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BOTANICAL MEDICINE

Herbs, nutrition, hormones & medications

Dr. Marisa Marciano & Dr. Nikita A. Vizniak



Dr. Marisa Marciano is a Naturopathic Doctor & Registered Herbalist (AHG) with expertise in both the education and clinical applications of therapeutic nutrition & phytotherapy. Her educational background includes an undergraduate degree in Kinesiology and medical training from the Boucher Institute of

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How to use this book, and legal disclaimer

This text is designed as a quick reference guide for students, therapists, doctors and instructors. It assumes the reader is receiving or has had thorough training in clinical botanical medicine procedures, and is meant as a supplemental source for information used in daily practice, and as a reminder of knowledge and information learned elsewhere. The information in this book is compiled from sources believed to be reliable, and exhaustive efforts have been put forth to make the book as accurate as possible. The contents are to be used as a guide only and health care professionals should use sound judgment and individualized therapy for each specific patient care situation. This book is not meant to be a replacement for training, experience or continuing education. This text is sold without warranties of any kind, expressed or implied, and the publisher, authors, consultants and editors disclaim any liability, loss, or damage caused by the contents.

We invite comments & suggestions for future improvement through our website: www.prohealthsys.com

About Dr. Marissa Marciano

Dr. Marciano is a Naturopathic Doctor & Registered Herbalist (AHG) with expertise in both the education and clinical applications of therapeutic nutrition & phytotherapy. She is recognized for creating the celebrated online herbal resource TheNaturopathicHerbalist. Her overall approach to wellness emphasizes the use of therapies inherently in tune with Nature, believing in the body's innate capacity to heal when provided with the ancient knowledge & foundational therapeutic potential of plant medicine in all its forms.

About Dr. Nikita Vizniak

Dr. Nikita Vizniak is a globally recognized educator/author of numerous text books and learning resources used around the world. His writings have been translated into many languages and help students/clinicians apply clinical topics with best practices of integrated multidisciplinary patient treatment. Dr. Vizniak loves teaching and empowering students with skills and confidence. He focuses on methodology that results in accurate assessment and more effective treatments.

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In virtute sunt multi ascensus - There are many degrees in excellence

Without your assistance and support this text would not have been possible, thank you.

This text is dedicated to all health care providers that can use the information it contains.

"From the Classroom to Clinical Excellence"

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Congratulations on making the best investment of your life - your own education and your continued service to your patient's quality of life. To help support you - this text was created as the most up-to-date, functional and cost effective clinical text available. Countless hours of research & design were spent to develop the content & format. Information sources include: hundreds of original peer reviewed research articles with cutting-edge information & decades of evidence informed best practices & multidisciplinary clinical experience with a focus on **results based medicine**.

In order to get the most clinical utility from this text, it must be available at all times, as such the books size allows for easy transport & storage. The paper used is uncoated to allow you to write your own notes directly on the pages. Do not be fooled, this text contains more useful information than most full-size textbooks and is supported by numerous student, clinician & instructor **resources**.

The study of herbal medicine is both healing and transformative. Though one of mankind's oldest forms of medicine, it has been experiencing a rebirth due to it's limitless life-enhancing qualities. What you will gain from this book is an overview of the possibilities of plant medicine, and an appreciation for the many gifts therein.

This book is intended to serve the hobby herbalist, medical student and/or professional health practitioner as a relevant & reliable source of botanical information. All of the information therein has been gathered from only the most credible herbalists & resources, with the inclusion of references that emphasize the most current herbal scientific research.

Intro

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Appendix



- P** Part used
- C** Constituents (active ingredients)
- A** Action(s) - effects in body
- I** Indications for use
- F** *plant family*

How to Use This Book

The layout of this book is organized in such a way as to facilitate ease of learning for both the beginner herbalist, and also act as a quick clinical reference guide for the more experienced herbal practitioner.

Each section is **structured alphabetically & key concepts are bold font**, so that the most pertinent & relevant herbal information can be accessed swiftly, followed alongside a more in-depth analysis of the content contained therein.

Its focus is on how to practically engage with these important medicines, imparting a sound understanding of a plant's identification, actions, constituents & pharmacology, and how best to utilize these properties in order to release a patient's true and innate healing potential.

Color! Each monograph displays a black & white herbal image which should be colored in as you go, imparting an ability to better identify a plant's form while engaging in a more creative learning process that is both relaxing & enjoyable.

'Mini'-monographs are structured using the key seen above, and offer a condensed version of what is considered the most pertinent plant information. They are an ideal learning tool to use when starting out to help simplify the content.

A more detailed account (e.g. pharmacology, folk use, dosing, & safety concerns) will follow, along with full references & sourcing.

The content therein aims to encourage the holistic perspectives inherent in herbalism while acknowledging the importance of modern scientific research.

***Achillea millefolium* (Yarrow)**

Part Used: Aerial (leaf & flower)

Constituents: Volatile oil (thujone) & sesquiterpene lactones, Tannins, Flavonoids

Medicinal Actions: Anti-hemorrhagic, Anti-inflammatory, Antimicrobial

Medical uses: useful for fevers; will stop bleeds both topically and internally.

Pharmacology: volatile oils are anti-inflammatory, antimicrobial & cytotoxic. Thujone in high doses is toxic to the nervous system. Low doses are anti-fungal, anti-microbial, emmenagogue and immuno-stimulant.

Pharmacy: Infusion: 1-2 tsp/cup, infuse 15 min, TID or hourly in fevers. Tincture: (1:2, 40%), 2-6 ml QD, 40 ml weekly max. / Dried herb: 2-4g, TID.

Toxicity: Volatile oil contains thujone which is neurotoxic in high doses. Sesquiterpenes are responsible for allergic contact dermatitis. High doses may cause headaches & photosensitivity.

Contraindications: Allergy to Asteraceae family. Avoid during pregnancy as it has a mild uterine stimulant effect (emmenagogue & abortifacient).

Interactions: None known. **Other:** (e.g. traditional use, homeopathic, plant energetics etc.)



If you're new to the study of herbal medicine the amount of information and terminology there is to learn can seem overwhelming at first. There are various ways to organize and synthesize the content to facilitate ease of learning, and this reference guide has been set up in such a way as to speed the process. Some useful tips for getting started include:

Establish what kind of learner you are.

Most students are a combination of the following 3 types:

1. Auditory (listener)

- Find post casts, videos, and webinars on topics related to herbal medicine.
- Commit to making the most of class and lecture time by eliminating distractors such as your phone and web-browsing.
- Ask your instructor if they are comfortable with having you record the lecture to listen to again at a later time.

2. Visual

- Re-write lecture notes using various organizational strategies such as charts, tables, flash cards, and/or white boards. Keep them around your home or office as constant and regular reminders of the content you're aiming to consolidate.
- Find a variety of images of the herbs you're learning to add to your notes or monographs.
- Use a resource guide that includes images of the herbs.

3. Kinesthetic (hands-on)

- **Try the herbs yourself!** No matter what kind of learner you are, this is perhaps one of the most useful ways to learn about herbal medicine.
- Visit an herbal dispensary and ask them to dispense sample sizes of the herbs you are learning.
- Smell, taste, and touch the herbs. This is especially useful when learning to identify plants and remember the parts used for medicine (e.g. leaf, root or flower)
- Go on an herb walk to learn to identify herbs that grown locally in your area.
- Grow herbs at home. Even if you don't consider yourself to have a green thumb, many medicinal plants are considered "weeds" which grow easily in small planter pots or gardens.

Remember, don't get lost in the Details!

- When starting out it is best to focus on knowing a small number of herbs well, vs. trying to memorize everything about all of them.
- Focus on 2-3 major plant actions, constituents & uses. Commit to building on your knowledge base as you go.



Mentha piperita



Botanical/herbal medicine (phytotherapy), is **the art & science of using herbal remedies to both treat and prevent illness**, and includes the use of medicinal plants which are both powerful (e.g. Foxglove) and gentle (e.g. Chamomile) in their effects. It is a **healing technique that is inherently in tune with nature**, and has been described as “ecological healing” as it is from our shared ecological and evolutionary heritage with the plant kingdom that herbal remedies do their work.

Throughout history the complex interactions between plants, humans, and other animals have produced an integrated biological matrix of life. For humanity, our needs have always been met by nature, and the use of botanicals as a source of healing remedies is inherent in all cultures and across all historical times. The plants themselves act as a bridge connecting us to various medical models and theories of the past while continuing to direct our understanding of health and healing into the future (Hoffman, 1998).

The current role of phytotherapy remains an important one, as many plants continue to be the foundation of much of modern medicine. A wide range of drugs have been produced from years of scientific research into the active ingredients of plant remedies. For example Aspirin came from Willow Bark and anti-cancer drugs from Periwinkle.

Recent scientific advances within the reductionist medical model have aimed to isolate & investigate individual plant compounds in an attempt best to understand their effects. The search for active ingredients in plants has been successful but is limited by the very nature of the perceptions behind it. Using & prescribing plants in this way limits their full healing power & potential. The modern herbal practitioner recognizes that healing is much more than solely a drug, herb, or constituent, and as stewards for the plant kingdom we must aim to find a middle ground between folk/eclectic herbal teachings and that of conventional scientific research.

Note about invasive plants:

Plants used for medicinal purposes have great value to human health; however, many plants, including some species mentioned in this book, are or have the potential to become invasive in some jurisdictions around the world. Invasive plants are non-native plants that have been moved from one part of the world to another. With characteristics that allow them to grow prolifically, and in the absence of natural predators (diseases, fungi, insects, etc.), these species can cause great environmental and economic harm. It is a major conservation issue worldwide.

Invasive plants can be as useful, beautiful and available as non-invasive plants but they are not easily distinguishable. Please contact your local government or invasive species organization to find out more about invasive species of concern where you live and work. Please use caution when propagating or handling all plant parts and seeds that are not native to your particular region. If you choose to grow invasive plants, take precautions to avoid their spread into the surrounding environment by containing the plants, or removing flowers and seeds before they are able to disperse. Be aware that there may also be legislation governing the transport, sale, growth, use or disposal of species designated as invasive in your region.

Please be a responsible user of all plants used for botanical medicine purposes, and take precautions to eliminate or minimize the impact of invasive plants on the environment beyond your clinic or garden.



Achillea millefolium
(Yarrow)



"Is this going to be on the test?" – **Yes, is always the correct answer** – LIFE IS CUMULATIVE

- If you **require this Botanical Medicine text** in class you are free to copy pages from this book - **A bonus question** on every quiz is a good way to get students excited!
- **Start each week with a quiz** – this allows students to accurately self-evaluate their progress through the material. Avoid students changing their answers by suggesting they write their quizzes in pen. Always test on any of the material you cover even on lessons from the first day of class. It is important to hold students responsible for the information – this enforces students to review the material more frequently and improves retaining of the information. Students will thank you in the end – **remember, life is cumulative!**
- **Start each class by asking if there are any questions** from last days material or the homework assignments - if there are none or few, ask students to give their interpretation of what they learned last class. Start with broad concepts such as herbal actions, and then move to more detailed information such as part used, family or dosing strategies.
- Make your classroom a safe place to make mistakes and ask questions – **it is OK to say "I don't know."** While keeping a positive and respectful interaction in mind – challenge students by **gently putting them on the spot to answer questions or demonstrate a skill.**
- **Give a 5 minute review at the end of class** to reinforce your important points and overall message. Ask students to help you recall the key points from the class.
- Learning new terms in class can incorporate kinesthetic learning – **"Say it with me, with a smile ☺"** helps students correlate positive associations with the new term and this activity also ensures correct pronunciation which is very important in professional communication.
- **"Get up, stand up"**. Less desk time (~30-45 minutes max) and more group work and hands on time will result in increased student performance and real world applications. Have students work through cases together, formulating and discussing herbal preparations and creating them in real-time.



Cassia angustifolia



Part of taking personal responsibility for our health lies in the ability to identify & gather our own herbal medicines.

Harvesting our own herbal medicines involves a deep show of respect & stewardship towards the plant kingdom and applies the principles of horticulture therapy to enhance their therapeutic potential. In the words of herbalist James Green, *"Harvesting is a way to call forth & receive Mother Nature's love"*. It should be considered a sacred practice that is done with grateful consciousness & clear communication of therapeutic intent.

If you have the space for it, many medicinal plants can easily be grown at home in your own garden or even on pots on a small apartment patio. The act of "Wild Crafting" involves harvesting a plant from where it is growing in it's natural habitat, while "Ecological Harvesting" is founded on the knowledge, intent & actions of those who hold in their hearts & minds a deep respect for plant our communities.

When harvesting:

- **Leaves, flowers, stems, and bark**, take only the most vital parts of the plant, cutting either close to the ground or just the top few inches.
- **Roots**, loosen the earth around the plant with a shovel or trowel, so that you can lift the whole root system out gently. Once removed, fill the space back in with soil. Roots should be harvested with respect since the plant must be killed for its root to be gathered, and keep in mind that some slower-growing roots can be replanted after you've harvested what you need.

It's ideal to **harvest plants during the season where their energy is most concentrated in the part of the plant you are using.**

Plants are affected by the time of day and the seasons, changing throughout the month, as well as throughout the year. In general:

- **Spring** – energy is flowing up to the plant's stalk and out of the root and into the budding leaves, thus this is a good season for fresh leafy greens
- **Summer** – energy is taken from the leaves up into the fruits & flowers
- **Fall** – energy is flowing back down into the stalk to be stored in the root for winter. When harvesting roots in the fall, the plant has time to flower & go to seed, ensuring more plants for the future
- **Full moon** - is the optimum time to harvest aboveground parts (leaf, flower, stem, and bark)
- **New moon** is the time for harvesting the roots

Tips & essentials before harvesting include:

- Proper plant identification. Assume the responsibility to learn the plants, and acquire the knowledge of the parts used for medicine and when they should be harvested.
- Evaluation of the plant's environment (e.g. pesticide use?) & vitality (do the plants look healthy?)



Taccuino Sanitatis, late 14th century



- Have a good sharp knife helps handy so as not to harm the plant by pulling or tearing.
- Harvest with gratitude. Show your appreciation in whatever way feels good to you: you can leave an offering: a piece of your hair, water or spit, a song, a pinch of an herb or a simple thanks.
- Harvest abundance only, and take only what you need from each plant. Never harvest or disturb threatened or endangered plants.
- Leaves, flowers, stems, and bark can also be dried by laying them in baskets or on screens (nylon, not metal). Depending on the weather and the herb's moisture content, your herbs may be completely dry in just a couple days, while others may take several days.
- Roots should be washed and sliced while they are fresh (are easier to cut) and dried in baskets, on screens.

Drying Herbs

- Aerial parts can be dried in bunches, small enough for air to circulate around so the plant can dry thoroughly. Tie bunches with string or use rubber bands, which will adjust as the water evaporates and the stems get smaller. Hang the plants out of direct sun with good air circulation & avoid food dehydrators as they're too hot. 28-30 degrees C & circulation of air is ideal

Storing Herbs

- Dried herbs should be stored in airtight containers (preferably glass jars) and labeled clearly!
- To help maintain their vitality, store them in a dry area away from direct sunlight & extreme temperatures.
- Many books will tell you to use dried leaves/flowers within 6-12 months and dried roots within 3 years, However, use your judgment & your senses (sight, smell, taste) to decide whether an herb or root still possesses its vital essence.



Evidence 'Informed' or 'Based' Medicine?

Evidence-Based Medicine (EBM) is the conscientious use of *current best evidence* in making decisions about the assessment & care of individual patients¹. All healthcare providers must realize that EBM alone is not enough for effective utilization of best practices & must be integrated with the following fundamental abilities to make **evidence informed** clinical decisions:

- A detailed understanding of pathoanatomy & expertise in performing a history, examination & condition management (including referrals)
- Understanding of the patient's family, personal & social history & the community in which they live
- Developing a relationship with the patient formed by mutual respect & an understanding of their desires, beliefs & values to help create a functional context for therapeutic decision-making

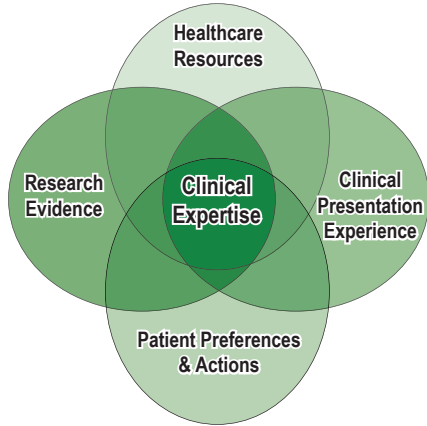
An evidence-informed medicine (EIM) approach helps to promote life-long learning & liberates clinicians from a reliance on tradition, which further permits the critical evaluation of both traditional & alternative therapies on an even playing field. EIM puts the patient at the center of care by emphasizing outcome markers that matter directly to patients such as pain, activities of daily living, quality of life & even cost (financial & personal).

Why use Evidence-Informed Medicine?

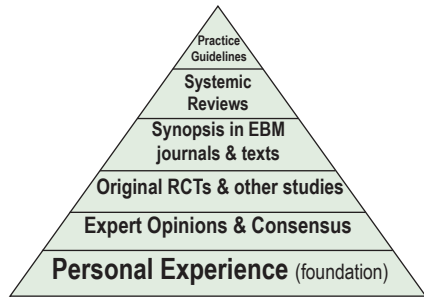
It provides a solid foundation for evaluation of new evidence from the literature, critical appraisal of existing practices, & the effective use of clinical information gathered from patients.

Perhaps the most direct change due to EIM is the potential improvement in clinical efficiency, which results in reduced healthcare costs by improving both assessment & treatment, as well as a net increase in earning potential for its providers as they are better able to competently see more patients in a given time period.

Evidence Informed Practice Model



Hierarchy of Evidence



Gathering information?

To be useful, *information must be relevant to everyday practice, valid, easy to obtain & low cost. Knowing where to look for answers to clinical questions is an important skill.* Most clinicians gather information from a wide variety of sources;

1. Straus SE, et al. Evidence Based Medicine. 4th Edition. Churchill Livingstone: Edinburgh, 2011.

Information source	Relevance	Validity	Work	Cost	Usefulness
Evidence-based textbook/website	High	High	Low	Low	High
Systematic review (evidence-based)	High	High	Low	High	High
Asking colleagues	High	Mod	Low	Low	High-mod
Practice guidelines (evidence-based)	Mod	High	Low	Low	High-mod
Practice guidelines (consensus)	Mod	Mod	Low	Low	Mod
Original journal articles	Low	High	Very High	High	Low

ProHealth resources are relevant to everyday practice, valid, easy to obtain & free or low cost!



While the importance of choosing & using herbs based on the best available evidence cannot be ignored, such evidence can come from a variety of places, and at times the traditional & folk usage of plants must be valued as equally important.

The modern herbalist must approach modern research methods discriminately, and choose how much weight to place on mechanistic vs. vitalistic medical & research models. This process will help us decide if a study's findings will accurately translate into the real world, and ultimately the healing of our patients. Important factors to consider to effectively evaluate the strength & relevance findings pertaining to herbal medicine include:

- An understanding of different research methodologies
- An assessment of the strength & limitations of the research method employed

While RCTs are generally considered the 'gold standard' of evidence based medicine, conclusions can be drawn incorrectly from trial data & the relevance of their findings in relation to herbal medicine are questionable due to:

- Findings not being representative of the individual (e.g. health status, comorbidities)
- Plant species & potency used are often not identified
- Only providing explanations for associations between a specific intervention and it's outcome
- Data can be manipulated or misinterpreted through flawed statistical analysis & other confounding variables (e.g. drop our rates).

Research methodologies which may be of greater or equal significance to herbalists will include:

- **Observational studies:** observe a group of people to draw inferences of the effects of a treatment.
- **Systematic reviews** are an analysis or review of the current literature. Where botanicals are concerned they usually conclude with "more studies are needed"
- **Meta analyses** are similar to systematic reviews, but uses the raw data from trials & pools it together for a larger statistical analysis with greater power.

Questions to ask yourself while evaluating the strength of a herbal study include:

- *Was the study done in vitro or in vivo (animal models or in humans?)*
- *Does the study describe how the herb was prepared and/or extracted?*
- *Is the dose & preparation relevant to what people would actually use?*
- *What specific conclusions were drawn regarding the herbs effects?*
- *What is known known regarding the quality or standardization of the herbal extract?*
- *Did the study acknowledge the potential for a plant's synergistic effects or focus on the isolation of individual compounds?*
- *Who conducted the study? Were there any conflicts of interest involved?*
- *Is the traditional or folk use of the plant represented or explored at all by the authors?*

In vitro studies are conducted on cells or molecules outside of their biological environment (i.e. in test tubes), and is usually the easiest type of research to conduct. As the body would metabolize these compounds differently than what's done in petrie dish, these findings should be carefully examined before drawing any conclusions.

In vivo studies are performed or take place in a living organism. Substances are most often tested in animals (usually mice) to assess biological effects & safety before being tested in humans.

Mechanism of action studies, investigate the biological activity of herb based on it's recorded traditional or folk usage. Can be done in vitro or in vivo to see how particular herbs or compounds affect certain cells.

- Note: Many natural substances can have an effect in vitro or in animals while reaching such dosage amounts in humans would not be feasible. Generally, concentrations > 0.1mg/mL are unlikely to be reached in people taking herbs orally.

Examiner must sign & date each entry, use ink, & perhaps most importantly - write legibly (difficult task for many ☹). The purpose of the **SOAP** note is to provide a record of the patient's **subjective** concern, the examiner's **objective** findings & **assessment/actions**, the long-term management **plan**.

HIP- MNRS = basic clinic protocol

History Inspection Palpation Motion Neurovascular Screen Referred Pain, Special Tests

H	S	<p>Subjective - History (OPQRST)</p> <ul style="list-style-type: none"> Record of information provided by the patient (direct quotes when possible) How has the patient responded since last treatment? You should have specific outcome markers to focus on (pain scale, ADL's, sleep quality, energy levels etc.) In patients with multiple conditions, address each condition separately If a patient has a new condition a new chief concern history is required <p>Create a differential diagnosis list to guide PE</p>
I P M N R S	O	<p>Objective - Physical Exam (PE) findings</p> <ul style="list-style-type: none"> General observations of patient's physical presentation <ul style="list-style-type: none"> How would you describe their overall demeanor & vitality? Perform focused physical exam based on their chief complaints <i>Specific measurements:</i> blood pressure, vitals, functional tests, lab work etc. <p>Narrow down differential diagnosis</p>
I P M N R S	A	<p>Assessment create working DDx</p> <ul style="list-style-type: none"> Decide what you are treating & give the condition(s) a name <ul style="list-style-type: none"> Stage - acute, subacute, chronic, chronic recurrent Severity - mild, moderate, severe, or grade 1, 2, 3 <i>E.g Stage 2 adrenal fatigue with acute sleep onset insomnia</i> Record global statement of patient's current condition - clinical impression Indicate whether the patient is improving or not
Tx	P	<p>Plan - treatment plan & follow-up</p> <ul style="list-style-type: none"> Discuss with patient PAR-Q (procedures, alternatives, risks & questions) Record treatment given during visit <ul style="list-style-type: none"> Full botanical formula prescribed including herbs, ratio strengths/ percentages, grams/mls used, dosing frequency & timing Therapeutic diet, supplementation, and lifestyle recommendations Record any future plans if there is something you wish to examine, treatment or test you wish to order on a future visit <p>Record response to treatment - schedule follow-up visit</p>



In order to ensure optimum treatment outcomes & patient compliance it is important to educate and inform clients regarding the intention and course of treatment when using herbal protocols. Some useful questions to ask when getting started include:

- What is your current level of experience with using herbal medicines?
- Are there any herbs or flavours you either enjoy or dislike? (e.g. licorice)
- Do you enjoy drinking and making herbal teas?
- Do you have a steeper at home?
- Are you uncomfortable using an herbal tincture knowing that they contain alcohol?
- Would you prefer to take herbal medicine in liquid (e.g. tea or tincture) or capsule form? (assess compliance)

Review intake questionnaire

- Prior to beginning the patient history the patient intake questionnaire should be reviewed to help better point out specific areas on interest or coexisting conditions
- **Why are they seeking care?**
- **How can I help you today?**

Major Health Concerns (Chief Concerns)

- What are the major health concerns that brought you here today?
- When was the last time you remember feeling well or without your symptoms?
- Ask the patient "Think of the last week, how would you rate your quality of life?" - excellent, very good, moderate, bad, very bad.

Onset (what happened & when?)

- When did the condition(s) begin?
- Was the onset gradual or sudden? What might have caused it?

Chronology/Timing (symptom patterns)

- Are symptoms constant or intermittent (episodic)?
- If constant, is it truly 24 hours a day? Does it prevent sleep?
- If intermittent: is it associated with specific circumstances? (e.g. eating certain

foods? certain activities? Time of day?)

- Are symptoms getting worse (progressive)? Getting better? Staying the same?
- Prior history: has this ever happened before? When? How long? What did you do about it?

Quality

- Ask patient to describe symptoms in their own words (use patient's words in quotations, e.g. sharp, dull, etc.)

Severity/effect on ADL

- Would you describe your symptoms as mild, moderate or severe? Use scale (0-10)
- Can you go to work? Affect performance? Affect hobbies? Sexual activity? Simple activities such as putting on a shirt? (Get specific activities)

Modifying Factors

- What increases your current symptoms or pain?
- What makes it better? (e.g. avoidance of foods, changing posture, rest, movement, medications, supplements, botanicals - dose & frequency?)

Associated Symptoms

- Do you have any other symptoms or problems that you feel are related to your chief complaint?

Treatment (Previous & Current)

- Have you ever taken or used herbal medicine before?
- Have you ever received any other prior care for your complaints? If yes, what for? Did it help? This will tell what has & has not worked previously (huge clinical value)
- Are you currently receiving care from any other HCP?
- Who did you see? When?
- What tests (labwork or imaging) were done? What were the results?
- What was the diagnosis? What treatment? Did it help?

Review of Systems (if indicated)



General

- Weight - average, recent changes, minimum, maximum
- Weakness, fatigue, fever
- Sweats, chills
- Anorexia
- Insomnia (can't sleep)
- Hypersomnolence (sleep all the time)

Skin

- Lesions, lumps, growths, sores
- Moles, change in color/pigmentation, eruptions/rashes
- Pruritus (itching)
- Dryness, excessive sweating
- Easy bruising
- Changes in nails/hair
- Birthmarks
- Change in temperature

Head, Eye, Ears, Nose, Throat

- **Head:** headache, head injury, change in size, deformity, dizziness, syncope (lightheaded), vertigo (spinning)
- **Eyes:** use of glasses/contacts, pain, diplopia (double vision), glaucoma, cataracts, itching, spots, photophobia, color blindness, night blindness, blurry vision, ptosis (droopy eyelids), halos (rings around lights), scotomata (blind spot), redness, tearing, discharge (color, consistency), use of eye drops, last eye exam
- **Ears:** pain, hearing loss, deafness, discharge (color, consistency, bloody), infections, tinnitus (ringing), vertigo, pruritus (itching), use of hearing aid

- **Nose/Sinuses:** rhinorrhea (runny nose), stuffiness, discharge (color, consistency), pruritus (itching), epistaxis (nose bleeds), pain over sinuses, hay fever, frequent colds
- **Throat/Mouth:** sores, lesions, condition of teeth and gums, dental caries, loss of teeth, dentures, bleeding, sore throat, hoarseness, change in taste, bad taste, malodorous breath, dry mouth, last dental exam
- **Neck:** pain, swelling, limits in range of motion or stiffness, lumps, swollen lymph nodes or "swollen glands"

Cardiovascular

- History of heart disease
- Chest pain (exertional/nonexertional, associated symptoms)
- Orthopnea (discomfort breathing by lying flat)
- PND (Paroxysmal Nocturnal Dyspnea)
- Dyspnea on exertion (shortness of breath)
- Edema, cyanosis (blue skin)
- Palpitations (irregular heartbeats)
- Loss of consciousness
- Hypertension, heart murmur
- Claudication (limping/calf muscle weakness)
- Thrombophlebitis (inflamed veins)
- Varicosities (dilated veins)
- Raynaud's Phenomenon (bilateral cyanosis of digits)

Gastrointestinal

- Change in appetite
- Abdominal pain, difficulty/pain with swallowing



- Heartburn, indigestion, bloating, belching, nausea, vomiting, hematemesis (vomiting blood), jaundice
- Food intolerance or allergies
- Frequency of bowel movements
- Change in bowel habits (frequency, consistency, caliber, constipation, diarrhea), melena (dark colored stools), hematochezia (bloody stools), clay-colored stools, mucus (passing mucus)
- Excessive belching or passing of gas
- Incontinence (inability to prevent discharge)
- Hemorrhoids, rectal itching/burning
- Rectal discharge/pain
- Laxative use
- History of hepatitis or gall bladder disease

Respiratory

- Cough, sputum (color, quantity), hemoptysis (blood from lungs/bronchus)
- Wheezing, asthma, emphysema, bronchitis, pneumonia, tuberculosis, pleurisy
- Shortness of breath
- Last chest x-ray

Genitourinary

- Frequency of urination
- Dysuria (difficulty/pain urination)
- Hematuria (blood in urine)
- Change in color of urine
- Polyuria (excess urine)
- Nocturia (pee a lot at night)
- Oliguria (not much urine), anuria (no urine)
- Flank/suprapubic pain
- Retention (can't fully void)
- Urgency (desire to void)

- Hesitancy (involuntary delay)
- Incontinence, change in force of stream
- Dribbling, passage of air/stone
- Enuresis (leakage of urine)
- Past infections

Female

- Breast (lumps, pain, swelling or nipple discharge). Use of self-exam, last mammogram
- Menstrual history (onset, cycle, duration, amount of flow, change in cycle) LMP, amenorrhea (loss of cycle), menorrhagia (excessive menses), metrorrhagia (irregular menses), associated pain or PMS symptoms
- Contraceptive history
- Previous pregnancies (deliveries, abortions, complications, outcomes)
- Exposure to DES (diethylstilbestrol)
- Vaginal discharge, pruritus, abscess, sores, lesions, infections, STI's, PID (Pelvic Inflammatory Disease), RPR status (Rapid Plasma Reagin test – syphilis), HIV status
- Previous PAPs
- Problem with intercourse (pain, satisfaction, libido), sexual orientation, number of partners
- Age at menopause
- Postmenopausal bleeding
- Menopausal symptoms (hot flashes, mood swings, changes in vaginal lubrication)

Male

- Hernias, penile discharge
- Sores, testicular pain or lumps



- STI's, RPR (Rapid Plasma Reagin test – syphilis), HIV status
- Sexual orientation, number of partners
- Problems with intercourse (impotence, satisfaction, sex drive)
- Contraceptive use
- Frequent falls, tremor, involuntary movement
- Weakness, loss of muscle mass, paralysis
- Clumsiness, pain
- Numbness, paresthesia (abnormal sensation, burning, tickling), hyperesthesia (abnormal acuteness to touch), dysarthria (speech change)

Endocrine

- Goiter, exophthalmos (eyeballs protrude)
- Hot/cold intolerance, constipation/diarrhea
- Tremor, excessive sweating
- Palpitations, change in voice
- Skin changes, hair distribution
- Secondary sex characteristics
- Changes in body contour or weight
- Changes in hat/glove/shoe size
- Polyuria (increase urine), polydipsia (increase thirst), polyphagia (increase eating)
- Striae (stretch marks)
- Acne, pigmentation
- Infertility, diabetes, thyroid disorders

Musculoskeletal

- Pain in an extremity, joint pain
- Swelling, redness, stiffness, deformity, warmth
- Limited range of motion,
- Crepitation (cracking joints) - note location of each joint involved
- History of arthritis, muscle pain, gout, backache, neck pain, significant trauma

Neurologic

- Syncope, dizziness, seizures, vertigo
- Ataxia (uncoordinated movements), limp

Psychiatric

- Ability to deal with stress
- Nervousness, anxiety, mood swings, depression, crying spells, panic attacks
- Change in memory, early awakening, problems sleeping, loss of energy
- Change in libido, suicidal thoughts
- Change in appetite, binge eating, purging
- Excessive exercising
- Paranoia, hallucinations, disturbing thoughts

GOALS

- What is your desired goal for your clinic visit?
- Ideally what state of health can you visualize achieving for yourself?
- In what form do you believe you will be best able to comply with your herbal treatment? (e.g. teas, tinctures, capsules etc.)
- Is there anything else you can tell me about your condition that I have not asked?

Create a differential diagnosis list to help direct physical exam, select special tests or referral for co-management



Past Medical History (hospitalization, trauma & injuries)

- Have you ever had any serious illness(es)? What were/are the residual effects?
- Have you ever been hospitalized?
- Have you had any surgeries?
- Was there any diagnostic imaging done? (e.g. X Rays, MRI) What were the findings?
- Have you experienced any physical, mental or emotional trauma that required treatment or should have been treated?
- Were there any residual problems or prolonged side effects?

Medications & Supplements

- Are you currently taking any prescribed medications?
- Are you currently taking any over the counter medications?
- Are you currently taking any herbs, vitamins, or nutraceuticals?
- Have you ever taken medication for extended periods of time? (e.g. Steroids, antidepressants, NSAIDs, antibiotics, hormones)

Allergies

- Do you have any known or suspected allergies? (e.g. food, herbs, medications, seasonal)

Last Physical Exam

- When was your last physical exam? Were you experiencing your chief complaint when you had the physical? Were any problems identified?

Females:

- When was your last GYN exam & PAP smear? What were the results?
- Females over 50: Have you had a mammogram? How often?
- What were the results?

Males

- Males 15-35: Do you perform self-testicular exam? Have you ever been taught how to?
- Males over 40: Have you ever had a rectal exam or lab tests to evaluate your prostate? If yes, what were the results?

Family History

- Are there any health conditions that run in your family? (e.g. diabetes, high blood pressure, stroke, heart disease, cancer)
- I'd like to start with your mother. Is she alive? Does she have any health problems? How about your mother's mother? How about your mother's father? Your father? Your father's mother? Your father's father? Brothers? Sisters?
- If there is a deceased relative, how old were they when they died? Cause of death?

Social History

- Can you describe your living situation to me? (e.g. house/apt, relationships, children, etc.)
- What is your occupation? Describe your activities at work. Hours? Do you like your job?
- Do you have any other interests, hobbies or activities you enjoy?



Lifestyle Habits

Physical activity & Exercise:

- Describe your overall fitness level.
- Do you participate in regular exercise? (describe type, intensity & frequency)

Stressors & Social Support

- Have there been any significant stresses in your life lately? (e.g. deaths, divorce, family, work).
- What resources do you have for coping with stress?
- Do you feel you have adequate support and/or social networks?

Alcohol:

- Do you drink alcohol? Type? How often do you drink? How much? If you have concern about patient's drinking (CAGE):
 - Have you ever felt the need to **C**ut down on drinking?
 - Have you ever felt **A**nnoyed by criticism of drinking?
 - Have you had **G**uilty feelings about drinking?
 - Have you ever taken a morning "Eye opener?"

Smoking & Drug Use:

- These are important questions to ask - do NOT pass judgement or make the client feel self conscious about there answers - your office should be a safe place for honesty
- Do you use or have you ever used tobacco products/smoke? What do you use? How much do you smoke?

For how long? When did you stop?

- Drugs: Do you use any recreational drugs? What? For how long? (reiterate patient confidentiality if needed)

Diet History

- Rate your overall diet for me (good, fair, poor)
- Do you adhere to any particular type of diet (e.g. vegan, vegetarian, paleo etc.)
- What do you typically eat for breakfast? Lunch? Dinner? Snacks?
- What do you drink throughout the day?
- How much water do you drink a day?
- How often do you eat vegetables? Fruit? Sweets? Fast food?
- Do you limit or restrict any foods for preference or ethical reasons?

Sleep

- Do you have any issues falling or staying asleep?
- How many hours do you sleep each night?
- Do you wake up at all during the night? (e.g. to urinate) If so, do you know what time?
- Have there been any recent changes?
- Do you feel you get enough sleep?
- Are you a vivid dreamer?



The tendency can be to view food & medicine as two different things, this should not be the case. **Medicinal herbs can and should be considered to be of the same therapeutic order as foods**, and their use helps build the health of various body systems, rather than just being medicines that correct specific problems. Thus plants can be classified into 3 main categories: **nutrient, medicinal-nutrient, and medicinal**.

While some plants may be considered to be foods for normal consumption, there are other that are more medicinal and should be used with caution as in higher doses they may have the potential for toxicity concerns.

The herbs we call foods have an abundance of functional & structural components while medicinal herbs have a greater abundance of those other chemicals (phytonutrients) that alter cellular structure and/or function. An example of this is fiber, a material in plants that cannot be broken down by the digestive process, however we know that as a food it imparts important health benefits.

Based on their constituents & properties all plants will contain varying degrees of the following nutritional necessities :

1) Macronutrients: are essential for life and are required in relatively large amounts

- Carbohydrates
- Proteins
- Fats (Lipids)

2) Micronutrients: are essential for life and are required in relatively small amounts

- Vitamins
- Minerals

3) Phytonutrients: are not considered essential for life but have any disease modifying and health promoting effects in moderate amount.

- Tannins, alkaloids, flavonoids, etc.

Culinary herbs & spices deserve special mention for their medicinal value in cooking.

They're traditionally aromatic plants rich in volatile oils that are used to add flavour to a dish when fresh or dried.

They are foods consumed for health reasons, though not in the same quantities as regular foods, and would be considered medicinal foods.

How to use Herbs as Food:

- Soups, stocks & broths
- Smoothies & Gruels (Porridge)
- Compotes & Jams
- Spices & Seasonings
- Infused oils & butters
- Infused vinegars & Honeys

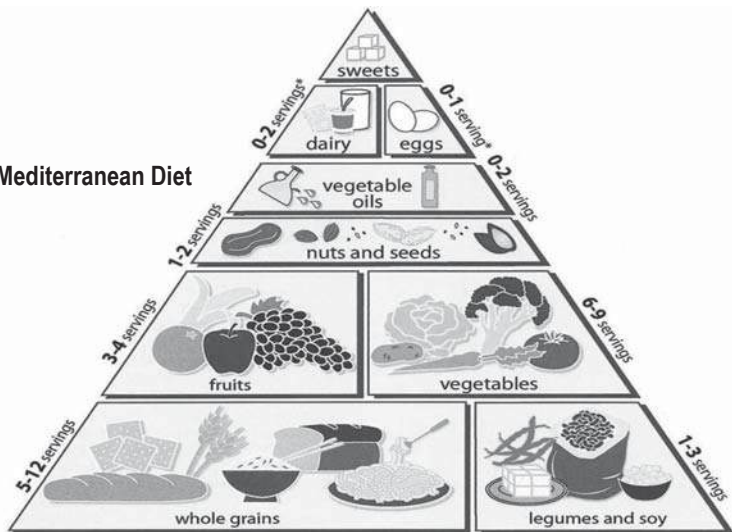
Examples of Herbs to use as Food:

- Dandelion greens can be added to salads
- Roots such as ginger & turmeric can be grated and added to dressings, soups and sauces
- Garlic & Blueberries can be consumed whole
- Rosemary & Thyme can be infused into cooking oils & salad dressings



Enjoy a variety of foods from each group every day - Whole natural foods are usually the best choice and avoid 'food-like' products and those your body does not tolerate!

Mediterranean Diet



* A reliable source of vitamin B12 should be included if no dairy or eggs are consumed.

Other Lifestyle Recommendations



Daily Exercise

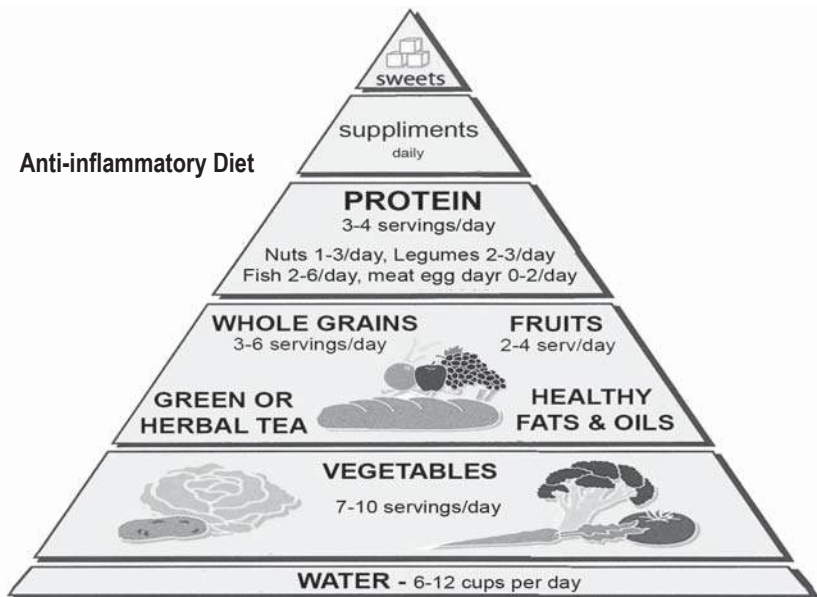


Water—eight, 8 oz. glasses per day



Sunlight—10 minutes a day to activate vitamin D

Anti-inflammatory Diet





Energy requirements

- Men 2900 kcal/d or 37-40 kcal/kg of body weight
- Women 2200 kcal/d or 36-38 kcal/kg body weight

Energy Sources

- Fat (9 kcal/g)
- Carbohydrates (4 kcal/g)
- Protein & amino acids (4 kcal/g)
- Ethanol & other alcohols (7 kcal/g)
- Ketones

Caloric density: the ratio of energy (calories) to mass of a food

- fruit, vegetables are low in caloric density, while fats & oils are high
- "Empty calorie foods" are those with high caloric density but low nutritional quality (fried food, high fat meats, high added sugar foods, alcoholic beverages)

Factors Influencing Energy Requirement

1) Metabolic Rate

Increased by:

1. Thyroid, adrenal, other hormones
2. Enlarged body mass
3. Aerobic exercise

Decreased by:

1. Starvation
2. Hypoparathyroidism, other diseases

2) Thermogenic effect (diet induced)

3) Physical activity measurement

- Basal Metabolic Rate (BMR)
- Basal body temperature
- Physical activity level & duration

4) Energy balance

1. Adjust for age, gender, height, etc.
2. Insurance tables
3. Body mass index (BMI)

5) Body Composition (lean vs. fatty tissue):

Skinfold calipers, Hydrostatic weighing, Bioelectric impedance

Normal body fat: 10-18% male, 20-25% female

Body Fat distribution

1. Waist/hip ratio-ponderosity index
 - Low risk: < 0.9 men, < 0.85 women
2. Waist circumference
 - Low risk: < 102 cm (41in) male
 - Low risk: < 89 cm (35in) female

Disturbances

Energy deficiency - underweight causes

- Poverty, famine, malabsorption
- Catabolic disease
- Food restriction
- Society induced eating disorders (anorexia nervosa, bulimia nervosa)

Consequences

- Underweight (loss of tissue mass)
- Bone density loss
- Debilitation
- Nutrient deficiencies

Energy excess - overweight causes

- Inactivity
- Poor food choices
- Diet & eating disorders

Consequences

- Increased risk of hypertension, diabetes, dyslipidemia, heart disease...

Metabolic Rate Calculation (use body weight in kg)

= ideal body weight (kg) x coefficient x hours

Males = IBW x 0.9 x 24

Female = IBW x 1.0 x 24

Divide 24 hrs into hours spent at specific activities*

1. Resting = $RMR \times 1.0 \times (\text{hours}/24)$
2. Sedentary activity (driving, typing) = $RMR \times 1.5 \times (\text{hours}/24)$
3. Light activity (slow walking, light work) = $RMR \times 2.5 \times (\text{hours}/24)$
4. Moderate activity (load carrying, dancing) = $RMR \times 5.0 \times (\text{hours}/24)$
5. Heavy activity (heavy manual labor or exercise) = $RMR \times 7.0 \times (\text{hours}/24)$

*Add the total from each category for estimated total daily requirement

Over 90% of diets fail to achieve long term weight loss (lifestyle change is crucial)



Age Group	RDA (g/d)	AMDR (%)
Infant (0-1 yr)	60-90 g/d	n/a
Child (1-8 yrs)	130 g/d	45-65%
Adolescent (9-16 yrs)		
Males (>17 yrs)		
Females (>17 yrs)		
Pregnancy	175 g/d	
Lactation	210 g/d	

Carb Energy = 4 kcal/g

Polysaccharides (complex carbohydrates)

Composed of more than 10 monosaccharide units, and are found mainly in **grains, legumes, roots & seeds**. Those of great importance to herbal medicine Include:

Fiber

Fiber Requirements

25-35 g/day

Basic Metabolism

- Carbohydrates (CHOs) are composed of only hydrogen, carbon & oxygen & are the building blocks of all other biological material

Functions of CHOs

- Primary nutrition & energy source for plants & animals
- Source of carbon for metabolism
- Energy storage in plants and animals
- Structural component of plant cell walls
- Sweetness in foods
- Fibre in food
- Component of the glyco-proteins in cell adhesion molecules

Classes of Carbohydrates

Mono/disaccharides (simple sugars) - Composed of one or two carbohydrate units including sucrose, glucose & fructose and found mainly in **fruits & seeds**.

Oligosaccharides (e.g. inulin) - Composed of 2-10 monosaccharides.

- Fructooligosaccharides escape digestion in the upper GIT & act as 'prebiotics' (preferred energy source) for gut flora in the large intestine.
- Found in **onion, garlic, and roots** (e.g. chicory, Echinacea & Dandelion)

Health issues related to mono & disaccharides

- Oral health disorders - eg. dental & gum disease
- Lactose & prebiotic intolerance - effects mostly non-Caucasians causing GIT distress (gas, bloating, cramps, diarrhea)
- Cardiovascular disease - sensitive adults sugar may ↑ triglyceride levels & atherosclerosis
- Diabetes - diets high in mono/disaccharides may hamper blood glucose control in diabetics

- Soluble Fiber (Gums & Mucilage)** – absorb water to form a gel. Can be used to heal & protect irritated or inflamed body tissues, act as a bulking agent in constipation, and has topical & internal vulnerary effects, soothing the endodermal lining of the gut and relaxing both the lungs & the urinary tract through spinal reflex.
- Insoluble Fiber** (e.g. lignin) - Has physiological effects both local & mechanical. Will prevent constipation, dilute bowel toxins, increase speed of intestinal transit, decrease risk of colon cancer, slows digestion & absorption of carbohydrates, prevents absorption of some fats & cholesterol.
- Mycopolysaccharides** (β D-glucans) Act as immune stimulants & tonics to increase the strength of the body's immune system.
- Arabinogalactans**
- Glycoproteins**
- Mucopolysaccharides**

Safety Concerns

- Take supplements & medications at least one hour prior to ingesting large amounts, as may reduce nutrient absorption by delaying gastric emptying and binding with intestinal contents.
- Increase water intake to prevent constipation
- Temporary intestinal gas may occur
- Contraindicated in intestinal obstruction

Herbal Sources:

- Aloe barbadensis* (Aloe)
- Althea off.* (Marshmallow)
- Plantago major ovatum* (Psyllium seed)
- Linum usitatissimum* (Flaxseed)
- Avena sativa* (Oats)
- Medicinal mushrooms*



Energy = 4 kcal/g

Age Group	RDA (g/d)	AMDR (%)
Infant (0-1 yr)	13.5 g/d	n/a
Child (1-8 yrs)	18 g/d	10-30%
Adolescent (9-16 yrs)	40 g/d	
Males (>17 yrs)	56 g/d	10-35%
Females (>17 yrs)	46 g/d	
Pregnancy	71 g/d	
Lactation		

Protein RDA (average) =

- **0.8 g/day per kg** of ideal body weight = **0.37 g/day per pound** of ideal weight
- Athletes may require up to twice the RDA, **Factors affecting protein requirements** - protein quality, calorie intake, growth & repair, lean body mass, exercise intensity, illness & chronic disease
- **Protein quality** - based on digestibility, absorbability & amino acid balance; animal proteins are higher quality than plant protein

Protein requirement per kg based on age

0-1 yrs	1-3 yrs	4-13 yrs	14-18 yrs	Adults	Pregnancy
1.5 g/kg/day	1.1 g/kg/day	0.95 g/kg/day	0.85 g/kg/day	0.8 g/kg/day	1.1 g/kg/day

Basic Metabolism

- Digestion via hydrochloric acid & pepsin; pancreatic & intestinal proteases.
- Absorption occurs mainly in SI where they are broken down & absorbed as single **amino acids**
- Protein synthesis (anabolism), degradation to urea (catabolism) occurs continuously with excess stored as fat

Functions of Protein

- Building materials in growth, repair & maintenance of various body connective tissues (e.g skin, bone, blood & muscle)
- Energy Source
- Enzymatic processes
- Hormone synthesis (e.g. insulin)
- Regulate fluid balance (e.g. albumin)
- Cell transporters & receptors
- Antibody & Neurotransmitter production

Classes of Proteins (Based on Amino acids)

- **Essential**- histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, valine
- **Non-Essential**- alanine, arginine, asparagine, cysteine, glutamic acid, glutamine, glycine, proline, serine, tyrosine

Health issues related to proteins

- **Protein Deficiency** - Rare in healthy people if calorie intake is normal. Symptoms: muscle wasting, edema, hair loss
- **Risk factors of high protein intake** - Increased cancer risk; may aggravate liver or kidney diseases. Increased calcium loss in urine (20 mg calcium/g of protein)
- Potential allergenic reactions in some patients (e.g gluten, casein, eggs, fish, peanuts & soy)

Dietary Sources

- **Animal:** meat, fish, poultry, eggs, dairy
- **Plant:** legumes (soy), beans, spirulina, wheat germ, grains, nuts & seeds, fermented foods, sea algae

Safety Concerns:

- Individual amino acid supplementation may carry risk of toxicity
- Monitor of allergic hypersensitivity

Herbal Sources:

- *Trigonella foenum-graecum* (Fenugreek)
- *Urtica dioica* (Nettle)
- *Petroselinum crispum* (Parsley)
- *Rumex crispus* (Yellow Dock)
- *Medicago sativa* (Alfalfa)
- *Plantago off.* (Plantain)



Age Group	RDA (g/d)	AMDR
Infant (0-1 yr)	30 g/d	30-40%
Child (1-8 yrs)	n/a	25-35%
Adolescent (9-16 yrs)		
Males (>17 yrs)		
Females (>17 yrs)		
Pregnancy		
Lactation		

Energy = 9 kcal/g

Polyunsaturated: sunflower, corn, soybean oils (omega 6); fish, flaxseed oils (omega 3)

- Raise HDL, lowers LDL

Trans Fats: created through food processing, especially hydrogenation

- Raise LDL levels

Cholesterol (RDA < 300 mg/day)

Function in body - structural component of cell membranes, hormone synthesis

Health issues - hyperlipidemia

- Genetic causes - decreased lipoprotein lipase, decreased LDL receptor function
- Dietary causes - high cholesterol diet, high saturated/trans fat diet

Clinical measurement - Desirable: LDL < 200 mg/dL, HDL > 35 mg/dL

Sources (mg/erving) - organ meats (liver-372 mg), eggs (215 mg), shrimp (150 mg), other shellfish (100 mg), other animal products (dairy)

Phospholipids

Function in body: Cell membrane structure, liver function, neurotransmitter synthesis (acetylcholine)

- Are similar to triglycerides except that they have either a choline or inositol, with a phosphate in place of one of the fatty acid chains

Sources

- Food - daily intake: 300 mg choline - animal & plant foods
- Supplements - commercial soy lecithin, phosphatidyl choline, pharmaceutical lecithin, choline compounds, inositol, phosphatidyl serine

Phytosterols

- Synthesized by plants (e.g beto-sitosterol)
- Reduce incidence of various types of cancer & autoimmune disease, CVD, Diabetes & other chronic diseases

Recommended intake: < 30% of daily caloric intake, < 10% as saturated fat

Basic metabolism

- Triglycerides (TG) = 90% of fat in diet
 - Cholesterol 5%, phospholipids 4%
 - Fat soluble vitamins - A, D, E, K
- Digestion highlights - pancreatic lipase, bile acids, micelle formation
Transportation - as lipoproteins (see next section)

Functions of Fats

- Triglycerides: provide energy, insulate the body against temperature extremes, protect internal organs
- Phospholipids: component of all cell membranes
- Sterols: component of hormones (sex & adrenal), bile, Vitamin D & cholesterol
- Essential Fatty acids: participate in regulation of inflammatory response & immune system response.

Classes of Fats & Dietary Sources

Saturated: meat & poultry fat, dairy fat (butter) tropical oils (coconut, palm)

- Raise LDL & HDL levels

Monounsaturated: olive, canola, 'oleic' oils, avocado

- Raise HDL, lowers LDL

Remember: fats are essential nutrients to the human body; fats help regulate body temperature, cushion & insulate organs & tissues, and are the main form of the body's energy storage. Vitamins A, D, E & K are fat soluble. Fats are used to synthesize numerous hormones & body chemicals (all of the cells in your body contain a phospholipid bilayer) - we need fat to live!



Essential fatty acids

- Linoleic acid (LA) & alpha-linolenic acid (ALA) can not be made by the body
- Necessary for hormone & prostaglandin synthesis (see below)
- **Deficiency symptoms:** dry skin/ skin problems, fatigue, impaired growth & fertility, impaired vision, neuropathies, impaired immune function
- **Deficiency may lead to:** increased risk of heart disease, diabetes, joint problems, learning disorders, inflammatory diseases, cancer
- **Dietary sources:**
 - LA: safflower oil, evening primrose seed, sunflower oil, hemp oil, pumpkin seed oil
 - ALA: perilla oil, flaxseed oil, hemp oil, small amounts in nuts & wheat germ

Eicosanoids

Participate in regulation of

- Inflammatory response (chronic)
- Platelet aggregation, smooth muscle irritability
- Immune function

Eicosanoid nomenclature - Prostaglandins (PG), Thromboxanes (TX), Leukotrienes (LT)

Precursors

Arachidonic Acid (AA)

- Produced from other omega-6 precursors
- Can be made from DGLA
- Precursor of 2-series PG & TX, 4-series LT
- Often associated with pathologic conditions

Eicosapentaenoic acid (EPA)

- Found only in marine life - fish oils
- Can be made from LA
- Precursor of 3-series PG & TX & 5-series LT

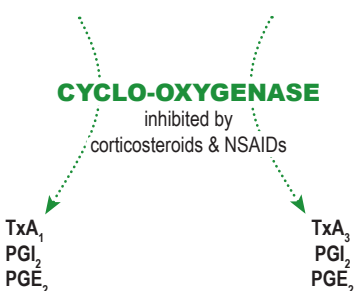
Dihomo-gammalinolenic acid (DGLA)

- No natural sources
- Precursor to 1-series PG & TX
- Precursor to 5-series LT

Herbal Sources: primarily obtained from seed oils.

- *Borago officinalis* (Borage)
- *Linum usitatissimum* (Flaxseed)
- *Oenothera biennis* (Evening primrose)
- *Echium alga*

omega-6 (Arachidonic) omega-3 (EPA)



Eicosanoid Synthesis

- Fatty acid precursors are stored in membrane phospholipids
- Precursors are released by phospholipase, which is inhibited by corticosteroids
- Released precursors are acted on by:
 - Cyclo-oxygenase - produces PG & TX, inhibited by aspirin, NSAIDs
 - Lipoxigenase - produces leukotrienes (LT), not inhibited by NSAIDs



Borago officinalis



Dosage

Therapeutic dose: 1200 RE (4000 IU) non-pregnant women, 1500 RE (5000 IU) men

Supplements derived from natural sources containing a mixture of carotenoids (lutein, alpha-carotene, lycopene) are considered the best sources

Retinol equivalent (RE) are a measure of Vitamin A activity

- 1 retinol equivalent (RE) = 1 µg of retinol = 6 µg of beta-carotene
- 1 RE = 3.3 IU (retinol from animal foods) = 10 IU (beta carotene from plant foods)

DRI for Vitamin A (µg)

Adult Men 900 Adult Women* 700 * if planning or in pregnancy should not exceed 2500 RE/day

Dietary Sources: Vitamin A is found in two forms: retinol (in animals) & carotenoids (plants)

Retinol	Serving size	mg	Carotenoids	Serving size	µg
Beef liver	100 g	9.1	Carrot	1 large	810
Cod liver oil	10 g	2.6	Sweet potato	1 large	920
Egg	1 whole	0.1	Spinach	100 mg	460

Herbal Sources

Centella asiatica (Gotu kola), Calendula officinalis (Marigold), Rumex crispus (Yellow Dock), Medicago sativa (Alfalfa), Capsicum sp. (Cayenne), Urtica dioica (Nettle), Taraxacum off. radix (Dandelion root)

Functions of Vitamin A

Vision - plays a central role in the retina for the conversion of light energy into nerve impulses

Immune system - improves antibody production, ↑ activity of T-cells

Skin & mucus membranes - promotes healthy epithelial growth

Hormone synthesis - required for steroid hormone synthesis

Red blood cells - helps to mobilize iron stores for the production of new RBC's

Nervous system - helps maintain myelin sheath around nerves

Skeletal system - participates in bone formation, growth & fracture healing

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> • Dryness & itching of conjunctiva • Poor night or low light vision (xerophthalmia) • Dry, rough, itchy skin with rash • Dry, brittle hair & nails • Loss of appetite, sense of smell/taste • Fatigue, anemia, poor growth 	<ul style="list-style-type: none"> • Bone pain & joint swelling • Nausea, vomiting & diarrhea • Headaches, blurred vision • Dermatitis, hair loss, dry skin • Liver damage, high blood calcium • Possible teratogenic effects

Increased deficiency risk may be associated with the following:

1. Decreased absorption (alcoholics, liver/biliary disorders, Crohn's, cystic fibrosis)
2. Poor beta-carotene conversion to vitamin A (diabetics & hypothyroid)
3. Increased utilization (smokers, increased stress, diabetes, infection, surgery)

Therapeutic Research

Musculoskeletal trauma - Vitamin A plays a major role in wound & bony fracture healing

Cancer prevention effects (15,000 IU/d)

Improved immune function - treatment of childhood measles (50 000-100 000 IU for 1-2 days)

Menstrual pain modification (demonstrated at 50,000 IU/d retinol for 2 weeks)

Skin & scalp conditions (oral & topical application), **Gastric ulcer healing improvement**



Dosage

Therapeutic range: 5-50 µg

RDI = 5 µg/d (200 IU/d), 1 µg = 40 IU, 100 IU = 2.5 µg calciferol

Vitamin D requirements decrease as growth declines

- Infant RDI: 7.5 µg (300 IU), Age 10-25: 10 µg (400 IU), > 25 = 5 µg (200 IU)

Vitamin D is synthesized in the skin from 7-hydroxycholesterol with ultraviolet radiation

It is the only vitamin that is biologically active in the form of a hormone (vitamin D3)

DRI for Vitamin D (µg)

Adult Men 5-15

Adult Women* 5-15

* Large doses are contraindicated in pregnancy due to potential teratogenic effects.

Sun exposure of 10-30 minutes several times a week should provide adequate vitamin D

Dietary Sources

Source	Serving size	µg
Salmon	100 g	16
Fortified milk*	1 qt	10
Tuna	100 g	5
Egg	1 (medium)	1

*Fortification may use synthetic vitamin D2 (ergocalciferol)

Note: vitamin D3 is the preferred form for humans as its bioavailability is twice that of vitamin D2

Functions of Vitamin D

Calcium metabolism - aids in regulation of blood calcium levels

Skeletal health - bone growth during childhood, strength & density during adulthood

Cell growth - regulator of cell development throughout body (especially epithelial cells)

Immune function - cell development, activity & response of white blood cells

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity (>100-1000 µg/day)
<ul style="list-style-type: none"> • Rickets (children), Osteomalacia (adults) • Poorly formed tooth enamel (children) • Increased risk of osteoporosis & fractures • Impaired immune response • Muscle weakness (esp. around hip/pelvis) 	<ul style="list-style-type: none"> • Hypercalcemia • Calcium deposition into soft tissues • Renal calcification (kidney stones) • Fetal abnormalities

Increased deficiency risk may be associated with the following:

1. Lack of sun exposure (confined persons, premature infants, regular use of sunscreens)
2. Persons with fat malabsorption syndromes, long-term corticosteroid medication use
3. Strict vegetarians, elderly, diabetes, kidney disease

Therapeutic Research

Bone disorders - treatment of rickets, can slow/prevent bone loss given with calcium

Psoriasis - can ↓ hyperproliferation of skin cells (due to regulatory effects)

Immune response - can stimulate white blood cells & ↑ resistance to infection

Cancer prevention - may ↓ risk of colorectal & breast cancer

Multiple Sclerosis & autoimmune conditions - 4000-5000 IU

Clinical Measurement

Serum vitamin D - reflects intake & synthesis, not level of active form

Serum 1,25-dihydroxycholecalciferol (1,25-DHCC) - reflects active form

Due to the relationship with vitamin D, serum calcium should also be monitored



Dosage

Therapeutic range: 100 mg-2500 mg

Vitamin E is a general term for a group of compounds with varying degrees of vitamin E activity. 10mg/d alpha-tocopherol = 10 IU/d alpha-tocopherol

Vitamin E form (relative activity): alpha-tocopherol (100), beta-tocopherol (50), gamma-tocopherol (10-30), delta-tocopherol (1)

RDA men: 10 IU
RDA women: 8 IU

DRI for Vitamin E (mg)

Adult Men 15

Adult Women 15

Increased intake of polyunsaturated fats ↑ vitamin E requirements

Dietary Sources

Source	Serving size	mg
Sunflower seeds	100 g	21
Wheat germ	100 g	12
Sweet potato	1 (average size)	7
Shrimp/salmon	100 g	3.5

Vitamin E is contraindicated with anticoagulant medication as it may ↑ demand for vitamin K

Functions of Vitamin E

Antioxidant - free radical scavenger (works with glutathione peroxidase & vitamin C)

Ischemia - protects cellular proteins from oxidative damage during ischemic events (myocardial infarction, angina)

Antithrombotic - can slow the action of thrombin & ↓ platelet aggregation

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity (>2000 IU/day)
<ul style="list-style-type: none"> • Hemolytic anemia - decreased RBC membrane integrity • Neurological disorders - degeneration of neurons • Atrophy & weakness of skeletal muscle • Potential increased cancer risk • Susceptibility to infection, fatigue, poor wound healing 	<ul style="list-style-type: none"> • Temporary gastric upset • Delay in wound healing • ↑ Bleeding time • > 400 IU/d from supplements may increase mortality

Increased deficiency risk may be associated with the following:

1. Persons exposed to high levels of free radicals (smokers, urban centers, radiation)
2. Persons with high polyunsaturated fat intakes, high iron, excessive aspirin intake
3. Fat malabsorption syndromes

Therapeutic Research

Cardiovascular disease - 300-1600 IU/d for 3 months **Excessive clotting** - 100-400 IU/d

Immune response - improvement with 800 IU/d, may also ↓ allergy symptoms

Premenstrual syndrome - ↓ symptoms with 400IU/d

Parkinson's & Alzheimer's disease - may slow progression with 400-3200 IU/d

Rheumatic disorders - may be beneficial for osteoarthritis & rheumatoid arthritis

Skin conditions - applied topically, may ↓ scar formation & healing time

Diabetes - may ↓ oxidative damage & enhance the action of insulin

Cancer prevention - antioxidant/free radical scavenger activity

Infertility - 100-400 IU twice daily



Dosage

Therapeutic range: 30-100 µg

Intestinal bacteria synthesize up to 1/2 of the daily requirement for vitamin K.

Vitamin K has two principal forms K1 (phyloquinone) from plants & K2 (menaquinone) from animals & bacteria; K3 (menadione) is a synthetic form.

DRI for Vitamin K (µg)

- Adult Men** 120
- Adult Women** 90
- 1 µg/kg body weight**

Dietary Sources

Source	Serving size	µg
Spinach	100 g	415
Broccoli	100 g	175
Beef liver	100 g	92
Tea, green	10 g	71
Eggs	1 (average size)	11

Note: vitamin K is not included in most vitamin supplements



Camellia sinensis

Functions of Vitamin K

Blood coagulation - essential cofactor in thrombus formation

Bone metabolism - cofactor in bone protein regulation (osteocalcin)

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> • Tendency toward prolonged bleeding time, easy bruising & hemorrhagic disease • Impaired bone mineralization, & possible bone loss in the elderly 	<ul style="list-style-type: none"> • Doses over 500 mg/d have caused allergic-like symptoms

Increased deficiency risk may be associated with the following:

1. Liver damage (alcoholics, cirrhosis, hepatitis)
2. Drug interactions (antibiotics, cholestyramine, antacids, coumadin, phenytoin)
3. Poor fat absorption (biliary disease, Crohn's, sprue, pancreatitis, cystic fibrosis)
4. Megadoses of vitamin E

Therapeutic Research

Anticoagulant overdose - to counteract overdose

Poor coaguability - reverse deficiency of coagulation factors

Osteoporosis - may help optimize bone mineralization & remodeling



Dosage

Therapeutic range: 10 mg-1500 mg/day

Most of the body's thiamine is located in muscle as it plays a central role in energy production. Once absorbed from the diet, thiamine is rapidly transformed into its active form thiamine pyrophosphate (TPP).

DRI for Vitamin B1 (mg)

Adult Men 1.2
Adult Women 1.1

RDA = 0.5 mg/ 1000 kcal
(minimum of 1 mg/day)

Dietary Sources

Source	Serving size	mg
Brewer's yeast	10 g	1.2
Pork chop	100 g	0.85
Oatmeal	100 g	0.65
Sunflower seeds	30 g	0.6
Potato	1, average	0.24

Herbal Sources

Ephedra sinensis, *Centella asiatica* (Gotu kola), *Trigonella foenum-graecum* (Fenugreek), *Mentha piperita* (Peppermint), *Cassia sp.* (Senna), *Arctium lappa* (Burdock), *Salvia off.* (Sage), *Rumex crispus* (Yellow Dock) & *Vaccinium myrtillus* (Bilberry)

Functions of Vitamin B1

- Energy metabolism** - vital coenzyme (with magnesium) in the production of energy in cells
- Nervous system** - major role at PNS & CNS synapse, & metabolism of neurotransmitters
- Protein synthesis** - key role in collagen synthesis

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Impaired reflexes, movement & sensation in extremities (peripheral paresthesias) Muscle tenderness (esp. calf muscles) & weakness Mental confusion, depression, anorexia Impaired collagen synthesis (poor wound healing) Eventually cardiac failure & encephalopathy (beri-beri) 	<ul style="list-style-type: none"> None reported at 500 mg/d for 1 month Megadoses may cause drowsiness in some people

Increased deficiency risk may be associated with the following:

- Heavy alcohol consumption, fat malabsorption, chronic liver & inflammatory bowel diseases
- Medication interactions: diuretics (furosemide), heart meds (digoxin), anti-epileptic (dilantin)
- High intake of raw seafood, tea, coffee
- High physical activity with high carbohydrate intake
- Folate deficiency, as it impairs thiamine absorption

Therapeutic Research

- Chronic alcoholics** - used to treat deficiency (100 mg/d)
- Nervous system** - may ease chronic pain, trigeminal neuralgia, diabetic neuropathy
- CNS disorders** - may benefit Alzheimer's disease, anxiety & depression
- Anemia** - rare thiamine anemia may respond to dose of 100 mg/d
- Myocardial infarction** - intravenous TPP may improve outcome of MI



Dosage

Therapeutic range: 10 mg-400 mg/day

RDI for Vitamin B2 (mg)

Adult Men 1.3
Adult Women 1.1

RDA = 0.6 mg/ 1000 kcal
(minimum of 1.2 mg/day)

Dietary Sources

Source	Serving size	mg
Calf liver	50 g	1.1
Mushrooms	100 g	0.45
Spinach	100 g	0.2
Milk	1 large glass	0.18
Cheddar cheese	30 g	0.15

Herbal Sources

Mentha piperita (Peppermint), Cassia sp. (Senna), Euphrasia off. (Eyebright), Medicago sativa (Alfalfa), Petroselinum crispum (Parsley), Centella asiatica (Gotu kola), Echinacea spp., Ephedra sinensis, Rumex crispus (Yellow Dock), Humulus lupulus (Hops), Capsicum spp. (Cayenne)

Functions of Vitamin B2

Energy metabolism - essential part of FMN & FAD molecules which act as hydrogen ion carriers for Krebs's cycle, electron transport system, fatty acid & amino acid oxidation

Antioxidant - cofactor with glutathione reductase

Vitamin metabolism - cofactor for vitamin B3, B6, A, folate

Neurotransmitter metabolism

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Glossitis Cheilosis - painful fissures & cracks around mouth Dermatitis - red, scaly, painful & itchy patches of skin Slow wound healing Lethargy, depression, personality changes 	<ul style="list-style-type: none"> None reported, absorption is inefficient at high doses

Increased deficiency risk may be associated with the following:

- Increased demand - childhood & adolescent growth, pregnancy & lactation
- Poor absorption - GI or biliary obstruction, chronic diarrhea, irritable bowel syndrome
- Medication interactions - thyroid hormones, oral contraceptives, barbiturates
- Heavy alcohol consumption
- Increased protein breakdown - fever, cancer, injury, chronic illness
- Hypothyroidism may cause B2 deficiency (low T3 leads to low flavokinase activity)

Therapeutic Research

Cataracts - ample intake may ↓ risk of developing cataracts

Skin & mucous membranes - maintains healthy skin & may help prevent stomatitis & cheilosis

Fatigue & depression - may help if symptoms are due to riboflavin deficiency

Antioxidant - riboflavin helps maintain the body's supply of glutathione reductase



Dosage

Therapeutic range: 100 mg-4500 mg/day

1 niacin equivalent (NE) = 1 mg niacin = 60 mg of tryptophan

The amino acid tryptophan can be converted into niacin by the liver & is thus another source of niacin.

There are two main forms of niacin found in food: nicotinic acid & niacinamide

Nicotinic acid is associated with a 'niacin flush'

DRI for Vitamin B3 (mg)

Adult Men 16

Adult Women 14

RDA = 6.6 mg/1000 kcal
(minimum of 13 mg/day)

Dietary Sources

Source	Serving size	mg
Peanuts	100 g	14
Tuna	100 g	10.5
Chicken breast	100 g	10.5

Functions of Vitamin B3

Cell metabolism - supports health of skin, mucus membranes, nervous & digestive system

Energy metabolism - essential part of NAD & NADPH molecules which act as hydrogen ion carriers for Krebs's cycle, electron transport system, fatty acid synthesis, glycolysis, cholesterol synthesis (niacin is required for the function of over 200 enzymes in the body)

DNA replication - synthesis of histones

Blood sugar - aids regulation as a component of glucose tolerance factor (GTF)

Fat/Cholesterol metabolism - lower levels of blood cholesterol & LDL's & ↑ HDL's

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> • Pellegra - dermatitis, diarrhea, dementia • Inflamed painful swollen tongue • Depression, anxiety 	<ul style="list-style-type: none"> • > 500 mg can cause tingling & flushing of skin • > 2.5 mg/d can produce hypotension & dizziness, liver dysfunction, gastric irritation & increased blood sugar • By 2 weeks most side-effects resolve as the body adapts

Increased deficiency risk may be associated with the following:

1. Poor absorption - inflammatory bowel disease, heavy alcohol consumption
2. Low intake of proteins with tryptophan
3. Vitamin B2 & B6 deficiency - may impair conversion of tryptophan to niacin
4. Harnup's syndrome - defective conversion of tryptophan to niacin
5. Carcinoid syndrome - tumors secreting serotonin may ↓ tryptophan to niacin conversion

Therapeutic Research

Atherosclerosis - 1200-6000 mg/d lower LDL (15%-30%), & serum triglycerides (up to 50%) & raise HDL (up to 33%)

Diabetes - may slow the development of diabetic neuropathy

Headaches - may help prevent headaches associated with PMS & migraine

Arthritis - niacin may be beneficial for osteoarthritis (particularly involving the knee)

Raynaud's disease & intermittent claudication - due to vasodilation effects



Dosage

Therapeutic range: 50 mg-1000 mg/day

Pantothenic acid's biologically active form is coenzyme A (CoA), which is required in over 100 metabolic pathways.

DRI for Vitamin B5 (mg)

Adult Men	5	RDA = 4-7 mg/d
Adult Women	5	

Dietary Sources

Source	Serving size	mg
Calf liver	100 g	7.9
Peas	100 g	2.1
Brown rice	100 g	1.7
Lobster	100 g	1.7

Functions of Vitamin B5

Energy metabolism - CoA transfers carbon groups in fatty acid & sugar metabolism

Biochemical synthesis - CoA is required for the synthesis of fatty acids (particularly in cell membranes), cholesterol, steroid hormones, & vitamins A & D. As well as the synthesis of the following proteins & amino acids: leucine, arginine, methionine, hemoglobin, & cytochrome proteins

Neurotransmitter - pantothenic acid is required for the synthesis of acetylcholine

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Fatigue, headaches, depression, anemia Insomnia, muscle aches, joint aches Numbness & burning in lower legs & feet 	<ul style="list-style-type: none"> Extremely low risk of toxicity > 20 g/d may cause diarrhea

Risk of deficiency is extremely rare due to the wide prevalence of pantothenic acid in foods.

Subclinical deficiency may be associated with other B-vitamin deficiencies in conjunction with heavy alcohol consumption, chronic illness, or low calorie dieting & weight loss.

Therapeutic Research

Arthritis - may ↓ morning stiffness in both rheumatoid & osteoarthritis (500-2000mg/d)

Dyslipidemia - 600-1200 mg/d may ↓ serum cholesterol (15%) & triglycerides (30%)

Microcytic anemia - through its role in hemoglobin synthesis & in conjunction with iron

Fatigue - subclinical deficiency of B5 may produce fatigue, supplementation may be beneficial

Improved wound healing - after trauma or surgery

Stress reduction/adaptation - B5 supports adrenal function



Dosage

Therapeutic range 10 mg-1500 mg/day

Vitamin B6 is converted into pyridoxal-5-phosphate (PLP) which is involved in over 100 metabolic reactions in the body, including transamination & the urea cycle

DRI Vitamin B6 (mg)

Adult Men 1.3-1.7

Adult Women 1.3-1.5

RDA = 2 mg/d

Dietary Sources

Source	Serving size	mg
Calf liver	100 g	0.9
Potatoe	1 (average size)	0.7
Banana	1 (average size)	0.6

Functions of Vitamin B6

Protein synthesis - central role in the conversion of amino acids into proteins, collagen & hemoglobin synthesis

Niacin formation - PLP is essential for the conversion of tryptophan to niacin

Lipid metabolism - PLP is vital to fat metabolism, myelin sheath formation & cell membrane lipid production

Neurotransmitter synthesis - PLP is essential for synthesis of serotonin (from tryptophan), dopamine, & norepinephrine

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Cheilosis, glossitis, stomatitis Anemia (sideroblastic) Depression, anxiety, confusion Peripheral nerve dysfunction Immune suppression 	<ul style="list-style-type: none"> >1000 mg/d for 1 year may produce neurological disturbances (numbness & tingling) in hands & feet B6 inactivates L-dopa medication in GI tract, thus it is contraindicated for Parkinson's patients being treated with these medications

Increased deficiency risk may be associated with the following:

1. Increased demand - alcohol consumption, smoking, high protein intake, coffee
2. Medication interactions - oral contraceptives, estrogen, antihypertensive meds, L-dopa
3. Chronic disease - asthma, coronary heart disease, diabetes, rheumatoid arthritis

Therapeutic Research

Peripheral neuropathy - including carpal tunnel syndrome (100-200 mg/d for 3 months max)

Premenstrual syndrome - may ↓ mood swings, edema, acne (500 mg/d)

Atherosclerosis - ↓ platelet clumping, LDL & blood homocysteine, raises HDL

Anemia - reduction of symptoms alone or in conjunction with iron & vitamin A

Arthritis - may ↓ inflammation & swelling of joints of fingers as well as tenosynovitis

Diabetes - (150 mg/d) may help prevent diabetic neuropathy & gestational diabetes

Epilepsy, autism, depression - neurotransmitter involvement

Osteoporosis - helps to decrease homocysteine & ↑ collagen cross linking

Clinical Measurement

Urinary levels reflects recent intake (urinary excretion form = pyridoxic acid); Erythrocyte amino-transferase activity measures tissue saturation, xanthurenic acid levels indicate B6 deficiency



Dosage

Therapeutic range: 400 µg-75000 µg/day

Diets high in processed food are low in folate, as most of the folate is removed through processing

Folate deficiency is one of the most common vitamin deficiencies

Folate is absorbed & converted to its active form tetrahydrofolate (THF) & stored in the liver

DRI for Folic Acid (µg)

Adult Men 1000

Adult Women 1000

RDA = 3 µg/d/kg of body weight

Dietary Sources

Source	Serving size	µg
Brewer's yeast	1 Tbsp	300
Kidney beans	100 g	250
Spinach	100 g	134
Broccoli	100 g	105
Egg	1 (average size)	100

Functions of Folic Acid

Protein synthesis - essential role in amino acid conversions & synthesis of structural & functional proteins

Cell growth - essential for the production of DNA & RNA

Fetal development - required for normal development (particularly for central nervous system)

Neurotransmitter synthesis - see depression in therapeutic research section below

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Anemia (megaloblastic) Glossitis, GI irritation Depression, irritability, hostility Birth defects (neural tube) 	<ul style="list-style-type: none"> Extremely non-toxic Doses >300 µg may ↓ zinc absorption Large doses are contraindicated for epileptics on anticonvulsant medication

Increased deficiency risk may be associated with the following:

1. Decreased absorption - alcoholics, low fresh food diets, malabsorption syndromes
2. Rapid growth during pregnancy
3. Medication interactions - aspirin, antacids, oral contraceptives, & antibiotics
4. Zinc deficiency will cause a decrease in folate absorption

Note: Folate & B12 deficiency have many similar features & may mask each other

Therapeutic Research

Pregnancy - ↓ premature birth, cleft lip & palate & neural tube defects

Atherosclerosis - folate lowers homocysteine levels

Cancer - folate with vitamin A may ↓ risk of cervical dysplasia (10 mg/d for 3 months)

Diabetics - may improve circulation & visual acuity in elderly diabetics (5 mg/d)

Depression - aids in NT synthesis by increasing THP (tetra-hydro-biopterin) levels

Osteoporosis - increases collagen cross linking



Dosage

Therapeutic range: 10-2000 µg/day

Vitamin B12 is found in many forms: naturally as methylcobalamin (methyl-B12) &

5-deoxyadenosylcobalamin (coenzyme-B12) & synthetically as hydroxycobalamin & cyanocobalamin (both of which do not occur naturally). ~90% of B12 is stored in the liver.

DRI Vitamin for B12 (µg)

Adult Men 2.4

Adult Women 2.4

RDA = 2 µg/d

Dietary Sources

Source	Serving size	µg
Liver	100 g	60
Salmon	100 g	3
Beef, filet	100 g	2

Functions of Vitamin B12

Folate metabolism - B12 is required for the activation of folate into THF (its active form)

Cell growth - along with folate is essential for the production of DNA & RNA

Fat metabolism - required for conversion of methylmalonate to succinate & for fat metabolism

Amino acid metabolism - required for conversion of homocysteine to methionine

Nervous system - required for synthesis of myelin in CNS & PNS

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> • Pernicious anemia (megaloblastic) • GI irritation (gastritis) • Sensory, motor & cognitive impairment • Constipation, anorexia, weight loss • B12 deficient patients risk serious nervous system deterioration if undergoing nitrous oxide anesthesia 	<ul style="list-style-type: none"> • No reports of toxicity at doses >10 mg/day

Increased deficiency risk may be associated with the following:

1. Pernicious anemia secondary to ↓ intrinsic factor (IF) or achlorhydria (low stomach acid)
2. Low intake/higher demand - strict vegetarians, pregnancy, elderly, smoking, alcoholics
3. Medication interactions - para-aminosalicylic acid (PASA), choline, neomycin, oral contraceptives, AZT (interacts with B12 absorption & metabolism)

Therapeutic Research

Pernicious anemia - 1000 µg/d prevents deficiency due to 1-3% absorption even with no IF

Peripheral nerve disorders - may ↓ pain/symptoms of postherpetic & trigeminal neuralgia, may accelerate healing time in nerve injuries & diabetic neuropathy

Atherosclerosis - with folate, may prevent conditions associated with ↑ blood homocysteine

Alzheimer's, psychiatric/nervous disorders - may ↓ dementia & confusion in elderly

Tinnitus - may ↓ symptoms by stabilizing neural activity

AIDS - may inhibit HIV replication

Clinical Measurement

Serum B12 reflects tissue stores & bioavailability

Deoxyuridine suppression test differentiates folate from B12 deficiency

Dosage**Therapeutic range: 300-16000 µg/day**

Biotin is required for many reactions involving the transfer of CO₂ groups between molecules in the metabolism of carbohydrates, lipids & amino acids.

DRI for Biotin (µg)**Adult Men** 30**Adult Women** 30

RDA = 30-100 µg/d

Dietary Sources

Source	Serving size	µg
Liver	100 g	75
Brewer's yeast	30 g	30
Oatmeal	100 g	20
Egg	1 (average)	12

*Avena sativa***Functions of Biotin****Glucose synthesis** - initial step in gluconeogenesis requires biotin**Fat metabolism** - essential for fatty acid synthesis & breakdown**Amino acid metabolism** - required for breakdown of amino acids such as threonine, isoleucine, & methionine for energy use**Cell metabolism** - required for DNA synthesis**Deficiency & Toxicity Signs & Symptoms**

Deficiency	Toxicity
------------	----------

- | | |
|---|---|
| <ul style="list-style-type: none"> • Rare • Anorexia, nausea, muscle aches • Hair loss, scaly dermatitis | <ul style="list-style-type: none"> • Non-toxic even at oral doses over 60 mg/day |
|---|---|

Increased deficiency risk may be associated with the following:

1. Increased demand - pregnancy, lactation, growth during childhood
2. Low calorie diets, chronic use of antibiotics
3. Achlorhydria
4. Consumption of large amounts of raw egg white (Avidin, a substance in raw egg whites, binds biotin)

Therapeutic Research

Seborrheic dermatitis (Cradle Cap - seborrheic dermatitis in newborns) - may be reversed with supplementation (5 mg/day)

Diabetes - may help control blood glucose

Hair & nail disorders - dry, brittle hair & nails may benefit from biotin supplementation

Clinical Measurement

Serum biotin reflects total absorbed vitamin



Dosage

Therapeutic range: 1000 - 20 000 mg/day

Vitamin C plays a key role in the body's ability to handle physiologic stresses during infections, injury, wound healing, chronic diseases & environmental toxin exposure

RDI for Vitamin C (mg)

Adult Men 90
Adult Women 75

RDA = 60 mg/d

Dietary Sources

Source	Serving size	mg
Papaya	1 (medium)	195
Broccoli	100 g	115
Orange	1 (medium)	70
Strawberries	100 g	65

Note: Vitamin C is contraindicated with aspirin (potential GI bleeding)

Herbal Sources

Rosehips, Aloe Vera, Cassia spp. (Senna), Rumex crispus (Yellow Dock), Rubus ideaus (Raspberry leaf), Trifolium pratense (Red clover), Allium cepa (Onion), Lobelia, Humulus lupulus (Hops), Sambucus nigra (Elderberry), Crataegus spp. (Hawthorne)

Functions of Vitamin C

Antioxidant - is the body's primary water soluble antioxidant & required for Vitamin E regeneration

Collagen synthesis - essential for collagen production & repair

Neurotransmitter synthesis - required for the production of norepinephrine & serotonin

Increased iron absorption - ↑ absorption of non-heme iron in diet

Other functions - Carnitine synthesis, improved immunocompetence, cholesterol breakdown, hormone production

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> • Easy bruising • Scurvy (bleeding swollen gums) • Impaired wound healing • Neuropsychiatric changes 	<ul style="list-style-type: none"> • Doses >5-10 g/d for years have shown few side effects • Potential GI irritation, diarrhea • May ↑ risk of kidney stone formation

Increased deficiency risk may be associated with the following:

1. Increased physical stress - smoking, injury, surgery, chronic illness, RA, diabetes
2. Increased demand - rapid growth, above reasons
3. Vitamin C absorption is hindered by high levels of pectin, zinc & iron in the GI tract

Therapeutic Research

Immune response - megadoses may ↑ immune response

Cancer prevention - may help prevent carcinogen & cancer formation (90mg/d-1000mg/d)

Wound healing - improved healing time (500 mg-1000 mg/day)

Atherosclerosis - can lower cholesterol, triglycerides & raise HDL cholesterol

Periodontal disease - can ↓ gum inflammation & promote healing

Iron deficiency - vitamin C enhances iron absorption from meals & supplements

Cataracts - antioxidant action may prevent cataract formation

Glaucoma - 10 g/day may lower intraocular blood pressure

Dosage

Therapeutic range: 1000-3000 mg

DRI Calcium (mg)

Adult Men 1000-1200
Adult Women 1000-1200

RDA = 800 mg/d

Dietary Sources

Source	mg/serving
Tofu (w/ calcium)	600 mg
Sardines	400 mg
Milk/cheese	300 mg
Dark green vegetables	75 mg

Vitamin D is crucial for the absorption of calcium

See page 402 for calcium metabolism

Herbal Sources

Valeriana off. (Valerian), Quercus spp. (Oak), Pau D'arco, Fucus vesiculosus (Kelp), Urtica dioica (Nettles), Cassia angustifolia (Senna), Viburnum off. (Crampbark), Plantago off. (Plantain), Rubus idaeus (Raspberry leaf) & Stachys off. (Wood Betony)

Functions of Calcium

Bone & tooth structure, blood clotting, muscle contraction, nerve transmission
Calcium is one of the most important & highly regulated substances in the human body

Deficiency & Toxicity Signs & Symptoms

Deficiency	Toxicity
<ul style="list-style-type: none"> Osteoporosis Poor quality tooth enamel Muscle cramps & spasms Increased nerve cell irritability Prolonged bleeding times 	<ul style="list-style-type: none"> Doses >2 g/d do not have significant side effects High doses may be contraindicated with hyperparathyroidism & predisposition to form calcium oxalate kidney stones

Increased deficiency risk may be associated with the following:

- Genetics - small framed caucasian & oriental women with long post-menopause life
- Medication interactions - antacids, laxatives, thyroid meds, steroids & some cholesterol lowering meds
- Poor absorption/increased secretion - low vitamin D, high phosphate intake, kidney disease, protein intake >20% of total calories, coffee, black tea, alcohol, fat malabsorption diseases

Therapeutic Research

Osteoporosis - National Institute of Health recommendations:

- 1000 mg/d premenopausal women
- 1500 mg/d postmenopausal women
- 1000 mg/d men over 40 yrs

Blood pressure - ↓ hypertension (10%-20%) in some patients (1000-2000 mg/d)

Colon cancer - increased intake (with vitamin D) may ↓ risk of colon cancer

PMS - 300 mg/d - ↓ irritability & depression

Clinical Measurement

Serum calcium, bone density scan, hydroxyproline is a urine marker for collagen breakdown

**Chromium**

DRI = 30-35 µg, therapeutic range 200-3000 µg
 Functions - Aids glucose metabolism, lipid & protein metabolism

Dietary Sources – Raw oysters, Spirulina, peanuts, mushrooms & apples

Herbal Sources - Gymnema sylvestre (Gymnema), Avena sativa (Oats), Urtica dioica (Nettles), Trifolium pratense (Red Clover), Ginkgo biloba (Ginkgo), Hibiscus

Deficiency - impaired insulin function & glucose tolerance, elevated cholesterol

Toxicity - none at doses > 2000 µg/d for three months

Therapeutic research - improved glucose tolerance, ↓ serum cholesterol, may ↑ lean body mass during weight training

Copper

DRI = 900 µg, therapeutic range 2-10 mg
 Functions - iron metabolism, energy production, connective tissue synthesis, pigment production, antioxidant protection, metabolism of hormones & neurotransmitters

Dietary Sources - liver, shellfish, nuts, seeds, dried fruit, fortified breakfast cereal

Herbal Sources - Scutellaria laterifolia (Skullcap), Salvia off. (Sage), Quercus alba (Oak), Equisetum arvense (Horsetail), Centella asiatica (Gotu kola)

Note: copper & zinc ratio is important; always take 10:1 zinc:copper

Deficiency - anemia, poor connective tissue synthesis, dyslipidemia, osteoporosis

Toxicity - non-toxic <5 mg/d, doses >7 mg/d may cause nausea, vomiting, diarrhea; Wilson's disease (copper storage disorder - hepatolenticular degeneration)

Therapeutic research - may ↓ symptoms of rheumatoid arthritis & certain anemias

Iodine

DRI = 150 µg, therapeutic range 100-2300 µg
 Functions - thyroid hormone synthesis (regulate growth, development & energy metabolism)

Dietary Sources - iodized salt, salt water fish, seaweed, seafood

Herbal Sources - Fucus vesiculosus (Kelp/Bladderwrack)

Deficiency - goiter, hypothyroidism, cretinism in children

Toxicity - non-toxic <100-500 µg/d, >1-2 mg/d

may impair thyroid function or aggravate acne
 Therapeutic research - main use is to ↓/prevent iodine deficiency & hypothyroid disorders

Iron

DRI = 8 mg, 18 mg/d for premenopausal adult females

Functions - required for hemoglobin (oxygen transport), muscle function, energy production

Dietary Sources - liver, beef, lamb, pork, fortified cereal, brewer's yeast, nuts, beans

Herbal Sources - Harpagophytum procumbens (Devil's Claw), Stellaria media (Chickweed), Verbascum thapsus (Mullein), Cimicifuga racemosa (Black Cohosh), Arctium lappa (Burdock), Rubus idaeus (Raspberry leaf), Taraxacum off. Radix (Dandelion root)

Deficiency - microcytic hypochromic anemia, fatigue, impaired mental & motor function, cataracts

Toxicity - iron poisoning in children can be fatal (**lethal dose = 2-2.5 g in a 10 kg child**), doses up to 30 mg-60 mg can be given to treat iron deficiency anemia - may cause abdominal pain, nausea & vomiting. Iron supplementation is contraindicated in patients with hemochromatosis. There may be an increased risk of free radical pathology with excess iron
 Therapeutic research - main use is to ↓/prevent iron deficiency anemia

Magnesium

DRI = 420 mg, 4.5 mg/kg of body weight, therapeutic range 500-750 mg

Functions - energy metabolism, bone/teeth structure, regulates calcium channels in the heart, skeletal muscle & nerves

Dietary Sources - soy flour, fortified cereal, lentils, spinach, walnuts, peanuts, almonds, seafood

Herbal Sources - Avena sativa (oats), Glycyrrhiza glabra (Licorice), Fucus vesiculosus (Kelp/Bladderwrack), Urtica dioica (Stinging Nettle), Mentha piperita (Peppermint), Salix alba (Willow), Althea off. (Marshmallow)

Deficiency - muscle weakness, tremors, hypocalcemia, hypokalemia

Toxicity - doses up to 1 g/d have no side effects. It is contraindicated in patients with impaired kidney function or heart blocks without artificial pacemakers

Therapeutic research - diabetes mellitus, kidney stones prevention, ↓ risk of heart disease & hypertension, ↓ muscle cramps, migraine headaches, osteoporosis, asthma, PMS



Manganese

DRI = 2-5 mg, therapeutic range ~15 mg/day
 Functions - carb/protein metabolism, insulin production, bone & cartilage synthesis, antioxidant

Dietary Sources - oatmeal, soy flour, wheat germ, rice bran, peanuts, pecans, mussels, bananas

Herbal Sources - *Rubus idaeus* (Raspberry leaf), *Vaccinium* spp. (Bilberry), Zingiber off. (Ginger), *Centella asiatica* (Gotu kola)

Deficiency - impaired insulin secretion & bone production, poor wound healing, schizophrenia

Toxicity - doses 2-50 mg/d safe for healthy adults, toxicity can produce CNS effects

Therapeutic research - osteoporosis, diabetes mellitus, improved wound healing, schizophrenia

Phosphorus

DRI = 700 mg, therapeutic range 1-4 g/day
 Functions - bone & teeth structure, energy metabolism, DNA structure & cell membranes

Dietary Sources - cheese, fish, milk, beef, eggs, legumes, nuts, seeds

Herbal Sources - *Cimicifuga racemosa* (Black Cohosh), *Vaccinium* spp. (Bilberry), *Mentha piperita* (Peppermint), *Rumex crispus* (Yellow Dock), *Silybum marianum* (Milk Thistle), *Ginkgo biloba* (Ginkgo)

Deficiency - rare, may occur with alcoholism or some kidney diseases - may cause bone loss

Toxicity - contraindicated in patients with kidney failure

Therapeutic research - may ↑ endurance performance in some athletes, ↑ libido

Potassium

DRI = 2000 mg, therapeutic range 2000-6000 mg/day

Functions - energy metabolism, membrane excitability & transport in nerves & muscle

Dietary Sources - soy flour, lentils, bananas, spinach, potatoes, orange juice, nuts, fish

Herbal Sources - *Apium graveolens* (Celery), *Petroselinum crispus* (Parsley), *Salvia officinalis* (Sage), *Humulus lupulus* (Hops), *Scutellaria laterifolia* (Skullcap),

Deficiency - muscle weakness, bradycardia, hypotension, constipation, cardiac arrhythmias, deficiency may be seen with dehydration following exercise or prolonged

activity

Toxicity - contraindicated in kidney failure - doses >8 g/d may produce hyperkalemia

Therapeutic research - lowering blood pressure, constipation, cardiac arrhythmias, exercise

Selenium

DRI = 60 µg, 0.87 µg/kg of body weight, therapeutic range ~200 µg/day

Functions - antioxidant protection, immune function, thyroid hormone metabolism

Dietary Sources - tuna, herring, sardines, liver, soy beans, beef, pork, salmon, cod, milk products

Herbal Sources - *Hibiscus*, *Nepeta cataria* (Catnip), *Silybum marianum* (Milk Thistle), *Achillea millefolium* (Yarrow), *Valeriana* off. (Valerian), *Althea* off. (Marshmallow)

Deficiency - free radical pathology, muscle weakness, childhood osteoarthritis (Kashin-Beck disease)

Toxicity - 500 µg/d appear to be safe, doses > 600 µg/d may cause nausea, vomiting, fatigue peripheral neuropathy

Therapeutic research - cancer prevention, rheumatoid arthritis, immune stimulant, hypothyroidism, childhood osteoarthritis, heavy metal accumulation in the body

Silicon

DRI = not specified

Functions - synthesis of elastin & collagen, increased bone strength

Dietary Sources - Raisins, grains & cereals (brown rice, barley, oats, whole wheat), nuts & legumes, dried fruit, bananas, root vegetables, spinach, seafood and organ meats.

Herbal Sources - *Equisteum arvense* (Horehound), *Euphrasia* off. (Eyebright), *Echinacea* spp. (Coneflower), *Hydrastis canadensis* (Goldenseal), Zingiber off. (Ginger), Zea mays (Corn silk), *Arctium lappa* (Burdock), *Avena sativa* (Oats), *Centella asiatica* (Gotu kola), *Stellaria media* (Chickweed)

Deficiency - little information is known

Toxicity - little information is known

Therapeutic Research - may lower risk of osteoporosis

Note: Is readily available in the form of silicates

Sodium

RDA = 120-1200 mg/day based on age or health stage

Functions - must be in balance with K+ in the body and is involved in the transfer of energy & fluid balance

Dietary Sources – Table salt, canned & processed foods (often added as a preservative)

Herbal Sources - Fucus vesiculosus (Kelp/Bladderwrack), Dulce, Rose Hips, Apium graveolens (Celery), Centella asiatica (Gotu kola), Petroselinum crispus (Parsley), Glycyrrhiza glabra (Licorice), Avena sativa (Oats)

Deficiency - (Rare) Hypotension

Toxicity - Hypertension, fluid & edema retention, stroke & kidney disease

Note: 1 tsp of table salt = 2000 mg of sodium, and 1 small bag of Lays potato chips contains 1485 g of sodium! The average Canadian takes 3400 mg of sodium per day. *Sodium is not salt!* It is a mineral that is found in salt (table salt is sodium chloride), and it is added to many of our foods

Sulphur

RDA = not specified

Functions - an antioxidant required for glutathione synthesis, a component of S-adenylmethionine (SAME) & important for transmethylation and structural modifications for some enzymes, insulin and other proteins

Dietary Sources - meat, poultry, fish, eggs, legumes, cruciferous vegetables (broccoli & cauliflower)

Herbal Sources - Allium sativum (Garlic), Allium cepa (Onion), Brassica spp. (Mustard seed)

Deficiency - Rare

Toxicity - Short-term may cause digestive disturbance & aggravation of some GIT disorders

Therapeutic Research -

Ability to increase the capacity of the liver to detoxify harmful, cancer-causing compounds (specifically Phase 2 detoxification enzymes), provide protection against cell mutations.

Helps deactivate a potent estrogen metabolite (2-hydroxyestrone) that promotes tumor growth, especially in estrogen-sensitive breast cells.

Zinc

DRI = 11 mg/d, therapeutic range 100-150 mg/day

Functions - enzyme function (> 200 zinc dependant enzymes), protein structure & function, immune function, antioxidant, wound healing

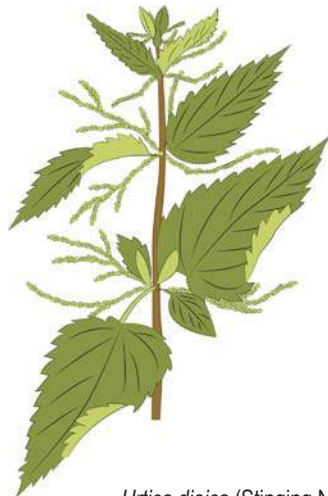
Dietary Sources - oysters, liver, beef, poultry, seafood, dairy products, eggs, lentils, oatmeal, corn

Herbal Sources - Avena sativa (Oats), Vaccinium spp. (Bilberry), Scutellaria laterifolia (Skullcap), Capsicum spp. (Cayenne), Salvia off. (Sage), Dioscorea villosa (Wild Yam), Stellaria media (Chickweed), Echinacea spp. (Coneflower), Urtica dioica (Nettles)

Deficiency - growth retardation in children, dermatitis, poor wound healing, white spots on nails, acne, hair thinning & loss, decreased immune response, impaired glucose tolerance, free radical pathology, impaired testicular/ovarian function, mental illness

Toxicity - doses >150 mg/d may cause nausea, vomiting, & interfere with copper absorption, >300 mg/d may impair immune function & decrease serum HDL cholesterol levels

Therapeutic research - improved immune function, pustular acne, wound healing, improved rheumatoid arthritis, male infertility, diabetes, macular degeneration, gastric ulcers



Urtica dioica (Stinging Nettle)



Understanding how herbs work means understanding the wide range of actions they can have in the body. It's important to keep in mind that **a single herb can have numerous actions**, and they should never be "pigeon-holed" into only doing any one thing! Often their actions (primary, secondary etc.) are synchronized & work together in a way that will benefit the body as a whole system and on multiple levels.

The following chapter outlines some major herbal actions arranged alphabetically and gives a definition of their effects along with herbal examples.

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Symphytum officinale (comfrey)



Adaptogens

Though adaptogens are a relatively new concept to western medicine, Chinese medical theory has employed their use for centuries.

The intent behind their use is the very basis of a preventative approach to health & well-being, as their basic action is one that **improves the body's adaptability, enabling the avoidance of reaching a point of collapse or over-stress.**

They may provide benefit within a specific organ (e.g. adrenals) or body system (e.g. circulatory, reproductive). The restorative quality of these herbs is a unique feature of herbal medicine unlike any in the pharmaceutical index, as their normalizing effect can lead to contradictory actions depending on the body's needs (aka. amphoterics). This section will focus on their effects pertaining specifically to the adrenal glands.

How Adaptogens Work

The core of their action appears to be in **helping the body deal with the physiology of stress**, as a poor ability to cope with external pressures leads to internal repercussions & the manifestation of many diverse forms of illness.

As the adrenal glands underlie much of the body's response to external & internal stressors, some major effects of improved bodily resistance to stress include:

- Prevention of common manifestations of adrenal fatigue including poor concentration, sleep disturbance, fatigue, decreased immune response & resistance to infections.
- Restoring normal tone & function to the HPA (hypothalamic/pituitary/adrenal) axis & SAS (sympatho-adrenal system) by supporting adrenal & possibly pituitary gland function.

Herbal Examples:

- *Astragalus membranaceus* (Milk vetch)
- *Borago officinalis* (Borage)
- *Eleutherococcus senticosus* (Siberian ginseng)
- *Glycyrrhiza glabra* (Licorice)
- *Panax ginseng* (Korean ginseng)
- *Rhodiola rosea* (Arctic rose)
- *Schisandra chinensis* (Wu Wei Zi)
- *Withania somniferum* (Ashwaghandha)

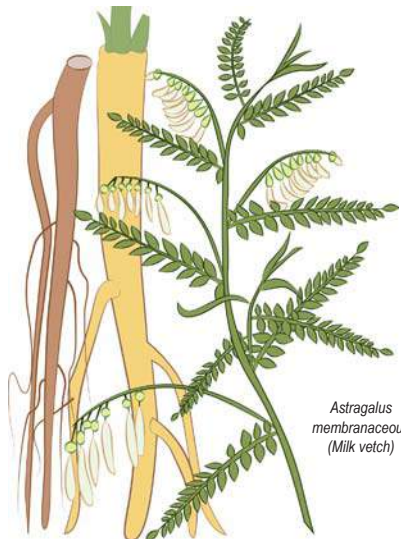
Note: Herbs rich in saponins are most commonly associated with an adrenal tonifying effect.

Alteratives

Synonymous with Depuratives or "Blood Purifiers"

Alteratives are herbs that **gradually restore proper nutrition, elimination & metabolic function of the body.** When used over time, they help move the body towards a state of greater health & vitality.

Traditionally they have been referred to as "Blood cleansers/purifiers", however a better descriptor may be to consider them as "detoxifiers", as they have particular affinity towards



Astragalus membranaceus
(Milk vetch)



organ systems involved in the removal of metabolic wastes, such as the lymph, gastrointestinal & urinary tracts, and skin.

Almost every herb have some alterative function and can commonly be their secondary or tertiary action. (For example, diuretic & hepatic remedies can also be viewed as alteratives).

They can be used safely in many diverse conditions as supportive remedies, and should be considered when chronic inflammatory or degenerative disease exists such as in arthritis, dermatitis, colitis & autoimmune disease.

How Alteratives Work

Their exact mode of action on the body is not well understood through pharmacology, however in one way or another, they **will alter the body's processes of metabolism so that tissues can best deal with a range of functions from nutrition to elimination.**

Some will improve the body's ability to eliminate waste through the lymph, bowels, kidneys, liver, or skin. Many will be rich in

both macro/micronutrients & phytonutrients required for optimal performance of a variety of metabolic functions.

Herbal Examples:

- *Arctium lappa* (Burdock)
- *Galium aparine* (Cleavers)
- *Iris versicolor* (Blue Flag)
- *Rumex crispus* (Yellow Dock)
- *Taraxacum off. radix* (Dandelion)
- *Trifolium pratense* (Red clover)
- *Urtica dioica folia* (Stinging Nettle)



Arctium lappa
(Burdock)



Galium aparine
(Cleavers)



Analgesics (Anodynes)

Are herbs that **will relieve & soothe pain** within the body both topically & internally.

How Anodynes Work

- Act through various mechanisms & constituents such as **salicylates, alkaloids & resin** to lessen neural sensitivity & pain signals within the nervous system, resulting in analgesia.
- Some are strong CNS depressants (Hypnotics) which have the potential to be toxic in high doses - **pulse dosing & close monitoring is often required!**

Herbal Examples:

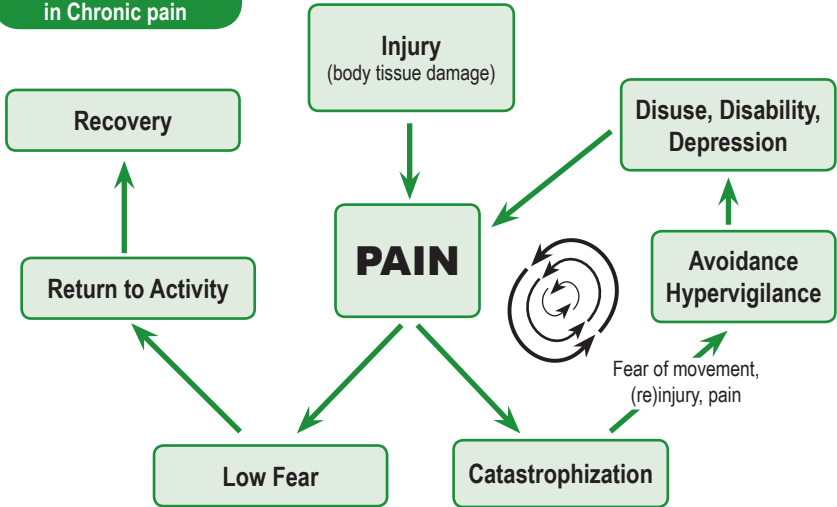
- *Atropa belladonna* (Deadly Nightshade)
- *Capsicum spp.* (Cayenne)
- *Eschscholzia californica* (California Poppy)
- *Gelsemium sempervirens* (Yellow Jasmine)

Most analgesics are best used in low doses over a longer period of time.

Some specific proposed mechanisms of action for analgesics include:

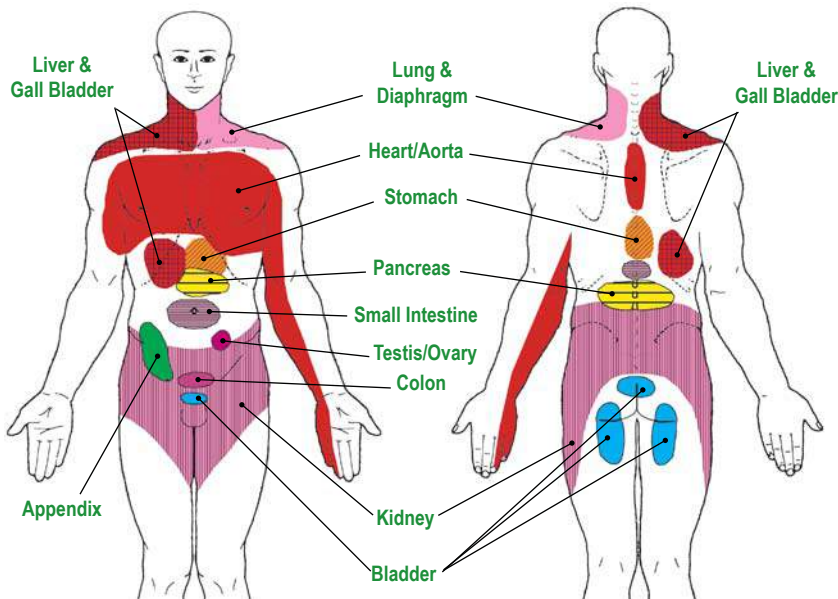
- Inhibition of the inhibitory influence of GABA on neurons involved-with descending antinociceptive pathways.
- Inhibition of cell sodium dependent channels & reduced action potential/pain signal transduction
- Stimulation & depletion of neurotransmitter Substance P
- Modulation of pro-inflammatory cytokines & eicosanoid synthesis

Fear Avoidance Model in Chronic pain



Catastrophization, avoidance & fear of future injury creates a cycle for the development of chronic pain
 Research & personal experience show that the best chance for recovery is a return to normal ADLs
It is important to have this conversation with patients for their own understanding & healing

The **Fear-Avoidance Beliefs Questionnaire (FABQ)** is a useful diagnostic instrument that can help show a biopsychosocial model of the cognitive, affective & behavioral influences in pain & disability



Visceral Pain Referral

Pain Patterns

- **Dermal Pain:** from superficial soft tissues, usually well localized (eg. cut in skin)
- **Sclerotomic Pain:** from deep somatic tissues typically deep, aching & somewhat localized (eg. muscle strain)
- **Visceral pain:** from internal organ capsule distension or ischemia, deep achy, cramping pain that may be sharp at times, often poorly localized and may be immobilizing in more severe cases (eg. intestinal cramps, PMS, heart attack, appendicitis)
- **Radicular Pain:** from nerve roots, often described as shooting, electrical and/or burning and in a dermatomal pattern (nerve root compression) - nerve compression distal to the nerve roots may result in a peripheral nerve distribution pattern of pain
- **Phantom pain:** arises from direct changes in neural pathways & perception of the brain, felt by amputees in the area of the missing limb
- **Referred pain:** pain felt at a site other than where the cause is situated; pain in internal organs or myofascial trigger points (MFTP) is often referred to other locations (mechanisms of referred pain are complex - theories include convergent projection, convergent facilitation, axon reflex & hyper excitability)

Pain Duration

- **Acute Pain:** generally refers to pain associated with the acute stage of inflammation, however can be described as pain that is unbearable, usually first 48-72 hours.
- **Sub Acute:** pain after the acute stage but not yet chronic (> 72 hrs)
- **Chronic Pain:** refers to pain associated with the stages healing after the resolution of the inflammatory response. - is commonly used in reference to pain of long duration i.e. more than 3 months



Anthelmintics

Anthelmintics help destroy or expel parasitic worms from the digestive tract often due to neurotoxic volatile oils (e.g. thujone), which can accumulate within the body and be toxic in high doses, so they should not be used long-term.

Herbal Examples

- *Artemisia absinthium* (Wormwood)
- *Allium sativum* (Garlic)
- *Juglans nigra* (Black Walnut)
- *Thuja occidentalis* (Arbor vitae)



Artemisia absinthium
(Wormwood)

Anti-catarrhals

Synonymous with *Mucolytic* or *Secretolytic*

Are herbs that will **remove excess mucous from the body**. They're often used in ear, nose & throat infections to help eliminate mucous accumulation within the sinuses while playing a role in a broader based treatment objectives.

How Anti-catarrhals Work

Mucous is not in-and-of-itself a problem, as it is purposefully made by the body to help rid itself of foreign bodies & infectious agents. When an excess is being produced it is usually in response to an chronic infection or irritation of the mucous membrane, as an attempt to remove a pathogenic organism and/or excess carbohydrates from the body.

- Some contain **volatile oils and/or saponins** which work by thinning the mucous making it more watery & easier to expel
- Some will reduce mucous secretions directly through the astringent properties of **tannins**.

Herbal Examples:

- *Baptisia tinctoria* (Wild Indigo)
- *Ephedra sinensis* (Ma Huang)
- *Euphrasia* off. (Eyebright)
- *Hydrastis canadensis* (Golden seal)
- *Sambucus nigra* (Elderberry & flower)
- *Solidago virgaurea* (Golden rod)

Anti-emetic

Are herbs that will **reduce feelings of nausea and relieve or prevent vomiting**.

How Anti-emetics Work

Most of these herbs are carminatives that are rich in **volatile oils**, which will soothe & settle the digestive processes of the stomach. Some will also have a gentle nervine relaxant effect that will relax both the mind and smooth muscle layers of the digestive tract.

Herbal Examples:

- *Melissa officinalis* (Lemon Balm)
- *Matricaria recutita* (Chamomile)
- *Mentha piperita* (Peppermint)
- *Zingiber* off. (Ginger)



Anti-inflammatory

Are herbs that will **help the body to control inflammation**.

However, the symptomatic alleviation of inflammation employed by pharmaceuticals is rarely the same mechanism by which these remedies act. They are perhaps better referred to as **"inflammatory modulators"**, as we recognize that inflammation is a normal & purposeful bodily response aimed at resolving tissue dis-ease.

The cardinal signs of inflammation (swelling, heat, redness, loss of function & pain) all serve eliminative purposes & meaningful immune system responses meant to bring about necessary changes required to heal & restore health to the area affected. Depending on the case, inflammatory processes should not be suppressed unless absolutely necessary.

These herbs offer us the possibility of achieving a balance between the complex chemical mediators involved and working with the body rather than against it. **Demulcents, Emollients and Vulneraries** often act in an anti-inflammatory way, especially when applied externally.

How Anti-inflammatories Work

Herbs will rarely inhibit the natural inflammatory process, and instead support & encourage the chemical mediators involved. This aids the body with the cleansing work it's already doing, thereby speeding the healing process.

Herbal anti-inflammatories can be broadly placed in groups according to their constituents, which will have a variety of anti-inflammatory effects.

The overall action of these plants is much more than any specific chemical, however the following summarizes some major anti-inflammatory constituents found within some of our most potent anti-inflammatory herbs:

Sulphur

- *Allium cepa* (Onion)
- *Allium sativa* (Garlic)
- *Brassica* spp. (Black/white mustard)

Resin

- *Boswellia serrata* (Frankincense)
- *Bryonia dioica/alba* (White bryony)
- *Capsicum frutescens* (Cayenne)
- *Guaiacum officinalis* (Lignum-vitae)
- *Zingiber officinalis* (Ginger)

Salicylates

- *Betula alba* (Silver birch)
- *Filipendula ulmaria* (Meadowsweet)
- *Gaultheria procumbens* (Wintergreen)
- *Populus* spp. (Poplar)
- *Salix* spp (Willow)
- *Viburnum* spp.

Saponins

- *Dioscorea villosa* (Wild yam)
- *Smilax* off.. (Sarsaparilla)
- *Trigonella foenum-graecum* (Fenugreek)
- *Glycyrrhiza glabra* (Licorice)
- *Calendula* off. (Marigold)

Essential Fatty Acids

- *Borago officinalis* (Borage seed)
- *Oenothera biennis* (Evening primrose)

Volatile Oils

- *Achillea millefolium* (Yarrow)
- *Matricaria recutita* (Chamomile)
- *Curcuma longa* (Turmeric)
- *Rosmarinus officinalis* (Rosemary)

Flavonoids

- *Vaccinium myrtillus* (Bilberry/Blueberry)
- *Crataegus oxycantha* (Hawthorne)
- *Sambucus nigra* (Elderberry)

Mucilage

- *Althea* off. (Marshmallow)
- *Symphytum* off. (Comfrey)
- *Verbascum thapsus* (Mullein)



Anti-lithics

Are herbs that help **prevent the formation of stones in the urinary system** & may aid removal of those already formed.

How Anti-lithics Work

The exact mechanism for many of these herbs is unclear, however, most seem to work either by “dissolving” stones, or acting as **diuretics** to help the body remove stones by promoting urine flow, thus flushing kidney & bladder passages.

Herbal Examples:

- *Apium graveolens* (Celery)
- *Betula alba* (Silver birch)
- *Eupatorium purpureum* (Gravel root)
- *Hydrangea arborescens* (Hydrangea)

Antimicrobials

Are herbs that help the body to **destroy or resist pathogenic microorganisms**. They can be divided into those that are specifically anti-bacterial, anti-viral, anti-fungal, or anti-parasitic, but most will have a broad acting spectrum of effects and in general will help support the natural immune process.

Supporting the immune system is a vitally important job, as much over & unconscious use of antibiotics has dominated our populations’ treatment of infections. Without question there are times when antibiotics are essential and life saving, however much of the time the body can benefit from supportive & preventative help that bypasses the need for synthetic and/or chemical intervention. However in an emergency, we should count our blessings that antibiotics exist!

How Antimicrobials Work

- Most commonly **volatile oils** (e.g. allicin) & **alkaloids** (e.g. berberine) are responsible for antimicrobial effects, often acting directly by killing the micro-organism.

- May also remove infection by direct or indirect stimulation of the body’s own immune system (e.g. *Phytolacca spp.* & *Echinacea spp.*)

Each system of the body has plants that are particularly suited to it, some of which are anti-microbial. By the nature of the infection and the body’s response to it, a general systemic treatment is always appropriate even if done in conjunction with specific local remedies.

Herbal Examples:

- *Allium Sativum* (Garlic)
- *Baptisia tinctoria* (Wild Indigo)
- *Commiphora molmol* (Myrrh)
- *Echinacea angustifolia* (Echinacea)
- *Hydrastis canadensis* (Goldenseal)
- *Ligusticum porteri* (Osha)
- *Lomatium dissectum* (Lomatium)
- *Thymus vulgaris* (Thyme)

Anti-pyretics

Primarily refers to drugs used to prevent or reduce a fever. Refer to Febrifuge section for herbal examples to support or encourage fever, though these actions are occasionally used synonymously.

Anti-rheumatics

Are herbs that can be applied topically or taken internally to **help reduce and/or resolve symptoms associated with rheumatic disorders** (e.g. arthritis & myalgia) by reducing pain & modulating the inflammatory process.

They are used in conditions which affect the muscles, joints, and body connective tissues and have an important role in the management of many chronic inflammatory or degenerative musculoskeletal disorders.

How Antirheumatic Work

Are often anti-inflammatories & alteratives, and will reduce signs & symptoms of various



inflammatory disorders by altering the body's processes of metabolism so that tissues (such as muscles & joints) can effectively eliminate waste products, receive adequate nutrition, and modify various inflammatory & immune mediators of connective tissue dysfunction.

Plant constituents which may be involved in these effects include **resin, iridoid glycosides** (e.g. harpagoside), **saponins, & salicylates**.

Herbal Examples:

- *Arnica montana* (Arnica)
- *Capsicum spp.* (Cayenne)
- *Curcuma longa* (Turmeric)
- *Dioscorea villosa* (Wild Yam)
- *Harpagophytum procumbens* (Devil's Claw)

Antispasmodics

Synonymous with Spasmolytics

Are herbs that will **prevent or ease spasms or cramping within the musculature** (both smooth & skeletal).

Many of these herbs are also **Nervines & Carminatives** and so will reduce both physical & psychological tension as needed. Many can be used both topically and/or internally depending on the desired effects.

How Antispasmodics Work

Most commonly **volatile oils, salicylates & alkaloids** are responsible for antispasmodic effects.

There are general antispasmodics that will reduce muscle spasm throughout the body, and those that will act on specific organs or systems (e.g. uterus & digestive tract), however here is much overlap here as muscle tissue is generally similar throughout many areas of the body.

Herbal Examples:

- *Humulus lupulus* (Hops)
- *Matricaria recutita* (Chamomile)
- *Mentha piperita* (Peppermint)

- *Passiflora incarnata* (Passionflower)
- *Viburnum opulus* (Crampbark)
- *Zingiber off.* (Ginger)

Aperients

Are herbs that **stimulate appetite while providing a mild & gentle laxative effect** without stimulating the bowels directly.

How Aperients Work

Are often gentle bitters or hepatics that work by stimulating the digestive process primarily through the liver, but also throughout the whole of the digestive tract.

Herbal Examples:

- *Juniperus communis* (Juniper)
- All Bitters, Hepatics & Laxatives in low doses

Aromatics

Are herbs that **have a strong & often pleasant odour due to their high volatile oil content**.

This oil-based aroma can both stimulate & relax the body via the digestive (e.g. Carminatives) and/or nervous systems (Nervines), and are the basis for much of aromatherapy.

Herbal Examples:

- *Cinnamomum zeylanicum* (Cinnamon)
- *Melissa officinalis* (Lemon Balm)
- *Mentha piperita* (Peppermint)
- *Pimpinella anisum* (Aniseed)
- *Rosmarinus officinalis* (Rosemary)

Astringents

Are herbs that have a **binding, tightening, or drying effect upon mucous membranes, skin, and other exposed tissues**. If you've ever had a cup of tea or glass of wine, then you have personally experienced astringency. The tightening of the tissue of the mouth is the astringent action of the plant at work!



Astringents can exert their effects both topically & internally, and have a role in a wide range of problems in many parts of the body, but are of special importance in wound healing and conditions of the digestive system.

How Astringents Work

Resulting actions are due to the presence of **tannins**, which have the following effects:

- Will bind or precipitate protein molecules, rendering them inactive against proteolytic enzymes
- Reduce tissue surface irritation (slight “numbing” effect) & inflammation
- Improve mucosal integrity and help form a barrier against infectious agents (especially in diarrhea)
- Will speed wound healing in cases of excessive bleeding, burns & ulcers
- Reduce tissue swelling, mucous & edema

Note: Long-term internal use can be detrimental to health, as there may be an eventual inhibition of proper nutrient absorption across the gut wall (especially in regards to minerals such as in iron deficiency).

Herbal Examples:

- *Achillea millefolium leaf* (Yarrow)
- *Capsella bursa-pastoris* (Shepherd’s Purse)
- *Filipendula ulmaria* (Meadowsweet)
- *Geranium maculatum* (Cranesbill)
- *Hamamelis virginiana* (Witch Hazel)
- *Quercus spp.* (White/Red Oak)
- *Rubus idaeus* (Red Raspberry)

Bitters

Are herbs that **have a predominantly bitter taste** and major role in holistic herbal treatment & preventative medicine due to their widely beneficial effects on digestive functions. They will aid in a great range of health problems that have their basis in inefficient or

allergy distorted digestion.

They are especially useful in conditions which include symptoms of digestive insufficiency (e.g. belching, acid reflux, gas, bloating & stress or sympathetic dominance).

How Bitters Work

These herbs contain **a mix of constituents referred together as ‘The Bitter Principle’**, which is often a volatile oil, alkaloid, or some combination thereof.

They appear to work by triggering a bitter sensory taste response in the mouth which travels via the Vagus nerve & CNS to the gut, giving rise to the digestive hormone gastrin & a wide range of physiological effects of value towards the digestive process & general bodily health such as:

- Stimulation of appetite & peristalsis
- Aid the liver in detoxification
- General stimulation of digestive juices & secretions from the stomach (HCL), pancreas (digestive enzymes, & liver (bile)
- Establish parasympathetic dominance via the Vagus nerve (calming to the nervous system, i.e. “Rest & Digest” functions)
- Regulate pancreatic hormone secretions and thus blood sugar levels via insulin & glucagon
- Help the gut wall repair damage through stimulating self-repair mechanisms

Bitter Safety Concerns:

Use caution with strong bitters or avoid use completely in cases such as:

- Active/acute inflammatory bowel disease
- Diarrhea
- Pregnancy
- Kidney stones
- Acute gall bladder disease
- GERD or hiatal hernia



Herbal Examples

- *Artemisia absinthium* (Wormwood)
- *Berberis* spp. (Barberry/Oregon Grape)
- *Gentiana lutea* (Gentian)
- *Hydrastis canadensis* (Goldenseal)
- *Taraxacum officinalis* leaf & root (Dandelion)

Some important secondary actions of bitters, include:

- **Nervines:** *Humulus lupulus* (Hops) & *Gentiana lutea* (Gentian)
- **Antimicrobials:** *Hydrastis canadensis* (Goldenseal) & *Berberis* spp. (Barberry/Oregon Grape)
- **Anti-inflammatory:** *Achillea millefolium* flower (Yarrow) & *Calendula* off. (Marigold)
- **Warming:** *Angelica archangelica* (Angelica)
- **Cooling:** *Mentha piperita* (Peppermint) & *Gentiana lutea* (Gentian)

Note: : In Humoral Medical theory bitters are considered to be cooling & drying, regulating the digestive organs with a yin-like quality that congeals fluids, tightens tissues, and “pulls energy back to the core”. They have an earthy, grounding (or melancholic temperament) that restrains the mind and can help when feeling scattered and focus is needed.

Cardiac Tonics

Synonymous with Cardio-actives

Are herbs that have an overall **beneficial action on the heart & circulatory system**.

In general they can strengthen the hearts ability pump blood around the body & prevent the accumulation of fluid in the lungs/extremities, and are helpful in a variety of cardiovascular disorders from congestive heart failure to arrhythmia.

Some of the herbs included in this group are

powerful cardio-active agents such as *Digitalis purpurea* (Foxglove), while others are gentler and much safer, like *Crataegus oxycantha* (Hawthorne).

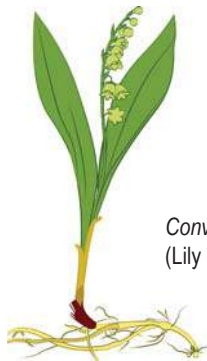
How Cardiac Tonics Work

The stronger **cardio-active agents contain cardiac glycosides** which are constituents that will increase the efficiency of the myocardium (heart muscle) without increasing its oxygen requirements. (Note: removal rates of cardiac glycosides from the body tend to be low, and their accumulation can potentially be poisonous).

Other cardiac tonics have an observable beneficial action on heart and blood vessels, but how they work is either completely obscure, or an area of great pharmacological debate. The

Herbal Examples:

- *Convallaria majalis* (Lily of the Valley)
- *Crataegus* spp.. (Hawthorne)
- *Digitalis purpurea* (Foxglove)
- *Leonurus cardiaca* (Motherwort)



Convallaria majalis
(Lily of the Valley)

Carminatives

Are herbs which **promote digestive system functions to operate with greater ease** They will soothe & settle the gut wall, easing gripping/cramping pains and aid in the removal of gas (e.g. bloating) from the intestines.

Taken after meals, these herbs are particularly helpful towards general feelings of indigestion and have an overall regulatory effect upon the



whole of the digestive tract.

How Carminatives Work

Their mechanism of action is considered largely a result of their **volatile oil** content, which can both stimulate & relax the smooth muscles of the intestines depending on the body's need.

Herbal Examples:

- *Foeniculum vulgare* (Fennel)
- *Matricaria recutita* (Chamomile)
- *Melissa officinalis* (Lemon balm)
- *Mentha piperita* (Peppermint)
- *Pimpinella anisum* (Anise)
- *Zingiber officinalis* (Ginger)

Cholagogues

Are herbs that specifically **stimulate the flow of bile from the liver/gallbladder**, and are often broadly considered Hepatics. They will aid in the digestion of food & particularly facilitate the breakdown & assimilation of dietary fats.

How Cholagogues Work

Though the exact mechanism is not known, effects are partially due to constituents having a bitter taste & physiological effects, and thus stimulating bile secretion from the gallbladder, helping to ensure overall healthy liver function.

Herbal Examples:

- *Chionanthus virginicus* (Fringetree)
- *Curcuma longa* (Turmeric)
- *Hydrastis canadensis* (Goldenseal)

Choleretics

Are herbs that specifically **increase the volume of bile produced by the liver**, and are often broadly considered Hepatics. They will aid in the digestion of food & particularly facilitate the breakdown & assimilation of dietary fats.

How Choleretics Work

Though the exact mechanism is not known, effects are partially due to constituents having a bitter taste & physiological effects. By stimulating the production of bile, the body is better able to release toxins from the GIT and thus improve detoxification capacity of other body cells & tissues.

Herbal Examples: See Cholagogues.

Note: The differentiation between Cholagogues & Choleretics is not very important in holistic herbal practice, as all cholagogues & choleretics will act as Hepatics & Alteratives to some degree.

Connective Tissue Tonics

Are herbs which **strengthen & nourish a variety of physical bodily structures** that consist of a connective framework of fibers including skin, muscles, tendons, ligaments, fascia, joint capsules, cartilage, bone, and even blood & lymphatic tissues.

They help to rebuild & regenerate the structure, function & integrity of such body tissues, and have a role in both chronic & acute connective tissue damage no matter the cause.

How Connective Tissue Tonics Work

Will often contain constituents such as **al-lantoin** (helps "knit" connective tissues back together), **mucilage**, **tannins**, **minerals** and/or **flavonoids** which work through a variety of mechanisms as tissue trophorestoratives through antioxidant & vulnerary effects.

Herbal Examples:

- *Centella asiatica* (Gotu kola)
- *Equisetum arvense* (Horsetail)
- *Plantago spp.* (Plantain)
- *Symphytum officinalis* (Comfrey)
- *Vaccinium myrtillus* (Bilberry)



Demulcents

Are herbs that will **soothe & protect irritated or inflamed internal tissue**, and are used whenever a membrane is raw, hot, irritated, inflamed or over excited. They are cooling, soothing, healing & relaxing, particularly towards the digestive, respiratory & urinary tracts. When used topically they are referred to as **emollients**, and have specific vulnerary (or wound healing effects).

How Demulcents Work

Rich in **mucilage**, when ingested these herbs will act upon internal mucosal linings to soothe & reduce irritation through direct tissue contact.

Some demulcents will have a similarly soothing effect far from their site of absorption (non-direct contact), and its theorized that this action may be due to a complex reflex response initiated by the gut lining. The mechanism proposed relates to early embryonic developmental associations of endodermal tissue layers.

In general all demulcents will have properties of reducing irritation & spasm throughout the length of the:

- **Digestive tract**, reducing sensitivity of the digestive system to gastric acids such as HCL (esophagus, stomach, intestines) & the **Respiratory tract** (nose, larynx & lungs)
 - *Althea off.* (Marshmallow leaf or root)
 - *Glycyrrhiza glabra* (Licorice)
 - *Symphytum off.* (Comfrey)
 - *Ulmus fulva* (Slippery Elm)
- **Urinary tract** (kidneys, ureters & bladder)
 - *Zea mays* (Corn silk)
 - *Agropyron repens* (Couch grass)

Note: The use of demulcents or mucilage rich herbs internally may reduce rate of drug absorption by forming a semi-permeable coating over mucus membranes, delaying gastric emptying and by binding with intestinal contents.

Diaphoretics

Are herbs that **will produce or promote sweating**, and are often used to support a fever, general circulation, and/or encourage the skin to skin eliminate waste.

Some will produce an actual & observable sweat, while others just aid sub-sensible sweating that goes on all the time.

How Diaphoretics Work

In part due to their volatile oil content, these herbs will increase the general circulation & cause vasodilation of surface capillaries, thus promoting the stimulation of sweat glands within the skin.

Herbal Examples:

- *Achillea millefolium* (Yarrow)
- *Capsicum frutescens* (Cayenne)
- *Eupatorium perfoliatum* (Boneset)
- *Nepeta cataria* (Catnip)
- *Zingiber officinalis* (Ginger)



Capsicum frutescens
(Cayenne)

Diuretics

Are herbs that can **increase the production & elimination of urine from the body**, however in traditional herbal medicine may refer to any herb that has a beneficial effect upon the urinary system.

They are used to often reduce edema & promote the elimination of metabolic wastes through the urine in many heart, liver, or



kidney disorders, but will have a role in any condition that may benefit from supporting the body's general process of inner cleansing.

How Diuretics Work

Strictly speaking, a diuretic will increase the volume of urine produced, in healthy or unhealthy kidneys, by promoting the excretion of salts and water. However there are several mechanisms by which they exert this effect which can be summarized as follows & further elucidated below:

1. **Stimulating:** Increase kidney blood flow
2. **Osmotic:** Reduce the water resorption in the nephrons of the kidney
3. **Cardiac/Circulatory Stimulants:** Increase cardiac output & thus renal blood flow

NOTE: *Taraxacum officinalis folia* (Dandelion leaf) is an example of an herb with a long traditional use as a diuretic whose precise mechanism has not been yet demonstrated to us.

Stimulating diuretics work by irritating the kidneys in an attempt to "flush away" the offending substance. Because there is more blood passing through the kidney, more urine is therefore produced. Constituents that irritate the resorption mechanism in this way are often **volatile oils, saponins or alkaloids** (e.g. caffeine). Herbal examples include:

- *Apium graveolens* (Celery)
- *Arctostaphylos uva-ursi* (Bearberry)
- *Betula alba* (Silver birch)
- *Coffea arabica* (Coffee)
- *Camellia sinensis* (Tea)
- *Juniperus communis* (Juniper)
- *Petroselinum crispum* (Parsley)

Osmotic diuretics work via many different means, but often cause diuresis due to constituents such as **mucilage & polysaccharides** which cause a nerve reflex reaction

through the gut lining (via the Vagus) to thin & loosen mucous secretions to be excreted via the kidney. As larger and/or un-metabolized sugars pass into the urine, this change in osmotic pull causes more water to be lost from the body. Herbal examples include:

- *Althea officinalis* (Marshmallow)
- *Agropyron repens* (Couch Grass)
- *Zea mays* (Corn silk)

Cardiac/Circulatory stimulants work by increasing renal blood flow & glomerular filtration rate due to an increase in cardiac output. Up to a certain point any excess glomerular filtrate can be reabsorbed from the kidney tubules, but if it is too high then the urine volume will increase. Herbs examples include:

- *Convallaria majalis* (Lily of the Valley)
- *Crataegus spp.* (Hawthorne)
- *Cytisus scoparius* (Scotch broom)

Emetics

Are herbs that **will induce vomiting**. Used much more historically, their use is rarely indicated in medicine today. Their main use is in the first aid treatment of poisoning where they will empty the contents of the stomach.

How Emetics Work

Most work through irritation of the either the stomach or the nervous system due to their alkaloid or saponin content. Some expectorants are emetics in high doses, and there is some relationship between the mechanisms by which they work.

Herbal Examples:

- *Cephaelis ipecacuahana* (Ipecac)
- *Lobelia inflata* (Lobelia)

Emmenagogues

Strictly speaking these are herbs that will **stimulate menstrual flow**, however its perhaps better used to denote those that can



normalize & regulate menstrual irregularities. There is much overlap between them and the Uterine tonics & Oxytocics, and their use should be avoided during pregnancy.

How Emmenagogues Work

Little is known about their mechanism of action, however many will contain volatile oils, alkaloids & phytoestrogens which will have either stimulating or relaxing effects upon the uterus.

Herbal Examples:

- *Artemisia vulgaris* (Mugwort)
- *Achillea millefolium* flower (Yarrow)
- *Caulophyllum thalictroides* (Blue cohosh)
- *Actaea racemosa* (Black cohosh)

Emollients

Are herbs used externally to **soften, soothe & protect the skin**, and have specific vulnerary (or wound healing effects). When used internally they are referred to as Demulcents.

How Emollients Work

Are often rich in **mucilage or fixed oils** that form a protective barrier to the skin that moistens and soothes inflamed or irritated skin tissues and will cool & heal excessive heat & burns. They may be applied as a gel, oil, lotion/cream, or salve, and are useful whenever anti-inflammatory effects are required for healing.

Herbal Examples

- *Aloe barbadensis* (Aloe)
- *Althea officinalis* (Marshmallow)
- *Plantago lanceolata* (Plantain)
- *Stellaria media* (Chickweed)
- *Symphytum officinalis* (Comfrey)

Expectorants

Are herbs that will help the body to **remove excess mucous from the lungs**, however the term is perhaps better suited to describe any herb with a tonic effect on the respiratory system.

Mucous and any inhaled particles are normally voided from the lungs via the muco-ciliary escalator, and expectorants will encourage this self-cleansing mechanism when mucous is present excessive amounts, or the lung tissue is generally irritated & inflamed.

How Expectorants Work

Expectorants act through a variety of mechanisms, and many may be considered Amphoteric (can act paradoxically depending on the body's need).

1) Stimulating Expectorants are most indicated for cases of copious mucous production. They often work by irritating the lining of the bronchioles to stimulate the expulsion of congested material by increasing activity of the muco-ciliary escalator. They are often emetics at high doses, as they appear to work by way of a reflex action on the lining of the gut, and are related to plant constituents such as **alkaloids, volatile oils & saponins**. Herbal examples include:

- *Hyssopus off.* (Hyssop)
- *Inula helenium* (Elecampane)
- *Lobelia inflata* (Lobelia)
- *Sanguinaria canadensis* (Bloodroot)

2) Soothing Expectorants are most indicated when excessive mucous production causes an unproductive and/or irritable-type cough, where they soothe bronchial spasm & loosen mucous secretions. Some owe their action to their **mucilage** content, and generally derive their action by relaxing body tissues, encouraging the production of a thinner, looser mucous which is more easily expelled. Herbal examples include:

- *Plantago lanceolata/major* (Plantain)
- *Trigonella foenum-graecum* (Fenu-greek)
- *Tussilago farfara* (Coltsfoot)
- *Verbascum thapsus* (Mullein)



3) **Respiratory Tonics or Amphoterics** may be stimulating or soothing, depending on the body's need, and will often aid in the regeneration of damaged or inflamed lung tissue

- *Equisetum arvense* (Horsetail)
- *Glycyrrhiza glabra* (Licorice)
- *Hydrastis canadensis* (Goldenseal)
- *Plantago lanceolata/major* (Plantain)

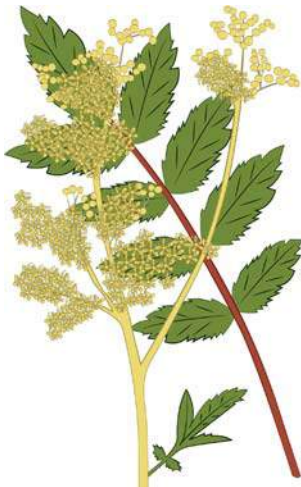
Febrifuge

Are herbs that can **control or reduce fever**, and are sometimes used synonymously with the term Anti-pyretic.

Fever control with herbal remedies is quite effective, however the focus should be on aiding the body's natural recuperative processes rather than just dropping the temperature. The key is to help the body through the fever and at the same time reduce excessive suffering from symptoms. Other herbal actions to consider to helping control the process of a fever include Diaphoretics, Antimicrobials, Diuretics, Alteratives and Nervines.

How Febrifuges Work

Though exact mechanisms are unclear, the



Filipendula ulmaris (meadowsweet)

constituents considered primarily responsible for effects are often **salicylates & volatile oils**.

Herbal Examples:

- *Filipendula ulmaria* (Meadowsweet)
- *Mentha piperita* (Peppermint)
- *Salix alba* (Willow)
- *Sambucus nigra* (Elder flower)

Galactagogues

Are herbs that will **increase the flow of breast-milk** in a lactating woman.

How Galactagogues Work

A not unusual situation in herbal medicine, the exact mechanism of their action is unclear.

They do not appear to force hormonal pressure on the body, and may result from their fatty acid & volatile oil content.

Herbal Examples:

- *Foeniculum vulgare* (Fennel)
- *Galega off.* (Goat's Rue)
- *Humulus lupulus* (Hops)
- *Silybum marianum* (Milk Thistle)
- *Trigonella foenum-graecum* (Fenu-greek)
- *Vitex agnus-castus* (Chasteberry)

Hemostatics

Synonymous with Styptics

Are herbs which will help **staunch or allay excessive bleeding**. Many are used in cases such as post-partum hemorrhage, menorrhagia, perforated ulcers, and/or topically to prevent blood loss and promote tissue healing.

How Hemostatics Work

Are primarily rich in **tannins**, and thus have a drying, tightening & astringent effect which helps to prevent blood losses. Some have specificity to certain organ systems such as the uterus and digestive tracts.

Herbal Examples

- *Achillea millefolium* leaf (Yarrow)
- *Capsella bursa-pastoris* (Shepard's Purse)
- *Filipendula ulmaria* (Meadowsweet)



Hepatics

Are herbs that in a wide range of ways **aid the work of the liver**. They will tone & strengthen liver function, and in some cases increase the flow of bile.

In a broad holistic approach to health they are of great importance because of the fundamental role of the liver in the workings of the body, and the “toxins heavy” world in which we live which the liver neutralizes for us daily. **Hepatoprotectives & Hepatotrophorestoratives** are herbs that can protect the liver from further damage, and actually regenerate healthy hepatocytes when under excessive demands from toxic stress.

How Hepatics Work

Bitters, Cholagogues & Choloretics all act as Hepatics and their actions should be briefly reviewed. However, a wide range of remedies without such actions also act beneficially towards the liver in myriad of ways, often due to their rich flavonoid content.

Hepatics Herbal Examples:

- *Curcuma longa* (Turmeric)
- *Cynara scolymus* (Artichoke)
- *Glycyrrhiza glabra* (Licorice)
- *Silybum marianum* (Milk thistle)
- *Taraxacum officinalis* (Dandelion root)

Hypnotics

Are herbs that will help to **induce a deep & healing sleep**. They are often used synonymously with Sedatives and many are Nervine Relaxants when used at high doses.

How Hypnotics Work

The mode of action for these herbs vary from mild muscle relaxing properties through **volatile oils** that ease psychological tension, to remedies that contain strong **alkaloids** that work directly on the nervous system to induce sleep.

Some of the most effective hypnotics are illegal to the very degree of their effectiveness, including the whole range of opium poppy derivatives. These herbs should always be used within the context of an overall approach to sleep problems involving relaxation techniques, food, and lifestyle in general.

Hypnotic Herbal Examples

- *Eschscholzia californica* (California Poppy)
- *Lactuca virosa* (Wild lettuce)
- *Passiflora incarnata* (Passionflower)
- *Valeriana off.* (Valerian)

Immunomodulators

Synonymous with Deep Immune Tonics

Are herbs that will **have a beneficial effect on immune system responsiveness**, facilitate greater flexibility in the body's natural response to infection & disease, and play a central role in supporting those cells involved in our immunological defenses.

They are used in chronic or recurrent disease, where the immune system needs feeding & strengthening, and are usually combined with other body system tonic herbs where a weakness has been identified, especially in the treatment of malignancies.

How Immunomodulators Work

The pharmacology of these herbs tends to point to **saponins & polysaccharides** (e.g. beta-d-glucans) as key contributors towards functions such as:

- Stimulate T-suppressor cells (thereby reduce immune resistance)
- Stimulate macrophages & natural killer cells
- Stimulate the production of WBCs & antibodies
- Hormonal modulation of the adrenal glands (e.g. adaptogenic), which is foundational to healthy immune status.



Hormone Balancers (review on next page)

Are herbs which often can **modulate endogenous sex hormones** such as estrogen, progesterone, testosterone LH, FSH, and cortisol. They have the potential to effect circulating hormonal levels and their activity within the body.

How Hormone Balancers Work

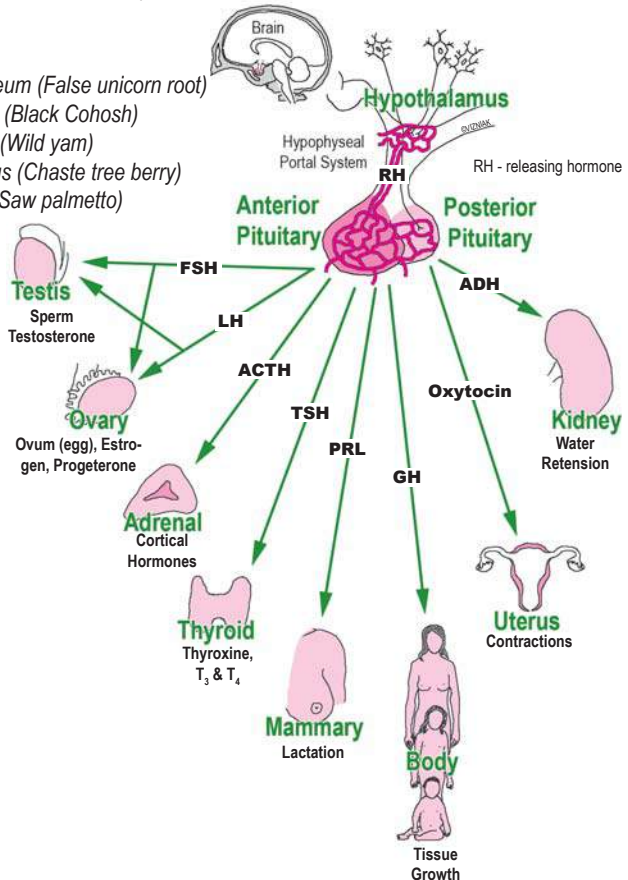
Plant constituents primarily responsible for this action include phytoestrogens such as **isoflavones, coumestans, lignans, triterpenoid/steroidal saponins & resorcylic acid lactones**.

These plant molecules have structural similarity to our endogenous hormones and can bind with receptor sites lending weak or partial agonistic effects. In general, these herbs modulate our hormone levels, and can competitively bind with (i.e. fill or block the receptor site) for endogenous hormones and prevent them from working there. They can also have modulating effects upon the Hypothalamic/Pituitary Axis and its communication with the adrenals, thyroid, ovaries & testes.

Hormone balancers have many uses but are most often included in cases of endocrine imbalance such as menopause, premenstrual syndrome, PCOS, fibroids, prostate disorders and sexual dysfunction.

Herbal Examples

- *Chamaelirium luteum* (False unicorn root)
- *Actaea racemosa* (Black Cohosh)
- *Dioscorea villosa* (Wild yam)
- *Vitex agnus-castus* (Chaste tree berry)
- *Serenoa repens* (Saw palmetto)





Source & Name		Function
Anterior Pituitary	Follicle-stimulating hormone (FSH) Luteinizing hormone (LH) Adrenocorticotropin (ACTH) Thyroid stimulating hormone (TSH) Prolactin (PL) Growth hormone (GH)	Sperm & egg development Estrogen, progesterone & testosterone secretion Release of corticoids from adrenal gland ↑ T3 & T4 secretion Lactation ↑ protein synthesis, lipolysis, ↑ blood glucose
Post. pit.	Antidiuretic hormone (ADH) (vasopressin) Oxytocin (OXY)	↑ water reabsorption in kidney ↑ uterine contractions during labor
Adrenal	Aldosterone (mineralcorticoid) Cortisol (glucocorticoid) Androgens Epinephrine & norepinephrine	↑ blood Na ⁺ & water (↑ BP), ↓ blood K ⁺ Stress - gluconeogenesis, lipolysis, ↓ inflammation Male secondary sexual characteristics Sympathetic response (fight or flight)
Testis	Testosterone	Male secondary sexual characteristics, regulate spermatogenesis
Ovary	Estrogen & Progesterone Relaxin	Female secondary sexual characteristics, regulate menstrual cycle & oogenesis ↑ ligament laxity prior to birth (pubic symphysis)
Thyroid	Thyroxine (T ₄), Triiodothyronine (T ₃) Calcitonin	↑ basal metabolic rate, ↑ protein synthesis, ↑ ATP generation, ↑ lipolysis, accelerate growth ↓ blood calcium (inhibits osteoclast activity)
Para-thyroid	Parathormone (PTH)	↑ blood Ca ²⁺ levels (increases osteoclast activity & Ca ²⁺ reabsorption in kidneys & GI tract)
Pancrease	Insulin (alpha cells) Glucagon (beta cells)	↓ blood glucose (↑ cell uptake, glycogenesis), ↑ lipogenesis & protein synthesis ↑ blood glucose (glycogenolysis, gluconeogenesis)
Kidney	Erythropoietin (EPO) Calcitriol* (vitamin D) Renin	↑ red blood cell formation ↑ absorption of Ca ²⁺ & phosphorus Renin-angiotensin-aldosterone pathway = ↑ BP
Stomach	Gastrin	↑ gastric juice secretion, ↑ stomach motility
Duodenum	Cholecystokinin (CCK) Secretin	↑ pancreatic juice secretion, gall bladder contraction, causes satiety ↑ pancreatic juice & bile secretion, ↓ stomach emptying

* synthesis starts in skin with sun light, continues to liver & active form made in kidney

**Herbal Examples**

- *Astragalus membranaceus* (Astragalus)
- *Ganoderma lucidum* (Reishi mushroom)
- *Lentinus edodes* (Shitake mushroom)
- *Schisandra chinensis* (Schisandra)

Immune Stimulants

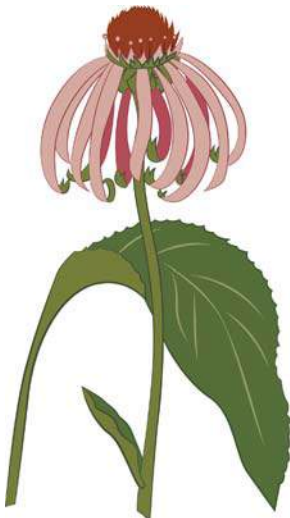
Synonymous with Surface/Superficial Immune Tonics

Are herbs that can **act directly against a bacteria or virus, while also leading to non-specific stimulation of innate immunological defenses.**

They generally do not affect our immune memory cells (humoral immunity), and many are perhaps better known as Antimicrobials, or “immune-boosters”. It’s best to use caution when prescribing these herbs long-term if we are to practice herbal medicine holistically.

How Immune Stimulants Work

Active pharmacological compounds are complex, however **volatile oils, phenolic acids & lectins** are often responsible for effects.

Herbal Examples:

Echinacea sp.

- *Baptisia tinctoria* (Wild Indigo)
- *Echinacea spp.* (Echinacea)
- *Phytolacca spp.* (Pokeroot)
- *Thuja occidentalis* (Thuja)
- *Usnea spp.* (Old Man’s Beard)

Laxatives

Are herbs that in some way **stimulate the digestive system to promote bowel movements.**

This action can be referred to by a number of names depending on strength & dosing. In increasing order of effect they are: Aperients, Laxatives (both Stimulating & Bulking) & Cathartics/Purgatives.

How Laxatives Work

There are several mechanisms of action for laxatives based on their constituents & effects which are categorized as follows:

1) Aperients

Are mild & gentle laxatives that primarily stimulate the appetite and are often also Bitters & Hepatics (chologogues & cholteretics).

Without stimulating the bowels directly, natural bowel movements & function are promoted **by activating peristalsis through bile secretion from the liver & gallbladder**, creating a reflex activation of the bowels. Herbal examples include:

- *Angelica archangelica* (Angelica)
- *Juniperus communis* (Juniper)
- *Taraxacum off. leaf & root* (Dandelion)

2) Stimulating Laxatives

Are herbs that contain plant constituent **anthraquinones**, which act locally within the intestinal wall to irritate/stimulate greater contractions of the musculature of the large intestine.

These herbs may cause uncomfortable and gripping pain in the abdomen, should not be used long term, and may have a considerable number of safety concerns & contraindications.



Herbal examples include:

- *Aloe barbadensis* (*Aloe latex*)
- *Cassia angustifolia* (*Senna*)
- *Rhamnus purshiana* (*Cascara*)
- *Rheum spp.* (*Rhubarb*)
- *Rumex crispus* (*Yellow dock*)

3) Bulking Laxatives

Synonymous with *Osmotic laxatives* or “stool softeners”

Are herbs which contain significant amounts of **mucilage**, and can draw water into themselves and hold it in the colon. This serves to soften & give more bulk to stools, which also aids the natural bodily reflex signalling for evacuation of the bowels. Herbal examples include:

- *Aloe barbadensis* (*Aloe gel*)
- *Althea off. root* (*Marshmallow*)
- *Linum usitatissimum* (*Flax*)
- *Plantago psyllium* (*Psyllium seed*)

4) Cathartics & Purgatives

Are herbs with the potential to cause quite violent & immediate evacuation of the bowels due to constituents which the body views as toxic and so attempts to eliminate.

Though a frequent practice in humoral medicine, this action is almost never used by the herbal practitioner today, however many of the stimulating laxatives may act as cathartics in higher doses. Herbal examples include:

- *Aloe barbadensis* (*Aloe latex*)
- *Cassia angustifolia* (*Senna*)
- *Juglans nigra* (*Black Walnut*)
- *Phytolacca spp.* (*Pokeroot*)
- *Podophyllum peltatum* (*Mayapple*)

Lymphatics

Are herbs which have the ability to **move lymph & increase lymphatic flow** to remove waste products from body tissues so that fresh lymph (rich in oxygen and nutrients needed for tissue repair) can replace it.

These herbs play a vital role in helping the

body fight infection, improve immune system surveillance, and relieve inflammation (e.g. swollen glands, and edema) while supporting the health of the body as a whole. Many can be used both topically & internally.

How Lymphatics Work

Constituents considered to be implicated include **coumarins & lectins**, which may:

- Stimulate the production of B & T lymphocytes within lymphatic glands.
- Increase capillary perfusion & support tissue drainage.
- Decrease tissue edema & inflammation.
- Improve elimination of metabolic waste due to secondary diuretic & circulatory stimulant effects.

Herbal Examples

- *Calendula officinalis* (*Marigold*)
- *Galium aparine* (*Cleavers*)
- *Ceanothus americanum* (*Red Root*)
- *Phytolacca spp.* (*Pokeroot*)
- *Trifolium pratense* (*Red Clover*)
- *Zanthoxylum spp.* (*Prickly Ash*)

Narcotics

Are herbs that can **affect mood or behaviour and are often restricted or illegal** to use due to potential psychoactive and/or potential addictive effects. They are also often Sedatives and/or Stimulants & Analgesics, and should be used with great caution if at all.

How Narcotics Work

Through a variety of constituents & effects however **alkaloids** (e.g. morphine & codeine) are often primarily responsible.

Herbal Examples

- *Atropa belladonna* (*Deadly Nighshade*)
- *Cannabis spp.* (*Marijuana*)
- *Gelsemium sempervirens* (*Yellow Jasmine*)
- *Nicotiana tabacum* (*Tobacco*)
- *Papaver somniferum* (*Opium poppy*)



Nervines

Are herbs that **have a beneficial effect upon the nervous system in some way**, and are differentiated by their effects into relaxants, stimulants, and tonics.

They can address a variety of nervous system disorders including stress, anxiety, depression, insomnia, poor memory/concentration, and neuralgias.

How Nervines Work

There are several mechanisms of action for nervines based on their constituents & effects which are categorized as follows:

1) Nervine Tonics are perhaps the most important contribution herbal medicine can make in the area of stress & anxiety, as they will strengthen & “feed” the nervous system in cases of nervous debility & exhaustion. Adaptogens may also be considered in this group due to their ability to aid the whole of the body and mind to cope with demands made upon it. Herbal examples include:

- *Avena sativa* (Oat tops)
- *Bacopa monniera* (Brahmi)
- *Centella asiatica* (Gotu kola)
- *Hypericum perforatum* (St. John's wort)
- *Verbena officinalis* (Blue vervain)
- *Vinca major/minor* (Periwinkle)

2) Nervine Relaxants will benefit both physical & psychological tension within the body and are of great help in restlessness & anxiety. Many are rich in **volatile oils**, and in high doses many act as Sedatives or Hypnotics. Herbal examples include:

- *Lavandula officinalis* (Lavender)
- *Matricaria recutita* (Chamomile)
- *Melissa off.* (Lemon Balm)
- *Passiflora incarnata* (Passionflower)
- *Piper methysticum* (Kava Kava)
- *Rauwolfia serpentina* (Snakeroot)
- *Scutellaria lateriflora* (Skullcap)
- *Viburnum opulus* (Cramp Bark)

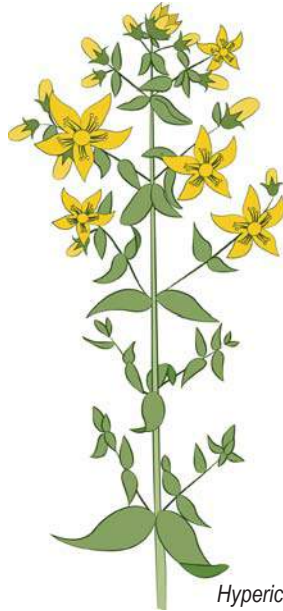
3) Nervine Stimulants cause a direct stimulation of nervous system function in cases of mental fatigue often due their **volatile oil or alkaloid (e.g. caffeine)** content.

In most cases it is more appropriate to stimulate the body's innate vitality with the help of Adaptogens & Nervine Tonics, which have a much deeper & longer-lasting effect. A problem with some stimulants is that they can themselves be involved in causing many problems such as anxiety & nervous tension, especially when overused.

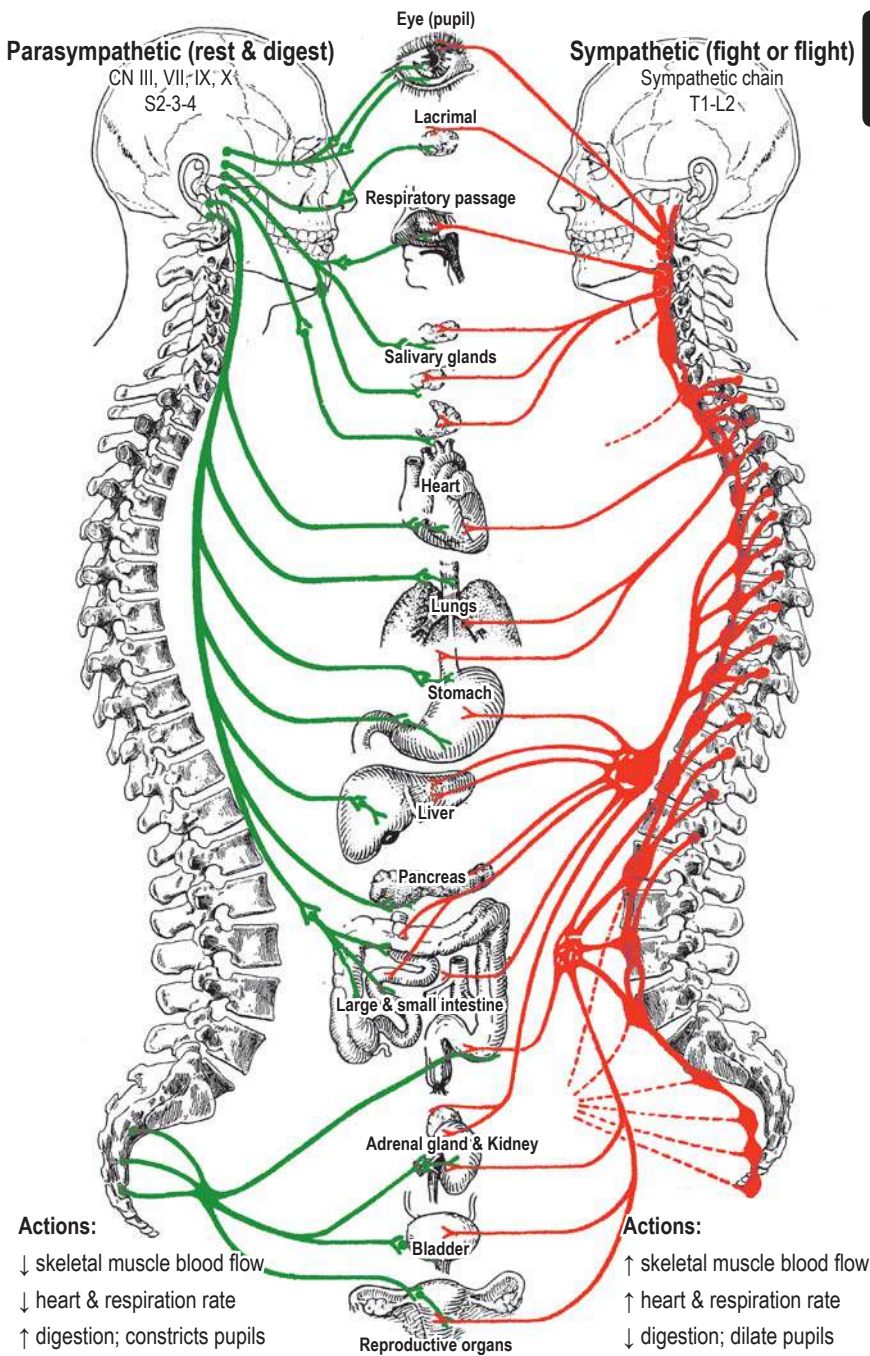
Herbal examples:

- *Camellia sinensis* (Green/Black Tea)
- *Coffea arabica* (Coffee)
- *Ephedra sinica* (Ma Huang)
- *Ilex paraguariensis* (Yerba mate)
- *Pausinystalia johimbe* (Yohimbe)

Note: Cerebral Circulatory Stimulants, which can improve blood flow to the brain can also aid in cognitive processes such as memory & concentration (e.g. *Rosmarinus off.*)



Hypericum perforatum
(St. John's wort)





Nutritives (Nutritionals)

Are herbs which **provide nutritional value to the body**, and can be considered 'medicinal foods', lending nutrients essential to bodily health.

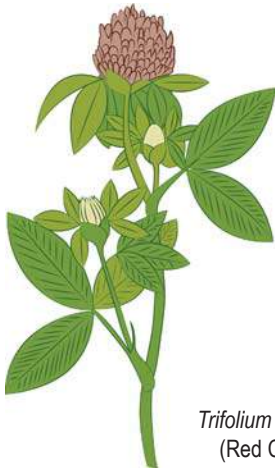
They can be consumed in large amounts to aid the eliminative functions of the body the regeneration of bodily tissues (cleansing & tonifying), and are especially useful in prenatal care, malnutrition, convalesce, anorexia, and to supplement the diet whenever necessary.

How Nutritives Work

Are complex mixtures of phytonutrients, providing a wide variety of **macronutrients** (e.g. fats, proteins, carbohydrates) and **micronutrients** (vitamins & minerals) which act to build up the health of various body systems. They often also exert mild secondary therapeutic effects (e.g. bulking laxatives, blood sugar regulation, diuretic etc.).

Herbal Examples

- *Allium sativum* (Garlic)
- *Althea off.* (Marshmallow)
- *Capsicum sp.* (Cayenne)
- *Fucus vesiculosus* (Kelp)
- *Medicago sativa* (Alfalfa)



Trifolium pratense
(Red Clover)

- *Urtica dioica leaf* (Nettle)
- *Trifolium pratense* (Red Clover)

Oxytocics

Are herbs that will **stimulate the uterus to contract**, and are often used as Parturients (to help facilitate childbirth) and/or Emmenagogues to bring on a woman's menstrual flow, depending on the herbs strength & dosing.

All are toxic to some degree should be used cautiously, short term, and only when absolutely necessary if at all.

How Oxytocics Work

Variable amounts of constituents such as **Alkaloids & Volatile oils** may act by imitating oxytocin in the body to stimulate uterine contractions & release prostaglandin hormones.

Herbal Examples

- *Artemisia absinthium* (Wormwood)
- *Cytisus scoparius* (Scotchbroom)
- *Mentha pulegium* (Pennyroyal)
- *Tanacetum vulgare* (Tansy)
- *Thuja occidentalis* (White Cedar)

Rubefaciants

Are herbs that **when applied topically will cause a localized increase in surface blood flow** (vasodilation) and reddening of the skin.

They will vary in potency based on their constituents & method of administration, and are used mostly to ease muscle & joint pains.

How Rubefaciants Work

Their ability to increase blood flow locally is often due to their **resin or volatile oil** content, and has benefits including:

- Gentle mimicing of the body's natural & self-healing inflammatory processes.
- Cleansing & nourishment of affected tissues via improved blood & lymphatic flow (reduced congestion).



- Drawing of blood from deeper parts of the body into the skin, which can benefit visceral tissues & body organs (e.g. castor oil packs).

Herbal Examples:

- *Allium cepa* (Onion)
- *Allium sativa* (Garlic)
- *Brassica alba/niger* (Mustard seed)
- *Capsicum spp.* (Cayenne)
- *Ricinus communis* (Castor Oil Bean)

Sedatives

Are herbs that will calm the nervous system to **reduce anxiety and help promote restful sleep**. Many sedatives are also as Nervine Relaxants in high doses, Hypnotics, Analgesics and/or Antispasmodics.

How Sedatives Work

Through a variety of constituents including **alkaloids & volatile oils**, much is known about the action of some truly potent herbal sedatives, with less being known of others. Conventional medicine has used some of these herbs to their advantage by potentizing their effects as pharmaceuticals (e.g. morphine from Opium poppy).

Note: Some of the most effective sedatives are illegal to the very degree of their effectiveness, and some will carry serious toxicity concerns.

Sedatives should always be used within the context of an overall approach to sleep problems involving relaxation techniques, food and lifestyle in general.

Herbal Examples

- *Eschscholzia californica* (California Poppy)
- *Gelsemium sempervirens* (Yellow Jasmine)
- *Humulus lupulus* (Hops)
- *Lactuca virosa* (Wild lettuce)
- *Piscidia erythrina* (Jamaican Dogwood)
- *Valeriana off.* (Valerian)



Gelsemium sempervirens
(Yellow Jasmine)



Stimulants

Are herbs that can **quicken & enliven the physiological activity of the body in some way.**

The term stimulant has an incredibly broad meaning in herbal medicine that does not necessarily only refer to chemicals such as caffeine. For example, Rubefaciants can be referred to as having a stimulant effect when applied topically. The following is a list of some "Stimulant" activities that can occur within the body along with herbal examples:

Nervine stimulants

- *Coffea arabica* (Coffee)
- *Camellia sinensis* (Green/Black tea)

Cerebral circulatory stimulants

- *Centella asiatica* (Gotu kola)
- *Ginkgo biloba* (Ginkgo)
- *Rosmarinus off.* (Rosemary)

Peripheral circulatory stimulants

- *Achillea millefolium* (Yarrow)
- *Zingiber off.* (Ginger)
- *Zanthoxylum americanum* (Prickly Ash)

Central circulatory stimulants

- *Capsicum minimum* (Cayenne)
- *Panax ginseng* (Chinese/Korean Ginseng)

Immune/lymphatic stimulants

- *Baptisia tinctoria* (Wild Indigo)
- *Echinacea spp.* (Echinacea)
- *Phytolacca americanum* (Pokeroot)

Glandular stimulants

- *Foeniculum vulgare* (Fennel)
- *Phytolacca americanum* (Pokeroot)

Tonics

Synonymous with Trophorestoratives

Are an incredibly broad group of herbs that describe those that will **strengthen, enliven, restore, or regenerate a specific body organ or system** as a whole.

They will often demonstrate the phenomenon of "tissue specificity", lending targeted & beneficial effects towards the circulatory, respiratory, digestive, urinary, reproductive, musculoskeletal & nervous systems.

How Tonics Work

Tonics work in many ways based on their individual constituents & effects, but are in general a remarkable example of the true healing power of Nature. The following is a list of some "Tonic" activities that can occur within the body along with herbal examples:

Nervine tonic

- *Avena sativa* (Oat tops)
- *Hypericum perforatum* (St. John's Wort)

Mucous membrane tonic

- *Euphrasia off.* (Eyebright)
- *Hydrastis canadensis* (Goldenseal)

Thyroid tonic

- *Fucus vesiculosus* (Kelp)

Immune tonic

- *Astragalus membranaceus* (Milk vetch)
- *Ganoderma lucidum* (Reishi mushroom) & other medicinal mushrooms

Connective tissue tonic

- *Centella asiatica* (Gotu kola)
- *Equisetum arvense* (Horsetail)
- *Plantago lanceolata/major* (Plantain)
- *Symphytum off.* (Comfrey)
- *Crataegus sp.* (Hawthorn)
- *Vaccinium myrtillus* (Blueberry leaf)

Vascular tonic

- *Achillea millefolium leaf* (Yarrow)
- *Aesculus hippocastanum* (Horsechestnut)
- *Tilia europea* (Linden)
- *Vaccinium myrtillus* (Blueberry)



Cardiac tonic

- *Convallaria majalis* (Motherwort)
- *Crataegus* sp. (Hawthorne)
- *Leonurus cardiaca* (Motherwort)

Liver tonic

- *Curcuma longa* (Turmeric)
- *Cynara scolymus* (Artichoke)
- *Glycyrrhiza glabra* (Licorice)
- *Silybum marianum* (Milk thistle)

Adrenal tonic

- *Borago officinalis* (Borage)
- *Eleutherococcus senticosus* (Siberian ginseng)
- *Glycyrrhiza glabra* (Licorice)
- *Rhodiola rosea* (Arctic rose)
- *Withania somnifera* (Ashwaganda)

Respiratory tonic

- *Equisetum arvense* (Horsetail)
- *Hyssopus* off. (Hyssop)
- *Plantago lanceolata/major* (Plantain)

Uterine tonic

- *Actaea racemosa* (Black cohosh)
- *Leonurus cardiaca* (Motherwort)
- *Mitchella repens* (Partridge Berry)
- *Rubus idaeus* (Red raspberry)

Female Reproductive tonic

- *Actaea racemosa* (Black Cohosh)
- *Chamaelirium luteum* (False unicorn root)
- *Dioscorea villosa* (Wild yam)
- *Paeonia lactiflora* (White peony)
- *Vitex agnus-castus* (Chaste tree berry)

Male Reproductive tonic

- *Serenoa repens* (Saw palmetto)
- *Smilax officinalis* (Sarsaparilla)
- *Urtica dioica radix* (Stinging Nettle root)
- *Tribulus terrestris* (Puncture vine)

Vulnerary

Are herbs which **help with healing wounds** both topically and internally. Many Astringents, Demulcents, and Emollients are also considered to have a Vulnerary effect.

How Vulneraries Work

Through a variety of mechanisms & constituents will speed up and/or enable conditions for natural wound healing processes to occur including:

- **Tannins** which dry up blood, mucous & edema, produce an impervious layer to infection, and promote the forming of a scab or eschar.
- **Mucilage** which soothes irritated or inflamed epithelial tissues.
- **Allantoin** which stimulates cell growth & division, thus speeding the healing of many connective tissues.

Herbal Examples:

- *Calendula officinalis* (Marigold)
- *Centella asiatica* (Gotu kola)
- *Plantago lanceolata/major* (Plantain)
- *Symphytum officinalis* (Comfrey)



Calendula officinalis
(Marigold)



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To a pharmacist, herbal constituents are **the active ingredients of the plant**, or the chemicals that have demonstrated a definable physiological & therefore, possible medical effect upon the body.

The weight placed on the importance of identifying & extracting these singular plant chemicals in isolation from the rest of the plant is a representation of the divide that exists between the reductionist vs. vitalist models that have long existed within the medical field.

To the medical herbalist, focusing exclusively on individual constituents does not tell us much about the activity of the plant as a whole, herbs contain **many** constituents (some of which we may have not even identified yet!)

This is also a good time to introduce the phenomenon of **plant synergy**, which is crucial to understanding the complexity of how plant medicines really work. Synergism implies that **the interaction of 2 or more agents results in a combined effect that is greater than the sum of the individual parts**, and applies to combining herbs together in a formula as well as the combined effects of active constituents within the same herb.

However this does not deny the value of studying individual plant constituents as long as we maintain a holistic perspective of the plant, respecting it as an integrated biologically evolved organism.

Having a sound knowledge of individual constituents is essential for developing quality assurance methods, extraction procedures,

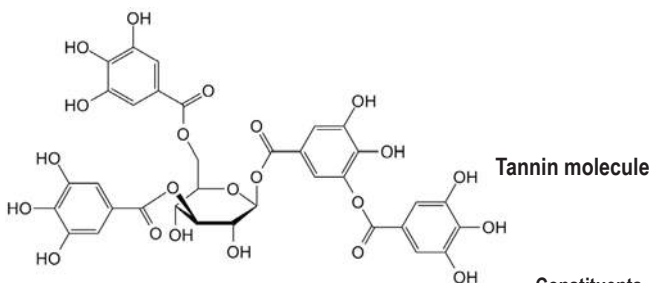
and understanding a plants pharmacological activity, especially pertaining to toxicity concerns & potential drug interactions.

If this section of the book seems at all intimidating, every herbal students could greatly benefit from a sound understanding of basic biochemistry, and so would encourage reviewing a good introductory organic chemistry textbook to freshen up on these building blocks of life and just how they work.

The better you are able to understand some simple principles of biochemistry, the easier it is to see the similarities that exist in the molecules that make up both plants & humans, and the dancing chemical continuum between our species becomes abundantly clearer.

This chapter gives an overview of some major plant constituents and their effects within the human body including:

- Alkaloids..... 60**
- Anthraquinones 62**
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- Tannins 71**
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Alkaloids are a very mixed group of plant constituents that contain a nitrogen-bearing molecule that makes them pharmacologically active. In addition to nitrogen, alkaloids may also contain oxygen, sulfur and more rarely other elements such as chlorine, bromine, and phosphorus.

Despite this chemical similarity, their structures and functions vary widely and so they can be subdivided into categories based on their structure, however there is still large variability even within these groups.

Alkaloids are found most commonly in around 20 families of flowering plants and have a wide range of pharmacological activities, many of which have found use in traditional or modern medicine, or as starting points for drug discovery.

Some major action of alkaloids in the body include:

- Antispasmodic
- Analgesic
- Anti-arrhythmic
- Anti-bacterial
- Anti-malarial
- Anti-cancer
- Anti-secretolytic
- Hypo/Hyperglycemic effects
- Nervine Stimulant
- Vasodilatory
- Psychotropic & Hallucinogenic effects

How Alkaloids Work

Although alkaloids act on a diversity of metabolic systems in humans and other animals, they almost uniformly invoke a bitter taste, and all have the potential to be toxic.

The major groups of alkaloids and their phar-

macology with herbal examples are outlined in the chart on the following page.

Free alkaloids (bases) are generally soluble in ethanol but only slightly soluble in water. Tinctures are very efficient (using 40-60% ethanol) at extracting alkaloids from plants.

Safety Concerns & Contraindications

Some of our most potentially harmful and toxic herbs are due to the effects & accumulation of their alkaloid content, which in some cases **may be lethal** and require immediate medical intervention. **Maximum weekly & daily dosing of such herbs should be strictly adhered to.**

The prudent herbal practitioner will be well aware of those herbs high in potentially harmful alkaloids and able to inform & **identify early signs of toxicity**, which **often manifest within that patients digestive or central nervous systems**. Some general signs & symptoms of toxicity may include:

- Dry mouth & eyes (w/ photophobia)
- Mydriasis (pupil dilation)
- Excessive sedation (potentially leading to loss of consciousness)
- Addiction & Dependence
- Hyper/Hypotension
- Heart palpitations
- Rapid/Shallow Respiration
- Nausea, vomiting & diarrhea
- Delirium, incoherent speech & confusion
- Uncoordinated movements



Mentha piperita

Alkaloid Class	Pharmacology	Herbal Examples
Tropane	<p>Atropine, hyoscyamine & scopolamine</p> <p>Anticholinergics with antispasmodic and anti-secretolytic effects, particularly in the respiratory, genitourinary & digestive tracts</p>	<ul style="list-style-type: none"> • <i>Atropa belladonna</i> • <i>Datura stramonium</i> • <i>Hyoscyamus niger</i>
Isoquinoline	<p>Papaverine, chelerythrine, morphine, hydrastine & berberine</p> <p>Anti-hypertensive, anti-spasmodic, analgesic & antiseptic effects</p>	<ul style="list-style-type: none"> • <i>Hydrastis canadensis</i> • <i>Berberis aquifolium</i> • <i>Papaver somniferum</i> • <i>Sanguinaria canadensis</i>
Pyridine & Piperidine	<p>Trigonelline, lobeline, nicotine, piperine, & ricinine</p> <p>Antiseptic, anti-hyperglycemic, and potential narcotic effects</p>	<ul style="list-style-type: none"> • <i>Lobelia inflata</i> • <i>Nicotiana tabacum</i> • <i>Piper spp.</i> • <i>Ricinus communis</i> • <i>Trigonella foenum-graecum</i>
Pyrrrolizidine	<p>Stachydrine</p> <p>Those with unsaturated necine bases can be nephrotoxic & hepatotoxic when metabolized by cytochrome P450 system. Enzymatic intermediates formed can attack DNA and damage hepatocytes leading to fibrosis causing hepatic veno-occlusive disease (HVOD)</p>	<ul style="list-style-type: none"> • <i>Borago off.</i> • <i>Eupatorium perfoliatum</i> • <i>Symphytum off</i> • <i>Tussilago farfara</i>
Quinoline	<p>Quinine</p> <p>Anti-pyretic & Anti-malarial effects</p>	<p><i>Cinchona spp.</i></p>
Indole	<p>Vincristine, vinblastine, ergotamine, physostigmine, reserpine & yohimbine</p> <p>Cardiotonic, cytotoxic & various central nervous system effects.</p>	<ul style="list-style-type: none"> • <i>Aspidosperma spp.</i> • <i>Catharanthus spp.</i> • <i>Claviceps spp.</i> • <i>Rauwolfia serpentina</i> • <i>Gelsemium sempervirens</i>
Purine (methyl xanthines)	<p>Caffeine & theobromine</p> <p>CNS stimulant & cardiotonic effects</p>	<ul style="list-style-type: none"> • <i>Camellia sinensis</i> • <i>Coffea arabica</i> • <i>Theobroma cacao</i>
Proto-alkaloids	<p>Mescaline, ephedrine, colchicine & taxol</p> <p>Sympathomimetic & potential narcotic effects.</p>	<ul style="list-style-type: none"> • <i>Colchicum spp.</i> • <i>Ephedra sinica</i> • <i>Taxus brevifolia</i>
Quinolizidine Alkaloids	<p>Sparteine, cytisine & oxytyramine</p> <p>Cardioactive & hypertensive effects</p>	<ul style="list-style-type: none"> • <i>Cytisus scoparius (Scotch broom)</i>



Anthraquinones are the main active constituents in herbs often used to relieve constipation, as they **have an irritant or stimulating laxative effect on the large intestine**. They are often red or purple in pigment, and are widely distributed in plants, especially in the *Fabaceae*, *Liliaceae*, *Polygonaceae*, and *Rhamnaceae* families.

Anthraquinones are commonly found as glycosides in the living plant, and several groups are distinguished based on their degree of oxidation. Anthrones are less oxygenated than the anthraquinones and the dianthrone are formed from two anthrone units.

Studies using dianthrone glycosides suggest most of these compounds pass through the upper GI tract without any change, however they are subsequently metabolized by the natural bacteria of the colon, and thus a healthy bacterial flora is necessary for their maximal effects.

Anthraquinone rich herbs are **most indicated for flaccid or atonic constipation** that is characterized by a loss of bowel tone and thus an infrequency of bowel movements. It is usually caused by a lack of exercise, prolonged bed rest or habitual laxative use, and is more common in elderly populations.

How Anthraquinones Work

Anthraquinones act directly on the intestinal mucosa, influencing several pharmacological targets, and their laxative effect is largely due to increased peristalsis of the colon, reducing transit time and consequently the reabsorption of water from the colon making the stool more liquid and easing bowel movements.

Additionally the stimulation of active chloride secretion into the gut increases osmosis, and results in a subsequent increased excretion of water. Overall the result is an increase in fecal volume and GI pressure.

Their action is very much dose dependent. In lower doses, anthraquinones exert a milder tonic laxative effect. In larger doses they will have a more powerful stimulant to cathartic effect.

In summary their major pharmacological actions are as follows:

- 1) Stimulation of active transport of chloride into the gut lumen → osmotic pull in the gut → accumulation of fluid in the gut
- 2) Inhibition of Na-K ATP-ase activity of the enterocytes → inhibition of water, sodium and chloride reabsorption, and an increase in enteric secretion of potassium
- 3) Stimulation of localized, inflammatory prostaglandins → increased force and rate of peristalsis

Safety Concerns & Contraindications

At high doses anthraquinone-rich herbs are gastrointestinal irritants, causing toxicity symptoms that can include nausea, vomiting, bloody diarrhea, dermatitis, dizziness, acute abdominal pain & cramping, and in severe cases, kidney damage. In general the following are important considerations with their usage:

- Use caution in irritable bowel, bowel obstructions, spastic colon, acute intestinal inflammation, abdominal pain of unknown origin, children <12 years old
- A harmless reddish discoloration of urine and feces may occur
- Use for short-term only. Use > 10 days exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur
- Recurrent use or abuse can lead to electrolyte imbalances (particularly hypokalemia), dehydration, and muscle and kidney damage
- Dramatic decrease in transit time can interfere with absorption of medications



- Can provoke reflex contractions in the uterus when taken during pregnancy, leading to miscarriage
- Should be avoided in those with gout or a predisposition to kidney stones
- In addition, Long-term dosing can cause peroxidation of lipids in the enteric mucosa → lipo-fuscin residue and brownish pigmentation called melanosis, which may be a risk factor bowel cancer

Bitter Principles are a varied group of many plant constituents linked by their pronounced bitter taste, which is not due to any one individual constituent. In herbal terms, **bitter is considered an action and not a constituent**, and when referring to bitter as a constituent it is referred to as 'The Bitter Principle' and is often a volatile oil, alkaloid, sesquiterpene, or glycoside (or some combination).

For more information on Bitters see section in Actions chapter.

Herbal examples:

- *Aloe barbadensis* (Aloe)
- *Cassia* sp. (Senna)
- *Rheum palmatum* (Turkey Rhubarb)
- *Rhamnus frangula* (Cascara sagrada)
- *Rumex crispus* (Yellow Dock)

Note: Naphthaquinones are dark yellow pigments with a range of pharmacological properties. They are structurally similar to anthraquinones but demonstrate different effects, often having antimicrobial & anti-fungal properties.



Taraxacum officinalis
(dandelion)

Note: Among anthraquinone-containing laxatives, the gentlest acting compounds belong to Yellow Dock (*Rumex crispus*) and Rhubarb (*Rheum palmatum*). These herbs are aged for at least one year, during which the more irritant anthraquinones are converted to milder compounds. The presence of tannins in these plants also tends to moderate the laxative effect.



In general, **cardioactive glycosides** improve the efficiency of the heart muscle without increasing its need for oxygen. This enables the heart to pump adequate amounts of blood around the body and prevents fluid accumulation within the lungs or extremities.

They are powerful & fascinating plant constituents specifically those such as digitoxin & convallatoxin, which have a strong, direct action on the heart, supporting the rate of contraction when it is failing. Many are also significantly diuretic, helping to stimulate urine production, thus increasing the removal of fluid from the tissues & circulatory system.

They are generally used to treat cardiac insufficiency, especially in atrial fibrillation & supra ventricular rhythm abnormalities, improving the ability of the myocardium (heart muscle) to perform it's work.

How Cardioactive glycosides Work

When taken internally will have:

- 1) **Positive inotropic effects**, increasing the force of systole & contraction of the myocardium.
- 2) **Negative chronotropic effects**, slowing the heart rate & reducing conduction velocity at the AV junction.
- 3) **Increase venous return & decrease vasoconstriction** and resistance to ventricular ejection. Will reduce activation of the renin-angiotensin-aldosterone system and lower circulating level of catecholamines, thereby lowering blood pressure within the vasculature.
- 4) **Increase overall cardiac output** without raising myocardial oxygen requirements by acting on the cell membrane to **inhibit sodium/potassium ATPase**, resulting in an increase in intracellular calcium concentra-

tions, thereby allowing for the greater force of heart muscle contraction.

Safety Concerns & Contraindications

The use of these herbs requires extreme caution. They have a narrow margin of safety, and the solubility & removal rates of these glycosides tend to be low, thus high levels may easily accrue in the body becoming potentially quite dangerous. Signs of toxicity include:

- Nausea, vomiting & diarrhea
- Yellowing of vision, confusion & headache
- Arrhythmia, ventricular extra systole, bradycardia, and AV block.

Their use requires frequent monitoring of:

- Diuresis
- Blood pressure
- Heart rate
- Serum potassium levels (hypokalemia)

Their use should be avoided alongside drugs that reduce potassium levels in the blood (e.g. diuretics, laxatives, corticosteroids, some antibiotics), which will increase their potency and potential for toxicity.

Herbal examples:

- *Asclepias tuberosa* (Pleurisy Root)
- *Convallaria majalis* (Lily of the Valley)
- *Digitalis purpurea* (Foxglove)
- *Urginea maritime* (Squill)

Note: In a strictly technical sense, the pharmacological term cardiotonic is synonymous with "positive inotropic", and is used not only to describe agents that increase heart contractility, but also to indicate an increase in heart beat frequency and general cardiac performance. Specifically cardioactive plants are those that owe their effects on the heart to cardiac glycosides, thus possessing the strengths and drawbacks of these constituents.



There are over 700 plant **coumarins** derived from the plant compound coumarin which occurs widely in plants, usually in bound form.

The 3 major classes of plant coumarins include hydroxycoumarins, furanocoumarins & Pyr-anocoumarins. They are found in many plant species and have widely divergent actions including anti-inflammatory, antispasmodic, anti-edematous, vascular tonic, anti-hemorrhagic, anti-fungal, and anti-tumor effects.

How Coumarins Work

Several coumarin molecules have demonstrated multiple biological activities that suggest that their structural features promote ROS scavenging activity and have pro-apoptotic effects. They have also demonstrated an ability to modulate of ATP-driven membranes, and inhibit enzymatic activity of various protein-dependent kinases, as well as carbonic anhydrase, and aromatase activity.

Safety Concerns & Contraindications

It is important to note coumarin found in plants is virtually devoid of anticoagulant effects in humans because a structurally essential characteristic for the anticoagulant potential of coumarin derivatives is absent.

Note: the drug Warfarin is a synthetic chemical derived from coumarol).

Although coumarin has little-to-no anticoagulant activity, it is transformed to the natural anticoagulant dicoumarol by a number of species of fungi, which proceeds through production of 4-hydroxycoumarin, then further into the actual anticoagulant dicoumarol, a fermentation product and mycotoxin. Nevertheless, caution

should still be used with long-term used alongside anticoagulant therapies.

Herbal examples:

- *Aesculus hippocastanum* (Horsechestnut)
- *Ammi visnaga* (Khella)
- *Angelica archangelica* (Angelica)
- *Apium graveolens* (Celery)
- *Melilotus off.* (Sweet clover)
- *Trifolium pratense* (Red clover)



Aesculus hippocastanum
(Horse Chestnut)



Of the approximately 4000+ **flavonoids** that have been identified they all possess this same basic polyphenolic structural makeup involving a carbon skeleton with two substituted benzene rings. They are nearly ubiquitous secondary metabolites found especially in leaves, fruits & flowers, and their major role in plants is to function as growth regulators, and protect the plant from UV radiation by scavenging free radicals produced by the photosynthetic electron transport system. They also act as pigments, imparting color to flowers & fruits.

Flavonoids are water-soluble and occur both in free state and as glycosides. Their molecular classification can be broken down by their degree of saturation, biosynthetic origin (i.e. those that are intermediate steps vs. end products), molecular size, and associated conjugates (i.e. whether bound to a sugar unit or hydroxyl group). Major classes of flavonoids include:

- Flavonols (e.g. Quercetin)
- Flavones (e.g. Apigenin)
- Flavonones (e.g. Naringin)
- Isoflavones (e.g. Genistein)
- Catechins (e.g. Epigallocatechin gallate or EGCG)
- Anthocyanidins/Proanthocyanidins (Aka. Condensed tannins)

How Flavonoids Work

Flavonoids have a wide range of actions and many medicinal uses. They have been referred to as “nature’s biological response modifiers” or “Redox Regulators”, since they modify the body’s reaction to compounds such as allergens, viruses and carcinogens as evidenced by their anti-inflammatory, anti-allergic, antiviral and anticancer properties.

Additionally they will strengthen vascular capillaries to prevent leakage of body fluids into surrounding tissues, and some will have phytoestrogenic, and liver-protective activity.

Most are astoundingly safe to use long-term with almost no toxicity concerns. Some of their distinct pharmacological actions and effects include:

- Antioxidant or Redox regulators, inhibiting the reduction of dehydroascorbic acid via glutathione by acting as H+ donors, permitting resonance stabilization and rendering potentially damaging molecules relatively unreactive
- Smooth muscle relaxation (antispasmodics & hypotensives)
- Reduced platelet aggregation & blood vessel protectants
- Improved hypoxic tolerance
- Inhibition of catechol-O-methyltransferase leading to increased availability of catecholamines and enhanced neural transmission and neuro-protective effects
- Inhibition of mast cell lysis
- Stimulation of proline hydroxylase leading to increased formation of cross links between collagen fibers, reinforcing tensile strength of connective tissue and cell structures and reduced capillary fragility
- Increased intra-cellular vitamin C, preventing its breakdown and up regulating its absorption
- Reduced allergic responses
- Reduction of inflammatory leukotrienes
- Mediate prevention of LDL oxidation
- Bind metal ions (which prevent them from acting as ROS catalysts)

Herbal examples:

- *Calendula off.* (Marigold)
- *Camellia sinensis* (Green/Black tea)
- *Crataegus sp.* (Hawthorne berries)
- *Curcuma longa* (Turmeric)
- *Ginkgo biloba* (Ginkgo)
- *Matricaria recutita* (Chamomile)
- *Trifolium pretense* (Red Clover)
- *Vaccinium myrtillus* (Bilberry)



Glycosides

Glycosides, or sugar ethers, are a complex grouping of aldehydes and alcohols which can be broken down to yield one or more sugars (glycones), plus a non-sugar component (aglycones). It is important to note that glycosides are not a major classification of phytochemicals themselves. Glycosides are often better absorbed & extracted than aglycones, but the aglycone is usually the active component with have a specific therapeutic effects.

The formation of a glycoside is dependent on interaction with Carbon, Sulphur, Nitrogen, or alcohol/phenol components, thus glycosides can occur in any of the major phytochemical classifications, because a sugar ether can bind itself to molecules in myriad of ways.

Glycosides are most commonly classified according to the chemical nature of the aglycone, and have vast medicinal applications as they are found in almost every therapeutic class (example: cardiac glycosides or anthraquinone glycosides). Some glycosidic categories are as follows:

- Alcohol
- Aldehyde
- Anthraquinone
- Cardiac
- Cyanogenic
- Flavonoid
- Isothiocyanate
- Iridoid
- Lactone
- Phenol (e.g. Salicin)
- Saponin

Mucilage

Mucilaginous herbs derive their properties from the polysaccharides they contain. These polysaccharides have a 'slippery', mild taste and swell in water, producing a gel-like mass that can be used to soothe and protect irritated tissues in the body, such as dry irritated skin and sore or inflamed mucous membranes. All plants produce mucilage in some form to store water

as hydrates and as a food reserve, for seed dispersal & germination, and as a membrane thickener and stabilizer.

How Mucilage Works

Most mucilage is not broken down by the human digestive system, but when taken internally and combined with water will lend powerful demulcent & vulnerary effects, both soothing and protecting towards inflamed or irritated nerve endings along the mucous membranes or epithelia. It can absorb toxins from the bowel, regulate intestinal flora, protect against gastric acidity and ingested toxins, reduce bowel irritation, and act as a bulking laxative agent to give more form to stools, promoting peristalsis and regular evacuation of the bowels.

Mucilage can also promote expectoration and soothe bronchial and urinary spasm via a proposed mechanism involving spinal reflex signaling from the endodermal lining of the gut, which lends a relaxant & antispasmodic effect to the lungs and the urinary tract. When used externally mucilage has vulnerary & emollient effects towards any irritated or inflamed skin and surface tissues.

Safety Concerns & Contraindications

Generally mucilage is incredibly gentle and can be used long-term without safety or toxicity concerns. When used internally it is prudent to one's increase water intake, and should be avoided in known or suspected bowel obstruction. Theoretically mucilage may delay the absorption of drugs & nutrients if taken simultaneously and thus should be taken away from meals & medications.

Herbal Examples:

- *Althea off.* (Marshmallow)
- *Plantago lanceolata* (Plantain)
- *Plantago ovata* (Psyllium)
- *Symphytum off.* (Comfrey)
- *Trigonella foenum-graecum* (Fenu-greek)
- *Ulmus fulvus* (Slippery elm)



Salicylates are a widely distributed group of simple phenolics and include compounds such as salicin, methyl salicylate & salicylic acid, with salicin being the first identified compound in this class and used to create the well-known pharmaceutical drug Aspirin. They appear to act as a phytohormone involved in plant growth & development, photosynthesis, transpiration, ion uptake and transport, and the endogenous signaling involved in mediating the plants' defense against pathogens.

Salicylates are used primarily for their analgesic, anti-inflammatory and anti-rheumatic effects. It is also a key ingredient in many skin care products as a keratolytic and comedolytic agent. It should be noted that salicylate-rich plants have been used traditionally and with good results for pain and inflammation, however their analgesic actions are typically slow-acting but longer lasting. In general the action of salicylates are:

- Anti-inflammatory
- Analgesic
- Antipyretic
- Antiseptic
- Keratolytic & Comedolytic

How Salicylates Work

Salicin derivatives are absorbed in the small intestine or carried to the distal ileum & colon where bacterial gut flora digest salicin into salicyl alcohol & glucose. The salicylic alcohol is then absorbed and oxidized in the blood, tissues, and liver to give salicylic acid, which is the main and most active form. It appears that the conversion of salicyl alcohol to salicylic acid occurs preferentially in areas of higher acidity in the blood and body tissues.

From studies conducted so far, salicylates appear to exert their effects on several pro-inflammatory targets including cyclo-oxygenase enzymes 1 & 2, and has been shown to produce significant inhibition of TNF-alpha and NF-K-beta. It is important to note that salicin does not demonstrate the antiplatelet

effects seen with aspirin. When used topically, salicylates cause the cells of the epidermis to shed more readily, opening clogged pores and neutralizing bacteria within, preventing pores from clogging up again by constricting pore diameter, and allowing room for new cell growth.

Safety Concerns & Contraindications

In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.

Theoretically, Salicylism, which is an acute overdose of salicylates, can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Herbal Examples

- *Filipendula ulmaria* (Meadowsweet)
- *Gaultheria procumbens* (Wintergreen)
- *Poplar spp.* (Poplar)
- *Salix spp.* (Willow)
- *Viburnum opulus* (Cramp bark)
- *Viburnum prunifolium* (Black Haw)



Salix spp. (Willow)



Saponins are found in many plants and gained their name because like soap, they form a lather when combined with water. Chemically they are based on a Steroid or Triterpene fat-soluble base joined to a water-soluble sugar molecule (their aglycone portion is referred to as the sapogenin), creating a detergent that results in the emulsification of fat-soluble molecules in the digestive tract of the body. It should be noted that both steroid & triterpene types are usually found existing together and especially in plant skins where they form a waxy protective coating, and it is presumed that they play a major part in a plants' active immune system.

Among the chemical properties of saponins, their polarity, hydrophobicity and nature of the reactive groups seem important determinants of their biological properties, and has also made them difficult compounds to both isolate and research. Properties of saponin containing herbs are many & varied and may include alterative, diuretic, expectorant, anti-catarhal, anti-inflammatory, antispasmodic, aphrodisiac, antioxidant, emmenagogue, cardiac stimulant, hormone modulating, hepatoprotective, and adrenal adaptogenic effects.

How Saponins Work

The chemical structure of steroidal saponins is similar to that of many of the body's endogenous hormones (e.g. estrogen and cortisol), and their marked hormonal activity was in fact the basis from which the contraceptive pill was first developed and currently many bioidentical hormones. Triterpenoid saponins have less hormonal activity, and often have expectorant effects and while aiding in absorption of nutrients. Some major actions of saponins in the body include:

- Adaptogen (or Adrenal tonic) & hormone modulating effects by mimicking endogenous hormones and specifically sparing cortisol
- Stimulating expectorant effect via activation of mucociliary escalator and mucous

membrane irritation

- Diuretic effect via local irritation of kidney epithelia
- Hypolipidemic effects through bile sequestration, thus binding with cholesterol and preventing its reabsorption.
- Anti-cancer effects through a variety of proposed mechanisms including antioxidant, direct and select cytotoxicity effects, immune-modulation, bile acid and neutral sterol metabolism, and regulation of cell proliferation.
- Hepatoprotective effect through Kupffer cell support

Safety Concerns & Contraindications

- May have an irritating effect on mucous membranes of the respiratory and digestive tract, potentially causing urticaria, sneezing, bloating, gastroenteritis, nausea, diarrhea, and vomiting.
- Have also been noted for their hemolytic properties as they can effectively "dissolve" the cell walls of red blood cells and disrupt them when taken intravenous or intramuscularly. When taken orally however they are comparatively harmless or they are not absorbed at all.

Herbal examples:

- *Aesculus hippocastanum* (Horsechestnut)
- *Dioscorea villosa* (Wild Yam)
- *Glycyrrhiza glabra* (Licorice)
- *Medicago sativa* (Alfalfa)
- *Panax ginseng* (Chinese Ginseng)



Dioscorea villosa
(Wild Yam)



Tannins are produced to a greater or lesser degree by all plants, with higher concentrations in those parts that are shed such as leaves, fruits & bark. Chemically tannins are polyphenolic compounds based on a benzene ring with a hydroxyl group attached. They are soluble in water, and will precipitate alkaloids, nitrogenous bases, and some glycosides.

There are two broad classes of tannins to be aware of, namely Hydrolyzable and Condensed (aka. proanthocyanidins) types which are elucidated below.

How Tannins Work

In general tannins are used to contract and “astringe” body tissues by binding with and precipitating proteins (hence their use to “tan” leather), thus rendering them resistant to proteolytic enzymes.

They are often used when there is a desire to:

- Dry up excessive watery or mucous secretions
- Stop bleeding (hemostatic)
- Protect & tighten body tissues (especially mucous membranes) both topically and internally

It should be noted much ingested tannin remains unabsorbed in the digestive tract, but some does reach body fluids as soluble tannate to be excreted by the kidneys. Tannins have also been found to inhibit enzymes such as 5-lipoxygenase & hyaluronidase, lending to their action as anti-inflammatories, antimicrobials & keratolytics.

1) Condensed Tannins (Proanthocyanidins) are flavonoids and anthocyanidin precursors and are especially prevalent in darkly pigmented fruits & foods.

When taken internally condensed tannins cause precipitation of the cells lining the gut, thus inhibiting cellular secretions and reducing the absorption of substances across the gut wall. This action also leads to reduced sensitivity of nerve endings in the gut, thus

reducing peristalsis and making tannins useful in the treatment of diarrhea, especially when due to an infectious cause, as the bacteria in the gut will also be precipitated.

Applied externally they are very useful in treating burns, as they precipitate protein of the exposed tissue to help form a scab. Some herbal examples include:

- *Camellia sinensis* (Green/Black Tea)
- *Rubus ideaeus* (Red Raspberry)
- *Salix spp.* (Willow)

2) Hydrolysable tannins (HTs) (or tri-hydroxybenzenes) are broken down readily by acid, alkali or certain enzymes to yield gallic or ellagic acid, and ultimately pyrogallol which is antiseptic, caustic and hepatotoxic. Thus, HTs **should be used with caution and if taken internally it should be used for the shortest time possible.** Some herbal examples include:

- *Aesculus hippocastanum* (Horsechestnut)
- *Arctostaphylos uva-ursi* (Bearberry)
- *Hamamelis virginianicus* (Witch Hazel)
- *Quercus sp.* (Oak)

Tannins & Tissue Specificity

It should also be noted that tannins demonstrate the amazing phenomenon of “tissue specificity”, whereby their astringent action may act locally, or at a distant site within the body. Such herbs with tissue specificity to various body systems may include:

Gastrointestinal Tract

- *Camellia sinensis* (Green/Black Tea)
- *Filipendula ulmaris* (Meadowsweet)
- *Geranium maculatum* (American Cranesbill)

Renal (Kidneys)

- *Arctostaphylos uva-ursi* (Bearberry)
- *Equisetum arvense* (Horsetail)

Pulmonary (Lungs)

- *Equisetum arvense* (Horsetail)

- *Plantago lanceolata/major* (Plantain)

Cardiovascular (veins & arteries)

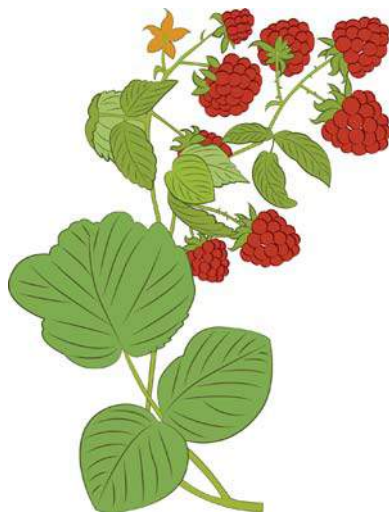
- *Achillea millefolium* leaf (Yarrow)
- *Aesculus hippocastanum* (Horsechestnut)
- *Vaccinium myrtillus* leaf (Bilberry)

Female Reproductive (uterus)

- *Capsella bursa-pastoris* (Shepard's Purse)
- *Rubus ideaus* (Red Raspberry)

Skin & Connective Tissues

- *Aesculus hippocastanum* (Horsechestnut)
- *Hamamelis virginicus* (Witch Hazel)



Rubus ideaus (Red Raspberry)

Safety Concerns & Contraindications

- The use of tannins may be inappropriate in cases of constipation, iron deficiency, and malnutrition, as they can reduce the absorption of nutrients & various medications with long-term use or when used simultaneously.
- Tannin-rich herbs should not be combined along with alkaloids in a formula as they will form a precipitate and potentially decrease its therapeutic potential.
- Some herbs rich in hydrolyzable tannins (e.g. Witch hazel) should be reserved for topical use only due to potential hepatotoxic effects.



Hamamelis virginicus (Witch Hazel)



Volatile oils (VO) are complex mixtures often of 100 or more compounds largely made up of mono & sesquiterpenes. They can vary widely chemically but are most often phenolic in nature and may found linked with resins and/or gums, hydrocarbons, alcohols, aldehydes, ketones, oxides, and esters.

Volatile oils “volatilize” into steam when combined with hot water, and are extracted from plants to produce the essential oils used in aromatherapy as they are generally responsible for the distinctive scent/odour of a plant as they evaporate. In general they are potent anti-microbials, anti-inflammatories, and in variety of ways will benefit central nervous system function. They are often identified by their pleasant aromatic quality, which lends to regular use in teas and culinary herbal pursuits.

How Volatile Oils Work

Therapeutically, volatile oils have many uses. When used topically they tend to cause vasodilation of the capillaries and mildly stimulate the tissues in which they come in contact with (e.g. rubefacients or counter-irritants). Internally, volatile oils are largely responsible for both the stimulating and relaxing effects of many nervine and carminative herbs, often affecting the respiratory, digestive, and circulatory systems in some beneficial way.

Safety Concerns & Contraindications

- Though generally very safe, internal use may cause an increase in salivation, perspiration, peristalsis, and/or stimulate the heart muscle to contract.
- Essential oils (concentrated VO extracts) should not be used internally (controversial) and are contraindicated in pregnancy. Use caution with external use as

may be caustic to sensitive skin.

Herbal Examples:

- *Allium sativum* (Garlic)
- *Humulus lupulus* (Hops)
- *Mentha piperita* (Peppermint)
- *Melissa officinalis* (Lemon balm)
- *Zingiber officinalis* (Ginger)



Mentha piperita (Peppermint)



Herbal pharmacy is both an art and a science. While the choice of herbs you will use is of course important, knowing how to prepare and administer them to patients is just as vital.

Various methods of extracting the medicinal properties have plants have been developed over the years, and current technological advancements have expanded options for clinicians in many ways.

Different herbal preparations will release different healing properties, and thus the effect of the plant itself. With our modern knowledge of pharmacology we can make conscious choices as to which process we use to release the biochemical constituents for healing.

However, we should not neglect the traditional forms of using herbs by our ancestors, which often involves **using the whole plant and not merely it's individual constituents.** It's important to remember that the medicinal property of any herb is not just the sum of the actions of the various chemicals present.

In the words of David Hoffman "There is a synergy at work that acts to create a therapeutic whole that is more than the sum of it's parts". If the method of preparation destroys or loses part of the whole, much of the plant's healing power can be lost.

Extraction is the procedure by which the soluble portion of a plant is separated from the inert matter. The major ways this is done is through solvents such as:

- **Water** which will extract only water-soluble constituents such as polysaccharides & polyphenolics (e.g. tannins, flavonoids & salicylates), and are used to make infusions & decoctions.
- **Alcohol** which will extract all fat-soluble constituents such as resin, saponins, oils & alkaloids, as well as the water soluble ones. The most commonly used solvent is vodka, but vinegar or other spirits can be used to make tinctures & macerations.

- **Fats & Oils** which will extract volatile oils, gums, resins, waxes & alkaloids, and are used to make infused oils, creams & salves, suppositories & pessaries.
- **Sugar, Honey & Glycerine** will have solvent properties between water & alcohol, and act as valuable preservatives when making syrups, oxymels & elixirs.

Many preparations may be for either **internal or external use** and the following forms will be explored in more detail in this chapter:

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Capsules are dry herbal preparations can be taken as pills/capsules or tablets.

Dry herbs are first ground to a fine powder then often used to fill gelatin capsules (made from either animal or vegetable by-products). The standard size capsule is called "00" and provides approximately the equivalent dose of active material as 5 ml of tincture or 1 cup of infusion or decoction. The general dosage of capsules is 1 x "00" three times daily.

Advantages:

- No concerns of palatability & poor taste leading to non-compliance. However, tasting the herbs (even though unpleasant) is sometimes necessary in order for them to fully express their actions!
- Inexpensive to produce
- Convenient for the patient

Disadvantages:

- The plant's constituents are not always as readily available for easy absorption. In a process like infusion, heat & water help to break down the plant's cell walls & dissolve the constituents, something that is not always guaranteed during the digestive process of the stomach & small intestine, especially in inflammatory bowel conditions. When the constituents are already dissolved in a liquid form, they are considered to be more bioavailable, and can begin their actions in the body sooner.
- There is no way to preserve the herbs, which may oxidize & lose their potency (or else preservatives may be added).
- It is difficult to assess quality & potency through organoleptic inspection of capsules & tablets.
- Gelatin capsules are often made from animal by-products.

How to make Herbal Capsules:

1. Acquire gelatin capsules in the size desired (a capsule sized 00 with hold about 0.5 g of herb)
2. Powder herbs as finely as possible, either in a processor or with a mortar & pestle
3. Place the powdered herbs in a flat dish and take the halves of the capsules apart
4. Move the halves of the capsules through the powder, filling them in the process
5. Push the halves together

Note: In pharmaceutical supply stores it is possible to buy small plastic machines which greatly speed up the process of filling capsules and which ensure that each capsule contains the same amount of herb as the next.



Castor Oil Pack

Castor oils packs (COPs) are applied topically over a variety of areas and left in place to do their work.

The necessity of the patient to stop moving around for the duration of application can be part of the healing process. They are one of the simplest and most effective means of using herbal oil topically. The oil need not be infused with another herb (but can be), and is absorbed into the skin and circulation to do its work.



A castor oil pack treatment provides a soothing, cleansing, and relaxing treatment that promotes immune function via a gentle lymphatic stimulation wherever it is applied, tonifying internal organs and enhancing the flow and elimination processes of the blood and lymphatics.

They are often used over:

- **The abdomen** for pelvic congestion of any kind (e.g. fibroids, dysmenorrhea, constipation)
- **The liver** to help with detoxification
- **Any area of muscle soreness**, spasm, or inflammation
- **Any area of tissue congestion** to dissolve swollen masses of various types (e.g. fibroids)

How to do a Castor Oil Pack:

1. Fold cotton or wool cloth so that it is an appropriate size to cover recommended body area.
2. Pour oil onto area so that it is well moistened, but not dripping and cover with cloth.
3. Place hot water bottle over the cloth (optional: cover with the towel to hold everything in place and to help insulate the heat)
4. Relax with the castor oil pack in place for 30-40 minutes (take this time to relax fully)
5. Remove the pack and, if necessary, cleanse the area.

NOTE: Castor oil should not be taken internally, applied to broken skin or used over the abdomen during pregnancy or menstruation unless prescribed by physician. Also note that castor oil can stain clothing and sheets.

Creams (Lotions)

A Cream or Lotion is an emulsion oil & water, with the medicinal phases being in either or both bases. They are usually miscible with the secretions of the skin and therefore the active portion is absorbed by the body as well as working on the surface, often having **emollient & vulnerary** effects.

Making your own creams (for cosmetic or medicinal purposes) is a challenge well worth mastering, with an endless variety of ingredients to choose from.

How to make a Cream/Lotion:

1. Make (~1/2 cup) of infusion or decoction with choice of herbs
2. Heat (~4 T) herbal infused oil on low and slowly melt in (~2 T) beeswax
3. Cool both down and pour into blender
4. Whip until thick and creamy
5. Cool completely in fridge, then blend again
6. Dispense into jars and refrigerate





Decoctions

Are water-based extractions that are specifically used **for hard & woody parts of plants such as roots, rhizomes, wood, bark, nuts & seeds**. These plant parts have tougher cell walls that require a stronger extraction to ensure that their active (water soluble) constituents are effectively extracted.

The process of "Decocting" involves bringing herbs & water to a boil, then reducing to a simmer with a lid on for 20 minutes up to several hours or even overnight.

How to make a Decoction

1. Add 1 tbsp of herb per cup of water to saucepan (If large quantities are made, use 30 g herbs for each 1/2 L of water)
2. Cover with lid, bring to a boil and simmer for at least 15-20 min (can do longer)
3. Strain while hot & enjoy.

Notes on making Decoctions:

- Fresh roots should be doubled in quantity.
- If preparing a blend requiring some plant parts be decocted & some infused, first make your decoction and use it as the liquid to pour over herbs to be infused.
- Ideally your saucepan should be glass, ceramic or earthenware (not aluminum or other metals)

Elixirs

Are often **aromatic & rejuvenating tonics** that have a quite sweet taste, as they're usually made with a combination of sugar (honey or cut-up fruit) & distilled spirits (often brandy).

Formulas are made to taste and will differ from other preparations in that usually the herbs are left in the mixture instead of strained out.

How to make an Elixir:

1. Rinse herbs thoroughly & place in jar
2. Fill with brandy or other distilled liquor
3. Let jar sit in cool dark place for 1 month (agitate if you wish)
4. Take 1 tsp a day as a general tonic

Emulsions

Are mixtures of normally immiscible fluids (e.g. oil & water) using the help of an emulsifying agent (usually acacia gum or coconut oil) which reduces the surface tension between water & oil and allows for greater coalescence of fluids, increasing the surface charge of the oil to better attract water to it.

The most common use of an emulsion is to administer essential or volatile oils internally.

How to make an Emulsion

1. Place 1 part emulsifier to 4 parts oil in a bone dry mortar and stir with pestle till thoroughly mixed
2. Add 2 parts water and stir in one direction only until the mixture reaches desired certain consistency
3. Add essential oil if desired

Note: This is called a primary emulsion and much water can be added to it to dilute it from its original strength for internal use. Up to 1L of water can be added and taken in small doses as needed.

Fomentation (compress)

A fomentation is a topical preparation that allows a herbs active ingredients to be absorbed directly through the skin.

It is prepared by first making a strong infusion or decoction and saturating a cloth with the liquid to be applied wherever is desired.



They are primarily used to:

- Stimulate local circulation (Rubefacient effect) to soothe & warm stiff muscles & joints
- Reduce pain, congestion & edema in acute inflammations
- Draw out abscesses

How to make a Fomentation

1. Decoct or infuse herbs in water for a minimum of 15 minutes, then strain and let cool slightly
2. Saturate clean cloth in liquid for 10 minutes
3. Wring out excess liquid and apply to desired area for at least 30 minutes and/or up to overnight

Glycerites

Glycerine or glycerol is a colorless, odorless, viscous liquid with a very sweet taste. Vegetable glycerine is usually made from coconut oil, however it is always prudent to inquire with your supplier if you have concerns about sourcing.

Glycerine can be used as solvent to make or add to tinctures (having solvent abilities somewhere between alcohol & water), as the medicinal constituents in suspension can ameliorate the harsh taste or effects of tannins. It can also be used to preserve a fresh expressed plant juice in the proportion 1:1 (i.e.: 50% glycerine).

They are commonly used for children because of their sweet taste, and can be added to poultices & suppositories for their emollient qualities.

How to make a Glycerite:

1. Place 50 g finely chopped, ground or powdered herb in jar
2. Add 500 ml glycerin

3. Add 300 ml distilled water
4. Cap jar tightly and agitate daily for 14 days
5. Strain, press & store

Infusion (tea)

Traditionally considered as a cup of tea, infusions are water-based extractions that extract water-soluble constituents and are **prepared from more delicate plant parts such as leaves, flowers or green stems.**

Infusions may be the simplest & most common method of herbal preparation. They may be drunk hot or cold, and boiling water is not always necessary or desirable depending on the herb being use.

Apart from their medicinal use, the act of preparing herbal infusions make a wonderful addition to one's lifestyle as a whole, as they have the benefit of being easy & enjoyable to prepare.

How to make an Infusion:

1. Add 1 tsp-tbsp dried herb to cup
2. Pour 1 cup of nearly boiling over herb
3. Cover cup with lid and leave to steep for 10-15 minutes
4. Strain & enjoy



**Notes on making infusions:**

- The difference between a medicinal tea and a pleasure tea has to do with quantity of herb used & a more lengthy steeping time. Generally, the stronger the infusion, the stronger it's medicinal potency.
- Can be sweetened to taste with a bit of honey or juice.
- It's best to prepare infusions as needed since they have the potential to oxidize & spoil rather quickly. They will usually keep fresh for up to 24 hours, however if there is any sign of fermentation or spoiling it should be discarded.
- Up to 30 g of dried herb may be used in 500 ml of water and steeping time can last up to 8 hours (ideally in the fridge)
- Cold water extracts are often used to help preserve constituents such as mucilage and will create a milder medicine
- Fresh herbs can be tripled in quantity.
- Avoid steeping in aluminum pots. Stainless steel, ceramic, clay, porcelain or glass are ideal.
- Herbs rich in volatile oils should not be subjected to strong or lengthy heat
- Infusions can be gently reheated before consumption (Microwaves are not recommended)
- NOTE: Sun & moon teas are delightful ways to encourage patients to consume their teas even in the hot of summer. These can be made by placing a clear glass jar of cold water & herb, covered, in a spot that will receive at least several hours of sun or moonlight. The taste will be pleasantly different – milder, but more fragrant.

Infused Oil

Can be used in various ways in herbal pharmacy both topically & internally.

Various herbal preparations require the use of a carrier oil, and infusing our oils provides added therapeutic benefits, whether it's to a salve or a salad dressing.

When choosing an oil it's important to consider whether the oil will be used topically or internally and if heat will be required in it's preparation (Note that the less saturated the fat or oil, the more likely it is to oxidize). Examples of oils that can be infused with herbs include:

- Olive
- Apricot kernel
- Avocado
- Almond
- Coconut
- Castor

Some examples of medicinally infused oils include:

- *Calendula officinalis* (Marigold) applied to eczema, psoriasis or diaper rash
- *Hypericum perforatum* (St. John's Wort) applied to sunburn or herpes outbreaks
- *Verbascum thapsus* (Mullein) applied to eardrum in otitis media
- *Symphytum officinalis* (Comfrey) used as the base for a healing salve
- *Thymus vulgaris* (Thyme) as a salad dressing or chest rub.

How to make an Infused Oil

1. Sterilize a jar with boiling water & ensure it is completely dry & free of moisture
2. Loosely pack jar with fresh or dried herbs
3. Pour oil to the top of the jar & cover with cheesecloth & elastic band to allow moisture to escape
4. Let stand for 4-6 weeks in a dark place & agitate daily



5. Strain off into another sterilized jar and use as desired.

Note: For a faster method, heat herbs & oil over low heat or in a double boiler or crockpot on lowest setting for at least 3 hours and up to overnight.

Liniment

Are liquids intended for external use only, having **anodyne and/or rubefacient effects** useful for a variety of rheumatic complaints such as muscle & joint pain.

They are made much like a tincture, using a medium such as alcohol or vinegar that is quickly absorbed into the skin, carrying the medicine into the tissues while the liquid evaporates off.

How to make a Liniment:

1. A simple liniment can be made by mixing 2 parts of any tincture to 1 part isopropyl alcohol or vinegar.
2. To enhance rubefacient effects, apply using friction over the affected area.

Note: Do not apply over open or acutely inflamed skin & wounds.

Ointment (Salve)

Are topical semi-solid preparations containing the plants medicinal properties in a non-aqueous base (oil & beeswax). They are not usually miscible with skin secretions and therefore are protective primarily on the surface, however the oil will penetrate the skin while the beeswax provides an occlusive barrier layer.

They are often used for their **vulnerary & emollient** effects, which are healing to dry or

chapped lips & skin, and will help heal minor cuts & abrasions.

How to make an Ointment or Salve:

1. Place 500 ml of herbal infused oil in a double boiler
2. Add 60 g of grated beeswax
3. Once beeswax has melted pour into directly into dispensing jars
4. Salve will harden as it cools (do not seal jars)

Poultice

Are topical applications that use dried or moistened herbs applied directly to the skin.

They are frequently used for their **rubefacient, vulnerary, antimicrobial, and/or drawing effects** (e.g. to pull out infected matter or foreign bodies).

They can be applied hot or cold, and technically some saliva mixed with crushed herbal matter will do the trick for a poultice in a pinch!

How to make a Poultice

1. Make a strong infusion, decoction or paste using desired herb
2. Strain liquid if required and apply the herbal matter directly over the affected area (the herbs can be placed in a muslin bag or wrapped in piece of cheesecloth)

Note: A poultice can be left in place for several hours depending on the individual





circumstances, but should be monitored & removed if the patient expresses any feelings of discomfort.

Suppository & Pessaries

Are external preparations made in essentially the same way, using a lipid base (often cocoa butter and/or glycerine) with the addition of herbs (extracts or whole herb) varying on the condition being treated. In a sense they are taken internally in as much as they are inserted into the body such that:

- **Suppositories are inserted rectally** (e.g. for hemorrhoids)
- **Pessaries are inserted vaginally** (e.g. for candidiasis).

Of major importance in their preparation is the composition of a good base, which ideally should:

- Remain solid at room temperature
- Melt at normal body temperature
- Be a non-irritant to the body
- Be stable on storage and when combined with the herbal materials
- Be suitable for fat and/or water soluble constituents depending on desired therapeutic effects

How to make a Suppository or Pessary:

1. Melt base over low heat and add herbs, stirring often (approximately 3 parts base to 1 part herb)
2. Pour into prepared molds and put in freezer to harden
3. Remove & partially thaw (for about ½ hour) before use

Note: While it is possible to form these by hand, it is faster and neater to use reusable molds, which also makes packaging & storage easier. Before filling, the mold should be lubricated with almond oil then inverted to drain.

Syrups

Are medicated solutions that use either honey or sugar (and sometimes other aqueous liquids) as a solvent & preservative. They can be combined alongside almost any other herbal preparations.

They are useful for carrying & improving the taste of other medicinal agents (are more palatable due to their sweetness), and can provide nutritional value as a carbohydrate source.

How to Make a Syrup

1. Place 2 parts sugar to 1 part herbal infusion or decoction into a sterilized mason jar
2. Securely cap bottle (avoids loss of any volatile principles throughout the preparation process)
3. Place in water bath until sugar is completely dissolved.





Tinctures

Are alcohol-based preparations which acts as a better solvent & preservative than water, and can be made using either fresh or dried herb and using any plant of the plant desired.

The most common solvent used is vodka (however vinegar or glycerine can also be used), as it allows the preparation to have a longer shelf life and will extract both fat & water soluble constituents.

NOTE: Certain types of alcohol are not meant for human consumption (such as rubbing alcohol). Vinegars will not have as long a shelf-life (longer if refrigerated) and may not be strong enough to extract non-polar constituents such as volatile oils & resins.

Tinctures are much stronger, volume for volume than infusions & decoctions therefore the dosage to be take is much smaller depending on the herb.

They can be made either by **maceration** or **percolation** (technically referred to as a fluid extract) methods and used in a variety of ways, taken alone or mixed with water, added to a bath or tea, mixed with an oil or ointment, or added to lozenges & suppositories.

The quantity of alcohol in a tincture is written as a percentage (e.g. 25% or 60%), and should always be a minimum of 25% to ensure sterility. A higher percentage such as 90% can be achieved through several grain alcohols and will extract the resins in plants such as *Zingiber off.* & *Calendula off.*, however most extracts will be suitable in the 40-60% range.

EtoH % Required by Constituent

Mucilage - generally insoluble in alcohol. If you add a mucilaginous tincture to one with a high level of alcohol the mucilage may precipitate out and form a slug.

Bitters - 25-40% - most bitter compounds will extract

Volatile Oils - 25-40%+ - soluble in alcohol and fixed oils, slightly soluble in water (steam distillation). Solubility is increased with heat.

Glycosides - 25-40% - vary in solubility. Most are soluble in water & alcohol

Tannins - 25-40% - soluble in water, also in alcohol & glycerine. Including glycerine will stabilize the tannins in the tincture so they will not precipitate out taking any alkaloids with them

Saponins - 45-60% - partially soluble in water and more so in dilute alcohol

Alkaloids - 40-60% - Are generally poorly soluble in water and are better extracted in alcohol

Resins - 90%+ - soluble in alcohol & insoluble in water



Calendula officinalis
(Marigold)



Advantages of Tinctures

- More concentrated dosing
- More constituents efficiently extracted with minimal processing
- More lengthy preservation of extract
- More readily absorbed (bioavailable)
- Convenience & versatility

Disadvantages of Tinctures

- Contain alcohol. A problem for certain people for health or religious reasons. There can be sensitivities and it is a consideration in pregnancy and liver pancreatic or other diseases.
- Compliance issues due to palatability.

How to Make a Tincture (By Maceration):

When making a tincture the herbal matter is referred to as the **marc** and the combination of water and/or alcohol is called the **menstruum**.

Depending on the herb, they are made according to a specific ratio of marc (weight of herb in grams) to menstruum (volume of liquid in mls). The most effective proportions of marc to menstruum for each herb are written as ratio strengths such as (1:2), (1:4), (1:10) etc., and are found within each individual herbs monograph. These ratio strengths are based upon the desired constituents to be extracted.

NOTE: A tincture made to a (1:1) strength is considered a fluid or liquid extract.

1. Coarsely grind or powder the herb, allowing for greater surface area & optimal coverage by the menstruum
2. Weigh out herb and place in glass jar
3. Calculate the total volume of menstruum required to make your desired ratio strength based on your weight of herb

4. Calculate the percentage of alcohol required in your menstruum for the efficient extraction & preservation
5. Add alcohol to jar along with remaining required menstruum volume, ensuring herbs are completely covered, and seal tightly.
6. Label with the date, name of the herb, w/v ratio, solvent(s) used and their percentages using an indelible marker.
7. Agitate jar 1-2 times daily for at least 14 days.
8. Strain by pressing or squeezing the marc to filter off your liquid.
9. Store in airtight dark glass in a moderately cool place

Notes on Making Tinctures:

- When tinctures are prepared professionally, specific water/alcohol proportions are required, however the **folk method** of tincture making requires less calculations and is still incredibly effective, especially for at home use. This can be accomplished by roughly filling a jar 1/2 full with herb, filling it to the top with vodka, and processing the preparation as described above.
- It is best to use an alcohol such as vodka of at least 40-90% (80-180 proof)
- In tincture form plants that are high in alkaloids and/or tannins should not be mixed, as tannins generally bind with alkaloids to form insoluble compounds, rendering your medicine rather inert.



Vinegar & Oxymels

Depending on the kind, vinegar is about 4% acetic acid, and can act as a solvent to extract water soluble & some fat-soluble plant constituents for both internal & topical applications.

When taken internally vinegars (especially unpasteurized apple cider vinegar) are often used to promote digestion & support liver health, and as acetic acid is primarily excreted via the lungs, kidney & skin, these preparations will often act as alteratives, having mild expectorant, diuretic & diaphoretic effects.

A vinegar extract can be useful if you do not want to give any alcohol to the patient, however, it will not keep as long as an alcoholic tincture (about 3 months), and will slightly less medicinally potent. Also, vinegar is sour! A disadvantage for some can be the taste, and so honey may be added, making an Oxymel (a preparation using both vinegar & honey).

How to Make a Herbal Vinegar:

1. Fill a glass sealable jar roughly 1/2 way with desired herbs
2. Add enough vinegar to cover herbs completely and seal tightly
3. Label with the date & name of the herbs used
4. Agitate jar 1-2 times daily for at least 14 days.
5. Strain by pressing or squeezing the marc to filter off your liquid.
6. Store in airtight dark glass in a moderately cool place
7. **To make an Oxymel:** add honey to vinegar to taste

Herbal Wine

Herbal wines are a traditional and pleasant way to ingest herbal medicines. They will extract both water & fat soluble constituents in moderate amounts. Their preservative effect is not as lasting as the distilled alcohols, so refrigeration is necessary.

How to make a Herbal Wine:

1. Combine herbs & wine in a jar & screw lid on tightly
2. Agitate daily for 14 days
3. Strain herbs & bottle
4. Store in fridge & use within 1 week

Sample herbal infused wine recipe

Honeysuckle, Yarrow & Boneset Infused Wine

- Dry white wine (Pinot Gris / Grigio)
- 1 Tablespoon organic honeysuckle flowers, dried
- 1 Tablespoon organic yarrow leaf & flowers, dried
- 1 Tablespoon organic boneset, dried
- 1 teaspoon organic blue vervain, dried
- Best served before a meal to stimulate appetite



Eupatorium perfoliatum
(Boneset)





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A



P Aerial (leaf & flower)

Volatile oil (Sesquiterpene lactones)

C Flavonoids

Tannins

Anti-inflammatory

A Astringent

Diaphoretic

Upper respiratory tract infection with fever

I Dysmenorrhea and/or Menorrhagia

Nosebleeds (bleeding of mucous mem.)

F Asteraceae

Constituents:

Flower:

- Volatile oil (borneol, camphor, thujone, chamazulene, azulene, linalool, limonene, cineole, & sesquiterpene lactones)

Leaf:

- Tannins (condensed & hydrolyzable)
- Flavonoids (apigenin, luteolin, rutin)
- Alkaloids (achilletin, betonicine, stachydrine & trigonelline)
- Acids (amino, ascorbic, caffeic, folic, salicylic, succinic)
- Cyanogenic compounds
- Coumarins & furanocoumarins
- Bitter principle (achillein)

Medicinal Actions:

- Anti-hemorrhagic (Hemostatic)
- Anti-inflammatory
- Antimicrobial
- Astringent
- Bitter tonic
- Carminative & Antispasmodic
- Diaphoretic
- Emmenagogue
- Febrifuge
- Alterative
- Hypotensive
- Vulnerary

Medicinal uses:

- **Flowers** are one of the best diaphoretic herbs and is a standard remedy for **aiding the body to deal with fevers**. As peripheral circulatory stimulant. Is both a **relaxant and tonifying agent for the smooth muscle of the pelvic viscera**
- **Leaf** is used externally and will **aid in the healing** of wounds. It is astringent and used as a hemostatic in a variety of **bleeding conditions associated with mucous membranes** (wounds/ulcers)

Pharmacology:

Flowers:

- **Volatile oils** (including thujone) are anti-inflammatory, antimicrobial & cytotoxic
- **Thujone** is present in low amounts, however in high doses is toxic to the nervous system and an abortifacient. Low doses are anti-fungal, anti-microbial, emmenagogue and immuno-stimulant

Leaf:

- Tannins are astringent & anti-hemorrhagic.
- Flavonoids are antispasmodic & anti-inflammatory
- Alkaloids **betonicine, stachydrine, trigonelline** are anti-pyretic & hypotensive
- Alkaloid **achilletin** soothes the digestive system by relieving muscle spasms in the intestines, promotes the flow of digestive bile, fights bacterial invasion, and firms and tightens tissues
- **Achillein** (a bitter glycoside) is a choleric & digestive stimulant

Pharmacy:

- Infusion: 1-2 tsp/cup, infuse 15 min, TID or hourly in fevers
- Tincture: (1:5, 25%), 2-4 ml TID, (1:2, 40%), 2-6 ml QD, 40 ml weekly max.

- Dried herb: 2-4 g, TID

Toxicity:

- Volatile oil contains **thujone** which is a neurotoxic compound. Use with caution.
- High doses may cause headaches, photosensitivity, and dermatitis.

Contraindications:

- Allergy to Asteraceae family
- Pregnancy as it has a mild uterine stimulant effect (emmenagogue & abortifacient)
- Long-term use (months) may lead to photosensitivity and sensitive individuals may develop a rash

Interactions:

- Increases gut motility, thus may theoretically decrease absorption of drugs if taken simultaneously

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The name *Achillea* comes from Achilles, the great warrior & *millefolium* means "thousand-leaved". In ancient times it was called "Soldier's woundwort", having affinity to cuts & bruises of violent origin it is considered "the wounded warrior remedy". According to Matthew Wood it is also a remedy for "the wounded healer", good for people who are too delicate or susceptible to their environment.

A



Constituents:

- Terpenoid alkaloids (aconitine, aconine, hypaconitine, neopelline, picraconitine, napelline, benzoylaconine, traces of ephedrine and sparteine)
- Acids: aconitic, itaconic
- Sugars & Starch

Medicinal Actions:

- Nervine Sedative
- Anodyne/Analgesic
- Anti-neuralgic
- Anti-rheumatic

P Root

Terpenoid alkaloids (aconitine)
C Phenolic acids
Sugars & starch

Anodyne/Analgesic
A Anti-neuralgic
Anti-rheumatic

Neuralgias (trigeminal, herpes & sciatica)
I Rheumatic pains
Ovarian cysts

F *Ranunculaceae*

Medicinal uses:

- Is considered to be a powerful poison **and is NOT TO BE USED INTERNALLY.**
- Topical application will cause localized anodyne and anti-inflammatory effects in cases neuralgia, especially trigeminal neuralgia, otitis, herpes zoster, and other nerve related pain (e.g sciatica)

Pharmacology:

- **Terpenoid alkaloids (aconitine)** reduce permeability of nerve cells to sodium, thereby reducing ability to transmit nerve impulses thus acting as a sedative and painkiller.

Pharmacy:

- Topical use **ONLY**
- Liniment: 1:10 tincture diluted in 1:9 parts witch hazel applied as needed

Toxicity:

- VERY TOXIC PLANT. Overdose is potentially lethal.
- Toxic effects may be seen with greater than 10 drops of the tincture. Fatal doses are: 1 gm of plant (3-6 mg aconitine), 5 ml of tincture, 2 mg of aconitine.
- Toxicity symptoms are: Nausea and vomiting, tingling or burning followed by numbness of the mouth, throat, and hands; dizziness, restlessness, loss of speech control; intense headache; pinpoint pupils, blurred vision; slow and weak pulse; hypotension; irregular heartbeat and breathing; chest pain; ventricular fibrillation in about 2 hours (1-6 hours); sweating and hypothermia; patient is cold and cannot stand; face is pale, extreme anxiety; diarrhea, muscular weakness, convulsion and death due to respiratory failure.

According to Felter: "Aconite is an energetic, narcotic poison in improper doses, occasioning symptoms of gastric irritation, with great depression of nervous energy and brain". Herbalist Michael Moore describes using Aconite in the treatment of the mumps virus, using: as a topical lotion of 3 parts Echinacea to 1 part Aconitum.

Contraindications: INTERNAL USE

Interactions: None known

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A

P Root & Rhizome

C Triterpene glycosides & Saponins
Isoflavones (formononetin)
Isoferulic acid

A Uterine & Female Reproductive tonic
Anti-rheumatic
Antispasmodic

I PMS (eg. Dysmenorrhea)
Menopausal symptoms
Muscle cramps & spasms

F Ranunculaceae

Constituents:

- Triterpene glycosides & Saponins (actein, cimifugoside, cimigenol & cimicifugin)
- Isoflavones (formononetin)
- Isoferulic acid
- Volatile oil
- Tannin
- Alkaloids
- Salicylates
- Resin
- Flavonoids

Medicinal Actions:

- Anti-rheumatic
- Antispasmodic
- Diuretic
- Emmenagogue

- Phytoestrogenic
- Sedative
- Uterine tonic

Medicinal uses:

- Affinity to musculoskeletal, respiratory & female reproductive systems.
- Anti-spasmodic & analgesic actions are useful for treating PMS including dysmenorrhea and uterine fibroids.
- Has been researched and utilized extensively in **the management of perimenopausal & menopausal symptoms**, including the cardinal vasomotor climacteric symptoms of hot flashes & night sweats, and to inhibit the development of osteoporosis.
- Documented estrogenic effects have been found to suppress hot flashes and lower LH, but not FSH levels. A reduction in LH may cause a resulting reduction in progesterone.

Pharmacology:

- Main effects are likely attributable to the synergism of the **triterpenes & flavone derivatives**. These compounds are believed to affect the hypothalamus and vasomotor centers resulting in decreased LH secretion and relief of associated menopausal symptoms.
- **Isoflavones** have show phytoestrogenic effects and suppression of LH release in menopausal women. The isoflavone formononetin has been suggested to be an estradiol competitive antagonist by binding to estrogen receptors but not activating them.
- Cimicifugoside inhibits lymphocyte blastogenesis, has an immunosuppressive activity on B cells function, and may inhibit T cell function at higher doses.
- Note: Some studies indicate extracts do not bind to estrogen receptors and was thus devoid of estrogenic effects despite significant changes in the levels of other gynecologically relevant hormones. Effective compounds were concluded most likely to be neurotransmitter-mimetic in nature: dopaminergic, noradrenergic, serotonergic and GABAergic

Pharmacy:

- Decoction: 2-3 g/cup water, simmer 20 min, 1 cup TID
- Tincture (1:2, 40%), 2 ml TID. 40 ml weekly max.
- Capsules: 40-200 mg QD.

Toxicity: May cause adverse effects (sedation, hypotension, nausea, dizziness), frontal headaches are not uncommon.

Contraindications: Early pregnancy.

Interactions:

- Potential additive effects with anesthetics, anti-hypertensives or sedatives.

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A



Constituents:

- Coumarins (esculin, aesculetin) & coumarin glycoside (aesculin)
- Saponins (aescin = escin)
- Flavonoids
- Tannins (condensed & hydrolyzable)
- Fatty acids
- Sterols
- Allantoin

Medicinal Actions:

- Anti-inflammatory
- Anti-edematous
- Astringent
- Bitter
- Diuretic
- Venotonic & Vascular protective

P Seed/Fruit & Bark

C Saponins (aescin/escin)
Coumarins
Tannins (condensed & hydrolyzable)

A Venotonic & Vascular protective
Astringent (anti-edema)
Anti-inflammatory

I Peripheral Vascular disease
Varicose veins & Hemorrhoids
Swelling, bruises, and/or fractures

F *Hippocastanaceae*

Medicinal uses:

- Is a **trophorestorative & antioxidant for venous tissue**.
- Stimulates contraction of venous valves, increases venous pressure, stimulates lymphatic flow, improves and tones connective tissue & circulation.
- Will remove venous congestion and is indicated in acute thrombophlebitis, varicose veins, swelling with bruises, fracture, brain trauma & stroke.
- External applications are used in the forms of ointments and gels for edema from sports injuries, hemorrhoids, rheumatism, backaches, neuralgia and restless leg syndrome.

NOTE: Though the bark is astringent, the seed is used more often due to both saponin & tannin content

Pharmacology:

- **Aescin/escin** is anti-inflammatory and a venous tonic. It inhibits hylauronidase, reduces fluid leakage and strengthens capillary cell membranes, thereby controlling bruising & edema.
- Aescin is a registered drug in Germany and the active ingredient in a number of preparations used either topically or orally for the treatment of peripheral vascular diseases, in particular those related to capillary permeability and resistance such as hemorrhoid & varicostities.
- Flavonoids are anti-inflammatory and help strengthen capillaries.
- **Aesculin** (coumarin glycoside) found on the seeds needs to be removed from extracts as is toxic.

Pharmacy:

- Infusion: 2 tsp/cup water, infuse 10-15 min TID.
- Tincture: (1:2, 40%), 2-5 ml QD. (1:5, 40%), 1-4 ml TID, 80 ml weekly max.
- Topical: wash, oil, cream, lotion, or poultice.
- Note: **Short term or pulse dosing required**, 6 weeks on 4 weeks off, due to hydrolyzable tannins.

Toxicity:

- High doses internally can cause nausea, GIT irritation and reflux.
- Aescin has hemolytic properties, though is minimal within therapeutic doses. Past reports of acute renal failure from injection of b-aescin have revealed to be due to dosages much greater than manufacturer recommendations being used in children.

Contraindications:

- Known allergy, high or long-term doses, children under 4, anticoagulant therapy (theoretical), acute kidney inflammation, gastric ulcer, topical on broken or ulcerated skin (due to irritant effects of saponins), IM injection of aescin.
- Use caution in bleeding disorders due to inhibition of platelet lipoxygenase and platelet aggregation activity

Interactions:

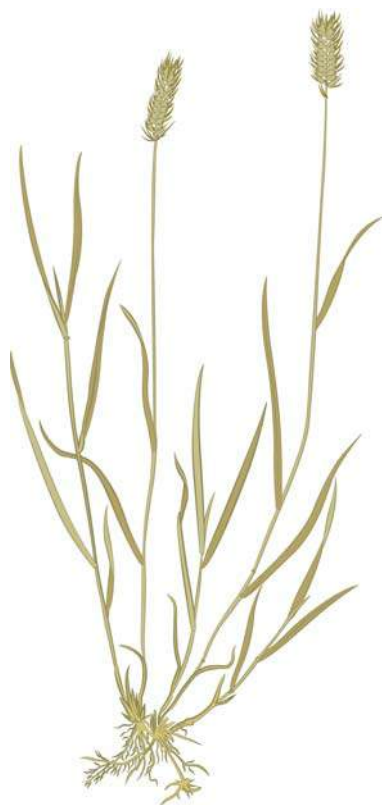
- May interfere with the binding of drugs to plasma proteins.
- Aspirin or anticoagulants due to antiplatelet activity (theoretical)
- With cardiac glycosides & phenopyrazine may cause calf spasm, fatigue, flushing, and pseudolupus.

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
3. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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A



Constituents:

- Saponins
- Carbohydrates (Triticin, Inositol, Mannitol) & Mucilage
- Beta carotene
- Minerals (Iron & Potassium)
- Silicic acid & silicates

Medicinal Actions:

- Anti-microbial
- Diuretic
- Demulcent & Vulnerary
- Expectorant

P Rhizome

C Saponins
Mucilage & Carbohydrates
Minerals (Iron, Potassium, Silicic acid)

A Diuretic
Demulcent
Expectorant

I Urinary tract infections (symptomatically)
Kidney stones
Dry, unproductive cough

F *Poaceae*

Medicinal uses:

- Used in urinary infections such as **cystitis, urethritis and prostatitis** and also as a broadly applicable and safe diuretic in most conditions where this action is needed. Is specifically indicated for intense burning sensation and constant desire to urinate.
- Its demulcent properties soothe irritation & inflammation and can be used for easing the passage of kidney stones.
- As a soothing expectorant will reduce the irritation of dry, non-productive coughs.

Pharmacology:

- **Saponin & potassium** content both theorized to induce urinary flow by increasing the osmotic pressure within the glomerular tubules.
- Small sugars (e.g CHOs) present are poorly absorbed from the gut and may also account for gentle diuretic effects.

- **Silicic acid** has the ability to reduce uptake and cause renal excretion of aluminum in the body, as well as stimulate collagen type 1 synthesis.

Pharmacy:

- Decoction: 1 tbsp/cup, simmer 5 min, 1-2 cups TID.
- Tincture: (1:1, 25%), 3-6 ml QD, 40 ml weekly max.
- Dried rhizome: 4-8 g TID.

Toxicity:

- Generally well tolerated and no side effects have been reported.
- Oral administration of infusion has demonstrated a decrease in citraturia when combined with a high carbohydrate diet, and an increase in calcuria and decrease in magnesiuria when combined with a standard diet.

Contraindications:

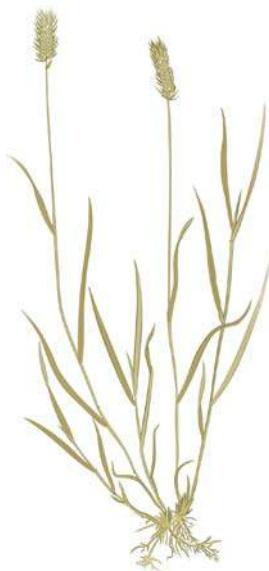
- Edema from heart failure or kidney insufficiency due to inadequate excretion salt from diuretic effects (theoretical).

Interactions:

- Theoretical hypokalemia with long term use with K⁺ depleting diuretics.

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Cricollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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Constituents:

- Sulfur containing compounds: sulfoxides (ajoene, alliin, allicin) & thiocyanates
- Volatile oil (Enzymes: allinase)
- Nutrients: Carbohydrates, lipids & amino acids

Medicinal Actions:

- Anti-histamine
- Anti-microbial
- Antispasmodic & Carminative
- Anti-thrombotic (Anti-platelet aggregant)
- Cardioprotective
- Diaphoretic

P
C
A
I
F

- Bulb
- Glucosinolates & Sulfur-containing compounds (alliin, allicin & thiocyanates)
- Volatile oil (allinase)
- Antimicrobial
- Hypolipidemic
- Hypotensive
- Treatment/Prevention of digestive and/or respiratory tract infections
- Hypertension & Dyslipidemia
- Liliaceae*

- Expectorant
- Hypoglycemic
- Hypolipidemic
- Hypotensive
- Rubefacient

Medicinal uses:

- Effective **anti-microbial** acting on bacteria, viruses, fungi, and alimentary parasites. Can be used topically or internally against fungal infections (eg. Candida), warts, vaginitis, and otitis media.
- Used in **respiratory infections** such as chronic bronchitis, catarrh, recurrent colds and influenza.
- In general it may be used as a preventative for most infectious conditions, digestive as well as respiratory.

- **Reduces blood pressure & blood cholesterol levels** when taken over a period of time.
- Hepatoprotective from Acetaminophen possibly due to s-allyl components and prevention of glutathione depletion & cardioprotective especially in combination with *Crataegus sp.*

Pharmacology:

- **VO & sulfur containing compounds** (alliin & allicin) are largely responsible for effects.
- **Alliin is converted by allinase to allicin** when chopped, crushed and exposed to air (oxidized)
- **Allicin** inhibits platelet aggregation, reduces cholesterol and is anti-microbial and antioxidant.
- Anti-thrombotic activity may be in part due to inhibition of thromboxane B2 synthesis, and anti-platelet activity is associated with allicin, ajoene, and sulfides.

Pharmacy:

- Fresh bulb: 1 clove eaten daily for prophylaxis. During acute infections, 1 clove TID. Note: Chop finely, allow bulb to oxidize 1-3 min and eat off a spoon without chewing for best effects.
- Capsule: garlic oil (standardized to 6mg allicin), daily.
- Dried bulb: 2-4 g, TID.
- Juice, syrup, poultice, ear/nasal drops and as food.

Toxicity:

- Fresh bulb can cause irritation to the gastric mucosa.
- High doses can cause breath & body odour.

Contraindications:

- Do not use within 10 days of surgery or with medications that inhibit blood coagulation.

- Acute stomach inflammation, acid reflex or irritation of mucosal surfaces (disulfides may cause gastroenteritis).
- Avoid excessive use in early pregnancy due to potential emmenagogue effects, and hypothyroidism as may cause reduced iodine uptake by the thyroid (theoretical)

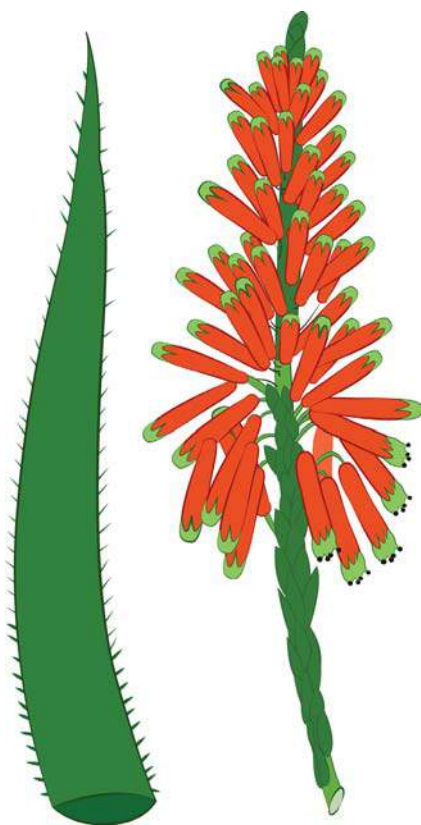
Interactions:

- May potentiate insulin (inhibits its breakdown) and hypoglycemic drugs.
- May potentiate anticoagulants (eg. Warfarin, indomethacin, dipyridamole) due to antiplatelet activity (theoretical).
- May enhance effects of cholesterol-lowering agents (theoretical)

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**Constituents:**

- Gel: Mucilage & Polysaccharides
- Latex: Anthraquinone glycosides (anthrone, aloe-emodin), aloe resins, polysaccharides: Mannose-6-phosphate (acemannan), flavonoids.

Medicinal Actions:

- *A. vera* **Gel**: inflammatory modulator, immunomodulating, demulcent, emollient, & vulnerary
- *A. barbadensis* **Latex**: Stimulating laxative & cathartic, emmenagogue, anthelmintic & antibacterial

P Gel & LatexMucilage & Polysaccharides
(acemannan)**C** Anthraquinone glycosides (emodin)
Flavonoids

Laxative

A Demulcent & Emollient (Vulnerary)
AntimicrobialTreatment/prevention of ulcer, GERD
Constipation**I** Wound healer (eg. Sunburn)**F** *Asphodelaceae***Medicinal uses:**

- Internally aloe has a use in gastrointestinal conditions & research suggests that regular juice consumption can lead to improved protein digestion and assimilation and/or reduced bacterial putrefaction. Often used internally to treat **peptic/duodenal ulcers & GERD**, exerting powerful anti-inflammatory and healing effects.
- As a vulnerary, both topically and internally is will **heal wounds**, has been shown to stimulate fibroblast & connective tissue formation, thereby promoting repair in sunburns and any inflammatory process of the skin or mucous membranes.
- As a **laxative** will aid in cases of chronic or acute constipation, while helping to eliminate toxic compounds or parasites and neutralize free radicals.

Pharmacology:

- **Anthraquinone glycosides** (anthrone & aloe-emodin) cause stimulating laxative effects of aloe latex. These molecules are split by the normal bacteria in the large intestines to form aglycones, which exert their laxative action.
- Stimulates the epidermal growth and repair process, presumably due to polysaccharides such as **Mannose-6-phosphate**, an active growth promoting substance.
- **Acemannan** is anti-tumor and beneficial against HIV.
- **Mucilage** & various constituents have also been shown to have anti-inflammatory effects as well as to stimulate wound healing.

Pharmacy:

- 50-100 ml whole leaf concentrate/juice, daily.
- Topical gel/ointment
- Note: Tincture or capsules are not well-suited to access the medicinal benefits of aloe

Toxicity:

- Gel: Topically is extremely safe.
- Latex: Use > 10 days consecutively frequently exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur. Recurrent use or abuse can lead to electrolyte imbalances (particularly hypokalemia), dehydration, and muscle and kidney destruction with hematuria and albuminuria. Adverse effects include acute intestinal pain and cramping.

Contraindications:

- Gel: Externally on surgical wounds healing by second intention due to slower healing time
- Latex: Pregnancy/Lactation, profuse menses, or bleeding between periods due to emmenagogue effects. Use > 10 days, intestinal obstruction, spastic constipation,

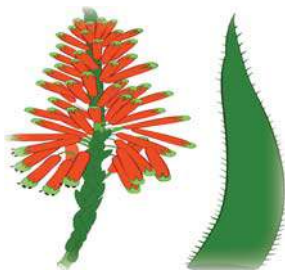
acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.

Interactions: None known

- Due to decreases in transit time, when used internally may interfere with absorption of food & medications.
- Gel: potentiates hypoglycemic effect of glyburide & anti-inflammatory effects of hydrocortisone when applied externally.
- Latex: Overuse can cause potassium loss leading to increased toxicity of anti-arrhythmic drugs and cardiac glycosides. May aggravate potassium loss caused by thiazide diuretics, corticosteroids, and licorice due to excretion from laxative effects.

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
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A

P Root & Leaf

Mucilage & Polysaccharides (pectin)

C Tannins

Flavonoids

Demulcent & Emollient (Vulnerary)

A Expectorant (soothing)

Nutritive

Inflammation of the gastrointestinal,
I genitourinary & respiratory tracts
Spastic Constipation

F *Malvaceae*

Constituents:

- Mucilage & Polysaccharides (pectin)
- Tannins
- Flavonoids
- Coumarins
- Calcium oxalate
- Amino acids (Asparagine)

Medicinal Actions:

- Alterative
- Anti-inflammatory
- Antimicrobial
- Anti-tussive
- Demulcent & Emollient (Vulnerary)
- Expectorant (soothing)
- Hypoglycemic
- Nutritive
- Bulking/Osmotic laxative

Medicinal uses:

- **Demulcent & Vulnerary** to the gastrointestinal system, respiratory system & urinary systems.
- Can be used in gastritis, peptic ulcer, GERD, IBD, interstitial cystitis, lower UTI symptom relief, pharyngitis & dry cough.

Pharmacology:

- **Mucilage & Polysaccharides** are hypoglycemic, anti-tussive, anti-microbial, soothing & protective to mucous membranes (mouth, throat, GIT, and by reflex action the urinary and respiratory tract). Will also stimulate phagocytosis and have anti-inflammatory and immunomodulating effects.
- As a form of soluble fiber has gentle bulking laxative effects and draws out toxins from the bowels.

Pharmacy:

- **Best taken as cold infusion:** 2-4 g/cup water, infuse overnight; 1 cup TID.
- Tincture: (1:2, 25%), 3-6 ml QD.
- Dried herb: 2-5g QD.
- As Gruel, Gargle, Poultice, Syrup.

Toxicity:

- A very safe herb and food. May cause some GIT upset.

Contraindications: None Known**Interactions:**

- Theoretically may delay the absorption of oral drugs if taken simultaneously.

References:

1. Benbassat, N et al. Development and evaluation of novel lozenges containing marshmallow root extract. Pak J Pharm Sci. 2013 Nov;26(6):1103-7.
2. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
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A dish of mallow was considered a delicacy by the Ancient Romans and the Chinese also used a species of mallow for food.

Althea inhabits salt marshes, river banks, and other moist places. Its habitat and mucilage content accounts in part for having an above average sodium content (137 mg/100 g dried), since sodium salts of polysaccharides are soluble and freely transported within the plant.

A





P Root & Leaf

Volatile oil

C Furanocoumarin glycosides
Flavonoids

Bitter (warming)

A Carminative & Antispasmodic
Expectorant (stimulating)

Spastic & inflammatory conditions

I Bronchitis & influenza
Dyspepsia & Hypochlorhydria

F *Apiaceae*

- Cholagogue
- Diuretic
- Stimulating Expectorant

Constituents:

- Volatile oil (pinene, limonene, beta-carophyllene, linalool & borneol)
- Macrocyclic lactones
- Furanocoumarin glycosides (imperatorin & isoimperatorin, angelicin, umbelliferone, psoralen & bergapten)
- Flavonoids
- Phytosterols

Medicinal Actions:

- Anti-catarrhal
- Anti-inflammatory
- Anti-microbial
- Bitter (warming)
- Carminative & Antispasmodic

Medicinal uses:

- As a **stimulating expectorant and aromatic digestive tonic**, particularly useful for hypochlorhydria, dyspepsia, and bronchitis (especially when accompanied by fever, colds & influenza).
- The carminative and anti-inflammatory qualities of the volatile oils will help ease spasm in both the lungs and the GIT, and help with rheumatic pains and inflammation.

Pharmacology:

- **Volatile oil** is anti-microbial against *C. difficile*, *Clostridium perfringens*, *Enterococcus faecalis*, *Eubacterium limosum*, *Peptostreptococcus anaerobius*, and *Candida albicans*.

- **Coumarins** imperatorin and isoimperatorin have the potential to reduce anxiety.

Interactions: Theoretically may antagonize anticoagulant medications.

Pharmacy:

- **Decoction:** 1 tsp/cup water, simmer for 15 min, TID.
- **Tincture:** (1:5, 45%), 2-5 ml TID, 100 ml weekly max.
- **Topical use (as oil)**

Toxicity:

- Excessive intake may cause photosensitivity due to furanocoumarin. Avoid prolonged sun & UV exposure.

Contraindications:

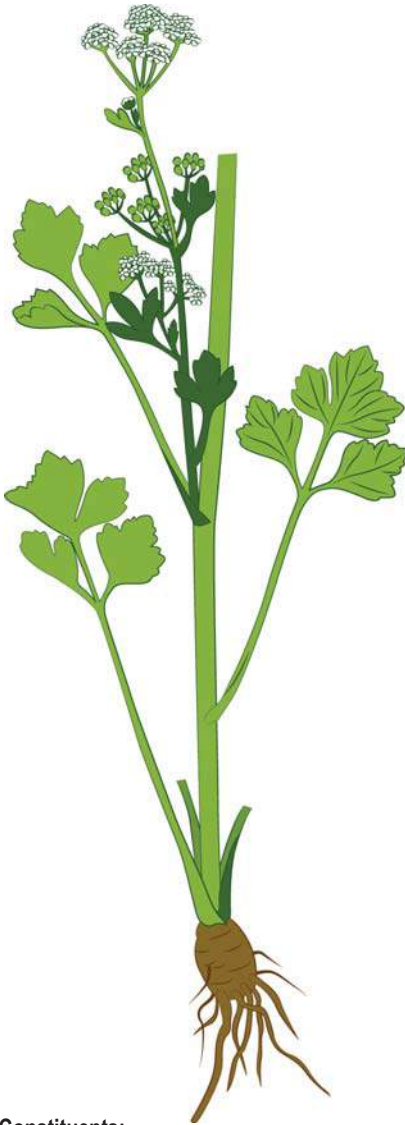
- Inflammatory GIT conditions such as active peptic ulcers, GERD & gastritis.
- Pregnancy & lactation
- Internal use of fresh root

References:

1. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
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A



P Fruit/Seed

C Volatile oil (phthalide compounds)

Flavonoids

Furanocoumarins

Anti-inflammatory

A Anti-rheumatic

Carminative

Gout & Rheumatism

Autoimmune disease

I Smooth & skeletal muscle pain & spasms

F *Apiaceae*

- Fatty acids (linoleic, myristic, oleic, palmitic & stearic)
- Alkaloids

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial
- Anti-rheumatic (Uricosuric)
- Bitter
- Carminative & Antispasmodic
- Diuretic
- Galactagogue
- Hypotensive
- Sedative Nervine
- Uterine stimulant

Constituents:

- Volatile oil (limonene, selenine & phthalide compounds)
- Flavonoids (apigenin, apiin & isoquercitin)
- Furanocoumarins

Medicinal uses:

- Alkalizes the body as a whole & detoxifies with specificity to the musculoskeletal system. **It will promote the elimination of uric acid & waste products** and is helpful in cases of gout & rheumatism.
- As a diuretic is particularly suited to **arthritic conditions**, including those of an autoimmune nature (e.g rheumatoid arthritis)
- Also useful in nervous restlessness and spasmodic tension. Can be used both topically and internally.

Pharmacology:

- **Volatile oils & alkaloids** are calming and appear to have depressant, tranquilizing effects on the CNS.
- **Phthalide compounds** are antispasmodic, sedative, diuretic & hypotensive.
- Flavonoids are diuretic, anti-inflammatory, anti-rheumatic & anti-platelet.
- Alcohol extract of seed is analgesic, anti-inflammatory and will stimulate circulation to and through the kidneys by mildly promoting excretion of uric acid.

Pharmacy:

- Dried seed: 2g , TID
- Decoction: 1/2 tsp crushed seeds/cup, simmer 20 min, TID
- Fresh seed juice: up to 90 ml QD
- Tincture: (1:2, 40%), 4-8 ml QD, 60 ml weekly max.

Toxicity:

- High sodium content, monitor those with hypertension or fluid retention.

- Furanocoumarins in combination with UV light may cause photodermatitis.

Contraindications:

- In acute kidney conditions due to the irritating effect of the volatile oils.
- The volatile oils also have emmenagogue and possible abortifacient effects & should be avoided during pregnancy.

Interactions: None known

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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A



Constituents:

- Lignans (arctigenin, arctiin & matairesinol)
- Polysaccharides (up to 50% inulin) & Mucilage
- Tannins
- Sulphur containing polyacetylenes
- Volatile oil
- Sesquiterpene lactones (arctiopicrin)
- Nutrients (vitamins & minerals)

Medicinal Actions:

- Alterative
- Anti-inflammatory
- Antimicrobial
- Bitter
- Diuretic
- Hepatic & Hepatoprotective

P Root & Seed

Polysaccharides (inulin)
C Sesquiterpene lactones (arctiopicrin)
Nutrients (vitamins & minerals)

Alterative
A Bitter
Hepatic

Liver & digestive detoxification
I Inflammatory skin disorders
Autoimmune disease

F Asteraceae

- Immuno-stimulant
- Laxative (mild)

Medicinal uses:

- Acts through a combination of effects to **enhance detoxification pathways in the liver and increase cellular metabolism as a whole.**
- Is useful in conditions such as eczema, acne, psoriasis, and possibly in the treatment of cancer.
- Is also useful adjunct in the treatment of rheumatoid arthritis and a tonic to the digestive system.

Pharmacology:

- **Polysaccharides** (mucilage & inulin) are soothing to the digestive tract and Immunostimulant.

- **Sesquiterpene lactone** (arctiopicrin) is a bitter glycoside and antibacterial.

Pharmacy:

- Decoction: 1 tsp root/cup, simmer 20 minutes, 1 cup TID for several weeks.
- Tincture: (1:2, 40%), 2-4 ml QD, 25 ml weekly max.
- Fresh root as food
- Note: Best when used long-term.

Toxicity:

- None reported, although a gentle approach with this herb is advisable since it can be a powerful detoxifier in some individuals.
- Potential adverse reactions include dermatitis from topical use, and allergic sensitivity to Asteraceae family.
- Avoid in history of bleeding disorder, dehydration, electrolyte imbalance, hypoglycemia, pregnancy & lactation.
- Use caution in diabetes, may precipitate decrease in blood sugar.

Contraindications: Pregnancy & lactation

Lappa derives from the Greek word meaning “to hold fast”, and Burdock is largely considered a common weed whose burs like to get caught in people’s (and animal’s) clothing. As a result it has migrated and naturalized to nearly every climate & continent.

Interactions:

- Increases gut motility, thus may theoretically decrease absorption of medications taken simultaneously.
- May potentiate aspirin or anticoagulants due to antiplatelet activity (theoretical)
- May decrease blood glucose with anti-diabetic agents, and potentiate effects of diuretics
- May upregulate levels of CYP3A4 substrates

A

References

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2. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
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A



P Leaf

C Tannins (hydrolyzable & condensed)
Hydroquinone glycosides (arbutin)
Flavonoids

A Antimicrobial (specific to urinary tract)
Astringent
Demulcent

I Inflammation & infection of the
genitourinary tract
General kidney & bladder tonic

F *Ericaceae*

Constituents:

- Tannins (Hydrolyzable & Condensed)
- Hydroquinone glycosides (arbutin)
- Flavonoids
- Polyphenolic acids (ursolic, gallic & ellagic)
- Allantoin
- Volatile oil

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial (tissue specificity to urinary tract)
- Astringent
- Demulcent
- Diuretic

Medicinal uses:

- Is used primarily in the treatment of cystitis, ulcerations of the kidney and bladder, and to **soothe and tonify the urinary organs**, as it will remove excess water from the body and has specific antiseptic & astringent effects upon the membranes of the urinary system.
- Is frequently used where there is gravel or ulceration in either the kidney or the bladder, and in the treatment of infections, or as part of a holistic approach to chronic kidney problems.
- With its high astringency it is used in some forms of bed-wetting, and as a douche it may be helpful in vaginal ulceration & infection.

Pharmacology:

- **Hydroquinone derivative, arbutin** releases aglycone in alkaline urine with antimicrobial action.
- *Note:* The whole plant is more effective than isolated arbutin, which may be related

to the activity of **gallic acid** or **gallotannin** which prevents the splitting of arbutin by such enzymes as β -glucosidase. This enzyme is present in some enteric microorganisms that can occur in urinary tract infections. Thus, the flavonoid component allows more arbutin to be hydrolyzed than when isolated arbutin is administered.

- **Tannins** are highly astringent.

Pharmacy:

- Infusion: 1 tbsp/cup water, TID.
- Tincture: (1:2, 40%), 4-8 ml QD, 60 ml weekly max.
- Dry herb: up to 12 g QD (equivalent to 400-840 mg arbutin)
- Douche or topical wash.
- **Pulse dosing required (2 weeks max)**

Toxicity:

- Toxicity is proportional to the conversion of arbutin to hydroquinone as hydroquinone is a highly toxic and mutagenic. 15 g of the fresh leaves can provide 1 g of hydroquinone which can be toxic with signs and symptoms of: tinnitus, nausea, vomiting, sense of suffocation, shortness of breath, cyanosis, convulsions, delirium and collapse.
- Caution due to hydrolyzable tannin content that can accumulate causing liver and kidney damage.

Contraindications:

- Avoid during pregnancy & lactation.
- Considering the hydrolyzable tannin content, use should be avoided in organic kidney disease and for longer than 14 days consecutively.

Interactions:

- High doses of vitamin C and cranberry juice will transiently acidify the urine in a minority of people. Considering that arbutin converts to hydroquinone in alkaline urine, urinary acidifiers can theoretically inhibit this conversion.
- High tannins may interfere with absorption of various nutrients.

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
3. De Arriba, S et al. Risk assessment of free hydroquinone derived from *Arctostaphylos Uva-ursi* folium herbal preparations. *Int J Toxicol.* 2013 Nov-Dec;32(6):442-53.
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A

P Flowers

C Sesquiterpene lactones (helenalin)
Volatile oil
Flavonoids

A Anti-inflammatory
Anodyne/analgesic
Anti-rheumatic

I TOPICAL USE ONLY
Sprains, bruises, edema & fractures
Arthralgia & rheumatic joint pains

F Asteraceae

Constituents:

- Sesquiterpene lactones (helenalin)
- Flavonoids
- Volatile oil
- Coumarins
- Nutrients - CHO (mucilage, inulin), Amines & Fatty acids
- Trace alkaloids

Medicinal Actions:

- Anodyne/analgesic
- Anti-inflammatory
- Antimicrobial
- Anti-neuralgic
- Anti-rheumatic
- Rubefacient
- Vulnerary

Medicinal uses:

- **TOPICAL USE ONLY.**
- As an external agent it is useful for sprains, bruises, hematomas, edema, fractures, over areas of phlebitis and thrombosis, arthralgia and rheumatic joint pains, and inflamed insect bites.
- Is most specific for bruises and may also be used as a massage oil to help relieve muscle soreness and stiffness.

Pharmacology:

- **Sesquiterpene lactones (mainly helenalin)** are highly toxic internally, but topically act as analgesic, anti-microbial, anti-inflammatory, and immuno-stimulant.
- Volatile oils are counter-irritant, anti-inflammatory and vulnerary.

Pharmacy:

- **External use over intact skin only!**
- Poultice or application of infusion 2g/cup or arnica oil (extracted at 1:5).
- Ointment: 10-25% of tincture (1:10, 70%), apply BID-TID.

Toxicity:

- Internal use may result in gastroenteritis and with increasing dosage cardiac arrest due to helanin interfering with myocardial recovery in between contractions. Helanalin and its esters are sensitizing agents and act as allergens, can cause muscle paralysis & death.
- With prolonged external use, edematous dermatitis may result with the formation of small vesicles.
- Internal use has toxic effects on the liver, kidneys, and entero-hepatic circulation.

Contraindications:

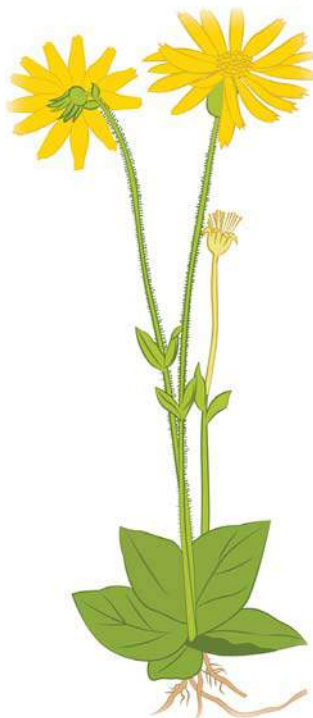
- Application over large areas of broken skin or internal use unless under supervision of a qualified expert.
- Avoid with known allergy to Asteraceae family.
- Pregnancy (speculative)

Interactions: None known

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
3. Ciollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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From a TCM perspective Arnica functions to transform blood stasis and relieve pain. It has a strong transforming and dispersing action due to its acrid and very warm energy. Arnica combines well with Hypericum & Cayenne for external applications, especially as an oil or alcohol-based liniment.



A



P Aerial parts (leaf & flower)

C Volatile oil (azulenes & thujone)
Sesquiterpene lactones
Flavonoids

A Anthelmintic
Bitter (Nervine)
Emmenagogue & Oxytocic

I Parasites (roundworm & pinworm)
To promote appetite and biliary
secretions
Anti-malarial & anti-cancer

F Asteraceae

Constituents:

- Volatile oil (thujone, absitol & azulenes)
- Bitter sesquiterpenes & sesquiterpene lactones (artemisinin absinthin, artabsin & santoinin)
- Flavone glycosides
- Hydroxycoumarins
- Lignans

Medicinal Actions:

- Anthelmintic
- Anti-inflammatory
- Anti-microbial
- Anti-neoplastic
- Bitter
- Carminative
- Choleric
- Diuretic

- Emmenagogue & Uterine stimulant
- Immuno-stimulant
- Narcotic (Sedative)

Medicinal uses:

- Will **promote appetite and bile secretions** as well as absorption of nutrients, and decrease bile duct spasm while increasing efficient bile duct contractions. Consider in cases of anorexia & dyspepsia and conditions involving insufficient flow of gastric or pancreatic enzymes and bile.
- Potential anthelmintic (especially against roundworm and pinworm), anti-malarial and anti-cancer properties.
- Can be applied topically for rheumatic pains.

Pharmacology:

- Azulene is anti-inflammatory.
- **Sesquiterpene lactones** (absinthin, artabsin, santoinin) have bitter action which stimulates taste buds and by reflex action increases appetite, gastric secretions, bile flow, and promotes digestion.
- Santonin is also insecticidal, anti-tumor and paralyzes worms.

Pharmacy:

- Infusion: 1-2 g, 1/2 cup water (extremely bitter!)
- Tincture: (1:5, 25%), 0.7-3 ml QD. 20 ml weekly max.
- Lotion or oil externally over intact skin.
- **Use short-term or pulse-dosing** (4-5 weeks).

Toxicity:

- Constituent **thujone** (isolated and in high doses) is very toxic to the CNS, causing paralysis, decreased coordination, and (euphoric) hallucinations. These effects are said to be reversible. Thujone is not well preserved in water, thus water extractions are safer than alcohol extractions.
- Long-term or high dosing may irritate stomach and dangerously affect the heart and arteries.

Contraindications:

- In pregnancy & lactation due to uterine stimulant effects.
- Caution in gastric and peptic ulcers, irritable nervous states, and seizure disorders.
- Known allergy to Asteraceae family.

Interactions: May need to be combined with iron for optimal efficacy.

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Crillo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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A

Wormwood is referenced in the Bible and in Shakespeare as a metaphor for harsh events & experiences due to its extremely bitter properties. It was also used in Europe to make vermouth & absinthe, but due to its potential to cause mental deterioration (especially in addicts) it is largely no longer legal to use as an ingredient.



A



P Aerial parts

Volatile oil (thujone)
C Sesquiterpene lactones
Flavonoids

Anthelmintic
A Bitter (Nervine)
Emmenagogue & Oxytocic

Digestive insufficiency
I Eases depression & nervous tension
Dysmenorrhea & functional amenorrhea

F Asteraceae

Constituents:

- Volatile oil (thujone, borneol & pinene)
- Sesquiterpene lactones
- Flavonoids
- Coumarins
- Bitter principle
- Tannins

Medicinal Actions:

- Anthelmintic
- Bitter
- Carminative
- Choloretic
- Diaphoretic
- Diuretic
- Emmenagogue
- Nervine tonic

Medicinal uses:

- Supports digestion as a bitter may be used **wherever digestive stimulation is needed** or through carminative actions conferred by the volatile oils it contains.
- Mild nervine action may help ease depression and tension.
- Is specific for **dysmenorrhea and functional amenorrhea** and promotes normal menstrual flow.
- **Potential anthelmintic** (especially against roundworm and pinworm), anti-malarial and anti-cancer properties.
- Commonly used as moxibustion in traditional Chinese medicine.

Pharmacology:

- **Volatile oils** (including thujone) are anti-inflammatory, antimicrobial & cytotoxic

- **Thujone** is present in low amounts, however in high doses is toxic to the nervous system and an abortifacient. Low doses are anti-fungal, anti-microbial, emmenagogue and immuno-stimulant

Pharmacy:

- Infusion: 1 tbsp/cup, TID.
- Tincture: (1:1, 25%), 0.5-2 ml TID. **40 ml weekly max.**
- Capsules: 0.5-2 g dried herb TID.

Toxicity:

- High doses may interfere with absorption of nutrients.
- Known allergy to Asteraceae family.
- Constituent **thujone** (isolated and in high doses) is very toxic to the CNS, causing paralysis, decreased coordination, and (euphoric) hallucinations. These effects are said to be reversible. Thujone is not well preserved in water, thus water extractions are safer than alcohol extractions.

Contraindications:

- In pregnancy & lactation due to uterine stimulant effects.
- Known allergy to Asteraceae family.

Interactions: None known

References:

1. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
2. Deng, H. & Shen, X. The mechanism of moxibustion: ancient theory and modern research. Evid Based Complement Alternat Med. 2013.
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Moxibustion therapy tools are often made from a closely related species of Mugwort (*Artemisia argy*). It is usually aged, ground to a fluff and then burned or further processed into a cigar-shaped stick that can be used indirectly, with acupuncture needles, or is burned on top of the skin.



A



P Root

C Triterpenoid saponins (astragalosides)
Polysaccharides
Phytosterols (isoflavones)

A Adaptogen
Immuno-modulator
Hepatoprotective

I Immunodeficiency
Improve energy & physical endurance
Side effects of chemotherapy & radiation

F *Fabaceae*

Constituents:

- Triterpenoid saponins (astragalosides)
- Polysaccharides
- Phytosterols (isoflavones)
- Amino Acids (GABA)
- Flavonoids

Medicinal Actions:

- Adaptogen
- Antioxidant
- Cardi tonic (negative chronotrope & inotrope)
- Diuretic
- Hepatoprotective
- Hypoglycemic
- Immuno-modulator (deep immune tonic)

Medicinal uses:

- Appears to **raise immune resistance** by strengthening both nonspecific & specific immunity, combating general infections of all kinds.
- A classic energy tonic that improves physical endurance by helping the body adapt to external stressful influences. Has been used since ancient times in traditional Chinese medicine as a warming (yang) tonic.
- Controls body fluids and is used to control excessive sweating, night sweats, and relieve fluid retention.
- Is useful in **cancer patients** undergoing chemotherapy and radiation who experience side effects such as immunosuppression, nausea, vomiting, loss of appetite, weight loss, hair loss, fatigue, and secondary infections.

Pharmacology:

- **Polysaccharides** are largely responsible for immunologic effects (stimulate phagocytosis and interferon production), however triterpene

saponins (astragalosides) and flavonoids contribute synergistically and help explain the plants dynamism. Studies indicate that the polysaccharides intensity phagocytosis, stimulate pituitary-adrenal cortical activity, and restore depleted red blood cell formation in bone marrow.

- **Triterpenoid saponins (astragalosides)** also have a positively inotropic action on the heart, stimulate NK cells, and are hepatoprotective against chemically induced liver injury by increase the activity of hepatic lysozymes, tissue dehydrogenase and liver glycogen.
- **Flavonoids** modulate the synthesis of eicosanoids (inhibit phospholipase A2, increase PGF1 and cAMP), as well as prevent platelet aggregation, and counter the effects of mast cell substances.

- Spleen transplant (may cause graft rejection and immune stimulation)

Interactions:

- May theoretically reduce absorption of many agents if taken simultaneously.
- Also reduces the side effects & toxicity of some drugs as it is a hepatoprotective.
- Anticoagulants due to antiplatelet activity (theoretical)
- May decrease blood glucose with anti-diabetic agents, and potentiate effects of diuretics, antihypertensives & dopaminergic agents
- May inhibit effect of immunosuppressants (eg. Cyclosporine & corticosteroids), and potentiate the effects of recombinant interleukin-2, interferon-1 and interferon-2 therapy.

A

Pharmacy:

- Decoction: 1 tbsp/cup water, bring to boil, simmer 20 min, TID.
- Tincture: (1:2, 40%), 4-8 ml QD. 60 ml weekly max.
- Capsules: 200 mg standardized extract (1% isoflavones) TID.

References:

1. Anon. Monograph: Astragalus membranaceus. Alternative Medicine Review: Volume 8, Number 1, 2003.
2. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
3. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
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6. Miller, AL. Botanical Influences on cardiovascular disease. Altern Med Rev 1998;3(6):422-431.
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Toxicity:

- No adverse effects with recommended dosage.
- May decrease blood glucose, blood pressure & heart rate, increase growth hormone and diuresis.
- May cause GIT upset due to saponins.

Contraindications:

- Use caution in acute infections, autoimmune disease, hypotension, hypoglycemia, bradycardia, electrolyte/water imbalances, growth hormone and inflammatory skin disorders.
- Pregnancy & Lactation



A



Constituents:

- Tropane alkaloids (hyoscyamine, atropine, scopolamine, hyoscyne & belladonnine)
- Volatile pyridine & pyrrolidine bases
- Flavonoids (scopoletin, scopolin, kaempferol & quercetin derivatives)

Medicinal Actions:

- Analgesic
- Antispasmodic
- Narcotic
- Secretolytic

P Whole Herb

Tropane alkaloids (atropine)
C Volatile pyridine & pyrrolidine bases
Flavonoids

Analgesic
A Antispasmodic
Secretolytic

Topically for pain
I Muscle spasms
Reduce excessive bodily secretions

F *Solanaceae*

Medicinal uses:

- **Applied TOPICALLY** for pain relief (aches, pains & injuries)
- When taken internally exert anticholinergic effects and is most often used for its **antispasmodic effects on the digestive tract** with large doses affecting the central nervous system.

Pharmacology:

- **Tropane alkaloids** (hyoscyamine & scopolamine) are anticholinergic & positively adrenergic (sympathomimetic), causing an inhibition of parasympathetic and stimulation of sympathetic nerves via competitive inhibition of acetylcholine.
- Primarily block muscarinic acetylcholine receptors, resulting in smooth muscle relaxation, inhibition of secretion of gastrointestinal tract and promoting **analgesia**.

- Effects lead to increased intraocular pressure & diplopia, reduction of bodily secretions, inhibition of vagus nerve (tachycardia, increased cardiac output and raised blood pressure), reduced tone in all smooth muscles: vasodilation, bronchial dilation & reduced peristalsis.

Interactions: None reported, but may theoretically interact with anticholinergic & sympathomimetic herbs and medications.

Pharmacy:

- Tincture: (1:10, 45%), take 10 drops twice a day to a max of 1 ml. Increase by 1 drop every three days until dry mouth and visual disturbances appear. Reduce by 1 drop each day until side effects disappear. **10 ml weekly max.**
- Topical in lotion, creams, and liniments.

Toxicity:

- **First sign of toxicity is dry mouth & eyes.**
- Do not use in large or continuous doses. Children are especially sensitive to the toxicity of belladonna.
- Signs of toxicity: Dry mouth, flushing, skin hot and dry, mydriasis (pupil dilation), increased respiratory rate and volume, increased temperature in children, palpitations, increased pulse rate and blood pressure, uncoordinated movements., incoherent speech, memory disturbed, disorientation, urinary urgency, difficult urination, eye pain, blurred vision, sensitivity to light, dysphagia, great thirst, nausea, vomiting, diarrhea, delirium, restlessness, confusion; later: depressed cerebral and neural activity, stupor, circulatory collapse, coma and death from centric respiratory paralysis.

Contraindications:

- Pregnancy & lactation

References:

1. Berdai, M. et al. *Atropa belladonna* intoxication: a case report. *Pan Afr Med J.* 2012;11:72.
2. Bogan, R. et al. Plasma level of atropine after accidental ingestion of *Atropa belladonna*. *Clin Toxicol (Phila).* 2009 Jul;47(6):602-4.
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4. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
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Belladonna is extremely poisonous, however some grazing animals eat the plant and berries without having ill effects, but humans who eat the meat of such animals can become seriously ill. People who handle the plant can have the poison absorbed through their skin, and those that come in direct contact with the sap may experience severe dermatitis as well.



A



Constituents:

- Mucilage & Starch
- Triterpenoid saponins (avenocosides)
- Proteins (avenins)
- Indole alkaloids (gramine)
- Silicic acid esters
- Nutrients (high source of Vitamin E & B, iron, manganese, zinc, calcium)
- Flavonoids

Medicinal Actions:

- Antispasmodic
- Cardiogenic
- Demulcent & Emollient (Vulnerary)
- Nervine tonic & Nervous System Trophorestorative
- Nutritional

P Aerial parts (milky oat seed tops and/or straw)

C Nutrients: CHO, Proteins (avenins)
Triterpenoid saponins (avenocosides)
Indole alkaloids (gramine)

A Nervine tonic (Trophorestorative)
Demulcent & Emollient (Vulnerary)
Nutritive

I Nervous exhaustion & anxiety
Inflammatory skin disorders

F *Poaceae*

Medicinal uses:

- **Oat Straw** is higher in silica & minerals & has connective tissue restorative qualities for bones, muscles, tendons & nerves. The high levels of silicic acid in the straw explain its use as a remedy for skin condition, especially in external applications.
- **Oat seed tops** (aka. milky green oats or seed of unripe plants) is higher in saponins & alkaloids and is neurotonic & an adaptogenic nervine useful in anxiety & lassitude.
- Overall is a **nervous system trophorestorative, is nutritive in cases of debility from anxiety, depression & fatigue**. Taken over time will increase one's stamina and strength. Will "feed" the nervous system especially when under stress, and is specific in cases of nervous debility and exhaustion, especially when associated with depression.

Pharmacology:

- High **starch** content acts as a demulcent, emollient and vulnerary
- **Triterpenoid saponins** (avenocosides) are anti-fungal
- High nutrient content is partly responsible for sedative action on the nervous system (has the highest content of iron, zinc and manganese of all grain species). Is theorized to stimulate the limbic system and motor ganglia thereby increasing energy level and one's sense of well-being.
- Indole alkaloids (gramine) has relaxant properties
- Silicic acid esters are healing to the skin.

Pharmacy:

- Infusion: 1 Tbsp/cup water; steep until at room temperature. Drink freely.
- Tincture: (1:5, 25%), 1-5 ml TID, 100 ml/week.
- Bath: Add 1 heaping cup to bath water
- Topical in creams, lotions, oils and poultices

Toxicity:

- None expected within recommended dose range

Contraindications:

- Use caution in those with celiac or known gluten sensitivity due to avenin content.

Interactions: None known

References:

1. Blumenthal, M., Goldberg, A., Brinckmann, J., editors. Herbal Medicine: Expanded Commission E Monographs. Austin, TX: American Botanical Council; Boston: Integrative Medicine Communications; 2000.
2. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
3. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
4. Kaukinen, K. et al. Long-Term Consumption of Oats in Adult Celiac Disease Patients. *Nutrients* 2013, 5, 4380-4389.
5. Mitchell, W. Plant Medicine: The Bastyr Years. 1999.
6. Singh, R. et al. Avena sativa (Oat), A Potential Nutraceutical and Therapeutic Agent: An Overview. *Critical Reviews in Food Science and Nutrition*, 53:126-144 (2013).

In TCM, oats are considered able to supplement both yin and qi, and is used to nourish the heart and calm the spirit. Its especially useful in the elderly, and some herbalists prefer fresh plant tincture over teas & decoctions.



B



Constituents:

- Steroidal & Triterpene saponins (bacosides & bacosine)
- Alkaloids (brahmine & herpestatine)
- Betulic acid
- Phytosterols (stigmastanol & beta-sitosterol)

Medicinal Actions:

- Adaptogen
- Alterative
- Anti-inflammatory
- Antioxidant
- Aphrodisiac
- Bitter
- Cardiotonic
- Cognition & memory enhancer
- Nervine Tonic & Sedative

P Aerial

C Steroidal & Triterpene saponins
Alkaloids (brahmine)
Phytosterols

A Adaptogen
Cognition & memory enhancer
Nervine Tonic & Sedative

I Poor memory and concentration
Insomnia, stress, and anxiety
Asthma, bronchitis and hypertension

F *Plantaginaceae*

Medicinal uses:

- Has a reputation for enhancing circulation to the brain, thereby increasing short and long-term memory, improving concentration, mental performance & cognitive function as a whole.
- Can be used in **disorders of the nervous system** such as insomnia, anxiety, stress, Alzheimer's and Parkinson's disease.
- Can be taken internally or applied topically for rheumatic conditions, joint pain and neuralgias.
- Has a vasodilatory & relaxing effect on the cardiorespiratory system (eg. Asthma, bronchitis and hypertension).

Pharmacology:

- **Steroidal & Triterpenoid saponins (bacosides)** increase protein kinase activity, protein synthesis in the long-term memory brain regions, and are responsible for cognitive effects and enhanced nerve

impulse transmission (balances GABA and glutamate levels in the brain)

- Bacosine has analgesic effects.
- The alkaloid brahmine is toxic in very large doses.

Pharmacy:

- Tincture: (1:2, 25%), 5-13 ml QD, 90 ml/week.
- Standardized extract (20% bacosides A & B): 200-400 mg QD.
- *Note:* May take 4 weeks to see effects.

Toxicity:

- No adverse effects reported or expected. May cause gastric irritation of the gastric mucosa membranes and reflux due to saponin content.

Contraindications: None Known

Interactions: None known

References:

1. Aguiar, S. & Borowski T. Neuropharmacological review of the nootropic herb *Bacopa monniera*. *Rejuvenation Res.* 2013 Aug;16(4):313-26.
2. Bone, K. A *Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient*. Elsevier Science, 2003.
3. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
4. Kapoor, L. *CRC Handbook of Ayurvedic medicinal plants*. Boca Raton, Fla. 1990.
5. Monograph: *Bacopa monniera*. *Alternative Medicine Review: Volume 9, Number 1*, 2004. Sandu, D. *Indian therapeutics*, 2nd ed. Dehli, 1987.





B

Constituents:

- Polysaccharides (arabinogalactans) & Glycoproteins
- Quinolizidine alkaloids (cytisine, anagyrine, sparteine, & formononetin)
- Isoflavones (genistein)
- Flavonoids
- Coumarins (scopoletine)
- Bitter principle (baptisin)
- Oleo-resin

Medicinal Actions:

- Alterative
- Anti-catarrhal
- Anti-microbial
- Emetic & purgative (high doses)
- Emmenagogue
- Febrifuge
- Immuno-modulator & immuno-stimulant
- Laxative
- Lymphatic

P Root

C Polysaccharides (arabinogalactans)
Isoflavones (genistein)
Alkaloids

A Lymphatic
Anti-microbial & immuno-stimulant
Anti-catarrhal

I Acute infections with excessive
mucous production, fever & enlarged
lymphatic glands

F *Fabaceae*

Medicinal uses:

- Should be considered whenever there is **acute infection** to support and stimulate the body's own immune response. It is especially useful in the treatment of infections and with catarrh or excessive mucous production in the ear, nose and throat, and may be used for laryngitis, pharyngitis, tonsillitis, rhinitis and sinusitis.
- Is helpful in the treatment of enlarged & inflamed lymph glands and also to reduce fevers.

Pharmacology:

- **Isoflavones (genistein)** are mildly phytoestrogenic.
- **Alkaloids** including cytisine may account for antimicrobial and emetic qualities when taken in large doses.
- Sparteine may have cardiovascular & oxytocic effects.

- Glycoproteins are immunomodulating.
- Polysaccharides and proteins are believed to stimulate the immune system via increasing the WBCs and to improving the endogenous defense reaction.

Pharmacy:

- Decoction: 1 tbsp/cup water, simmer 15 min, TID.
- Tincture: (1:5, 60%), 1-3 ml TID, max 60 ml/week.
- Dried herb: 1 g, TID.
- Mouthwash, gargle, douche

Toxicity:

- In high doses could nausea, vomiting, anorexia, hypersalivation, tachypnea, tachycardia, and respiratory paralysis.

Contraindications:

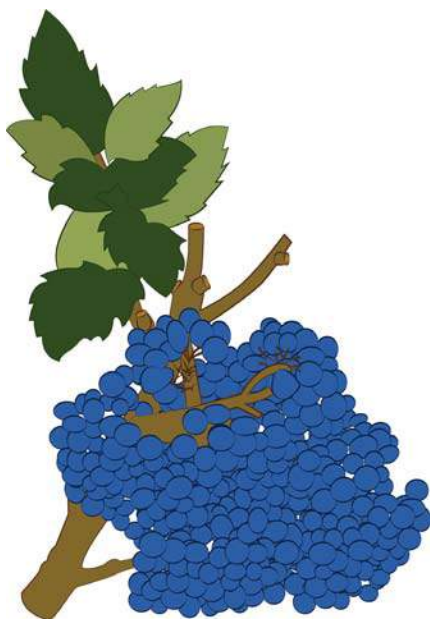
- Long-term use or high doses
- Pregnancy & lactation

Interactions: None known**References:**

1. Banerji, P. et al. Efficacy of *Baptisia tinctoria* in the treatment of typhoid: its possible role in inducing antibody formation. *J Complement Integr Med.* 2012 Jul 2;9:Article 15.
2. Chevallier, A. *Encyclopedia of Herbal Medicine.* Dorling-Kindersley, 2000.
3. Classen, B. et al. Immunomodulatory effects of arabinogalactan-proteins from *Baptisia* and *Echinacea*. *Phytotherapy.* 2006 Nov;13(9-10):688-94.
4. Cniolo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
5. Mitchell, W. *Plant Medicine: The Bastyr Years.* 1999.



B



Constituents:

- Isoquinoline alkaloids (berberine, berbamine, palmatine)
- Flavonoids
- Tannins
- Phytosterols
- Chelidonic acid
- Resins

Medicinal Actions:

- Alterative
- Antimicrobial
- Anti-neoplastic
- Astringent
- Bitter
- Hepatic stimulant (chologogue & cholaretic) & Hepatoprotective
- Inflammatory-modulating
- Laxative (mild)

P Inner bark of root & stem

Isoquinoline alkaloids)

C Flavonoids

Tannins

Alterative (Bitter)

A Antimicrobial

Hepatic stimulant (Chologogue & Cholaretic)

Infections (eg. Bacterial, viral or fungal)

I

Inflammatory skin conditions
Hepatobiliary insufficiency

F *Berberidaceae*

Medicinal uses:

- A traditional remedy for **correcting liver function** and promoting the flow of bile. It is indicated when gallstones or gall bladder inflammation is present and when jaundice occurs due to a congested state of the liver.
- As a bitter tonic with mild laxative effects, it helps strengthen and cleanse the system in weak or debilitated people.
- An ideal **alterative for skin conditions** due to liver toxicity and for chronic skin diseases like psoriasis and acne can be used topically or internally.
- As a tonic will strengthen the whole system and is of great use in fever and **infections of all kinds**. As an antimicrobial can treat candidiasis at any site, as well as gastroenteritis and H.Pylori infection.

Pharmacology:

- **Isoquinoline alkaloids** (berberine & berbamine) are anti-microbial, inhibit platelet aggregation and adhesion, stimulate intestinal contraction, cholagogue, hepatoprotective, immuno-stimulant and cytotoxic.
- Berberine displaces albumin from bilirubin, thus this herb may be harmful during later stages of pregnancy.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 20 min TID.
- Tincture: (1:2. 60%), 3-7 ml QD, 50 ml weekly max.
- Dried bark: 1-2 g, TID.

Toxicity:

- Theoretically could cause intestinal or vaginal dysbiosis by using extreme doses of standardized extracts.

Contraindications:

- Avoid during pregnancy.
- Limit long-term use (absolute max. 2 months consecutive).

Interactions:

- Increases gut motility, thus may decrease absorption of many drugs if taken simultaneously (theoretical).

References:

1. Bone, K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient. Elsevier Science, 2003.
2. Brinker, F. Eclectic Case Histories: Psoriasis Treatment with Oregon Grape Extracts. Journal of the American Herbalists Guild Volume 6, Number 1, 2005.
3. Chevalier, A. Encyclopedia of Herbal Medicine. Dorling-Kindersley, 2000.
4. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004
5. Ellingwood, F & Lloyd J.U.: King's American Dispensatory ed 18, rev 3, Portland 1905.
6. Felter, H.W & Lloyd, J.U.: King's American Dispensatory, ed 18, rev, 3, Portland, 1905.

The antimicrobial activity of *Berberis* is most pronounced in the colon since its alkaloids (e.g. berberine) are 2-4 times as bactericidal in alkaline pH as in neutral environment. It contains the same alkaloids as both Goldenseal & Barbary. Traditional formulas often combine *Berberis* spp. with Cascara, Gentian, Ginger & Dandelion for a variety of gastrointestinal disorders.



B



Constituents:

- Flavonoids (hyperoside, quercetin & luteolin)
- Volatile oil
- Salicylates (methyl-salicylates)
- Tannins
- Resins
- Saponins
- Betulin & betulinic acid
- Ascorbic acid (vitamin C)

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antimicrobial
- Antispasmodic
- Alternative
- Astringent

P Leaf & Bark

C Salicylates (methyl-salicylates)
Tannins
Volatile oil

A Analgesic
Anti-inflammatory
Alterative (Diuretic)

I Chronic inflammatory conditions of all kinds (eg. Rheumatism & gout)
Cystitis & renal calculi
Topically in myalgia

F *Betulaceae*

- Diaphoretic
- Diuretic

Medicinal uses:

- **Promotes the detoxification of waste products** from the body (such as uric acid) and can be used in chronic skin rashes, arthritis, rheumatism, gout, muscular and arthritic pain.
- Is indicated in cystitis and renal stones as it irrigates the urinary tract while exerting anti-inflammatory and antiseptic actions.
- Topically, the fresh wet bark placed over affected area (inner side touching the skin), helps to alleviate muscle pain and herpes zoster.

Pharmacology:

- Flavonoids in leaf are diuretic
- Volatile oils contain methyl-salicylates with

antiseptic and aspirin-like effects.

- High Vitamin C content contributes to diuretic effects and discourages urinary and renal calculi.

Pharmacy:

- Infusion: (dried leaves) 1 tsp/cup, infuse 10 min, TID.
- Decoction: (inner bark) 1 tsp/cup, TID.
- Tincture: (1:5, 25%), 1-2 ml TID, 40 ml weekly max.
- Dried herb: 2-3g, TID.

Toxicity:

- Speculative potential for allergic hypersensitivity to salicylates.

Contraindications:

- Use caution in edema from heart failure or kidney insufficiency.

Interactions: None known

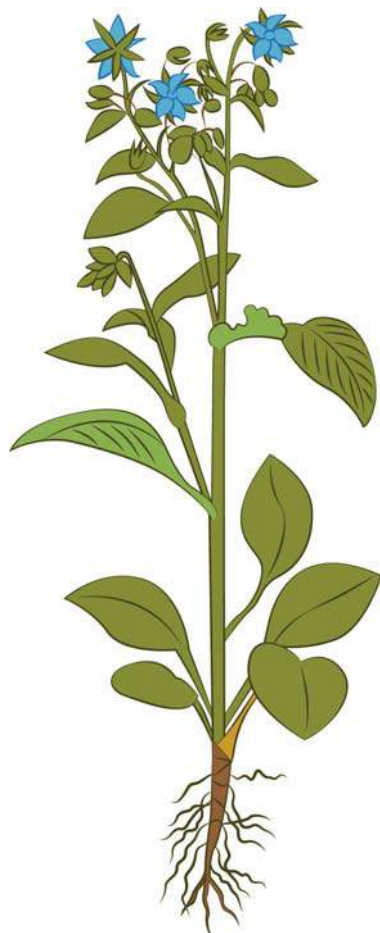
References:

1. Brinker, F. Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines. 4th ed. Eclectic Medical Publications; 2010.
2. Chevalier, A. Encyclopedia of Herbal Medicine. Dorling-Kindersley, 2000.
3. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
4. Jager, S. et al. A preliminary pharmacokinetic study of betulin, the main pentacyclic triterpene from extract of outer bark of birch. *Molecules*. 2008 Dec 18;13(12):3224-35.
5. Rastogi, S. et al. Medicinal plants of the genus *Betula*-Traditional uses and a phytochemical-pharmacological review. *J Ethnopharmacol*. 2015 Jan 15;159C:62-83.
6. Weckesser, S. et al. Topical treatment of necrotising herpes zoster with betulin from birch bark. *Forsch Komplementmed*. 2010 Oct;17(5):271-3.

B



B



Constituents:

- Pyrrolizidine alkaloids (lycopsamine, intermedine, amabiline & supinine)
- Fatty acids including omega-6-fatty acids (gamma-linoleic acid)
- Choline
- Mucilage
- Potassium & calcium salts
- Tannins
- Saponins

P Aerial parts & seed oil

C Pyrrolizidine alkaloids
Omega 6 Fatty acids (GLA)
Saponins

A **Aerial:** Adaptogen, Demulcent/
Emollient, Expectorant
Seed Oil: Adaptogen, inflammatory-
modulator, Hormone balancer

I Adrenal fatigue
Stress, anxiety & depression
Topical connective tissue tonic

F *Boraginaceae*

Medicinal Actions:

- **Aerial:** Adrenal adaptogen, diuretic, demulcent, emollient, expectorant
- **Seed Oil:** inflammatory-modulator, Hormone balancer, Anti-platelet & Hypolipidemic, Galactagogue (Note: oil is especially high in gamma linoleic acid)

Medicinal uses:

- Borage is restorative to the adrenal cortex. It will renew and revive the adrenal glands after a medical treatment with cortisone or steroids and can also be used as a tonic for the adrenals. This makes it useful to help mitigate stress, and may be used long term for this purpose. Borage **has been historically used to “bring courage”**, joy and well-being to depressed individuals.
- It has a reputation as an anti-inflammatory, mild laxative and diuretic.
- The oil can be used to treat atopic dermatitis, dysmenorrhea, PMS, rheumatoid arthritis,

dyslipidemia, hypertension and diabetic neuropathy.

- Traditionally used to stimulate milk flow in nursing women and applied topically in ringworm, insect bites & stings.

Pharmacology:

- Ability to prolong the action of corticosterone operates via an undetermined mechanism, however this adrenal restorative effect contributes to its anti-inflammatory action.
- Omega 6 Fatty acids have anti-inflammatory & hormone balancing effects.
- High amounts of **calcium and potassium salts** promote osmotic diuresis thus aiding the filtration of waste by the kidneys.
- **Mucilage** in the leaves exert a reflex antispasmodic and soothing action on mucous membranes

Pharmacy:

- 2 tsp dried herb/cup; 1 cup BID.
- Tincture: (1:5, 25%), 1-5 ml TID.
- Juice pulp from fresh leaves, 10 ml BID.
- Seed oil: 500 mg capsule: 1-4 capsules daily.
- Poultice of fresh borage leaves.

Toxicity:

- Borage leaf does contain small amounts of pyrrolizidine alkaloids and should therefore be used with caution in any person with known or suspected liver disease and in children due to potential hepatotoxic and carcinogenic effects.

Contraindications:

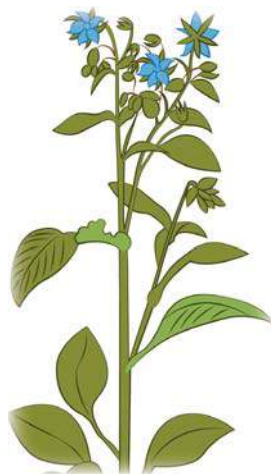
- Pregnancy & Lactation (controversial).
- Avoid high doses over long term.

Interactions:

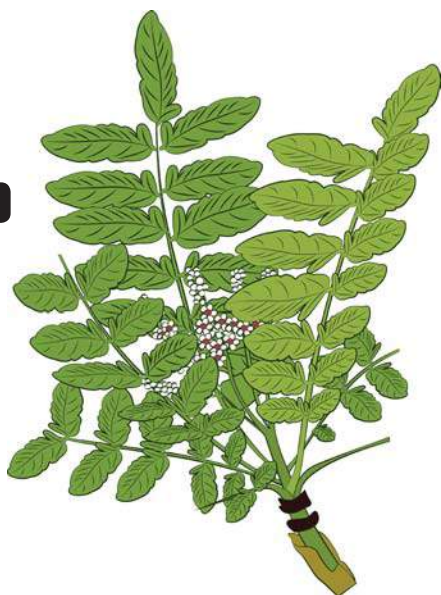
- The oil is a platelet inhibitor, and may theoretically potentiate anticoagulants
- Use caution with hepatotoxic drugs such as anabolic steroids, phenothiazines, ketoconazole.

References:

1. Asadi-Samani, M. et. al. The chemical composition, botanical characteristic and biological activities of *Borago officinalis*: a review. *Asian Pac J Trop Med.* 2014 Sep;7S1:S22-8.
2. Brinker, F. *Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines.* 4th ed. Eclectic Medical Publications; 2010.
3. Chevalier, A. *Encyclopedia of Herbal Medicine.* Dorling-Kindersley, 2000.
4. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
5. Foster, R. et al. Borage oil in the treatment of atopic dermatitis. *Nutrition.* 2010 Jul-Aug;26(7-8):708-18.
6. Mitchell, W. *Plant Medicine: The Bastyr Years.* 1999.



B



P Bark

Volatile oil

C Oleo-Resin (boswellic acids)
Mucilage

Anti-rheumatic

A Inflammatory modulator
Hepatoprotective

Osteoarthritis & rheumatoid arthritis

I Inflammation of the gastrointestinal tract and/or respiratory tract

F *Burseraceae*

Constituents:

- Volatile oil (pinene, dipentene & phellandrene)
- Oleo-Resin (boswellic acids incl. tetra and Pentacyclic triterpene acids)
- Mucilage

Medicinal Actions:

- Anti-rheumatic
- Inflammatory modulator
- Hepatoprotective

Medicinal uses:

- Inhibits pro-inflammatory mediators in the body (eg. Leukotrienes) and can therefore help in conditions such as asthma, ulcerative colitis, osteoarthritis, rheumatoid arthritis, chronic prostatitis and **almost any inflammatory syndrome**.
- In contrast to NSAIDs, long-term use does

not lead to irritation or ulceration of the stomach.

Pharmacology:

- **Resin (Boswellic acids)** have been shown to be specific non-redox and non-competitive inhibitors of 5-lipoxygenase, the key enzyme of leukotriene biosynthesis.
- In a dose-dependent manner these acids block the synthesis of pro-inflammatory 5-lipoxygenase products, including 5-hydroxyeicosatetraenoic acid (5-HETE) and leukotriene B₄ (LTB₄), which cause bronchoconstriction, chemotaxis, and increased vascular permeability.

Pharmacy:

- Tincture: (1:1. 90%), 1-3 ml TID. 40 ml weekly max.
- Capsules: 300-400 mg (standardized to 60% boswellic acids), TID.

Toxicity:

High resin content may cause stomach upset.

Contraindications: None Known.

Interactions:

- May theoretically interfere with the absorption of drugs.

References:

1. Anon. Monograph: *Boswellia serrata*. *Altern Med Rev* 2008;13(2).
2. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
3. Kimmalkar, N. et al. Efficacy and tolerability of *Boswellia serrata* extract in treatment of osteoarthritis of knee – A randomized double blind placebo controlled trial. *Phytomedicine* 10: 3–7 (2003).
4. Knaus U, Wagner H. Effects of boswellic acid of *Boswellia serrata* and other triterpenic acids on the complement system. *Phytomedicine* 1996;3:77-81.
5. Verhoff, M. et al. Tetra- and Pentacyclic Triterpene Acids from the Ancient Anti-inflammatory Remedy Frankincense as Inhibitors of Microsomal Prostaglandin E2 Synthase. *J. Nat. Prod.* 2014, 77, 1445–1451.

Traditional use of *Boswellia* has been celebrated for thousands of years. Considered extremely valuable in ancient times, from Biblical (was one of the choice gifts brought by the Wise Men) to Ayurvedic medicine where it is referred to as Shallaki, and used mainly for the treatment of osteoarthritis & musculoskeletal pains.

B





P Seed

Glucosinolates (sinigrin)

Volatile oil

C Alkaloid amine (Sinapine) & Sinapic acid

Anti-rheumatic

A Inflammatory-modulator

Rubefacient

Topical use in bronchitis & MSK pain

I Internal use as food as gastric & circulatory stimulant

F *Brassicaceae*

Constituents:

- Glucosinolates (sinigrin)
- Volatile oil
- Alkaloid amine (Sinapine) & Sinapic acid (choline ester)
- Mucilage

Medicinal Actions:

- Anti-rheumatic
- Emetic
- Expectorant
- Inflammatory-modulator
- Rubefacient (counter-irritant)

Medicinal uses:

- Has been used historically as a **topical application to create a counter-irritant or rubefacient effect**, and its main use is as a stimulating external application to aid

in cases of bronchitis when applied over the chest to loosen congestion and stimulate expectoration.

- The rubefacient action causes a mild irritation to the skin, stimulating circulation to that area and relieving muscular and skeletal pain also.
- Internal use is limited due to gastric stimulation produced by the oils in the plant, causing a stimulation of the gastric smooth muscles, and as a result emesis occurs.

Pharmacology:

- **Volatile oils** are a skin irritant, and mode of action is through the principle of counter-irritation or the ability to influence deeper regions of the body by reflex effects mediated by the nervous system.
- **Glucosinolates** and their various transformation products alter phase I and II detoxification processes acting to reduce the production of carcinogenic compounds.

- When the seeds are crushed glucosinates (particularly sinigrin) are hydrolyzed by enzymes into their active compounds. Allyl isothiocyanate is a constituent of many cruciferous vegetables and possesses numerous biochemical and physiological activities. It is cytotoxic and tumorigenic at high doses and also is a modulator of enzymes involved in metabolism of xenobiotics.

Interactions: None known

References:

1. Acharaporn, D. et. al. Black pepper and piperine reduce cholesterol uptake and enhance translocation of cholesterol transporter proteins. *J Nat Med* (2013) 67:303-310.
2. Antonious, G. et. al. Screening Brassica species for glucosinolate content. *J Environ Sci Health B*. 2009 Mar;44(3):311-6.
3. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
4. Khuda-Bukhs. A. et. al. Molecular approaches toward targeted cancer prevention with some food plants and their products: inflammatory and other signal pathways. *Nutr Cancer*. 2014;66(2):194-205.
5. Mitchell, W. *Plant Medicine: The Basty Years*. 1999.

Pharmacy:

- Poultice or Plaster: Mix 1:4 parts freshly ground mustard seeds with warm water & flour to form a thick paste. Spread on a piece of cloth to the size of the body area that is to be covered. Apply the cloth and remove after 1 minute, or at the first sensation of burning felt by the patient. Do not leave on for longer than 15-30 minutes. The local counter-irritant effect may persist for 24-48 hours.

Toxicity:

- Applications left on too long or over sensitive skin will cause vesication that can cause skin ulceration, necrosis and permanent scarring.

Contraindications:

- If there is severe circulatory damage and over varicose veins.
- Is not to be used internally in amounts greater than those for culinary purposes.





B

Constituents:

- Plant steroids (Cucurbitacin glycosides inc. Bryoside & cucurbitacin)
- Alkaloids
- Polyhydroxy-unsaturated fatty acids
- Volatile oil
- Tannins
- Resin (poisonous)

Medicinal Actions:

- Anodyne
- Antimicrobial
- Anti-rheumatic
- Cathartic (emetic)
- Cytotoxic
- Diaphoretic
- Expectorant
- Hypotensive
- Immuno-modulating

P Root

Plant steroids (Cucurbitacins)

C Volatile oil

Resin

Analgesic

A Anti-rheumatic

Cytotoxic

I Cardiac insufficiency or infection (e.g pulmonary edema, rheumatic fever)

Rheumatism & neuralgia

Anti-neoplastic

F *Curcubitaceae*

• Nervine Sedative

• Rubefacient

Medicinal uses:

- Has specific use for the **cardiac complications of rheumatic fever**, and is useful in hypertension, and pulmonary edema with associated cardiac insufficiency or resulting from an infectious process.
- Useful in **rheumatic conditions of the joints** and helps relieve pain and stiffness by reducing fluid in the joint space. Use topically for joint/muscular pains, sciatica and myalgia.
- Considered to be trophorestorative towards serous membranes (e.g. linings of respiratory & gastrointestinal tract).
- Internally is considered to possess toxic effects in relatively small doses, and is therefore infrequently used.

Pharmacology:

- **Cucurbitacins** have demonstrated anti-tumor & cytotoxic effects and appear to relax smooth muscle.
- **Resin** is poisonous and a drastic purgative.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 20 min, q 1-2 hours.
- Tincture (1:10, 60%), 0.5 – 1ml TID, **10 ml weekly maximum.**
- Dried root: 0.5-2 g, TID.
- Topical applications

Toxicity:

- Symptoms of toxicity are poorly understood though include: colic, vomiting, diarrhea, gastro-enteritis, cardiac depression, mydriasis, congestive headaches, dizziness, delirium, cold perspiration, and death.

Contraindications:

- Avoid in pregnancy, lactation, and with some GIT disorders.

Interactions: None known

References:

1. Alghasham, A. Cucurbitacins – A Promising Target for Cancer Therapy. International Journal of Health Sciences, Qassim University, Vol. 7, No. 1, 2013.
2. Crotolo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
3. Mitchell, W. Plant Medicine: The Bastyr Years. 1999.
4. Panossian, A. Plant adaptogens. II. Bryonia as an adaptogen. Phytomedicine. 1997 Mar;4(1):85-99.
5. Ukiya, M. Anti-inflammatory and anti-tumor-promoting effects of cucurbitane glycosides from the roots of Bryonia dioica. J Nat Prod. 2002 Feb;65(2):179-83.

In Homeopathy, Bryonia is considered a polycrest remedy for aches and pains associated with colds, flus, coughs, and any illness with chills alternating with fever. A sore throat with dry hard spasmodic coughs and a great thirst for cold drinks often key signs of indication.





P Root

- C** Triterpenoid saponins (saikosaponins)
Polysaccharides (bupleurans)
Flavonoids

- A** Adaptogen
Anti-inflammatory
Immuno-modulator & stimulant

- I** Inflammatory & infectious conditions
Autoimmune disease
Adrenal fatigue

F *Apiaceae*

Constituents:

- Triterpenoid saponins (saikosaponins or saikosides)
- Flavonoids (rutin)
- Polysaccharides (bupleurans)
- Coumarin
- Polyacetylenes
- Polyhydroxy sterols
- Trihydroxy fatty acid

Medicinal Actions:

- Adaptogen
- Alterative
- Anti-inflammatory
- Carminative
- Diaphoretic

- Febrifuge
- Hepatic & Hepatoprotective
- Immuno-modulator & stimulant

Medicinal uses:

- Has been used in Chinese herbal formulary for centuries, and is one of the most important herbs in traditional Japanese and Chinese medicine.
- It has been used for the treatment of **chronic inflammatory conditions of all kinds**, especially those involving the liver and kidneys such as hepatitis, as well as **auto-immune disease** such as systemic lupus erythematosus and multiple sclerosis
- Its immunomodulating effects make it useful in the treatment of colds & flus.
- Chronic infections and inflammatory diseases are also indications because of its

anti-inflammatory, adrenocortical-sparing, hepatoprotective and immuno-stimulatory actions.

Pharmacology:

- **Triterpenoid saponin** saikosaponin has been shown to inhibit platelet aggregation and thromboxane formation, and are also hepatoprotective. Will also enhance the activity of corticosterone by inducing liver enzymes involved in the activation of corticosterone and by stimulating adrenocortical function, with effects leading to an overall anti-inflammatory action.
- Oral doses transiently increase blood glucose, bile output and bile salt content (and thus lower cholesterol). It has been suggested that saikosaponins and saikogenins lower cholesterol by increasing cholesterol excretion in the bile and may increase hepatic protein synthesis.
- Saikosaponins undergo enterohepatic circulation and fecal excretion.

Pharmacy:

- Decoction: 1 tbsp/cup, simmer 20 min, TID
- Dried root/capsules: 2-6 g/day in divided doses (up to 120 mg saikosaponins/day)
- Tincture: (1:5, 40%) 5-20 ml/day in divided doses.

Toxicity:

- Can be sedating in some individuals and may causes increased bowel movements & flatulence.

Contraindications: None known.

Interactions:

- Theoretical interactions with NSAIDs & antibiotics (needs friendly bacteria to be effective).

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B



C



Constituents:

- Flavonoids (isorhamnetin & quercetin)
- Triterpenoid & Steroidal saponins (yields oleanolic acid)
- Carotenoids
- Bitter resin (calendulin & caledin)
- Mucilage
- Polysaccharides
- Volatile oils
- Xanthophylls

P Flower heads & ray florets

Flavonoids

C Triterpenoid & Steroidal saponins
Resin

Anti-inflammatory

A Lymphatic
Vulnerary

Topical first aid treatment and general wound healer

I Drains enlarged & inflamed lymph nodes (specific to breast & pelvis)

F Asteraceae

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial
- Anti-spasmodic
- Demulcent/Emollient & Vulnerary
- Emmenagogue
- Hemostatic
- Lymphatic
- Phytoestrogenic

Medicinal uses:

- One of the best herbs for treating **local skin problems** such as first aid treatment of minor burns and scalds with a lotion, poultice or compress.
- Internally is **anti-inflammatory in the gastrointestinal tract** (eg. gastric or duodenal ulcers)
- Has marked anti-microbial anti-fungal activity

and may be used internally and externally to combat such infections. Is a good gargle for sore throats & gums due to infection with swollen glands.

- Stimulates the **drainage of enlarged, inflamed lymph nodes** and is specific for the lymphatics in the breast and pelvic tissues.
- As an emmenagogue it has a reputation of helping delayed menstruation and painful periods.

Pharmacology:

- **Saponins** have mild phytoestrogenic activity, decrease tissue swelling, increase capillary perfusion of tissue and along with **flavonoids** decrease inflammation.
- Immuno-stimulating properties are derived from the polysaccharides and volatile oil.
- Anti-fungal properties are only found in a tincture it is the **resins** that are anti-fungal and these need 90% EtOH for extraction.
- Vulnerary actions are due to the xanthophyls (which stimulate granulation tissue), mucilage and volatile oil.

Pharmacy:

- Infusion: 1-4 g/cup TID
- Tincture: (1:2, 60%), 1.5-4.5 ml QD, or 10-30 ml weekly max.
- Topical creams, ointments, oils, poultices, suppositories, and fresh plant succus.

Toxicity:

- An extremely safe herb without documented side effects.
- There is a low but potential likelihood for allergic sensitivity.

Contraindications:

- Avoid internally in pregnancy due to potential emmenagogue effects and in known Asteraceae allergy.

Interactions: None known

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C

Herbalist Chris Hafner is credited by Matthew Wood for coining the name “herbal sunshine” in reference to *Calendula*. He adds that it can be considered a remedy “for places where the sun doesn’t shine” such as the lymphatic tissue beneath the chin, arms & armpits, breasts and in the inguinal creases, helping to ‘dry up’ fluids & dampness beneath the skin.



C

**Constituents:**

- Xanthine alkaloids (methylxanthines - caffeine, theobromine & theophylline)
- Flavonoids & Polyphenols: Catechins incl. epicatechin, epicatechin-3-gallate, epigallocatechin & epigallocatechin-3-gallate (EGCG)
- Condensed tannins (proanthocyanidins)
- Nutrients & minerals
- Oxalates

Medicinal Actions:

- Anti-microbial
- Antioxidant
- Cytotoxic & anti-cancer
- Astringent
- Cardiotonic
- Diuretic
- Immuno-stimulant
- Nervine stimulant

P Leaf & Buds

Xanthine alkaloids (e.g. caffeine)

C Polyphenols

Tannins

Antioxidant

A Cytotoxic & Anti-Cancer

Nervine stimulant

Cancer treatment & prevention

I Mental exhaustion & headaches

Inflammatory & infections disorders

F *Theaceae***Medicinal uses:**

- Has been used throughout Asia since at least 3000 B.C. to promote longevity, improve mental functions, and prevent disease (Note: Green tea has higher therapeutic properties than black tea).
- Is an excellent source of anti-oxidant compounds and will **reduce free radical damage and promote active detoxification**.
- As a nervous system stimulant can be used for fatigue and headaches.
- Has been found to have **anti-cancer & cancer preventative effects**, specifically reducing the carcinogenic effects of female hormones.
- Its immune and inflammatory modulating activity can also be beneficial in fever, cough, colds/flu, and infections, and possesses significant anti-microbial effects against bacteria, protozoa, and viruses.
- Cardiotonic effects give it use in the prevention of arteriosclerosis, high cholesterol and various heart conditions.

Pharmacology:

- Polyphenols such as **epigallocatechin gallate (EGCG)** directly scavenge free radical oxygen and block oxidation of LDL cholesterol in-vitro. Both EGCG & epicatechin directly damage bacterial membranes and are thereby bacteriocidal compounds.
- Polyphenols may protect tissues from tumor development by enhancing gap junctional communication which is otherwise inhibited in tumor development, and EGCG directly binds to certain carcinogens.
- **Caffeine** is structurally similar to adenosine, and therefore antagonizes adenosine's sympathetic nervous stimulation. (Note: adenosine inhibits neuronal activity by inhibiting pre-synaptic neurotransmitter release and by inhibitory binding to post-synaptic neurons).

Pharmacy:

- Infusion: 2 tsp/cup, infuse 3-5 min, TID. (1 cup contains approximately 20-70 mg of caffeine)
- Tincture: (1:2, 40%), 3-5 ml TID. Max 100 ml/ week.
- Standardized extract: 300-400 mg polyphenols/ day; standardized to 80% polyphenol and 55% epigallocatechin gallate.
- *Note:* if steeped for more than 2 minutes, there is an increase in tannins which precipitate caffeine and thus the stimulatory effects may be decreased.

Toxicity:

- There is theoretical, but no clinical evidence for tea to promote the formation of calcium oxalate kidney stones because caffeine induces calcium excretion and tea is contains oxalates.

Contraindications:

- Avoid in children (developing nervous system more sensitive to effects of caffeine)
- Avoid in liver disease or cardiac arrhythmias.
- Use caution in anemia or if at risk of pancreatic cancer.

Interactions:

- Use caution in anemia or if at risk of pancreatic cancer.
- Theoretically may inhibit absorption of drugs and nutrients (eg. Iron & Calcium)
- Anticoagulants due to antiplatelet activity (theoretical)
- Increased risk of caffeine toxicity with CYP 1A2 substrates, cimetidine, disulfiram, enoxacin, MAOIs, estrogens, OCPs, alcohol, fluconazole, furafylline, isoniazid, ketoconazole, macrolides, and lithium (when abruptly stopped).
- Amphetamines & nicotine may increase CNS effects
- Anti-hyperglycemics (may increase blood glucose)
- Anti-hypertensives (may increase blood pressure)
- May antagonize effects of barbiturates and benzodiazepines

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C



Constituents:

- Resin
- Phytocannabinoids: delta-9-tetrahydrocannabinol (Δ 9-THC), cannabidiol (CBD), cannabigerol (CBG), cannabichromene (CBC), tetrahydrocannabivarin (THCV) and many others.
- Volatile oil containing terpenes & Flavonoids
- Vitamins & Mineral salts (Potassium, silica, phosphates)
- Alkaloids
- Nutrients: CHOs, amino acids & proteins, fatty acids (ALA & GLA) & Chlorophyll
- Ketones & acids
- Simple esters & lactones
- Phytosterols

P Leaves, seeds, & flowering tops

Resin

C Phytocannabinoids (THC, CBD)
Flavonoids

Analgescic

A Anti-emetic
Immuno-modulator

Nausea

I Anorexia
Chronic pain

F *Cannabaceae*

Medicinal Actions:

- Analgesic (anodyne)
- Anti-emetic
- Anti-inflammatory
- Antispasmodic
- Bitter (digestive stimulant)
- Euphoric
- Immuno-modulator
- Laxative (seed)
- Nervine sedative & hypnotic
- Parturfacient

Medicinal uses:

- Historically used as an anesthetic during surgical operations, as it **relieves pain** and is beneficial in digestive, reproductive and nervous system disorders such as anxiety, multiple sclerosis, epilepsy, headaches/migraines, endometriosis, dysmenorrhea,

epilepsy through powerful anti-spasmodic effects.

- Will benefit **chronic inflammatory conditions** (e.g. neuralgia/sciatica, gout, rheumatism), insomnia and sleep disturbances, and can lift the spirits in nervous depression and debility.
- Mitigates convulsive coughs such as asthma & any irritation of the genitourinary tract (eg. cystitis, urethritis, gonorrhoea), especially when associated with nervous depression.
- May increase the strength of uterine contractions during parturition (labour)
- As an **adjunct to cancer/AIDS therapy** will reduce nausea & improve appetite. Is especially helpful in the elderly for loss of appetite, diarrhea/constipation ad glaucoma (reduces intraocular pressure)
- Applied topically will relieve itching & inflammation of cutaneous disorders such as eczema, varicose veins, corns and ulcers.

Pharmacology:

- **Phytocannabinoids** appear to be delta-9-tetrahydrocannabinol (Δ 9-THC), cannabinalol (CBN), and cannabidiol (CBD), cannabigerol (CBG), cannabichromene (CBC), and tetrahydrocannabivarin (THCV). Cannabinoids target various cellular signaling & transcriptional pathways resulting in the inhibition of pro-inflammatory cytokine release (e.g. IL-1 β , IL-6, IFN- β), and/or stimulation of anti-inflammatory cytokine release (e.g. IL-4, IL-5, IL-10, IL-13).
- **Δ 9-THC** is primarily responsible for physical & psychotropic effects. It acts as a partial agonist at CB1 & CB2 receptors. Small doses of THC reduce the action of neurotransmitter acetylcholine in the hippocampus. (Note: Other cannabinoids (such as CBD, CBC, CBG) have little, if any, psychotropic properties).
- Δ 9-THC appears to have a biphasic effect

on immune system function, with low doses seeming to have stimulatory or pro-inflammatory effects, and higher doses having inhibitory or immunosuppressive effects.

- **Cannabinol** (CBN) has possible immunosuppressive properties.
- **Cannabigerol** (CBG) is a partial CB1/2 receptor agonist any may have anti-inflammatory & analgesic properties by blocking 5-HT1A receptors and acting as an α 2- adrenoceptor agonist.
- **Cannabidiol** (CBD) does not appear to bind to either CB1 or CB2 receptors at physiologically meaningful concentrations, but it affects the activity of a significant number of other targets including ion channels, receptors, and enzymes and has anti- inflammatory, analgesic, anti-nausea, anti-emetic, anti-psychotic, anti-ischemic, anxiolytic, and anti-epileptiform effects. Also appears to induce a shift in Th1/Th2 immunobalance
- **Tetrahydrocannabivarin** (THCV) acts as a CB1 receptor antagonist and CB2 receptor partial agonist and may have anti-epileptiform/anti-convulsant properties.
- **Terpenes & flavonoids** have a broad spectrum of action including anti-oxidant, anti-anxiety, anti-inflammatory, anti-bacterial, and anti-neoplastic effects.
- Note: Various studies have reported either potentiating, opposing, or neutral interactions between Δ 9-THC and CBD. The complex pharmacology of cannabinoids, genetic differences in cannabinoid receptor structure and function, metabolism affecting cannabinoid bioavailability, prior exposure to and experience with cannabis/cannabinoids, pharmacological tolerance to cannabinoids, changes to cannabinoid receptor distribution/density and/or function as a consequence of a medical disorder.

C

Pharmacy:

- Infusion & Juices (dried flowering tops).
Note: THC has poor water solubility.
- Tincture: (1:10, 90%), 0.5-3 gtt prn
- Edibles: 2.5 -10 mg THC per serving (assuming 1 gram of dried herb contains approximately 10% THC or 100 mg THC per gram)
- Rectal: (hemisuccinate ester of Δ^9 - THC) 2.5 – 5 mg QD
- Smoking: 1-3 g QD
- Note: A typical cannabis cigarette contains between 0.5-1 g plant matter, contains 2-4% THC, and can yield between 9 -225 mg Δ^9 -THC, though the actual amount of Δ^9 -THC delivered in the smoke varies widely and has been estimated at 20 - 70%.
- Topical: Oils, lotions and ointments
- Note: Patients with no prior experience with cannabis and initiating cannabis therapy for the first time are cautioned to begin at a very low dose and to stop therapy if unacceptable or undesirable side effects occur. The variable potency of the cannabis plant material, and the different dosing regimens and routes of administration all contribute to the difficulty in reporting precise doses or establishing uniform dosing schedules for cannabis (and/or cannabinoids). **Therapeutic dosing remains highly individualized**, relies to a great extent on titration, and will vary according to the underlying disorder.

Toxicity:

- May produce unwanted side physical effects such as tachycardia, digestive upset, stupor, dizziness, irresponsive pupils, cold, clammy skin, dry mouth, lowered blood pressure, and sedation.
- Short-term psychoactive effects

associated include relaxation, time-distortion, intensification of ordinary sensory experiences, loss of inhibitions that may result in laughter and impaired function on cognitive and short-term memory tasks, exalted imagination, euphoria, dysphoria, or an acute and short-lasting episode of anxiety often resembling a panic attack more often encountered in naive users and those who consume higher doses (>5 mg oral Δ^9 -THC) and also when consumed in novel or stressful environments.

- Rare acute complications (e.g. psychosis, convulsions) are an extension of the psychotomimetic and physiologic effects of THC. Individuals experiencing psychotic reactions should stop using cannabis or cannabinoids immediately and seek prompt medical/psychiatric attention.
- Chronic heavy use has been associated with dependence (physical and psychological) respiratory ailments, amotivational syndrome and increased tolerance with frequent use and is mainly linked to changes in the availability of the cannabinoid receptors, principally the down-regulation of CB1 receptors.
- In males may reduce sperm count and motility among chronic smokers, although no effect on fertility has been shown, as these effects are modest and reversible.
- Withdrawal symptoms may appear within the first one to two days following discontinuation and may include symptoms of anger or aggression, irritability, anxiety, nightmares/strange dreams, insomnia/sleep difficulties, craving, headache, restlessness, and decreased appetite or weight loss.
- Death has not been known to result directly from the effects of cannabis, except when continually used until marasmus is induced. There have been no reliable research findings to support changes in the gross morphology of the brain.

- Evidence for a link between cannabis smoking and cancer remains inconclusive, however cytotoxic condensates, tar, ammonia, oxides of nitrogen and hydrogen cyanide, and carbon monoxide may be retained in the lungs when inhaled.
- Poor plant cultivation, storage, and harvesting may lead to toxic spores which can contaminate the plant material.
- Note: Effects from large doses are best combatted by vegetable acids such as lemon juice, emetics, and cold applications.

Contraindications:

- Use caution in cardiovascular (eg. coronary heart disease, hypertension, or heart failure) and respiratory conditions.
- Pregnancy & lactation (controversial)
- Psychosis, bipolar & Schizophrenia
- Adolescence
- Alongside driving and operation of intricate machinery
- Note: Cannabis is not an approved therapeutic substance in Canada and has not been issued a notice of compliance by Health Canada authorizing sale in Canada.

Interactions:

- Avoid concomitant use of tobacco and alcohol or illicit drugs.
- THC may potentially inhibit CYP3A4, CYP3A5, CYP2C9, and CYP2C19, while CBD inhibits CYP2C19, CYP3A4, and CYP3A5; however, higher concentrations than those seen clinically appear to be required for significant drug interactions. However it would be prudent to monitor patients on medications that are metabolized by the above mentioned enzymes including: amitriptyline, fentanyl (opiods), anti-retrovirals

or anti-psychotics such as clozapine or olanzapine.

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C



Constituents:

- Flavonoids
- Fumaric & bursic acids
- Isothiocyanates (sulforaphane)
- Amino acids: Choline & Acetylcholine, Histamine & Tyramine
- Oxalates & Nutrients (Vitamin K, C, Beta-carotene, potassium, calcium)

P Aerial

Flavonoids

C Isothiocyanates (sulforaphane)
Amino acids

Hemostatic

A Diuretic
Antitumor

I Hemorrhagic conditions (post partum
& menorrhagia)

F *Brassicaceae*

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial
- Antitumor
- Astringent
- Diuretic
- Febrifuge
- Hemostatic (Styptic)
- Uterine tonic

Medicinal uses:

- Is used for the most part as a styptic in the reproductive tract and is most indicated in cases of **uterine bleeding, post partum hemorrhage, and menorrhagia.**
- It can allay internal bleeding in any site, but has most efficacy in staunching bleeding from ulcerated tissues (lung, stomach, kidneys, etc.).

- Its styptic actions are also noted on external application in the treatment of wounds, hemorrhoids, and epistaxis.
- Is also a soothing, mildly stimulating diuretic, most indicated in cases of hematuria and urinary sediment.
- Ethanol extracts have shown inhibition on the cell growth and apoptosis of human oral cancer cells.

Pharmacology:

- An interesting styptic as it is NOT rich in tannins. Studies of constituents are inconclusive as to which are responsible for the actions of the plant.
- Polypeptides are thought to be responsible for the uterine contractile actions (similar to the contractions produced by oxytocin).
- Flavonoids are thought to contribute to anti-inflammatory and anti-ulcer actions.
- Transient decrease in blood pressure may be due to the acetylcholine.
- Sulforaphane has shown anti-inflammatory activity through modulation of nitric oxide, interleukins 1, 6 & 10, prostaglandin E2 (PGE2) & cyclooxygenase-2 levels.

Pharmacy:

- Infusion: 3-5 g/day (for heavy bleeding: 5g/ cup TID).
- Tincture (1:5, 25%), 2-10 ml TID. (10 ml short term for heavy bleeding). Max 100 ml/week.
- Poultice, Compress for external bleeding.

Toxicity: None known.

Contraindications:

- Theoretically in pregnancy due to its

emmenagogue & uterine stimulant action

- Use with caution if patient has a history of oxalate kidney stones.

Interactions: Vitamin K content should be considered if large quantities are used for a week or more in patients concurrently taking anticoagulant medications

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P Fruit

Capsaicinoids (capsaicin)

C Steroidal saponins (capsicidins)
Carotenoids & Tocopherols

Analgesic

A Circulatory stimulant (Diaphoretic)
Rubefacient

Poor circulation (eg. Raynaud's,
I headaches, dyspepsia)

Topical counter-irritant in rheumatic &
neuralgic pains

F *Solanaceae*

Constituents:

- Capsaicinoids (capsaicin)
- Carotenoids & Tocopherols
- Steroidal saponins (capsicidins)

Medicinal Actions:

- Analgesic
- Antimicrobial
- Antioxidant
- Carminative & Antispasmodic
- Circulatory stimulant
- Diaphoretic
- Febrifuge
- Hemostatic
- Rubefacient

Medicinal uses:

- One of the purest of all known stimulants and the most useful of the stimulating diaphoretics. Wwill increase body temperature, and aid in infections & general body cleansing.
- It regulates blood flow, strengthens the heart, arteries, capillaries and nerves and will aid in poor peripheral circulation causing cold hands and feet.
- Is used in flatulent dyspepsia and colic, and as a circulatory stimulant will increase blood supply to the digestive organs hence enhancing their activities (secretions and regular contractions).
- Topically it is used a rubefacient to increase circulation and aid in problems such as rheumatic pains. It's counter-irritant effect causes vasodilation (and heat) in whichever tissue with which it comes into contact.

- Exerts an analgesic effect systemically if taken internally or in the area of topical application, and is used to relieve pain associated with Herpes zoster, arthralgia, and headaches.
- Circulatory stimulation may mobilize lipids from adipose tissue and reduce triglycerides, thus has been marketed by some companies as a weight loss supplement.

Pharmacology:

- **Capsaicinoids** (mainly capsaicin) stimulates circulation, especially towards the GIT mucosa which is sensitive to capsaicin, promoting blood flow to the area and increasing vascular permeability.
- Appears to stimulate excessive production of substance P (a neurotransmitter involved in pain, inflammation and pruritus) by peripheral neurons to the point of depletion from sensory afferent nerves creating temporary analgesic effects.

Pharmacy:

- Tincture: (1:5, 25%), 0.25-.5 TID, **Maximum weekly dose is 3 ml.**
- Capsules: 30-120 mg TID.
- Topical: Ointment and creams, prn.
- Note: All internal forms of capsicum are best tolerated if taken with food. When added to other herbs will enhance their stimulatory effects (eg. is a good addition to formulas in order to enhance their circulation and stimulatory effects of other herbs (eg. Combines well with Ginkgo biloba in the treatment of Raynaud's syndrome).

Toxicity:

- Symptoms of internal toxicity include: heartburn, anal burning, and gastric erosions, GIT upset, and diarrhea. Internal toxicity may occur if ingested in quantities greater than the therapeutic doses away from food. May cause transient increase in heart rate

and blood pressure.

- External adverse effects may occur if extracts are highly concentrated in capsaicin and are applied for a prolonged period of time. Adverse reactions to topical application include: burning, stinging, erythema, heat, pain, and with prolonged use may cause permanent loss of sensory nerve function in the area of application.

Contraindications:

- **Internal use:** active duodenal ulcer, GERD, acute diarrhea, acute cholelithiasis, and severe hypertension. During pregnancy doses should not exceed normal dietary levels, and caution should be used during lactation.
- **External use:** application to eyes and/or mucosal membranes.
- Avoid in allergy to Solanaceae family
- Note: Should be reserved for use when significant stimulation is required. Is indicated in gastric and digestive insufficiency, but relatively contraindicated in ulcerations and inflammations of the digestive tract.

Interactions: None known

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C



P Leaf & Pods

C Anthraquinones (sennosides)
Naphthalene glycosides
Mucilage

A Laxative (stimulating)
Cathartic
Demulcent

I Temporary laxative, especially indicated in atonic constipation

F *Fabaceae*

Constituents:

- Anthraquinone glycosides (sennosides & their aglycones)
- Naphthalene glycosides
- Mucilage
- Flavonoids
- Volatile oil
- Resins

Medicinal Actions:

- Stimulant laxative & Cathartic (direct stimulation of a bowel movement)

Medicinal uses:

- Used as a **temporary laxative for non-inflammatory conditions of the intestinal tract.**
- Especially indicated in atonic constipation

when fast action is needed or until the cause of constipation is discovered.

- Its influence is chiefly on the small intestines, augmenting secretions and peristalsis and producing loose, yellowish-brown evacuation.
- Has demonstrated anthelmintic properties in vitro.

Pharmacology:

- **Anthraquinones** are absorbed into the blood and re-secreted into the colon as active anthraquinones where they stimulate smooth muscle contraction.
- Resin (highest in the leaves) can be irritating to the upper GIT causing nausea.

Pharmacy:

- Infusion: 4-12 dried pods (1 tsp) steeped in cold or hot water for 6-12 hours.
- Tincture: (1:1, 25%) 0.5-2 ml TID. Max 40 ml/week.
- Dried herb: 0.5-2 g/day.
- Note: Do not use > 10 days consecutively.
- If the pods are soaked in cold water, resins are not extracted and the infusion has less of a laxative action. A hot senna tea is therefore a stronger laxative. It is best to combine with carminative herbs to reduce griping.

Toxicity:

- Use > 10 days consecutively frequently exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur.
- Recurrent use or abuse can lead to electrolyte imbalances (particularly hypokalemia), dehydration, and muscle and kidney destruction with hematuria and albuminuria.
- Adverse effects include acute intestinal pain and cramping (can often be offset with carminatives).
- Harmless reddish discoloration of urine and feces may occur.
- Pseudomelanosis coli (PMC) is a reversible deposition of active anthraquinone glycosides in the colon wall may occur. Long term use may predispose to colon cancer.

Contraindications:

- Use > 10 days, intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.

- Pregnancy (can provoke reflex contractions in the uterus when taken during pregnancy leading to miscarriage).

Interactions:

- Due to dramatic decrease in transit time, can interfere with absorption of practically any drug.
- Avoid concomitant use with drugs that cause hypokalemia, cardiac glycosides, anti-arrhythmics, and some diuretics.

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C

P Root & Rhizome

Alkaloids

C Steroidal saponins

Resin

Antispasmodic

A Uterine tonic

Parturifacient

Labour prep

I Loss of tone or inflammation of the uterus

F *Berberidaceae*

Constituents:

- Alkaloids (methycystine, anagryne, bapitfoline, magnoflorine)
- Steroidal saponins (caulosaponin & caulophyllosaponin)
- Triterpene glycosides
- Resin

Medicinal Actions:

- Anti-inflammatory
- Anti-rheumatic
- Antispasmodic
- Diuretic
- Emmenagogue
- Oxytotic
- Parturient (facilitates labour)
- Uterine tonic

Medicinal uses:

- An excellent uterine tonic that will increase blood supply to the uterus via vasodilatation and is indicated in **any conditions of uterine weakness and loss of tone due to chronic inflammation** (eg. cervicitis, chronic PID, endometriosis, dysmenorrhea, amenorrhea, ovarian pain and/or inflammation, irregular menses, infertility, and threatened miscarriage).
- Is specifically indicated when uterine spasms are worse the first day of menstrual flow and in cases where there is pelvic pain/a sense of pelvic fullness (heavy or deep aching pain)
- Its antispasmodic action will ease false labour pains, and when used just before birth will help facilitate labor by normalizing uterine contractions, relax the cervical os, and help ensure an easy delivery. Muscle contractions are strengthened (positive inotropic effect) and slowed down (negative chronotropic effect).
- As an emmenagogue it can be used to

bring on a delayed or suppressed menses while ensuring that the pain that sometimes accompanies it is relieved.

Pharmacology:

- **Steroidal saponins** influence hormonal activity and contribute to anti-inflammatory and antispasmodic effects.
- **Alkaloids** are oxytocic, antispasmodic and cardioactive.
- May enhance estradiol binding to estrogen receptors and increase estradiol-induced transcription activity estrogen-responsive cells.

Pharmacy:

- Decoction: 1 tsp./cup; 1 cup TID.
- Tincture (1:5, 45%) 1-3 ml TID. 60 ml weekly max.

Toxicity:

- Nausea, headache, and increased blood pressure at doses 3-4 x greater than those listed above.
- There are 2 cases in the literature of fetal harm (both associated with improper use including overdosing and use for too long a period of time).
- Based on case reports of cardiac toxicity, abortive effects, nicotinic toxicity and potential teratogenicity, should be used with caution and only under medical professional supervision such as obstetricians, midwives, naturopathic doctors and medical herbalists.

Contraindications:

- Pregnancy (besides labour)

Interactions: None known

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C





C

Constituents:

- Triterpenoid saponins (asiaticoside, madecassoside & brahmoside)
- Nutrients (Vitamins K & B, Na, Ca, Mg)
- Amino acids
- Allantoin
- Flavonoids (quercetin & kaempferol)
- Volatile oils
- Alkaloids
- Phytosterols

Medicinal Actions:

- Adaptogen
- Alternative
- Anti-inflammatory
- Anti-rheumatic
- Bitter
- Connective tissue builder
- Diuretic
- Nervine Tonic
- Peripheral vasodilator
- Vulnerary

P Aerial

Triterpenoid saponins (asiaticoside)

C Vitamins & Minerals

Flavonoids

Nervine tonic

A Anti-inflammatory

Connective tissue builder

Poor cognition & memory

I Wound healing & weak or inflamed connective tissues

F *Apiaceae*

Medicinal uses:

- A revitalizing herb that **strengthens nervous system function & memory**. Is a balancing tonic that brings stimulation to the brain via cerebral blood circulation, while being a relaxing nervine to other areas of the body.
- Is also used in skin conditions & wound healing to speed up collagen formation & angiogenesis, and increasing antioxidant levels within the wound in early stages of tissue repair.
- **Promotes the repair of connective tissue** including hair and nails and the treatment of burns and scars. Also useful in venous insufficiency and microangiopathy.

Pharmacology:

- **Triterpenoid saponins (asiaticoside)** are vulnerary and anti-inflammatory. Will increase vascularization of connective tissue and the formation of structural glycosaminoglycans (chondroitin sulfate, hyaluronic acid).
- **Brahmoside** is a diuretic, CNS depressant and reduces motor activity.

Pharmacy:

- Infusion: 1 tbsp/cup, infuse 10 min, TID.
- Tincture: (1:5, 45%), 1-2 ml TID. Max 40 ml/week.
- Extract: standardized to contain asiaticoside (40%), 60-120mg QD.
- Topical as poultice, oil, lotion or salve.

Toxicity:

- Side effects may include GIT upset, itchiness, contact dermatitis, sedation, headaches, and photosensitization.
- Carcinogenic concerns if used long term topically.

Contraindications:

- Pregnancy & Lactation (safety not established, may decrease fertility)
- Allergic sensitivity in some patients.
- Avoid in history of liver disease or where sedation poses danger.

Interactions:

- May inhibit efficacy of anti-diabetic agents & anti-hyperlipidemics
- May have additive effects with vasodilators, CNS depressants, and alter effects of GABAergic medications.

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The Chinese value *Centella* more as a plant that increases longevity and brain capacity that for any other purpose. An Indian proverb has been translated and reads, "a leaf or two a day will keep old age away".





C

Constituents:

- Steroidal saponins (chamaelirin & helonin)
- Glycosides

Medicinal Actions:

- Diuretic
- Uterine tonic
- Emmenagogue
- Hormone Balancer

Medicinal uses:

- Tonifies and strengthens the reproductive system as a whole.
- Though primarily used for the female

P Root

C Steroidal saponins (chamaelirin & helonin)
Glycosides

A Uterine tonic
Emmenagogue
Hormone Balancer

I Endometriosis, PMS & Dysmenorrhea

F *Liliaceae*

system, it can be equally beneficial for men to impart tone & vigor to the pelvic organs.

- As a hormone balancer is particularly useful in dysmenorrhea, amenorrhea, and threatened miscarriage.
- Note: Is considered an endangered plant and should be used consciously & sparingly by the herbal practitioner.

Pharmacology:

- **Steroidal saponins** are phytoestrogenic and act amphoterically in situations of hormonal imbalance (are based on diosgenin)

Pharmacy:

- Decoction: 1 tsp/cup water, 1 cup TID.
- Tincture: (1:5, 45%), 3-5 ml TID. Max 100 ml/week.

Contraindications:

- Avoid in early pregnancy.

Toxicity:

- In large doses, it is a cardiac poison and will cause nausea & vomiting.

Interactions: None known**References**

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This herb goes by many names; Helonias, blazing star and sometimes fairywand. Both Native Americans and midwives have used this herb for hundreds of years. It is native to North America, but grows best in eastern Canada and the United States. Because of its popularity and the human desire to profit, this herb is now threatened. In fact wild harvesting of this herb is pushing it ever closer to the endangered list, and in fact some herbalists refuse to dispense it.

C



C



Constituents:

- Saponins (chionanthin)
- Lignan glycosides (Phyllirine, phyllirin & pinoresinol)
- Secoiridoids (oleuropein, ligustroside & angustifolioside)

Medicinal Actions:

- Alterative
- Bitter
- Hepatic, Choleric & Cholagogue
- Diuretic
- Laxative
- Lymphatic

P Root Bark

Saponin glycoside (chionanthin)
C Lignan glycosides
Bitter principle

Alterative
A Bitter
Hepatic, Choleric & Cholagogue

Hepato-biliary congestion (e.g. gallstones)
I Splenomegaly
Used historically to treat malaria

F *Oleaceae*

Medicinal uses:

- Is most indicated in states of **hepato-biliary congestion with partial obstruction** (due to hepatic inflammation and/or gall stones), excess mucous, and impaired hepatic functioning.
- In gout and impaired metabolism of urea with resultant increase in uric acid excretion and consequent joint disease).
- Used historically to treat malaria because it stimulates the activity of both the liver and the spleen, and in fact stimulates all glandular tissue to some extent. For this reason it may be helpful in the treatment of type II diabetes & hyperglycemia through its hepatic and pancreatic stimulation.

Pharmacology:

- Not specifically known.
- In general, bitter cholagogues stimulate the flow of bile into the small intestine whereas choleric increase the production of bile by the liver.

Pharmacy:

- Decoction: 1-2 tsp bark/cup water, 1 cup TID.
- Tincture (1:5, 25%), 1-2 ml TID. 40 ml weekly max.

Toxicity:

- Excessive salivation may result.

Contraindications:

- Should not be used in cases of impacted stones or malignant growths obstructing the hepatic duct.

Interactions: None known

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Fringe tree gets its name from its clouds of fleecy white, softly fragrant flowers that hang from the branches in late spring and early summer. It is a deciduous shrub or small tree that can grow up to 35' in the wild, and most often occurs in rich, moist woods and hillsides, moist stream banks, limestone glade margins and rocky bluffs and ledges.

C





C

Constituents:

- Volatile oil (e.g. cinnamaldehyde, eugenol, and methyleugenol)
- Tannins
- Coumarins
- Methylhydroxychalcone polymers

Medicinal Actions:

- Antimicrobial
- Astringent
- Carminative & Antispasmodic
- Hemostatic
- Hypoglycemic

Medicinal uses:

- Used often for its **smooth muscle relaxing effects**. It acts systemically in this regard and is useful in the treatment of hypertension, bronchial spasm, dysmenorrhea, diarrhea, and spastic constipation.

P Inner bark

Volatile oil (cinnamaldehyde)

C Tannins

Methylhydroxychalcone polymers

Astringent

A Carminative & Antispasmodic

Hypoglycemic

Hyperglycemia & Type 2 Diabetes

Hypertension

I

Spastic constipation & muscle cramping

F *Lauraceae*

- As a carminative, is a useful companion to laxatives and is considered warming towards the intestinal tract.
- Astringent properties make it useful for the treatment of **diarrhea and for conditions of passive hemorrhage** (e.g. epistaxis, menorrhagia, post partum hemorrhage).
- Helpful in colds and flus as it is anti-viral.
- Has shown beneficial effects on **hyperglycemia in type II diabetics** by promoting insulin release, enhancing insulin sensitivity, and exerting activity in the regulation of protein-tyrosine phosphatase to insulin receptor kinase, and potentially as lower serum lipid levels.

Pharmacology:

- **Volatile oils** are antispasmodic, antibacterial, antifungal, & antiviral.
- **Cinnamaldehyde** inhibits cyclooxygenase & lipoxygenase enzymes thus decreasing inflammation. Also expresses insulinotropic

effects on blood glucose by up-regulating GLUT4 gene expression & glycoprotein movement from intracellular compartments to facilitate glucose entrance into the cells.

- Tannins are highly astringent.

Pharmacy:

- Infusion: 1 tsp/cup, 1 cup TID.
- Tincture (1:5, 40%) 2 – 8 ml/day. 60 ml weekly max.
- Crude herb as food.

Toxicity:

- Adverse effects can be nausea or gastrointestinal burning. Topically may cause contact dermatitis and irritation of mucous membranes.
- Overdose of the volatile oil (amounts > 0.5 ml/kg body weight) can cause nausea, vomiting, convulsions, pulmonary edema, kidney & liver damage, and coma.

Contraindications:

- Use caution in large doses with conditions that are exacerbated by GI stimulation (eg. gastritis, GERD, biliary obstruction, acute cholelithiasis)
- Use caution above culinary uses in pregnancy & lactation.

Interactions:

- Tannin content promotes gut motility and may interfere with absorption of many other medicines when taken simultaneously.
- Anticoagulants due to antiplatelet activity (theoretical)
- Anti-diabetic agents (may decrease blood sugar)

References

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C

The two major types of cinnamon used in food preparation are Ceylon cinnamon and Cassia cinnamon. Ceylon cinnamon (*Cinnamomum verum* or *Cinnamomum zeylanicum*), native to Sri Lanka, is also known as “true cinnamon.” Although related, cinnamon and cassia are not the same plant, and they should be treated as separate herbs, both from a nutritional and a health standpoint.





C

Constituents:

- Xanthine alkaloids specifically methylxanthines (Caffeine, theobromine, & theophylline)
- Polyphenols & Polyamines (Trigonelline & Chlorogenic acid)
- Tannins

Medicinal Actions:

- Analgesic
- Anti-emetic
- Bitter
- Diuretic
- Nervine Stimulant

Medicinal uses:

- Has a direct stimulating action on the central nervous system and a secondary diuretic effect.
- It potentiates the analgesic effect of aspirin

P Seed kernals

Xanthine alkaloids (methylxanthines)
C Polyphenols & Polyamines
 Tannins

Analgesic
A Bitter
 Nervine Stimulant

Headaches & migraines
I Bowel cleansing
 Enhance mental & physical performance

F *Rubiaceae*

and other non-steroidal anti-inflammatory drugs.

- Is a bitter substance and is a powerful promoter of peristalsis .
- Additionally, coffee worsens anxiety type of depression.
- Is used to enhance exercise performance.
- Short-term consumption of coffee can cause diuresis, gastrointestinal distress, tremors, insomnia, and anxiety.
- Traditional use as enemas for bowel cleansing

Pharmacology:

- Xanthine Alkaloids - Methylxanthines (Caffeine, theobromine, & theophylline) have stimulating effects on the CNS & heart, and may act as vasodilators and smooth muscle relaxants.
- Caffeine competitively inhibits the inhibitory neurotransmitter adenosine, and may

increase the neurotransmission acetylcholine, epinephrine, dopamine, and serotonin.

- Caffeine potentiates calcium release from skeletal muscle sarcoplasmic reticulum, reduces plasma potassium during exercise, and has a muscle glycogen sparing effect.

Pharmacy:

- Infusion: 1 Tbsp/cup, QD – TID.

Toxicity:

- In persons sensitive to the effects of caffeine, may cause tremors, diuresis, arrhythmia, agitation, insomnia, diaphoresis, gastrointestinal distress (usually loose stool) and anxiety at almost any dose.
- During pregnancy, large doses may stimulate contractions and cause miscarriage.

Contraindications:

- Avoid during pregnancy & lactation (controversial).
- Use caution in kidney and liver disease.

Interactions:

- May inhibit the absorption of iron.
- Potential additive effect with sympathomimetics.

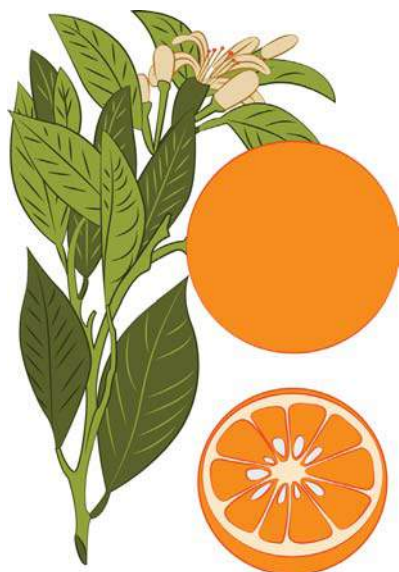
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Coffea arabica is a species of *Coffea* originally indigenous to the forests of the southwestern highlands of Ethiopia. It is also known as the "coffee shrub of Arabia", "mountain coffee", or "arabica coffee", and is believed to be the first species of coffee to be cultivated, which is well documented by the 12th century.



C



Constituents:

- Flavonoids (hesperidin & isohesperidin)
- Protoalkaloids (p-synephrine & octopamine)
- Bitter principle (aurantiamarin)
- Mucilage
- Volatile oil (90% limonene)

Medicinal Actions:

- Anti-fungal
- Carminative
- Bitter tonic
- Stimulant (Thermogenic agent)

Medicinal uses:

- Is aromatic and slightly tonic, and often used to enhance the taste of disagreeable medicines or to lessen their tendency to nausea, and for these purposes it is frequently added to bitter tinctures &

P Peel/Rind

Protoalkaloids

C Flavonoids

Volatile oil

A Carminative

Thermogenic agent

I Dyspepsia (nausea, gas & bloating)

Weight management

F Rutaceae

infusions.

- Historical use to aid indigestion, flatulence, and abdominal bloating.
- Is used in weight management products due to purported effects on metabolic processes, including an increase in basal metabolic rate and lipolysis as well as mild appetite suppression.
- Has been shown to increase resting metabolic rate and energy expenditure, and modest increases in weight loss have been observed with long-term use.

Pharmacology:

- **Protoalkaloid (p-synephrine)** increase metabolism and energy expenditure due to a paucity of binding to α -, β -1 and β -2 adrenergic receptors while exhibiting modest binding to β -3 adrenergic receptors. However the structural (stereochemical differences between p - synephrine relative to other biogenic amines such as epinephrine, nor-

epinephrine, ephedrine and m-synephrine result in markedly different adrenergic receptor binding and pharmacokinetic characteristics, and as a consequence markedly different pharmacological properties. One cannot extrapolate the properties of other biogenic amines to p-synephrine based on some structural similarities.

Pharmacy:

- Infusion: 1 tsp dried peel in 1 cup water, BID

Toxicity:

- Large quantities may cause GIT upset.
- Adverse cardiovascular effects due to alkaloids have been reported however inconsistently. Recent research demonstrated that then extract alone (p-synephrine) did not produce significant adverse events as an increase in heart rate or blood pressure, or alter electrocardiographic data, serum chemistry, blood cell counts or urinalysis.

Contraindications:

- Use caution in history of CAD, HTN, arrhythmia, migraines, narrow-angle glaucoma, photosensitivity, seizure, vascular disease, stomach or intestinal ulcers.
- Avoid in pregnancy & lactation (effects unknown)

Interactions:

- With CYP 3A4 substrates may increase effects through enterocyte concentrations.
- Avoid use with MAOIs, photosensitizing agents and in hyperthyroidism (theoretical).
- May increase adverse effects of adrenergics, decongestants (eg. Dextromethorphan), and

warfarin.

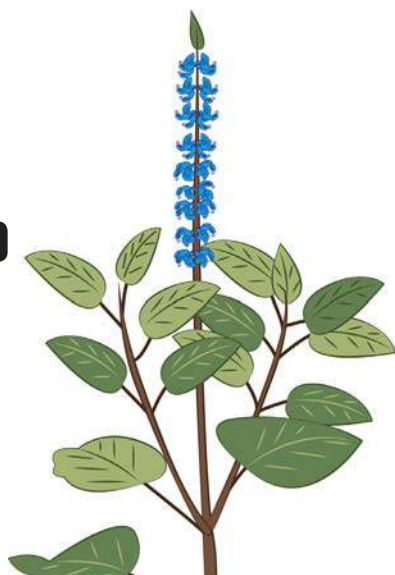
- May inhibit effects of anti-adrenergic agents, anti-arrhythmics, and anti-hypertensives.
- May increase levels of felodipine & indinavir.

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C





C

Constituents:

- Labdane Diterpenoids (forskolin/coleanol)
- Volatile oils

Medicinal Actions:

- Anti-inflammatory
- Anti-platelet
- Hypotensive
- Bronchodilator
- Thermogenic agent (lipolysis stimulator & thyroid hormone release stimulator)

Medicinal uses:

- In cardiovascular conditions such as **hypertension and angina** will lower blood pressure, inhibit platelet aggregation, and increase vasodilation without increasing myocardial oxygen consumption giving it use in cases of cerebral vascular insufficiency and post-stroke.

P Root

C Labdane Diterpenoids (Forskolin)
Volatile Oil

A Thermogenic agent
Thyroid stimulant
Bronchodilator

I Hypothyroidism
Asthma
Weight management

F *Lamiaceae*

- As a bronchodilator, will **relieve symptoms of asthma** and other conditions characterized by decreased levels of cAMP (e.g allergies, eczema, psoriasis & glaucoma).
- In **hypothyroidism** will stimulate thyroid hormone release and increase thyroid hormone production.
- May have use in prevention of cancer metastases and tumor colonization.
- In weight loss has demonstrated increased lipolysis in fat cells.

Pharmacology:

- **Diterpenoid (Forskolin)** is responsible for virtually all pharmacological activities. It's primary mode of action is to increase cyclic adenosine monophosphate (cAMP) and cAMP-mediated functions, via activation of the enzyme adenylate cyclase. Potentiation of cAMP in turn inhibits basophil and mast cell degranulation and histamine release,

lowers blood pressure and intraocular pressure, has a positive inotropic action on cardiac tissue, inhibits platelet aggregation, promotes vasodilation, bronchodilation, and thyroid hormone secretion, and stimulates lipolysis in fat cells.

- Forskolin antagonizes the action of platelet-activating factor (PAF) by interfering with PAF binding to receptor sites, playing a central role in many inflammatory and allergic processes including neutrophil activation, increasing vascular permeability, smooth muscles contraction including bronchoconstriction, and reduction in coronary blood flow.
- Forskolin also appears to have an effect on several membrane transport proteins, and inhibits glucose transport in erythrocytes, adipocytes, platelets, and other cells.

Pharmacy:

- Capsules: 100-250 mg BID (standardized to 10 % forskolin)
- Note: Crude extracts may not be sufficient to illicit pharmacological effects.

Toxicity:

- Overall very safe. May cause GIT upset.

Contraindications:

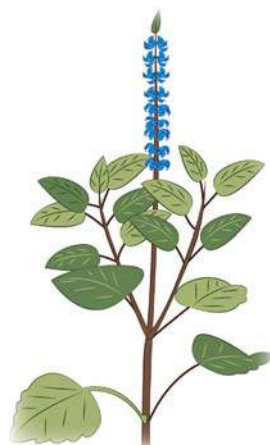
- Use caution with active peptic ulcer, hypotension, bleeding disorders, and in pregnancy/lactation.

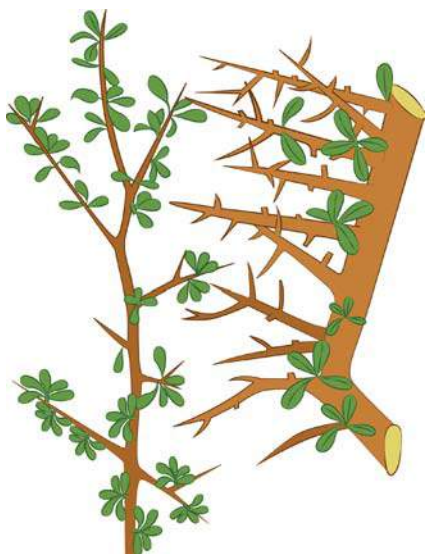
Interactions:

- Theoretical potentiating effects with anticoagulant and antihypertensive agents.

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P Bark Resin

Volatile oil

C Oleo-Resins (commiphoric acids)
Tannins

Antimicrobial (anti-fungal)

A Astringent
Anti-inflammatory

Inflammation & infection of mucous
membranes (e.g. sinusitis, gingivitis,
pharyngitis & vaginitis)

I Hypothyroidism

F *Burceraceae*

Constituents:

- Volatile oil (heerabolene, eugenol, cuminaldehyde & furanosesquiterpenes)
- Oleo-Resins (commiphoric acids & commiferin)
- Phytosterols
- Tannins

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial (anti-fungal)
- Analgesic
- Antioxidant
- Astringent
- Carminative & Antispasmodic
- Emmenagogue
- Expectorant

Medicinal uses:

- Primarily used as a gargle, steam inhalation, & douches in **cases of inflammation & infection** such as pharyngitis, laryngitis, sinusitis, tonsillitis, gingivitis, leukoplakia, vaginitis, toothache, mouth ulcers & bleeding gums.
- Direct antimicrobial action is useful topically for wounds warts & abrasions.
- Astringent action tends to have a **normalizing effect (toning & tightening) on mucosal secretions** by thinning copious, and thus contributing to expectoration and anti-inflammatory activity.
- Has a **stimulating effect on the thyroid gland** and may be indicated in secondary hypothyroidism.
- Studies continue on the potential anticancer and analgesic actions of myrrh resin.

Pharmacology:

- **Resins** produce actions exerted locally on the tissues with which they come into contact. Will exert a reflex action from the gut to increase secretions in the respiratory tract, thus thinning thick mucous and encouraging expectoration.
- **VO & resin** stimulates the production of white blood cells & macrophages and has been shown kill various microbes producing direct anti-microbial effects.
- **VO** may bind to TSH receptors on the thyroid exerting a stimulating effect.

Pharmacy:

- Powder in cream or sprinkled directly on area, or added to water to make an infusion.
- Tincture (1:5, 90%), 1-2 ml TID. 40 ml weekly max.
- For a gargle: use 1 part tincture: 5 parts water
- For a douche: use 1 part tincture: 8 parts water.

Toxicity:

- In large doses may cause tachycardia, gastric burning, diaphoresis, vomiting, and catharsis.

Contraindications:

- Pregnancy and excessive uterine bleeding due to emmenagogue and abortifacient effects.

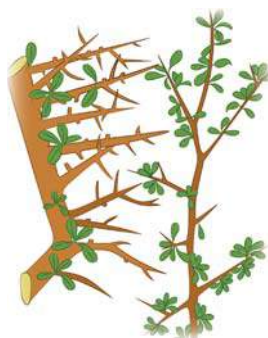
Interactions:

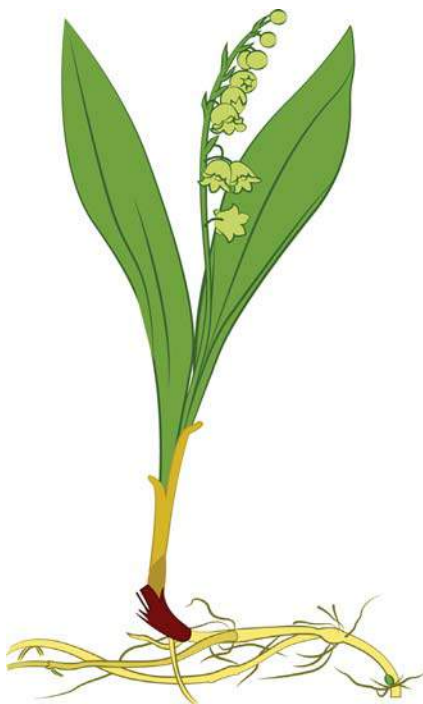
- May interfere with absorption of many lipophilic drugs.

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C





C

P Aerial

Cardiac glycosides (convallatoxin)

C Saponins
Flavonoids

Cardioactive-tonic & Stimulant

A Anti-arrhythmic
Diuretic

I Cardiac irregularities (arrhythmia)
Congestive heart failure with edema

F *Liliaceae*

Constituents:

- Cardioactive glycosides (convallotoxin, convallotoxol, convalloside, convallotoxoloxide, convallarin, convallamarin & glucoconvalloside)
- Saponins (including convallarin & convallaric acid)
- Asparagine
- Flavonoids
- Volatile oils (farnesol)

Medicinal Actions:

- Anti-arrhythmic
- Antispasmodic
- Diuretic
- Cardioactive-tonic & stimulant (positive inotropic and negative chronotropic)
- Hypertensive

Medicinal uses:

- Will increase myocardial efficiency & stroke volume without putting extra demands on coronary oxygen supply, thus increasing the efficiency of the heart muscle itself.
- Is indicated in mild to moderate degrees of heart failure and is **specific for cardiac irregularities due to mechanical impediments** (ie. a heart that is weakened secondary to poor valvular function) such as congestive heart failure with edema.
- Is also indicated in bradycardic and/or arrhythmic forms of heart failure such as mitral stenosis & regurgitation.
- Is considered a weaker (and safer) cardioactive plant than Digitalis sp.

Pharmacology:

- **Cardiac glycosides** (convallamarin & convallarin) have stronger cardiac effects than Digitalis but a shorter half-life, and aglycones have a slower absorption rate, thus avoiding toxic buildup. These glycosides inhibit the sodium potassium cellular pump leading to a rise in intracellular calcium, which increases the contractile force and speed of the heart muscle (positive inotropy). This action translates into increases cardiac output and other effects.
- Flavonoids stimulate vasodilation of coronary vessels but have a hypertensive effect systemically.
- Asparagine is diuretic and helps drain fluids from edematous tissue.
- Note: Cardioactive glycosides are released sequentially in the body, resulting in a lengthening of the cardiac response and the avoidance of an abrupt and undesirable peak in plasma concentration. Certain non-cardioactive glycosides also present increase almost 500 times the water solubility of convallatoxin and convallatoxol, while other glycosides act synergistically by occupying protein binding sites and thereby effecting a high plasma concentration of active glycosides with correspondingly increased bioavailability.

Pharmacy:

- Dried leaf: 150 mg, TID.
- Infusion: 1 tsp/cup. Dried leaves: 60-200mg TID.
- Tincture (1:5, 40%), 0.5-1.0 ml TID (8-15 drops)
- Note: Short term use best (4-6 weeks). Lower doses are tonic, moderate doses decrease heart rate, larger doses increase heart rate.

Toxicity:

- Signs of toxicity include nausea, vomiting, catharsis, cardiac arrhythmias, hypertension, restlessness, trembling, mental confusion, extreme weakness, depression, collapse of circulation, and death.
- Note: For practitioner use only. Monitor BP & edema.
- Red fruits are highly poisonous.

Contraindications:

- Use caution in hypertension.

Interactions:

- Use alongside anthraquinones (through their laxative effects) can deplete potassium levels, which will potentiate the effect of cardioactive glycosides. This potentiation may result in cardiac arrhythmias.

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P Leaf & Berries

C Oligomeric proanthocyanadins
Phenolic acids
Triterpene saponins

A Adaptogen
Antioxidant
Cardiac tonic & trophorestorative

I Cardiac insufficiency (e.g. post MI) & arrhythmias
Atherosclerosis
Angina & Hypertension

F *Rosaceae*

Constituents:

- Oligomeric proanthocyanadins (OPCs) & Anthocyanidins
- Flavonoids (kaempferol, quercetin, apigenin, luteolin & rutin)
- Amines (phenylethylamine, tyramine, choline)
- Phenolic, carboxylic & triterpene acids (ascorbic, crategolic acid & ursolic acid)
- Triterpene saponins
- Tannins

Medicinal Actions:

- Adaptogen (specific to circulatory system)
- Anti-arrhythmic
- Antioxidant
- Cardiac tonic & trophorestorative
- Coronary & peripheral vasodilator
- Diuretic
- Hypotensive

Medicinal uses:

- The Berry is considered one of the **best tonic remedies for cardiovascular system**, and will act in a normalizing way by either stimulating or depressing cardiac activity based upon the need.
- Will reduce myocardial oxygen demand by increasing coronary blood flow, thereby protecting against myocardial damage.
- As a long-term treatment may be used safely in heart failure (cardiac insufficiency), coronary artery disease, palpitations, arrhythmias, hypertension, atherosclerosis, hypercholesterolemia, angina, and weakness of the myocardium after infectious disease or ischemia.
- Leaves & Berries will play a role in any treatment of **vessel or connective tissue problems** including varicose veins, ulcers, and osteoporosis.

Pharmacology:

- **Oligomeric procyanidins** are antioxidant, improve coronary circulation and have negative chronotropic & positive inotropic action on the heart.
- The resulting coronary vasodilation promotes decreased vascular resistance, hypotension, increased nutrition & energy stores to myocardial cells.
- Inhibition of phosphodiesterase (PDE) causes increased levels of cAMP in myocardial cells, thus prolonging the effective refractory period of the heart muscle. Also inhibits angiotensin converting enzyme.
- **Flavonoids** relax and dilate arteries and are highly antioxidant. Rutin specifically, improves integrity of blood vessels and capillaries.
- **Anthocyanidins and Vitamin C** work synergistically to help stabilize connective tissues & collagen in cartilage and bone by strengthening cross-links between collagen chains.

Pharmacy:

- Dried/fresh leaf, flower or berry: 1.5 – 3.5 g dry (3x if fresh) infusion or decoction, TID.
- Tincture (1:5, 45%), 1-2 ml TID. Max 40 ml/week.
- Standardized extract containing 18% OPCs: 250-500 mg QD.
- Note: There is no restriction on the long-term use. Should be used at least 2 months for treatment of heart conditions.

Toxicity:

- No adverse effects expected within recommended doses.

- Potential for GIT upset and CNS disturbance.

Contraindications:

- Use caution in severe hypotension.

Interactions:

- May help reduce toxicity of cardiac glycosides, hypertensive medications and CNS depressants.
- May inhibit effects of vasoconstrictors (eg. Alpha-blockers) and decrease BP with nitrates & PDE-5 inhibitors (eg. Sildenafil)

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C

Constituents:

- Volatile oil (Sesquiterpenes – zingiberene & tumerone)
- Flavonoids - Curcuminoids (Curcumin)
- Resins
- Nutrients: CHO, proteins

Medicinal Actions:

- Alterative
- Anti-cancer
- Anti-inflammatory
- Antioxidant
- Anti-microbial
- Carminative
- Circulatory stimulant
- Hepatic & Choleric
- Hypolipidemic
- Liver trophorestorative & hepatoprotective
-

P Rhizome

Volatile oil (zingiberene & tumerone)

C Curcuminoids (Curcumin)
Resins

A Anti-cancer
Anti-inflammatory
Hepatoprotective (Hepatic & Choleric)

I Rheumatic disorders (arthritis)
Inflammatory bowel disease
Hepatobiliary insufficiency

F *Zingiberaceae*

Medicinal uses:

- Used internally for **hepato-biliary & digestive complaints**, as it will promote liver function, bile flow & production and protect the liver against toxic exposure. As a digestive aid will relieve flatulence and protect the stomach mucosa against ulceration of stomach.
- As an **anti-inflammatory agent** can be useful for arthritic conditions (RA & OA) tendonitis, bursitis, bruises, sprains & pain and inflamed joints in general.
- Of use in gastrointestinal conditions such as inflammatory bowel disease, dyspepsia & gastric ulcers, ulcerative colitis.
- Has **protective effects on the cardiovascular system** include lowering elevated cholesterol and triglyceride levels, decreasing susceptibility of LDL to lipid peroxidation, and inhibiting platelet aggregation.
- As a cytotoxic agent may be used to prevent and treat various cancers.

Pharmacology:

- **VO (zingiberene & tumerone)** are highly anti-inflammatory.
- **Curcumin** (considered to be the most active constituent) is primarily lipophilic, however water-soluble extracts also demonstrate significant anti-oxidant & anti-inflammatory activity.
- Curcumin modulates the inflammatory response by down-regulating the activity of COX-2, lipoxygenase, and inducible nitric oxide synthase enzymes. Will also inhibit the production of the inflammatory cytokines TNF, and interleukins 1, 2, 6, 8, & 12.
- Administered orally, curcumin inhibits platelet aggregation by inhibiting the formation of thromboxanes & increasing prostacyclin.
- Effects on cholesterol levels may be due to decreased cholesterol uptake in the intestines, increased conversion of cholesterol to bile acids in the liver, and increased bile acid secretion.
- Hepatoprotective effects are mainly a result of potent antioxidant properties.
- Anti-carcinogenic effects are due in part to direct antioxidant and free-radical scavenging, but will also enhance the body's natural antioxidant system, increasing glutathione levels, thereby aiding in hepatic detoxification of mutagens and carcinogens, and inhibiting nitrosamine formation.

Pharmacy:

- Dried turmeric root: 1.5 – 3g QD.
- Tincture: (1:1, 60%), 5-14 ml QD. 100 ml weekly max.
- Curcumin: 250-300 mg TID; for acute inflammation: 400-600 mg TID (equivalent to 8-60 g of turmeric).
- Poultice: apply as needed (note: yellow hue will stain)
- Note: Curcumin is often formulated with

bromelain for increased absorption and enhanced anti-inflammatory effects.

Toxicity:

- There have been no reports of toxicity at standard dosage levels. Possible sensitization problems exist for high concentration tumerone (skin rash/ photosensitivity).

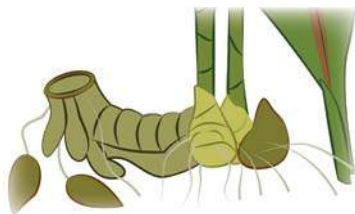
Contraindications: Caution with biliary obstruction, gallstones or stomach hyperacidity/ stomach ulcer.

Interactions:

- Some evidence that curcumin may inhibit or enhance the activity of certain chemotherapeutic drugs.
- Additive effects with NSAIDs & anticoagulants (theoretical), and possible antagonistic effects with immunosuppressants.

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Constituents:

- Caffeic acid derivatives (cynarin and scolymoside)
- Sesquiterpene lactones (cynaropicrin, grossheimin & cynaratriol)
- Flavonoids (rutin & luteolin)
- Inulin
- Volatile oil

Medicinal Actions:

- Alterative
- Antioxidant
- Bitter
- Cholagogue & cholaretic
- Diuretic
- Hepatoprotective & liver trophorestorative
- Hypoglycemic
- Hypolipidemic (Anti-cholesterol)

P Whole plant (leaves)

C Caffeic acid derivatives
Sesquiterpene lactones
Flavonoids

A Hepatic (Cholagogue & Cholaretic)
Hepato-trophorestorative
Hypolipidemic

I Hepatobiliary insufficiency
Dyslipidemia
Dyspepsia

F Asteraceae

Medicinal uses:

- Used in cases of **poor or weak digestion** such as indigestion, hypochlorhydria, flatulence, IBS, fatty-liver & gallbladder problems.
- Leaves **enhance liver detoxification pathways** and protect the liver against damage.
- Indicated in cases of **dyslipidemia**, will lower high blood lipid levels and help prevent arteriosclerosis.
- Whole plant is considered a source of nutrients and fiber and stimulates bowel motility.

Pharmacology:

- Cholaretic & cholagogue actions partly due to **bitter principle and sesquiterpene lactones**.
- **Caffeic acid derivatives & flavonoids** (Cynarin & luteolin) may play a role in reducing cholesterol via interference with

cholesterol synthesis.

- Cynarin and cyanidin have been shown to downregulate the expression of inducible nitric oxide synthase in human coronary smooth muscle cells.

Pharmacy:

- Infusion: 2 tsp/cup, or juice taken freely.
- Tincture: (1:2, 60%), 3-8 ml QD. 50 ml weekly max.
- Standardized extract: 300-650 mg, TID.

Toxicity:

- Rare but possible allergic reactions in some individuals.

Contraindications:

- Avoid in active peptic ulcers, acute inflammation of the GIT, gallstones, and bile duct obstructions.
- Allergic sensitivity to Asteraceae family

Interactions:

- Increases gut motility, thus may theoretically decrease the absorption of many drugs if taken simultaneously.
- May enhance cholesterol-lowering agents due to additive effects (theoretical)

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In TCM, *Cynara* is considered to have a bitter taste and acold energetic quality that enters liver, gallbladder and stomach meridians. It's used to treat liver-gallbladder damp-heat patterns with side pain and a sense of fullness or abdominal pain. It should be used cautiously in patients with gallstones or if there is suspected obstruction of the bile ducts.

C





C

P Flower heads

C Quinolizidine Alkaloids (sparteine)

Isoflavones
Amines (tyramine)

A Cardioactive stimulant &
Hypertensive
Diuretic
Oxytocic

I Palpitations & arrhythmias
Coronary & Venous insufficiency
Edema

F *Fabaceae*

Constituents:

- Quinolizidine Alkaloids (sparteine & oxytyramine)
- Flavonoids (scoparin & vitexin)
- Isoflavones
- Amines (tyramine & hydroxytyramine)
- Bitter principle
- Tannins
- Volatile oils

Medicinal Actions:

- Bitter
- Cardioactive stimulant
- Diuretic
- Emetic
- Laxative
- Oxytocic (Parturient)
- Peripheral vasoconstrictor (Hypertensive)

Medicinal uses:

- **Regulates and strengthens the heartbeat**, especially in cases of functional palpitations, arrhythmias or fibrillations by affecting electrical conductivity (slowing and regulating impulse contractions).
- Will stimulate blood flow and venous return to the heart while improving capillary integrity, as well as aiding in liver conditions or when a diuretic action is needed.
- Flower tops have potential hallucinogenic properties when smoked.
- As a parturient can be used to facilitate childbirth in delayed labour.

Pharmacology:

- **Quinolizidine Alkaloids** (sparteine & oxytyramine) exert cardioactive effects.
- In low doses **sparteine** has effects similar to quinidine and causes tachycardia, and in high doses bradycardia.

- Sparteine has peripheral effects on motor nerve terminals and sympathetic ganglia, can reduce cardiac muscle activity and have oxytocic-like effects.
- **Oxytyramine** is a peripheral vasoconstrictor and will increase blood pressure as a whole.
- Volatile oils promote oxytocic, diuretic, and cathartic effects.
- Isoflavones have potential estrogenic effects

Pharmacy:

- Infusion: 1 tsp/cup, simmer 10 min, TID.
- Tincture: (1:5, 45%) 0.5-2 ml TID. 20 ml weekly max.
- Dried herb: 1-2 g/day

Toxicity:

- Signs of toxicity include impaired vision, nausea, vomiting, profuse sweating, dizziness, headaches, numbness and tingling of hands and feet.
- Overdose may cause hypertensive crisis, uterine contractions, respiratory arrest and death.

Contraindications:

- Pregnancy (besides labour) & Lactation

Interactions:

- Use caution with blood thinning medications.

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C

Scotch broom is an escaped garden ornamental that is now considered an invasive species in BC which spreads rapidly and densely, choking out native species, and preventing reforestation. A single plant can produce well over 20,000 seeds that last in the soil for more than 30 years.



D



P Root

Steroidal saponins
C Alkaloids
Phytosterols

Anti-rheumatic
A Antispasmodic
Hormone balancer

PMS & Menopausal complaints
I Rheumatic conditions (arthritis)
Hepatobiliary insufficiency

F *Dioscoriaceae*

Constituents:

- Steroidal saponins based on diosgenin (dioscin & dioscorin)
- Starch
- Alkaloids (dioscorine, dihydrodioscorine)
- Tannins
- Phytosterols

Medicinal Actions:

- Anti-inflammatory
- Anti-rheumatic
- Antispasmodic
- Diaphoretic
- Diuretic
- Expectorant
- Hepatic
- Hormone balancer

Medicinal uses:

- Is most indicated in **inflammatory conditions of the gallbladder, GIT, joints, uterus and ovaries.**
- Will reduce the inflammation and pain associated with smooth muscle spasms in intestinal cramping, dysmenorrhea, and ovarian cysts.
- Has specific use for acute phases of RA and will aid in all types of **arthritis, joint/muscle pain, and neuralgias.**
- Cholagogue effects will promote the flow of bile and thus aid in hepatobiliary insufficiency, dyslipidemia, gallstone prevention and hormonal imbalances.

Pharmacology:

- Anti-inflammatory and antispasmodic action believed to be due to **steroidal saponins (dioscin & dioscorin)** acting as an CNS relaxant.

- Note: The steroidal saponin dioscin yields diosgenin which is used for the commercial manufacturing of progesterone, hydrocortisone, and other hormones. This process requires microbiological fermentation, organic solvent extraction, and acid hydrolysis. It is not clear that the body can convert diosgenin to progesterone or other hormones.

Pharmacy:

- Decoction: 1-2 tsp root/cup water, decoct 15 min; Chronic: 1 cup TID; Acute: ½-1 cup q ½ hour.
- Tincture: (1:2, 60%), 1-2 ml QD. Acute: 2.5 ml q ½ hour; 100 ml weekly max.
- Dried root: 2-4 g, TID.

Toxicity:

- High doses may cause nausea, vomiting, and diarrhea.
- Possible allergic reactions (rhinitis & dermatitis)

Contraindications:

- Pregnancy & Lactation
- Use caution in hormone-sensitive conditions (eg. Breast cancer), diabetes, tendency to clot, and overt LIV/KID disease.

Interactions:

- Anticoagulants due to antiplatelet activity (theoretical)
- Anti-diabetic agents (may decrease blood sugar)
- May increase risk of toxicity from hepatotoxic and nephrotoxic drugs, inhibit anti-inflammatory effects of indomethacin/

NSAIDs, and increase risk of adverse effects from estrogen/anti-estrogen medications.

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Recently, the popularity of Wild yam has risen greatly for body builders as an anabolic agent trying to enhance their performance by giving their bodies every chance to manufacture its own steroids, however there is poor evidence that the plant works in this way. Similarly, it's reputation as a steroid replacement has led some to use it as a female contraceptive, following the notion that the steroidal effects render one sterile while taking it regularly (this is not advised!)





E

Constituents:

- Caffeic acid esters (echinacoside, isochlorogenic acid, chlorogenic acid & cichoric acid)
- Polysaccharides (inulin & arabinogalactans)
- A kylamides
- Polyacetylenes
- VO
- Flavonoids
- Alkaloids (non-toxic type pyrrolizidine)

Medicinal Actions:

- Antimicrobial (antibacterial & antiviral)
- Anti-inflammatory

P Root

C Caffeic acid esters (echinacoside)
Polysaccharides
A kylamides & Polyacetylenes

A Antimicrobial
Immuno-modulator
Vulnerary

I Infection (acute & prevention)
Lymphadenopathy
Wound healing

F *Asteraceae*

- Diaphoretic
- Immuno-modulator
- Lymphatic
- Vulnerary

Medicinal uses:

- Immune modulating properties **improves resistance to various types of infections.** Is best used preventatively or in the very early stages.
- As a vulnerary and be used locally & topically to protect against infection, repair tissue damage and facilitate connective tissue regeneration.

Pharmacology:

- **Polysaccharides, alkylamides, polyacetylenes & caffeic acid derivatives** appear to work synergistically to activate the non-specific immune response leading to granulocyte chemotaxis, phagocytosis by

macrophages, and increased TNF, IL-1, Ig binding, and neutrophils. These constituents mainly enhance phagocytosis, meaning a more direct clearance & inactivation of pathogenic organisms and better immune surveillance, which accelerates the response of the system to new or opportunistic pathogens.

- **Echinoside** appears to have a mild antibiotic effect capable of directly inhibiting *Staphylococcus aureus*, and certain polyacetylene constituents have been found to be bacteriostatic against *E.coli* and *Pseudomonas aeruginosa*.
- Note: No single constituent has been found to be primarily responsible for immune system effects.
- Caffeic acid esters (cichoric acid) inhibit hyaluronidase activity, stabilizing mucosal connective tissue against invasion by pathogenic organisms and enhancing fibroblast growth & formation of glycosaminoglycans.

Pharmacy:

- Decoction: 1g/cup, simmer 15 min, TID.
- Tincture: (1:2, 60%), 3-6 ml QD. During acute infection, dose can be increased to 3–5 ml q 2 hours. 40 ml weekly max.
- Dried root: 1g, TID.
- Powdered extract (standardized to 3.5% echinacoside): 300 mg, TID.

Toxicity:

- High doses may cause nausea and/or mouth & throat irritation.
- Has been reported to occasionally cause reversible skin reactions in atopic individuals.

Contraindications:

- Allergic reaction to Asteraceae family.
- Due to its potential to stimulate TNF & IL-1 and 6 it has been suggested that *Echinacea* should not be used in immunosuppression (eg. AIDS or autoimmune disease) although this theory is not universally upheld.

Interactions:

- Selectively modulates activity of CYP 3A4 substrates
- Theoretically should use caution with immuno-suppressive drugs (antibiotics & anti-retrovirals), chemotherapy, corticosteroids, blood thinners and hepatotoxic drugs.

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E

Constituents:

- Phenylpropanoid glycosides: Eleutherosides (A through M)
- Syringin
- Polysaccharides (eleutherans)
- Triterpenoid saponins (Ciwujianosides)
- Phytosterols (beta-sitosterol)
- Coumarins (isofraxidin)
- Lignans
- Nutrients: Vitamin E, beta-carotene, Cu

Medicinal Actions:

- Adaptogen
- Antioxidant
- Chemoprotective
- Immunomodulator & Immune stimulant
- Hepatoprotective

P Root

C Phenylpropanoid glycosides
Polysaccharides
Triterpenoid saponins

A Adaptogen
Immunomodulator & stimulant
Hypoglycemic

I Physical & emotional stress & adrenal fatigue
Treatment & prevention of infections & cancer

F *Araliaceae*

- Hypertensive (in a hypotensive state)
- Hypoglycemic
- Neuroprotective

Medicinal uses:

- **Adaptogenic (especially adrenal)** properties have been shown to increase both mental alertness and physical endurance.
- Inhibits hypertrophy of adrenal and thyroid glands by reducing extent of the fight or flight reaction and reduces the exhaustive effects of long term stress.
- Used in the treatment & prevention of infections and cancer. Will treat **chronic illness and fatigue**, alleviate chronic stress, and reduce damage from heavy metal & pesticide toxicity.
- As an **adjuvant in cancer therapy**, will reduce the side effects of radiation and chemotherapy including nausea, dizziness, and loss of appetite.

Pharmacology:

- Effects are due to a combination of components, primarily **phenylpropanoid glycosides (eleutherosides B and E)**.
- Eleutherosides inactivate free radicals and accelerate lipid mobilization thus exerting a cellular protective effect.
- Immunostimulatory effects increase CD4, and to a lesser extent CD8 cells.

- Diabetics should monitor blood glucose levels and adjust medication accordingly, due to the reported hypoglycemic effects in animals.

NOTE: Its correct common name is now considered Eleuthero, as it is not actually a member of the ginseng family, and was called Siberian Ginseng partly for marketing purposes.

Pharmacy:

- Tincture (1:2, 40%), 2-8 ml QD. 60 ml weekly max. Note: Best taken in the morning and at noon to match the adrenal gland rhythm.
- Capsule: 100 mg (standardized to > 1% eleutheroside E): 200 – 400 mg daily in 2 doses.
- Whole powder: 2-4 g daily in two doses.
- Pause dosing: 6 weeks on 2 weeks off

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Toxicity:

- High doses may cause palpitations, insomnia, hypertension and tachycardia.

Contraindications:

- Best to avoid in children and those that are nervous, tense, manic or overly energetic.
- Use caution in autoimmune disease due to Immunostimulant effects.

Interactions:

- Avoid use with stimulants, alcohol, barbiturates, anti-psychotics, digoxin, and anticoagulants.





P Aerial

Protoalkaloids (ephedrine)

C Tannins

Proanthocyanidins

Bronchodilator

A Cardiac stimulant

Nervine stimulant

Asthma

I Allergies & Rhinitis

Hypotension

F *Ephedraceae*

Constituents:

- Protoalkaloids (ephedrine & pseudoephedrine)
- Volatile oils
- Tannins
- Glycans
- Flavonoid glycosides
- Proanthocyanidins

Medicinal Actions:

- Bronchodilator
- Cardiac stimulant
- Circulatory stimulant
- Diaphoretic
- Hypertensive
- Nervine stimulant

Medicinal uses:

- Has specific use in **asthma** to reduce the severity and frequency of spasms and improve bronchodilation.
- Also useful for colds, flus, coughs, bronchospasms, **nasal congestion and other allergic symptoms**.
- Is also used to **increase alertness, increase blood pressure** and promote circulation throughout the body.

Pharmacology:

- **Protoalkaloids (ephedrine & pseudoephedrine)** are sympathomimetic, CNS stimulant, and have effects on adreno-receptors. Are also smooth muscle relaxants specifically to the lungs and digestive tract.
- **Ephedrine** is a vasoconstrictor with positive inotropic actions on the heart to increase blood pressure and heart rate. Pseudoephedrine is a bronchodilator that

decreases blood pressure, reduces heart rate and acts as a nasal decongestant. Note: Alkaloids have an opposite effect on the body, with an overall balancing effect.

- Volatile oils are antibacterial and antiviral

Pharmacy:

- Decoction: 2 tsp/cup, simmer 10 min, TID.
- Tincture: (1:5, 40%), 1-4 ml TID. 50 ml weekly max.

Toxicity:

- May cause increases in blood pressure, cardiac arrhythmias, insomnia, headaches, low appetite, anxiety, restlessness, tremors, tachycardia, nausea & vomiting, and dependency.

Contraindications:

- Pregnancy, Lactation, and in children
- Use caution with hypertension, heart disease, glaucoma, anxiety, diabetes, and hyperthyroid, prostate cancer, liver and/or kidney disease.

Interactions:

- Potential interactions with all centrally acting drugs such as anti-depressants, sympathomimetics, corticosteroids, cardiac glycosides and anesthetics.
- May antagonize effects of alpha-blockers, anti-arrhythmics, anti-convulsants, anti-diabetic agents, and anti-hypertensives.
- May have additive effects with anesthetics, beta-blockers, caffeine, ergot alkaloids, alcohol, MAOIs, and may increase toxicity risk with all stimulants, phenothiazines, theophylline and thyroid hormones.

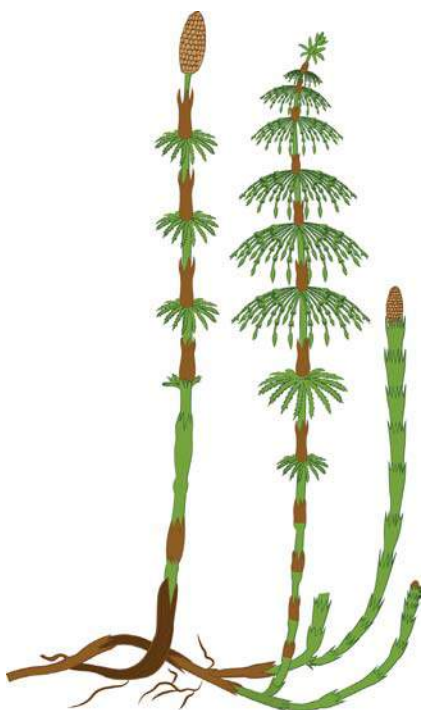
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Modern medicine and research methods has viewed *Ephedra* almost entirely by its alkaloids, isolating and synthesizing ephedrine from it, and as a result discovering an entirely new class of drugs, the amphetamines. Pseudo-ephedrine is presently most commonly used an over the counter remedy for the relief of nasal congestion. The alkaloids of *Ephedra* do exhibit serious toxicity concerns when taken in large amounts, and may nutraceutical products have been banned due it's improper use, even causing death in some cases.



E



Constituents:

- Nutrients: mineral silica (65%) in the form of silicic acid & silicates, K+, Mg
- Flavonoids (quercetin)
- Alkaloids
- Phytosterols
- Saponins (equisitonin)
- Mucilage
- Tannins

Medicinal Actions:

- Anti-inflammatory
- Anti-rheumatic
- Astringent
- Connective tissue tonic
- Diuretic
- Vulnerary

P Aerial (vegetative green phase)

C Silica
Saponins
Mucilage

A Connective tissue tonic
Diuretic
Vulnerary

I Promote repair & improve strength of connective tissues (collagen & bone)
Rheumatic & Genitourinary complaints

F *Equisetaceae*

Medicinal uses:

- It is specific to the **genitourinary & respiratory systems as a connective tissue tonic** that promotes repair of damaged connective tissue and the healthy growth of bones.
- It improves connective tissue strength and elasticity, as well as removes uric acid, lactates and residual toxins from the extracellular matrix.
- Has specific use for BPH, prostatitis, incontinence and enuresis in children.
- Promotes renal function, cleanses and repairs tissues.
- **Repairs connective tissue**, improving both collagen and elastin; bone, cartilage, joints, muscles, arteries (bleeding), veins (varicose).
- For **chronic connective tissue disorders**, arthritis, inflammation (old degenerated wounds) releases old pus and residual material, chronic infections (esp. bladder), irritation.

- Restores mineral levels and weak mucous membranes (eg. sinusitis, IBS).

Pharmacology:

- Silicic acid & silicates** provide approximately 2–3% elemental silicon, which is a vital component for bone and cartilage formation, helps preserve elasticity of connective tissue, controls Ca+ absorption and promotes the repair of tissue after lung damage. The high silicon content exerts a connective tissue-strengthening effect.
- Soluble silicates stimulate leucocyte activity.

Pharmacy:

- Infusion: 2 tsp/cup, infuse 20 min, TID.
- Tincture: (1:2, 25%), 1-3 ml BID. 40 ml weekly max.
- Dried herb: 2-4 g, TID.
- Poultice: make paste with powdered herb.
- Note: Pulse dosing 4 weeks on, 1 week off.

Toxicity:

- Use with caution in people with edema that is the result of impaired kidney function.
- Long-term use may cause kidney and/or heart damage and result in tissue irritation and consequent inflammation.
- Note: Heavily concentrates minerals from the soil in which it grows. Thus, plants by roads and industrial areas will concentrate heavy metals such as cadmium and lead.

Contraindications:

- Caution with impaired cardiac & kidney function, edema from cardiac origin, prostate cancer, children under 2, and long-term use.

Interactions:

- Digitalis and other cardiac glycosides may be potentiated due to potassium loss secondary to diuresis.

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E



E



Constituents:

- Isoquinoline alkaloids (californidine, eschscholtzine, reticuline & chelerythrine)
- Flavone glycosides (rutin)

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antispasmodic
- Anxiolytic (lower doses)
- Nervine relaxant
- Sedative & Hypnotic (higher doses)

P Aerial

C Isoquinoline Alkaloids
Flavone glycosides

A Analgesic
Antispasmodic
Nervine relaxant & Sedative

I Neuralgia & migraines
Stress, anxiety & depression
Insomnia

F *Papaveraceae*

Medicinal uses:

- Has hypnotic effects similar to those of opium poppy but are much milder and non-addictive.
- Has a normalizing effect on both physical and psychological symptoms such as pain, neuralgias, migraines, stress, nervous bowel, depression, anxiety and hyperactivity in children.
- It will regulate sleeping patterns and is useful in formulas for bedwetting (safe to use in children), nervous anxiety, and trouble sleeping

Pharmacology:

- **Isoquinoline alkaloids** are hypnotic & sedative, though are non-addictive and do not cause disorientation.
- **Chelerythrine** (an alkaloid constituent) is a protein kinase C inhibitor in the dorsal horn of the spinal cord, decreasing pain induced

by heat or chemical stimulation.

- Flavone glycosides and antispasmodic and blood vessel tonics.
- Has been shown to inhibit enzymatic degradation of catecholamines as well as the synthesis of adrenaline, dopamine
 □-hydroxylase and monoamine oxidase.

Pharmacy:

- Infusion: 1 tsp/cup, infuse 10 min, 1 cup at bedtime to aid with sleep.
- Tincture: (1:2. 45%), 3-6 ml QD. 40 ml weekly max.
- Note: High doses will cause drowsiness, low doses induce relaxation.

Toxicity:

- No adverse effects within recommended doses.
- High doses may cause nausea and a residual hangover effect.

Contraindications:

- Pregnancy & lactation.

Interactions:

- Caution with nervous system medications (e.g. antidepressants & dopaminergic). May have addictive effects when combined with other sedatives and barbituates.

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California poppy is in the same family as opium poppy, and has similar (but less potent) pain-relieving constituents, without the strength of chemicals like morphine & codeine. The chemical properties of California poppy are non-narcotic, non-addictive, and safe for long-term use without the worry of dependency.





E

Constituents:

- Sesquiterpene lactones (VO)
- Polysaccharides
- Flavonoids (quercetin, kaempferol, rutin)
- Bitter glycoside (eupatorin)
- Caffeic acid derivatives
- Tannins
- Alkaloids (pyrrolizidine)

Medicinal Actions:

- Antimicrobial
- Anti-rheumatic
- Bitter
- Diaphoretic
- Immuno-stimulant
- Laxative (mild)

P Aerial

C Sesquiterpene lactones
Polysaccharides
Flavonoids

A Anti-rheumatic
Diaphoretic
Immuno-stimulant

I URTIs
Fever & influenza
Rheumatic complaints (myalgia)

F Asteraceae

Medicinal uses:

- Stimulates the immune system against bacterial & viral infections, and is one of the best remedies for the **relief of the associated symptoms that accompany influenza** (cough, night sweats, aching bones), and particularly towards Dengue fever (aka. breakbone fever).
- Will speedily relieve aches and pain as well as aid the body in dealing with any fever that is present, will also loosen phlegm and promote clearing of the upper respiratory tract through coughing.
- As a relaxant it may provide symptomatic relief in the treatment of **muscular rheumatism** and also works on the peripheral vascular system.
- The bitter principles are stimulating to the stomach and liver, aiding in the secreting of bile and providing a mild laxative effect

Pharmacology:

- **Polysaccharides & sesquiterpene lactones** are immuno-stimulatory and enhance phagocytosis in vitro.

Pharmacy:

- Infusion: 1-2 tsp herb/cup water; during fevers of the flu drink 1 cup every half hour as hot as possible.
- Tincture (1:5, 25%), 2-4 ml TID. 80 ml weekly max.

Toxicity:

- Hot tea may produce diaphoresis, and in some cases, vomiting and evacuation of the bowels
- Use caution in liver disease and avoid long-term use due to potential toxicity concerns associated to alkaloids (pyrrolizidine type)

Contraindications:

- Pregnancy and Lactation
- Known allergic hypersensitivity to Asteraceae family (e.g. dermatitis)

Interactions:

- None known

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European settlers that first landed in America were faced with diseases particular to the new climate. An intermittent fever with chills & aching bones was not uncommon, and as Boneset was universally used by Native Indians during the "winter flu", settlers quickly adopted this medicine. In writing from 1982, "almost every farmhouse has its bunch of dried herb hanging, tops downward from the rafter during the whole year, ready for immediate use, should some member of the family, or that of a neighbor, be taken with a cold".



F



P Aerial

Salicylates (salicin)

C Tannins
Mucilage

Anti-inflammatory

A Anti-rheumatic
Astringent

Peptic ulcer treatment & prevention

I Inflammatory & painful MSK
conditions
Dyspepsia & GERD

F Rosaceae

Constituents:

- Salicylates (salicin & salicylic acid)
- Flavonoids
- Tannins
- Volatile oils
- Coumarins
- Mucilage

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antimicrobial
- Anti-rheumatic
- Astringent
- Carminative
- Diaphoretic

Medicinal Uses:

- Has specific use for **peptic ulcers** both as prophylactic and as treatment.
- Will regulate gastric acid levels, protect and soothe GIT mucous membranes in conditions like dyspepsia, hyperacidity, heartburn, and gastritis.
- Also of great use in **inflammatory musculoskeletal conditions** such as arthritis, gout (promotes uric acid excretion), and all kinds of muscle & joint pains.
- Has anti-bacterial and immunomodulating effects, and astringency makes it a useful remedy in the treatment of diarrhea.

Pharmacology:

- **Salicylates** (salicin & salicylic acid) are analgesic and anti-inflammatory.
- Salicin is metabolized & absorbed in the bowels to salicylic acid, which is has aspirin-

like effects without irritating the gastric lining. Salicin and salicyl glycosides form salicin after hydrolysis of the acyl group. Salicin is then split by intestinal flora into saligenin (salicyl alcohol) and glucose. Saligenin is then absorbed and oxidized in the blood and liver to salicylic acid and has antipyretic, analgesic, anti-rheumatic, and anti-septic actions.

- Their activity may also be due to their ability to inhibit cyclooxygenase, complement activation, and T-cell proliferation and thus interfere with the production of reactive oxygen species (ROS).
- Tannins & mucilage appear to buffer the adverse effects of isolated salicylates which can cause gastric bleeding.

Pharmacy:

- Decoction: 2-3 g/cup, simmer 20 min, TID
- Tincture (1:2, 60%), 1-2 ml TID. 40 ml weekly max.
- Dried bark: 1-3 g, TID (the effective dose of salicin is 60-120 mg/day).

Toxicity:

- In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.
- Theoretically Salicylism which is an acute overdose of salicylates can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Contraindications:

- Use caution in children with the flu due to Reye's syndrome (theoretical).
- Those with known hypersensitivity to salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

Interactions:

- Use caution with anticoagulants (theoretical) or salicylate containing substances, alcohol, barbiturates/sedatives, methotrexate, spironolactone, phenytoin, valproate medications.

References:

1. Barnaulov, O. et al. [Anti-ulcer action of a decoction of the flowers of the dropwort, *Filipendula ulmaria* (L.) Maxim]. *Farmakol Toksikol.* 1980 Nov-Dec;43(6):700-5.
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5. Kudriashov, B. et al. [The content of a heparin-like anticoagulant in the flowers of the meadowsweet (*Filipendula ulmaria*)]. *Farmakol Toksikol.* 1990 Jul-Aug;53(4):39-41.





F

Constituents:

- Volatile oil (anethole & estrogole)
- Flavonoids (rutin, quercetin, kaempferol)
- Coumarins
- Phytosterols

Medicinal Actions:

- Anti-inflammatory
- Carminative
- Galactagogue
- Phytoestrogenic

Medicinal Uses:

- Is anti-inflammatory & **relaxes the smooth muscles of the intestines** thus relieving griping and flatulence. Will also relax bronchial smooth muscle spasm and it useful in bronchitis.

P Fruit (Seed)

C Volatile oil
Flavonoids
Phytosterols

A Carminative
Galactagogue
Phytoestrogenic

I Flatulence, GIT & bronchial spasm
Amenorrhea & Oligomenorrhea
Stimulate breast milk production

F *Apiaceae*

- Note: Is often used with laxatives to allay associated griping.
- Is reported to enhance hepatic regeneration, and phytoestrogenic action gives it an indication in amenorrhea and oligomenorrhea.
- Stimulates milk production and combines well with *Galega officinalis* and *Silybum marianum* for this purpose.

Pharmacology:

- **VO** relaxes smooth muscle, regulates peristaltic functions of the GIT and are carminative and anti-inflammatory.
- **Anethole** has been shown to have estrogenic activity. Isomers and several other compounds in the VO have been shown to have a similar chemical structure to that of adrenaline and dopamine giving the plant a sympathomimetic action on the body (eg. Bronchodilation, lactogenesis)

Pharmacy:

- Infusion: 1-2 tsp crushed seeds/cup, TID.
- Tincture (1:5, 45%), 0.5-2 ml TID. 40 ml weekly max.
- Seeds 0.3-1 g QD.

Toxicity:

- Essential oil toxic dose: 1-5 ml/day and may cause skin irritation, nausea/vomiting, seizures, pulmonary edema, and liver lesions.

Contraindications:

- Internal use of EO during pregnancy (concentrated oil is abortifacient).

Interactions: None known

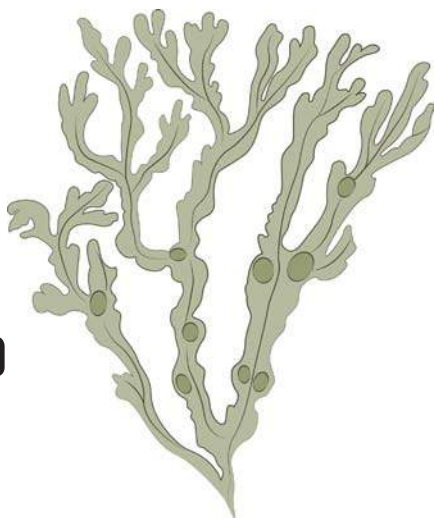
References:

1. Albert-Puleo, M. Fennel and anise as estrogenic agents. *J Ethnopharmacol.* 1980 Dec;2(4):337-44.
2. Badgujar, S et al. *Foeniculum vulgare* Mill: a review of its botany, phytochemistry, pharmacology, contemporary application, and toxicology. *Biomed Res Int.* 2014;2014:842674.
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4. Endalamaw, F. et al. Levels of major and trace elements in fennel (*Foeniculum vulgare* Mill.) fruits cultivated in Ethiopia. *Springerplus.* 2015 Jan 3;4:5.
5. Karlsen, J. et al. Studies on the fruits of *Foeniculum* species and their essential oil. *Planta Med.* 1969 Aug;17(3):281-93.
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The latin name for hay “frenum” gave rise to both the scientific name and English name of this member of the carrot family. The foliage, depending on the variety, can be bright green, red, or purple. It is a native of Italy and is one of the most ancient cultivated plants, especially favoured for its culinary uses, having a sweet, warm and pleasurable taste.

F





F

P Whole plant

Mucilage (mucopolysaccharides)

C Trace minerals (iodine)

Anti-hypothyroid

A Anti-rheumatic

Nutritive

Hypothyroid (due to iodine deficiency)
& goiter

I Obesity

Typically in rheumatism

F *Fucaceae*

Constituents:

- Polysaccharides (align & mucopolysaccharides)
- Phenolic compounds
- Trace minerals (iodine up to 0.1%)

Medicinal Actions:

- Anti-hypothyroid
- Anti-rheumatic
- Connective tissue tonic
- Demulcent & Emollient
- Vulnery

Medicinal Uses:

- Used most commonly in hypothyroid (due to iodine deficiency), goiter, weight loss, and rheumatism and in wound repair when applied externally.

Pharmacology:

- High iodine content promotes T3 & T4 production
- Fucoidan component may modulate fibroblast proliferation

Pharmacy:

- Dried Herb: 0.8-2 g QD.
- Tincture: (1:5, 45%), 2-6 ml TID. 125 ml weekly max.
- Fresh kelp as food

Toxicity:

- May produce GIT upset and changes in urination, bleeding time, blood pressure, and menstruation.
- Iodine hypersensitivity reaction may include rash, angioedema, fever, arthralgia.

Contraindications:

- Pregnancy & lactation, and excessive thyroid activity (hyperthyroidism)
- Avoid in known allergy to seaweeds.

Interactions:

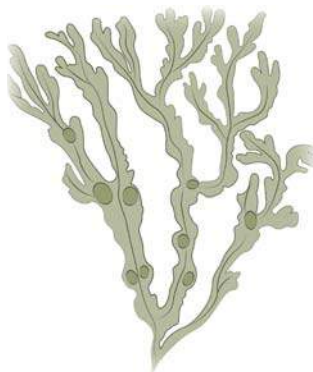
- Anticoagulants due to antiplatelet activity (theoretical)
- Anti-diabetic agents (may decrease blood sugar)
- Potential risk for reduced bioavailability of amidarone, antagonistic effects on anti-hypertensives, estrogens, and may increase effects of laxatives and thyroid medications.

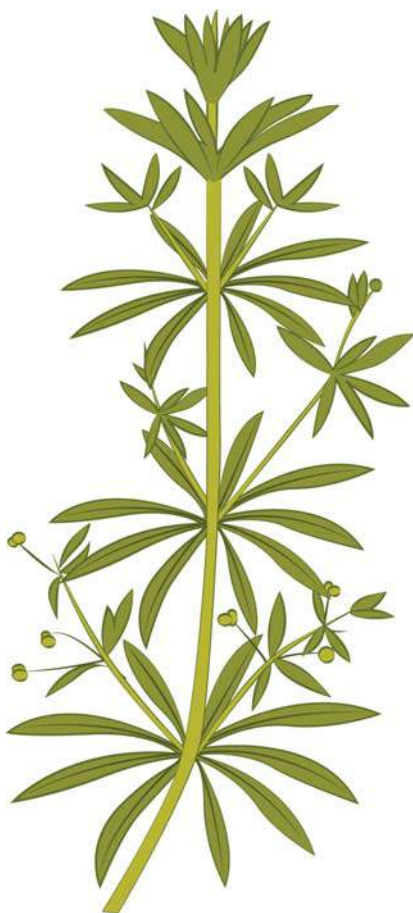
Kelp is a group of brown algae with large, flat, leaf-like fronds that are usually attached to rocks in 10-150 foot seas found native to the Pacific Ocean. It gets its name from the Greek "phykos" which is a derivative of "phytein" meaning to grow, in reference to the plants remarkable length. The species name "vesiculosus" is from the Latin "vesicula" meaning a little vesicle, referring to the air blisters found in the frond.

F

References:

1. Bourme, E. et al. The active carbohydrate metabolites of the brown seaweed, *Fucus vesiculosus*. *Carbohydrate Research*, Volume 9, Issue 4, April 1969, Pages 415-422.
2. Chavan, M. et al. *Fucus* extract: cosmetic treatment for under-eye dark circles. *J Cosmet Sci*. 2014 Mar-Apr;65(2):103-13.
3. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
4. Eliason, B. Transient hyperthyroidism in a patient taking dietary supplement containing kelp. *JABFP* 1998;11(6):478-480.
5. Hendriks, H. [The presence of iodine in *fucus* and the thyroid gland]. *Pharm Weekbl*. 1972 Sep 8;107(36):565-73.
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7. Suich, MI, Sanoski CA. *Herbal Notes: Complementary & Alternative Medicine Pocket Guide*. Philadelphia, PA: FA Davis Company; 2011.





P Aerial

C Polyphenolic acids
Iridoid glycosides (asperuloside)
Tannins

A Anti-inflammatory
Alterative
Lymphatic tonic

I Edema & Lymphadenopathy
Pelvic/Genitourinary tract infection
Inflammatory skin disorders

F *Rubiaceae*

Medicinal Actions:

- Anti-inflammatory
- Alterative
- Astringent
- Diuretic
- Lymphatic tonic
- Vulnerary

Medicinal Uses:

- **Increases lymphatic drainage & breaks up lymphatic congestion** (enlarged lymph nodes) especially in the pelvis and urinary tract, and in general is a lymphatic tonic.
- Is a soothing and relaxing diuretic & demulcent to the urinary tract, giving it indication in cystitis, urethritis, prostatitis, pyelonephritis, and edema of kidney origin.

Constituents:

- Polyphenolic acids (caffeic, gallic, salicylic, citric & rubichloric)
- Iridoid glycosides (asperuloside)
- Tannins (gallotannic acid)
- Coumarins
- Flavonoids
- Galiosin (a red substance)

- As an alterative can be used internally or topically for inflammatory skin disorders, minor injuries and conditions such as eczema and psoriasis.
- Will reduce edema of the joints in rheumatoid arthritis.

According to Matthew Wood, Galium is one of the most important remedies for swollen glands, especially around the ears and down the neck. It is considered a cooling herb, acting upon the body's "internal waters" (i.e. kidneys & lymphatics)

Pharmacology:

- **Iridoid glycosides** including asperuloside are mildly laxative & purgative.
- **Flavonoids** are strong free radical scavengers & have potent antioxidant effects in cases of damage due to oxidative stress.
- Little is known on the pharmacodynamics

Pharmacy:

- Infusion: 1-2 tsp/cup, steep 10 min, 1-2 cups TID.
- Tincture: (1:5, 25%), 4-10 ml TID. 200 ml weekly max.
- Fresh juice: 3-15 ml, TID.
- Poultice, skin wash as needed.

Toxicity: None

Contraindications: None known.

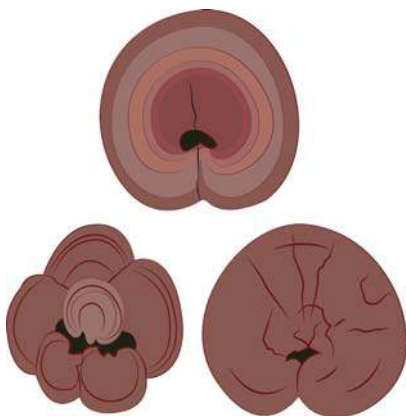
Interactions: None reported.

References:

1. Bokhari, J. et al. Evaluation of diverse antioxidant activities of Galium aparine. Spectrochim Acta A Mol Biomol Spectrosc. 2013 Feb;102:24-9.
2. Chughtai, B. Use of herbal supplements for overactive bladder. Rev Urol. 2013;15(3):93-6.
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5. Wood, M. The Book of Herbal Wisdom. North Atlantic Books, California, 1997.
6. Yang, J. et al. [Phenolic compounds from Galium aparine var. tenerum]. Zhongguo Zhong Yao Za Zhi. 2009 Jul;34(14):1802-4.



G



G

Constituents:

- Myco-Polysaccharides (beta D-glucans)
- Nucleotides (adenosine)
- Nutrients (Zn, Mg, Fe, Cu, Ca, oleic acid, proteins, choline)
- Coumarin
- Phytosterols (ganodosterone)
- Alkaloid

Medicinal Actions:

- Adaptogen
- Alterative
- Anti-inflammatory
- Antiplatelet
- Antioxidant
- Cardiotionic
- Cytotoxic (Anti-tumor)
- Expectorant
- Hypoglycemic
- Hypolipidemic
- Hypotensive
- Immune modulator & stimulant
- Nervine Tonic & Sedative

P Fruiting body

C Myco-Polysaccharides (beta D-glucans)
Phytosterols

A Antioxidant
Cytotoxic (Anti-tumor)
Immune modulator & stimulant

I Chronic immune deficiency and allergies
Cancer & massive oxidative damage
Protection against radiation

F *Polyporaceae*

Medicinal Uses:

- Provides immunological support and improves the functioning and regulation of the whole immune system. Is especially helpful in **chronic immune weakness** and poor resistance to airborne & respiratory infections.
- Inhibits the release of histamine and reduces the immune response to inhaled or ingested allergens, especially those allergies mediated by immunoglobulin E.
- Can be used in **cancer and other disease involving massive oxidative damage**, including chemical toxicity and liver damage, and also as a long term prophylactic and regulator for the circulatory system.
- It's antioxidant effect protects against radiation damage so it can be utilized if exposure to X rays is expected and reduces inflammation without interfering in the healing response.

Pharmacology:

- **Mycopolysaccharides (b-D-glucans)** are anti-tumor, immuno-stimulant, hypoglycemic and cardiotoxic. These are water soluble constituents, and this may account for the traditional use of Reishi in teas and soups as an immune enhancing herb.
- Nucleotides (adenosine) inhibit platelet aggregation and thrombus formation, and are muscle relaxant and analgesic. These are not readily water soluble and hence have not been utilized clinically until more recent times.
- Triterpenes inhibit histamine release and cholesterol synthesis.
- Oleic acid is anti-allergic by inhibiting histamine release.
- Sterols act as hormone precursors and hepatoprotectors.
- Alkaloids are cardiotoxic.
- Ganodersterone is anti-hepatotoxic.

Pharmacy:

- Infusion/Decoction: 1-2 tsp/cup, TID.
- Tincture: (1:2, 40%), 2-4 ml TID. 80 ml weekly max.
- Powder: 5-10 g, QD. (may be added to food)

Toxicity:

- When commencing treatment many people experience transient cleansing reactions such as pimples, sore muscles, dizziness, bowel disturbance and itchy skin. These pass within a few days as the toxins are eliminated from the body, and can be controlled by regulating the daily dose.

Contraindications: Pregnancy & lactation.

Interactions:

- Use caution with anti-coagulants.

References:

1. Bhardwa, N. et al. Suppression of inflammatory and allergic responses by pharmacologically potent fungus *Ganoderma lucidum*. *Recent Pat Inflamm Allergy Drug Discov.* 2014;8(2):104-17.
2. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
3. Jin, X. et al. *Ganoderma lucidum* (Reishi mushroom) for cancer treatment. *Cochrane Database Syst Rev.* 2012 Jun 13.6.
4. Pan, D. Antidiabetic, antihyperlipidemic and antioxidant activities of a novel proteoglycan from *ganoderma lucidum* fruiting bodies on db/db mice and the possible mechanism. *PLoS One.* 2013 Jul 11;8(7):e68332.
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6. Van der Hem, L. et al. Ling Zhi-8: studies of a new immunomodulating agent. *Transplantation.* 1995 Sep 15;60(5):438-43.
7. Wachtel-Galor, S. et al. Effect of *Ganoderma lucidum* on human DNA is dose dependent and mediated by hydrogen peroxide. *Redox Rep.* 2005;10(3):145-9.
8. Wachtel-Galor, S. et al. *Ganoderma lucidum* (Lingzhi or Reishi): A Medicinal Mushroom. *Herbal Medicine: Biomolecular and Clinical Aspects.* 2nd edition.

G





G **Constituents:**

- Volatile oil
- Methyl salicylates

Medicinal Actions:

- Analgesic
- Anti-rheumatic
- Astringent
- Carminative
- Diuretic
- Emmenagogue
- Rubefacient

Medicinal uses:

- Its main use is in **reducing pain and inflammation**, and is commonly used to reduce swelling in acute arthritis and other joint problems. Is usually used as a liniment in musculoskeletal problems of all kinds.
- Internally it will have diuretic effect because of irritation of the kidney, as well as stimulating action on menstruation.

P Inner root bark

C Methyl salicylates
Volatile oil
Flavonoids

A Analgesic
Anti-rheumatic
Rubefacient

I Topically in musculoskeletal problems of all kinds (e.g. arthritis & myalgia)

F *Ericaceae*

Pharmacology:

- High in **methyl salicylate** which can be converted into salicylic acid in the body is anti-inflammatory and a topical analgesic.

Pharmacy:

- Infusion: 1 tsp/cup, BID.
- Tincture: (1:5, 40%), 1-3 ml TID. 60 ml weekly max.
- Poultice/lotion/liniment of essential oil applied externally as needed.

Toxicity:

- Large doses (both internal and topical) have caused symptoms of salicylate toxicity. Large internal doses of the oil have caused death through inflammation of stomach.

Contraindications:

- Internal use of essential can cause gastrointestinal irritation and should be avoided during pregnancy & lactation.

Interactions: None known.

NOTE: Wintergreen is considered an endangered plant. Substitute Birch essential oil whenever possible for similar methyl-salicylate effects.

Wintergreen is considered incredibly cooling energetically. It is increasingly at risk of over harvesting & sustainability issues. It has a related species, Salal (*Gaultheria shallon*) that grows in the Northwestern United States & Canada and has very similar applications that should be considered in its place.

G

References:

1. Bell, A. et al. Acute methyl salicylate toxicity complicating herbal skin treatment for psoriasis. *Emerg Med (Fremantle)*. 2002 Jun;14(2):188-90.
2. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
3. Michel, P. et al. Polyphenolic Profile, Antioxidant and Anti-Inflammatory Activity of Eastern Teaberry (*Gaultheria procumbens* L.) Leaf Extracts. *Molecules*. 2014 Dec 8;19(12):20498-20520.
4. Milos, N. et al. Chemical composition and biological activity of *Gaultheria procumbens* L. essential oil. *Industrial Crops and Products*, Volume 49, August 2013, Pages 561–567.
5. Wolowich, W. et al. Plasma salicylate from methyl salicylate cream compared to oil of wintergreen. *J Toxicol Clin Toxicol*. 2003;41(4):355-8.





G

P Root

C Indole Alkaloids (gelsemine)

Iridoids

Coumarins

A Analgesic

Antispasmodic

Nervine Sedative & Hypnotic

I Symptoms associated with nervous tension or anxiety (eg. pain, diarrhea)

Migraines & neuralgia

Insomnia

F *Loganiaceae*

Constituents:

- Indole Alkaloids (gelsemine, gelsemoidine, sempervirine & gelsemicine)
- Iridoids
- Coumarins
- Tannins

Medicinal Actions:

- Analgesic
- Antispasmodic
- Febrifuge
- Hypnotic
- Nervine Sedative

Medicinal uses:

- Has a potent and analgesic action towards pain associated with nervous tension or irritability.
- Of specific use for managing the pain of **migraines and in trigeminal neuralgia**, as well as symptoms associated with nervous anxiety such as anxiety, insomnia and diarrhea.

Pharmacology:

- **Indole Alkaloids (gelsemine)** is a CNS depressant which acts similar to nicotine & cocaine (first stimulates neural function, and then depresses it, with an overall sedative effect)

Pharmacy:

- Tincture: (1:10, 60%) 0.3 – 1 ml TID (or smaller doses more frequently). **Weekly maximum dose = 5 ml.**

Toxicity:

- **A highly toxic herb.**
- Sign of toxicity include: internal strabismus with double vision and ptosis, muscular weakness, giddiness, convulsions, sweating, slowed, shallow and labored respiration, dizziness, dimished pulse, lowered temperature and blood pressure, drowsiness but easily aroused, intense abdominal cramps, paralysis, death from respiratory and cardiac failure.

Contraindications:

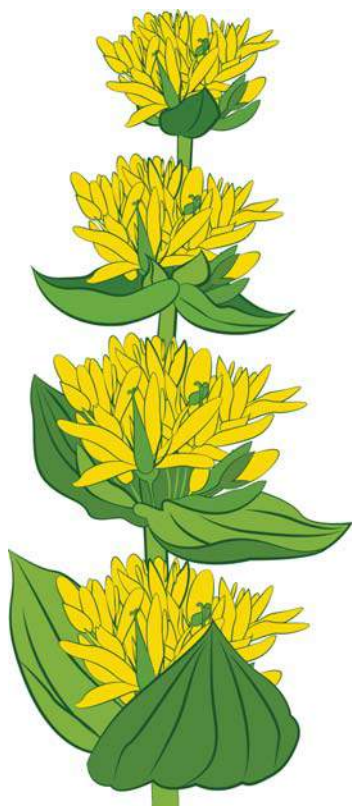
- Pregnancy & Lactation, and in those with poor circulation a weak heart or CVD.

Interactions: None known.

References:

1. Bousta, D. et al. Neurotropic, immunological and gastric effects of low doses of *Atropa belladonna* L., *Gelsemium sempervirens* L. and *Poumon histamine* in stressed mice. *J Ethnopharmacol.* 2001 Mar 3;74(3):205-15.
2. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
3. Jin, G. et al. Medicinal plants of the genus *Gelsemium* (Gelsemiaceae, Gentianales)—a review of their phytochemistry, pharmacology, toxicology and traditional use. *J Ethnopharmacol.* 2014 Feb 27;152(1):33-52.
4. Noriyuki, K. et al. Six new indole alkaloids from *Gelsemium sempervirens*. *Tetrahedron Letters*, Volume 46, Issue 35, 29 August 2005, Pages 5857–5861.
5. Rujjanawate, C. et al. Pharmacological effect and toxicity of alkaloids from *Gelsemium elegans*. *Journal of Ethnopharmacology*, Volume 89, Issue 1, November 2003, Pages 91–95.
6. Zhang, Z. et al. Steroids, alkaloids, and coumarins from *Gelsemium sempervirens*. *Planta Med.* 2008 Dec;74(15):1818-22.
7. Zhang, J. et al. Gelsemine, a principal alkaloid from *Gelsemium sempervirens* Ait., exhibits potent and specific antinociception in chronic pain by acting at spinal $\alpha 3$ glycine receptors. *Pain.* 2013 Nov;154(11):2452-62.
8. Zhang, J. et al. Gelsemium analgesia and the spinal glycine receptor/allopregnanolone pathway. *Fitoterapia.* 2015 Jan;100C:35-43.





G

Constituents:

- Iridoid glycosides (amarogentin & gentiopicrin: bitter principle)
- Terpenoids
- Sugars: saccharose, gentianose & gentiobiose (bitter)
- Xanthone derivatives (gentisin, gentisein, isogentisin)
- Pyridine alkaloids
- Flavonoids
- Phenolic acids

P Root

Iridoid glycosides (bitter principle)

C Xanthone derivatives
Flavonoids

Bitter

A Cholagogue
EmmenagogueHypochlorhydria & Hepatobiliary
insufficiency**I** Malabsorption & low appetite
Bloating & indigestion**F** *Gentianaceae***Medicinal Actions:**

- Anti-microbial
- Bitter
- Cholagogue
- Emmenagogue

Medicinal uses:

- Is considered one of the classic bitters, and as such will stimulate gastric HCl acid and bile secretion.
- Is **tonifying to the digestive tract** and should be considered for all persons who have weak or sluggish digestion eg. Food allergies, bloating, fullness after eating, impaired appetite, anemia (will increase Fe absorption) and malabsorption issues.
- Antimicrobial effects via ability to enhance HCl acid production (kills entering pathogens) and has additional toxic activity directly to some pathogens.

Pharmacology:

- **Iridoid Glycosides** gentiopicrin & amarogentin stimulate bitter taste receptors in the mouth that reflexively causes vagal stimulation. Vagal stimulation causes the release of gastrin which in turn stimulates the release of HCl, increases gastric and intestinal mobility, and increases secretion of bile & pancreatic enzymes.

Pharmacy:

- Decoction .5-2 g/1 cup water, 1/2 cup prn.
- Tincture (1:5, 45%), 1-3 ml in 1/2 cup water prn. 60 ml weekly max.
- Note: Bitters are best-dosed 15-30 minutes before meals and should be sipped slowly (over 5-10 minutes).

Toxicity:

- If given in large amounts, will irritate the bowels, cause N/V, and bounding pulse with headache.

Contraindications:

- Pregnancy & Lactation
- In situations of excess hydrochloric acid production and in weak constitutions with nervous system irritability in that it tends to aggravate.

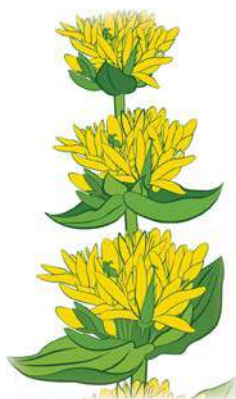
Interactions: None known.

NOTE: According to humoral medical theory, Gentian is most indicated for "melancholia", which often manifests as liver congestion or causing gloomy thoughts.

References:

1. Aberham, A. et al. Quantitative analysis of iridoids, secoiridoids, xanthenes and xanthone glycosides in *Gentiana lutea* L. roots by RP-HPLC and LC-MS. *Journal of Pharmaceutical and Biomedical Analysis*, Volume 45, Issue 3, 5 November 2007, Pages 437–442.
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4. McMullen, M. et al. Bitter tastants alter gastric-phase postprandial haemodynamics. *J Ethnopharmacol*. 2014 Jul 3;154(3):719-27.
5. Olivier, D. et al. Bitterness values for traditional tonic plants of southern Africa. *J Ethnopharmacol*. 2013 Jun 3;147(3):676-9.
6. Savikin, K. et al. Antimicrobial activity of *Gentiana lutea* L. extracts. *Z Naturforsch C*. 2009 May-Jun;64(5-6):339-42.
7. Toriumi, Y. New triterpenoids from *Gentiana lutea*. *Chem Pharm Bull (Tokyo)*. 2003 Jan;51(1):89-91.

In TCM, Gentian has a cold quality and is used to clear heat and transform dampness. It should therefore be used cautiously in those who already have a cold constitution or for long periods of time.





Constituents:

- Tannins (up to 30%)
- Resinous compounds

Medicinal Actions:

- Astringent
- Styptic (Hemostatic)
- Vulnerary

Medicinal uses:

- As a powerful astringent & hemostatic, is specifically **indicated for relaxed mucous tissues with profuse & debilitating discharges (eg. Intestinal bleeding, chronic mucous diarrhea, IBS, UC flares, passive hemorrhages, gastric ulcer).**

P	Root
C	Tannins Resinous compounds
A	Astringent Styptic Vulnerary
I	Mucous mebranes with profuse discharge (e.g. bleeding, diarrhea) Topically for ulcers & lacerations Gargle/wash for pharyngitis/vaginitis
F	Geraniaceae

- When applied topically will help allay bleeding from ulcers & lacerations while shortening the healing time.
- Can be gargled for mouth ulcers and inflammatory pharyngitis, or used as a douche for vaginitis in order to reduce exudate and bleeding if present.

Pharmacology:

- **Tannins** precipitate proteins (including those on cell surfaces) resulting in a protective coating over the cell membrane as well as mechanical shrinkage of the cell reducing passive diffusion out of the cell. Its ability to pull tissues together lend its secretolytic activity and anti-inflammatory actions.
- **Note:** Tannins are poorly absorbed, therefore the action is primarily on the tissue with which it comes into contact. Thus the direct effects of ingested tannins are localized to the gastrointestinal tract.

Pharmacy:

- Decoction: 1-2 tsp/cup; simmer 10-15 min, 1 cup TID.
- Tincture: (1:5, 25%), 2-4 ml TID. 60 ml weekly max.
- Topically as douche, wash or gargle

Toxicity:

- Use with caution in people with spastic, dry constipation or those on taking anticholinergic medications as it may potentiate smooth muscle irritability.

Contraindications:

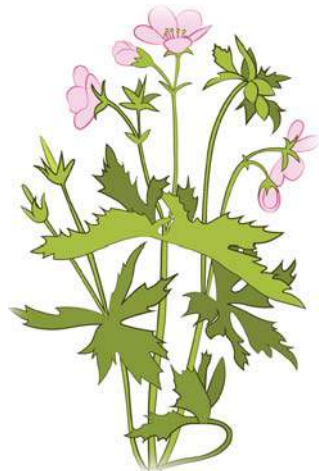
- Constipation, iron deficiency and malnutrition.

Interactions:

- May interfere with the absorption of medications, nutrients and minerals.

References:

1. Bate-smith, E. Ellagitannin content of leaves of Geranium species. *Phytochemistry*, Volume 11, Issue 5, May 1972, Pages 1755-1757
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P Leaf

- Flavonoids
- C** Terpenoid lactones (ginkgolides)
- Proanthocyanidins

- Antioxidant
- A** Cerebral circulatory stimulant & Neuroprotective

- Poor memory & concentration
- Peripheral & cerebral vascular
- I** insufficiency
- Prevention of age-related cognitive disorders

F *Ginkgoaceae*

Constituents:

- Flavonoids (quercetin, kaempferol)
- Terpenoid lactones (bilobilides & ginkgolides A,B & C)
- Proanthocyanidins
- Ginkgolic acid (toxic)
- Polysaccharides
- Waxes
- Phytosterols (sitosterol)

Medicinal Actions:

- Anti-inflammatory
- Antioxidant
- Anti-platelet/anti-thrombotic
- Antispasmodic
- Cerebral & circulatory stimulant
- Neuroprotective & cognitive enhancer
- Peripheral vasodilator

Medicinal uses:

- Improves brain metabolism of glucose and oxygen while **promoting blood flow to the brain improving memory, concentration, and brain function.**
- An anti-coagulant with strong antioxidant effects is also useful in peripheral vascular disease and restricted blood flow for any reason.
- Can inhibit platelet aggregation, relax blood vessels & improve their tone, and can be used topically as an anti-inflammatory.
- May be efficacious in the treatment of a wide array of **conditions associated with age-related physical and mental deterioration** including Alzheimer's disease/senile dementia, cardiovascular disease & cerebral vascular insufficiency and impaired cerebral performance.

Pharmacology:

- **Flavonoids** are antioxidant and protect blood vessels, brain and heart from free radical damage. They also increase oxygen and glucose utilization & blood flow, therefore improving tissue oxygenation and nutrition.
- **Ginkgolides** may be responsible for neuroprotective effects.
- Ginkgolide B is a potent platelet-activating factor antagonist and helps suppress cerebral vasospasm.

Pharmacy:

- Infusion: 1 tbsp/cup, infuse 5 min, TID.
- Tincture: (1:5, 25%), 2-4 ml TID. 80 ml weekly max.
- Standardized Extract capsules: 120-160 mg, QD-BID.
- Note: May take 6 weeks to see effects. Pause 6 weeks every 6 months.

Toxicity:

- Hypersensitivity reactions such as allergic dermatitis. May cause dry mouth, and sleep disturbance.
- Raw or fresh leaf may cause GI discomfort & dizziness.
- Fruit/nut consumption: erythema, edema, vesicles, and severe GIT irritation.

Contraindications:

- Use caution with patients on anticoagulant or antiplatelet medication such as warfarin and aspirin, in cases of excessive bleeding, or within 14 days prior to surgery.
- Avoid if on anti-convulsants or TCAs and with history of bleeding or seizure disorder
- Known hypersensitivity.

Interactions:

- May increase risk of bleeds (case reports of subdural hematoma) when combined with acetaminophen, anticoagulants/antiplatelet

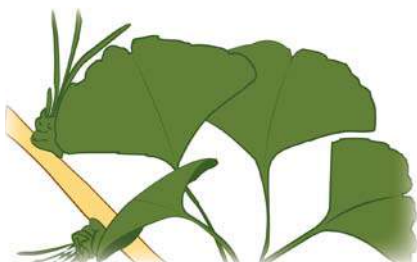
agents (NSAIDS, ASA).

- May antagonize effects of anti-hypertensives, thiazide diuretics, alprazolam, anticonvulsants, omeprazole, prilosec, and nicardipine.
- With anti-diabetic agents may increase drug metabolism and blood sugar.
- Anti-psychotics (eg. Risperidone - may cause priapism) and may induce hypomania in combination with SSRIs, MAOIs, trazadone, TCAs, buspirone, and St. John's Wort may increase risk of serotonin syndrome and seizures. May increase risk of seizure when combined with any medication known to lower seizure threshold.

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G





G

Constituents:

- Triterpene saponins (glycyrrhizin, glycyrrhizic & glycyrrhetic acid)
- Flavonoids & iso-flavonoids
- Phytosterols
- Mucilage & Polysaccharides (glucans), lignans & starch
- Coumarins
- Volatile oils
- Amino acids

Medicinal Actions:

- Adaptogen & Adrenal restorative
- Anti-inflammatory
- Antimicrobial
- Anti-spasmodic
- Demulcent & Vulnerary
- Expectorant
- Hepatoprotective

P Rhizome

C Triterpene saponins
Flavonoids & Isoflavones
Polysaccharides

A Adaptogen & Adrenal restorative
Anti-inflammatory
Demulcent

I Ulcers & GIT inflammation (e.g. GERD & IBD)
Adrenal insufficiency
Rheumatism

F *Fabaceae*

- Laxative (mild)

Medicinal uses:

- Is specific for the treatment of peptic ulcers. **Will soothe gastrointestinal inflammation** and irritations such as GERD, gastritis, and IBD.
- Also used for **adrenal insufficiency, corticosteroid withdrawal**, and Addison's disease.
- Inflammatory conditions also benefit from its use such as allergies and autoimmune disease, and Lyme disease.
- **A respiratory amphoteric** action for dry and spasmodic coughs
- For rheumatism, muscle spasm & cramps, and joint inflammation it can be used both internally and topically.

Pharmacology:

- **Triterpene saponins** (glycyrrhizin, glycyrrhizic acid) inhibit growth of HIV & DNA/RNA viruses. Exhibit steroid-like anti-

inflammatory effects similar to hydrocortisone in part due to inhibition of phospholipase A2 activity.

- **Glycyrrhetic acid** is an aglycone similar to natural corticosteroids which have an adrenocorticoidmimetic action.
- **Flavonoids and isoflavonoids** are anti-microbial and mildly estrogenic.
- Phytosterols have an estrogenic action.
- Polysaccharides (glucans) are demulcent.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 15 min, TID.
- Tincture: (1:1, 40%) 2-6 ml QD. 40 ml weekly max.
- Powdered root: 1-4g TID.
- Note: DGL (deglycyrrhized licorice) is a preparation where most of the glycyrrhetic acid has been removed. Inhibits the formation of ulcers and protects gastric mucosa against damage.

Toxicity:

- Minimal adverse effects if intake is less than 10 mg/day.
- May cause GIT upset, edema, and temporary visual disturbance.
- Long-term use may reduce thyroid function and basal metabolic rate.
- High doses of long-term use may cause headache, seizures, arrhythmia, amenorrhea, gynecomastia, and hypermineralcorticoidism.
- May antagonize/agonize estrogen receptors, decrease testosterone, and increase PTH.
- Pseudohyeraldosteronism may manifest as suppression of renin-angiotensin-aldosterone axis, cardiac arrest, CHF, edema, hypokalemia, and HTN.

Contraindications:

- Use with caution in autoimmune disease, anemia, hypertension, cardiovascular

disorders, edema associated with heart failure, liver problems, kidney insufficiency, hypokalemia, hypothyroidism, fibrocystic breasts, male infertility or erectile dysfunction.

- Pregnancy, lactation, and when on dialysis.

Interactions:

- Potentially with anti-arrhythmics, anti-coagulants, anti-diabetic agents, anti-hypertensives, diuretics, immunosuppressants, cardiac glycosides, corticosteroids, MAOIs, blood pressure medications, spironolactone, hormonal therapies, laxatives and K+ depleting medications.
- There is an increased likelihood of cardiac arrhythmias particularly in individuals with ischemic heart disease when used in conjunction with digoxin.
- Estrogen-based oral contraceptives may enhance mineralcorticoid side effects.

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G



G

P Leaves & Bark

C Resin acids
Saponins
Lignans

A Alterative
Anti-inflammatory
Anti-rheumatic

I Inflammatory & Rheumatic
complaints (e.g myalgia & arthritis)
both topically & internally

F *Zygophyllaceae*

Constituents:

- Resin acids (guaiazulene, guaiaconic, guaianetic and guaiaicic)
- Triterpenoid Saponins (guaianin R & officigenin)
- Polyterpenoids
- Vanillin
- Lignans (furoguaiacidin, furoguaiaoxidin & containing essential oil guajol)
- Phytosterols

Medicinal Actions:

- Alterative
- Analgesic
- Anti-inflammatory
- Antimicrobial
- Anti-rheumatic
- Astringent
- Diuretic

- Expectorant
- Rubefacient

Medicinal uses:

- An anti-inflammatory that promotes circulation and clears toxins from tissues.
- Is specific for **rheumatic complaints** (e.g. chronic rheumatism and rheumatoid arthritis) where inflammation and pain is present and particularly when an astringent is needed.
- It will aid in the treatment and prevention of gout and promotes the excretion of uric acid.
- Can be used internally and topically. Increases circulation and eases pain when rubbed into painful joints.

Pharmacology:

- Very little is known.
- **Resins** are considered anti-inflammatory & rubifacient through counter-irritant effects.
- **Lignans** (found within the resin) are considered responsible for antimicrobial & anti-inflammatory effects.

Pharmacy:

- Decoction: 1/4 tsp/cup, simmer 20 min, 1/2 cup TID.
- Tincture: (1:5, 90%), 1-4 ml TID. 80 ml weekly max.
- Friction rub/liniment: tincture over rheumatic area.

Toxicity: May cause GIT upset and/or contact dermatitis.

Contraindications:

- Pregnancy, lactation, kidney stones.
- Caution with gastritis & peptic ulcers, high resin content may lead to stomach upset.
- Avoid in allergic & inflammatory conditions.

Interactions:

- Use caution with anti-hypertensives.

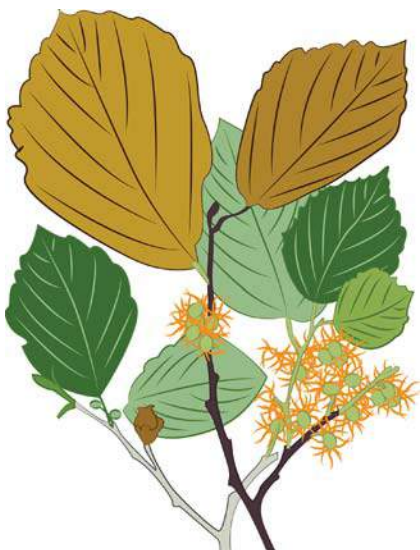
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- *Also called Guaiacum, Lifewood, Lignum vitae*



G



H

P Leaves & Bark

Tannins (hydrolyzable & condensed)

C Flavonoids

VO

Anti-inflammatory

A Antioxidant

Astringent

Topically in hemorrhoids, varicose veins, bruising & edema

I

Wash for leukorrhea & vaginitis

Ance & anti-aging of the skin

F *Hamameliadaeae*

Constituents:

- Leaves: Tannins (hydrolyzable gallotannins & condensed catechins and proanthocyanin), flavonoids, quercetin, VO
- Bark: Tannins (hydrolyzable hamamelitannins & condensed d-galocatechin, l-epigallocatechin, l-epicatechin), saponins, VO, resin

Medicinal Actions:

- Anti-inflammatory
- Anti-edematous
- Antioxidant
- Astringent
- Antimicrobial
- Comedolytic
- Vulnery

Medicinal uses:

- Should only be used topically for the treatment of **hemorrhoids, varicose veins, bruises and inflamed swellings & skin disorders** (eg. eczema, dermatitis). If used in a vaginal douche, it will address purulent mucus discharge from inflamed tissues as well as blood loss.
- Its antioxidant activity can be useful towards anti-aging and anti-wrinkling of the skin.

Pharmacology:

- **Proanthocyanidins** are potent inhibitors of 5-lipoxygenase and PAF in vitro.
- **Tannins** (Hamamelitannin) demonstrated in vitro antioxidant activity (inhibits superoxide anion radicals) and protected murine skin fibroblasts from damage induced by UVB irradiation, and human experiments have demonstrated suppression of UVB

mediated sunburn with topical application of Hamamelis lotion.

- Topical application of leaf extract produces a significant reduction in skin temperature and vasoconstrictive activity.
- Hamamelis concentrate exhibited significant antiviral activity against herpes simplex virus type 1 in vitro.

Pharmacy:

- **Topically use only**, as distilled witch hazel water, Cream, Poultice, Compress etc.

Toxicity:

- Hydrolysable tannins which are broken down readily by acid, alkali or certain enzymes to yield gallic or ellagic acid, and ultimately pyrogallol which is antiseptic, caustic and hepatotoxic.

Contraindications:

- Internal use due to hydrolyzable tannins.

Interactions: None known.

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H



P Tuber (Secondary roots)

Iridoid glycosides (harpagoside)

C Flavonoids
Phenolic acids

A Anti-inflammatory
Antioxidant
Anti-rheumatic

I Arthritis (rheumatoid & osteoarthritis)
Tendonitis & MSK degenerative disease

F *Pedaliaceae*

Constituents:

- Iridoid glycosides (harpagoside (1.4%-2.0%), harpagide, procumbide)
- Flavonoids
- Phenolic acids & Harpagoquinone
- Phytosterols (beta-sitosterol, stigmasterol)

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antioxidant
- Anti-rheumatic
- Nervine Sedative

Medicinal uses:

- Often used in the **treatment of arthritis**, and has significant anti-inflammatory activity. Other actions that aid in its

anti-arthritic application are its analgesic and vasodilatory effects. Can be used in tendonitis and to treat degenerative diseases of the musculoskeletal system.

Pharmacology:

- The pharmacokinetics of devil's claw and its iridoid glycosides (harpagoside) have not been well established. Indeed, there is some controversy on the action of the stomach or acid hydrolysis on the extract and its active ingredients.
- It is clear from the research that harpagoside alone is less effective for alleviating pain than whole extracts of the tuber, indicating that other compounds are involved in the herb's effects.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 15 min, 1 cup TID for at least 1 month.

- Tincture (1:2, 40%), 6-12 ml QD. 80 ml weekly max.
- Powdered tuber: 100-250 mg TID (note: for analgesic effects should be taken in enteric coated capsules with meals).

Toxicity:

- Higher doses may cause transient mild GIT disturbances such as diarrhea & flatulence. Frontal headaches, conjunctivitis, tinnitus, tachycardia, rhinitis have been reported.
- Allergic hypersensitivity

Contraindications:

- Use caution with anxiety, peptic ulcers, gallstones, history of arrhythmia, bleeding disorder, CHF, HTN, and heart disease.
- Known allergy
- Pregnancy & lactation

Interactions:

- Caution with anti-diabetic, anti-arrhythmic and blood pressure medications.
- Anticoagulants due to antiplatelet activity (theoretical).
- May increase effects of other anti-inflammatory agents.
- Less effective if taken with antibiotics (needs intestinal bacteria for activation).

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G





P Strobile

C Bitter Oleo-resins
Volatile oil (humulene)
Flavonoids

A Antispasmodic
Bitter
Sedative Nervine & Hypnotic

I Anxiety & Insomnia
Restless leg syndrome
Nervous indigestion

F *Cannabaceae*

Constituents:

- Oleo-resins containing bitter substances (acylphloroglucides, humulone, lupulone, valerianic acid)
- Volatile oil (humulene)
- Tannins
- Phytoestrogenic substances
- Flavonoids (kaempferol, quercetin, rutin)

Medicinal Actions:

- Analgesic
- Anaphrodisiac
- Antispasmodic
- Astringent
- Bitter
- Diuretic
- Sedative Nervine & Hypnotic

Medicinal uses:

- The main internal indications for Humulus are **sleeplessness from worry and anxiety, with nervous gastropathies**. Can be used for restlessness associated with nervous tension and headache and/or indigestion. Great for restful sleep and restless leg syndrome.

Pharmacology:

- **Oleo-resins** containing bitter substances stimulate appetite, gastric secretion and bile flow, thus improving digestion.
- **Valerianic acid** is a sedative.
- **Volatile oils** including humulene are sedative, hypnotic, analgesic, antiseptic, carminative and antispasmodic.
- **Humulone & lupulone** are antibacterial.
- **Phytoestrogens** have an anti-androgen effect in men to reduce sexual overexcitement (i.e. premature ejaculation).

Pharmacy:

- Infusion: 1 tsp/ cup, 1 cup TID
- Tincture (1:5, 60%), 2-3 ml TID. 40 ml weekly max.
- Hops pillow for insomnia

Toxicity:

- No adverse effects expected. Use caution depending on occupation due to sedative/ hypnotic effects.

Contraindications:

- Depression (may potentiate symptoms)

Interactions:

- Barbiturates and other sleeping aids may have additive effects.

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The most popular use of hops has been in the brewing of beer, contributing to its distinctive flavour and aroma, as well as providing a natural preservative to the beverage, which is an effective antibacterial. The flowers can also be eaten in place of asparagus, particularly in Belgium, while the oil is used in many perfumes.

Recorded cultivation of hops dates back to the middle of the 8th century, and the use of hops in brewing dates back to the Middle Ages. It was introduced in England in 1524, and it was used in a pillow during an illness of King George III in the place of opiates to produce sleep.

H





H

P Root

C Isoquinoline alkaloids
Chlorogenic acid
Volatile oil

A Bitter/Hepatic
Antimicrobial
Mucus membrane trophorestorative

Indigestion/dyspepsia with
hepatobiliary insufficiency
I Excessive mucosal secretions &
catarrh
Infection & inflammation

F *Ranunculaceae*

Constituents:

- Isoquinoline alkaloids (hydrastine, berberine, berberastine & canadine)
- Tannins (chlorogenic acid)
- Carbohydrates
- Volatile oil
- Resins
- Fatty acids

Medicinal Actions:

- Alterative
- Anti-catarrhal
- Anti-inflammatory
- Antimicrobial
- Astringent
- Bitter
- Emmenagogue & Oxytocic

- Hepatic (Choleretic & Cholagogue)
- Immuno-stimulant
- Laxative
- Mucus membrane trophorestorative

Medicinal uses:

- Has specific use for indigestion or dyspepsia with hepatic symptoms, as a bitter and antimicrobial
- Is well known for being a **restorative to mucus membranes** and helpful in all forms of catarrh.
- Is useful for all kinds of infections and inflammations, especially of the liver, skin, and in candidiasis.

Pharmacology:

- **Isoquinoline alkaloids** are bitter, cholagogue, choleretic and anti-microbial.

- **Berberine** is immuno-stimulant, anti-microbial, bitter, sedative, uterine tonic & anti-convulsant.
- **Hydrastine** is similar to berberine, a uterine stimulant, anthelmintic, vasoconstrictor and nervous system stimulant.
- **Canadine** is an uterine stimulant, hypotensive in low doses but high doses is hypertensive.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 20 min, TID.
- Tincture: (1:5, 60%), 1 ml, TID. 20 ml weekly max.
- Dried parts: 2g, TID.
- As douche, ointment, eyewash, gargle or compress.
- Note: Dose short term (up to 4 weeks).

Toxicity:

- Long-term dosing can cause dysbiosis (kill “good” & “bad” bacteria).
- High dose berberine can cause flu-like symptoms, stomach upset, dizziness, dyspnea, increased respiratory rate, hypotension, nephritis, nervous issues, depression, convulsions & paralysis and may be fatal.
- May cause photo toxicity and local anesthetic action when applied topically, and seizure in toxic doses.

Contraindications:

- Caution with hyper/hypotension, hypoglycemia, history of bleeding disorders, CHF, arrhythmia, acute inflammatory conditions (especially of GIT)
- Pregnancy & lactation, and in children & neonates.

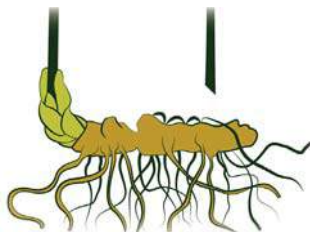
Interactions:

- With CNS depressants, cardiac medications, and anticoagulants.
- Use caution with anti-hyperglycemics, laxatives, sedatives, photo-sensitizing drugs and tetracycline.

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Note: considered an endangered plant species. Consider using *Berberis aquifolium* as an alternative when possible.





H

P Aerial

C Tropane alkaloids (primarily hyoscyamine)

A Analgesic
Antispasmodic
Nervine sedative

I For antispasmodic effects on the urinary tract (e.g. Kidney stones)

F *Solanaceae*

Constituents:

- Tropane alkaloids (hyoscyamine, hyoscyne & scopolamine)

Medicinal Actions:

- Analgesic
- Antispasmodic
- Nervine sedative

Medicinal uses:

- Is often compared to Belladonna as both plants exert anticholinergics effects.
- Is most often used for its **antispasmodic effects on the urinary tract** (eg. Kidney stones), with large doses affecting the central nervous system.

Pharmacology:

- **Tropane alkaloids (hyoscyamine & scopolamine)** are negatively cholinergic & positively adrenergic (sympathomimetic), causing an inhibition of parasympathetic and stimulation of sympathetic nerves via competitive inhibition of acetylcholine. Effects lead to increased intraocular pressure & diplopia, reduction of bodily secretions, inhibition of vagus nerve (tachycardia, increased cardiac output and raised blood pressure), reduced tone in all smooth muscles: vasodilation, bronchial dilation & reduced peristalsis.
- Primarily block muscarinic acetylcholine receptors Ca²⁺ channels resulting in smooth muscle relaxation, and inhibition of secretion of gastrointestinal tract and elsewhere, and analgesia.

Pharmacy:

- Tincture: (1:10, 45%), take 10 drops twice a day to a max of 1 ml. Increase by 1 drop every three days until dry mouth and visual disturbances appear. Reduce by 1 drop each day until side effects disappear. **10 ml weekly max.**

Toxicity:

- **First sign of toxicity is dry mouth & eyes.**
- Acute: Facial dryness, nausea, increased pulse rate, vertigo, dull headache, dilated pupils, muscular weakness, reduced peristalsis, tachycardia, paralysis, delirium and hallucinations, coma, spasms, cramps, convulsions, rapid pulse, salivation, death.
- Chronic: macular rash which is dry & pruritic.

Contraindications:

- Pregnancy & lactation.

Interactions:

- None reported, but may theoretically interact with anticholinergic & sympathomimetic herbs and medications.

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H





H

Constituents:

- Volatile oils (pinene & cineole)
- Flavonoids & proanthocyanidins (hyperoside, quercetin, rutin)
- Phloroglucinols (hyperforin)
- Naphthodianthrone (hypericin, pseudohypericin, isohypericin, protohypericin)
- Carotenoids
- Phloroglucins (hyperforin)
- Tannins

Medicinal Actions:

- Anti-depressant

P Aerial (primarily flowering tops)

Flavonoids (hyperoside & hyperforin)
C Naphthodianthrone (hypericin)
Volatile oils

Nervine tonic
A Antiviral
Vulnerary

Depression & anxiety
I Neuralgia & myalgia
Wound healing & antimicrobial

F *Clusiaceae*

- Anti-inflammatory
- Antimicrobial
- Astringent
- Nervine tonic
- Vulnerary

Medicinal uses:

- Most useful in **mild to moderate depression, seasonal affective disorder, anxiety and various somatoform disorders** (neuralgia & myalgias).
- Is antiviral both internally and topically.
- Vulnerary actions make it a wonderful choice for topical wound healing (eg. burns).

Pharmacology:

- **Naphthodianthrone (hypericin & pseudohypericin)** have received most of the attention in pharmacological studies based on their contributions to the antiviral properties of the plant as well as speculation (based on early in vitro data) that they may also contribute to the plant's antidepressant

actions. Recent research, however, indicates that other constituents such as **hyperforin and flavonoid compounds**, may also contribute to the antidepressant actions.

- Various proposed mechanisms exist for antidepressant effects, involving several neurotransmitters and hormones, specifically inhibition of monoamine oxidase (MAO) due to hypericin.
- Hyperforin can inhibit synaptosomal reuptake of serotonin, norepinephrine, and dopamine and has also been shown to have antimicrobial activity against gram-positive bacteria and numerous viruses.
- Hypericin is a powerful photosensitizer and has anti-tumor actions. Once taken up by tumor cells, hypericin reacts in the presence of oxygen and activates multiple apoptosis pathways that results in malignant cell death

Pharmacy:

- Infusion: 2-4 g / cup QD to TID.
- Tincture (1:5, 40%), 1-4 ml TID. 80 ml weekly max.
- Standardized extract: 500 to 1000 mg divided daily of extract standardized to 0.3% hypericin for mild-moderate depression.
- Note: May take 2-4 weeks to notice clinical results.

Toxicity:

- Photosensitivity can occur in susceptible individuals. Fair-skinned individuals should take precautions when exposed to the sun, and It is advisable that the elderly use protective eyewear when exposed also.
- Reported side effects include gastrointestinal irritations, allergic skin reactions, tiredness and restlessness. Sudden d/s may result in adverse reactions.
- May cause CNS effects (eg. Restlessness, dizziness & insomnia), bradycardia, palpitations, alterations in ACTH, TSH and

glucose metabolism.

- Serotonin syndrome symptoms (eg. Agitation, HTN, delirium, sweating, increased heart rate, and weakness).

Contraindications:

- Speeds up the elimination of many drugs through phase liver detoxification and can interfere with MAOIs, SSRIs, narcotics & reserpine.
- Pregnancy & lactation
- Use caution in history of mania, bleeding disorder, diabetes, HTN, liver disease, seizure disorder, and thyroid disease.

Interactions:

- Concomitant use with selective serotonin reuptake inhibitors (SSRIs) and other CNS agents may result in serotonin syndrome.
- May reduce serum levels and therefore activity of antiretroviral drugs, coumarin anticoagulants, chemotherapeutics, cyclosporine, benzodiazepines, digoxin, amitriptyline, theophylline, anticonvulsants (carbamazepine, phenobarbital, phenytoin), oral contraceptives, anti-hyperlipidemics and opioids

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H



P Aerial

C Volatile oil
Terpenoids
Flavonoids

A Antispasmodic & Carminative
Diaphoretic
Expectorant

I Cough & congestion associated with
asthma & URTIs
Spasmodic GIT disorders
Topically as anti-fungal

F *Lamiaceae*

Constituents:

- Volatile oil (pinocamphone, alpha & beta-pinene, linalool, cineole & limonene)
- Terpenoids (marrubiin, olanolic acid, ursolic acid)
- Flavonoids (glycosides of hesperidin & diosmetin)
- Hyssopin glycoside
- Tannins
- Resin

Medicinal Actions:

- Anti-inflammatory
- Antispasmodic
- Carminative
- Diaphoretic
- Expectorant
- Nervine sedative

Medicinal uses:

- Promotes expectoration, relieves asthmatic cough, and **reduces the inflammation & spasm** associated with respiratory infections.
- Is a diffusive aromatic, stimulating and relaxing with mild tonic properties and an effective carminative for spasmodic GIT disorders.
- May be used topically as an anti-fungal and to speed the healing of bruises.

Pharmacology:

- VO has non-specific spasmolytic action (primarily to linalool) acting on both receptor-stimulated and on ion-stimulated contractions.
- The terpenoid marrubiin is an expectorant.
- Ursolic acid is anti-inflammatory and may play role in regulation and differentiation of Th1/Th2 immunobalance.

Pharmacy:

- Infusion: 1-2 tsp/cup water, 1 cup TID.
- Tincture (1:5, 45%), 2-4 ml TID. 80 ml weekly max.

Toxicity: None known.

Contraindications: Pregnancy.

Interactions: None known

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Elecampane is covered with soft hairs and has a starchy root made up primarily of the complex carbohydrate inulin, from which its genus name is derived. Inulin swells and forms a slippery suspension when mixed with digestive fluids, and is also found in high quantities in both Burdock & Marshmallow roots.





P Root

C Mucilage & Inulin
Volatile oil
Saponins

A Antimicrobial
Diaphoretic
Expectorant & Lung
Trophorestorative

I Chronic inflammatory lung conditions
(e.g. asthma, bronchitis)
Warming digestive stimulant

F *Asteraceae*

Constituents:

- CHOs: mucilage & Inulin (40%)
- Volatile oil - bitter sesquiterpene lactones (alantolactone, isoalantolactone, isoheleproline, alantopicrin, alantic acid & azulene)
- Saponins
- Chlorogenic & caffeic acids
- Phytosterols
- Resin

Medicinal Actions:

- Alternative
- Antimicrobial
- Anti-tumor
- Bitter
- Diaphoretic
- Diuretic
- Expectorant & Lung Trophorestorative

Medicinal uses:

- Is used in **any chronic lung condition as a trophorestorative**. It acts as a warming expectorant, and is anti-inflammatory.
- Is immuno-stimulatory and somewhat sedating overall, is most indicated in irritating bronchial coughs (asthma, whooping cough, croup), especially in children or the elderly. Will remove excess mucus and chronic catarrh).
- As a warming digestive bitter will tonify the digestive tract as a whole.
- Has traditional use as a surgical antiseptic and can be used as an antimicrobial topically.

Pharmacology:

- **VO** is spasmolytic on smooth muscle tissues
- **Sesquiterpene lactones** (alantolactone, isoalantolactone) are widely antiseptic (eg. MRSA, Candida) and anti-inflammatory. Isolated alantolactone has been used to

treat parasites (e.g. roundworm, hookworm) and has chemopreventative and anti-tumor effects.

- **Mucilage** has a relaxing & carminative effect which combines well with the stimulation and expectoration of the VO
- **Inulin** is a prebiotic that will aid in the balance of blood sugar levels and of the microbiome.

Pharmacy:

- Decoction: 1 tbs/cup, simmer 20 min, TID.
- Tincture: (1:5, 40%) 2-5 ml TID. 100 ml weekly max.
- Powdered herb: 2-4 g QD.

Toxicity: None known.

Contraindications:

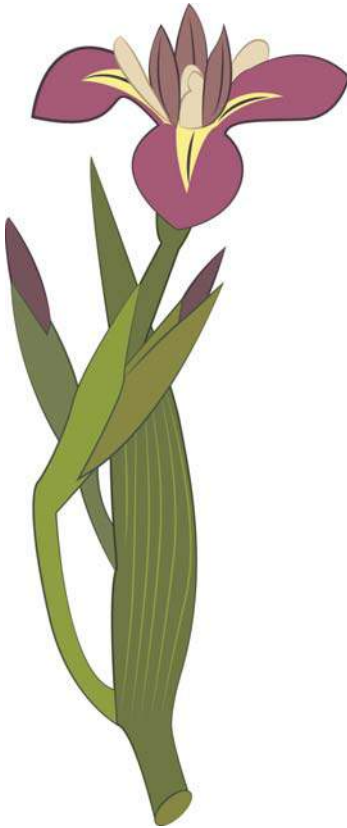
- Use caution when lungs are irritated or dry as it can increase dryness and give a feeling of constriction.
- May cause contact dermatitis topically.

Interactions: None known.

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Constituents:

- Volatile oil (furfural)
- Iridin glycoside (irisin)
- Phenolic acids (salicylic and isophthalic)
- Tannins
- Oleo-resin
- Beta-sitosterols
- Triterpenoids

P Rhizome

C Volatile oil
Iridin glycoside
Phenolic acids (salicylic and isophthalic)

A Alterative
Dermatological agent
Lymphatic

I Inflammatory skin disease (e.g. acne, eczema/psoriasis) due to liver congestion
Endocrine & glandular disorders

F *Iridaceae*

Medicinal Actions:

- Alterative
- Anti-inflammatory
- Astringent
- Dermatological agent
- Diaphoretic
- Diuretic
- Hepatic (Choleretic & cholagogue)
- Laxative
- Lymphatic

Medicinal uses:

- Has a wide application in the treatment of skin disease, **aiding detoxification of the skin by working through the liver & GIT**
- May be used in skin eruptions such as acne, spot and blemishes. For the more chronic skin disease such as eczema and psoriasis, it is valuable as a part of a wider treatment.

- It may be used wherever there is **constipation associated with liver problems** or the gall bladder. It has stimulating effects on the liver, gallbladder, pancreas, and colon and promotes the production and secretion of bile along with other hepatic functions making it useful in many toxic conditions.
- Has use in **endocrine conditions and other glandular disorders** including hypothyroidism (with thyroid enlargement), splenomegaly, lymphadenopathy, menstrual irregularities (including uterine fibroids), and sebaceous gland disorders.

Pharmacology:

- VO (furfural) is a mucous membrane irritant.
- Irisin in high doses can cause nausea & vomiting, unclear if iridin has same effects.

Pharmacy:

- Decoction: 1 tsp/cup water, simmer 20 minutes, TID.
- Tincture: (1:5, 40%), 1-3 ml, TID. 80 ml weekly max.

Toxicity:

- Fresh root can cause symptoms such as burning sensation in the mouth and throat, N/V, violent diarrhea, abdominal burning, difficult breathing, colic and rectal heat, and gastroenteritis resulting in death.
- Large doses will evacuate and exhaust the system, acting on the liver, and the alimentary canal throughout.

Contraindications:

- Use caution in weakened constitutions.

Interactions: None known.

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J

Constituents:

- Naphthaquinones (juglone)
- Volatile oil
- Fatty acids
- Tannins (ellagic & gallic acids)
- Flavonoids
- Silica

Medicinal Actions:

- Alterative
- Anthelmintic
- Antimicrobial (antifungal)
- Antineoplastic
- Astringent
- Bitter
- Laxative (stimulating)

P Green hulls & husks

C Naphthaquinones (juglone)
Tannins
Flavonoids

A Anthelmintic (Antiparasitic)
Astringent
Laxative

I Parasitic & microbial infections
Constipation (flaccid)
Cancer

F *Juglandaceae*

Medicinal uses:

- **Antiseptic properties and antineoplastic** actions give it indication in the treatment of chronic skin conditions associated with a disorder of digestion and assimilation.
- Used often internally for the **treatment of worms/parasites**, yeast infections and cancer.
- Laxative effects give it use in acute cases of constipation.

Pharmacology:

- **Naphthaquinone (juglone)** is anti-fungal, a toxin, antimicrobial, anti-tumor and anti-parasitic. Has similar laxative effects to anthraquinones in *Cassia* sp.

Pharmacy:

- Tincture: (1:5, 25%) 5-10 gtt, TID, 10-15 ml weekly max.
- Pulse dosing: 2 weeks on 2 weeks off

Toxicity:

- Nausea, vomiting, and watery catharsis.
- External application may cause dermatitis (treat by washing area with soap and water). Juglone may cause allergic reaction and genetic mutation with long-term use.

Contraindications:

- Chronic GIT conditions, pregnancy & lactation.

Interactions:

- Theoretically interfere with absorption of any drug when taken simultaneously.

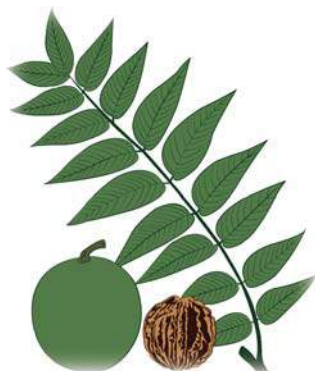
References:

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In Nature, juglone is an example of an *allelopathic* compound, a substance that is produced by a plant to stunt the growth of another. It exerts its effect by inhibiting certain enzymes needed for a plant's metabolic function & is also an insecticide.

Black Walnut trees produces familiar greenish-yellow fruits about the size of a golf ball. The seed is edible but as herbalists we're more interested in the fruit rind than the seed. As the fruit of the tree ripens, the rind loosens and the seed is easily separated. The yellow rind has a black pulp that stains everything it touches, though its the tannins contained within this pulp that are largely responsible for its therapeutic value.

Black Walnut has a cousin called Butternut (*Juglans cinerea*), which is sometimes used interchangeably with Black Walnut bark.





J

Constituents:

- Volatile oil (pinene, camphor, cineole, limonene, thujone, borneol, terpinene-4-ol)
- Tannins
- Diterpenes
- Resin
- Flavonoids (amentoflavone, quercitin, apigenin)

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial
- Anti-rheumatic
- Bitter
- Carminative
- Diuretic
- Emmenagogue
- Rubefacient

P Berries

Volatile oil

C Tannins
Flavonoids

Anti-rheumatic
A Carminative
Diuretic

Rheumatism (arthritis & gout)

I Myalgia & neuralgia
Bitter digestive stimulant

F Cupressaceae

Medicinal uses:

- Is used in **arthritis and rheumatism** because of its anti-inflammatory and diuretic properties and will relieve muscle aches due to excess lactic acid.
- Topically the essential oil can be used in arthritis, muscle/joint pains, gout and neuralgia.
- Has a specific use in the treatment of **cystitis in the absence of renal inflammation** (i.e. bladder infection but NOT kidney infection)
- Traditionally used as a **bitter digestive stimulant** or aperitif in gin.

Pharmacology:

- **Volatile oils** are diuretic, antiseptic, uterine stimulant, anti-viral and topically irritant.
- Diuretic action may be due to the stimulation of the glomerulus to increase filtration rate.

Studies done on animals show that the active principle for the diuretic action of juniper is a simple terpene: **terpinene-4-ol**, which specifically acts as an irritant to the kidneys to increase glomerular filtration rate.

- **Flavonoid** (amentoflavone) has demonstrated anti-viral activity
- Pain relief in arthritis, gout and rheumatism may be due to its prostaglandin-inhibiting effects.

Pharmacy:

- Infusion: 1 tsp lightly crushed berries/cup water; infuse 20 min, 1 cup BID.
- Tincture (1:5, 40%), 1 – 2 ml TID.
- Essential oil: 5 parts to 30 parts fixed oil, 30 drops TID.
- Note: Pulse dosing required (2 weeks on, 1 week off)

Toxicity:

- A key sign that long-term use may be irritating the kidneys is albuminuria.
- Thujone in the VO may accumulate and is neurotoxic.
- Topically may cause burning, erythema, and inflammation.

Contraindications:

- In acute kidney infections or kidney disease (nephritis and nephrosis)
- Pregnancy due to the stimulation of uterine contractions.

Interactions: None known.

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J



L

Constituents:

- Phenolic acids (mallic, citric, oxalic)
- Alkaloids
- Sesquiterpene lactones (lactucin, lactulone, lactupicrin, lactucic acid)
- Flavonoids (quercetin, apigenin, luteolin)
- Coumarins

Medicinal Actions:

- Analgesic
- Antispasmodic
- Nervine Sedative & Hypnotic

P Leaves (latex)

Phenolic acids
C Alkaloids
Sesquiterpene lactones

Analgesic
A Antispasmodic
Nervine Sedative & Hypnotic

Insomnia & restlessness
I Dry irritated coughs
Myalgia & muscle spasms (e.g. dysmenorrhea)

F Asteraceae

Medicinal uses:

- A valuable remedy for use in **insomnia, restlessness and over-excitability** (especially in children) and other manifestations of an overactive nervous system.
- As an antispasmodic it can be used as holistic treatment for whooping cough and dry irritated coughs in general.
- It will relieve colic pain in the gut and uterus and so can be used in painful periods, and will ease muscular and joint pains related to rheumatism, and has been used as an aphrodisiac.
- Note: The latex of this plant was at one time sold as "Lettuce Opium" and has been used as an opium substitute.

Pharmacology:

- **Alkaloids & sesquiterpene lactones** are possibly responsible for sedative effects.

Pharmacy:

- Infusion: 1 tsp/cup, infuse 15 min, TID.
- Tincture: (1:1, 25%), 0.5-3 ml TID. 60 ml weekly max.

Toxicity:

- In high doses can produce stupor, depressed breathing and overdose can cause coma/death.

Contraindications:

- Allergic reaction to Asteraceae family
- Pregnancy & lactation

Interactions:

- Use caution with other CNS depressants (additive effects)

References:

1. Besharat, S. et al. Wild lettuce (*Lactuca virosa*) toxicity. *BMJ Case Rep.* 2009.
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3. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
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8. Wesolowska, A. et al. Analgesic and sedative activities of lactucin and some lactucin-like guaianolides in mice. *J Ethnopharmacol.* 2006 Sep 19;107(2):254-8.





Constituents:

- Volatile oil (linalyl acetate, linalol, geraniol, cineole & limonene)
- Tannins
- Flavonoids (luteolin)
- Coumarins
- Phytosterols
- Triterpenes (ursolic acid)

Medicinal Actions:

- Antimicrobial
- Anti-rheumatic
- Carminative & Antispasmodic

P Flowers

Volatile oil

C Tannins
Flavonoids

Carminative & Antispasmodic

A Nervine sedative
Rubefacient

Headaches (especially due to stress)

I Insomnia
Topically to ease rheumatic pains

F *Lamiaceae*

- Nervine sedative
- Rubefacient
- Uterine stimulant & emmenagogue

Medicinal uses:

- Has many uses including culinary, cosmetic and medicinal.
- As a digestive aid is highly carminative & mildly bitter and will benefit any inflammatory or spasmodic GIT condition.
- It is an effective herb for **headaches, especially when they are related to stress.** It can be quite effective in the clearing of depression, especially if used in conjunction with other remedies.
- As a gentle strengthening tonic of the nervous system it may be helpful for nervous debility and exhaustion. It can be used to soothe and **promote natural sleep.**

- Externally the oil can be used as a soothing, calming, locally anti-inflammatory liniment to help ease itching & the aches and pains and rheumatism.

Pharmacology:

- **Volatile oils (linalol & geraniol)** are largely responsible for the many actions of this herb. Will reduce the tone of skeletal muscle and have sedative and anti-anxiety effects.

Pharmacy:

- Infusion: 1 tsp/cup, infuse 15 min, TID.
- Tincture: (1:2, 60%), 2-5 ml QD. 40 ml weekly max.
- Essential oil: 1-4 ggt inhalations, chest rub, massage oil, pillow, douche.
- Bath: 100g infused and strained, added to bath.
- Culinary uses.

Toxicity: None expected within recommended doses.

Contraindications:

- Internal use of essential oil.
- Avoid excessive use during early pregnancy.

Interactions: None known.

References:

1. Chevallier, A. Encyclopedia of Herbal Medicine. Dorling-Kindersley, 2000.
2. Cricollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
3. Fibler, M. et al. A case series on the use of lavender oil capsules in patients suffering from major depressive disorder and symptoms of psychomotor agitation, insomnia and anxiety. *Complement Ther Med.* 2014 Feb;22(1):63-9.
4. Fismar, K. et al. Lavender and sleep: A systematic review of the evidence. *European Journal of Integrative Medicine, Volume 4, Issue 4, December 2012, Pages 436-447.*
5. Kasper, S. An orally administered lavender oil preparation (Silexan) for anxiety disorder and related conditions: an evidence based review. *Int J Psychiatry Clin Pract.* 2013 Nov;17 Suppl 1:15-22.
6. Parvin, N. et al. The effect of lavender *angustifolia* in the treatment of depression. *European Psychiatry, Volume 26, Supplement 1, 2011, Page 624.*
7. Raisi Dehkordi, Z. et al. Effect of lavender inhalation on the symptoms of primary dysmenorrhea and the amount of menstrual bleeding: A randomized clinical trial. *Complement Ther Med.* 2014 Apr;22(2):212-9.
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L

Constituents:

- Alkaloids (leonurine, betonicine & stachydrine)
- Flavonoids (apigenin, kaempferol, quercetin)
- Glycosides (Bufadienolide & Lavandulifolioside)
- Iridoids & Terpenoids (ursolic acid)
- Tannins
- Volatile oil
- Vitamins A & C

Medicinal Actions:

- Antimicrobial
- Antispasmodic
- Cardiac tonic
- Hepatic

P Aerial

Alkaloids (leonurine)

C Flavonoids
Volatile oil

Cardiac tonic

A Nervine tonic
Uterine tonic

Anxiety & Restlessness

I Heart palpitations & tachycardia of nervous origin or hyperthyroidism
Menstrual irregularities

F *Lamiaceae*

- Hypotensive
- Laxative
- Nervine tonic
- Uterine tonic & emmenagogue

Medicinal uses:

- Is most indicated in **nervous debility** with irritation and unrest (e.g. anxiety)
- The hypotensive action is due to its vasodilatory effect, which also serves to increase circulation to the reproductive organs.
- As a gentle cardiotonic, is **specific for cardiac disorders of nervous origin** (e.g. tachycardia secondary to anxiety).
- Will also promote blood flow to female reproductive organs and balances hormones affecting the menstrual cycle as well as hyperthyroidism.

Pharmacology:

- **Alkaloids (leonurine, betonicine & stachydrine)** increase uterine contractions.
- Stachydrine is oxytocic & sedative.
- Leonurine is uterotonic, sedative, hypotensive, and cardioactive.
- Glycosides are antiseptic, nervine, anti-spasmodic, and hypotensive.
- Ursolic acid is anti-viral, anti-tumor, cytotoxic and inhibits Epstein-Barr.
- Sedative, hypotensive and cardiotonic effects attributed to bufadienolide glycosides.

Pharmacy:

- Infusion: 1 tsp/cup water, 1-2 cups TID.
- Tincture: (1:5, 45%), 4-6 ml TID. 125 ml weekly max.
- Capsules: 250 mg/cap, 1-2 cap TID.

Toxicity: No adverse effects expected within recommended doses.

Contraindications:

- Pregnancy
- Use caution in menorrhagia.

Interactions:

- Theoretically may interact with various cardiovascular medications

References:

1. Bernatoniene, J. et al. The effect of Leonurus cardiaca herb extract and some of its flavonoids on mitochondrial oxidative phosphorylation in the heart. *Planta Med.* 2014 May;80(7):525-32.
2. Chevalier, A. *Encyclopedia of Herbal Medicine.* Doring-Kindersley, 2000.
3. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
4. Ritter, M. et al. Cardiac and electrophysiological effects of primary and refined extracts from Leonurus cardiaca L. (*Ph. Eur.*). *Planta Med.* 2010 Apr;76(6):572-82.
5. Shikov, A. et al. Effect of Leonurus cardiaca oil extract in patients with arterial hypertension accompanied by anxiety and sleep disorders. *Phytother Res.* 2011 Apr;25(4):540-3.
6. Tahmouzi, S. et al. Optimum extraction of polysaccharides from motherwort leaf and its antioxidant and antimicrobial activities. *Carbohydr Polym.* 2014 Nov 4;112:396-403.
7. Wolyniak, K. et al. Leonurus cardiaca L. (motherwort): a review of its phytochemistry and pharmacology. *Phytother Res.* 2013 Aug;27(8):1115-20.



In TCM theory, Motherwort is considered to enter the heart, liver, bladder and small intestine channels. It quickens the blood, transforms stasis and stops pain, and is used to nourish the heart blood and calm the spirit (or shen). It has a long history of use in helping to facilitate birth for women who have either a history of difficult births or when they're past their due dates.



L

Constituents:

- Volatile oil (alpha & beta pinenes)
- Dimeric/lactone phthalides (glycosides)
- Alkaloids
- Phytosterols
- Saponins
- Coumarins & furanocoumarins
- Ferulic acid
- Ligustilides (E-Z)

P Root

Volatile oil

C Dimeric/lactone phthalides
Alkaloids

A Antimicrobial
Diaphoretic
Emmenagogue

URTI & Influenza

I Chronic lung conditions (e.g. asthma
& bronchitis)

F *Umbelliferae*

Medicinal Actions:

- Analgesic
- Antimicrobial
- Antispasmodic
- Diaphoretic
- Emmenagogue
- Hypoglycemic

Medicinal uses:

- An effective **anti-viral and diaphoretic**.
- Is especially indicated in the beginning stages of a cold or flu or in someone with a nagging cough that has persisted for weeks.
- In asthma and bronchitis as a smooth muscle relaxant toward the respiratory tract.

Pharmacology:

- **Dimeric/lactone phthalides** display sedative & spasmolytic properties. Anti-hyperglycemic effects due to inhibition of α -glucosidase at the intestinal level as well as potential stimulatory effects on insulin secretion.
- **Z-ligustilide** has demonstrated antimicrobial and antispasmodic effects on smooth muscle tissue, as well as anti-asthmatic activity and general relaxation for the respiratory system and heart.

In TCM Osha enters lung, stomach, and liver channels, and combines well with Thyme & Sage for external attacks of wind-heat causing sore painful throat that is worse with swallowing or talking.

Pharmacy:

- Decoction: 1-2 tsp/cup water; 1 cup TID.
- Tincture (1:5, 60%), 2-4 ml TID. 80 ml weekly max.

Toxicity: None known.

Contraindications:

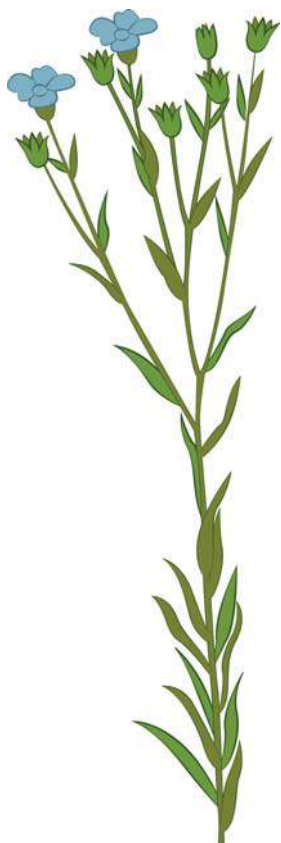
- Pregnancy & lactation.

Interactions: None known.

References:

1. Appelt, G. Pharmacological aspects of selected herbs employed in Hispanic folk medicine in the San Luis Valley of Colorado, USA: I. *Ligusticum porteri* (osha) and *Matricaria chamomilla* (manzanilla). *J Ethnopharmacol.* 1985 Mar;13(1):51-5.
2. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
3. Brindis, F. et al. (Z)-3-butylidene-phthalide from *Ligusticum porteri*, an α -glucosidase inhibitor. *J Nat Prod.* 2011 Mar 25;74(3):314-20.
4. Juárez-Reyes, K. et al. Antinociceptive activity of *Ligusticum porteri* preparations and compounds. *Pharm Biol.* 2014 Jan;52(1):14-20.
5. León, A. et al. Phthalides and other constituents from *Ligusticum porteri*; sedative and spasmolytic activities of some natural products and derivatives. *Nat Prod Res.* 2011 Aug;25(13):1234-42.
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L

Constituents:

- Fiber (hemicellulose, cellulose, lignin)
- Fixed oils
- Essential Fatty acids (Omega 3; linolenic & Omega 6; linoleic, oleic, palmitic, stearic acids)
- Secoisolariciresinol glycoside
- Proteins
- Mucilage
- Sterols & triterpenes (cholesterol, campesterol, stigmasterol, sitosterols)
- Cyanogenic glycosides
- Monoglycoside (linamarin)

P Seed & Seed Oil

Mucilage & Polysaccharides (fibre)

C Essential Fatty Acids (omega 3s)
Nutrients (Vitamins & Minerals)

Laxative (bulking/osmotic)
A Demulcent
Nutritive

Constipation and/or Diarrhea
I Dyslipidemia
GIT & Respiratory inflammation

F *Linaceae*

- Nutrients: Vitamins A, B, D, E, Minerals & Amino acids

Medicinal Actions:

- Anti-inflammatory
- Anti-spasmodic
- Demulcent
- Expectorant
- Nutritive
- Laxative (Bulking & Bowel lubricant)
- Phytoestrogenic

Medicinal uses:

- As a **bowel demulcent, lubricant and nutritive**, the ground seed will also draw out toxins for elimination through the GIT. Offers protective effects to the mucosa, softens stool, increases stool weight & volume and reduces bowel transit time.

- Also used as a preventative for atherosclerosis & thrombosis, **to improve blood lipid & cholesterol profiles.**
- Seed oil has been used in PMS and menstrual disorders.
- Demulcent properties make it useful for sore throats, irritated coughs, and upper respiratory inflammations

Pharmacology:

- **Mucilage** is demulcent & vulnerary.
- **Secoisolariciresinol** glycoside has anti-tumor, phytoestrogenic and antioxidant effects.
- Monoglycoside (linamarin) is antispasmodic and relaxant to the respiratory system.
- Soluble & Insoluble fiber responsible for aiding in bowel regularity.

NOTE: Ground flax seed is fermented by bacterial flora within the intestines to release aglycone from glycoside. Ensure healthy gut flora or supplement with probiotics for best effects.

Pharmacy:

- Crushed seeds: 3 Tbsp daily with food
- Infusion (crushed seeds): ½ tsp/cup, soaked overnight. Drink the AM, warmed if desired
- Seed oil: 5 – 30 ml TID as purgative
- Topical applications: Poultice

Toxicity: No adverse effects expected within recommended doses. Ensure adequate water intake

Contraindications:

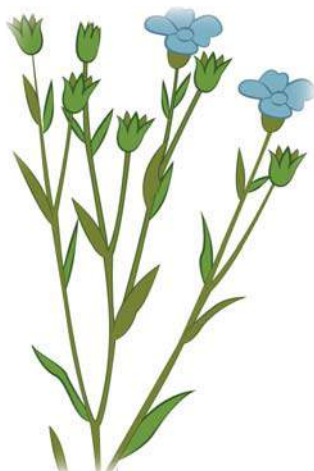
- Known or high risk bowel obstruction.
- Avoid heating oil. Store in dark container, refrigerated

Interactions:

- Theoretically may reduce absorption of all medications when taken simultaneously.

References:

1. Abrahamsson, A. et al. Estradiol, tamoxifen, and flaxseed alter IL-1β and IL-1Ra levels in normal human breast tissue in vivo. *J Clin Endocrinol Metab.* 2012 Nov;97(11):E2044-54.
2. Bisson, J. et al. Preventive effects of lignan extract from flax hulls on experimentally induced benign prostate hyperplasia. *J Med Food.* 2014 Jun;17(6):650-6.
3. Criollo, J. *Medicinal Herbs Quick Reference Guide.* 1st ed. Wellness Trading Post, 2004.
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6. Prasad, K. Hypocholesterolemic and antiatherosclerotic effect of flax lignan complex isolated from flaxseed. *Atherosclerosis, Volume 179, Issue 2, April 2005, Pages 269–275*
7. Xu, J. et al. Laxative effects of partially defatted flaxseed meal on normal and experimental constipated mice. *BMC Complement Altern Med.* 2012 Mar 9;12:14.





L

Constituents:

- Piperidine alkaloids (lobeline, isolobeline and others)
- Chelidonic acid
- Resins & Gums
- Fatty acids

Medicinal Actions:

- Antispasmodic
- Emetic
- Expectorant (soothing & stimulating)
- Diaphoretic
- Sedative Nerve

P Aerial

Piperidine alkaloids

C Resins & Gums

Fatty acids

Antispasmodic

A Expectorant (soothing & stimulating)

Sedative Nerve

Chronic lung conditions (e.g. asthma & bronchitis)

I Hypertension

Smoking cessation

F *Campanulaceae*

Medicinal uses:

- Is used primarily for its **relaxant effects on the bronchioles**. Its ability to relax the smooth muscle of the bronchioles make it an invaluable part of an acute or chronic asthma formula.
- Reduces smooth muscle spasm and thus lowers arterial pressure and vascular tension (e.g. hypertension)
- Is also a useful aid in smoking withdrawal and cessation protocols.
- A useful topical muscle relaxant in conditions such as asthma, colic, torticollis & dysmenorrhea.

Pharmacology:

- **Piperidine alkaloids** exert paradoxical effects.
- **Lobeline** is a powerful respiratory stimulant

by stimulating the respiratory centers and exerts this effect even in relatively small doses. Will increase sensitivity of the brain stem to CO₂.

- **Isolobeline** is an emetic and respiratory relaxant (relaxes smooth muscle) that most powerfully exerts its action at higher doses. The combined action of both of these alkaloids makes Lobelia a stimulating relaxant. The net effect in the lungs will be a promotion of mucous secretion, expectoration and a reduction in bronchial spasm.
- Lobeline shares a structural similarity with nicotine, and has high affinity for nicotinic acetylcholine receptors, and thus inhibits the function of vesicular monoamine and dopamine transporters (is 1/20 -1/5 as potent as nicotine).
- Lobeline may also alter presynaptic dopamine (DA) storage by potently inhibiting DA uptake into synaptic vesicles.

Pharmacy:

- Infusion: 1/4-1/2 tsp dried leaves/ cup water; 1 cup TID.
- Tincture: (1:8, 60%) dried, 0.5 -1.5 ml TID. 30 ml weekly max.

Toxicity:

- Possible toxicity symptoms include burning esophagus, salivation, N/V, weakness, stupor, tremors, paralysis, tachypnea, hypothermia, rapid pulse, pinpoint pupils, unconsciousness, convulsions, coma, exhaustion, sweating, prostration, miosis, and death.

- Note: The toxic dose is variable and some individuals will be sensitive to the therapeutic dose.

Contraindications:

- In general use caution in dyspnea (especially when due to a weakened heart or valvular incompetence), anxiety, shock or paralysis; heart disease, pneumonia or pleural effusion, hypertension, low vitality, or tobacco sensitivity.
- Pregnancy & lactation.

Interactions: None known.

References:

1. Ciollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
2. Crooks, P. et al. Design, synthesis and interaction at the vesicular monoamine transporter-2 of lobeline analogs: potential pharmacotherapies for the treatment of psychostimulant abuse. *Curr Top Med Chem.* 2011;11(9):1103-27.
3. Dvoskin, L. et al. A novel mechanism of action and potential use for lobeline as a treatment for psychostimulant abuse. *Biochem Pharmacol.* 2002 Jan 15;63(2):89-98.
4. Felpin, F. et al. History, chemistry and biology of alkaloids from *Lobelia inflata*. *Tetrahedron*, Volume 60, Issue 45, 1 November 2004, Pages 10127–10153.
5. Miller, D. et al. Lobeline, a potential pharmacotherapy for drug addiction, binds to μ opioid receptors and diminishes the effects of opioid receptor agonists. *Drug and Alcohol Dependence*, Volume 89, Issues 2–3, 10 July 2007, Pages



L



L

Constituents:

- Volatile oil
- Gums & oleo-resins (terpenes & sesquiterpenes)
- Furanocoumarins (nodakenetin, columbianin and pyranocoumarin)
- Carbohydrates, protein, fatty acids, ascorbic acid (22%)
- Methylamines
- Valeric acid
- Ascorbic acid (Vitamin C)

Medicinal Actions:

- Antimicrobial
- Expectorant
- Immuno-stimulant

P Root

Volatile oil
C Gums & oleo-resins
Furanocoumarins

Antimicrobial
A Expectorant
Immuno-stimulant

Acute & chronic infections
I Inflammatory lung disorders (e.g. asthma & bronchitis)

F *Apiaceae*

Medicinal uses:

- Useful in acute and chronic viral, bacterial, fungal infections and other **inflammatory disorders of the respiratory system**. It is most effective in treating infections when it is given as early as possible and in small frequent doses.

Pharmacology:

- **Volatile oils** are strongly anti-bacterial, interfering with bacterial replication and inducing increased phagocytosis by leucocytes.
- **Oleo-resins** rich in terpenes & sesquiterpenes are stimulating expectorants in the lungs, enhancing the liquification and consequent elimination of mucoid material.
- **Furanocoumarins** (nodakenetin, columbianin and pyranocoumarin) are anti-

viral, and prevent viral replication and host cell response. Are are photo-sensitizing.

- High **ascorbic acid** content in leaf is immuno-regulating and anti-microbial.

Pharmacy:

- Decoction: 1 tsp/1 cup water, simmer 20 min ,TID.
- Tincture (1:5, 60%), 1-2 ml TID. 40 ml weekly max.

Toxicity:

- Some individuals develop a pruritic, generalized maculopapular rash that mimics measles. The rash resolves several days after lomatium is discontinued.

Contraindications: None known. Use caution due to photosensitivity in fair skinned individuals.

Interactions: None known.

References:

1. Bradford, C. et al. Native american food and medicinal plants 7 : Antimicrobial tetriconic acid from lomatium dissectum. Tetrahedron, Volume 42, Issue 4, 1986, Pages 1117-1122.
2. Cardellina, J. & Vanwagenen, B. Antifungal agents from Lomatium dissectum Abstracts of the International Research Congress on Natural Products, University of North Carolina, Chapel Hill, N.C.1985.
3. Chevalier, A. Encyclopedia of Herbal Medicine. Dorling-Kindersley, 2000.
4. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
5. McCutcheon, A. et al. Antiviral screening of British Columbian medicinal plants. J Ethnopharmacol. 1995 Dec 1;49(2):101-10.
6. Van Wageningen, B. et al. Native American food and medicinal plants. 8. Water-soluble constituents of Lomatium dissectum. J Nat Prod. 1988 Jan-Feb;51(1):136-41.

- Also called Biscuit root



L



L **Constituents:**

- Phenolic acid derivatives (caffeic, rosmarinic, euroabienol, chlorogenic, ellagic & luteolin)
- Volatile oil
- Bitter principle
- Manganese

Medicinal Actions:

- Anti-hyperthyroid (anti-gonadotropic)
- Antimicrobial
- Astringent
- Diuretic
- Nervine sedative
- Peripheral vasoconstrictor

Medicinal uses:

- Reduces the symptoms of hyperthyroidism including agitation, insomnia, palpitations, and weight loss.

P Aerial

Phenolic acid derivatives

C Volatile oil
Bitter principle

A Anti-hyperthyroid
Nervine sedative/relaxant

Hyperthyroidism (Graves disease & goiter)

I Anxiety & Insomnia
Heart Palpitations

F *Lamiaceae*

- History of use in the treatment of Graves' disease & toxic goiter characterized by diffuse hyperplasia of the thyroid gland.

Pharmacology:

- **Phenolic compounds** may decrease LH, inhibit TSH from binding to the thyroid, and inhibit peripheral T4 conversion to T3 by liver cells, presumably as a consequence of a reduced peripheral T4 deiodination.
- Inhibits iodine metabolism and thyroxine release from the thyroid gland.
- Rosmarinic acid, luteolin, and euroabienol appear responsible for antimicrobial effects.

Pharmacy:

- Tincture: (1:5, 40%), 5 ml TID. 100 ml weekly max.
- Note: alcohol extract appears to be the most efficacious preparation as it maximizes the amount of phenolic compounds (constituents associated with the anti-thyroid activity).

Toxicity:

- None reported.

Contraindications:

- Hypothyroidism or non-toxic goiter
- Pregnancy & lactation

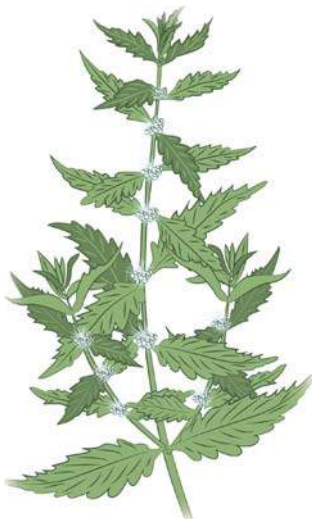
Interactions:

- May interfere with thyroid hormones and/or radioactive iodine by altering the regulatory metabolism of thyroid hormones (theoretical)

References

1. Aufmkolk, M. et al. Extracts and auto-oxidized constituents of certain plants inhibit the receptor-binding and the biological activity of Graves' immunoglobulins. *Endocrinology*. 1985 May;116(5):1687-93.
2. Aufmkolk, M. et al. The active principles of plant extracts with antithyrotropic activity: oxidation products of derivatives of 3,4-dihydroxycinnamic acid. *Endocrinology*. 1985 May;116(5):1677-86.
3. Beer, A. et al. *Lycopus europaeus* (Gypsywort): Effects on the thyroidal parameters and symptoms associated with thyroid function. *Phytomedicine*, Volume 15, Issues 1-2, 25 January 2008, Pages 16-22.
4. Brinker, F. *Herbal Contraindications and Drug Interactions: Plus Herbal Adjuncts with Medicines*. 4th ed. Eclectic Medical Publications; 2010.
5. Criollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post; 2004.
6. Fialová, S. et al. *Lycopus europaeus*: phenolic fingerprint, antioxidant activity and antimicrobial effect on clinical *Staphylococcus aureus* strains. *Nat Prod Res*. 2015 Feb 12:1-4.
7. Radulovic, N. et al. Antimicrobial phenolic abietane diterpene from *Lycopus europaeus* L. (Lamiaceae). *Bioorg Med Chem Lett*. 2010 Sep 1;20(17):4988-91.
8. Vorhoff, C. et al. Extract of *Lycopus europaeus* L. reduces cardiac signs of hyperthyroidism in rats. *Life Sci*. 2006 Feb 2;78(10):1063-70.
9. Winterhoff, H. et al. Endocrine effects of *Lycopus europaeus* L. following oral application. *Arzneimittelforschung*. 1994 Jan;44(1):41-5.

***aka. *Lycopus europaeus*





M

Constituents:

- Volatile oil (alpha bisabolol, azulene, chamazulene & matricin)
- Flavonoids (apigenin, luteolin, quercetin)
- Sesquiterpenes lactones
- Coumarins (umbelliferone)
- Salicylic acid
- Choline
- Fatty acids
- Mucilage

P Flower heads

• Volatile oil
C Flavonoids
Mucilage

• Anti-inflammatory
A Carminative & Antispasmodic
Nervine sedative

• GIT disorders (e.g. IBS & colitis)
I associated with anxiety
Insomnia & restlessness

F *Asteraceae*

Medicinal Actions:

- Anti-emetic
- Anti-inflammatory
- Anti-microbial
- Bitter
- Carminative & Antispasmodic
- Demulcent
- Nervine sedative
- Vulnerary

Medicinal uses:

- Is specific for use in all kinds of **gastrointestinal disturbances associated with nervous irritability** in the treatment of IBS and colitis. It's safe to use in children and it's powerful anti-inflammatory actions make it useful in almost any condition.
- As a nervine sedative and bitter will aid digestion while promoting a restful sleep.

- Typically is wound healing and a mild anesthetic useful for rheumatic & muscular pains and neuralgia.

Pharmacology:

- **Volatile oils (bisabolol, chamazulene, azulene & matricin)** are primarily responsible for anti-inflammatory, anti-spasmodic, and anti-microbial effects.
- **Flavonoids (e.g. apigenin)** are antispasmodic and have sedative effects.
- **Sesquiterpene lactones** possibly responsible for anti-allergenic effects.
- **Coumarins (umbelliferone)** and anti-fungal and anti-bacterial.

Pharmacy:

- Infusion: 1-2 tsp/cup water; steep 3-5 min. covered; 1 cup TID.
- Tincture (1:5, 45%), 1-4 ml TID. 80 ml weekly max.
- Baths, Steams, Enemas.
- Note: Is best dosed on the low end of its dosage range over a long period of time.

Toxicity:

- Generally a very safe herb.

Contraindications:

- Use caution in early pregnancy and in situations where sedation could pose a danger.
- Allergy to Asteraceae family

Interactions:

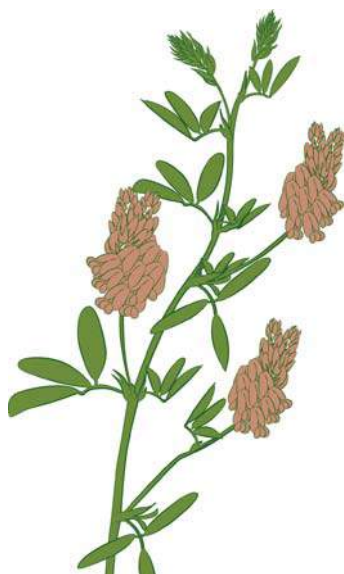
- Potential interactions with antiarrhythmics, anti-coagulants, anti-diabetic agents, anti-hypertensives, CNS depressants, SERMs, and spasmolytics.

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8. Ross, S. Generalized anxiety disorder (GAD): efficacy of standardized *Matricaria recutita* (German chamomile) extract in the treatment of generalized anxiety disorder. *Holist Nurs Pract.* 2013 Nov-Dec;27(6):366-8.
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M





Constituents:

- M** Alkaloids (aspragine, stachydrine & trigonelline)
- Isoflavones (formometin, coumestrol)
- Nutrients: Vitamins K, A, C & minerals Ca, K, Fe, Mg
- Saponins
- Coumarins
- Porphyrins

Medicinal Actions:

- Alterative
- Anti-tumorigenic
- Choleretic & Cholagogue
- Hepatic
- Hypolipidemic
- Nutritive
- Phytoestrogenic (Reproductive tonic)
- Uterine tonic

P Aerial

Isoflavones
C Saponins
Alkaloids

Nutritive
A Reproductive Tonic
Alterative

PMS & Menopausal complaints
I Dyslipidemia
Liver Detoxification

F *Fabaceae*

Medicinal uses:

- Rich in many minerals and vitamins is a valuable nutritive that can stimulate appetite and **enhances overall nutrition while promoting the digestion** & assimilation of foods.
- Is often included in detoxification teas for its nutritional, alkalizing and cleansing actions and is a good inclusion in formulas for the treatment of **anemia and arthritis** due to its high nutrient content, digestive, choleric and cholagogue actions.
- Actions on the reproductive system can be summarized as a restorative tonic, as phytoestrogenic effects **restore strength and tone to mammary, ovarian and uterine** tissue in females and towards the prostate in males.
- Phytoestrogens may help in the treatment of osteoporosis and a **variety of menstrual & menopausal complaints**.

Pharmacology:

- **Isoflavones** are anti-inflammatory, phytoestrogenic and antibacterial (Gm.-bacteria).
- **Saponins** may decrease intestinal cholesterol absorption by binding to cholesterol and bile salts.
- Porphyrins stimulate bile production and secretion.
- High **vitamin & mineral** content support tissue strength & regeneration.
- Alkaloid (stachydrine) has potential uterine stimulant effects.

Pharmacy:

- Infusion: 1 tsp/cup water, 1-2 cups TID.
- Tincture (1:5, 40%), 4-5 ml TID. 100 ml weekly max.

Toxicity:

- Allergic reactions such as dermatitis and potential for autoimmune aggravations.
- The sprouts have been reported exacerbate patients with SLE due.
- May cause GIT upset (abdominal pain and diarrhea), stimulate thyroid activity, and have hypoglycemic effects.

Contraindications:

- Those with systemic lupus erythematosus (SLE) may experience potential exacerbation from chronic consumption of tablets with the amino acid component L-canavanine (PO in human case reports) possibly due to immuno-regulatory effects.
- Due to significant phytoestrogen content & antigonadotropic effects (in rats & sheep)

- Avoid in pregnancy & lactation (potential uterine stimulant due to stachydrine)

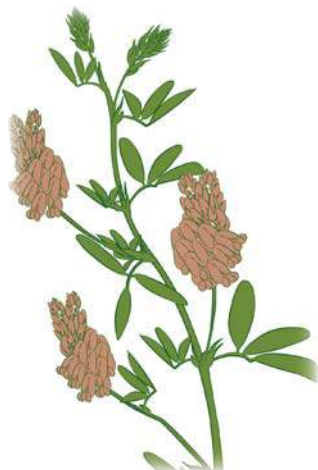
Interactions:

- Theoretical interactions with anti-diabetic agents, estrogens, immunosuppressants, photosensitizing drugs, thyroid medications and anti-coagulants.
- Patients with SLE while on Prednisone as maintenance therapy may suffer exacerbation following long-term (9-30 month) consumption.

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M





Constituents:

- Coumarins (precursor melilotiside, umbelliferone & scopoletin)
- Flavonoids
- Volatile oils
- Tannins
- Caffeic acid derivatives

Medicinal Actions:

- Anti-edematous
- Anti-inflammatory
- Anti-tumorogenic
- Lymphatic

Medicinal uses:

- Use in lymphedema caused by venous insufficiency, episiotomy, post-traumatic inflammation, filarisis and elephantiasis, cancer (malignant melanoma, renal cell carcinoma, prostatic carcinoma)

P Aerial

C Coumarins
Flavonoids
Tannins

A Lymphatic
Anti-inflammatory
Anti-tumorogenic

I Lymphedema (especially post-operative)
Venous insufficiency

F *Fabaceae*

and particularly to help prevent further metastasis.

- Will benefit cases of hemorrhoids & varicose veins through enhancement of lymphatic function help to increase venous return
- Is beneficial in post-operative edema (e.g. mastectomy), improving thoracic duct and lymph flow as well increasing lymphatic drainage.
- Has historical use in the treatment of ovarian pain, dysmenorrhea & neuralgia.

Pharmacology:

- **Coumarin** is anti-edematous and anti-inflammatory by enhancing the breakdown of protein accumulation in the extracellular spaces by macrophages, and inhibits prostaglandin formation.
- In the vascular system coumarin causes constriction of the pre-capillary sphincters, dilation of arteriovenous junctions resulting in improved blood flow to injured tissue, and decreased NO synthase.
- Note: properly dried herb does not have anticoagulant activity under normal circumstances. However if the herb is allowed to ferment dicoumarol can form and contribute to blood thinning.
- In general the onset of blood coagulation may be slowed but bleeding & prothrombin times are not altered.

Pharmacy:

- Infusion: 1 Tbsp/cup, steep 10 min, TID.
- Tincture: (1:5, 25%), 5 ml TID. 100 ml weekly max.
- Dried herb: 1 mg/kg, QD.

Toxicity:

- No adverse effects within the recommended dosage.

Contraindications:

- Avoid in patients with impaired liver function or elevated liver enzymes

Interactions:

- Use caution with anticoagulants, salicylates and bromelain due to potential potentiation of hemorrhagic diathesis (theoretical).

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M





M

Constituents:

- Volatile oil (citral, citronellal, citronellol & geraniol)
- Polyphenols (chlorogenic, rosmarinic and caffeic acids)
- Tannin
- Bitter principle
- Flavonoids (luteolin, quercetin, apigenin, kaempferol)

Medicinal Actions:

- Anti-microbial
- Anti-thyroid
- Cardiotonic
- Carminative & Antispasmodic
- Nervine Sedative & Tonic

P Aerial

Volatile oil
C Polyphenols
Tannin

Cardiac tonic
A Carminative & antispasmodic
Nervine Sedative & Tonic

Dyspepsia associated with depression, anxiety and/or heart palpitations
I Hyperthyroidism
Antimicrobial (antiviral)

F *Lamiaceae*

Medicinal uses:

- Has specific use for **dyspepsia associated with anxiety** and/or a depressive mood.
- It is indicated for someone with symptoms typical of **hyperthyroidism** (inhibits TSH binding to receptors): anxiety, restlessness, palpitations, headache, and excitability and also is a mild anti-depressant.
- It strengthens the brain and its resistance to stress/shock, and lifts the spirits.
- Has tonic effects on the heart and circulatory system .
- Can also be used topically for gout and internally for rheumatism, herpes and other viral infections and neuralgias.

Pharmacology:

- Anti-viral properties are mainly due to the oxidation products of caffeic acid and its derivatives.
- **Volatile oils (citral, citronellal, citronellol, geraniol)** are anti-septic, antispasmodic, and calming to the nervous system.
- **Flavonoids & polyphenols** may be responsible for inhibiting TSH and auto-antibodies from binding on TSH receptors (though it is not clear if decreases thyroid activity).
- Has demonstrated neuroblast differentiation, decreased serum corticosterone levels and increased GABA levels in animal studies, potentially through interactions with either glutamic acid decarboxylase (GAD) or GABA transaminase (GABA-T), ultimately increasing brain GABA levels and neurotransmission.

Pharmacy:

- Infusion: 2 tsp/cup, BID.
- Tincture: (1:2, 40%), 3-6 ml TID. 125 ml weekly max.
- Topically: poultice, compress etc.

Toxicity:

- None expected within recommended doses.
- Theoretically may interfere with thyroid hormone activity and cause sleepiness.

Contraindications:

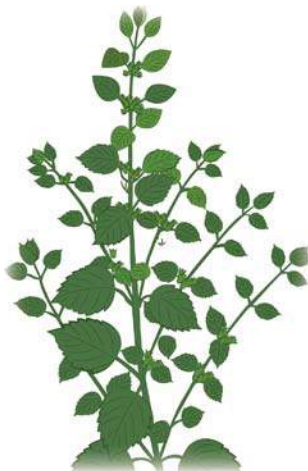
- Avoid in hypothyroid.

Interactions:

- None reported. Use caution with CNS depressants and thyroid medications.

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M

Constituents:

- Volatile oil (menthol & menthone)
- Tannins
- Bitter principle
- Phenolic acids (methyl-salicylates, rosmarinic, chlorogenic & caffeic)
- Flavonoids (luteolin, rutin & hesperidin)
- Gum & resins
- Nutrients (carotenes, choline, vitamin E, minerals)

P Aerial parts

Volatile oil (menthol)

C Tannins
Phenolic acids (methyl-salicylates)

Anti-emetic

A Carminative & Antispasmodic
Nervine (Sedative or Stimulant)

Spasmodic conditions with catarrh

I IBS & intestinal colic
Nausea

F *Lamiaceae*

Medicinal Actions:

- Analgesic
- Anti-emetic
- Anti-inflammatory
- Antimicrobial
- Carminative & Antispasmodic
- Choleric & cholagogue
- Diaphoretic
- Expectorant
- Nervine (Sedative or Stimulant)

Medicinal uses:

- Will inhibit mucous secretion temporarily due to menthol component. It can be used whenever there is excess mucous secreted, helping also with its **antispasmodic and carminative effects**.
- Is one of the best carminatives available, having a relaxing effect on visceral muscles

and relieving intestinal colic & flatulence, and in IBS.

- A **mild anaesthetic** to the stomach wall that helps with feelings of **nausea during travel or pregnancy**.
- Essential oil can be used topically for rheumatism, sprains & strains.

Pharmacology:

- **VO (menthol)** is anti-tussive, antiseptic, topical analgesic and irritant.
- VO relaxes smooth muscle and acts as an anti-spasmodic and a cooling carminative. Carminative effects act by relaxing esophageal sphincter and allowing air to be released.

Pharmacy:

- Infusion: 1 tbsp/cup, infuse 5-10 min.
- Tincture: (1:5, 25%), 1-3 ml TID. 100 ml weekly max.
- Dried herb: 2-4 g, TID.
- Essential oil, steam inhalations, bath, topical rub, massage oil.

Toxicity:

- High dose essential oil can cause burning and irritation, and may exacerbate GERD and dyspepsia in some individuals.

Contraindications:

- Avoid topical application of oil to broken skin
- Use caution in history of GERD, bile duct obstruction, gallstones, hiatal hernia, and liver disease.
- Internal use of oil in pregnancy & lactation

Interactions:

- Oil has potential interaction with anti-hypertensives (may block calcium channels and cause hypotension), and may increase cyclosporine levels.

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P Inner root bark

Volatile oil

C Glycosides (araliasides & panaxosides)

Alterative

A Anti-rheumatic
Hypoglycemic

Cancer adjunct

I Rheumatism & myalgias
Diabetes & blood sugar dysregulation

F *Araliaceae*

O

Constituents:

- Volatile oil (sesquiterpenes)
- Glycosides (araliasides & panaxosides)
- Polyne derivatives (oplopantriol A & faltarindiol)
- Phytosterols
- Phenylpropanoid & phenolic compounds (ferulic acid & caffeic acids)
- Coumarins (scopoletin & esculetin)
- Lignans

Medicinal Actions:

- Alterative
- Analgesic
- Anti-inflammatory

- Anti-microbial
- Anti-rheumatic
- Anti-tumorigenic & Chemoprotective
- Emetic
- Expectorant
- Hypoglycemic

Medicinal uses:

- In musculoskeletal conditions can be applied topically or taken internally for aches and pains, arthritis, rheumatism, and broken bones.
- Recent studies have shown promising anticancer potential in breast, colon and hematological malignancies.

- Also treats infections, and blood disorders and in the treatment of diabetes.
- Note: although as is a member of the ginseng family has some pharmacological and therapeutic similarities it is not to be considered a “mind enhancer” and its modern use as a substitute for ginseng is the result of marketing.

Pharmacology:

- **Polyynes (Oplopantriol A & Falcarindiol)**, have been shown in vivo to significantly suppress tumor growth & apoptosis, upregulating the expression of a cluster of genes, especially the tumor necrosis factor receptor family and caspase family. Falcarindiol showed the most potent antiproliferative effects, significantly inducing pro-apoptosis and cell cycle arrest in the S and G2/M phases.
- Root extracts display anti-tyrosine kinase activity independent of an antioxidant effect in vitro and improved CD8+ T-cell functionality in vivo.
- Volatile oil and polyynes have antibacterial and anti-diabetic effects.

Pharmacy:

- Decoction: 1 tsp/cup, TID.
- Tincture: (1:5, 60%), 2-4 ml TID. 80 ml weekly max.
- Topicals: Steam bath, poultice, etc.

Toxicity:

- High doses are emetic & purgative.

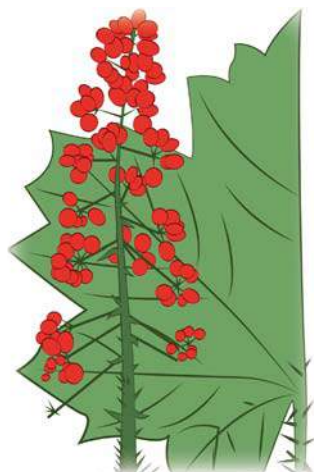
Contraindications: None known.

Interactions: None known.

NOTE: An endangered plant!

References:

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P Root

C Saponins (ginsenosides)
Polysaccharides
Acetylenic alcohols

A Adaptogen (adrenal restorative)
Immuno-modulator
Nervine Stimulant & Tonic

I To improve mental & physical stamina
Increase threshold of resistance to stress
Fertility & low libido

F *Araliaceae*

Constituents:

- Steroidal and triterpenoid saponins (ginsenosides, ginpanaxosides & protopanaxatriol)
- Polysaccharides (glycans)
- Acetylenic alcohols (panaxynol and panaxydol) & polyacetylenes (ginsenoynes A-K)
- Sesquiterpenes (B-elemene, panasinsanol A and B, ginsenol)
- Sterols
- Flavonoids
- Amino acids
- Volatile oils

Medicinal Actions:

- Adaptogen (adrenal restorative)
- Antioxidant
- Antispasmodic
- Aphrodisiac

- Cardiotonic
- Diuretic
- Hepatoprotective
- Hypoglycemic
- Immuno-modulator
- Nervine Stimulant & Tonic

Medicinal uses:

- Used to improve mental & physical stamina and performance as well as promote longevity.
- It promotes metabolism and growth of normal cells and accelerates development of both the brain and body.
- Increases muscle mass and resistance to biological, chemical and physical stress.
- In women, ginseng promotes an estrogenic effect, and in men can enhance fertility and especially low libido.

Pharmacology:

- **Steroidal saponins (ginsenosides, ginpanaxosides & protopanaxatriol)** have corticosteroid-like action and inhibit re-uptake of GABA, NE, dopamine, glutamate, and serotonin.
- **Protopanaxatriol** reduces ACTH-stimulated cortisol production and significantly inhibit the production of corticosterone in a dose-dependent manner.
- Individual **ginsenosides** may have opposite effects such as vasoconstriction & dilation, increase & decrease cardiac performance, hemostatic & anti-coagulant, and CNS stimulant & depressant.
- **Polysaccharides** are antioxidant, hypoglycemic, and anti-tumor.
- Lowers serum ROS and malondialdehyde (MDA) levels and increases total glutathione concentrations and GSH Reductase activity possibly contributing to anti-fatigue effects.

Pharmacy:

- Decoction: 1 tsp/cup, simmer 10 min TID.
- Tincture: (1:5, 60%), 1-2 ml TID. 40 ml weekly max.
- Dried root: short-term 0.5-2g QD, long-term 0.4-0.8 QD (100 mg capsule standardized to 4-7% ginsenosides: 100-200 mg daily).
- Note: Pause dosing 6 week on 4 weeks off (avoid long-term use unless in low doses)

Toxicity:

- Overdose can cause palpitations, insomnia, chest pain, vomiting, headaches and epistaxis.
- Possible adverse reactions include allergic reaction, CNS, cardiovascular, and endocrine disturbances.
- Note: Reports on side effects are controversial due to lack of information on the type of ginseng used in studies, though death reports exist.

Contraindications:

- Avoid in history of arrhythmia, acute asthma, hypertension, acute infections, and ADHD.
- Use caution with acute infection and inflammatory diseases, in hyper tense people and in children.

Interactions:

- Avoid use with other stimulants (e.g caffeine)
- Theoretically interact with anti-psychotics, MAOIs, sedatives, immunosuppressants, anti-hypertensives, anti-coagulants, anti-diabetic agents, and other hormone therapies.

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Ginseng has been an important part of the medicine of China & Tibet for thousands of years. In Shen Nung's *Materia Medica* (196 A.D.) it was described as "a tonic to the five viscera: quieting the spirits, establishing the soul, allaying fear, expelling evil, brightening the eyes, opening the heart, benefiting understanding and, if taken for some time, invigorating the body and prolonging life."





P Aerial

Indole alkaloids

C Flavonoids

Chrysin

Antispasmodic

A Cardiac tonic

Nervine Sedative & Hypnotic

Anxiety with tachycardia

I Insomnia & restlessness

Muscle & nervous tension

F *Passifloraceae*

Constituents:

- Indole alkaloids (harmol, harmine, harman & harmaline)
- P** • Flavonoids (Chrysin, vitexin, isovitexin, homoorientin, orientin, rutin, kaempferol & quercetin)
- Fatty acids (linoleic, linolenic, palmitic, oleic, myristic)
- Acids (formic & butyric)
- Coumarins
- Cyanogenic glycosides
- Volatile oil

Medicinal Actions:

- Analgesic
- Antispasmodic
- Bitter
- Cardiotonic

- Diuretic
- Hypotensive
- Nervine Sedative & Hypnotic

Medicinal uses:

- Has a depressant effect on CNS activity and is used in **hypertensive conditions of both smooth & skeletal muscle**.
- Is used for its sedative and soothing properties, to **lower blood pressure, prevent tachycardia and for both anxiety & insomnia**.
- Can be used safely for nervous tension and restlessness, muscle spasm, headaches, irregular sleep patterns, irritability, neuralgias and any condition in which an antispasmodic would be beneficial.

Pharmacology:

- **Indole alkaloids (harmaline)** have muscle relaxant and sedative effects.
- **Flavonoids** are antispasmodic, anti-inflammatory and sedative.
- **Chrysin** may be responsible for anxiolytic effects mediated via modulation of the GABA system including affinity to GABA receptors, and effects on GABA re-uptake.

In TCM, Passionflower is used to nourish yin & the heart and to calm the spirit. It has a long use in Chinese medicine, Native American medicine and was highly regarded by the Eclectics for wide range of uses.

Pharmacy:

- Infusion: 1 tsp/per cup, BID-TID.
- Tincture: (1:5, 40%), 1-3 ml TID. 40 ml weekly max.
- Note: Pause 2 weeks on, 2 days off with long-term dosing.

Toxicity:

- Possible mild nerve and muscle irritation with long-term use.

Contraindications: None known.**Interactions:**

- Potential additive effects with sleep aids, barbiturates and other CNS depressants.

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P Root

Triterpene saponins
C (phytolaccosides)
Lectins (poke weed mitogen)

Alterative
A Antimicrobial & Immuno-stimulant
Lymphatic

Lymphadenopathy & Goiter
I Infections & inflammatory conditions
of the URT

F *Phytolaccaeae*

Constituents:

- Alkaloids (phytolaccin & phytolaccanin)
- Triterpene saponins (phytolaccosides & phytolaccagenin)
- Lectins (poke weed mitogen)
- Pokeweed antiviral protein (PAP)
- Phytolaccic acid
- Resin
- Tannins
- Oleanolic acid

Medicinal Actions:

- Alterative
- Anti-catarrhal
- Anti-inflammatory
- Antimicrobial

- Anti-rheumatic
- Emetic & purgative
- Expectorant
- Immuno-stimulant
- Lymphatic

Medicinal uses:

- It has a **specific action on the lymphatic system** decreasing inflammation and increasing lymphatic drainage and inflammatory conditions of the upper respiratory tract.
- It can be applied topically and/or taken internally for swollen glands and lymph nodes (eg. Goiter).
- Is most indicated in cases of hard lymph nodes with pale mucous membranes. Is indicated in mastitis, sore nipples, and cystic breast tissue.

Pharmacology:

- **Triterpene saponins (phytolaccosides)** are anti-inflammatory, anti-catarthal, and have anti-cancer properties.
- **Lectins (polysaccharides – aka. pokeweed mitogen)** are mitogenic, immuno-stimulant (of B & T lymphocytes) and anti-inflammatory. Lectins stimulate peripheral lymphocytes to undergo mitosis by binding to their cell surfaces.
- Pokeweed antiviral protein (PAP) is a ribosome-inactivating protein that exhibits antiviral and has potent cytotoxic activity.

Pharmacy:

- Decoction: 1 tsp/cup water; 1 cup TID.
- Tincture: (1:10, 40%), 0.2-0.6 ml TID, **10 ml weekly max.**
- Poultice (Caution: application of fresh plant can cause erythema and blistering).
- Note: Pulse dosing required (2 weeks on, 2 weeks off internally)

Toxicity:

- **The alkaloid phytolaccin, can be toxic.** It affects the medulla in the brain causing paralysis, bradycardia, decreased respiration, and decreased skeletal muscle coordination. These alkaloids can build up in the body and be at potentially toxic levels for 1-2 weeks. Therefore, if any toxic effects are noticed, stop the use of this herb immediately.
- Toxic effects include: vomiting, diarrhea, nausea, stomach cramps, dizziness, hypotension, decreased respiration, and headaches. Also has mitogenic action and may cause blood cell abnormalities.

Contraindications:

- Pregnancy & Lactation.
- Kidney disease (alkaloid is eliminated through the kidneys), GIT inflammation, and in lymphocytic leukemia.

Interactions: Potential to antagonize effects of immunosuppressants.

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Constituents:

- Volatile oil (anethole, foeniculin, γ -himachalene, cis-isoeugenol, terpineol & linalool)
- Coumarins
- Flavonoid glycosides
- Phenylpropanoids
- Fatty acids & sterols
- Proteins
- Carbohydrates

Medicinal Actions:

- Analgesic
- Antioxidant
- Anti-spasmodic & Carminative
- Anti-microbial
- Galactagogue
- Expectorant

P Fruit/Seed

Volatile oil
C Coumarins
Flavonoid glycosides

Anti-spasmodic & Carminative
A Galactagogue
Expectorant

Bronchial and/or intestinal spasm
I Inflammations & infections of the URT
Increase milk production in lactation

F *Apiaceae*

Medicinal uses:

- Is a reliable **carminative in cases of functional dyspepsia**.
- Is an excellent expectorant, anti-spasmodic, and mild analgesic.
- Help increase milk production in lactating mothers.
- Has shown beneficial effects on dysmenorrhea and menopausal hot flashes in women.
- In diabetics has hypoglycemic and hypolipidemic effect and can reduce lipid peroxidation.

Pharmacology:

- **Volatile oils** are largely responsible for antimicrobial, antioxidant, and antispasmodic effects.

Pharmacy:

- Infusion: 1-2 tsp crushed seeds/cup water; 1 cup TID
- Tincture (1:5, 45%), 2 ml TID. 40 ml weekly max.
- Oil: 1-2 drops oil internally mixed with honey or sugar.

Toxicity:

- Allergic hypersensitivities have been reported, resulting in reactions of the skin, respiratory, and gastrointestinal tract.
- Photosensitization can occur during harvesting and when handled.

Contraindications:

- Use caution in GERD or acid reflux due to relaxing effects on lower esophageal sphincter (speculative).

Interactions:

- Potential interactions with drugs that act in the central nervous system including codeine, diazepam, midazolam, pentobarbital, imipramine and fluoxetine.
- May be useful in combination with antibiotics

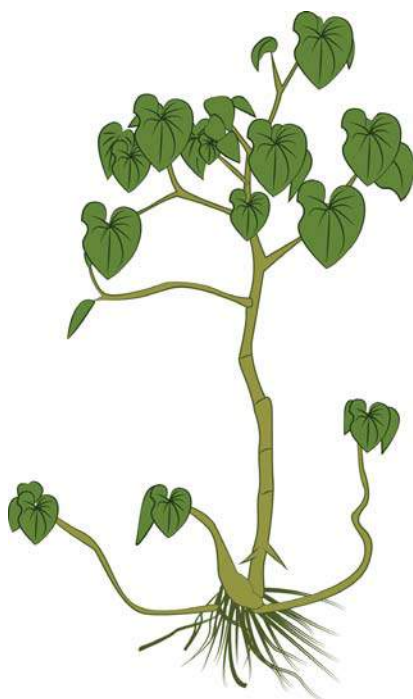
(e.g. amoxicillin & ciprofloxacin).

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P



Constituents:

- Resinous kava lactones (alpha-pyrone) mainly consisting of kavain, dihydrokavain, and methysticin
- Chalcones
- Flavonoids
- Piperidine alkaloids

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antimicrobial
- Antispasmodic
- Anxiolytic
- Diuretic
- Nerve Sedative & Hypnotic (mild euphoric)

P Rhizome

Resinous kava lactones

C Flavonoids

Piperidine alkaloids

Analgesic

A Antispasmodic

Nerve Sedative & Euphoric

Stress, anxiety & depression

I UTI or interstitial cystitis

Myalgias & neuralgias

F *Piperaceae*

Medicinal uses:

- **Reduces anxiety & promotes cognitive function** in cases of stress and restlessness.
- Will aid in insomnia, headaches due to tension, neuralgia, dizziness and depression
- A mild antiseptic & diuretic useful in urinary tract infections and also in interstitial cystitis. Any genitourinary tract infection or inflammation may benefit from its use.
- **Can be used internally (and topically) for pain of various origins** including rheumatism, joint pain, muscle tension, neuralgias, chronic pain and restless leg syndrome as a gentle relaxant & antispasmodic.
- May help with benzodiazepine withdrawal).

Pharmacology:

- **Kava lactones (pyrones)** are analgesic, anti-depressant, antispasmodic and urinary anesthetics. Analgesic effects do not appear to involve the opioid system

- May modulate GABA activity via alteration of lipid membrane structure and sodium channel function, monoamine oxidase inhibition, and noradrenaline and dopamine re-uptake inhibition. Does not act as a CNS depressant or impair motor function in therapeutic doses but will help retain & increase mental functioning. Specific GABA transporter polymorphisms appear to potentially modify anxiolytic response.

Pharmacy:

- Decoction: 30g/500ml water, simmer 20 min, 1/2-1 cup TID.
- Tincture: (1:2, 40%), 3-6 ml QD. 40 m weekly max.
- Dried rhizome: 1.5-3 g/day in divided doses (mixed with saliva first).
- Capsules, standardized: 100-200 mg kava lactones/day in divided doses.

Toxicity:

- May cause drowsiness & other CNS disturbance, and GIT upset.
- Acute toxicity may cause stupor, pupillary dilation and motor disturbances.
- Prolonged use of a dose equivalent to 400 mg or more of kava lactones per day is likely to cause the characteristic skin lesions of kava-kava toxicity (pigmented, dry, covered with scales) which heals upon discontinuance of the kava extract.
- At doses greater than 9 g per day, liver enzymes can elevate and should be monitored for hepatotoxicity. Inflammation of the liver may result from activation of macrophages (Kupffer cells), either directly or via kava metabolites.

Contraindications:

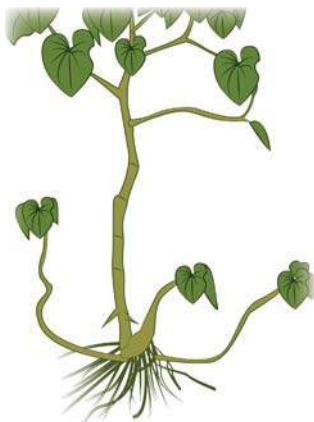
- When operating machinery, or when sedation could pose a danger.
- Use caution in liver disease, Parkinson's, the elderly, or with strong anxiety/ depression.

Interactions:

- With CNS depressants (e.g. alcohol & medications), anti-psychotics, barbiturates, benzodiazepine, levodopa, and blood thinning medications.

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P



Constituents:

- Isoflavonoids (ichthyone, durmillone, jamiacin, piscidone, rotenone, sumatrol & lisetin)
- Pyrano-rotenoids, (erythnone & hydroxyerythnone)
- Glycosides (piscidin)
- Calcium oxalate
- Acids (piscidic, malic, succinic, tartaric)
- Resin
- Volatile oils
- Tannins
- Saponins

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antispasmodic
- Bitter
- Nervine Sedative & Hypnotic

P Root bark

C Isoflavonoids
Glycosides (piscidin)
Saponins

A Analgesic
Antispasmodic
Nervine Sedative & Hypnotic

I Myalgias, neuralgias & rheumatism
Insomnia associated with nervous tension
Headaches & migraines

F *Fabaceae*

Medicinal uses:

- Is used for **spasm and associated pain of uterus and skeletal muscle**.
- It is indicated in insomnia, dysmenorrhea with associated nervous and/or musculoskeletal tension, migraine headaches and neuralgia.
- Is of great use for pain, general distress, inflammatory fever, rheumatism, spasmodic cough, bronchitis, intestinal colic, gall-stone colic, renal colic, labor pains, facial neuralgia, ovarian neuralgia, sleeplessness, delirium, and toothache. Will ease muscle spasms and cramps, especially of nervous origin.

Pharmacology:

- **Isoflavonoid (rotenone)** is antispasmodic and a cardiac sedative. It is also an insecticide and has anti-cancer activity and is responsible for the plant's toxicity.

Pharmacy:

- Decoction: 1 tsp/cup, TID.
- Tincture (1:2, 60%), 1-3 ml TID. 40 ml weekly max.
- Dried root bark: 1-2 g, TID.

Toxicity:

- High doses may cause headache, bradycardia, hypotension, nausea, vomiting, numbness, tremor, sweating, headache, paralysis and death.

Contraindications:

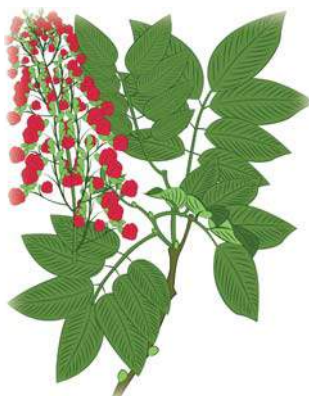
- Avoid in pregnancy, lactation, children and the elderly.
- Use caution in CVD and cardiac insufficiency

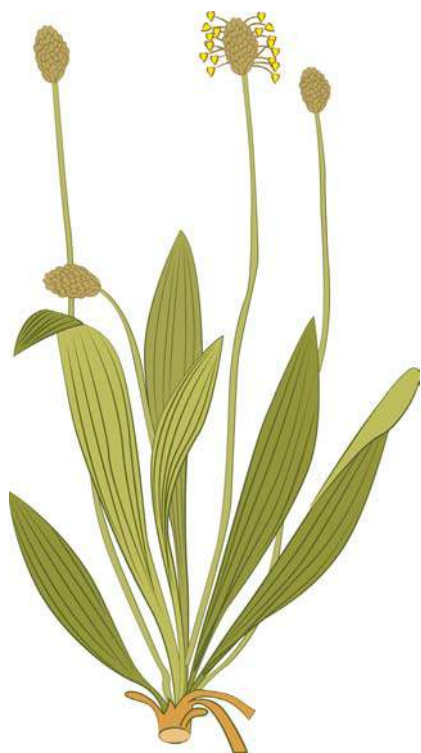
Interactions:

- May potentiate the effect of sedatives and tranquilizers.

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P **Constituents:**

- Mucilage & Polysaccharides
- Tannins
- Allantoin
- Phenylethanoid & Iridoid glycosides (acubin & catalpol, acteoside, cistanoside, lavandulifolioside, plantamajoside & soacteoside)
- Chlorogenic, caffeic and salicylic acids
- Flavonoids (apigenin, luteolin, scutellarin & baicalein)
- Alkaloids
- Saponins
- Nutrients (minerals: Zn, K+, Mg, P, Vitamin C)

P Leaves

Mucilage

C Tannins

Iridoid glycosides (acubin & catalpol)

A Demulcent, Emollient & Vulnerary

Astringent (Hemostatic)

Lung & genitourinary tonic

I Topical wound healer for first aid situations

Chronic inflammatory conditions of mucosal membranes

F *Plantaginaceae*

Medicinal Actions:

- Alterative
- Anti-catarrhal
- Anti-inflammatory
- Anti-microbial
- Antispasmodic
- Astringent
- Connective tissue tonic
- Demulcent & Emollient
- Diuretic
- Expectorant
- Hemostatic
- Lymphatic
- Vulnerary

Medicinal uses:

- Used as a **wound healing remedy** for centuries in almost all parts of the world and in the treatment of a number of diseases apart from wound healing. These include

diseases related to the skin, respiratory organs, digestive organs, for pain relief and against infections. Externally, is anti-inflammatory, antimicrobial, antipruritic, and vulnerary. The macerated leaves or fresh juice of the plant are excellent, quick healing agents for cuts, wounds, bruises and ear ache (infection).

- A **gentle soothing expectorant** most indicated in irritated coughs and mild bronchitis. It may be more beneficial long-term. It exerts astringent and alterative properties internally, especially in chronic inflammatory conditions of the mucosa, glandular tissues, or septicemias.
- Note: *P. lanceolata* shares its medicinal effects with its close relative, *Plantago major*. However, *P. lanceolata* seems to exert more of its effects internally, while *P. major* is better for external use.

Pharmacology:

- Polysaccharides stimulate innate immune system responses (increases in nitric oxide, TNF-alpha, and lympho-proliferation have been demonstrated) and are considered immuno-modulating.
- Mucilage has soothing, vulnerary and anti-inflammatory effects.
- Phenylethanoids have inhibitory effects on arachidonic acid and edema.
- Phenolic acids and flavonoids are anti-inflammatory (inhibit COX & LOX in vitro).
- Iridoid glycosides are considered antibacterial, a mild laxative, hepatoprotective, and anti-inflammatory.
- Allantoin promotes cell proliferation (wound healing) and induces transition of fibroblasts into myofibroblasts increases tensile strength of connective tissues.
- Potassium, aluminum, and manganese, along with fifteen different types of bioflavonoids, are believed to cause the

diuretic action.

- The liquid extract and the pressed juice of fresh plantain herb possess proven bacteriostatic and bactericidal effects due to the tannin content.

Pharmacy:

- Infusion: 2 tsp/cup, TID.
- Fresh juice, 5-15 ml TID.
- Tincture (1:1, 25%), 2-4 ml TID. 40 ml weekly max.
- Capsules: 400 mg, TID.
- Salve, lotion, or compress applied as needed.

Toxicity: High doses can be laxative.

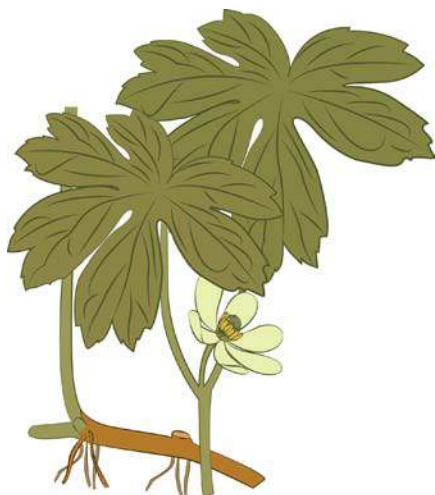
Contraindications: None known.

Interactions: None reported.

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Constituents:

- Resinous lignans (podophyllotoxin, podophyllin, α -peltatin & β -peltatin)
- Flavonoids (kaempferol & quercetin and their glycosides)

P

Medicinal Actions:

- Alterative
- Antineoplastic/Anti-tumorigenic
- Antiviral
- Cathartic/Purgative
- Cholagogue
- Cytotoxic
- Hepatic
- Laxative

Medicinal uses:

- Cytotoxic properties make it of use in **cancer and can be applied topically for various growths & dysplasias** (eg.

P Rhizome

C Resinous lignans (podophyllin & podophyllotoxin)

A Cytotoxic
Cathartic
Alterative

I Growth & Dysplasias (e.g warts)
Constipation (atonic)

F *Berberidaceae*

condyloma acuminata & venereal warts).

- Acts as a cathartic, exerting a powerful influence upon the whole system to restore normal hepatic & intestinal secretions.
- Is considered one of the best agents to overcome habitual constipation, especially if due to portal engorgement.
- **Acts strongly on the liver and intestines** and is a potent cholagogue that stimulates peristalsis significantly and is used to relieve atonic constipation, gastric & intestinal catarrh, hepatic congestion, dyspepsia, and gall bladder dysfunction.
- Also stimulates the release of water and other discharge from tissues and is thus helpful in relieving inflammation.

Pharmacology:

- **Reinsous lignans (podophyllin & podophyllotoxin)** are cytotoxic and possess anti-tumor activity.

- Podophyllotoxin is a potent inhibitor of microtubule assembly and inhibits the replication of measles and herpes simplex type I viruses.
- Beta & alpha Peltatin have demonstrated antiviral effects
- Note: Podophyllotoxin derivatives such as etoposide & teniposide are active in the treatment of a variety of cancers.

Pharmacy:

- Tincture: (1:10, 65%), up to 10 drops daily. **3.5 ml weekly max.**
- Topical applications.
- Note: The internal use is no longer advised because of its toxicity and is listed by the FDA as an unsafe herb.

Toxicity:

- In large doses can cause violent emesis & catharsis, gastritis and enteritis, which can potentially be fatal.

Contraindications:

- Pregnancy & lactation (podophyllin and podophyllotoxin are embryocidal in animals and humans).

Interactions:

- None known.

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Constituents:

- Salicylates (salicin & populin) and other phenolic glycosides
- Tannins
- Resin

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Anti-rheumatic
- Astringent
- Diuretic

P Bark

Salicylates

C Tannins
Resin

Analgesic
A Anti-inflammatory
Astringent

Rheumatism (myalgia & arthritis)
I Pain & inflammation of the urinary tract
Topically in edema & MSK injuries

F Salicaceae

Medicinal uses:

- Used primarily for **anti-inflammatory and diuretic actions**.
- Will lessen the inflammation and associated pain of cystitis while gently stimulating the flow of urine thereby promoting cleansing of the urinary tract.
- Perhaps the best way to use this herb is to harvest early leaf buds and soak in oil to make 'Balm of Gilead', which is a topical used in MSK inflammations and as a chest rub for congestive coughs.

Pharmacology:

- **Salicylates** are analgesic & anti-inflammatory. Salicin is metabolized & absorbed in the bowels to salicylic acid. Salicylates inhibit COX-1 & 2 enzymes in inflammatory cascade, minimizing pain and inflammation.

- Polyphenols inhibit membrane damage, reactive oxidative species, nitric oxide synthase and thus an overproduction of nitric oxide production responsible for the vasodilatory processes observed in inflammatory disease states.

Pharmacy:

- Decoction: 1 tsp/1cup water, simmer 20 minutes, TID
- Tincture: (1:5, 40%), 2-5 ml TID. 100 ml weekly max.
- Powder: 1-4 g/day

Toxicity:

- In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.
- Theoretically Salicylism which is an acute overdose of salicylates can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Contraindications:

- Avoid in children with the flu due to Reye's syndrome (theoretical).

Interactions:

- Caution while using aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, anticoagulants, methotrexate, spironolactone, phenytoin, and valproate medications.

References:

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P



Constituents:

- Hydrolyzable & Condensed Tannins, (e.g. Oligomeric Proanthocyanidins) including phlobatannin, gallic & ellagic acid esters catechin, epicatechin, galocatechin, epigallocatechin)

Medicinal Actions:

- Antimicrobial
- Astringent
- Hemostatic

Medicinal uses:

- Is a strong astringent and antiseptic and a mild tonic to the tissues which it contacts, tightening up tissues such as varicose veins and hemorrhoids.
- Will **dry up excessive watery secretions (e. g. diarrhea) and staunch bleeding** (eg. wounds or heavy menstrual flow).
- Is used in the treatment of pharyngitis as a gargle and can be used topically in the management of primary lymphedema and minor skin irritations

P Inner Bark

C Tannins (hydrolyzable & condensed)

A Antimicrobial
Astringent
Hemostatic

Topically in hemorrhoids & varicose veins

I Diarrhea & mucosal catarrh
Excessive bleeding (e.g. menorrhagia)

F Fagaceae

Pharmacology:

- Tannins** contract and “astringe” tissues of the body by binding with and precipitating proteins and thus rendering them resistant to proteolytic enzymes.
- Tannins have strong antioxidant activity and free-radical scavenging capacity, lowering homocysteine and cysteine levels decreased significantly. Will also inhibit lipid peroxidation and enzymes such as 5-lipoxygenase & hyaluronidase, lending to their action as anti-inflammatories, antimicrobials & keratolytics.
- Much ingested tannin remains unabsorbed in the digestive tract, but some does reach body fluids as soluble tannate to be excreted by the kidneys.
- Hydrolysable tannins are antimicrobial and have demonstrated anti-biofilm activity. In high doses can be caustic and hepatotoxic.

Pharmacy:

- Decoction 1 tsp/cup, simmer 20 minutes, 1 cup TID.
- Tincture: (1:5, 40%), 1-3 ml TID. 60 ml weekly max.
- Topical applications
- Note: **Pulse dosing required with internal dosing due to hydrolyzable tannins**

Toxicity:

- Large and/or long-term dosing may cause anorexia, constipation, gastric irritation, nephro and hepatotoxicity.

Contraindications:

- Use caution in cases of constipation, iron deficiency and malnutrition.
- Avoid topically application over large or open wounds.

Interactions:

- May reduce the absorption of alkaloids and other basic drugs through precipitation.
- May have synergistic effects when used in combination with the conventional fungicides (e.g. ketoconazole)

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Oaks are common trees in deciduous forests throughout the world. White Oaks are native to England and have been naturalized throughout North America. Their slow, steady growth and large stature have long been religious and patriotic symbols. The Greeks held it as sacred, the Romans dedicated it to Jupiter and the Druids venerated it. The generic name "Quercus" is from the Celtic "Quer", meaning handsome.

Q





P Root

C Indole alkaloids (reserpine)

A Hypotensive

I Mild to moderate hypertension

F Apocynaceae

Constituents:

- Indole Alkaloids (e.g. reserpine, raubasine, rescinnamine, deserpidine and syrosingopine)

Medicinal Actions:

R

- Hypotensive
- Anticonvulsant

Medicinal uses:

- Main indication is in the management of **mild to moderate hypertension** as the alkaloids create a gentle hypotensive effect.
- Is generally reserved for patients who fail to respond to non-drug therapies and who fail to respond to diuretics, beta-adrenergic blocking agents, ACE inhibitors, & alpha adrenergic blocking agents). Is generally most effective when used with a diuretic.

Pharmacology:

- The precise mechanism of the hypotensive action has not been established, however does not appear to be due to a decrease in cardiac output, but a reduction of peripheral vascular resistance.
- **Indole alkaloids (primarily reserpine)** deplete (as well as prevent the storage of) catecholamine and serotonin in many organs and body tissues, including the brain, hypothalamus, central vasomotor centers, and adrenal medulla.
- Will thus reduce uptake of catecholamines by adrenergic neurons with repeated doses results in depletion of catecholamine stores and a decrease in peripheral vascular resistance, blood pressure and is associated with bradycardia.
- Alkaloids (e.g. raubasine) also appear to possess anticonvulsant properties by acting directly at benzodiazepine sites with

a benzodiazepine agonist-type activity, producing a tranquilizing effect possibly due to depletion of serotonin and catecholamines in the brain.

Pharmacy:

- Whole extract powdered form is most desirable: 50-300 mg daily
- Begin with small doses and increase gradually until there is a drop in blood pressure or side-effects develop (eg. nasal congestion, diarrhea). Is best used in combination with other anti-hypertensives in order to avoid large doses. Blood pressure will take 2-3 weeks to respond.
- Tincture (1:5, 40%) 0.5 ml BID to start. **10 ml weekly max.**
- Note: By using moderate therapeutic doses, the maximum therapeutic effect may not be evident for 6-12 months after beginning continuous treatment.

Toxicity:

- Signs of toxicity may include sedation, depression, suicidal ideation, nightmares, abdominal cramps, diarrhea, gastrointestinal ulceration and hemorrhage, water retention, nasal congestion, flushing of the skin, pinpoint pupils, hypotension, bradycardia, vertigo, stupor, tremors, coma.
- Convulsions and serious extrapyramidal reactions have occurred following large doses.
- Small doses may stimulate respiration, large doses produce respiratory depression.
- Sodium and water retention may occur, especially if a diuretic is not administered concurrently, and may result in tolerance to the hypotensive effect of the drugs.

Contraindications:

- Pregnancy & lactation, depression, peptic ulcers & hyperprolactinemia.

Interactions:

- Potentially with all CVD drugs and sympathomimetics.
- Note: Is often combined with diuretics (e.g. chlorothiazide) in the treatment of hypertension.

References:

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Constituents:

- Anthraquinone glycosides (dianthrone, free aglycones & emodin glycosides)

Medicinal Actions:

- Antimicrobial
- Bitter
- Laxative

R

Medicinal uses:

- Is indicated in **chronic atonic/flaccid constipation**.
- It is a gentle, tonifying laxative in low doses and more stimulating in higher doses.

Pharmacology:

- **Anthraquinones** are absorbed into the blood and re-secreted into the colon as active anthraquinones where they stimulate smooth muscle contraction.
- **Emodin** has demonstrated anti-tumor and potential anti-leukemic activity.

P Bark

C Anthraquinones (emodin glycosides)

A Bitter
Laxative (stimulating)

I Constipation (flaccid/atonic)
Digestive stimulant

F *Rhamnaceae*

Pharmacy:

- Decoction: 1-2 tsp/cup, simmer 20 minutes, TID
- Tincture (1:5, 40%), 0.5-1 ml TID. 20 ml weekly max.
- Powdered bark: 1 – 2.5 g/day
- Note: Do not use > 10 days consecutively.

Toxicity:

- Fresh bark is emetic and cathartic.
- Adverse effects include acute intestinal pain and cramping (can often be offset with carminatives).
- Use > 10 days consecutively frequently exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur.
- Recurrent use or abuse can lead to electrolyte imbalances (particularly hypokalemia), dehydration, and muscle

and kidney destruction with hematuria and albuminuria.

- Harmless reddish discolouration of urine and feces may occur.
- Pseudomelanosis coli (PMC) is a reversible deposition of active anthraquinone glycosides in the colon wall may occur. Long term use may predispose to colon cancer.

Contraindications:

- Use > 10 days, intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.
- Pregnancy (can provoke reflex contractions in the uterus when taken during pregnancy leading to miscarriage).

Interactions:

- Due to dramatic decrease in transit time, can interfere with absorption of practically any drug.
- Avoid concomitant use with drugs that cause hypokalemia, cardiac glycosides, anti-arrhythmics, and some diuretics.

The bark of Cascara is probably the most popular cathartic on earth. Traditionally used as a laxative by the North American Indians, its use became popular among the pioneers of the Pacific Northwest in the early 1800s. It was traditionally prepared by making a cold infusion, by soaking a piece of bark overnight and taken as a daily tonic.

References:

1. Criollo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post. 2004.
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- Rhamnus/Frangula purshiana (aka. Cascara sagrada) is species native to Western North America



R



P Rhizome

C Anthraquinones (emodin)
Tannins

A Laxative (stimulating)
Astringent
Antimicrobial

I Constipation (flaccid/atonic)
Diarrhea secondary to lack of tone

F *Polygonaceae*

Constituents:

- Anthraquinones (emodin, sennosides & derivatives including rheinanthrone & rhein)
- Tannins
- Volatile oil
- Flavonoids (rutin)
- Fatty acids
- Calcium oxalate

Medicinal Actions:

- Antimicrobial
- Astringent
- Laxative (stimulating)
- Sialogogue

Medicinal uses:

- Is used for its laxative effects and is indicated in **atonic constipation or diarrhea secondary to lack of tone**. Also has an antiseptic effects.
- A major ingredient of 'Essiac' due to anti-cancer action of emodin and overall bowel tonic.

Pharmacology:

- **Anthraquinones** are absorbed into the blood and re-secreted into the colon as active anthraquinones where they stimulate smooth muscle contraction.
- **Sennoside metabolites** (rheinanthrone & rhein) activate intestinal macrophages to significantly increase PGE2 concentrations and decrease the expression of aquaporin-3 (AQP3) expressed in the mucosal epithelial cells of the colon, which is involved in inhibiting water transport from the luminal to the vascular side, leading to a laxative effect.

- **Emodin** has been shown to inhibit ATP-induced IL-1 β secretion, ROS production and phagocytosis attenuation in peritoneal macrophages.

Pharmacy:

- Decoction: 1 tsp/cup; 1 cup TID.
- Tincture (1:5, 40%) up to 6 ml day. 40 ml weekly max.
- Powder: 0.5-5 g/day
- Note: Do not use > 10 days consecutively.

Toxicity:

- High doses may cause diarrhea with mild griping, icterus and hepatic enlargement, renal insufficiency and proteinuria.
- Use > 10 days consecutively frequently exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur.
- Recurrent use or abuse can lead to electrolyte imbalances (particularly hypokalemia), dehydration, and muscle and kidney destruction with hematuria and albuminuria.
- Harmless reddish discolouration of urine and feces may occur.
- Pseudomelanosis coli (PMC) is a reversible deposition of active anthraquinone glycosides in the colon wall may occur. Long term use may predispose to colon cancer.

Contraindications:

- Use > 10 days, intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.
- Pregnancy (can provoke reflex contractions in the uterus when taken during pregnancy leading to miscarriage).
- Use caution in fever and with kidney stones.

Interactions:

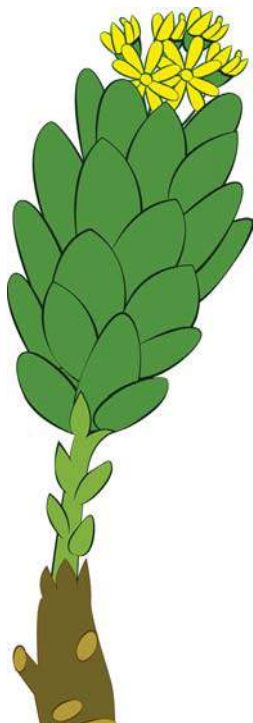
- Can interfere with absorption of practically any drug when taken simultaneously.
- Avoid concomitant use with drugs that cause hypokalemia, cardiac glycosides, anti-arrhythmics, and some diuretics.

References:

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R





Constituents:

- Phenylpropanoids & Phenylethanol derivatives (e.g. salidroside [aka. rhodioloside], rosavin, rosin, rosarin, rhodiolin, and rosiridin)
- Flavonoids (p-tyrosol, catechins & proanthocyanidins)
- Phenolic acids (gallic acid, caffeic acid & chlorogenic acid)

Medicinal Actions:

- Adaptogen
- Antioxidant
- Cardiotonic
- Cognitive enhancer
- Immuno-stimulant
- Nervine tonic

P Root

C Phenylpropanoids (e.g. rosavin)
Phenylethanol derivatives
Flavonoids

A Adaptogen
Cognitive enhancer
Nervine tonic

I Adrenal fatigue
Poor memory & concentration
Neuroprotective

F *Crassulaceae*

Medicinal uses:

- The effects on the nervous system for this herb **can be both stimulating and sedating depending on the dose.**
- Can enhance physical endurance, and sexual potency, improves thyroid, thymus and adrenal function, and protects the nervous system, heart and liver through antioxidant effects.
- **It increases the body's resistance to stress and has a neuroprotective effects,** specifically upon neurotransmitters serotonin and dopamine.
- It has specific use for headaches in neurasthenia and will enhance cognitive function, learning, memory and concentration.

Pharmacology:

- **Salidroside and its glycosides** (rhodiolin, rosin, rosavin, rosarin, and rosiridin), and **p-tyrosol** are potent antioxidants that exert neuroprotective effects and are able

to reduce neuronal death and behavioral dysfunction via oxidative stress pathways.

- Salidroside protects endothelium against H₂O₂-induced injury via promoting mitochondrial biogenesis and function, thus preventing the over activation of oxidative stress-related signaling pathways, enhancing superoxide dismutase (SOD), glutathione peroxidase (GSH) and malondialdehyde (MDA) in serum, heart, liver and brain tissues in vivo.
- Central nervous system effects have been attributed to its ability to prevent the depletion of adrenal catecholamines induced by acute stress and effecting the release and activity of monoamines such as serotonin, dopamine, and norepinephrine in the cerebral cortex, brain stem, hypothalamus, possibly due to inhibition of the activity of enzymes responsible for monoamine degradation and facilitation of neurotransmitter transport within the brain.
- May also induce opioid peptide biosynthesis through the activation of both central and peripheral opioid receptors.
- **Cardiotonic effects** may be due to cyclic AMP elevation in the myocardium.

Pharmacy:

- Tincture: (1:5, 40%). 1-3 ml, TID. 60 ml weekly max.
- Standardized extract: (3% rosavin, 1% salidroside) 300-600 mg QD.
- Note: Low dose tends to be stimulating and high dose is more sedating. Many commercial products have little to no biological activity, be sure to verify the quality of the product before purchasing.

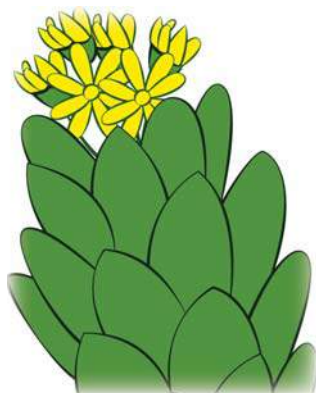
Toxicity: May cause agitation, especially in those prone to anxiety.

Contraindications: Avoid with excited states and use with caution in bipolar conditions, especially with those with a tendency towards mania.

Interactions: Potential interactions with cardiac medications and antidepressants (theoretical).

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P Seed Oil

C Ricinoleic acid
Fixed oils (Ricin)

A Topical: Lymphatic & Rubefacient
Internal: Laxative & Partufacient

I Topical: Constipation, lymphatic
congestion, dysmenorrhea
Internal: Induce labour

F *Euphorbiaceae*

Constituents:

- Ricinoleic acid
- Fixed oils - Ricin (toalbumin) & ricinine

Medicinal Actions:

- Topical: Anti-inflammatory, Lymphatic & Rubefacient
- Internal: Laxative (Purgative & Cathartic) & Partufacient

Medicinal uses:

- Has both internal & external applications.
- Internally is used as a purgative agent though the seeds are highly toxic when taken internally and thus must be used with extreme caution.
- As a purgative its effect dramatic and pronounced. Also used to induce delayed labour.

- Externally, it is often applied over an area of inflammation or injury, or in the form of a **castor oil pack to promote a gentle movement of the bowels and/or detoxification of deeper tissues** such as the liver.
- As a topical application it reduces inflammation of the tissues in the area and will speed healing time of injured tissue. Topical application is also safe because the main toxic ingredient, ricin is not extracted from the seeds into the commonly used oil.

Pharmacology:

- Little is known as to it's lymphatic & detoxifying effects, however mechanism is presumed to be likened to others rubefacients.
- Pure ricin ingestion leads to multiple organ damage and death, via cholinergic effects causing systemic inflammation with increased pro-inflammatory cytokine release and subsequent multiple organ failure, particularly kidney and liver dysfunction.

Pharmacy:

- Topical (e.g. Castor oil pack): Apply oil as needed over intact skin and heat (hot water bottle) to promote the absorption into tissues for 30-60 minutes daily or as needed.
- Internal use not advised unless as parturfacient under medical supervision.

Toxicity:

- Toxic dose is 2-4 seeds for adults. Fatal dose is 2-4 dose in children, 8 seeds in adults.
- Toxicity symptoms include immediate burning of mouth and throat, thirst, vomiting, stomach pain, dull weak rapid pulse, uremia, diarrhea, colic. 2-5 days later: headache, dizziness, dullness of vision, depression, liver and kidney damage, retinal, scleral or CNS hemorrhage, trembling, weakness, convulsions.
- Death can occur up to 12 days after ingestion. Treat with emesis or gastric lavage.

Contraindications:

- Internal use (except as a parturfacient to induce labour)

Interactions: None known.

References:

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Constituents:

- Volatile oil (borneol, camphene, camphor, cineole, pinene, limonene & linalool)
- Flavonoids (apigenin, diosmin, diosmin)
- Caffeic acid derivatives (e.g. rosmarinic acid)
- Terpenoids (carnosol, carnosic acid, oleanolic & ursolic acid)
- Resin
- Tannins

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial
- Antioxidant
- Astringent

P Aerial

C Volatile oil
Flavonoids
Caffeic acids (Rosmarinic)

A Carminative/Antispasmodic
Cerebral circulatory & Nervine stimulant
Cardiotonic

I Poor memory & cognition
Depressive states with CVD weakness (e.g hypotension)

F *Lamiaceae*

- Cardiotonic
- Carminative & Antispasmodic
- Cerebral circulatory stimulant
- Diuretic
- Nervine tonic & stimulant
- Rubefacient

Medicinal uses:

- Relaxes smooth muscle spasm of capillaries & arteries, thus **enhances blood flow throughout the circulatory & digestive tracts.**
- Has therapeutic potential in treatment or prevention of bronchial asthma, atherosclerosis & ischemic heart disease.
- **Increases circulation to the head to improve mental clarity,** memory & vision.
- Increases coronary blood flow and exerts a positive inotropic action in the myocardium.
- Has a tonifying effect on the circulation and on the nervous system, making it effective

R

in chronic circulatory weakness including hypotension.

- It has specific use for **depressive states with debility and cardiovascular weakness**.
- It is used for problems involved in central nervous system, cardiovascular system, genito urinary conditions, liver treatments, reproductive system & respiratory system.
- Volatile oil is used in oils and lotions for the treatment of arthritis, gout, muscular pain, neuralgia, wound and rubbed into hair for stimulating the hair bulbs to renewed activity, to prevent premature baldness.

Pharmacology:

- **Volatile oils (borneol, camphene, camphor, cineole, limonene)** are carminative, analgesic, and nerve stimulants.
- **Flavonoids & caffeic acid and its derivatives (apigenin & rosmarinic acid)** have potent anti-inflammatory & antioxidant effects and is well absorbed from gastrointestinal tract and from the skin. It increases the production of prostaglandin E2 and reduces the production of leukotriene B4 and inhibits the complement system.
- **Terpenoids** (e.g. carnosol & ursolic acid) have antioxidant & antibacterial activity.
- **Carnosic acid** has demonstrated anti-androgenic activity through inhibition of 5 α reductase and binding of dihydrotestosterone to androgen receptors for use in the treatment of androgenic alopecia.
- Diosmin reduces capillary fragility
- Extracts have shown inhibition of acetylcholinesterase activity and a stimulatory effect on butyrylcholinesterase expression in the brain cortex and hippocampus, possibly leading to improved long-term memory.

Pharmacy:

- Infusion: 1 tsp/cup, TID. Dried parts: 2-4g TID
- Tincture (1:5, 40%), 1-2 ml TID. 50 ml weekly max.
- Culinary uses & Aromatherapy of EO.
- External applications: baths, ointments, chest rub, massage oil.

Toxicity: Topical use of essential oil may cause dermatitis & photosensitivity.

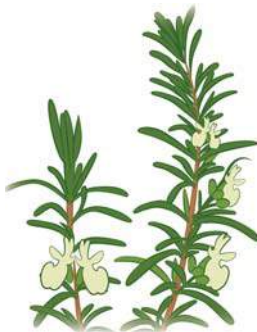
Contraindications:

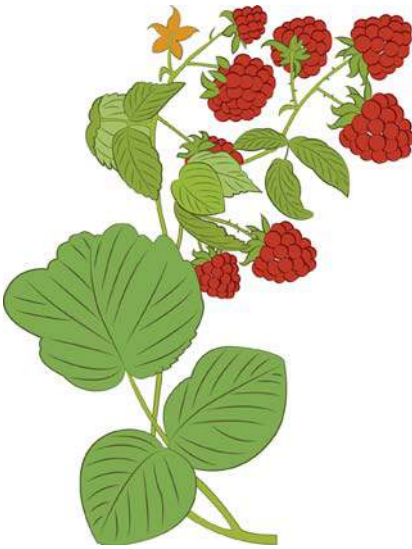
- Avoid internal use of essential oil.
- Use caution in epilepsy as high dose camphor may cause convulsions.

Interactions: May inhibit iron absorption (avoid taking with meals and supplements).

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P Leaves

C Tannins
Minerals (Ca, Mg, Fe & Se)
Flavonoids

A Uterine Tonic
Astringent
Parturfacient

I Labour Prep
Dysmenorrhea
Menorrhagia & Post-partum
hemorrhage

F Rosaceae

Constituents:

- Leaves: Tannins, volatile oil, flavonoid glycosides, Minerals (Ca, Mg, Fe, Se, Niacin)
- Fruit: Ketones (4-hydroxyphenyl). Vitamins (A & C) & Minerals (K, Ca, Mg)

Medicinal Actions:

- Astringent
- Uterine tonic
- Parturfacient
- Thermogenic agent

Medicinal uses:

- Has been traditionally used to facilitate childbirth and **exerts paradoxical actions of uterine relaxation and tonification** to reduce post-partum hemorrhage, heavy menses, and after pains of labor.
- Should be used with caution before 16 weeks of gestation because the relaxing

effect may too strong and threaten the pregnancy.

- Will tonify the smooth muscle layer of the uterus such that there is increased contractility, **regularity of contractions and decreased spasm in cases of dysmenorrhea.**
- Potential use in obesity and weight loss due to increased lipolysis
- In the treatment of diarrhea and similar enteric disorders for astringency, and may be useful for bacterial infection, pain, and inflammation of the gastrointestinal tract.

Pharmacology:

- High **Calcium & Magnesium** concentrations may help with tonification of smooth muscle possibly due to actions on polypeptides incorporated into prostaglandin synthesis.
- **Tannins** have shown anti-inflammatory and anti-Helicobacter pylori properties and inhibition of TNF-α induced NF-kB driven

transcription in gastric cells in vitro.

- Ketone (4-hydroxyphenyl) structure is similar to the structures of capsaicin and synephrine, compounds known to exert anti-obese actions and alter the lipid metabolism. Has been shown to significantly increase norepinephrine- induced lipolysis associated with the translocation of hormone-sensitive lipase from the cytosol to lipid droplets in rat epididymal fat cells.

Pharmacy:

- Infusion: 2 tsp/ 1 cup water; 1-2 cups TID
- Tincture: (1:1, 25%), 2-5 ml TID. 100 ml weekly max.
- Topical as douche or wash.

Toxicity: None reported.

Contraindications:

- Use caution in first trimester of pregnancy

NOTE: Though the fruit is known for its nutrition and sweetness, the leaf is more prominently used in Western herbal medicine.

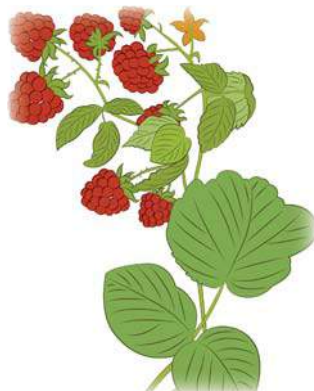
Interactions:

- May theoretically inhibit the absorption of drugs and nutrients when used simultaneously due to high tannin content.

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Is a member of the Rose family and is native to England, where it likes to grow on traveled road sides and hedges. The roots were formally boiled and eaten like turnips! The generic name "Rubus" comes from the Latin meaning red, and "idaeus" from the Latin "ida", the names of a mountain in Phrygia where the plant grew in abundance.



R



P Root

C Anthraquinones
Tannins
Minerals (Iron)

A Alterative
Astringent
Laxative

I Chronic skin/glandular disorders with
digestive complaints
Lymphadenopathy

F *Polygonaceae*

R **Constituents:**

- Anthraquinone glycosides (chrysophanol & emodin)
- Tannins
- Iron and other minerals
- Oxalates (high in leaf)

Medicinal Actions:

- Alterative
- Astringent
- Hepatic (Cholagogue)
- Laxative

Medicinal uses:

- Is especially indicated in **chronic skin conditions (e.g. eczema & psoriasis) with GIT complaints** and especially those due to liver/gall bladder congestion.
- Mild laxative action is most indicated in chronic toxic conditions with debilitation, tendency to tissue stagnation (cancer, lymphadenopathy, ulcers, cholelithiasis, glandular enlargement).
- As an alterative is useful in **rheumatic and inflammatory joint disease**, and in detox protocols as it helps to flush toxins through the skin, lymphatic system, liver/GB, and intestines while enhancing the absorption of minerals.
- Used externally as a wash to enhance granulation tissue and thus wound healing and is a useful external application for hemorrhoids.

Pharmacology:

- **Anthraquinone glycosides** have a mild laxative (aperient) action and are absorbed in the jejunum and hydrolyzed during absorption. They are then re-secreted back into the bowel where they irritate, and hence, stimulate the intestines to undergo peristalsis.
- **Tannins** provide an astringent action on the GIT acting as a gentle intestinal tonic and are antioxidants.
- Tincture extracts have shown antimicrobial activity against *Staphylococcus aureus* and have demonstrated potential cytotoxic & anti-cancerous effects as a potent antioxidant and exerting cell-death via apoptosis.

Pharmacy:

- Decoction: 2-6 g/cup water, simmer 20 minutes, 1-2 cups TID
- Tincture: (1:5, 25%), 1-3 ml, TID. 60 ml weekly max.
- Topically in Ointments & creams.

Toxicity:

- Fresh root is emetic & purgative. Fresh leaf in high doses may cause acute oxalate toxicity.
- High doses may cause an aggravation of inflammatory skin disorders, nausea, vomiting, diarrhea, and can aggravate irritable bowel and spastic colon.
- Excessive use exacerbates atonicity of the colon and can lead to dependence on laxatives for a bowel movement to occur.
- Hypokalemia may occur with long-term use.

Contraindications:

- All anthraquinone-rich herb CIs apply (eg. Pregnancy, prolonged use, acute inflammatory bowel disease, etc.), however is generally gentler and less extreme in it's effects when compared to other laxative herbs.
- Use caution in gout and predisposition to kidney stones due to oxalates.

Interactions:

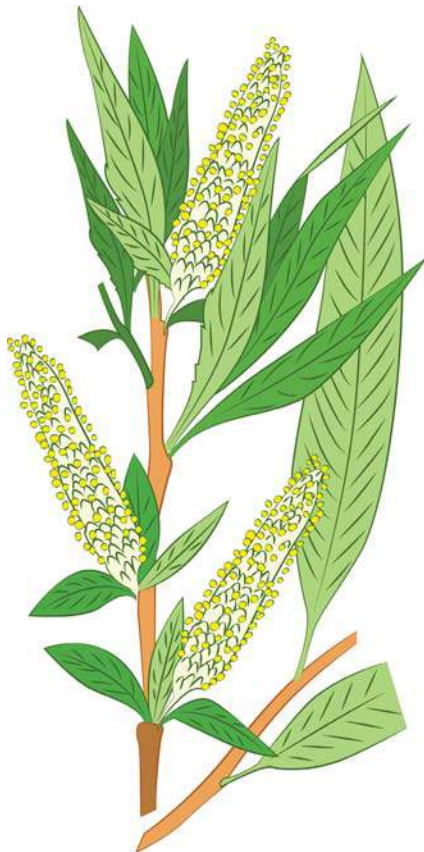
- Can interfere with absorption of practically any drug when taken simultaneously.
- Avoid concomitant use with drugs that cause hypokalemia, cardiac glycosides, anti-arrhythmics, and some diuretics.

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R

**Constituents:**

- S** • Salicylates (salicin, populin, tremulacin & salidroside)
- Phenolic acids (vanillin, syringin, vanillic & syringic)
- Flavonoids (isoquercitrin & naringin)
- Tannins
- Coumaric acid

Medicinal Actions:

- Analgesic
- Anti-inflammatory
- Antimicrobial

P Bark & leaf

Salicylates
C Flavonoids
 Tannins

Analgesic
A Anti-inflammatory
 Anti-rheumatic

Headaches
I Fever
 Painful rheumatic disorders (e.g. myalgia, neuralgia, arthritis)

F Salicaceae

- Anti-rheumatic
- Astringent
- Bitter
- Febrifuge

Medicinal uses:

- Is used in a variety of conditions associated with pain, though its analgesic effects are slower than that of aspirin, but of longer duration and without gastric side effects.
- Mild flus & colds with **fever, mild headaches and other pain caused by inflammation.**
- Is specific for RA and other **systemic connective tissue conditions with pain & inflammatory changes** such as ankylosing spondylitis, gout, muscular rheumatism, joint pain, OA, osteoporosis, tendinitis, sprains, sciatica and neuralgia.
- It should be noted that the irreversible inhibition of platelet aggregation seen with aspirin cannot be induced by Salix.

Pharmacology:

- **Salicylates** (salicin & salicylic acid) are analgesic and anti-inflammatory.
- Salicin is metabolized & absorbed in the bowels to salicylic acid, which has aspirin-like effects without irritating the gastric lining.
- Salicin and salicyl glycosides form salicin after hydrolysis of the acyl group. Salicin is then split by intestinal flora into saligenin (salicyl alcohol) and glucose which is then absorbed and oxidized in the blood and liver to salicylic acid and has antipyretic, analgesic, anti-rheumatic, and anti-septic actions likely due to their ability to inhibit cyclooxygenase, complement activation and thus interfere with the production of reactive oxygen species (ROS).
- NOTE: Best taken with probiotics to optimize gut flora conversion of salicylates

Pharmacy:

- Decoction: 2-3 g/cup, simmer 20 min, TID
- Tincture (1:5, 25%), 5-8 ml TID. 100 ml weekly max.
- Dried bark: 1-3 g, TID (the effective dose of salicin is 60-120 mg/day).

Toxicity:

- In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.
- Theoretically Salicylism which is an acute overdose of salicylates can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Contraindications:

- Avoid in children with the flu due to Reye's syndrome (theoretical).
- Those with known hypersensitivity to salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

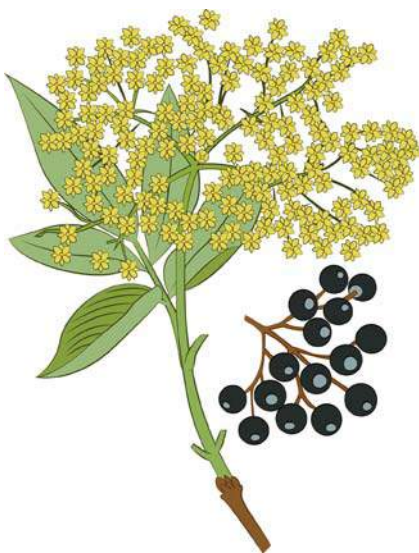
Interactions:

- Avoid while using aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, anticoagulants, methotrexate, spironolactone, phenytoin, valproate medications.

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P Flowers & Berries

C Flavonoids
Tannins
Mucilage

A Anti-catarrhal & Expectorant
Anti-inflammatory
Diaphoretic

I Cold & flus with fever and/or catarrh
Rhinitis & sinusitis
Rheumatic complaints

F *Caprifoliaceae*

Constituents:

- Flavonoids (sambucin & anthocyanocides)
- Volatile oil
- Sterols
- Tannins
- Mucilage
- Minerals (Iron)
- Vitamin A & C
- Pectin (sugars)
- Fixed oils (linoleic & linolenic)

Medicinal Actions:

- Alterative
- Anti-catarrhal
- Anti-inflammatory
- Carminative & Antispasmodic
- Demulcent
- Diaphoretic

- Diuretic
- Expectorant
- Laxative

Medicinal uses:

- Is specific for the treatment of colds & flus, and **acute infections associated with fever, URT congestion, headache and nausea.**
- Useful in rhinitis, asthma, croup, hay fever, conjunctivitis, rheumatism, pharyngitis, and tonsillitis.
- Flowers & berries are known for anti-catarrhal & alterative effects useful in allergic conditions (i.e. sinusitis, asthma) with cough & excessive mucous production.
- Berries are especially useful for joint diseases and rheumatism.

S

Pharmacology:

- **Flavonoids** may be responsible for the diaphoretic and diuretic effects.
- **Tannins** are astringent & anti-catarrhal.
- Can increase cytokine productions, strengthens cell membranes and protects against virus penetration.
- Lectins in bark and cyanogenic glycosides in leaves are potentially toxic.
- High **Vitamin C** content in berries potentiates effects on collagen and mast cells.

Pharmacy:

- Infusion (flowers) or decoction (berries): 1-2 tbs/cup, TID
- Tincture: (1:2, 25%), 2-4 ml, TID. 80 ml weekly max.
- Wine, Tonics, Syrups & Elixirs

Toxicity:

- In high does may cause GIT upset, weakness, dizziness, and allergy type reactions.
- Potential for cyanide toxicity from bark, leaves, seed and raw/unripe fruit.

Contraindications:

- Internal ingestion of unripe fruits due to risk of cyanide toxicity.
- Pregnancy & Lactation (controversial)

Interactions:

- May have additive effects with caffeine, chemotherapy, diuretics, and laxatives.
- May antagonize immunosuppressants.

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Is a small tree common to pastures and meadows that flowers in late summer. (*S. nigra* is a somewhat larger plant). Elder has a heavy smell which Shakespeare referred to as "the stinking elder". It has a mild influence on the mind & senses, which undoubtedly contributed to the main mysterious traditions associated with it.

Planting an Elder in a herb garden is considered beneficial to the medicinal plants growing there because is thought to serve as a protector or guardian to what grows there (as the stinking leaves are thought to perhaps repel insects).





P Rhizome

C Isoquinoline Alkaloids

A Analgesic
Antimicrobial
Expectorant

I Chronic congestive lung conditions
Topical use in variety of infections
(e.g. gingivitis)

F *Papaveraceae*

Constituents:

- Benzophenanthridine type isoquinolone alkaloids (sanguinarine, chelerythrine & oxysanguinaridine)
- Other alkaloids including berberine, coptisine, protopine, chelilutine, chelirubine, sanguidimerine, sanguirubine, allocryptopine, sanguidaridine, & sanguilutine

Medicinal Actions:

- Analgesic
- Antimicrobial
- Expectorant
- Immunomodulator
- Respiratory amphoteric

Medicinal uses:

- Is indicated in chronic congestive lung conditions (e.g. bronchitis, emphysema, asthma, croup, and laryngitis), and has traditionally been used in tinctures and cough syrups as **an expectorant, especially when the cough is dry or irritated and respiration is difficult**
- Exerts smooth muscle relaxation and antimicrobial effects in acute URT infections.
- Is often used in toothpaste and other oral hygiene products to inhibit the growth of oral bacteria when used as gargle or mouthwash.

Pharmacology:

- Benzophenanthridine type **isoquinolone alkaloids (principally sanguinarine)** constitute the primary active compounds having antimicrobial, antifungal, anti-inflammatory, and mast cell histamine release inhibition effects.

- **Sanguinarine** has broad antimicrobial activity as well as anti-inflammatory properties, and has been shown to uncouple phosphorylation and intercalate with DNA and induce the release of membrane-bound cell wall autolytic enzymes, resulting in lysis of the bacterial cell walls, which may explain antibacterial and antiviral properties.

Pharmacy:

- Decoction: 1 tsp dried root/cup water, simmer 20 minutes, TID
- Tincture (1:5, 40%), 2-5 ml TID. 100 ml weekly max.
- Gargles & Mouthwashes

Toxicity:

- Large doses may cause nausea & vomiting.

Contraindications:

- Pregnancy & lactation.
- Avoid in sensitive or irritated mucous

membranes.

Interactions: None known.

References:

1. Becci, P. et al. Short-term toxicity studies of sanguinarine and of two alkaloid extracts of *Sanguinaria canadensis* L. *J Toxicol Environ Health*. 1987;20(1-2):199-208.
2. Boyd, E. et al. The effect of quillaia, senega, squill, grindelia, sanguinaria, chion-anthus and dioscorea upon the output of respiratory tract fluid. *Acta Pharmacol Toxicol (Copenh)*. 1946;2(3):235-46.
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P Fruit/Berries

C Lignans (schizadrin)

Flavonoids
Phytosterols

A Adaptogen

Antioxidant

Nervous system trophorestorative

I Poor immune/liver function, memory, concentration & resistance to mental & physical stress (e.g. fibromyalgia)

F *Schisandraceae*

Constituents:

- Lignans (schizadrin, gomisin & pregomisin)
- Flavonoids
- α -Cubebenoate
- Phytosterols (beta-sitosterols & stigmasterol)
- Volatile oils (sesquiterpenes)
- Nutrients (Vitamins C & E)

Medicinal Actions:

- Adaptogen
- Anti-inflammatory
- Antioxidant
- Astringent
- Cardiac tonic
- Hepatoprotective
- Nervous system trophorestorative (Neuroprotective)

Medicinal uses:

- Of great use as a general hepatoprotective, antioxidant and adrenal adaptogen, especially in cases of **chronic fatigue syndrome related to inflammatory and oxidative stress**.
- Promotes vitality and increases memory and cognitive functions (neuroprotective) while providing resistance to stress.
- Will tone and strengthen the immune system to increase physical performance and endurance and promotes recovery after surgery.
- Will enhance athletic performance and **improve liver detoxification and functions**.

Pharmacology:

- **Lignans (schizadrin, gomisin & pregomisin)** are hepatoprotective and immunomodulating. Appear to protect the liver by activating liver enzymes that produce glutathione.

- **Gomisin** has been shown to produce beneficial sedative and hypnotic effects, possibly mediated by the modification of the serotonergic and GABAergic system
- Lignans have shown an ability to alleviate the provocation of corticosterone in stressed mice and decrease oxidative damage while increasing anti-oxidative capability of hepatocytes.
- **α -Cubebenoate** (a novel anti-inflammatory compounds) has shown an inhibition of the production of NO and PGE2 in vitro in peritoneal macrophages.
- Sesquiterpenes have demonstrated cytotoxic activities.

Pharmacy:

- Decoction: 2 tsp/cup water, simmer 10 minutes, TID
- Tincture: (1:2, 45%), 1-3 ml TID. 60 ml weekly max.
- Powder: 250 mg TID

Toxicity:

- High doses may cause mild GIT disturbances (reduces appetite, heartburn, nausea, indigestion, headaches, skin rash).

Contraindications: None known.

Interactions:

- Theoretically can interfere with metabolism of many drugs due to effect on liver & gastric secretions.

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Schisandra fruits come from aromatic trees that are native to China and Russia. It is most often found in formulas used to relieve stress, and as it can be a profound CNS relaxant it is often combined with ginseng or gotu kola to increase one's stamina.





P Aerial

Flavonoid glycosides (scutellarin)

C Iridoids

Volatile oil

Antispasmodic

A Nervine Tonic & Sedative

Hypotensive

Nervous tension/exhaustion
(depression & anxiety)

I

Muscle spasm & tremors (myalgia & neuralgia)

F *Lamiaceae*

Constituents:

- Flavonoids, Diterpenes & Phenylethanoid glycosides (e.g. acteoside, baicalein, baicalin, apigenin, scutellarin, scutellariin & luteolin)
- Iridoid glycosides (catalpol)
- Volatile oil (limonene, terpineol, & humulene)
- Tannins
- Minerals

Medicinal Actions:

- Antioxidant
- Antispasmodic
- Bitter
- Nervine Tonic & Sedative
- Hypotensive

Medicinal uses:

- Traditionally used as a nervine tonic & sedative to treat various **nervous disorders such as stress, anxiety, and premenstrual tension.**
- Can be used long-term for nervous tension and exhaustion as it relaxes these states while at the same time renewing & reviving the central nervous system.
- As a neuroprotective can significantly enhance mood without a reduction in energy or cognition, and will reduce oxidative stress implicated in neurodegenerative and neuropsychiatric disorders including depression, Alzheimer's, and Parkinson's.
- An anticonvulsant & **antispasmodic indicated for muscular tension**, twitching and tremors, grand mal seizures and neuralgias.

Pharmacology:

- **Flavonoids & diterpenes** possess wide pharmacological actions, such as antitumor, anti-angiogenesis, hepatoprotective, antioxidant, anticonvulsant, antibacterial and antiviral activities
- **Flavonoids (apigenin, scutellarin & luteolin)** are antispasmodic, anti-inflammatory, and have significant antioxidant effects that will neutralize free radicals having protective effects against oxidative stress.
- **Scutellarin** specifically has calming bitter effects and has demonstrated an ability to inhibit sucrase and maltase and alpha-glucosidase activity lending potential anti-diabetic effects
- **Baicalin and its aglycone baicalein** may play a role in anxiolytic & anti-convulsant activity, as they are known to bind to the benzodiazepine site of GABA receptors and may
- **Volatile oils** (limonene, terpineol & humulene) are antispasmodic and anti-inflammatory

Pharmacy:

- Infusion: 1 tbsp/cup, TID
- Tincture: (1:2, 45%), 2-4 ml TID. 80 ml weekly max.
- Powdered herb: 1-2 g QD

Toxicity: None known

Contraindications: None reported

Interactions:

- Theoretical additive effects with CNS depressants/sedative medications

References:

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In TCM, Skullcap is effective in nervousness, worry, or apprehension with a choppy pulse due to disturbed heart Qi. It enters the heart and liver channels and helps clear heat in both organ systems.

Easy to confuse with *Scutellaria baicalensis* (or Baikal skullcap) but both are very different in their use.



S



Constituents:

- Flavolignans (silybin, silydianin, & silychristin known collectively as silymarin or “the silymarin complex”)
- Flavonoids
- Volatile oil
- S** • Bitter principle
- Mucilage

Medicinal Actions:

- Antioxidant
- Hepatic (Cholagogue)
- Hepatoprotective & Liver trophorestorative
- Hypoglycemic
- Hypolipidemic
- Galactagogue

P Fruit (seed)

Flavolignans (silymarin complex)

C Flavonoids
Mucilage

Antioxidant
A Hepatic (Cholagogue)
Hepatoprotective & Liver trophorestorative

Inflammatory & infectious liver disease (hepatitis, cirrhosis)
I Hepatobiliary insufficiency

F Asteraceae

Medicinal uses:

- Will promote the regeneration of diseased liver cells and protect against toxic exposures (e.g. alcohol, drug, or dietary abuse) giving it a role in **any chronic liver disease and especially those resulting from oxidative & inflammatory injury** such as fibrosis (cirrhosis), hepatocellular carcinoma, and hepatitis.
- It will also aid in gall bladder problems, and increase the production of breast milk in breastfeeding mothers.
- Is useful in the treatment and prevention of cardiovascular disease and in the management of diabetes and its complications.

Pharmacology:

- **Silymarin (flavolignans)** is a mixture of three structural isomers: silybin, silydianin and silychristin, the former being the most active component.
- Flavolignans are powerful antioxidants that

can regenerate injured liver cells. They act to promote detoxification systems of regenerate both glutathione & superoxide dismutase within the hepatocyte, both of which are subject to deactivation due to their exhaustion in the case of an overload of toxic substances. Will restore functional and histopathological damage to hepatocytes.

- **Silymarin & silybin** react with numerous free radicals to form more stable and less reactive compounds thus increasing the stability of hepatocyte cell membranes and may act as a toxin blockade agent by inhibiting binding of toxins to the hepatocyte cell membrane receptors. Will inhibit lipid peroxidation, increase ribosomal protein synthesis, and decreases the activity of tumor promoters within hepatocytes.
- **Silymarin** has also shown hypoglycemic (enhances insulin sensitivity) & hypolipidemic (reduces total plasma cholesterol, LDL & VLDL) effects, reducing lipid peroxidation and thus having beneficial effects upon markers of cardiovascular disease.
- **Silybin** has demonstrated potential broad-spectrum antiviral activity and has been shown to potentially inhibit Hepatitis C viral entry by slowing down trafficking through clathrin-coated pits and vesicles, improving HCV-RNA titers, and serum aminotransferases (ALT & AST).

Pharmacy:

- Tincture: (1:1, 60%), 1-3 ml TID. 60 ml weekly max.
- Crushed fruit: 80-200 mg TID.
- Standardized extract: (80% silymarin), 175-600mg QD.
- Note: taking with lecithin promotes silymarin absorption, and seeds need to be cracked or crushed with any preparation.

Toxicity: Rare adverse effects have been reported, including sweating, abdominal cramps, and diarrhea. Insomnia, headache, dermatitis, and arthralgia.

Contraindications:

- Allergy to Asteraceae family.
- Pregnancy & Lactation (controversial).
- Use caution in anemic & thalassemic patients due to potential iron-chelating effects of silybin.

Interactions:

- May affect metabolism of various drugs (either increasing or decreasing levels) such as anti-diabetic agents (additive), estrogen, lamotrigine and lorazepam.
- Has the potential to reduce iron storage & absorption.

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Constituents:

- Steroidal & Glycosidal saponins (parillin, sarsaponin, smilagenin, sarsasapogenin, sarsaparilloside)
- Phytosterols (beta-sitosterol & stigmasterol)
- Flavonoids (flavanonol rhamnosides)
- Oxalic acid
- Fatty acids
- Resin
- Minerals (iodine)

Medicinal Actions:

- Alterative
- Anti-inflammatory
- Anti-rheumatic
- Antimicrobial
- Diuretic
- Immuno-modulating

P Root, leaves & stems

Saponins (Steroidal & Glycosidal)

C Phytosterols

Flavonoids

Alterative

A Anti-inflammatory

Anti-rheumatic

Chronic inflammatory skin conditions

I (acne & eczema)

Rheumatic complaints (arthritis)

F *Smilacaceae*

Medicinal uses:

- An incredibly useful alterative that has been used historically to heal **chronic skin conditions such as eczema, psoriasis** and other scaling skin diseases.
- It has also been used to relieve symptoms of **rheumatism and arthritis**.
- May modulate serum androgen levels, potentially decreasing DHT and thus having use in **cystic acne & benign prostatic enlargement**.
- Current popular use as an anabolic agent by body builders for its hormonal influence is somewhat unfounded.

Pharmacology:

- **Steroidal saponins** exert steroid modulating effects in the body (particularly testosterone), and are used in the manufacturing of cortisone & other steroids. May act as a competitive inhibitor for androgens.

- **Saponins** bind gut endotoxins, which have been shown to stimulate cGMP (stimulus for the proliferative cell division that occurs in psoriasis) and reduce toxic load within the gut, and have demonstrated anti-proliferative activity against human colon tumor cell lines.
- Parillin has demonstrated antibiotic activity
- Resin inhibits prostatic hyperplasia, reducing the DHT level in serum and improving the prostate gland morphology in vivo.
- Flavanonol rhamnosides have phytoestrogenic activity.
- May act as a therapeutic agent of immunoinflammatory diseases through a selective suppression on the cellular immune response without suppressing humoral immune responses.
- Direct anti-inflammatory mechanism includes inhibition of PGE2, IL-1, TNF and NO and improving activity of dysfunctional T lymphocytes.

Pharmacy:

- Decoction: 1-2 tsp/cup water, 1 cup TID
- Tincture: (1:1, 40%), 2-4 ml TID. 80 ml weekly max.

Toxicity:

- High doses may cause GIT upset and irritation, and long-term use may cause ulceration of the gastrointestinal mucosa and temporary kidney impairment.

Contraindications: None reported.

Interactions:

- May increase absorption and/or metabolism of some medications (eg. digitalis, bismuth, hypnotics and benzodiazepenes)

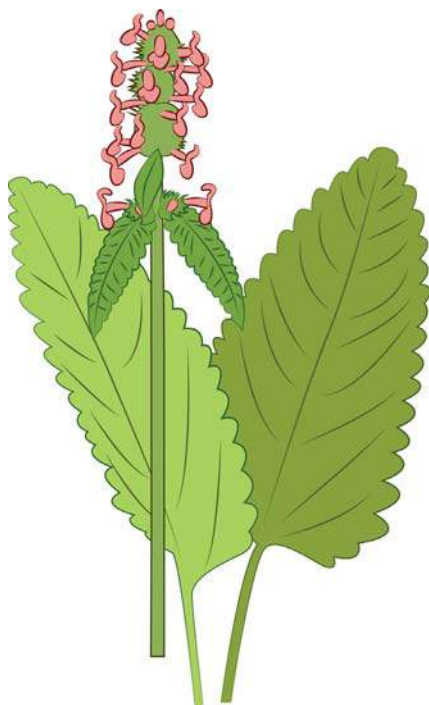
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There are about a hundred species of *Smilax* worldwide, coming from Jamaica, North, South & America as well as China. Significant differences exist among species, although some are very similar. Herbalist Michael Moore states he prefers the spices from the Western United States *S. californica*, which he calls "groovy stuff".



S



Constituents:

- Volatile oil (germacrene, β -caryophyllene & humulene)
- Alkaloids (stachydrine & betonicine)
- Phenylethanoid & Iridoid glycosides (acetoside, aucubin, harpagoside & betonyosides A-F)
- Saponins
- Betaine & Choline
- Tannins

Medicinal Actions:

- Alterative
- Antimicrobial
- Antispasmodic

P Aerial parts & root

Alkaloids

C Phenylethanoid glycosides
Saponins

Alterative

A Antispasmodic & Carminative
Nervine Tonic & Sedative

Tension headaches

I Anxiety & hypertension
Rheumatic complaints

F *Lamiaceae*

- Astringent
- Bitter
- Carminative
- Nervine Tonic & Sedative

Medicinal uses:

- Useful in the treatment of **headaches secondary to muscle tension** and/or hypertension that is worsened by anxiety, or in nervous debility associated with anxiety & tension.
- Will gently tonify and strengthen the nervous system while exerting an overall relaxing effect.
- Astringent, antimicrobial, and alterative actions give it usefulness in treating rheumatism, dysbiosis, and various toxic conditions.

Pharmacology:

- **VO** found to be antibacterial and anti-fungal in vitro against *Aspergillus niger* & *Candida albicans*.
- **Iridoids & phenylethanoid glycosides** have significant antioxidant and anti-inflammatory effects but other active constituents or their synergism are also implicated.

Pharmacy:

- Infusion: 1 tsp/cup TID
- Tincture: (1:5, 45%), 2-6 ml TID. 125 ml weekly max.
- Dried herb: 2-4 g, TID
- Poultice, mouth wash/gargle

Toxicity:

- Fresh leaves are intoxicating.
- High doses can cause diarrhea & vomiting.

Contraindications: None known.

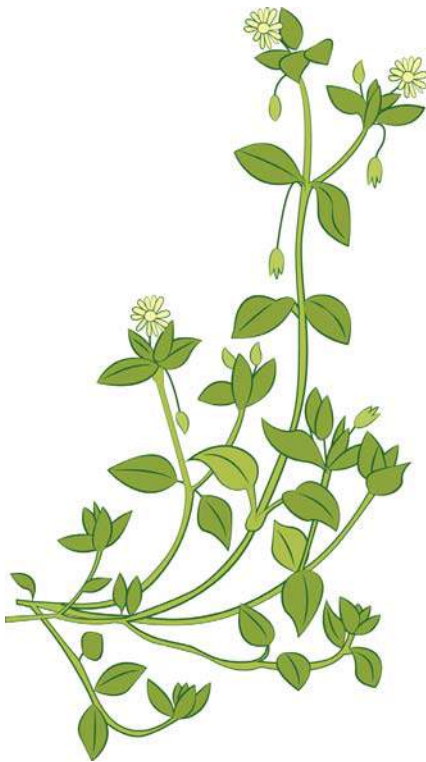
Interactions: None reported.

References:

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Wood betony is a flowering ornamental plant native to Europe, and has a widespread history of use dating back to the Roman empire. During the Middle Ages, it received a reputation for treating mental disorders, and was reported to magically relieve anxiety and depression.





Constituents:

- Triterpenoid saponins & glycosides
- Coumarins & Hydroxycoumarins
- Flavonoids (rutin)
- Phenolic & Carboxylic acids
- Phytosterols
- Nutrients: Vitamin C, B complex & carotenoids
- Fatty acids (GLA)
- Polysaccharides (pentasaccharide & lychnose)
- Proteins (stellamedin A)

P Aerial

Triterpenoid saponins
C Coumarins & Hydroxycoumarins
Flavonoids

Alterative
A Anti-rheumatic
Demulcent, Emollient & Vulnerary

Topically in irritated skin disorders
I (e.g. eczema & urticaria)
Rheumatic complaints & Gout

F *Caryophyllaceae*

Medicinal Actions:

- Alterative
- Antimicrobial
- Anti-rheumatic
- Astringent
- Carminative
- Demulcent, Emollient & Vulnerary
- Diuretic
- Hepatoprotective
- Laxative (mild)

Medicinal uses:

- Has traditionally been used to treat various diseases such as inflammations of the digestive, renal, respiratory and reproductive tracts. It also possesses diuretic, expectorant, anti-asthmatic and is a folk remedy for obesity.

- Is primarily used to **treat irritated skin and soothes severe itchiness**. It also relieves eczema, varicose veins, and urticaria. An infusion of the fresh or dried plant may be added to a bath to soothe skin conditions.
- The emollient properties help reduce inflammation and are useful in rheumatic joint conditions, and also helps encourage tissue repair.
- As an antioxidant displays strong inhibitory actions against xanthine oxidase and thus decreases in the risk of hyperuricemia and gout.

Pharmacology:

- **Triterpenoid saponins** may account for anti-pruritic effects and ability to soothe irritated skin. Also help to increase the effectiveness of bactericides by increasing the permeability of the bacteria cell wall and will solubilize toxins in abscesses and rashes.
- **Flavonoids & polysaccharides** exhibit diverse antiviral activities and have demonstrated potential anti-HBV activity in vitro.
- Polysaccharides have demonstrated hepatoprotective activity, reducing serum levels of transaminases (ALT & AST), alkaline phosphatase, bilirubin, and decreasing inflammation within the liver.
- A novel antiviral protein (stellamedin A) has shown inhibition of HSV-2 replication in vitro and is able to inhibit the proliferation of promyelocytic leukemia HL-60 and colon carcinoma cells.

Pharmacy:

- Infusion: 2 tsp/cup, TID
- Tincture: (1:5, 40%), 2-10 ml TID. 200 ml weekly max.
- Best used fresh as a topical poultice, lotion, ointment or bath

Toxicity:

- In large quantities may cause diarrhea & vomiting
- Rare cases of rashes with topical use have occurred

Contraindications:

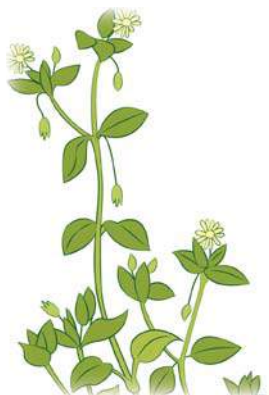
- Known allergy
- Use caution on open wounds

Interactions: None known.

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A famous folk use of Chickweed is an old wife's remedy for weight loss (probably due to its diuretic action), and its fresh tops are delicious boiled or as a greens in salad. It's name comes from the old custom of using the seeds as bird feed.





Constituents:

- Alkaloids (pyrrolizidine or PAs) (mainly root)
- Mucilage
- Tannins
- Phytosterols (sitosterols & stigmasterol)
- Steroidal saponins
- Phenolic acids (caffeic, rosmarinic & chlorogenic)
- Allantoin (mainly root)
- Chlorophyll, Ca, K+, Ph, Si & other trace minerals, vitamins A & C

Medicinal Actions:

- Anti-inflammatory
- Anti-rheumatic
- Astringent
- Connective tissue tonic (cell proliferant)

P Root & Leaves

C Pyrrolizidine alkaloids (mainly root)
Mucilage
Allantoin

A Astringent
Connective tissue tonic (cell proliferant)
Demulcent, Emollient & Vulnerary

I Topical: “knits connective tissues back together” in damage to skin, bones & joints etc.
Internal: GIT & bronchial irritations

F *Boraginaceae*

- Expectorant
- Demulcent. Emollient & Vulnerary
- Hemostatic

Medicinal uses:

- Internal use is indicated in the treatment of diarrhea, dysentery, and inflammation of the GIT, which respond to the demulcent, vulnerary, astringent, anti-hemorrhagic, and anti-inflammatory properties of the plant.
- The astringent action reduces hemorrhage associated with uclers & colitis and excessive mucous from bronchial irritation and irritated coughs.
- External use is well indicated for a variety of conditions such as **sore muscles, bone fractures, sprains, ligament tears and any damage to aching joints.**
- Is known to help “knit connective tissues back together”.

- Note: Comfrey root is much higher in PAs than the leaf, though long-term internal use of either should be cautioned for treatment of any condition.

Pharmacology:

- **Allantoin** promotes wound healing through cell proliferation and is anti-inflammatory
- **Pyrrrolizidine alkaloids** are hepatotoxic and carcinogenic and limit long-term internal use.
- Phenolic acids are anti-inflammatory.
- **Silicic acid** helps preserve elasticity of connective tissue, controls Ca⁺ absorption and is needed for bone and cartilage formation.

NOTE: Young leaves & smaller roots have highest PA content.

Pharmacy:

- Infusion (leaves) 5 g/cup, TID.
- Decoction (root): 5 g/cup, TID.
- Tincture: (1:5, 25%), 2-4 ml TID. 80 ml weekly max.
- Topical: Ointment, Cream, Lotion, Fomentation, Compresses, Poultices, Washes & Baths.
- Note: **Short-term internal dosing** (2-3 weeks on and 2-3 weeks off – repeat as needed). If using for longer than 2 months test liver enzymes and question whether this is the best herb to use.

Toxicity:

- Pyrrrolizidine alkaloids have been shown to cause veno-occlusive disease of the liver (one documented human case and in rats) when taken internally.
- Note: The current debate about whether to use *Symphytum* internally is due to concern over the pyrrrolizidine alkaloids, specifically

the echimidine alkaloid found primarily in the root. Toxicity reports are based on isolated compounds, not on the whole plant usage. The plant has centuries of use with beneficial results.

Contraindications:

- Liver disease, pregnancy & lactation, or in infants.
- Use on dirty skin or deep wounds (surface may heal too fast trapping dirt and pus).

Interactions: Theoretical interaction with antibiotics, fluconazole, fluoxetine, anti-cholesterol medications, and steroids as they compete with liver enzyme required to neutralize toxic compounds.

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S



Constituents:

- Sesquiterpene lactones or Bitter principle (taraxacin & taraxacerin)
- Triterpene steroids (sitosterin, taraxasterol, stigmasterin & phytosterin)
- Phenolic acids
- Flavonoids
- Mucilage
- Polysaccharides (inulin & pectin)
- Vitamins (especially carotenoids)
- Minerals, iron, potassium, silicon, magnesium, zinc & manganese

Medicinal Actions:

- Leaf: Alterative, Anti-inflammatory, Bitter, Diuretic (K+ sparing), Hepatic & Nutritive
- Root: Alterative, Anti-inflammatory, Anti-

P Root & Leaves

Sesquiterpene lactones
C Polysaccharides (inulin)
 Vitamins & Minerals (K+)

Leaf: Bitter, Diuretic (K+ sparing),
A Nutritive
 Root: Alterative & Hepatic

Leaf: Hypertension & Edema
I Root: Hepatobiliary insufficiency,
 inflammatory liver complaints

F Asteraceae

rheumatic, Bitter, Hepatic (choleretic & cholagogue), Immuno-modulator, Laxative & Nutritive

Medicinal uses:

- The leaves are a potassium sparing diuretic, that are not over-stimulating to the kidneys, useful in **edema & hypertension**.
- The root is stimulating to the digestive system, most notably the liver, and is indicated in **any condition of liver and/or gall-bladder inflammation** and stasis including cholelithiasis, metabolic toxicity, and jaundice.
- Is a wonderful alterative for nearly all chronic toxic or inflammatory conditions manifesting within the body such as eczema, acne, arthritis, chronic gastritis and enteritis.

Pharmacology:

- **Sesquiterpene lactones** (also referred to as taraxacin) are a form of flavonoid that create an osmotic diuretic effect and are unique to the plant (mostly in leaf). They also contribute to the bitter compounds that help stimulate digestive secretions & peristalsis, and may help improve fat (including cholesterol) metabolism in the liver.
- **Polysaccharides & Inulin** (mostly in root) activates complement, thus contributing to the anti-inflammatory, & immune-enhancing properties (extracts induce nitric oxide synthase in macrophages)
- **Triterpenoid (taraxasterol)** has exhibited powerful inhibitory effect on Herpes Simplex, Epstein-Barr early antigen and experimental mammary tumours.

Pharmacy:

- Decoction (root): 2-8 g/day
- Infusion (leaf): 4-10 g/day
- Juice of the pureed leaves: up to 20 ml/ day
- Tincture: (1:5, 40%) of root and/or leaf, 3-5 ml TID. 100 ml weekly max.
- Dried herb: 4-10 g TID
- As food or coffee substitute

Toxicity: Generally a very safe herb, however case reports of allergic reactions and anaphylaxis to ingested bee pollen containing dandelion pollen exist.

Contraindications:

- Avoid in known allergy to Asteraceae family.
- Use caution in weak or inflamed digestive organs as it may cause dyspepsia, flatulence, pain, and diarrhea.
- Use caution in biliary obstruction/ inflammation, gallstones, renal disorders (may increase potassium & alter electrolytes).

Interactions:

- May antagonize antacids and quinolones (e.g. ciprofloxacin)
- May have additive effects with diuretics, anti-platelet agents, anti-diabetic agents, steroids and supplemental potassium.

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T



P Flowering Tips

Flavonoids

C Phenolic acids

Volatile oils

Antispasmodic & Carminative

A Hypotensive

Nervine Sedative

Tension headaches & hypertension

I Anxiety with heart palpitations and/or dyspepsia

F *Tiliaceae*

Constituents:

- Flavonoids (Tiliroside: kaempferol & quercetin glycosides)
- Phenolic acids (chlorogenic, caffeic & coumaric)
- Volatile oils (farnesol, eugenol, citronellal, citronellol, limonene, pinene)
- Mucilage (arabino-galactans)
- Tannins

Medicinal Actions:

- Anti-inflammatory
- Antispasmodic & Carminative

- Diaphoretic
- Diuretic
- Expectorant
- Hypotensive
- Immuno-modulator
- Nervine Tonic & Sedative

Medicinal uses:

- As a nervine is indicated in **nervous tension & dyspepsia, anxiety, headaches, and heart palpitations.**
- Is hypotensive (although rarely strong enough on its own to reduce blood pressure) and will reduce hypertension when associated with arteriosclerosis and nervous tension.
- Is also a notable diaphoretic often used in colds and flu.

Pharmacology:

- **Volatile oils** are diuretic, sedative and antispasmodic
- **Flavonoids** are antispasmodic and diaphoretic. Tiliroside appears to be primarily responsible for anxiolytic and hypnotic effects upon the central nervous system via interactions with the serotonergic system.
- Coumaric acid is antispasmodic and diaphoretic

Pharmacy:

- Infusion: 1tsp/cup, TID
- Tincture: (1:5, 25%), 2-4 ml TID. 80 ml weekly max.
- Dried flowers: 2-4 g, TID.

Toxicity:

- Long-term high dosing may have cardio-toxic effects.
- Allergic sensitivity in some individuals.

Contraindications: Use caution in cardiac disorders (theoretical)

Interactions:

- Tea may inhibit iron absorption when taken with food or supplements, however tincture mildly promotes iron absorption.

References:

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Constituents:

- Volatile oil (thujone, sabinene, fenchone) & diterpenoids (beyerene & rimuene)
- Flavonoids (quercetin & amentoflavone)
- Mucilage & Polysaccharides
- Glycoproteins
- Oleo-resin
- Tannins
- Bitter principle (pinipicrin)

T

Medicinal Actions:

- Astringent
- Antimicrobial (Anti-fungal & Antiviral)
- Anti-neoplastic (Cytotoxic)
- Diuretic
- Emmenagogue (Abortifacient)
- Expectorant (stimulating)
- Nervine stimulant
- Rubefacient

P Twigs & Leaves

Volatile Oil (thujone)

C Oleo-resin
Flavonoids

A Antineoplastic
Antimicrobial
Anti-rheumatic

I Topical for warts, viral & fungal
infections
Rheumatic complaints

F Cupressaceae

Medicinal uses:

- Traditionally used in folk medicine for the treatment of rheumatism, amenorrhea, cystitis, and uterine carcinomas.
- Considered a valuable **anti-cancer agent** which will stimulate cell-mediated immunity and decrease pro-inflammatory cytokines, thereby inhibiting metastasis of tumor cells.
- As a diuretic will help treat acute cystitis, BPH, and bed-wetting in children.
- Is used as a steam inhalation for polyps, respiratory tract infections and bronchitis, as an effective lung decongestant.
- Used **topically for warts, fungal & viral skin infections**, herpes, scabies & lice, and as a douche for leucorrhoea.
- External applications are also used for **pain in the muscles & joints** (e.g. arthritis) to improve local blood supply easing pain and stiffness.

Pharmacology:

- **Volatile oils (including thujone)** are anti-inflammatory, antimicrobial & cytotoxic. In high doses is toxic to the nervous system and an abortifacient. Low doses are anti-fungal, anti-microbial, emmenagogue and immunostimulant.
- Anti-proliferative and apoptosis-inducing properties may be due to enhanced the NK cell activity and diterpenoids which induce IL-1, IL-2, IL-3, IL-6, & gamma interferon.
- Polysaccharides are immuno-modulating
- Has demonstrated an ability to increase estradiol and progesterone levels decreasing while luteinizing hormone (LH) and testosterone levels decreased in vivo.
- Flavonoids have been found to cause G2-M phase cell cycle arrest and apoptosis on non-small cell lung carcinoma and mammary carcinogenesis in vivo.

Pharmacy:

- Infusion: 1 tsp/cup, infuse 15 min, TID
- Tincture: (1:5, 90%), 1-3 ml TID. 60 ml weekly max.
- Pulse Dosing Required: One month on, one month off
- Topical uses.

Toxicity:

- Volatile oil contains thujone which is a neurotoxic compound. Use with caution.
- May cause gastroenteritis, headaches, paralysis, decreased coordination, & hallucinations (reversible).

Contraindications:

- Pregnancy & lactation
- Use caution with seizure disorders
- In high doses & long-term use

Interactions:

- Use caution with additive effects if combined with other thujone-containing herbs.

References

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Constituents:

- Volatile oil (thymol, carvacrol, geraniol, borneol, linalool, rosmarinic & cineol)
- Tannins
- Resin & Gums
- Flavonoids

Medicinal Actions:

- Anthelmintic
- Antimicrobial
- Antispasmodic & Carminative
- Astringent
- Expectorant

P Aerial

Volatile oil (thymol & carvacrol)

C Tannins
Flavonoids

A Antimicrobial
Antispasmodic & Carminative
Expectorant

I Dyspepsia
Infectious/inflammatory & spasmodic
GIT, genitourinary & lung complaints

F *Lamiaceae*

Medicinal uses:

- Primary uses are based on antiseptic & anti-bacterial actions combined with the expectorant and **spasmolytic effects within the respiratory, urinary & gastrointestinal tracts.**
- Has been used traditionally in the treatment of bronchitis, asthma and other respiratory diseases.
- For the urinary system, is a stimulating diuretic useful in for cystitis, urethritis and as a general urinary antiseptic.
- For the gastrointestinal system is indicated in dyspepsia, gastritis, flatulence, and for expelling worms and parasites.

Pharmacology:

- **VO (carvacrol & thymol)** increases mucus secretion of the membranes in the lungs and a relaxant effect on smooth muscle

(especially of lungs & digestive tract). Are also strongly disinfectant and analgesic. Carvacrol & thymol also contribute to a general reduction of inflammatory responses

- Antibacterial activity has been demonstrated against several strains of Gram-positive & Gram-negative bacteria including *S. aureus* & *E. Coli* as well as having anti-fungal effects against *Candida*, and anti-viral effects against HSV-2.
- Rosmarinic acid has been shown to inhibit oxidation of LDL and scavenge hydroxyl radicals.
- Note: Many constituents work synergistically to provide its anti-tussive, antispasmodic, and expectorant actions.

Pharmacy:

- Infusion: 1-2 tsp/cup water, TID.
- Tincture: (1:5, 45%), 2-5 ml TID. 100 ml weekly max.
- Topical use of essential oil must be diluted

Toxicity:

- Topical use may cause dermatitis and mucous membrane irritation.
- Internal use of essential oil may cause headache, vomiting, painful diarrhea, tinnitus, kidney damage, dizziness, convulsions, respiratory paralysis and death.

Contraindications:

- Pregnancy (above culinary amounts)
- Internal use of essential oil
- Use caution hypothyroid and acute renal, GIT or GIT inflammation.

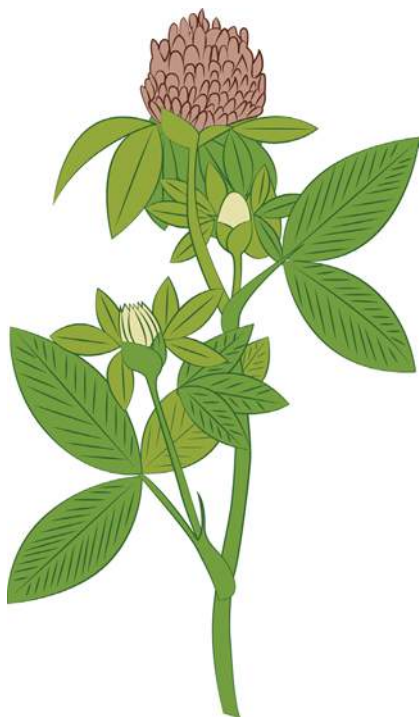
Interactions: None known.

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In TCM, Thyme is considered acrid, slightly bitter, and slightly cold, and enters lung, stomach and liver channels. One of the many advantages of using Thyme is that most people are familiar with the taste already and find it quite tasty!





P Flowerheads

C Isoflavones (formononetin)

Coumarins

Minerals

A Alterative

Nutritive

Phytoestrogenic

I Inflammatory liver & skin conditions

Menstrual & menopausal complaints

F *Fabaceae*

- Nutritive
- Phytoestrogenic

Constituents:

- Isoflavones (biochanin, genistein, daidzein, galactoside & formononetin)
- Flavonoids (quercetin & kaempferol)
- Phenolic glycosides
- Coumarins
- T** • Cyanogenic glycosides
- VO
- Minerals

Medicinal Actions:

- Alterative
- Antispasmodic
- Anti-tumorigenic
- Hepatic
- Nervine sedative

Medicinal uses:

- Traditionally used as a blood cleanser, expectorant, analgesic, antiseptic properties and to treat rheumatic aches.
- Is useful for any chronic condition of toxicity & **enhances the detoxification functions of the liver and especially in the treatment of chronic skin conditions** such as recurrent boils or acne, eczema, and psoriasis.
- Exerts some of the strongest phytoestrogenic effects among medicinal plants and is incredibly valuable **for menopausal women because of phytoestrogenic effects and mineral content**, which may improve bone & cardiovascular health.
- As a lymphatic and anti-tumorigenic is used as a part of anti-cancer treatments both topically and internally.

Pharmacology:

- **Isoflavone (formononetin)** can be converted to daidzein, which in turn can be metabolized to equol by bowel flora. Equol has significantly more estrogenic activity than its precursors, yet is produced to different levels in different people.
- **Isoflavone metabolites (equol, isoequol)** have powerful potential to reduce inflammatory edema and suppress contact hypersensitivity induced by UV radiation.
- **Isoflavones (biochanin, genistein & galactoside)** have mild estrogenic effects and can improve blood lipid profiles, decreasing total cholesterol, LDL & LpA levels.
- Isoflavones have shown an ability to increase bone mineral content & mechanical strength while preventing the rise of serum alkaline phosphatase levels and osteoclast activity. Are also effective in reducing skin aging induced by estrogen deprivation.
- Biochanin may inhibit aromatase activity, and thus inhibit the biosynthesis of estrogens.
- **Genistein and other flavonoids** (quercetin and kaempferol) have strong antioxidant effects and have been shown to be antiproliferative towards breast cancer cells.
- **Genistein** has demonstrated anti-carcinogenic effects in vitro, possibly due to inhibitory effects on protein tyrosinase kinase and angiogenesis & improved endothelium dependent vasodilation via an increase of nitric oxide to endothelin.

Pharmacy:

- Infusion: 2-4 g/cup water TID.
- Tincture: (1:5, 40%), 2-5 ml TID. 100 ml weekly max.
- Topical applications

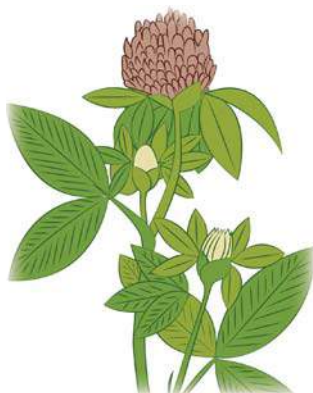
Toxicity: No adverse effects expected within recommended doses.

Contraindications: Use caution in estrogen dependent cancers (theoretical)

Interactions: Theoretical interaction of high doses with anti-platelet agents, hormone replacement therapy and oral contraceptives.

References:

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T



P Fruit (seed)

Mucilage (galactomannan)

C Volatile oil

Steroidal saponins

A Carminative & Anti-spasmodic

Demulcent, Emollient & Vulnerary

Galactagogue

Promote lactiation

I Diabetes & dysglycemia

Inflammation of mucous membranes

F *Fabaceae*

Constituents:

- Mucilage (galactomannan)
- Volatile oil
- Alkaloids (trigonelline, gentianine & carpaine)
- Steroidal saponins (diosgenin, yamogenin, gitogenin & tigogenin)
- Flavonoids (Apigenin, luteolin and kaempferol itexin, isovitexin, orientin, vicenins, quercetin)
- Caffeic acid derivatives (hydroxycinnamic acids)
- Nutrients (Vitamin A, B1, C, Ca, Iron)
- Proteins and free amino acids (lysine, tryptophan, arginine, histadine)

Medicinal Actions:

- Anti-inflammatory
- Aphrodisiac
- Carminative & Anti-spasmodic

- Demulcent/Emollient & Vulnerary

- Emmenagogue

- Expectorant

- Galactagogue

- Hypoglycemic

- Hypotensive

- Phytoestrogenic

Medicinal uses:

- Demonstrates value as a **wound healing and anti-inflammatory** herb in conditions such as skin wounds, boils, sores, fistulas and tumors & can be gargled to ease sore throats.
- **Stimulates milk production in mothers**, for which it is perfectly safe, and has a reputation of stimulating development of the breasts & libido.
- **Modulates changes in blood sugar** levels for insulin-dependent diabetics as well as improved glucose tolerance and improved

serum lipid profiles, while potentiating the secretion of insulin.

Pharmacology:

- **Mucilage** coats mucosa and fiber prevents rises in cholesterol levels
- **Steroidal saponins (Diosgenin)** exert hormone modulating effects
- Amino acid 4-hydroxyisolutidine has a direct action on pancreatic beta-cells, which initiate insulin secretion.
- **Alkaloids (trigonelline)** exert hypoglycemic effects.

Pharmacy:

- Cold infusion: 5 g/cup water, let stand 3 hours, TID
- Decoction: crushed seeds, 1-2 tsp/cup, simmer 20 minutes, drink freely
- Tincture: (1:5, 25%), 2-5 ml TID. 100 ml weekly max.
- Crushed seed: 1-6 g TID

Toxicity:

- Large doses may produce mild digestive upset (diarrhea & flatulence)
- Urine odor may smell of maple syrup and body odour may be curry-like.
- Topical use may cause dermatitis.

Contraindications:

- Use caution in anemia (may reduce iron absorption) and avoid high doses in hypothyroidism.

Interactions:

- Potential additive effects with hypoglycemic agents (e.g. insulin)
- May interfere with the absorption of various supplements & medications (e.g. MAOIs, anti-coagulants) when taken simultaneously.

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Constituents:

- Volatile oil (cineole, pinene, and thymol)
- Flavonoids (Apigenin & pinocembrin)
- Resin
- Tannins
- Starch (6%)
- Bitter compound (damianin)
- Hydroquinones (Arbutin)
- Alkaloids

Medicinal Actions:

- Antimicrobial
- Aphrodisiac
- Nervous system trophorestorative
- Nervine Tonic & Relaxant

P Leaves

Volatile oil
C Flavonoids
 Hydroquinones (Arbutin)

Aphrodisiac
A Nervous system trophorestorative
 Nervine Tonic & Relaxant

Stress, anxiety and/or depressive states
I Low libido & impotence
 PMS (e.g. acne, headaches etc.)

F *Turneraceae*

Medicinal uses:

- An excellent nerve tonic especially in anxiety and/or depression, stress, and a lowered sexual drive. It has a long and wide-spread use as an aphrodisiac and is most indicated in cases of **anxiety or depression that have impotence or low sexual desire as a main manifestation.**
- Can be effective treatment for hormonal imbalance manifesting as premenstrual acne, dysmenorrhea, and headache.
- Is useful in some cases of chronic cystic and renal catarrh by relieving irritation of the urinary mucous membranes.

Pharmacology:

- **Flavonoids (apigenin)** has demonstrated mild sedative, anxiolytic, analgesic, and aphrodisiac activity and act as non-specific inhibitors of nitric oxide pathways.
- Flavonoids arbutin & apigenin have demonstrated cytotoxic effect on cancer

cells and may be gastroprotective through inhibition of lipid peroxidation inhibitory, immuno-modulatory and anti-oxidant mechanisms including modulation of IL-6, IL-10 and TNF- α .

- **VO** are smooth muscle relaxants and are possibly responsible for aphrodisiac effects by irritating urethral mucous membrane.
- Through unknown mechanism may bind to progesterone receptors.
- **Alkaloids** possibly responsible for testosterone effects.
- Phytoestrogenic activity of **apigenin & pinocembrin** have been observed with potential to significantly suppress aromatase activity.

Pharmacy:

- Infusion: 1 tsp/cup water, TID.
- Tincture: (1:5, 60%), 1-2 ml TID. 40 ml weekly max.

Toxicity:

- In high doses may cause GIT disturbance, headache, insomnia, hallucinations, and urethral irritation. One report exists of inducing tetanus-like convulsions.

Contraindications:

- Pregnancy & lactation (above culinary amounts)
- Use caution in acute renal or bladder irritation, hormone-sensitive condition, psychiatric or mood disorder, and in situations where CNS impairment could pose a danger.

Interactions:

- Potential additive effects with anti-hyperglycemics and endocrine agents.
- May interfere with the absorption of various supplements & medications when taken simultaneously.

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T



P Aerial

C Mucilage
Tannins
Pyrrolizidine Alkaloids

A Anti-catarrhal
Expectorant
Demulcent

I Chronic & spasmodic cough (e.g. asthma, bronchitis, emphysema & whooping cough)

F Asteraceae

Medicinal Actions:

- Anti-catarrhal
- Anti-inflammatory
- Expectorant
- Demulcent

Constituents:

- Flavonoids (kaempferol, rutin, hyperoside & isoquercetin)
- Sesquiterpene (tussilagone)
- Phenolic acids (chlorogenic, caffeic, gallic, and ferulic)
- Mucilage & Polysaccharides (inulin)
- Phytosterols (beta-sitosterol & stigmasterol)
- Pyrrolizidine alkaloids
- Tannins
- Phytosterols
- Nutrients (Vitamin C & Zinc)

Medicinal uses:

- Has traditionally been used in the treatment of respiratory disorders such as bronchitis, tuberculosis, and asthma due to potent anti-inflammatory effects.
- As a diffuse expectorant and demulcent is most useful in **debilitated and chronic cough conditions** such as emphysema & silicosis, and in spasmodic coughs, such as that of asthma, chronic or acute bronchitis, and whooping cough.
- It combines well with Lobelia and other lung tonics & antispasmodics, however, its chronic use is limited due to the presence of pyrrolizidine alkaloids.

Pharmacology:

- **Flavonoids (rutin, quercetin & chlorogenic acid) & sesquiterpenoids** are closely related to antitussive and expectorant activities. Have potent anti-inflammatory and antispasmodic effects by inhibiting arachidonic acid metabolism, increasing glutathione (GSH), and the protein level of gamma-glutamylcysteine ligase (gamma-GCL), a key enzyme required for GSH synthesis.
- **Sesquiterpenes (tussilagone)** is a cardiovascular and respiratory stimulant that has shown promise in suppression colon cancer cell proliferation, and in the treatment of neurodegenerative diseases associated with inflammation and/or oxidative stress. Can inhibit the production of nitric oxide (NO), TNF, PGE2, inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) and is thus a valuable compound for modulating inflammatory conditions.
- **Mucilage** is highly demulcent & anti-inflammatory and promotes bronchial secretions while soothing the respiratory tract.

Pharmacy:

- Infusion 1-2 tsp/cup water, 1 cup TID
- Tincture: (1:5, 25%), 2-5 ml TID. 40 ml weekly max.
- Note: Short-term dosing (2-3 weeks on and 2-3 weeks off – repeat as needed).

Toxicity:

- Potential hepatotoxicity & veno-occlusive disease of the liver when taken internally.
- Large doses may cause hypertension, anorexia, lethargy, and GIT upset.

Contraindications: Internal use in liver disease, pregnancy & lactation, or in infants.

Interactions: Theoretical interaction with anti-hypertensive medications.

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T



Constituents:

- Mucilage & Polysaccharides (rhamnose & D-galactose)
- Nutrients (vitamins & minerals)
- Flavonoids (Catechins, taxifolin, kaempferol & quercetin)
- Coumarin (fraxin)

U Medicinal Actions:

- Anti-inflammatory
- Antioxidant
- Demulcent
- Diuretic
- Emollient
- Expectorant
- Laxative (osmotic)
- Nutritive

P Inner bark

C Mucilage & Polysaccharides
Nutrients (vitamins & minerals)

Demulcent, Emollient & Vulnerary
A Laxative (osmotic)
Nutritive

Inflammation of the GIT, genitourinary
I & respiratory tracts
Constipation & Diarrhea

F *Ulmaceae*

Medicinal uses:

- Traditionally used for the treatment of inflammation, ulcers, cancers, and parasites.
- Is especially useful GIT inflammation (e.g. **gastritis, enteritis, colitis, and diarrhea**)
- Through reflex action, it is a respiratory soothing expectorant, especially in **spasmodic coughs and as a urinary soothing diuretic.**
- Used as a soothing food & nutritive in convalescence.
- Will add **bulking and softening effects** to the stool in cases of spastic constipation.

Pharmacology:

- **Mucilage & Polysaccharides** are hypoglycemic, anti-tussive, anti-microbial, soothing & protective to mucous membranes (mouth, throat, GIT, and by reflex action)

the urinary and respiratory tract). Will also stimulate phagocytosis and have anti-inflammatory and immunomodulating effects. As a form of soluble fiber has gentle bulking laxative effects and draws out toxins from the bowels.

- **Flavonoids** have antioxidant and anti-inflammatory effects through reduced expression of iNOS and COX-2 enzymes.

Pharmacy:

- Best taken as cold Infusion: 2-4 g/cup water, infuse overnight; 1 cup TID.
- Tincture: (1:5, 25%), 1-4 ml TID.
- Dried herb: 2-5g QD.
- Gargle, Poultice, Syrup.

Toxicity:

- Very safe (non-toxic) herb & food.
- May cause mild GIT disturbance due to fiber.

Contraindications: None known.

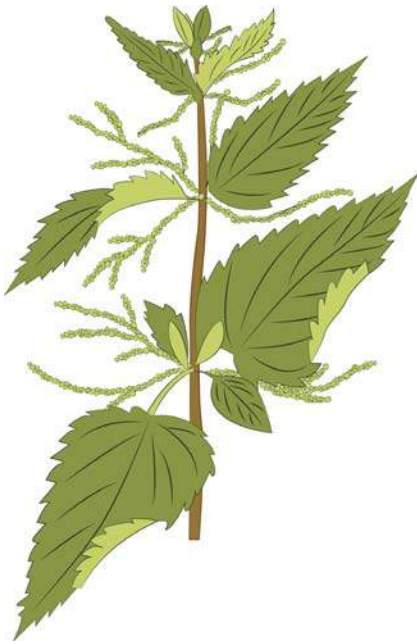
Interactions: May interfere with the absorption of drugs & nutrients if taken simultaneously.

References:

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Slippery elm has long been used as a survival health food. Many pioneer families were known to utilize it as a food when nothing else was available to save themselves from starvation. When ground to a fine powder it can make an excellent flour extender in a variety of recipes and some claim that it has food value equal to that of oatmeal.





P Leaf, Root & Seed

C Leaf: Tannins, Acids (formic), Amines (histamine), Vitamins & Minerals
Root: Tannins, CHOs, Coumarins, Phytosterols

Alterative (Diuretic)
A Anti-rheumatic
Nutritive

Rheumatic complaints (arthritis/gout)
I Edema & congestive heart disease
Root is indicated in BPH

F *Urticaceae*

Constituents:

- Leaf: Acids (carbonic, caffeic, chlorogenic, formic, salicylic, silicic, citric, fumaric, malic, oxalic & succinic), Amines (Ach, betaine, choline, lecithin, histamine & serotonin, Flavonoids (quercetin, kaempferol & rutin, Nutrients (Vitamins A, B, C, K+, Ca+, P silicon), dietary fiber & protein, Chlorophyll, Tannins & Glucoquinones
- Root: Polysaccharides (lectin & lignans, Coumarins, Triterpenes, Phytosterols (beta-sitosterol) & Tannins

Medicinal Actions:

- Anti-lithic (urinary)
- Alterative
- Anti-inflammatory
- Anti-rheumatic
- Astringent

- Diuretic
- Hemostatic
- Hypoglycemic
- Nutritive

Medicinal uses:

- The leaf increases urine output significantly and increases the removal of uric acid while replenishing nutrients & electrolytes, making it useful in the treatment of **edema, arthritis with swollen joints**, and congestive heart disease.
- **The root is indicated in BPH and uterine hemorrhages.** Is specific for nervous eczema and will strengthen and support the whole body. Plays an important role in chronic and degenerative condition of the musculoskeletal system such as RA, OA, gout, joint pain and myalgia.
- Seed is considered a kidney trophorestorative

Pharmacology:

- Amines (Ach, histamine) & leukotrienes in fresh plant may be responsible for stinging sensation of fresh leaf.
- Glycoquinones are hypoglycemic.
- Flavonoids and high K⁺ possibly responsible for diuretic action and excretion of uric acid.
- Glycoproteins bind to and inhibit sex hormone binding globulin.
- Beta-sitosterol has demonstrated 5-alpha reductase inhibition in vitro and may reduce benign prostatic hyperplasia (BPH) induced by testosterone.

Pharmacy:

- Infusion: 2 tsp/cup, TID to 6 times per day
- Tincture: (1:5, 25%), 2-5 ml TID. 100 ml weekly max.
- Decoction of radix: 4-6 g QD for BPH.

Toxicity:

- Hypersensitivity or allergy may occur causing symptoms are pharyngeal constriction and aggravation of sinusitis and rhinitis. Start with low doses! Fresh leaves are caustic due to formic acid in nettle hairs. This reaction is self-limited and may even be used therapeutically to produce a counter-irritant effect.
- Root may cause digestive upset.

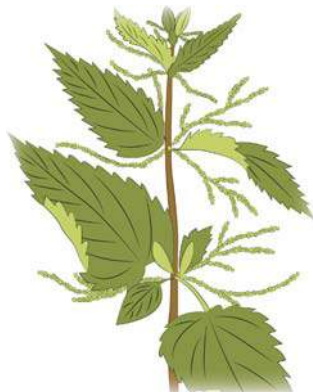
Contraindications: Use caution with edema due to heart or kidney dysfunction, history of bleeding disorder, and monitor electrolyte imbalances especially in the elderly.

Interactions:

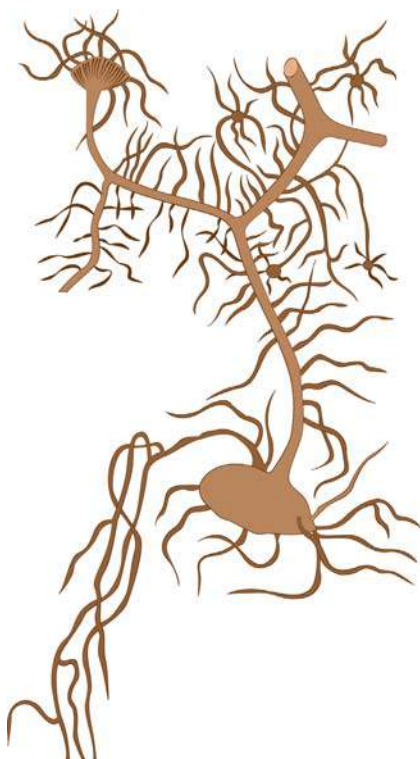
- Leaf: theoretical interactions with CNS depressants, anti-coagulants, diuretics, anti-hypertensives, hypoglycemics, immunosuppressants and diclofenac.
- Root: potential interaction with anti-diabetics and BPH medications.

References:

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U



Constituents:

- Lichen acids (usnic acid and derivatives, protocetraric & diffractaic acid)
- Mucilage & Polysaccharides
- Anthraquinones (endocrocin)
- Fatty acids (oleic, linolenic & arachadonic)
- Amino acids, vitamins (especially carotenoids)

Medicinal Actions:

- Analgesic
- Antimicrobial
- Anti-tumorogenic
- Astringent

P Whole lichen

Lichen acids (usnic acid)
C Mucilage & Polysaccharides
 Anthraquinones

Antimicrobial
A Demulcent & Emollient (Vulnerary)
 Immuno-stimulant & modulator

Local & systemic infections of all
I kinds
 Topical compress for open wounds

F *Usneaceae*

- Emollient & Vulnerary
- Expectorant
- Hemostatic
- Immuno-stimulant & modulator

Medicinal uses:

- Is primarily antibiotic, especially against gram positive, but also gram negative organisms such as: Streptococcus, Staphylococcus, Mycobacterium tuberculosis and other fast-growing species.
- As an immuno enhancer can be used for a variety of **local and systemic infections**.
- Common conditions it is used for are sinusitis, acute/chronic lung & vaginal infections.
- Used topically as a compress for open wounds to stop bleeding and infection.
-

Pharmacology:

- **Lichen acids (usnic acid)** have been shown to exhibit antiviral, antibacterial, antiprotozoal, antiproliferative, anti-inflammatory, analgesic, and anti anti-tumor activity.
- **Usnic acid** disrupts bacterial cell membrane function, inhibits ATP formation and oxidative phosphorylation without effecting human cells. Inhibits and weakens the growth of TB bacillus, pneumonococcus, streptococci & staphylococci
- **Diffractaic acid** is an analgesic.
- **Fatty acids & polysaccharides** have anti-tumor effects.
- **Polysaccharides** are immuno-stimulating.
- **Protocetraric acid** has significant broad spectrum antimicrobial activity.

Pharmacy:

- **Infusion:** 2-3 tsp/cup, TID.
- **Tincture:** (1:6, 90%), 2-5 ml TID. 100 ml weekly max.
- **Capsules:** up to 10 g/day powdered herb
- **External application** as tincture or compress
- **Note:** Dose short term up to 3 weeks.

Toxicity: No adverse effects expected. Topically, may cause skin irritation.

Contraindications: None known.

Interactions:

- Potential synergism between alongside clarithromycin in the treatment of *H. pylori* infection.

References:

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U



P Fruit (berry) & Leaf

Flavonoids (Anthocyanins)

C Tannins
Nutrients (Vitamin B1, C, beta carotene)

Antioxidant

A Astringent
Venous tonic & Vaso-protector

Eye disease (particularly with diabetic involvement)

I Venous insufficiency (e.g. hemorrhoids & varicose veins)

F *Ericaceae*

Constituents:

- Berry: Flavonoids (Anthocyanins), Nutrients (Vitamin B1, C, beta carotene) & Pectin
- Leaf: Tannins & polyphenols (catechin & epicatechin)

Medicinal Actions:

- Anti-inflammatory
- Anti-microbial
- Antioxidant
- Astringent
- Diuretic
- Venous tonic & vaso-protector

Medicinal uses:

- Berry is indicated in **visual disturbances/ poor vision, retinopathy, cataracts, glaucoma and macular degeneration.**
- Antioxidant effects give it usefulness in gout and rheumatoid arthritis.
- Leaf especially indicated for venous insufficiency and capillary fragility as a whole such as **hemorrhoids & varicose veins.**
- Have been used as food and for their high nutritive value in the treatment of scurvy and urinary complaints (including infection and stones).
- The dried berries have been used primarily for their astringent qualities in the treatment of diarrhea and dysentery.
- Decoctions of the leaves have been used in the treatment of diabetes.

Pharmacology:

- **Anthocyanins** are antioxidant and blood vessel tonics which help to stabilize collagen and protect it during inflammation.
- **Tannins** produce astringent effects.
- **Note:** Over 15 different anthocyanosides originate from the five different anthocyanidins found in bilberry.

Pharmacy:

- Fresh berries: 2-4 oz. TID
- Decoction: 1 tbsp/cup water, simmer 10 minutes, TID.
- Tincture: (1:1, 25%), 1-2 ml TID. 40 ml weekly max.

Toxicity:

- Theoretically may cause hypotension, changes in blood sugar and GIT disturbance (e.g. heartburn, nausea, diarrhea).

Contraindications: Use caution in hemorrhagic disorders, hypotension & hypoglycemia.

Interactions:

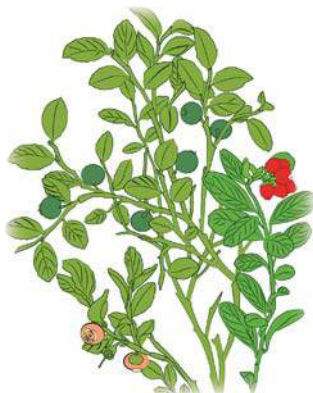
- Potential additive effects with anti-coagulant medications (theoretical).
- May interact with anti-diabetic agents & anti-hypertensives

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Bilberry is a shrubby perennial plant that grows in most temperate climates of the world. It is one of a group of 200 berry producing plants that produce edible fruits. Nearly all of the *Vaccinoides spp.* will produce the blue/purple colored pigment called flavonoids (or anthocyanidins), which are bitter and responsible for much of the plants medicinal effectiveness, particularly in relation to vascular concerns and anti-aging.

Vaccinium myrtillus is found natively in Western Canada and the United States. It is closely related to the widely cultivated North American blueberry *V. corymbosum* & *V. macrocarpon* (cranberry)





Constituents:

- Volatile oil (camphene, borneol)
- Iridoid esters (valepotriates)
- Alkaloids (actinidine, valerine, valerianine & chatinine)
- Sesquiterpene alkaloids (valerenic acid)

V

Medicinal Actions:

- Analgesic
- Antimicrobial
- Bitter (Warming)
- Carminative & Antispasmodic
- Nervine Sedative & Hypnotic (paradoxical stimulant)
- Hypotensive

P Root

Volatile oil

C Iridoid esters (valepotriates)
Alkaloids (valerenic acid)

Analgesic

A Carminative & Antispasmodic
Nervine Sedative & Hypnotic
(paradoxical stimulant)

Anxiety & Insomnia

I Muscle tension & neuralgia (e.g. migraines)

F Valerianaceae

Medicinal uses:

- One of the most relaxing nervines available to herbal medicine. Can be used safely to **reduce tension, anxiety, and overly excitable states**.
- Is an effective aid in **insomnia**, producing a natural healing sleep. As an antispasmodic it has a muscle relaxing effect on smooth and skeletal muscles, and will aid in the relief of cramping, neuralgias and intestinal colic.
- As a pain reliever it is most indicated where that pain is associated with tension, such as in migraines. It carries no risk of dependency and does not effect mental concentration.
- Has significant anti-hypertensive & anti-bronchospastic properties and can be useful in a variety **respiratory & cardiovascular disorders such as asthma & hypertension**.

Pharmacology:

- **Volatile oils** (camphene, borneol) are CNS depressants and therefore responsible

for sedative, hypnotic and antispasmodic actions.

- **Valerenic acid** and its derivatives are sedative and antispasmodic. Bind GABA receptors, release GABA and inhibit GABA degradation causing CNS sedation and smooth & skeletal muscle relaxation.
- **Iridoid valepotriates** (e.g. volvaltrates A and B) are sedative and antispasmodic. Paradoxical stimulant effects may be due to a high sensitivity to valepotriates.
- Alkaloids are hypotensive.

Pharmacy:

- Decoction: 1 tbsp/cup simmered, before bed
- Tincture: (1:5, 60%), 5-10 ml for sedation; 2.5 ml BID to TID for mild anxiety. 60 ml weekly max.
- Dried root capsules standardized to 0.2%-0.8% valerenic acids: 300-500 mg for sedation at bedtime, 150-300 mg for mild anxiety daily
- Note: High doses should be used for anxiety and low doses for sedation. Avoid abrupt discontinuation due to possible withdrawal syndrome.

Toxicity:

- 10% of individuals (notably those with "hot" constitutions) will react paradoxically and actually be stimulated by Valerian causing various CNS disturbances including excitability & agitation, insomnia & headache, and cardiac disturbances.
- Potential for allergic hypersensitivity and GIT upset.

Contraindications:

- Pregnancy & lactation (controversial)
- Avoid in conditions where sedation could pose a danger.
- Use caution in history of cardiovascular disease
- High in arginine, therefore avoid in Herpes simplex virus.

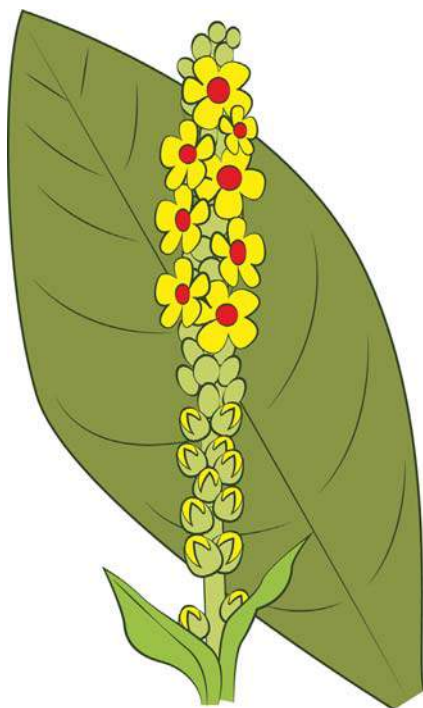
Interactions:

- Use caution with sedative & anti-depressant medications, anti-convulsants and alcohol.

References:

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Constituents:

- Mucilage & polysaccharides
- Flavonoids (acubin)
- Saponins
- Iridoid glycosides
- Volatile oil (flowers)
- Tannins
- Resins (flowers)
- Bitter principle
- Phenylethanoid & lignan glycosides (verbascoside)

Medicinal Actions:

- Anti-inflammatory
- Antimicrobial

P Aerial

Mucilage

C Flavonoids (acubin)
Saponins

Anti-inflammatory

A Demulcent, Emollient & Vulnerary
Expectorant (Respiratory amphoteric)

Cough (wet or dry) with catarrh

I Irritated/inflamed mucous
membranes (e.g. rhinitis, sinusitis)
Topically in otitis media

F *Scrophulariaceae*

- Demulcent & Emollient
- Expectorant (Respiratory amphoteric)
- Vulnerary

Medicinal uses:

- Is **expectorant and anti-spasmodic**, though will demonstrate amphoteric respiratory effects.
- Is indicated for both dry, hoarse coughs or wet, productive coughs with thick expectorate, and also in asthma.
- Topically, may be applied as a poultice to areas of muscle spasms and painful joints.
- Extracts (especially water) have demonstrated antibacterial activity against pneumonia, *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Escherichia coli*.

- The infused flower oil is often used for earaches & otitis media, for its soothing and vulnerary effects.
- Has a strong history of medicinal use for the treatment of tuberculosis and other pulmonary problems, often traditionally used in herbal smoking blends.

Pharmacology:

- **Saponins** draw fluid from the tissues, thereby creating a thinner mucous that is easier to expectorate
- **Mucilage** is anti-inflammatory & responsible for soothing action upon mucous membranes.
- **Flavonoids** (acubin & luteolin) are anti-inflammatory, helping reduce copious mucous production and have showed promising antiproliferative activities, with an effect on inducing apoptosis of lung cancer cells.
- **Iridoid compounds** (e.g. verbathasin A) have potential antiangiogenic & antiproliferative activities.
- Phenylethanoid glycoside (**verbascoside**) has anti-inflammatory properties, reducing the production of superoxide radicals and activity of iNOS.
- **Volatile oils** are antimicrobial, anti-inflammatory & antispasmodic.

Pharmacy:

- Infusion 1-2 tsp/cup water, 1-2 cups TID.
- Tincture: (1:5, 25%), 4-6 ml TID. 125 ml weekly max.
- Topical applications: Poultice & infused oils

Toxicity: None known.

Contraindications: None known.

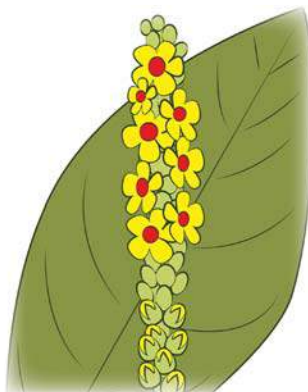
Interactions: None reported.

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3. Escobar, F. et al. Antiviral effect and mode of action of methanolic extract of *Verbascum thapsus* L. on pseudorabies virus (strain RC/79). Nat Prod Res. 2012;26(17):1621-5.
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The soft mucilaginous leaves of Mullein suggested therapeutic uses to traditional healers. Although soothing to the skin and mucosa, when prepared directly to the skin can actually be irritating when used fresh.

The seeds are not used in herbal medicine due to their toxicity.





Constituents:

- Iridoid glycosides (verbenosides: acetoside, verbenalin, hastatoside, verbeofflin & verbanaline)
- Phenylpropanoid glycoside (verbascoside)
- Phytosterols (beta-sitosterol)
- Volatile oil
- Mucilage
- Bitter substances (verbenalol)
- Tannins
- Alkaloids
- Triterpenoids (derivatives of ursolic & oleanolic acids)

P Aerial

Iridoid glycosides (verbenosides)

C Caffeic acid derivatives
Phytosterols

Bitter (Hepatic)

A Carminative & anti-spasmodic
Nervine Tonic

Hepatobiliary insufficiency

I Poor or sluggish digestion
Stress, Anxiety & Depression

F *Verbenaceae*

Medicinal Actions:

- Analgesic (mild)
- Antimicrobial
- Antioxidant
- Bitter (Digestive stimulant)
- Carminative & Anti-spasmodic
- Emmenagogue
- Galactagogue
- Hepatic & Hepatoprotective
- Hypotensive
- Immunomodulator
- Nervine Tonic
- Neuroprotective

Medicinal uses:

- Has remarkable **anti-inflammatory & gastroprotective activity**, acting as a digestive tonic that increases secretion

of saliva, HCl, pancreatic enzymes, and increases intestinal motility.

- Is a **mild choleric and hepatic stimulant**, while toning and strengthen the whole nervous system while relaxing any tension or stress and is useful in irritated and/or depressed states.
- Is used in folk medicine for the treatment of inflammatory disorders, skin burns, edema, abrasions, gastric diseases (e.g. dysentery & enteritis), amenorrhea & depression.
- Exhibits **neuroprotective effects** on cells of the central nervous system, with studies elucidating that phosphorylation of both interferon-inducing protein kinase (PKR) & c-Jun N-terminal kinase (JNK) was attenuated within neurons thus demonstrating potential actions against neuronal loss in Alzheimer's & conditions associated with cognitive declines.

Pharmacology:

- **Iridoid glycosides** (verbenosides) demonstrate antioxidant, anti-lipidemic and immunomodulating effects.
- Verbenalin is hepatoprotective.
- Verbenin is a galactagogue. In low doses acts as a agonist & in high doses acts as an antagonist to sympathetic nerve endings.
- Acetoside has anti-tremor, hypotensive, and analgesic effects.
- **Triterpenoids** exhibit antitumor activity against human hepatoma cells in vitro.

Pharmacy:

- Infusion: 1 tsp/cup water, 1 cup QD – TID
- Tincture: (1:5, 25%), 2-5 ml TID. 100 ml weekly max.

Toxicity:

- High doses may cause GIT upset (e.g. nausea, vomiting), convulsions and stupor.

Contraindications: Pregnancy & lactation (controversial)

Interactions:

- May inhibit iron absorption when taken with food or supplements.
- Theoretical interactions with HRT and blood pressure medications.

References:

1. Calvo, M. et al. Anti-inflammatory activity of leaf extract of *Verbena officinalis* L. *Phytomedicine*. 1998 Dec;5(6):465-7.
2. Casanova, E. et al. Antioxidant and antifungal activity of *Verbena officinalis* L. leaves. *Plant Foods Hum Nutr*. 2008 Sep;63(3):93-7.
3. Cricollo, J. *Medicinal Herbs Quick Reference Guide*. 1st ed. Wellness Trading Post, 2004.
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Constituents:

- Salicylates
- Coumarins (scopoletin & scopaline)
- Resin glycoside (Viburnin)
- Alkaloids (Valerianic acid)
- Proanthocyanidins (Flavonols)
- Tannins & Phenolic acids (cinnamic & benzoic acid derivatives including caffeic, p-coumaric, ferulic acid, gallic, ellagic & syringic)
- Hydroquinone glycosides (arbutin)
- Bitter (viburnin)
- Sesquiterpenes (Viopudial & Viburtinal)

P Dried Bark & Leaves

Salicylates
C Coumarins (scopoletin)
Alkaloids (Valerianic acid)

Anti-inflammatory
A Antispasmodic
Nervine Sedative

Muscle pain & spasm (e.g. dysmenorrhea & asthma)
I Hypertension
Arthritis

F *Caprifolicaceae*

Medicinal Actions:

- Anti-inflammatory
- Antioxidant
- Antispasmodic
- Astringent
- Bitter
- Emmenagogue
- Hypotensive
- Nervine Sedative

Medicinal uses:

- A **skeletal and smooth muscle relaxant** with tissue specificity to the uterus, lungs, and blood vessels.
- It can be used both internally topically to **relieve cramps** (especially menstrual and in uterine & ovarian pain), asthma, and hypertension. Muscle spasms, pain and cramping in any area can benefit from its use including back & leg pain, arthritis and polymyalgia.

Pharmacology:

- **Salicylates** are anti-inflammatory & analgesic
- **Coumarins** (scopoletin & scopoline) are uterine relaxants. Scopoletin being especially antispasmodic.
- Hydroquinone glycosides (**arbutin**) have emmenagogue effects
- **Proanthocyanidins** have demonstrated gastroduodenoprotective effects via an increase in endogenous NO generation, suppression of lipid peroxidation and mobilization of antioxidant activity of the gastroduodenal mucosa in rat models.
- **Sesquiterpenes** (Viopudial) is hypotensive & a smooth muscle antispasmodic.

Pharmacy:

- Decoction: 1 tbsp/cup water, 1-2 cups TID
- Tincture: (1:2; 25%), 1-4 ml TID; for acute up to 5 ml q 1/2 hour or 30 ml q 3-4 h. 80 ml weekly max.
- Powder: 2-4 g TID
- Topical as a liniment or ointment.

Toxicity:

- In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.
- Theoretically Salicylism which is an acute overdose of salicylates can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Contraindications:

- Avoid in children with the flu due to Reye's syndrome (theoretical).
- Those with known hypersensitivity to salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

Interactions:

- Avoid while using aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, anticoagulants, methotrexate, spironolactone, phenytoin, valproate medications.

References:

1. Altun, M. et al. Antioxidant properties of *Viburnum opulus* and *Viburnum lantana* growing in Turkey. *Int J Food Sci Nutr.* 2008 May;59(3):175-80.
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3. Erdogan-Orhan, I. et al. Anti-acetylcholinesterase and antioxidant assets of the major components (salicin, amentoflavone, and chlorogenic acid) and the extracts of *Viburnum opulus* and *Viburnum lantana* and their total phenol and flavonoid contents. *J Med Food.* 2011 Apr;14(4):434-40.
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Constituents:

- Salicylates
- Coumarins (scopoletin & scopoline)
- Flavonoids
- Iridoid glycosides (isovaleric)
- Triterpenes
- Tannins
- Phenolic acids (oxalic, oleanolic & ursolic)

v Medicinal Actions:

- Antispasmodic
- Astringent
- Bitter
- Diuretic
- Hypotensive
- Nervine Sedative
- Uterine tonic

P Dried Bark (cortex)

Salicylates

C Coumarins (scopoletin)
Iridoid glycosides

Antispasmodic

A Hypotensive
Uterine tonic

Hypertension

I Uterine irritation & inflammation (e.g. dysmenorrhea)

Myalgia (topically & internally)

F *Caprifolicaceae*

Medicinal uses:

- Is primarily an **antispasmodic** and is a balancer of hypo or hypertensive states.
- It has a specific use during threatened miscarriage especially with hypertension, and is of great use for **uterine inflammations/irritations** (such as menstrual cramps) and generally as a uterine tonic.
- Can be used for **muscle & leg cramps** and lumbar pain both topically and internally.
- Has been used traditionally as a **spasmolytic, sedative**, and for anti-asthmatic properties.

Pharmacology:

- **Salicylates** are anti-inflammatory & analgesic
- **Coumarins** (scopoletin) are uterine relaxants
- **Iridoid glycosides** are suspected to play a significant role in spasmolytic and uterus-relaxant properties

Pharmacy:

- Decoction: 1 tbsp/cup water, simmer 20 minutes, 1-2 cups TID
- Tincture: (1:5; 60%), 5-10 ml TID. 200 ml weekly max.
- Powder: 2-5 g TID
- Externally as a rub or ointment

Toxicity:

- In high doses salicylic acid has an ototoxic effect by inhibiting prestin, which is the motor protein of the outer hair cells of the inner ear of the mammalian cochlea. It has been known to induce transient hearing loss in zinc-deficient individuals.
- Theoretically Salicylism which is an acute overdose of salicylates can produce toxicity symptoms ranging from mild nausea, vomiting, abdominal pain, lethargy, tinnitus, and dizziness, depending on the dose consumed.

Contraindications:

- Avoid in children with the flu due to Reye's syndrome (theoretical).
- Those with known hypersensitivity to salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.
- Caution with kidney stones due to presence of oxalates in the dried bark, however oxalates are insoluble in water.

Interactions:

- Avoid while using aspirin or other salicylate containing substances, alcohol, barbiturates/ sedatives, NSAIDs, anticoagulants, methotrexate, spironolactone, phenytoin, valproate medications.

References:

1. Crillo, J. Medicinal Herbs Quick Reference Guide. 1st ed. Wellness Trading Post, 2004.
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4. Jarboe, C. et al. 1-methyl 2,3-dibutyl hemimellitate. A novel component of *Viburnum prunifolium*. *J Org Chem.* 1969 Dec;34(12):4202-3.
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6. Wilson, J. *Viburnum Prunifolium*, or Black Haw, in Abortion and Miscarriage. *Br Med J.* 1886 Apr 3;1(1318):640-1.

Cramp bark is a common plant in the central & eastern parts of the United States & Canada. Native Americans employed it often, especially finding it helpful prenatally, and in hemorrhage after childbirth, and included it in a decoction meant to "regulate the heart", and ease against pain throughout the entire body.





Constituents:

- Flavonoids (apigenin, castican, orientin, isovitexin & vitexin)
- Iridoid glycosides (agnuside, aucubin & eustoside)
- Labdane diterpenes (rotundifuran & 6 β ,7 β -diacetoxy-13-hydroxy-labda-8,14-diene)
- Alkaloids (viticin)
- Fatty acids (linoleic)
- Volatile oils (cineole, sabinene, limonene & camphene)

Medicinal Actions:

- Anaphrodisiac
- Antispasmodic
- Emmenagogue
- Galactagogue
- Hormone balancer
- Pituitary adjuvant
- Uterine tonic

P Fruit (Berry)

Flavonoids (vitexin & isovitexin)

C Iridoid glycosides
Alkaloids (viticin)

Antispasmodic

A Hormone balancer
Uterine tonic

I Conditions related to relative progesterone deficiency & estrogen excess (e.g. PMS, menstrual irregularity & infertility)

F *Lamiaceae*

Medicinal uses:

- Traditionally used as a galactagogue & emmenagogue and to 'repress sexual passions'.
- Is most often **used in the treatment of a variety of menstrual disorders** including secondary amenorrhea, oligomenorrhea, menorrhagia, metrorrhagia, cystic hyperplasia of the endometrium, deficient corpus luteum function, and will help normalize shortened luteal phases & correct luteal phase progesterone deficiencies due to latent hyperprolactinaemia, thereby helping promote fertility measures.
- An effective herb for the treatment of **moderate to severe PMS**, especially with symptoms of premenstrual/cyclic acne & mastalgia, fluid retention, anger/irritability & headache.
- Note: **Hyperprolactinaemia** is amongst the most frequent causes for menstrual disorders including corpus luteal insufficiency (which can lead to PMS & progesterone deficiency),

secondary amenorrhoea and premenstrual mastalgia.

- The basic overall indication is a **relative progesterone deficiency, or a relative estrogen excess.**

Pharmacology:

- The biological mechanism by which *Vitex* exerts its therapeutic effects has not been fully elucidated so far. Through synergistic effects *Vitex* appears to stimulate/normalize function of the pituitary gland and the activity of female sex hormones by the ovaries, but has no direct action on the ovaries themselves.
- **Dopaminergic compounds** including **fatty acids** (linoleic) & **labdane diterpenes** (rotundifuran) with affinity for dopamine D2 receptors appear to inhibit prolactin secretion from the anterior pituitary in a dose-dependent manner (with high doses demonstrating greater inhibition), thereby increasing corpus luteum growth & progesterone levels in the body.
- May increase the production of LH & inhibit the production of FSH causing a relative increase of progesterone & decrease of estrogen in women and testosterone in men.
- **Flavonoids** (agnuside, aucubin, casticin) do not show any inhibitory effects on prolactin.
- Note: At low doses prolactin secretion will increase, and at high doses prolactin levels will decrease.

Pharmacy:

- Infusion: 1 tsp/cup, TID
- Tincture: (1:1, 25%), 0.5-2 ml TID. 40 ml weekly max.
- Capsules (standardized to diterpenes): 200 – 500 mg BID.
- Note: may take a few months to see effects.
-

Toxicity:

- In high doses (20 times therapeutic) can inhibit all aspects of anterior pituitary function resulting in decreased pituitary, adrenal and uterine function. Can also decrease libido in both women & men.
- May aggravate pure spasmodic dysmenorrhoea not associated with PMS.
- Potential to cause allergic reactions, feelings of formication, CNS disturbance (dizziness, vertigo, headache), tachycardia, and GIT upset.

Contraindications:

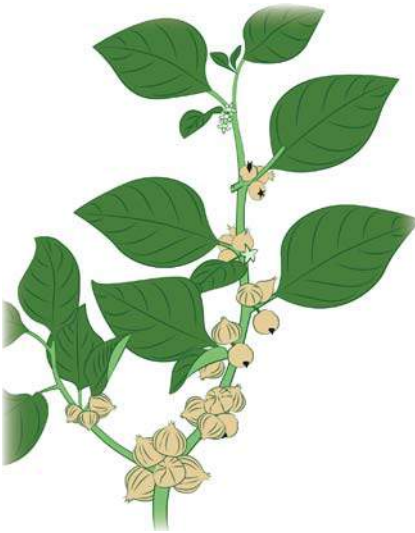
- Pregnancy & lactation (controversial). Use with caution in pregnancy and only in the early stages for insufficient corpus luteal function.
- Use caution in hormone sensitive disorders, estrogen-dependent cancers, seizure disorders, Parkinson's, and history of tachycardia.

Interactions: Theoretical interaction with HRT, OCP, and dopamine receptor agonists or antagonists.

References:

1. Blumenthal, M., Goldberg, A., Brinckmann, J., editors. *Herbal Medicine: Expanded Commission E Monographs*. Austin, TX: American Botanical Council; Boston: Integrative Medicine Communications; 2000.
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P Root

Steroidal saponins & lactones
(withanolides)

C

Tropane Alkaloids
Nutrients (iron)

Adaptogen

A

Immuno-modulator
Nervine Tonic & Sedative

I

Stress due to mental and/or physical
exhaustion (myalgia & neuralgias)
Recovery after illness & during
convalescence

F

Solanaceae

Constituents:

- Steroidal saponins & lactones (withanolides, withaferin A & sitoinsosides)
- Tropane alkaloids (isopelletierine & anaferine)
- Nutrients & Minerals (iron)

Medicinal Actions:

- Adaptogen
- Anaphrodisiac
- Anti-inflammatory
- Antioxidant
- Anti-rheumatic
- Anti-tumorigenic
- Immuno-modulator
- Nervine Tonic & Sedative

Medicinal uses:

- Has traditional use in Indian medicine for centuries to alleviate fatigue and improve general well-being.
- Is used **to restore health to the nervous system and eases stress and mental exhaustion** as it promotes mental clarity and improves memory and stamina.
- As a tonic for the elderly and to promote growth in children and enhance athletic performance, it also promotes recovery after illness and during convalescence and has great use in various chronic diseases involving inflammation.
- It will aid bone degeneration, rheumatism, joint pain and neuralgias and can be used topically for wounds and swelling. Has a protective role in SLE.
- Is a safe anti-inflammatory agent and for various seizure disorders.
- Augments the anti-neoplastic effects of chemotherapeutic agents and appears

to have an immuno-modulatory effect on paclitaxel-induced inhibition of cell proliferation while preventing cancer-related fatigue.

- Also appears to increase radio sensitivity of tumors and thereby enhances the apoptotic effects of radiotherapy, and play a role in chemoprevention of skin malignancies.

Pharmacology:

- **Steroidal lactones (withanolides & withaferins)** are anti-tumor, anti-inflammatory and immuno-stimulant
- Saponins are adaptogenic and immuno-stimulant (will increase WBC/neutrophils)
- **Withaferin A** is the most potent though withanolide also exhibits anti-proliferative effects in skin, lung & colon cancer cell lines by modulating levels of immunoglobulins G, A, and M.
- **Alkaloids** are sedative, decrease blood pressure, reduce heart rate and are antispasmodic
- High **iron** content helps increase RBC, WBC and platelet counts.

Pharmacy:

- Decoction: 3-5g/cup, simmer 20 minutes, QD
- Tincture: (1:2, 25%), 2-5 ml TID. 90 ml weekly max.
- Capsules (Standardized to withanolides): 1-2 g QD
- Note: May take 1 month to see effects.

Toxicity:

- Generally safe, may cause GIT discomfort.

Contraindications:

- Pregnancy & lactation (controversial)
- Use caution in acute sexual anxiety

Interactions:

- Potential additive effects with CNS depressants and may cause drowsiness and reduced coordination.
- Theoretical interactions with anxiety, insomnia, and anti-seizure medications.

References:

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P Bark & Fruit (Berries)

Isoquinoline alkaloids (chelerythrine)

C Volatile oil

Amines

Carminative & Antispasmodic

A Circulatory stimulant

Diaphoretic

I Peripheral circulatory insufficiency associated with rheumatic complaints (e.g. Raynaud's phenomenon)

F Rutaceae

Constituents:

- Isoquinoline alkaloids (chelerythrine & nitidine)
- Furanocoumarins (dipetaline, alloxanthoxyletin, xanthoxyletin & xanthyletin)
- Volatile oil
- Amines
- Lignans (sesamin & asarinin)
- Resins
- Tannins

Medicinal Actions:

- Alterative
- Analgesic
- Anti-microbial (Anti-fungal)
- Anti-rheumatic
- Bitter

- Carminative & Antispasmodic
- Circulatory stimulant
- Diaphoretic
- Hepatic
- Lymphatic
- Rubefacient

Medicinal uses:

- May be used in a similar way to cayenne although slower in its action.
- Can be used in many chronic conditions such as rheumatism and skin diseases.
- Will promote blood flow to the periphery and joints and **is specific for peripheral circulatory insufficiency associated with rheumatic symptoms**. Any sign of poor circulation can benefit from its use.
- Externally it can be used as stimulating liniment.

- Due to its stimulating effect upon the lymphatic system, circulation and mucous membranes it will have a role in the holistic treatment of many conditions.

Pharmacology:

- Little is generally known regarding pharmacodynamics
- **Alkaloids (e.g. chelerythrine)** are anti-inflammatory, anti-microbial, and potentiates analgesic effects of morphine
- Furanocoumarins may be responsible for anti-fungal effects

Pharmacy:

- Dried bark: 1-3g, TID
- Dried berries: 1-5g TID
- Decoction: 1 tsp/cup, simmer 20 min, TID
- Tincture: (1:5, 60%), 2-4 ml TID. 80 ml weekly max.

Toxicity:

- No adverse effects expected within recommended doses.

Contraindications:

- Use caution in acute inflammatory conditions of the stomach.

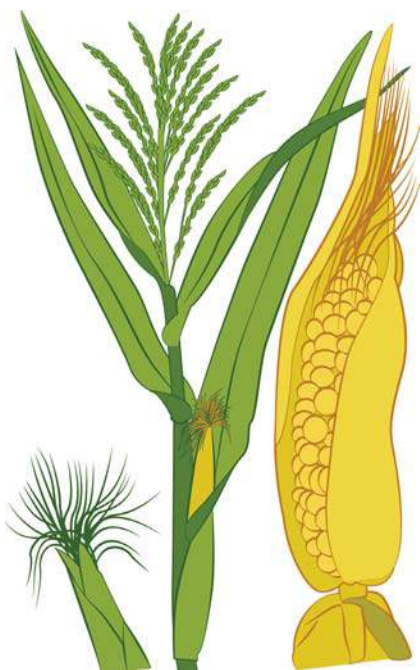
Interactions:

- Theoretical additive effects with anticoagulants and cardiac glycosides.

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- P** Stigmas & styles
- C** Mucilage & polysaccharides
Tannins
Allantoin
- A** Anti-lithic
Demulcent & Vulnerary
Diuretic
- I** Irritation & inflammation of the genitourinary tract (e.g. cystitis, prostatitis & kidney stones)
Symptoms of BPH (urinary retention)
- F** *Poaceae*

Constituents:

- Mucilage
- Flavonoids (Isoflavone: formononetin)
- Amines
- Fixed oils (glycerides of linolenic, oleic, palmitic, stearic acids)
- Tannins
- Allantoin
- Nutrients (Vitamin C, K, Mg)
- Saponins
- Bitter glycosides (hirsutrin)
- Phytosterols
- Gums & resins
- Alkaloids
- Volatile oil

Medicinal Actions:

- Alterative
- Anti-inflammatory
- Anti-lithic
- Cholagogue
- Demulcent
- Diuretic
- Vulnerary

Medicinal uses:

- A soothing diuretic helpful in **any irritation or inflammation of the urinary system.**
- Is used for renal problems in children (eg. enuresis, infection) and as a urinary diuretic, uricosuric & demulcent combined with other herbs in the treatment of cystitis, urethritis, prostatitis, urinary retention and kidney or urinary stones/gravel.

Pharmacology:

- **Mucilage** is demulcent & vulnerary.
- **Tannins** are astringent.
- **Allantoin** is a potent connective tissue healer.
- Isoflavone (formononetin) is highly antioxidant.
- **Glycosides (hirsutrin)** has demonstrated inhibition of galactitol formation in rat lens & erythrocytes and may effectively prevent osmotic stress in hyperglycemia, thus being a potential therapeutic agent against diabetes complications.

Pharmacy:

- Infusion: 3-4 tsp/cup, infuse 15 min, TID. 15
- Tincture: (1:5, 25%), 5-10 ml TID. 250 ml weekly max.
- Dried parts: 4-8 g, TID.
- As poultice or food (kernels)
- Note: best given as infusion.

Toxicity:

- Long-term & excessive use may cause hypokalemia.
- Potential for allergic hypersensitivity reactions & GIT upset.

Contraindications: None known.

Interactions:

- Theoretical interactions with hypoglycemic and anti-hypertensive medications.

References:

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Constituents:

- Volatile oil (zingiberene & b-bisabolene)
- Sesquiterpenes (α -turmerone & β -turmerone, & α -zingiberene) & terpene synthases (germacrene, bisabolene, humulene & eudesmol)
- Oleo-resins (gingerols & shogaols)
- Starch, proteins, lipids, nutrients & amino acids

Medicinal Actions:

- Anti-emetic
- Anti-inflammatory
- Antioxidant
- Antimicrobial
- Antispasmodic & Carminative
- Anti-thrombotic (Anti-platelet)
- Cardiotonic
- Diaphoretic
- Hepatic (Choleretic & Cholagogue) & Hepatoprotective

P Rhizome

Volatile oil (zingiberene)

C Sesquiterpenes
Oleo-resins (gingerols & shogaols)

Antioxidant & Anti-inflammatory
A Antispasmodic & Carminative
Peripheral circulatory stimulant

Rheumatic conditions (arthritis & myalgia)
I Nausea & digestive complaints (e.g. dyspepsia, gas & bloating)

F Zingiberaceae

- Hypolipidemic
- Peripheral circulatory stimulant (Warming)
- Rubefacient

Medicinal uses:

- Increases the flow of saliva and is a stimulating **tonic for the digestive system**.
- Reduces cramping, gas and nausea, and is indicated for motion sickness and to **reduce nausea & vomiting in pregnancy & chemotherapy**.
- Increases the peripheral circulation and detoxifies especially in cases of **rheumatism**. Can be used topically for inflammatory conditions such as RA, OA, bursitis and muscle sprains.

Pharmacology:

- **Oleo resins** (Gingerols mainly in fresh root) increase uptake of calcium by the myocardium and enhance the force of contractions. Also hepatoprotective, anti-inflammatory, antioxidant, antiseptic, and promote gastric secretions.

- **Gingerols & shogaols** modulate several signaling molecules like NF- κ B, TNF- α , COX-2, cyclin D1, and other cell growth regulatory proteins showing evidence for chemopreventive & chemotherapeutic potential. They also demonstrate substance P and acetylcholine receptor antagonism, anti-inflammatory properties, and modulation of cellular redox signaling, vasopressin release, gastrointestinal motility, & gastric emptying rate.
- **Volatile oils (zingiberene & b-bisabolene)** are anti-cholesterol, antioxidant, analgesic, rubefacient and anti-spasmodic. Inhibits both platelet aggregation and prostaglandins & leukotrienes associated with inflammation.
- **Sesquiterpenoids (α -turmerone & β -turmerone, & α -zingiberene)** inhibit proliferation of cancer cells and also enhance the anti-proliferative effect of radiation therapy. Studies demonstrate that they mediate apoptosis by activating p53 having anticancer, antiulcer, and antioxidant properties.

Pharmacy:

- Infusion: 1g/cup, TID
- Tincture: (1:5, 90%) 1.5 – 3 ml TID. 60 ml weekly max.
- Dry herb: 1-10 g in divided doses (start low and gradually increase the dosage)
- Fresh herb: 5 g fresh QD
- Topical as compress, cough syrup or candied.

Toxicity:

- No adverse effects expected with recommended dosages.
- Best taken with food as high doses can cause heartburn, and GIT upset.
- Topically may cause contact dermatitis and photosensitivity.

Contraindications:

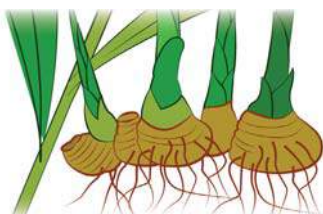
- Use caution in those with sensitive stomachs as will not always tolerate, and especially with ulcers, GERD, gallstones, kidney disease, bleeding disorders and tendency to hemorrhage. Avoid operatively.
- Pregnancy & lactation about culinary amounts (controversial)

Interactions:

- Potentially increases absorption of all drugs and reduces absorption of iron and fat-soluble vitamins.
- Additive effects with anticoagulants due to antiplatelet activity (theoretical)
- Theoretical interactions with anti-arrhythmics, anti-diabetic agents, anti-hypertensives, and sedatives.

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Aconitum napellus

Safety/Toxicity: SSX: N/V/D, tingling or burning followed by numbness of the mouth, throat, and hands; dizziness, restlessness, loss of speech control; intense headache; pinpoint pupils, blurred vision; slow and weak pulse; hypotension; irregular heartbeat and breathing; chest pain, sweating, patient is cold and cannot stand; face is pale, extreme anxiety, muscular weakness, convulsion and death due to respiratory failure.

Contraindications: Internal Use

Max Weekly Dosing: (1:10, 1.3%), Topical Use only

(may cause graft rejection) Use caution in autoimmune disease, hypotension, hypoglycemia, bradycardia, electrolyte/water imbalances, growth hormone and inflammatory skin disorders.

Max Weekly Dosing: 60 ml (1:2, 25%)

Aesculus hippocastanum

Safety/Toxicity: SSx: nausea, GIT upset & reflux. Aescin has hemolytic properties, though is minimal within therapeutic doses.

Contraindications: Known allergy, high or long-term doses, children under 4, anticoagulant therapy (theoretical), acute kidney inflammation, gastric ulcer, topical on broken or ulcerated skin (due to irritant effects of saponins), IM injection of aescin. Use caution in bleeding disorders due to inhibition of platelet aggregation activity

Max Weekly Dosing: 80 ml (1:5, 40%), Pulse-dosing required

Atropa belladonna

Safety/Toxicity: First dry mouth & eyes, then flushing, skin hot and dry, mydriasis, increased respiratory rate, pulse rate & blood pressure, palpitations, uncoordinated movements, incoherent speech, memory disturbed, disorientation, urinary urgency, difficult urination, eye pain, blurred vision, sensitivity to light, dysphagia, great thirst, N/V/D, restlessness, and confusion. Later depressed cerebral & neural activity, stupor, circulatory collapse, coma & death from respiratory paralysis.

Contraindications: Pregnancy & Lactation, children <12 L/T Use

Max Weekly Dosing: 10 ml (1:10, 45%)

Baptisia tinctoria

Safety/Toxicity: High doses may cause N/V, anorexia, hyper-salivation, tachypnea, tachycardia, & respiratory paralysis.

Contraindications: Pregnancy & Lactation L/T Use

Max Weekly Dosing: 50 ml, (1:5, 60%)

Apium graveolens

Safety/Toxicity: Use caution in hypertension & acute kidney conditions. May cause photosensitivity with long-term use.

Contraindications: Pregnancy & Lactation

Max Weekly Dosing: 60 ml (1:2, 60%)

Berberis aquifolium

Safety/Toxicity: Intestinal or vaginal dysbiosis in extreme doses (theoretical)

Contraindications: Pregnancy & Lactation L/T Use

Max Weekly Dosing: 50 ml (1:2, 25%)

Arctostaphylos uva-ursi

Safety/Toxicity: High doses are mutagenic & hepatotoxic.

SSx: tinnitus, N/V, SOB, cyanosis, convulsions & delirium.

Contraindications: Pregnancy & Lactation LIV/KID disease L/T Use

Max Weekly Dosing: 60 ml (1:2, 45%)

Borago officinalis

Safety/Toxicity: High doses are hepatotoxic.

Contraindications: Pregnancy & Lactation, children <12 L/T Use

LIV/KID disease

Max Weekly Dosing: 100 ml (1:5, 25%)

Arnica montana

Safety/Toxicity: SSx: gastroenteritis, allergic reaction (edematous dermatitis), muscle paralysis, and with increasing dosage cardiac arrest and death.

Contraindications: Internal use Topical use over broken skin. Known allergy to Asteraceae family

Max Weekly Dosing: (1:10), Topical Use only

Brassica nigra/alba

Safety/Toxicity: Topical applications left on too long may cause vesication, skin ulceration, necrosis & scarring

Contraindications: Topical use over circulatory damage or varicose veins

Max Weekly Dosing: Culinary or topical use only

Artemisia absinthium

Safety/Toxicity: Neurotoxic in high doses SSx: gastroenteritis, paralysis, decreased coordination, & hallucinations (reversible)

Contraindications: Pregnancy & Lactation Known allergy to Asteraceae family L/T Use Gastric/Peptic Ulcers Seizure disorders

Max Weekly Dosing: 20 ml (1:5, 45%),

Bryonia alba/dioica

Safety/Toxicity: SSx: gastroenteritis, N/V/D, cardiac depression, mydriasis, headache, dizziness, delirium, cold perspiration & death.

Contraindications: Pregnancy & Lactation Use caution in acute GIT disorders

Max Weekly Dosing: 10 ml (1:10, 60%)

Artemisia vulgaris

Safety/Toxicity: Neurotoxic in high doses

Contraindications: Pregnancy & Lactation Known allergy to Asteraceae family L/T Use

Max Weekly Dosing: 40 ml (1:1, 25%)

Camellia sinensis

Safety/Toxicity: SSx of caffeine toxicity: GIT upset, insomnia, agitation, palpitations, nervousness, irritability, and hypertensive crisis in some patients.

Contraindications: Pregnancy & Lactation, children <12 LIV disease or cardiac arrhythmias. Use caution in anemia or risk of pancreatic cancer.

Max Weekly Dosing: 100 ml (1:2, 40%)

Astragalus membranaceus

Safety/Toxicity: None expected within recommended doses.

May cause GIT upset

Contraindications: Pregnancy & Lactation Spleen transplant



Capsicum frutescens/annuum

Safety/Toxicity: Internal SSx: heartburn, anal burning, and gastric erosions, GIT upset, and diarrhea. May cause transient increase in heart rate and blood pressure. Topical SSx: burning, stinging, erythema, heat, pain, and with prolonged use may cause permanent loss of sensory nerve function in the area of application.

Contraindications: Internal: ulcerations and inflammations of the GIT, acute diarrhea, and severe hypertension. During pregnancy doses should not exceed normal dietary levels, and caution should be used during lactation. External: application to eyes and/or mucosal membranes. Avoid in allergy to Solanaceae family

Max Weekly Dosing: 3 ml (1:5, 25%)

Cassia angustifolia

Safety/Toxicity: SSx: acute intestinal pain & cramping. Recurrent use can lead to electrolyte imbalances (hypokalemia), dehydration, and muscle & kidney destruction (hematuria & albuminuria), and may predispose to colon cancer (mutagenic)

Contraindications: Pregnancy & Lactation L/T Use (> 10 days), intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.

Max Weekly Dosing: 40 ml (1:1, 25%), 14 g dried herb

Centella asiatica

Safety/Toxicity: SSx: GIT upset, itchiness, contact dermatitis, sedation, headaches, and photosensitization. Carcinogenic concerns if used long term topically. Hepatotoxic?

Contraindications: Pregnancy & Lactation Allergic sensitivity in some patients. LIV disease

Max Weekly Dosing: 40 ml (1:2, 45%)

Chamaelirium luteum

Safety/Toxicity: In large doses will cause N/V and is a cardiac poison

Contraindications: Avoid in early pregnancy (controversial)

Max Weekly Dosing: 40 ml (1:5, 45%)

Coffea arabica

Safety/Toxicity: SSx of caffeine toxicity: GIT upset, insomnia, agitation, palpitations, nervousness, irritability, and hypertensive crisis in some patients.

Contraindications: Pregnancy & Lactation, children <12 Use caution in KID/LIV disease or cardiac arrhythmias. Use caution in anemia or risk of pancreatic cancer.

Max Weekly Dosing: 100 ml (1:2, 40%)

Commiphora molmol

Safety/Toxicity: SSx: tachycardia, gastric burning, diaphoresis, vomiting, and catharsis.

Contraindications: Pregnancy & Lactation Excessive uterine bleeding

Max Weekly Dosing: 40 ml (1:5, 90%)

Convallaria majalis

Safety/Toxicity: SSx: N/V/D, catharsis, cardiac arrhythmias, hypertension, restlessness, trembling, mental confusion, extreme weakness, depression, collapse of circulation, and death.

Contraindications: Use caution in HTN

Max Weekly Dosing: 20 ml (1:5, 40%)

Curcuma longa

Safety/Toxicity: SSx: Skin rash, photosensitivity, and GIT upset

Contraindications: Use caution with biliary obstruction, gallstones or stomach hyperacidity/stomach ulcer.

Max Weekly Dosing: 100 ml (1:1, 45%)

Cytisus scoparius

Safety/Toxicity: SSx: impaired vision, nausea, vomiting, profuse sweating, dizziness, headaches, numbness and tingling of hands and feet. Overdose may cause hypertensive crisis, uterine contractions, respiratory arrest and death.

Contraindications: Pregnancy & Lactation

Max Weekly Dosing: 20 ml (1:5, 45%)

Eleutherococcus senticosus

Safety/Toxicity: SSx: palpitations, insomnia, hypertension and tachycardia.

Contraindications: Avoid in children and those that are nervous, tense, manic or overly energetic. Use caution in autoimmune disease due to Immunostimulant effects.

Max Weekly Dosing: 55 ml (1:2, 40%)

Ephedra sinica

Safety/Toxicity: SSx: increased blood pressure, cardiac arrhythmias, insomnia, headaches, low appetite, anxiety, restlessness, tremors, tachycardia, nausea & vomiting, dependency, and death from cardiac toxicity.

Contraindications: Pregnancy, Lactation, and in children Use caution with hypertension, heart disease, glaucoma, anxiety, diabetes, hyperthyroid, prostate cancer, liver and/or kidney disease.

Max Weekly Dosing: 50 ml (1:5, 40%)

Equisteum arvense

Safety/Toxicity: Long-term use (> 1 month) may cause kidney and/or heart damage and result in tissue irritation and consequent inflammation.

Contraindications: Use with caution in edema that is the result of impaired kidney and/or cardiac function, prostate cancer, and children < 2 L/T Use

Max Weekly Dosing: 40 ml (1:2, 25%)

Filipendula ulmaria

Safety/Toxicity: Potential ototoxic effect by inhibiting prestin, inducing transient hearing loss in zinc-deficient individuals.

Salicylism toxicity symptoms: mild N/V, abdominal pain, lethargy, tinnitus, and dizziness.

Contraindications: Avoid in children with the flu due to Reye's syndrome (theoretical). Those with known hypersensitivity to aspirin or salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm

Max Weekly Dosing: 40 ml (1:2, 60%)

Fucus vesiculosus

Safety/Toxicity: SSx: GIT upset, changes in urination, bleeding time, blood pressure, and menstruation. Iodine hypersensitivity reaction may include rash, angioedema, fever, and arthralgia.

Contraindications: Pregnancy & Lactation Excessive thyroid activity (hyperthyroidism) Known allergy to seaweeds.

Max Weekly Dosing: 125 ml (1:5, 45%)

Gaultheria procumbens

Safety/Toxicity: Large internal doses of essential oil have caused death by producing inflammation of the stomach.
Contraindications: Pregnancy & Lactation
Max Weekly Dosing: 60 ml (1:5, 40%)

Gelsemium sempervirens

Safety/Toxicity: SSx: strabismus with double vision and ptosis, muscular weakness, giddiness, convulsions, sweating, slowed, shallow and labored respiration, dizziness, diminished pulse, lowered temperature and blood pressure, drowsiness but easily aroused, intense abdominal cramps, paralysis, death from respiratory and cardiac failure.
Contraindications: Pregnancy & Lactation Use caution in poor circulation, a weak heart or CVD.
Max Weekly Dosing: 5 ml (1:5, 60%)

Gentiana lutea

Safety/Toxicity: SSx: GIT upset, N/V, and bounding pulse with headache.
Contraindications: Pregnancy & Lactation Use caution in excess HCL production and in weak constitutions with nervous system irritability.
Max Weekly Dosing: 60 ml (1:5, 40%)

Ginkgo biloba

Safety/Toxicity: Hypersensitivity reactions to fruits (allergic dermatitis) may cause dry mouth, and sleep disturbance. Raw or fresh leaf may cause GIT discomfort & dizziness. Fruit/nut consumption: erythema, edema, vesicles, and severe GIT irritation.
Contraindications: Use caution with anticoagulant or antiplatelet medication, in cases of excessive bleeding, or within 14 days prior to surgery. Avoid if on anti-convulsants or TCAs and with history of bleeding or seizure disorder. Known hypersensitivity.
Max Weekly Dosing: 80 ml (1:5, 25%)

Glycyrrhiza glabra

Safety/Toxicity: SSx: GIT upset, edema, and temporary visual disturbance. Long-term high doses may reduce pituitary function and basal metabolic rate, and cause headache, seizures, arrhythmia, amenorrhea, and gynecostasia. Pseudoheraldosteronism may manifest as suppression of renin-angiotensin-aldosterone axis, cardiac arrest, CHF, edema, hypokalemia, and HTN.
Contraindications: Use with caution in autoimmune disease, anemia, hypertension, and cardiovascular disorders, edema associated with heart failure, liver problems, kidney insufficiency, hypokalemia, hypothyroidism, fibrocystic breasts, male infertility or erectile dysfunction. Pregnancy, lactation, and when on dialysis.
Max Weekly Dosing: 125 ml (1:1, 40%)

Guaicum officinalis

Safety/Toxicity: SSx: GIT upset
Contraindications: Pregnancy, lactation & kidney stones. Use caution with gastritis & peptic ulcers, and in allergic & inflammatory conditions.
Max Weekly Dosing: 80 ml (1:5, 90%)

Hamamelis virginicus

Safety/Toxicity: SSx: GIT upset Caustic & Hepatotoxic
Contraindications: Internal Use
Max Weekly Dosing: Topical use only

Harpagophytum procumbens

Safety/Toxicity: SSx: transient mild GIT disturbances (eg. diarrhea & flatulence), frontal headaches, conjunctivitis, tinnitus, tachycardia, and allergic hypersensitivity
Contraindications: Use caution with anxiety, peptic ulcers, gallstones, history of arrhythmia, bleeding disorder, CHF, HTN, and heart disease. Known allergy
Pregnancy & Lactation
Max Weekly Dosing: 80 ml (1:2, 40%)

Humulus lupulus

Safety/Toxicity: SSx: drowsiness
Contraindications: Depression (may potentiate symptoms). Use caution depending on occupation due to sedative/hypnotic effects.
Max Weekly Dosing: 40 ml (1:5, 60%)

Hydrastis canadensis

Safety/Toxicity: Long-term dosing can cause dysbiosis (kill "good" & "bad" bacteria). High dose berberine can cause flu-like symptoms, stomach upset, dizziness, dyspnea, increased respiratory rate, hypotension, nephritis, nervous issues, depression, convulsions & paralysis and may be fatal. May cause photo toxicity and local anesthetic action when applied topically, and seizure in toxic doses.
Contraindications: Pregnancy & lactation, and in children Use caution with hyper/hypotension, hypoglycemia, history of bleeding disorders, CHF, arrhythmia, acute inflammatory conditions (especially of GIT)
Max Weekly Dosing: 20 ml (1:5, 60%)

Hyoscyamus niger

Safety/Toxicity: First sign of toxicity is dry mouth & eyes.
Acute: Facial dryness, nausea, increased pulse rate, vertigo, dull headache, dilated pupils, muscular weakness, reduced peristalsis, tachycardia, paralysis, delirium and hallucinations, coma, spasms, cramps, convulsions, rapid pulse, salivation, and death. **Chronic:** macular rash (dry & pruritic)
Contraindications: Pregnancy & lactation.
Max Weekly Dosing: 10 ml (1:10, 45%)

Hypericum perforatum

Safety/Toxicity: Serotonin syndrome symptoms (eg. Agitation, HTN, delirium, sweating, increased heart rate, and weakness). Photosensitivity can occur in susceptible individuals. SSx: GIT irritations, allergic skin reactions, tiredness and restlessness, bradycardia, palpitations, alterations in ACTH, TSH and glucose metabolism. Sudden d/s may result in adverse reactions.
Contraindications: Use caution with MAOs, SSRIs, narcotics & reserpine, history of mania, bleeding disorder, diabetes, HTN, liver disease, seizure disorder, and thyroid disease. **Pregnancy & lactation** Allergic reaction to Asteraceae family
Max Weekly Dosing: 80 ml (1:5, 40%)

Iris versicolor

Safety/Toxicity: Fresh root can cause burning sensation in the mouth and throat, N/V/D, abdominal burning, difficult breathing, colic and rectal heat, and gastroenteritis resulting in death.
Contraindications: Pregnancy & lactation Use caution in weakened constitutions
Max Weekly Dosing: 60 ml (1:5, 40%)



Juniperus communis

Safety/Toxicity: Long-term use may irritate the kidneys (albuminuria) and may be neurotoxic. Topically may cause burning, erythema, and inflammation.

Contraindications: Acute kidney infections or disease (nephritis & nephrosis) Pregnancy & lactation
Max Weekly Dosing: 40 ml (1:5, 40%)

Juglans nigra

Safety/Toxicity: SSx: N/V/D, watery catharsis, allergic reactions and genetic mutation with long-term use. External application may cause dermatitis

Contraindications: Pregnancy & lactation L/T use Chronic GIT conditions
Max Weekly Dosing: 15 ml (1:5, 25%)

Lactuca virosa

Safety/Toxicity: SSx: stupor, depressed breathing and overdose can cause coma/death.

Contraindications: Pregnancy & lactation Allergic reaction to Asteraceae family
Max Weekly Dosing: 60 ml (1:1, 25%)

Lobelia inflata

Safety/Toxicity: SSx: burning esophagus, salivation, N/V, weakness, stupor, tremors, paralysis, tachypnea, hypothermia, rapid pulse, pinpoint pupils, unconsciousness, convulsions, coma, exhaustion, sweating, prostration, miosis, and death.

Contraindications: Pregnancy & lactation Use caution in dyspnea (especially when due to a weakened heart or valvular incompetence), anxiety, shock or paralysis; heart disease, pneumonia or pleural effusion, hypertension, low vitality, or tobacco sensitivity.
Max Weekly Dosing: 35 ml (1:8, 60%)

Medicago sativa

Safety/Toxicity: Allergic reactions such as dermatitis and potential for autoimmune aggravations. May cause GIT upset (abdominal pain and diarrhea), stimulate thyroid activity, and have hypoglycemic effects.

Contraindications: In SLE may experience potential exacerbation from chronic consumption. Theoretically to be avoided in pregnancy & lactation.
Max Weekly Dosing: 100 ml (1:5, 40%)

Melissa officinalis

Safety/Toxicity: None expected. May cause sleepiness.

Contraindications: Hypothyroidism.
Max Weekly Dosing: 125 (1:2, 40%)

Mentha piperita

Safety/Toxicity: SSx: GIT burning and irritation, and may exacerbate GERD and dyspepsia in some individuals.

Contraindications: Avoid topical application of oil to broken skin Use caution in history of GERD, bile duct obstruction, gallstones, hiatal hernia, and liver disease. Internal use of oil in pregnancy & lactation
Max Weekly Dosing: 60 ml (1:5, 25%)

Panax ginseng

Safety/Toxicity: Overdose can cause palpitations, insomnia, chest pain, vomiting, headaches and epistaxis. Possible adverse reactions include allergic reaction, CNS, cardiovascular, and endocrine disturbances. Death reports exist.

Contraindications: Avoid in history of arrhythmia, acute asthma, hypertension, acute infections, and ADHD. Use caution with acute infection and inflammatory diseases, in hyper tense people and in children.

Max Weekly Dosing: 40 ml (1:5, 60%)

Petasites hybridus

Safety/Toxicity: Possible adverse reactions include CNS & endocrine disturbance (may decrease testosterone), dermatitis, GIT upset, and difficult breathing & urination. Hepatotoxic & carcinogenic compounds shown to cause hepatoveno-occlusive disease when taken internally at high doses or with long-term use.

Contraindications: Avoid Internal use in liver disease, long-term use and with allergy to Asteraceae family. Pregnancy & lactation, or in infants. Use caution when drowsiness or sedation could pose a danger and in history of HTN, ACTH or testosterone imbalance.
Max Weekly Dosing: 40 ml (1:5, 25%)

Phytolacca decandra/americana

Safety/Toxicity: Toxicity effects the brain medulla causing paralysis, bradycardia, decreased respiration, and decreased skeletal muscle coordination. SSx: N/V/D, stomach cramps, dizziness, hypotension, decreased respiration, headaches, and may cause blood cell abnormalities.

Contraindications: Pregnancy & Lactation. Kidney disease, acute GIT inflammation, and lymphocytic leukemia.
Max Weekly Dosing: 10 ml (1:10, 40%)

Piper methysticum

Safety/Toxicity: SSx: drowsiness, dermatitis, CNS disturbance, and GIT upset. Acute toxicity may cause stupor, pupillary dilation and motor disturbances. Monitor for hepatotoxicity.

Contraindications: Use caution in liver disease, Parkinson's, the elderly, with strong anxiety/depression, or when drowsiness or sedation could pose a danger.
Max Weekly Dosing: 40 ml (1:2, 40%)

Piscidia erythrina

Safety/Toxicity: High doses may cause bradycardia, hypotension, nausea, vomiting, numbness, tremor, sweating, headache, paralysis and death.

Contraindications: Pregnancy, lactation, children and the elderly. Use caution in CVD and cardiac insufficiency
Max Weekly Dosing: 40 ml (1:2, 60%)

Podophyllum pelatum

Safety/Toxicity: Large doses can cause violent emesis & catharsis, gastritis and enteritis, and potentially death.

Contraindications: Pregnancy & lactation
Max Weekly Dosing: 3.5 ml (1:10, 65%)

Populus spp.

Safety/Toxicity: Potential ototoxic effect by inhibiting prestin, inducing transient hearing loss in zinc-deficient individuals. Salicylism toxicity symptoms: mild N/V, abdominal pain, lethargy, tinnitus, and dizziness.

Contraindications: Allergy to salicylates or aspirin. Use caution in asthma (possible bronchospastic effects), and in children.
Max Weekly Dosing: 100 ml (1:5, 40%)

Quercus spp.

Safety/Toxicity: Large and/or long-term dosing may cause gastric irritation and kidney stress.

Contraindications: Use caution in cases of constipation, iron deficiency and malnutrition. Avoid topically application over large or open wounds.

Max Weekly Dosing: 40 ml (1:5, 40%)

Rauwolfia serpentina

Safety/Toxicity: SSx: sedation, depression, nightmares, abdominal cramps, diarrhea, gastrointestinal ulceration & hemorrhage, water retention, nasal congestion, flushing of the skin, pinpoint pupils, hypotension, bradycardia, vertigo, stupor, convulsions & tremors, respiratory depression and coma.

Contraindications: Pregnancy & lactation Depression, peptic ulcers & hyperprolactinemia.

Max Weekly Dosing: 10 ml (1:5, 40%)

Rhamnus purshiana

Safety/Toxicity: SSx: acute intestinal pain & cramping
Recurrent use can lead to electrolyte imbalances (hypokalemia), dehydration, and muscle & kidney destruction (hematuria & albuminuria), and may predispose to colon cancer (mutagenic)

Contraindications: Pregnancy & Lactation L/T Use (> 10 days), intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old.

Max Weekly Dosing: 20 ml (1:5, 40%),

Rheum palmatum

Safety/Toxicity: SSx: diarrhea with griping, icterus and hepatic enlargement, renal insufficiency and proteinuria.
Recurrent use can lead to electrolyte imbalances (hypokalemia), dehydration, and muscle & kidney destruction (hematuria & albuminuria), and may predispose to colon cancer (mutagenic)

Contraindications: Pregnancy & Lactation L/T Use (> 10 days), intestinal obstruction, spastic constipation, acute intestinal inflammation, abdominal pain of unknown origin, and children <12 years old. Use caution in fever and with kidney stones.

Max Weekly Dosing: 40 ml (1:5, 40%)

Rhodiola rosea

Safety/Toxicity: May cause agitation, especially in those prone to anxiety.

Contraindications: Use caution in bipolar conditions, especially with a tendency towards mania.

Max Weekly Dosing: 40 ml (1:5, 40%)

Ricinis communis

Safety/Toxicity: SSx: initially burning of mouth and throat, thirst, vomiting, stomach pain, dull weak rapid pulse, uremia, diarrhea, colic. Later headache, dizziness, dullness of vision, depression, liver & kidney damage, retinal, scleral or CNS hemorrhage, trembling, weakness, convulsions and death.

Contraindications: Internal use (except as a parturient to induce labour)

Max Weekly Dosing: Topical use only

Rumex crispus

Safety/Toxicity: SSx: aggravation of inflammatory skin disorders, N/V/D and gastric irritation. Hypokalemia may occur with long-term use.

Contraindications: All anthraquinone-rich herb CIs apply (eg. Pregnancy, prolonged use, acute inflammatory bowel disease, etc.), however is generally gentler and less extreme in it's effects when compared to other laxative herbs. Use caution in gout and predisposition to kidney stones due to oxalates.

Max Weekly Dosing: 60 ml (1:5, 25%)

Salix spp.

Safety/Toxicity: Potential ototoxic effect by inhibiting prestin, inducing transient hearing loss in zinc-deficient individuals. Salicylism toxicity symptoms: mild N/V, abdominal pain, lethargy, tinnitus, and dizziness.

Contraindications: Avoid in children with the flu due to Reye's syndrome (theoretical). Those with known hypersensitivity to aspirin or salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

Max Weekly Dosing: 100 ml (1:5, 25%)

Sanguinaria canadensis

Safety/Toxicity: SSx: N/V/D

Contraindications: Pregnancy & lactation. Avoid in sensitive or irritated mucous membranes.

Max Weekly Dosing: 100 ml (1:5, 40%)

Smilax officinalis

Safety/Toxicity: SSx: GIT upset & irritation, and long-term use may cause ulceration of GI mucosa and temporary kidney impairment.

Contraindications: None reported. Pregnancy & lactation (controversial)

Max Weekly Dosing: 40 ml (1:5, 40%)

Symphytum officinalis

Safety/Toxicity: Veno-occlusive disease of the liver (one documented human case and in rats) when taken internally using isolated plant compounds.

Contraindications: Long-term use. Internal use in liver disease, pregnancy & lactation, or in infants. Use on dirty skin or deep wounds (surface may heal too fast trapping dirt and pus).

Max Weekly Dosing: 80 ml (1:5, 25%)

Taraxacum officinalis

Safety/Toxicity: SSx: dyspepsia, flatulence, GIT pain & diarrhea. Generally very safe, however case reports of allergic reactions and anaphylaxis to ingested bee pollen containing dandelion pollen exist.

Contraindications: Avoid in known allergy to Asteraceae family. Use caution in weak or inflamed digestive organs, biliary obstruction, gallstones, and renal disorders (may increase potassium & alter electrolytes).

Max Weekly Dosing: 100 ml (1:5, 40%)

Tilia europea

Safety/Toxicity: Long-term high dosing may have cardio-toxic effects. Allergic sensitivity in some individuals.

Contraindications: Use caution in cardiac disorders.

Max Weekly Dosing: 80 ml (1:5, 25%)

**Thuja occidentalis**

Safety/Toxicity: Neurotoxic in high doses. SSx: gastroenteritis, headaches, paralysis, decreased coordination, & hallucinations (reversible)

Contraindications: Pregnancy & Lactation L/T Use Use caution with seizure disorders

Max Weekly Dosing: 60 ml week (1:5, 90%), Pulse-dosing required

Thymus vulgaris

Safety/Toxicity: Topical use may cause dermatitis & mucous membrane irritation. Internal use of essential oil may cause headache, vomiting, painful diarrhea, tinnitus, kidney damage, dizziness, convulsions, respiratory paralysis and death.

Contraindications: Pregnancy (above culinary amounts)

Internal use of essential oil Use caution hypothyroid and acute renal, GIT or GIT inflammation.

Max Weekly Dosing: 100 ml (1:5, 40%)

Trigonella foenum-graecum

Safety/Toxicity: SSx: digestive upset (diarrhea & flatulence), sweet urine odor and body odour. Topical use may cause dermatitis.

Contraindications: Use caution in anemia and hypothyroidism.

Max Weekly Dosing: 100 ml (1:5, 25%)

Turnera diffusa

Safety/Toxicity: SSx: GIT upset, headache, insomnia, hallucinations, and urethral irritation. One report exists of inducing tetanus-like convulsions.

Contraindications: Pregnancy & lactation (controversial) Use caution in acute renal or bladder irritation, hormone-sensitive condition, psychiatric or mood disorder, and in situations where CNS impairment could pose a danger.

Max Weekly Dosing: 40 ml (1:5, 25%)

Tussilago farfara

Safety/Toxicity: SSx: hypertension, anorexia, lethargy, and GIT upset. Potential hepatotoxicity & veno-occlusive disease of the liver when taken internally.

Contraindications: Pregnancy & lactation, or in infants. Use caution in liver disease.

Max Weekly Dosing: 40 ml (1:5, 25%), Pulse-dosing required

Urtica dioica

Safety/Toxicity: Hypersensitivity or allergic sxs: are pharyngeal constriction, aggravation of sinusitis & rhinitis. Fresh leaves are caustic topically. Root may cause digestive upset.

Contraindications: Use caution with edema due to heart or kidney dysfunction, history of bleeding disorder, and monitor electrolyte imbalances especially in the elderly.

Max Weekly Dosing: 100 ml (1:5, 25%)

Vaccinium myrtillus

Safety/Toxicity: May cause hypotension, changes in blood sugar & GIT upset (e.g. heartburn, nausea, diarrhea).

Contraindications: Use caution in hemorrhagic disorders, hypotension & hypoglycemia.

Max Weekly Dosing: 40 ml (1:1, 25%)

Valeriana officinalis

Safety/Toxicity: SSx: CNS disturbances including excitability & agitation, insomnia, headache, and cardiac disturbances, and GIT upset. Potential for allergic hypersensitivity reaction.

Contraindications: Pregnancy & lactation (controversial)

Avoid in conditions where sedation could pose a danger.

Use caution in history of cardiovascular disease

Max Weekly Dosing: 100 ml (1:5, 60%)

Verbena officinalis

Safety/Toxicity: SSx: GIT upset (N/V), convulsions and stupor.

Contraindications: Pregnancy & lactation (controversial)

Max Weekly Dosing: 100 ml (1:5, 25%)

Viburnum opulus

Safety/Toxicity: Potential ototoxic effect by inhibiting prestin, inducing transient hearing loss in zinc-deficient individuals.

Salicylism toxicity symptoms: mild N/V, abdominal pain, lethargy, tinnitus, and dizziness.

Contraindications: Avoid in children with the flu due to Reye's syndrome (theoretical). Those with known hypersensitivity to aspirin or salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

Max Weekly Dosing: 80 ml (1:2, 25%)

Viburnum prunifolium

Safety/Toxicity: Potential ototoxic effect by inhibiting prestin, inducing transient hearing loss in zinc-deficient individuals.

Salicylism toxicity symptoms: mild N/V, abdominal pain, lethargy, tinnitus, and dizziness.

Contraindications: Avoid in children with the flu due to Reye's syndrome (theoretical). Those with known hypersensitivity to aspirin or salicylates may experience rare reaction causing urticaria, rhinitis, asthma & bronchial spasm.

Use caution in kidney stones

Max Weekly Dosing: 30 ml (1:2, 60%)

Vitex agnus-castus

Safety/Toxicity: SSx: allergic reactions, formication, CNS disturbance (dizziness, vertigo, headache), tachycardia, and GIT upset. In high doses can inhibit all aspects of anterior pituitary function

Contraindications: Pregnancy & lactation (controversial)

Use caution in hormone sensitive disorders, estrogen-dependent cancers, seizure disorders, Parkinson's, and history of tachycardia.

Max Weekly Dosing: 40 ml (1:1, 25%)

Withania somnifera

Safety/Toxicity: SSx: GIT upset

Contraindications: Pregnancy & lactation (controversial)

Use caution in acute sexual anxiety

Max Weekly Dosing: 90 ml (1:2, 25%)

Zingiber officinalis

Safety/Toxicity: SSx: heartburn, and GIT upset. Topically may cause contact dermatitis & photosensitivity.

Contraindications: Use caution gastric irritations (e.g. ulcers & GERD), gallstones, kidney disease, bleeding disorders and tendency to hemorrhage. Avoid pre-operatively.

Pregnancy & lactation about culinary amounts (controversial)

Max Weekly Dosing: 60 ml (1:5, 90%)



Though most herbs are relatively harmless, considering the highly reactive state of pregnancy and the fact that fetal growth can manifest pharmacokinetics very differently than for an adult caution in their use is warranted, especially when using herbs with marked endocrine, autonomic or vascular effects.

Various herbal authorities or texts list herbs that should not be taken during pregnancy, however there is often not good agreement from one source to another and prohibitions exist based on inaccurate or inconsistencies in the available information. Some reasons for this are:

- Using dated information based on inaccuracies or perpetuation of conclusions based on dated or poor research and/or one authority influencing
- A highly conservative approach which recognizes little value in current herbal practice
- Any animal or in vitro study on herbs or constituents which might be remotely construed to have a negative effect is taken as evidence for contraindication, or literature reports of harm where a woman was actually trying to procure an abortion and failed
- Little credibility given to clinical studies

The primary risks associated with using herbs during pregnancy include:

- Increased risk of miscarriage (emmenagogues/ abortifacients)
- Toxicity to the mother
- Toxicity to the child (fetotoxicity)
- Developmental malformations (teratogenesis) & health effects on the child (both short and long term)
- Puerperal or post partum complications

FDA Classification:

- A** Controlled studies in pregnant women do not show risk to the fetus in the first trimester
- B** Animal reproduction studies do not show risk to the fetus but there are no controlled studies in pregnant women
- C** Studies in animals show adverse effects on the fetus but there are no controlled studies in women
- D** There is positive evidence of human fetal risk, but benefits from use in pregnant women may be acceptable despite the risk
- X** Studies in animals or human beings show fetal abnormalities and the risk of the use of the drug in pregnant women clearly outweighs any possible benefits

Drugs in categories A to D are widely prescribed during pregnancy, **only category X is contraindicated** in pregnancy

General Guide for Prescribing Herbs in Pregnancy

- Do not prescribe an herb to a pregnant woman unless familiar with its use
- Generally avoid toxic herbs and emmenagogues
- Essential oils (with some exceptions) should not be taken orally
- Keep all medicine to a minimum especially in the first trimester (most miscarriages occur in this period & exposure to teratogens from 17 to 70 days can cause major birth defects)
- Be particularly cautious where there is a history of miscarriage or difficult conception
- Exercise appropriate care if a patient is attempting to fall pregnant
- Until there is more human data, intake of isoflavones during pregnancy should not exceed typical dietary exposure.
- Avoid known & suspected teratogens including Veratrum, Conium, Datura, Ferula, Prunus, Sorghum, Solanum, & Senecio species.
- Preferable to use tablets, teas or capsules vs. tinctures.
- If tinctures are prescribed:
 - Doses should be taken with meals
 - Maximum single dose should be 5 mL
 - Maximum daily dose should be 15 mL (preferable dose is 10 mL)
 - Repeat doses should be separated by at least 2 hours
 - NO OTHER alcohol should be consumed

Herbs Contraindicated in Pregnancy

<i>Achillea millefolium</i>	<i>Iris versicolor</i>
<i>Aconitum napellus</i>	<i>Juglans nigra</i>
<i>Actaea racemosa</i>	<i>Juniperus communis</i>
<i>Aesculus hippocastanum</i>	<i>Lactuca virosa</i>
<i>Angelica sinensis</i>	<i>Leonurus cardiaca</i>
<i>Apium graveolens</i>	<i>Lobelia inflata</i>
<i>Artostaphylos uva-ursi</i>	<i>Lycopus virginicus</i>
<i>Arnica montana</i>	<i>Panax ginseng*</i>
<i>Artemisia absinthium</i>	<i>Petroselinum crispus</i>
<i>Artemisia vulgaris</i>	<i>Phytolacca decandra/americana</i>
<i>Atropa belladonna</i>	<i>Piscidia erythrina</i>
<i>Baptisia tinctoria</i>	<i>Podophyllum peltatum</i>
<i>Berberis aquifolium</i>	<i>Rauwolfia serpentina</i>
<i>Borago officinalis</i>	<i>Rhamnus purshiana/frangula</i>
<i>Bryonia alba/dioica</i>	<i>Rhenum palmatum</i>
<i>Cassia angustifolia</i>	<i>Ricinis communis</i>
<i>Caulophyllum thalictroides</i>	<i>Rumex crispus</i>
<i>Centella asiatica</i>	<i>Salvia officinalis</i>
<i>Commiphora molmol</i>	<i>Sanguinaria canadensis</i>
<i>Convallaria majalis</i>	<i>Schisandra chinensis</i>
<i>Cytisus scoparius</i>	<i>Smilax officinalis</i>
<i>Damiana turnera</i>	<i>Symphytum officinalis</i>
<i>Datura stramonium</i>	<i>Thuja occidentalis</i>
<i>Ephedra sinica</i>	<i>Turnera diffusa</i>
<i>Eschscholzia californica</i>	<i>Tussilago farfara</i>
<i>Gaultheria procumbens</i>	<i>Valeriana officinalis</i>
<i>Gelsemium sempervirens</i>	<i>Viscum album</i>
<i>Gentiana lutea</i>	<i>Vinca minor</i>
<i>Guaiaicum officinalis</i>	<i>Withania somnifera</i>
<i>Hydrastis canadensis</i>	<i>Zanthoxylum americanum</i>
<i>Harpagophytum procumbens</i>	
<i>Hyoscyamus niger</i>	
<i>Inula helenium</i>	



Nearly all herbs are safe to use in children as the long as the dose is adjusted appropriately by either age or weight. There are several universally accepted pharmacologia rules that apply when calculating herbal doses for pediatric cases.

Children are considered < 12 years old

Dosage calculation by Age:

- **Young's Rule** (based on age in years): Age in years x adult dose, divided by age + 12 = child's dose
- **Fried's/Fred's Rule** (based on age in months): Age in months divided by 150 months x by adult dose = child's dose
- **King's Rule:** (child < 6 months): 1/15th of adult dose = child's dose

Adjusting Dosage by Age

When the adult dose is one teaspoonful or 60 drops:

< 3 months	2 drops
3 - 6 months	3 drops
6 - 9 months	4 drops
9 - 12 months	5 drops
12 - 18 months	7 drops
18 - 24 months	8 drops
2 - 3 years	10 drops
3 - 4 years	12 drops
4 - 6 years	15 drops
6 - 9 years	24 drops
9 - 12 years	30 drops

Dosage calculation by weight:

Clark's Rule (ages 2-17): Weight of child in pounds divided by 150 lb. = % of adult dose

For example: if the adult dosage calls for 30 mg and the child weighs 30 lb divide the weight by 150 (30/150) to get 1/5. Multiply 1/5 x 30 mg to get 6 mg.

$$\frac{\text{Weight in pounds} \times \text{adult dose}}{150} = \text{child dose}$$

Bone's Rule: Divide child's weight in Kg by 60 Kg = % of adult dose

Ausberger's Rule: 1.5 x child's weight in kg +10 is the percentage of the adult dose for a child

Preferred remedies for Children include:

- Teas (taken hot, cold, or frozen into popsicles)
- Vinegars
- Tinctures (low % alcohol rarely causes problems)
- Glycerites & syrups may help improve taste & improve compliance
- Topical applications: massage oils, herbal wraps & baths, poultices, inhalations
- Powdered extracts can be added to applesauce, puddings & oatmeal

Great herbal options for children that are safe to use in some commonly encountered conditions are included below:

Colds & Flu

- *Echinacea* spp. (Echinacea)
- *Sambucus nigra* (Elderberry)
- *Thymus vulgaris* (Thyme)
- *Cinnamomum* spp. (Cinnamon)
- *Nepeta cataria* (Catnip)
- *Salix alba* (Willow)
- *Achillea millefolium* (Yarrow)

Eczema

- *Urtica dioica* (Nettles)
- *Calendula* off. (Marigold)
- *Stellaria media* (Chickweed)
- *Matricaria recutita* (Chamomile)
- *Glycyrrhiza glabra* (Licorice)
- *Echinacea* spp. (Echinacea)

Otitis (Ear ache)

- *Echinacea* spp. (Echinacea)
- *Matricaria recutita* (Chamomile)
- *Baptisia tinctoria* (Wild Indigo)
- *Euphrasia* off. (Eyebright)
- *Galium aparine* (Cleavers)
- *Sambucus nigra* (Elderberry)

Digestive Upset

- *Matricaria recutita* (Chamomile)
- *Melissa officinalis* (Lemon Balm)
- *Verbena* off. (Verbena)
- *Foeniculum vulgare* (Fennel)
- *Glycyrrhiza glabra* (Licorice)
- *Althea officinalis* (Marshmallow)
- *Mentha piperita* (Peppermint)
- *Angelica archangelica* (Angelica)
- *Taraxacum officinalis* (Dandelion)
- *Linum usitatissimum* (Flaxseed)

Sleep disturbance

- *Matricaria recutita* (Chamomile)
- *Melissa officinalis* (Lemon Balm)
- *Lavandula officinalis* (Lavender)
- *Hypericum perforatum* (St. John's Wort)

Teething

- *Matricaria recutita* (Chamomile)
- *Melissa officinalis* (Lemon Balm)
- *Nepeta cataria* (Catnip)
- *Lavandula officinalis* (Lavender)
- *Hypericum perforatum* (St. John's Wort)



<i>Achillea millefolium</i>	<i>Eupatorium purpurum</i>	<i>Prunus serotina</i>
<i>Aconitum napellus</i>	<i>Euphrasia officinalis</i>	<i>Prunus (Pygeum) africanum</i>
<i>Actea racemosa</i>		
<i>Aesculus hippocastanum</i>	<i>Foeniculum vulgare</i>	<i>Quercus rubra</i>
<i>Allium cepa</i>	<i>Fucus vesiculosus</i>	
<i>Allium sativum</i>		<i>Rauwolfia serpentina</i>
<i>Aloe barbadensis</i>	<i>Galium aparine</i>	<i>Rhamnus frangula</i>
<i>Althaea officinalis</i>	<i>Ganoderma lucidum</i>	<i>Rhamnus purshiana (Frangula purshiana)</i>
<i>Anemone pulsatilla</i>	<i>Gelsemium sempervirens</i>	<i>Rhodiola rosea</i>
<i>Angelica archangelica</i>	<i>Gentiana lutea</i>	<i>Ricinis communis</i>
<i>Angelica sinensis</i>	<i>Geranium maculatum</i>	<i>Rosmarinus officinalis</i>
<i>Arctium lappa</i>	<i>Ginkgo biloba</i>	<i>Rubus idaeus</i>
<i>Arctostaphylos uva ursi</i>	<i>Glycyrrhiza glabra</i>	<i>Rumex crispus</i>
<i>Artemisia (annua) Asclepius tuberosa</i>	<i>Grindelia robusta</i>	
<i>Aspidosperma quebracho</i>	<i>Gymnema sylvestre</i>	
<i>Astragalus membranaceus</i>		<i>Salix alba</i>
<i>Atropa belladonna</i>	<i>Hamamelis virginiana</i>	<i>Salvia officinalis</i>
<i>Avena sativa</i>	<i>Harpagophytum procumbens</i>	<i>Sambucus nigra</i>
	<i>Humulus lupulus</i>	<i>Sanguinaria canadensis</i>
<i>Baptisia tinctoria</i>	<i>Hydrangea arborescens</i>	<i>Schizandra chinensis</i>
<i>Berberis (Mahonia) aquifolium</i>	<i>Hydrastis canadensis</i>	<i>Scutellaria baicalensis</i>
<i>Berberis vulgaris</i>	<i>Hyoscyamus niger</i>	<i>Scutellaria lateriflora</i>
<i>Borago officinalis</i>	<i>Hypericum perforatum</i>	<i>Selenicereus (Cactus) grandiflorus</i>
<i>Boswellia serrata</i>		<i>Serenoa repens</i>
<i>Bryonia alba / dioica</i>	<i>Inula helenium</i>	<i>Silybum marianum</i>
	<i>Iris versicolor</i>	<i>Smilax spp.</i>
<i>Calendula officinalis</i>		<i>Solidago spp.</i>
<i>Camellia sinensis</i>	<i>Juglans nigra</i>	<i>Symphytum officinale</i>
<i>Cannabis sativa</i>	<i>Juniperus communis</i>	
<i>Capsella bursa-pastoris</i>		<i>Tanacetum parthenium</i>
<i>Capsicum frutescens</i>	<i>Larrea tridentata</i>	<i>Tanacetum vulgare</i>
<i>Cassia spp.</i>	<i>Leonurus cardiaca</i>	<i>Taraxacum officinale</i>
<i>Caulophyllum thalictroides</i>	<i>Leptandra virginica (Veronicastrum virginicum)</i>	<i>Theobroma cacao</i>
<i>Ceanothus americanus</i>	<i>Ligusticum porteri</i>	<i>Thuja occidentalis</i>
<i>Centella asiatica</i>	<i>Ligustrum lucidum</i>	<i>Thymus vulgaris</i>
<i>Chamaelirium luteum</i>	<i>Linum usitatissimum</i>	<i>Tilea europae</i>
<i>Chelidonium majus</i>	<i>Lobelia inflata</i>	<i>Tribulus terrestris</i>
<i>Chionanthus virginicus</i>	<i>Lomatium dissectum</i>	<i>Trifolium pratense</i>
<i>Cineraria maritima</i>	<i>Lycopus virginicus</i>	<i>Tussilago farfara</i>
<i>Cinnamomum zeylanicum</i>		
<i>Coleus forskohlii</i>	<i>Matricaria chamomilla (Matricaria recutita)</i>	<i>Ulmus rubra (fulva)</i>
<i>Commiphora mukul</i>	<i>Medicago sativa</i>	<i>Urtica dioica</i>
<i>Commiphora myrrha/molmol</i>	<i>Melaleuca alternifolia</i>	<i>Usnea barbata</i>
<i>Convallaria majalis</i>	<i>Melissa officinalis</i>	<i>Vaccinium myrtillus</i>
<i>Cordyceps sinensis</i>	<i>Mentha piperita</i>	<i>Valeriana officinalis</i>
<i>Corydalis ambigua and spp.</i>	<i>Mitchella repens</i>	<i>Veratrum alba (viride)</i>
<i>Crataegus oxyacantha</i>	<i>Momordica charantia</i>	<i>Verbascum thapsus</i>
<i>Curcuma longa</i>		<i>Verbena officinalis</i>
<i>Cynara scolymus</i>	<i>Olea europaea</i>	<i>Viburnum opulus</i>
		<i>Viburnum prunifolium</i>
<i>Datura stramonium</i>	<i>Panax ginseng</i>	<i>Vinca major/minor</i>
<i>Digitalis purpurea</i>	<i>Panax quinquefolium</i>	<i>Viscum album</i>
<i>Dioscorea villosa</i>	<i>Passiflora incarnata</i>	<i>Viscum / Phoradendron flavescens</i>
	<i>Pausinystalia yohimbe</i>	<i>Vitex agnus-castus</i>
<i>Echinacea (angustifolia, pallida, purpurea)</i>	<i>Phytolacca americana</i>	
<i>Eleutherococcus senticosus</i>	<i>Piper methysticum</i>	<i>Withania somnifera</i>
<i>Ephedra sinica</i>	<i>Piscidia erythrina (Piscidia piscipula)</i>	<i>Zingiber officinale</i>
<i>Equisetum arvense</i>	<i>Plantago major</i>	
<i>Eschscholzia californica</i>	<i>Podophyllum peltatum</i>	
<i>Eucalyptus globulus</i>		
<i>Eupatorium perfoliatum</i>		



Apiaceae/Umbelliferae (carrot family)

Angelica archangelica
 Angelica sinensis (dong quai)
 Apium graveolens (celery)
 Bupleurum chinensis (Chinese thorowax)
 Centella asiatica (gotu kola)
 Foeniculum vulgare (fennel)
 Ligusticum porteri (osha)
 Lomatium dissectum (Lomatium)
 Petroselinum crispum (parsley)
 Pimpinella anisum (anise)

Araliaceae (ginseng family)

Eleutherococcus senticosus (Siberian ginseng)
 Oplonanax horridum (devil's club)
 Panax ginseng (Chinese/Korean ginseng)
 Panax quinquefolius (American ginseng)

Asteraceae/Compositae (sunflower family)

Achillea millefolium (yarrow)
 Arctium lappa (burdock)
 Arnica montana (arnica)
 Artemisia absinthium (wormwood)
 Artemisia annua (sweet annie)
 Artemisia vulgaris (mugwort)
 Calendula officinalis (marigold)
 Cynara scolymus (artichoke)
 Echinacea sp. (echinacea)
 Eupatorium perfoliatum (boneset)
 Eupatorium purpureum (gravel root)
 Inula helenium (elecampane)
 Lactuca virosa (wild lettuce)
 Matricaria recutita (chamomile)
 Silybum marianum (milk thistle)
 Solidago virgaurea (goldenrod)
 Tanacetum vulgare (tansy)
 Tanacetum parthenium (feverfew)
 Taraxacum officinalis (dandelion)
 Tussilago farfara (coltsfoot)

Boraginaceae (borage family)

Borago officinalis (borage)
 Symphytum officinalis (comfrey)

Brassicaceae/Cruciferae (the cabbage family)

Capsella bursa-pastoris (shepard's purse)
 Brassica alba/nigra (white/black mustard)

Fabaceae/Leguminosae (pea family)

Astragalus membranaceus (astragalus)
 Baptisia tinctoria (wild indigo)
 Cassia angustifolia (senna)
 Cytisus scoparius (scotch broom)
 Galega officinalis (goat's rue)
 Glycine max (soybean)
 Glycyrrhiza glabra (licorice)
 Medicago sativa (alfalfa)
 Melilotus officinalis (sweet clover)
 Piscidia erythrina (jamaican dogwood)
 Trigonella foenum-graecum (fenugreek)
 Trifolium pratense (red clover)

Lamiaceae (mint family)

Coleus forskohlii (Coleus)
 Hyssopus officinalis (hyssop)
 Lavendula officinalis (lavender)
 Leonurus cardiaca (motherwort)
 Lycopus virginicus (bugleweed)
 Melissa officinalis (lemon balm)
 Mentha piperita (peppermint)
 Nepeta cataria (catnip)
 Origanum vulgare (oregano)
 Rosmarinus officinalis (rosemary)
 Salvia officinalis (sage)
 Scutellaria lateriflora (skullcap)
 Stachys officinalis (wood betony)
 Thymus vulgaris (thyme)

Liliaceae (lily family)

Allium cepa (onion)
 Allium sativum (garlic)
 Aloe barbadensis (aloe)
 Chamaelirium luteum (false unicorn root)
 Convallaria majalis (lily of the valley)
 Ruscus aculeatus (butcher's broom)
 Smilax officinalis (sarsaparilla)

Paveraceae (poppy family)

Chelidonium majus (greater celandine)
 Corydalis spp.
 Eschscholzia californica (california poppy)

Papaver somniferum (opium poppy)
 Sanguinaria canadensis (blood root)

Ranunculaceae (buttercup family)

Anemone pulsatilla (pasque flower)
 Aconitum napellus (monkshood)
 Actaea racemosa (black cohosh)
 Hydrastis canadensis (goldenseal)

Rosaceae (rose family)

Alchemilla vulgaris (lady's mantle)
 Crataegus oxyacantha (hawthorne)
 Filipendula ulmaria (meadowsweet)
 Prunus africanum (pygeum)
 Prunus serotina (wild cherry)
 Rosa canina (rose hips & flower)
 Rubus idaeus (raspberry)

Rubiaceae (coffee family)

Cephaelis ipecacuanha (ipecac)
 Cinchona spp. (Peruvian bark)
 Coffea arabica (Coffee)
 Galium aparine (cleavers)
 Mitchellia repens (partridge berry)
 Pausinystalia yohimbe (yohimbe)

Scrophulariaceae (foxglove family)

Digitalis purpurea (foxglove)
 Euphrasia officinalis (eyebright)
 Rhemannia glutinosa (chinese foxglove)
 Verbascum thapsus (mullein)

Solanaceae (nightshade family)

Atropa belladonna (deadly nightshade)
 Capsicum frutescens (cayenne)
 Datura stramonium (jimson weed)
 Hyoscyamus niger (henbane)
 Withania somnifera (ashwaghandha)

Zingiberaceae

Curcuma longa (turmeric)
 Zingiber officinalis (ginger)

Nutrient	Nutrient	Interaction
Calcium	Magnesium	High doses ↓ calcium absorption, deficiency produces hypocalcemia
	Phosphorus	High intakes (> 2 g/d) ↑ urinary calcium excretion
	Protein	High intakes ↑ urinary calcium excretion
	Sodium Vitamin D	↑ urinary calcium excretion Promotes calcium absorption, ↓ urinary excretion
Chromium	Calcium	High doses of calcium carbonate ↓ chromium absorption
	Iron	Iron deficiency enhances chromium absorption
Folic Acid	B12	Deficiency impairs folate utilization & metabolism
	Niacin	Deficiency ↓ activation of folate
	Vitamin C	Maintains body stores of folate, ↓ urine excretion
Iron	Calcium	↓ absorption of heme & non-heme iron
	Copper	High doses ↓ absorption
	Manganese	↓ absorption
Vitamin A		Deficiency impairs mobilization & utilization of body iron; plasma levels of iron drop
	Vitamin C	Sharply ↑ absorption of iron & overcome inhibition of iron absorption by phenols & phytates
Magnesium	Calcium	High doses ↓ magnesium absorption
	Iron, manganese	↓ magnesium absorption
Niacin	Tryptophan	Precursor in niacin synthesis
	Riboflavin, B6	Essential cofactor in niacin synthesis from tryptophan
Potassium	Magnesium	Deficiency ↑ urinary excretion
Thiamine	Magnesium	Deficiency impairs activation of thiamin to TPP
	Vitamin C	Protects thiamin from inactivation in GI tract
	Folic Acid	Deficiency ↓ absorption of thiamin
Vitamin A	Vitamin C Vitamin E	May ↓ vitamin A toxicity Enhances absorption, use & storage of vitamin A
Vitamin B6	Niacin	Important in activation of vitamin B6
	Zinc	Important in conversion of B6 to active form
Vitamin B12	Potassium	Extended release potassium fluoride tablets ↓ B12 absorption
	Folic acid	Large doses may hide hematologic signs of deficiency
Vitamin C	Iron	Large doses ↓ blood levels through oxidation
Vitamin D	Calcium	Hypocalcemia stimulates vit. D conversion to active form
Vitamin E	Iron, Copper	Large doses ↑ vitamin E requirements
Vitamin K	Calcium	High doses of calcium may impair vitamin K status
	Vitamin E	> 1200 mg/d may ↓ vitamin K absorption
Zinc	Calcium Copper, folic acid Iron	High doses ↓ zinc absorption ↓ zinc absorption Enhance zinc absorption
	Vitamin A, B6 Vitamin E	Deficiency ↓ zinc plasma levels & may worsen zinc deficiency

Medication	Nutrient	Interaction
Alcohol	B & fat soluble vitamins Magnesium Zinc	↓ absorption & impairs metabolism ↑ urinary magnesium excretion ↓ zinc absorption & ↑ urinary excretion
Antacids	B-vitamins, choline, vitamin A, C, calcium, phosphorus, iron, zinc, fluoride	↓ vitamin & mineral absorption
Antibiotics	Vitamin K, biotin	↓ vitamin production by colonic bacteria
Anticoagulants (warfarins)	Vitamin K Vitamin E & C	Antagonizes action, high doses of vitamin K ↓ activity of coumarins High doses of these vitamins may potentiate anticoagulant action
Atropine	Iron	↓ iron absorption
Barbiturates	Biotin, vitamin B6, B12, riboflavin, folate, calcium Vitamin D, K Folate	Impairs vitamin metabolism ↓ calcium absorption ↑ vitamin breakdown & biliary excretion High doses may ↓ anticonvulsant effects
Beta-blockers	Niacin	High doses of niacin may enhance hypotensive action
Cholesterol lowering drugs	Vitamin A, D, E, K Calcium	↓ vitamin & mineral absorption Increased urinary calcium excretion
Corticosteroids	Vitamin C Vitamin D Calcium, phosphorus	↑ vitamin C turnover & urinary excretion ↑ vitamin D requirement ↓ mineral absorption & ↑ urinary excretion
Digitalis	Potassium, Magnesium	↑ urinary mineral excretion
Fiber (psyllium)	Beta-carotene, zinc, riboflavin, iron	↓ vitamin & mineral absorption
Laxatives	Most vitamin & minerals	↓ vitamin & mineral absorption due to accelerated transit time
L-dopa	Vitamin B6	↓ L-dopa activity
Phenytoin	Folate Magnesium Calcium	↓ absorption & impairs metabolism, high doses of folate may antagonize effects ↓ serum magnesium levels ↓ calcium absorption
Salicylates	Vitamin A, vitamin B6, Vitamin C Vitamin K Iron Folate	↓ vitamin clearance ↓ vitamin C absorption, ↓ uptake into leukocytes & plasma, ↑ urinary excretion Impairs vitamin K metabolism ↑ loss from the digestive tract ↓ serum folate levels

↑ = increase, ↓ = decrease. Sources: Handbook on Drug & Nutrient Interactions. Nutritional Assessment. CRC Press. 2003.
Thomas, JA. Drug-nutrient interactions. Nutr Rev. 1995;53:271



Aesculus hippocastanum

Anticoagulants due to antiplatelet activity (theoretical)

With cardiac glycosides & phenopyrazine may cause calf spasm, fatigue, flushing, and pseudolupus.

Allium sativum

Anticoagulants due to antiplatelet activity (theoretical)

May potentiate insulin, hypoglycemic, and cholesterol-lowering agents (theoretical)

Aloe barbadensis

Gel: potentiates hypoglycemic effect of glyburide & anti-inflammatory effects of hydrocortisone when applied externally.

Latex: May aggravate potassium loss leading to increased toxicity of anti-arrhythmic drugs & cardiac glycosides, also thiazide diuretics, corticosteroids, and licorice due to excretion from laxative effects.

Due to decreases in transit time, when either gel or latex is used internally may interfere with absorption of food & medications.

Althea officinalis

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Arctium lappa

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Anticoagulants due to antiplatelet activity (theoretical)

May decrease blood glucose with anti-diabetic agents, and potentiate effects of diuretics

May increase levels of CYP3A4 substrates

Astragalus membranaceus

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Anticoagulants due to antiplatelet activity (theoretical)

May decrease blood glucose with anti-diabetic agents, and potentiate effects of diuretics, antihypertensives & dopaminergic agents

May inhibit effect of immunosuppressants (eg. Cyclosporine & corticosteroids), & potentiate

effects of recombinant interleukin-2, interferon-1 and interferon-2 therapy.

Atropa belladonna

Anticholinergics (theoretical)

Berberis aquifolium

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Borago officinalis

Anticoagulants due to antiplatelet activity (seed oil, theoretical)

Use caution with hepatotoxic drugs such as anabolic steroids, phenothiazines, and ketoconazole.

Boswellia serrata

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Bupleurum falcatum

Theoretical interaction with NSAIDs & antibiotics (needs friendly bacteria to be most effective).

Camellia sinensis

Theoretically may inhibit absorption of drugs and nutrients (eg. Iron & Calcium)

Anticoagulants due to antiplatelet activity (theoretical)
Increased risk of caffeine toxicity with CYP 1A2 substrates, cimetidine, disulfiram, enoxacin, MAOIs, estrogens, OCPs, alcohol, fluconazole, furafylline, isoniazid, ketoconazole, macrolides, and lithium (when abruptly stopped). Amphetamines & nicotine may increase CNS effects. May antagonize effects of barbiturates and benzodiazepines. Anti-hyperglycemics (may increase blood glucose) & Anti-hypertensives (may increase blood pressure)

Capsella bursa-pastoris

Vitamin K content should be considered if large quantities are used for a week or more in patients concurrently taking anticoagulant medications

Capsicum frutescens/annuum

Anticoagulants (eg. Aspirin) due to antiplatelet activity (theoretical)
Hepatic metabolism of various drugs may alter serum levels. Use caution

with MAOIs, anti-diabetic agents, anti-arrhythmics, anti-hypertensives, and ACE inhibitors (may increase cough even with topical applications).

Cassia angustifolia

Due to dramatic decrease in transit time may theoretically interfere with absorption of any drug when taken simultaneously.

Avoid concomitant use with drugs that cause hypokalemia including cardiac glycosides, anti-arrhythmics, and some diuretics.

Centella asiatica

May inhibit efficacy of anti-diabetic agents & anti-hyperlipidemics
May have additive effects with vasodilators, CNS depressants, and alter effects of GABAergic medications.

Cinnamomum zeylanicum/verum

Promotes gut motility and may interfere with absorption of many drugs when taken simultaneously.
Anticoagulants due to antiplatelet activity (theoretical)
Anti-diabetic agents (may decrease blood sugar)

Citrus aurantium

With CYP 3A4 substrates may increase effects through enterocyte concentrations.
Avoid use with MAOIs, photosensitizing agents and in hyperthyroidism (theoretical).
May increase adverse effects of adrenergics, decongestants (eg. Dextromethorphan), and warfarin.
May inhibit effects of anti-adrenergic agents, anti-arrhythmics, and anti-hypertensives.
May increase levels of felodipine & indinavir.

Coffea arabica

Theoretically may inhibit absorption of drugs and nutrients (eg. Iron & Calcium)
Increased risk of caffeine toxicity with CYP 1A2 substrates, cimetidine, disulfiram, enoxacin, MAOIs, estrogens, OCPs, alcohol, fluconazole, furafylline, isoniazid, ketoconazole, macrolides, and lithium (when abruptly stopped). Amphetamines & nicotine may increase CNS effects.

May antagonize effects of barbiturates and benzodiazepines .
Anti-hyperglycemics (may increase blood glucose) & Anti-hypertensives (may increase blood pressure)

Commiphora molmol

May interfere with absorption of many lipophilic drugs.

Convallaria majalis

Concomitant use with anthraquinones can deplete potassium levels and potentiate the effects, resulting in cardiac arrhythmia.

Crataegus oxycantha

May help reduce toxicity of cardiac glycosides, hypertensive medications and CNS depressants (monitor digoxin levels closely if used together). May inhibit effects of vasoconstrictors (eg. Alpha-blockers) and decrease BP with nitrates & PDE-5 inhibitors (eg. Sildenafil)

Cimicifuga racemosa

May inhibit CYP450 2D6 substrates
Use caution with chemotherapeutic agents (may increase or decrease effects), hepatotoxic agents, thyroid medications, and tamoxifen/anti-estrogens/OCPs/HRT for possible estrogenic effects.
Potential additive effects with anti-hypertensives and vasodilators

Curcuma longa

May inhibit or enhance the activity of certain chemotherapeutic agents.
Additive effects with NSAIDs & anti-coagulants and possible antagonistic effects with immunosuppressants (theoretical).

Cynara scolymus

Promotes gut motility and may interfere with absorption of many drugs when taken simultaneously.

Cytisus scoparius

Anticoagulants due to antiplatelet activity (theoretical)

Dioscorea villosa

Anticoagulants due to antiplatelet activity (theoretical)
Anti-diabetic agents (may decrease blood sugar)
May increase risk of toxicity from

hepatotoxic and nephrotoxic drugs, inhibit anti-inflammatory effects of indomethacin/NSAIDs, and increase risk of adverse effects from estrogen/anti-estrogen medications.

Echinacea sp.

Selectively modulates activity of CYP 3A4 substrates, and theoretically should use caution with immunosuppressive drugs (antibiotics & anti-retrovirals), chemotherapy, corticosteroids, blood thinners and hepatotoxic drugs.

Eleutherococcus senticosus

Avoid use with stimulants, alcohol, barbiturates, anti-psychotics, digoxin, and anticoagulants.
Diabetics should monitor blood glucose levels and adjust medication accordingly, due to the reported hypoglycemic effects in animals.

Ephedra sinica

Potential interactions with all centrally acting drugs such as anti-depressants, sympathomimetics, corticosteroids, cardiac glycosides and anesthetics.
May antagonize effects of alpha-blockers, anti-arrhythmics, anti-convulsants, anti-diabetic agents, and anti-hypertensives.
May have additive effects with anesthetics, beta-blockers, caffeine, ergot alkaloids, alcohol, MAOIs, and may increase toxicity risk with all stimulants, phenothiazines, theophylline and thyroid hormones.

Equisteum arvense

Cardiac glycosides may be potentiated due to potassium loss secondary to diuresis.

Eschscholzia californica

Caution with nervous system medications & MAOIs. May have additive effects when combined with other sedatives.

Filipendula ulmaria

Anticoagulants due to antiplatelet activity (theoretical) and use caution with salicylate-containing substances such as aspirin.

Fucus vesiculosus

Anticoagulants due to antiplatelet

activity (theoretical)
Anti-diabetic agents (may decrease blood sugar)
Potential risk for reduced bioavailability of amidarone, antagonistic effects on anti-hypertensives, estrogens, and may increase effects of laxatives and thyroid medications.

Ganoderma lucidum

Anticoagulants due to antiplatelet activity (theoretical)

Ginkgo biloba

Anticoagulants due to antiplatelet activity. May increase risk of bleeds (case reports of subdural hematoma) when combined with acetaminophen, anticoagulants/antiplatelet agents (NSAIDs, ASA) .
My antagonize effects of anti-hypertensives, thiazide diuretics, alprazolam, anticonvulsants, omeprazole, prilosec, and nicardipine. Anti-psychotics (eg. Risperidone - may cause priapism) and may induce hypomania in combination with SSRIs, MAOIs, trazadone, TCAs, buspirone, and St. John's Wort may increase risk of serotonin syndrome and seizures. May increase risk of seizure when combined with any medication known to lower seizure threshold.
With anti-diabetic agents may increase drug metabolism and blood sugar.

Glycyrrhiza glabra

Potentially with anti-arrhythmics, anti-coagulants, anti-diabetic agents, anti-hypertensives, diuretics, immunosuppressants, cardiac glycosides (eg. Digoxin), corticosteroids, MAOIs, blood pressure medications, spironolactone, hormonal therapies, laxatives





and K⁺ depleting medications. Estrogen-based oral contraceptives may enhance mineralocorticoid side effects.

Guaiacum officinalis
Antihypertensives

Harpagophytum Procumbens
Use caution with anti-diabetic, anti-arrhythmic, blood pressure medications, and anticoagulants due to antiplatelet activity (theoretical). May increase effects of other anti-inflammatory agents.
Less effective if taken with antibiotics (needs intestinal bacteria for activation).

Humulus lupulus
Barbiturates and other sleeping aids may have additive effects.

Hydrastis canadensis
With CNS depressants, cardiac medications, and anticoagulants. Use caution with anti-hyperglycemics, laxatives, sedatives, photosensitizing drugs and tetracycline.

Hoscyamus niger
May theoretically interact with anticholinergic & sympathomimetic herbs and medications.

Hypericum perforatum
Concomitant use with SSRIs and other CNS agents may result in serotonin syndrome.
May reduce serum levels and therefore activity of antiretroviral drugs, coumarin anticoagulants, chemotherapeutics, cyclosporine, benzodiazepines, digoxin, amitriptyline, theophylline, anticonvulsants (carbamazepine, phenobarbital, phenytoin), oral contraceptives, anti-hyperlipidemics and opioids

Juglans nigra
Theoretically interfere with absorption of any drug when taken simultaneously.

Lactuca virosa
Use caution with other CNS depressants.

Leonurus cardiaca
Theoretically may interact with various cardiovascular medications.

Linum usitatissimum
Theoretically interfere with absorption of any drug when taken simultaneously.

Lycopus virginicus
May interfere with thyroid hormones and/or radioactive iodine by altering the regulatory metabolism of thyroid hormones (theoretical)

Matricaria recutita
Theoretical interactions with antiarrhythmics, anti-coagulants, anti-diabetic agents, anti-hypertensives, CNS depressants, SERMs, and spasmolytics.

Medicago sativa
Theoretical interactions with anti-diabetic agents, estrogens, immunosuppressants, photosensitizing drugs, thyroid medications and anti-coagulants.
Patients with SLE while on Prednisone as maintenance therapy may suffer exacerbation following long-term (9-30 month) consumption.

Melilotus officinalis
Anticoagulants due to antiplatelet activity (theoretical)

Melissa officinalis
Use caution with CNS depressants and thyroid medications.

Mentha piperita
Internal use of oil has potential interaction with anti-hypertensives and increase cyclosporine levels.

Panax ginseng
Avoid use with other stimulants (e.g. caffeine)
Theoretically interact with anti-psychotics, MAOIs, sedatives, immunosuppressants, anti-hypertensives, anti-coagulants, anti-diabetic agents, and other hormone therapies.

Passiflora incarnata
Additive effects with sleep aids, barbiturates and other CNS depressants.

Petasites hybridus
May have additive effects with anticholinergics and interfere with various cardiovascular medications (e.g. anti-hypertensives & calcium channel blockers).

Phytolacca decandra/americana
Potential to antagonize effects of immunosuppressants.

Piper methisticum
Potential additive effects with CNS depressants (e.g. alcohol & medications), anti-psychotics, barbiturates, benzodiazepine, levodopa, and blood thinning medications.

Piscidia erythrina
May potentiate the effect of sedatives and tranquilizers.

Populus spp.
Anticoagulants due to antiplatelet activity (theoretical)
Use, caution with barbiturates/sedatives, methotrexate, spironolactone, phenytoin, and valproate medications.

Quercus spp.
May reduce the absorption of alkaloids and other basic drugs through precipitation.

Rauwolfia serpentina
Potential interactions with all CVD drugs and sympathomimetics.

Rhamnus purshiana
Due to dramatic decrease in transit time may theoretically interfere with absorption of any drug when taken simultaneously.
Avoid concomitant use with drugs that cause hypokalemia including cardiac glycosides, anti-arrhythmics, and some diuretics.

Rheum palmatum
May theoretically interfere with absorption of any drug when taken simultaneously.
Avoid concomitant use with drugs that cause hypokalemia including cardiac glycosides, anti-arrhythmics, and some diuretics.



Rosmarinus officinalis

May inhibit iron absorption when taken with food or supplements.

Rumex crispus

May theoretically interfere with absorption of any drug when taken simultaneously.
Avoid concomitant use with drugs that cause hypokalemia including cardiac glycosides, anti-arrhythmics, and some diuretics.

Salix spp.

Use caution with anticoagulants due to antiplatelet activity (theoretical), aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, methotrexate, spironolactone, phenytoin, valproate medications.

Sambucus nigra/canadensis

May have additive effects with caffeine, chemotherapy, diuretics, and laxatives, and may antagonize immunosuppressants.

Schisandra chinensis

Theoretically can interfere with metabolism of many drugs due to effect on liver & gastric secretions.

Scutellaria lateriflora

Theoretical additive effects with CNS depressants/sedative medications.

Silybum marianum

May affect metabolism of various drugs such as anti-diabetic agents (additive), estrogen, lamotrigine and lorazepam.

Symphytum officinalis

Theoretical interaction with antibiotics, fluconazole, fluoxetine, anti-cholesterol medications, and steroids as they compete with liver enzyme required to neutralize toxic compounds.

Taraxacum officinalis

May antagonize antacids and quinolones (e.g. ciprofloxacin)
May have additive effects with diuretics, anti-platelet agents, anti-diabetic agents, steroids and supplemental potassium.

Tilia europea

Tea may inhibit iron absorption when taken with food or supplements, however tincture mildly promotes iron absorption.

Thuja occidentalis

Use caution with additive effects if combined with other thujone-containing herbs.

Trifolium pretense

Theoretical interaction of high doses with anti-platelet agents, hormone replacement therapy and oral contraceptives.

Trigonella foenum-graecum

Potential additive effects with hypoglycemic agents (e.g. insulin)
May interfere with the absorption of various supplements & medications when taken simultaneously.

Turnera diffusa

Potential additive effects with anti-hyperglycemics & progesterones.
May interfere with the absorption of various supplements & medications when taken simultaneously.

Tussilago farfara

Theoretical interaction with anti-hypertensives medications.

Ulmus fulva

Theoretically may delay the absorption of oral drugs if taken simultaneously.

Urtica dioica

Leaf: theoretical interactions with CNS depressants, anti-coagulants, diuretics, anti-hypertensives, hypoglycemics, immunosuppressants and diclofenac.
Root: potential interaction with anti-diabetics and BPH medications.

Vaccinium myrtillus

Potential additive effects with anti-coagulant medications (theoretical), and may interact with anti-diabetic agents & anti-hypertensives

Valeriana officinalis

Use caution with sedative & anti-depressant medications, anti-convulsants and alcohol.

Verbena officinalis

May inhibit iron absorption when taken with food or supplements.
Theoretical interactions with HRT and blood pressure medications.

Viburnum opulus

Use caution with anticoagulants due to antiplatelet activity (theoretical), aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, methotrexate, spironolactone, phenytoin, valproate medications.

Viburnum prunifolium

Use caution with anticoagulants due to antiplatelet activity (theoretical), aspirin or other salicylate containing substances, alcohol, barbiturates/sedatives, NSAIDs, methotrexate, spironolactone, phenytoin, valproate medications.

Vitex agnus-castus

Theoretical interaction with HRT, OCP, and dopamine receptor agonists or antagonists.

Withania somnifera

Potential additive affects CNS depressants causing drowsiness & reduced coordination.
Theoretical interactions with anxiety, insomnia, and anti-seizure medications.

Zanthoxylum americanum

Theoretical additive effects with anticoagulants and cardiac glycosides.

Zea mays

: Theoretical interactions with hypoglycemic and anti-hypertensive medications.

Zingiber officinalis

Potentially increases absorption of all drugs and reduces absorption of iron and fat-soluble vitamins.
Additive effects with anticoagulants due to antiplatelet activity (theoretical)
Theoretical interactions with anti-arrhythmics, anti-diabetic agents, anti-hypertensives, and sedatives.



A -----

ATIS (erythromycin (topical)); antibiotic Rx: acne

abacavir sulfate (ZIAGEN): antiviral Rx: HIV/AIDS

abacavir, lamivudine, zidovudine (TRIZIVIR): antiviral Rx: HIV

ALBIFILY (antiprripazole): modifies sensitivity of serotonin and dopamine Rx: schizophrenia

acarbose (PRECOSE): delays carbohydrate digestion Rx: diabetes mellitus

ACCOLATE (zafirlukast): bronchospasm inhibitor Rx: asthma

ACCUNE/PROVENTIL (albuterol sulfate): antispasmodic Rx: asthma

ACCPURIL (quinapril): ACE inhibitor Rx: HTN, CHF

ACCURETIC (quinapril hydrochloride+hydrochlorothiazide)

ACUTANE (isotretinoin) Rx: severe cystic acne

acebutolol hydrochloride (SECTRAL): B-blocker Rx: KTN, cardiac dysrhythmias

ACEON (perindopril): ACE inhibitor Rx: HTN

acetaminophen (APAP): pain reliever Rx: headache, fever, aches

acetaminophen (TYLENOL): pain reliever Rx: headache, fever, aches

acetaminophen oxycodone hydrochloride (ROXICET): narcotic analgesic Rx: moderate to severe pain

acetazolamide (DIAMOX): diuretic / anticonvulsant Rx: glaucoma, CHF, epilepsy, mountain sickness

acetylsalicylic acid (ASA): aspirin/NSAID analgesic

ACHROMYCIN V (tetracycline): antibiotic Rx: acne, conjunctivitis, bacterial infections

ACIPHEX (rabeprazole sodium): proton pump inhibitor Rx: GERD, duodenal ulcers, Zollinger-Ellison syndrome

acitretin (SORIATANE): retinoid Rx: psoriasis

ACLOVATE (alclometasone dipropionate): steroid anti-inflammatory Rx: psoriasis

acrivastine + pseudoephedrine hydrochloride (SEMPREX-D): pseudoephedrine, antihistamine / decongestant

ACTIFED (tiropiridine + pseudoephedrine): antihistamine / decongestant Rx: allergies

ACTIGALL (ursodiol): bile acid - dissolves gall stones

ACTIVELLAFEMHRT (estrogen + progestin): Hormone replacement therapy Rx: menopause, vaginal atrophy

ACTONEL (risedronate): strengthens bones, prevents osteoporosis, bisphosphonate Rx: paget's disease, osteoporosis

ACTOS (pioglitazone hydrochloride): oral hypoglycemic Rx: diabetes

ACULAR (ketorolac tromethamine): nonsteroidal antiinflammatory drug Rx: allergies

acyclovir (ZOVIRAX): antiviral agent Rx: herpes, shingles

ADALAT, ADALAT CC (nifedipine): Ca++ blocker Rx: angina, HTN

adapalene (DIFFERIN): topical retinoid Rx: acne

ADDERALL (amphetamines): CNS stimulant Rx: ADD

ADIPEX-P (phentermine hydrochloride): appetite suppressant / stimulant

ADRENALIN (epinephrine): bronchodilator Rx: asthma

ADVAIR DISKUS (fluticasone propionate): oral inhaler Rx: asthma

ADVANCED NATURAL CARE (vitamin E): prenatal supplement

ADVICOR (lovastatin + niacin): lowers cholesterol

ADVIL (ibuprofen): NSAID analgesic

AEROBID (flunisolide): steroid anti-inflammatory inhaler Rx: asthma, bronchitis

AEROLATE, AEROLATE II, AEROLATE JR. (theophylline): xanthine bronchodilator Rx: asthma, COPD

AGENERASE (amprenavir): antiretroviral agent Rx: AIDS, HIV

AGGRENEX (aspirin+ extended-release + dipyridamide): prevent clot formation in stroke patients Rx: Stroke

AH-CHEW (chlorpheniramine): phenylephrine, methscopolamine, antihistamine / decongestant

AKINETON (biperiden): antiparkinsonian Rx: prophylaxis of EPS

AKNE-MYCIN (erythromycin): antibiotic Rx: infection

AKTOB (tobramycin): eye drops Rx: bacterial eye infections

ALAMAST (penicillate): prevents itch / rashes Rx: allergies

albandazole (ALBENZA): anthelmintic Rx: tapeworm

ALBENZA (albandazole): anthelmintic Rx: tapeworm

albuterol (COMBIVENT): ipratropium, bronchodilators Rx: asthma

albuterol (PROVENTIL HFA): beta-2 bronchodilator Rx: asthma

albuterol (SALBUTAMOL): beta-2 bronchodilator Rx: asthma, COPD

albuterol (VENTOLIN): beta-2 bronchodilator Rx: asthma, COPD

albuterol (VOLMAX): beta-2 bronchodilator Rx: asthma, COPD

albuterol sulfate (ACCUNE/PROVENTIL): antispasmodic Rx: asthma

albuterol sulfate (VOSPARE): antispasmodic Rx: bronchial spasms

alclometasone dipropionate (ACLOVATE): steroid anti-inflammatory Rx: psoriasis

ALDACTAZIDE (fctz): spironolactone diuretics Rx: HTN

ALDACTONE (spironolactone): potassium-sparing diuretic

ALDOCHOL (methylglupa + chlorothiazide): antihypertensive / diuretic compound

ALDOMET (methylglupa): antihypertensive

ALDORIL (methylglupa + hctz): antihypertensive compound

alendronate sodium (FOSAMAX): reduces bone loss Rx: osteoporosis, Paget's disease

ALLESSE 21, ALLESSE 28 (levonorgestrel): estradiol, oral contraceptive

ALLEVINE (naproxen sodium): NSAID analgesic

ALFENTA (alfentanil): narcotic analgesic / anesthetic

alfentanil (ALFENTA): narcotic analgesic / anesthetic

ALINIA (nitazoxanide): treats infectious diarrhea

ALKERAN (melphalan): anticancer agent Rx: multiple myeloma, ovarian CA

ALLEGRA (fexofenadine hydrochloride): antihistamine Rx: allergies

allopurinol (ZYLORIM): reduces serum uric acid Rx: gout

almotriptan (AXERT): SSRA, relieves migraines

ALORA (estradiol): hormone Rx: menopause

alosteron (LOTRONEX): antidiarrheal Rx: irritable bowel syndrome

ALPHAGAN (bromonide tartrate): lowers high-pressure in the eye Rx: open-angle glaucoma

alprazolam (XANAX): benzodiazepine hypnotic

alprostadil (CAVERJECT): Rx: male impotence

ALTACE (ramipril): ACE inhibitor Rx: hypertension

ALTOCOR (lovastatin): reduces LDL cholesterol

altretamine (HEXALEN): anticancer agent Rx: ovarian cancer

aluminum carbonate (BASALJEL): antacid Rx: heartburn, indigestion

aluminum hydroxide (AMPHOJEL): antacid Rx: indigestion

ALUPENT (metaproterenol sulfate): beta-2 bronchodilator Rx: COPD, asthma

amantadine (SYMMETREL): antiparkinsonian / antiviral, fluocinolone, topical steroid anti-inflammatory

AMARYL (glimepiride): oral hypoglycemic Rx: diabetes mellitus

AMBIEN (zolpidem tartrate): hypnotic Rx: insomnia

amcinonide (CYCLOCORT): anti-inflammatory agent Rx: Skin disorders

AMEN (medroxyprogesterone): hormone Rx: endometriosis, amenorrhea, uterine bleeding

AMERGE (naratriptan hydrochloride): migraine headaches

amikacin (AMIKIN): antibiotic

AMIKIN (amikacin): antibiotic

amiloride (MIDAMOR): potassium-sparing diuretic

amiloride + hydrochlorothiazide (MODURETIC): HCTZ, antihypertensive / diuretic

aminobenzoate (POTABA): Rx: fibrosis, scleroderma

aminosalicylic acid (PASER): bacteriostatic Rx: TB

amiodarone (CARDORONE): antiarrhythmic Rx: ventricular tachycardia/fibrillation

amiodipine + benazepril hydrochloride (LOTREL): benazepril, calcium blocker / ACE inhibitor Rx: HTN

amiodipine besylate (NORVASCO): calcium blocker Rx: HTN, angina

amitriptyline (TRIVIAL): perphenazine, tricyclic antidepressant / major tranquilizer combination

amitriptyline hydrochloride (ELAVIL): tricyclic antidepressant

ammonium lactate (LAC-HYDRIN): treats dry scaly skin Rx: ichthyosis vulgaris

amoxicillin (AMOXIL): antibiotic

amoxicillin (WYMOX): antibiotic Rx: gonorrhea, middle ear infections, skin infections, urinary tract infections

amoxicillin + clavulanate potassium (AUGMENTIN): clavulanate potassium, antibiotic

AMOXIL (amoxicillin): antibiotic

amphetamines (ADDERALL): CNS stimulant Rx: ADD

AMPHOJEL (aluminum hydroxide): antacid Rx: indigestion

amprenavir (AGENERASe): antiretroviral agent Rx: AIDS, HIV

ANAFRANIL (clomipramine hydrochloride): tricyclic antidepressant

anagrelide (AORYUN): platelet reducer Rx: thrombocytopenia

anakinra (KINERET): antirheumatic drug Rx: rheumatoid arthritis

ANAPLEX HD (hydrocodone): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine

ANAPROX, ANAPROX DS (naproxen sodium): NSAID analgesic / anti-inflammatory agent

anastrozole (ARIMIDEX): anticancer agent Rx: breast CA

ANATUSS DM (guaifenesin): pseudoephedrine, dextromethorphan, expectorant / decongestant / antitussive

ANATUSS LA (guaifenesin): pseudoephedrine, expectorant / decongestant

ANCOBON (flucytosine): antifungal agent

ANDRODERM (testosterone patches): increase testosterone

ANDROGEL (testosterone gel): hormone replacement product Rx: Hypogonadism

ANDROID (methyltestosterone): androgen / steroid / masculinizing hormone Rx: hypogonadism

anisindione (MIRADON): anticoagulant Rx: blood clots, pulmonary embolism, heart conditions

ANOLOR 300 (butalbital + acetaminophen + caffeine): APAP, caffeine, sedative / analgesic

ANSAD (fluripropil): NSAD Rx: arthritis

ANTABUSE (disulfiram): inhibits metabolism of alcohol Rx: alcohol addiction

antihemophilic factor IV (HUMATE-P) Rx: hemophilia

antihemophilic factor VIII (KOGENATE) Rx: hemophilia

antipyrine (AURALGAN): benzocaine, ear, drop analgesic

ANTIVERT (meclizine hydrochloride): antinauseant Rx: vertigo

ANUSOL HC (hydrocortisone): steroid anti-inflammatory

AOPHEX (rabeprazole): inhibits gastric acid secretion Rx: ulcers

APAP (acetaminophen): non-narcotic analgesic

apap (CAPITAL with CODEINE): codeine, narcotic analgesic

apap (ESGIC): caffeine, ibuprofen, analgesic / muscle relaxant / antianxiety compound Rx: headache

apap (NOREL PLUS): phenyltoloxamine, chlorpheniramine, analgesic / decongestant / antihistamine Rx: colds

apap (PHENAPHEN WITH CODEINE): codeine, narcotic analgesic

apap (PROTID): chlorpheniramine, phenylephrine, analgesic / antihistamine / decongestant Rx: colds

apap (SINULIN): phenylpropranolamine, chlorpheniramine, analgesic / decongestant / antihistamine Rx: colds, allergies

apap (SINUTAB SINUS ALLERGY): pseudoephedrine, chlorpheniramine, analgesic / decongestant / antihistamine

apap (SINUTAB SINUS): pseudoephedrine, analgesic / decongestant

apap (TYLENOL with CODEINE): codeine, narcotic analgesic

apap (ZYDONE): hydrocodone, narcotic analgesic

APHRODYNE (yohimbine): alpha-blocker Rx: impotence

APL (chorionic gonadotropin hormone): growth hormone

APRI (oral contraceptive)

AGRYUN (anagrelide): platelet reducer Rx: thrombocytopenia

AQUATENSEN (methylgluthiazide): antihypertensive / diuretic

ARALEN (chloroquine): antimalarial agent

ARAVA (leflunomide): antiinflammatory Rx: rheumatoid arthritis

ARCO-LASE (digestive enzymes) Rx: poor digestion

ARCO-LASE PLUS (digestive enzymes): hydroxyamine, atropine, phenobarbital Rx: poor digestion

ARICEPT (donepezil hydrochloride): cholinergic enhancer Rx: Alzheimer's

ARIMIDEX (anastrozole): anticancer agent Rx: breast CA
aripiprazole (ABILIFY): modifies sensitivity of serotonin and dopamine Rx: schizophrenia
ARISTOCORT (triamcinolone): steroid anti-inflammatory
ARMOUR THYROID (natural thyroid hormones t₄ and t₃): treats thyroid gland and goiters, suppression test Rx: overactive thyroid
ARTANE (trihexyphenidyl hydrochloride): antiparkinsonian Rx: prophylaxis of EPS
ARTHROTEC (diclofenac sodium + misoprostol): NSAID Rx: arthritis
ASA (acetylsalicylic acid): aspirin, NSAID analgesic
asa (EASPRIN): NSAID analgesic Rx: arthritis
ASACOL (mesalamine): anti-inflammatory agent Rx: colitis
asparaginase (ELSPAR): antineoplastic Rx: leukemia, sarcoma
ASPIRIN (HALFPRIN) Rx: acute MI prophylaxis
aspirin+ extended-release + dipyridamole (AGGRENOX): prevent clot formation in stroke patients Rx: Stroke
ASTELIN (azelastine hydrochloride): antihistamine Rx: allergic rhinitis
ASTRAMORPH PF (morphine): narcotic analgesic
ATACAND/ATACAND HCT (candesartan cilexetil): blocks angiotensin II Rx: high blood pressure
ATAMET (carbidopa): levodopa, antiparkinsonian Rx: Parkinson's disease
ATAPRYL (selegiline): MAO inhibitor Rx: Parkinson's disease
ATARAX (hydroxyzine hydrochloride): sedative / tranquilizer / antihistamine Rx: urticaria, anxiety
atenolol (TENORMIN): beta-1 blocker Rx: dysrhythmias, HTN, angina, MI prophylaxis
atenolol + chlorthalidone (TENORETIC): chlorthalidone, beta-1 blocker/diuretic Rx: HTN
ATIVAN (lorazepam): benzodiazepine hypnotic
atomoxetine hydrochloride (STRATTERA): boosts norepinephrine Rx: ADHD
atovastatin (LIPITOR): antihyperlipidemic Rx: high cholesterol
atovaquone (MEPRON): antibiotic Rx: pneumocystis carinii - pneumonia in AIDS
ATROHIST PLUS (phenylephrine): phenylpropanolamine, chlorpheniramine, hydroxyzine, atropine, scopolamine, decongestant / antihistamine Rx: allergies, colds
ATROMID-S (clofibrate): antilipidemic Rx: hyperlipidemia
ATROVENT (ipratropium bromide): anticholinergic bronchodilator Rx: COPD
AUGMENTIN (amoxicillin + clavulanate potassium): clavulanate potassium, antibiotic
AURALGAN (antipyrine): benzocaine, ear drop analgesic
auranofin (RIDAURA): anti-inflammatory drug Rx: rheumatoid arthritis
AVALIDE (irbesartan, hydrochlorothiazide): controls angiotensin II, diuretic
AVANDAMET (rosiglitazone maleate, metformin hydrochloride): oral hypoglycemic Rx: type II diabetes
AVANDIA (rosiglitazone maleate): oral hypoglycemic Rx: diabetes
AVAPRO (irbesartan): angiotensin II receptor antagonist Rx: diabetes
AVELOX (moxifloxacin hydrochloride): antibiotic Rx: sinus and lung infections
AVODART (dutasteride): shrinks enlarged prostate Rx: benign prostatic hyperplasia (BPH)
AVONEX (interferon): antiviral Rx: MS
AXERT (almotriptan): SSRA, relieves migraines
AXID (nizatidine): Histamine-2 antagonist, which inhibits gastric acid secretion Rx: ulcers
AXOCET (butalbital): AAP, sedative/analgesic Rx: tension H/A
AYGESTIN (norethindrone acetate): hormone Rx: amenorrhea, endometriosis
azatidine maleate + pseudoephedrine sulfate (TRINALIN): pseudoephedrine, antihistamine / decongestant compound
azathioprine (MURAN): immunosuppressant Rx: organ transplants, ulcerative colitis, lupus, severe arthritis
azelaic acid (AZELEX): antiacne cream
azelastine hydrochloride (ASTELIN): antihistamine Rx: allergic rhinitis
AZELIX (azelaic acid): antiacne cream
azithromycin (ZITHROMAX): antibiotic
AZMACORT (triamcinolone acetate): steroid anti-inflammatory Rx: asthma, bronchitis
AZI (zidovudine): antiviral agent Rx: HIV, AIDS virus
AZULFIDINE-EN (sulfasalazine): anti-infective, anti-inflammatory Rx: colitis, arthritis

B

bacampicillin (SPECTROBID): antibiotic
BACTRIM, BACTRIM DS (trimethoprim + sulfamethoxazole): sulfamethoxazole, antibacterials Rx: UTI, ear infection, bronchitis
BACTROBAN (mupirocin): topical antibacterial Rx: skin infections
BASALJEL (aluminum carbonate): antacid Rx: heartburn, indigestion
BAYCOL (civastatin): cholesterol inhibitor
becaplermin (REGRANEX): cell growth agent Rx: ulcers, diabetes
beclomethasone (BECLONENT): steroid anti-inflammatory agent Rx: COPD, asthma
beclomethasone (BECONASE, BECONASE AQ): steroid anti-inflammatory agent Rx: allergic rhinitis, nasal polyps
beclomethasone (VANCERIL INHALER): steroid Rx: asthma
BECLONENT (beclomethasone): steroid anti-inflammatory agent Rx: COPD, asthma
BECONASE, BECONASE AQ (beclomethasone): steroid anti-inflammatory agent Rx: allergies
BEELITH (magnesium): pyridoxine, magnesium / vitamin B6 supplement
BENADRYL (diphenhydramine): antihistamine Rx: allergies
benazepril hydrochloride (LOTENSIN): ACE inhibitor Rx: HTN, CHF
benazepril hydrochloride+ hydrochlorothiazide (LOTENSIN HCT): ACE inhibitor + diuretic Rx: HTN
benfroflumethazide (CORZIDE): nadolol, beta-blocker, diuretic Rx: HTN
BENEMID (probenecid): Licosuric Rx: gout. Also prolongs effects of penicillin
BENICAR (olmesartan medoxomil): blocks angiotensin II Rx: hypertension
BENTYL (dicyclanole hydrochloride): GI tract antispasmodic
BENYLIN (diphenhydramine): antihistamine
BENZAC AC (benzoyl peroxide): gel for acne Rx: acne vulgaris
BENZAGEL (benzoyl peroxide): gel for acne Rx: acne

BENZAMYCIN (erythromycin + benzoyl peroxide): benzoyl peroxide, topical antibiotic / keratolytic compound Rx: acne
benzoyl peroxide (BENZAC AC): antibacterial Rx: acne vulgaris
benzonatate (TESSALON): non-narcotic cough suppressant
benzoyl peroxide (BENZAGEL): gel for acne Rx: acne
benzoyl peroxide (TRIAZ): antineoplastic Rx: acne
benzoyl peroxide (VANOXIDE HC): hydrocortisone, skin cleanser, steroid anti-inflammatory Rx: acne
benzotropine (COGENTIN): antiparkinsonian Rx: EPS
bepridil (VASCOR): calcium blocker Rx: angina prophylaxis
BEROCCA (multivitamins): nutritional supplement
BEROCCA PLUS (multivitamins): minerals, nutritional supplement
ASPIRIN (levobunolol hydrochloride): eyedrops Rx: chronic open-angle glaucoma
betaine anhydrous (CYSTADANE): reduce homocysteine in the blood Rx: homocystinuria
BETALIN (thiamine): vitamin B-1
betamethasone (CELSESTONE): steroid anti-inflammatory
betamethasone dipropionate (DIPROLENE): synthetic cortisone-like steroid cream, gel or lotion Rx: itchy rashes
BETAPACE (sotalol): beta-blocker Rx: angina, HTN, arrhythmias
BETASERON (interferon): immunologic Rx: Multiple Sclerosis
betaxolol (KERLON): beta-1 blocker Rx: HTN
betaxolol hydrochloride (BETOPTIC): beta-1 blocker eyedrops Rx: glaucoma
bethanechol (URECHOUINE): bladder tone modifier Rx: urinary retention
BETIMOL (timolol): reduces pressure in the eye Rx: glaucoma
BETOPTIC (betaxolol hydrochloride): beta-1 blocker eyedrops Rx: glaucoma
BEXTRA (valdecoxib): COX-2 inhibitor Rx: osteoarthritis, rheumatoid arthritis, dysmenorrhea
BIAXIN (clarithromycin): antibiotic
bicalutamide (CASODEC): antiandrogen / anticancer Rx: prostate CA
BICLIN (penicillin): antibiotic
BICITRA (sodium citrate): citric acid, urinary alkalinizer Rx: acidosis
BILTRICIDE (praziquantel): anthelmintic Rx: schistosomiasis, flukes
bitoprostol (LUMIGAN): reduces pressure in the eye Rx: open-angle glaucoma
BIOHIST-LA (carboxinamine): pseudoephedrine, antihistamine / decongestant
biperiden (AKINETON): antiparkinsonian Rx: prophylaxis of EPS
bisacodyl (DULCOLAX): laxative
bismuth subsalicylate + metronidazole + tetracycline hydrochloride (HELL-DAC THERAPY) Rx: stomach ulcers
bisoprolol (ZEBETA): beta-blocker antihypertensive
bisoprolol (ZIAC): HCTZ, antihypertensive / diuretic Rx: HTN
bitolterol (TRNALTAL): beta bronchodilator Rx: asthma
BLEPHAMIDE (sulfacetamide): prednisolone, antibacterial, steroid anti-inflammatory Rx: ocular infections
BLOCADREN (timolol): beta-blocker Rx: angina, HTN, arrhythmias
BONINE (meclizine): antiemetic Rx: N&V, vertigo
BONTRIL PDM (bontiril slow release): phendimetrazine, stimulant, appetite suppressant Rx: obesity
bontiril slow release (BONTRIL PDM): phendimetrazine, stimulant, appetite suppressant Rx: obesity
BRETHINE (terbutaline sulfate): beta-2 bronchodilator Rx: asthma, COPD
BREVICON, oral contraceptive
brimonidine tartrate (ALPHAGAN): lowers high-pressure in the eye Rx: open-angle glaucoma
BROMFED CAPSULES, PD CAPSULES (brompheniramine): pseudoephedrine / antihistamine / decongestant Rx: allergic rhinitis, nasal congestion
bromocriptine mesylate (PARLODEL): ergot Rx: Parkinson's disease, hypogonadism, infertility, amenorrhea
brompheniramine (BROMFED CAPSULES, PD CAPSULES): pseudoephedrine / antihistamine / decongestant Rx: allergic rhinitis, nasal congestion
brompheniramine (DIMETANE-DX): pseudoephedrine, dextromethorphan, antihistamine / decongestant / antussive
brompheniramine (LODRANE ALLERGY CAPSULES): antihistamine
brompheniramine (LODRANE LD CAPSULES): pseudoephedrine, antihistamine / decongestant
brompheniramine (LODRANE LIQUID): pseudoephedrine, antihistamine / decongestant
brompheniramine (RESPAHIST): pseudoephedrine, antihistamine / decongestant
brompheniramine (RONDEC CHEWABLE TABLET): pseudoephedrine, antihistamine / decongestant
brompheniramine (ULTRABROM, ULTRABROM PO): pseudoephedrine, antihistamine / decongestant
BRONCHOLATE SYRUP (ephedrine): guaifenesin, bronchodilator, expectorant Rx: colds, bronchitis
budesonide (ENTOCORT EC): anti-inflammatory steroid budesonide Rx: Crohn's disease
budesonide (PULMICORTIURBUHATER): steroid anti-inflammatory Rx: asthma
budesonide (RHINOCORT): corticosteroid Rx: allergic rhinitis
bumetanide (BUMEX): decrease amount of salt and water in body Rx: edema, fluid retention
BUMEX (bumetanide): decrease amount of salt and water in body Rx: edema, fluid retention
BUPAP (butalbital): acetaminophen, sedative/analgesic Rx: headache
bupivacaine (SENSORCANE WITH EPI): epinephrine, local anesthetic with vasoconstrictor
bupivacaine (SENSORCANE, SENSORCANE-MPF): local anesthetic
BUPRENEX (buprenorphine): narcotic analgesic Rx: anxiety disorders
buprenorphine (BUPRENEX): narcotic analgesic Rx: anxiety disorders
bupropion (WELLBUTRIN): antidepressant
bupropion hydrochloride (ZYBAN): nicotine-free quit-smoking aid Rx: smokers
BUSPAR (buspirone hydrochloride): antidepressant
buspirone hydrochloride (BUSPAR): antidepressant



bisulfan (MYLERAN): anticancer agent Rx: leukemia
butalbital (PACAPAS): caffeine, APAP, sedative / analgesic Rx: headache
butalbital (AXOCET): APAP, sedative/analgesic Rx: tension H/A
butalbital (BUPAP): acetaminophen, sedative/analgesic Rx: headache
butalbital (ESGIC-PLUS): APAP, caffeine, sedative / analgesic
butalbital (FIOREXET WITH CODEINE): APAP, caffeine, codeine, sedative / narcotic analgesic
butalbital (FIOREXET): APAP, caffeine, analgesic Rx: H/A
butalbital (FIORINAL with CODEINE): ASA, caffeine, codeine, narcotic analgesic compound
butalbital (MEDIGESIC): APAP, caffeine, analgesic compound Rx: headache
butalbital (PHRENILIN): APAP, analgesic compound
butalbital (SEDAPAP): APAP, sedative/analgesic Rx: tension H/A
butalbital + acetaminophen + caffeine (ANOLOR 300): APAP, caffeine, sedative / analgesic
butalbital + aspirin + caffeine (FIORINAL): ASA, caffeine, non-narcotic analgesic
buprenorphine (MENTAX): antifungal Rx: ringworm, athlete's foot
butoracanol (GYNAZOLE-1): antifungal Rx: yeast infections
bupropion (STADOL NS): narcotic analgesic

C

carbogerline (DOSTINEX): dopaminergic Rx: hyperprolactinemia
CAFERGOT (ergolamine tartrate + caffeine): prevents vascular headaches Rx: migraine, migraine variants, cluster headaches
CALAN, CALAN SR (verapamil hydrochloride): calcium blocker Rx: angina, hypertension, PSVT prophylaxis, headache
CALCET, CALCET PLUS, calcium supplement
CALCIBIND (cellulose sodium phosphate): binds calcium
calcipotriene (DOVONEK): topical agent Rx: psoriasis
calcitonin-salmon (MIAACALCIN): synthetic hormone Rx: postmenopausal osteoporosis
calcitrol (RICALTROL): vitamin D analog Rx: hypocalcemia, bone disease
calcium and vitamin D supplement (OS-CAL)
candesartan cilexetil (ATACAND/ATACAND HCT): blocks angiotensin II Rx: high blood pressure
capecitabine (XELODA): oral anticancer agent Rx: breast CA
CAPITAL with CODEINE (apap): codeine, narcotic analgesic
CAPOZIDE (captopril + hydrochlorothiazide)
captopril + hydrochlorothiazide (CAPOZIDE)
CARAFATE (sucralfate): anti-ulcer agent
carbamazepine (TEGRETOL, TEGRETOL XR): anticonvulsant Rx: epilepsy
carbicillin (GEOCILIN): antibiotic
carbidopa (ATAMET): levodopa, anti-parkinsonian Rx: Parkinson's disease
carbidopa + levodopa (SINEMET, SINEMET CR): levodopa, dopamine precursors Rx: Parkinson's Disease
carbinoxamine (BIOHISTAL): pseudoephedrine, antihistamine / decongestant
carbinoxamine (RONDEC DM): pseudoephedrine, dextromethorphan, antihistamine / decongestant / antitussive
carbinoxamine (RONDEC ORAL DROPS, RONDEC SYRUP, RONDEC TABLET, RONDEC TR TABLET): pseudoephedrine, antihistamine / decongestant
carboplatin (PARAPLATIN): anti-cancer agent Rx: ovarian CA
CARDENE (nicardipine hydrochloride): calcium blocker Rx: angina, HTN
CARDIOQUIN (quinidine): antiarrhythmic Rx: cardiac dysrhythmias
CARDIZEM, CARDIZEM CD (diltiazem hydrochloride): calcium blocker Rx: angina, HTN
CARDURA (doxazosin mesylate): alpha blocker Rx: HTN, prostatic hypertrophy
carisoprodol (SOMA COMPOUND): aspirin, sedative / antispasmodic / analgesic Rx: muscle spasm
carisoprodol (SOMA): sedative / antispasmodic
CARNITOR (levocarnitine) Rx: carnitine deficiency
carteolol (CARTROL): nonselective B-blocker Rx: HTN, angina
CARTROL (carteolol): nonselective B-blocker Rx: HTN, angina
carvedilol (COREG) & B-blocker Rx: HTN, CHF, angina
casanthranol (PERI-COLACE): docusate, laxative / stool softener
CASODEX (bicalutamide): antiandrogen / anticancer Rx: prostate CA
CATAFLAM (diclofenac): NSAID analgesic
CATAPRES (clonidine hydrochloride): antihypertensive agent
CATAPRES ITS (transdermal clonidine): antihypertensive
CAVERJECT (alprostadil) Rx: male impotence
CECLOR, CECLOR CD (cefadroxil): antibiotic
CEDAX (ceftibuten): antibiotic
cefazolin (CEZOR, CEZOR CD): antibiotic
cefadroxil monohydrate (DJURICEF): antibiotic
cefazolin (KECK ZIL): antibiotic
cefixime (SUPRAX): broad spectrum antibiotic
cefotaxime (CLAFORAN): antibiotic
cefotixin (MEFOXIN): antibiotic
cefprozil (CEFZIL): antibiotic
ceftazidime (FORTAZ): antibiotic
cefuroxime (TAZICEF): antibiotic
ceftazidime (TAZIDIME): antibiotic
ceftibuten (CEDAX): antibiotic
CEFTIN (cefuroxime axetil): antibiotic
ceftriaxone (ROCEPHIN): antibiotic
cefuroxime (KEFJURX): antibiotic
cefuroxime axetil (CEFTIN): antibiotic
CEFTZIL (cefprozil): antibiotic
CELEBREX (celecoxib): COX-2 inhibitors Rx: acute pain, menstrual cramps, arthritic pain
celecoxib (CELEBREX): COX-2 inhibitors Rx: acute pain, menstrual cramps, arthritic pain
CELESTONE (betamethasone): steroid anti-inflammatory
cellulose sodium phosphate (CALCIBIND): binds calcium

CELONTIN (methsuximide): anticonvulsant Rx: absence Sz
cephalexin (KEFTAB): antibiotic
cephalexin hydrochloride (KEFLEX): antibiotic
CEREZYME (miglustat): enzyme Rx: Gauchers disease
cerivastatin (BAYCOL): cholesterol inhibitor
cetirizine (OMNICEF): antihistamine Rx: pneumonia, bronchitis
cetirizine (ZYRTEC, ZYRTEC SYRUP): antihistamine Rx: allergy, hives, asthma
cetopodoxime (VANTIN): antibiotic
CHEMET (lead chelator) Rx: lead poisoning
chlormbuticil (LEUKERAN): anticancer agent Rx: leukemia, lymphoma, Hodgkin's disease
chlordiasepoxide hydrochloride + clidinium bromide (LIBRAX) Rx: peptic ulcers, irritable bowel syndrome, acute enterocolitis
chlordiasepoxide (LIMBRIUM): benzodiazepine hypnotic
chlordiasepoxide (LIMBITROL, LIMBITROL DS): amitriptyline, benzodiazepine hypnotic / tricyclic antidepressant Rx: depression with anxiety
chlorhexidine (PERIGARD): oral rinse
chlorophyllin copper (DERIFIL): internal deodorant Rx: colostomy, incontinence
chlorprocaine (NESAICAIN): local anesthetic
chloroquine (ARALEN): antimalarial agent
chlorothiazide (DIURIL): antihypertensive / diuretic
chloroxylenol (COPTIC EAR DROPS): pramoxine, hydrocortisone, antiseptic, antifungal, steroid anti-inflammatory
chlorpheniramine (NALEX-A): phenylloxamine, phenylephrine, antihistamine / sedative / decongestant Rx: colds
chlorpheniramine (OMNIHIST LA): phenylephrine, methscopolamine, antihistamine / decongestant
chlorpheniramine (ORNADE): phenylpropranolamine, antihistamine / decongestant compound
chlorpheniramine maleate + d-pseudoephedrine hydrochloride (DECONAMINE): antihistamine/decongestant Rx: allergies/colds
chlorpromazine (THORAZINE): major tranquilizer
chlorpropamide (DIABINESE): oral hypoglycemic agent Rx: diabetes
chlorthalidone (HYGROTON): antihypertensive / diuretic
chlorthalidone (THALTON): antihypertensive / diuretic Rx: HTN, CHF
chlorzoxazone (PARAFON FORTE): acetaminophen, muscle relaxant / analgesic compound
cholestyramine (PREVALITE): cholesterol reducer
choline magnesium trisalicylate (TRILISALIC): anti-inflammatory/analgesic
chorionic gonadotropin hormone (APL): growth hormone
CHROMAGEN (iron): vitamin C, folic acid Rx: anemias
chlorpheniramine (AH-CHEW): phenylephrine, methscopolamine, antihistamine / decongestant
clopidogrel (PLOPROX): antifungal Rx: ringworm, Candida
clopidogrel (PELAC): antifungal nail lacquer Rx: ringworm of the nails
cimetidine (TAGAMET): histamine-2 blocker which inhibits gastric acid secretion Rx: ulcers
CIPRO (ciprofloxacin): antimicrobial agent
ciprofloxacin (CIPRO): antimicrobial agent
cisapride (PROPULSID): increases gastric emptying
CLAFORAN (cefotaxime): antibiotic
CLARINEX (desloratadine): antihistamine Rx: seasonal allergic rhinitis
clarithromycin (BIAIXIN): antibiotic
CLARITIN (loratadine): non-sedating antihistamine Rx: allergies
CLARITIN-D (loratadine): pseudoephedrine, antihistamine / decongestant Rx: allergic rhinitis
clemastine (TAVIST): antihistamine Rx: allergies
clémastine (TAVIST-D): phenylpropranolamine, antihistamine / decongestant Rx: allergies
CLEOCIN (clindamycin): antibiotic
clindamycin (CLEOCIN): antibiotic
CLINORIL (sulindac): NSAID analgesic Rx: arthritis
clobetazol propionate (TEMOVATE): steroid anti-inflammatory
clofibrate (ATROMID-S): antilipidemic Rx: hyperlipidemia
CLOMID (clomiphene): ovulatory stimulant, fertility drug
clomiphene (CLOMID): ovulatory stimulant, fertility drug
clomiphene citrate (SEROPHENE): induces ovulation
clomipramine hydrochloride (ANAFRANIL): tricyclic antidepressant
clonazepam (KLONOPIN): benzodiazepine hypnotic Rx: seizures
clonidine hydrochloride (CATAPRES): antihypertensive agent
clorazepate dipotassium (TRANXEN T-TAB, TRANXEN-SD): benzodiazepine hypnotic Rx: anxiety, seizures
clotrimazole (GYNE-LOTRIMIN): antifungal agent Rx: ringworm, athlete's foot, jock itch
clotrimazole (LOTRIMIN): antifungal agent
clotrimazole (MYCELEX, MYCELEX G): antifungal Rx: candidiasis
clotrimazole + betamethasone dipropionate (LOTRISONE): betamethasone, topical antifungal / steroid anti-inflammatory compound
clozapine (CLOZARIL): psychotropic Rx: schizophrenia
CLOZARIL (clozapine): psychotropic Rx: schizophrenia
COCAINE (cocaine hci): mucous membrane anesthetic
cocaine hci (COCAINE): mucous membrane anesthetic
cocaine (CODIMAL PH): phenylephrine, pyrilamine, narcotic antitussive / decongestant compound Rx: colds, allergies
codine (NUCOFED EXPECTORANT): pseudoephedrine, guaifenesin, narcotic antitussive / decongestant / expectorant
codine (NUCOFED): pseudoephedrine, narcotic antitussive / decongestant compound
codine (PEDIAFAC): phenylephrine, chlorpheniramine, potassium iodide, narcotic antitussive / decongestant / antihistamine
CODICLEAR DM (hydrocodone): guaifenesin, narcotic antitussive / expectorant Rx: coughs
CODIMAL DH (hydrocodone): phenylephrine, pyrilamine, narcotic antitussive /

decongestant Rx: colds, allergies
CODIMAL DM (dextromethorphan): phenylephrine, pyrilamine, non-narcotic antitussive / decongestant Rx: colds, allergies
CODIMAL PH (codeine): phenylephrine, pyrilamine, narcotic antitussive / decongestant compound Rx: colds, allergies
COENZYME Q-10 (Q-BID): helps maintain healthy muscle, increases ATP production
COENZYME Q-10 (UBI-OGEL): helps maintain healthy muscle, increases ATP production Rx: mitochondrial cytopathy
COGENTIN (benztropine): antiparkinsonian Rx: EPS
COGNEX (tacrine): cholinomimetic/ACh-ase inhibitor Rx: Alzheimer's Disease
COLACE (docusate): stool softener
COLBENEMID (probenecid): cothicine, uricosuric Rx: gout
colesevelam (WELCHOL): lowers cholesterol Rx: high cholesterol
COLESTID (colestipol): reduces serum cholesterol
colestipol (COLESTID): reduces serum cholesterol
COMBIPATCH (estradiol): norethindrone, estrogens Rx: menopause symptoms
COMBIPRES (diltiazem): nifedipine, antihypertensive/diuretic
COMBIVENT (albuterol): ipratropium, bronchodilators Rx: asthma
COMBIVIR (amivudine): zidovudine, antivirals Rx: HIV, AIDS
COMPazine (prochlorperazine): phenothiazine antiemetic
COMPRO (prochlorperazine): phenothiazine antiemetic
COMTAN (entacapone): extends the effect of Sinemet Rx: Parkinson's
CONCERTA (methylphenidate): stimulant Rx: attention deficit hyperactivity disorder in children, narcolepsy
CONDYLOX (podofoxiol): antimicrobial Rx: anogenital warts
COPAXONE (glatiramer): neurologic agent Rx: Multiple Sclerosis
COPTIC EAR DROPS (chloroxylenol): pramoxine, hydrocortisone, antiseptic, antifungal, steroid anti-inflammatory
CORDARONE (amiodarone): antiarrhythmic Rx: ventricular tachycardia/fibrillation
CORDRAN (flurandrenolide): steroid anti-inflammatory
COREG (cardivellol) & b-blocker Rx: HTN, CHF, angina
CORMAX (dobesalol): steroid anti-inflammatory Rx: dermatoses
CORTENEMA (hydrocortisone): steroid anti-inflammatory Rx: colitis
CORTIFOAM (hydrocortisone): steroid anti-inflammatory Rx: proctitis
CORTISOL (hydrocortisone): steroid anti-inflammatory
cortisone (CORTONE): steroid anti-inflammatory
CORTISPORIN (neomycin): polymyxin, hydrocortisone, antibiotic / steroid anti-inflammatory
CORTONE (cortisone): steroid anti-inflammatory
CORZIDE (benzofluoranthiazide): nadolol, b-blocker, diuretic Rx: HTN
COSOPT (timolol): dorzolamide, b-blocker, decreases intraocular pressure Rx: glaucoma
COTAZYM, **COTAZYM-S** (pancrelipase): digestive enzyme Rx: pancreatitis, cystic fibrosis
COUJADIN (warfarin): anticoagulant Rx: thrombosis prophylaxis
COVERA HS (verapamil): calcium blocker Rx: HTN, angina
COZAAR (losartan): antihypertensive
CREON (pancrelipase): pancreatic enzyme replacement
CRIXIVAN (indinavir): protease inhibitor antiviral Rx: AIDS
cromolyn (GASTROCREM): antihistaminic, antiallergic Rx: diarrhea, H1A, urticaria, nausea
cromolyn sodium (INTAL): antiallergic Rx: asthma prophylaxis
cromolyn sodium (NASALCROM): antihistaminic/antiallergic medication Rx: asthma, allergies
CUMARA (estradiol hormone) Rx: menopause
CUPRIMINE (penicillamine): chelating agent, anti-inflammatory Rx: Wilson's disease, arthritis, heavy metal toxicity
CUTIVATE (flucanazole): topical steroid anti-inflammatory Rx: dermatoses
cyanoacablamine (NASOCOBAL): vitamin B-12 Rx: anemia
cyclozaxiprine hydrochloride (FLEXERIL): skeletal muscle relaxant
CYCLOCORT (amcortidone): anti-inflammatory agent Rx: Skin disorders
cyclophosphamide (CYTOXAN): anticancer agent Rx: Hodgkin's disease, lymphoma antihistamine/decongestant, allergies
cyclosporine (SANDIMMUNE): immunosuppressant agent Rx: prophylaxis of rejection of transplanted organs
cyclosporine (SANGCYA): immunosuppressant agent Rx: prophylaxis of rejection of transplanted organs
CYCRIN (medroxyprogesterone acetate): hormone Rx: uterine bleeding
cytosinerine (SEROMYCIN): antibiotic Rx: TB, UTI
cytosporine (NEORAL): immunosuppressant Rx: organ transplant
CYTERT (pemelone): stimulant Rx: Attention Deficit Disorder in children
cyproheptadine (PERIACTIN): antihistamine
CYSTADANE (betaine anhydrous): reduce homocysteine in the blood Rx: homocystinuria
CYSTOSPASZ, **CYSTOSPASZ-M** (hycosamine): urinary tract antispasmodic
CYTOMEL (tirothronine): thyroid hormone Rx: hypothyroidism
CYTOTEC (misoprostol): prevents gastric ulcers caused by NSAIDs
CYTUVENE (ganciclovir): antiviral Rx: cytomegalovirus, ARC, AIDS
CYTOXAN (cyclophosphamide): anticancer agent Rx: Hodgkin's disease, lymphoma antihistamine/decongestant, allergies

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DALMAME (flurazepam hydrochloride): benzodiazepines Rx: insomnia
danzol (DANOCRINE): gonadotropin inhibitor Rx: endometriosis, fibrocystic breast disease
DANOCRINE (danzol): gonadotropin inhibitor Rx: endometriosis, fibrocystic breast disease
DANTRIUM (dantrolene): skeletal muscle antispasmodic Rx: multiple sclerosis, cerebral palsy
dantrolene (DANTRIUM): skeletal muscle antispasmodic Rx: multiple sclerosis, cerebral palsy
DARANIDE (dichlorophenamide): carbonic anhydrase inhibitor - lowers intraocular pressure Rx: glaucoma

DARAPRIM (pyrimethamine): antiparasitic Rx: malaria, toxoplasmosis
DARVOCT-N (propoxyphene napsylate + acetaminophen): APAP, narcotic analgesic
DARVON (propoxyphene napsylate + acetaminophen): narcotic analgesic
DARVON COMPOUND (propoxyphene napsylate + acetaminophen): ASA, caffeine narcotic analgesic compound
DAYPRO (oxaprozin): NSAID Rx: arthritis
DDAVP (desmopressin acetate): antidiuretic hormone Rx: nocturia, diabetes insipidus
DECADRON (dexamethasone): steroid anti-inflammatory
DECADRON L.A. (dexamethasone): steroid anti-inflammatory
DECLAMYCIN (demeclocycline): antibiotic
DECOMAMINE (chlorpheniramine maleate + p-suedoephedrine hydrochloride): antihistamine/decongestant Rx: allergies/colds
DECONSAL II (pseudoephedrine): guaifenesin, decongestant / expectorant Rx: colds
DEFEN-LA (pseudoephedrine): guaifenesin, decongestant, expectorant Rx: the common cold
deferoxamine (DESFERAL): iron-chelator Rx: iron toxicity
deltavirdine (DESCRIPTOR): antiviral Rx: HIV
DELTAONE (prednisone): steroid anti-inflammatory Rx: rheumatoid arthritis, severe asthma
DEMADEX (furosemide): diuretic Rx: HTN, edema, CHF, kidney disease, liver disease
demecarium (HUMORSOL): topical miotic Rx: glaucoma
demeclocycline (DECLAMYCIN): antibiotic
DEMEROL (meperidine hydrochloride): narcotic analgesic
DEMSEK (metyrosine): antihypertensive Rx: pheochromocytoma
DEMULEN, oral contraceptive
DEVAVIR (penciclovir): topical anti-viral Rx: recurrent cold sores
DEPACON (divalproex sodium): antiepileptic Rx: absence seizures
DEPAKENE (valproic acid): antiepileptic Rx: epilepsy
DEPAKOTE (divalproex): antiepileptic Rx: absence seizures
DEPEN (penicillamine): DMARD Rx: arthritis, pain
DEPO-MEDROL (methylprednisolone): steroid anti-inflammatory
DEPONIT (nitroglycerin): transdermal nitrate Rx: angina
DEPO-PROVERA (medroxyprogesterone acetate): contraceptive / anticancer agent Rx: endometrial or renal CA
DEPRENYL (selegiline): MAO inhibitor Rx: Parkinson's disease
DERIFIL (chlorophyllin copper): internal deodorant Rx: colostomy, incontinence
DESFERAL (deferoxamine): iron-chelator Rx: iron toxicity
desipramine hydrochloride (NORPRAMIN): tricyclic antidepressant
desloratadine (CLARINEX): antihistamine Rx: seasonal allergic rhinitis
desmopressin acetate (DDAVP): antidiuretic hormone Rx: nocturia, diabetes insipidus
desmopressin acetate (STIMATE): pituitary hormone Rx: hemophilia
DESOGEST (desogestrel): estradiol, oral contraceptive
desogestrel (DESOGEST): estradiol, oral contraceptive
desonide (DESOWEN): steroid anti-inflammatory
desonide (TRIDESILON): anti-inflammatory steroid cream Rx: variety of skin conditions
DESOWEN (desonide): steroid anti-inflammatory
desoximetasone (TOPICORT): antiinflammatory cream Rx: various skin conditions
DESOXYN (methamphetamine hydrochloride): stimulant
DESYREL (trazodone hydrochloride): anti-depressant Rx: depression
DETROL (tolterodine tartrate): cholinergic Rx: urinary urgency
dexamethasone (DECADRON L.A.): steroid anti-inflammatory
dexamethasone (DECADRON): steroid anti-inflammatory
DEXEDRINE (dextroamphetamine sulfate): stimulant
dexamethylphenidate hydrochloride (FOCALIN)
dextroamphetamine (DEXTROSTAT): stimulant Rx: attention deficit hyperactivity disorder, narcolepsy
dextroamphetamine sulfate (DEXEDRINE): stimulant
dextromethorphan (CODIMAL DM): phenylephrine, pyrilamine, non-narcotic antitussive / decongestant Rx: colds, allergies
dextromethorphan (DIBAE-TUSS DM): antitussive Rx: cough
dextromethorphan (DURATUSS DM): guaifenesin antitussive, expectorant Rx: colds, allergies
dextromethorphan (FENESIN DM): guaifenesin, antitussive / expectorant Rx: colds
dextromethorphan (MUCO-FEN DM): guaifenesin, antitussive / expectorant Rx: colds
dextromethorphan (RESPA-DM): guaifenesin, antitussive / expectorant
dextromethorphan (TUSS-DA RX): pseudoephedrine, antitussive / decongestant
dextromethorphan (TUSS-ORGANIDIN DM): iodinated glycerol, antitussive / mucolytic, expectorant Rx: COPD, asthma, colds
DEXTROSTAT (dextroamphetamine): stimulant Rx: attention deficit hyperactivity disorder, narcolepsy
DIABETA (glyburide): oral hypoglycemic Rx: diabetes
DIABE-TUSS DM (dextromethorphan): antitussive Rx: cough
DIABINESE (chlorpromamide): oral hypoglycemic agent Rx: diabetes
DIAMOX (acetazolamide): diuretic / anticonvulsant Rx: glaucoma, CHF, epilepsy, mountain sickness
DIASAT (diazepam): anxiolytic Rx: anxiety, seizure, panic disorder
diazepam (DIASAT): anxiolytic Rx: anxiety, seizure, panic disorder
diazepam (VALIUM): benzodiazepine hypotensive
diatrizoate (HYPERSTAT): antihypertensive Rx: HTN
diatrizoate (PROGLYCEM): increases blood glucose Rx: hypoglycemia
DIBENZYLIN (phenoxbenzamine): alpha blocker Rx: HTN, sweating
dichlorophenamide (DARANIDE): carbonic anhydrase inhibitor - lowers intraocular pressure Rx: glaucoma
diclofenac (CATAFLAM): NSAID analgesic



diclofenac (VOLTAREN): NSAID analgesic Rx: arthritis
diclofenac sodium + misoprostol (ARTHRITEC): NSAID Rx: arthritis
dicyclomine hydrochloride (BENTYL): GI tract antispasmodic
didanosine (VIDEX): antiviral Rx: AIDS
DIDRONEL (etidronate): bone metabolism regulator Rx: Paget's disease, total hip replacement
diethylpropion hydrochloride (TENUATE): appetite suppressant Rx: weight loss
difenoxin (MOTOFEN): antiperistaltic, narcotic antidiarrheal agent
DIFFERIN (adapalene): topical retinoid Rx: acne
DIFLUCAN (fluconazole): antifungal agent
diflunisal (DOLOBID): NSAID analgesic
digestive enzymes (ARCO-LASE PLUS): hycosamine, atropine, phenobarbital Rx: poor digestion
digestive enzymes (ARCO-LASE): Rx: poor digestion
digestive enzymes (KUTRASE): hycosamine, phenyltoloxamine, antispasmodic sedative Rx: indigestion
digestive enzymes (KÜ-ZYME) Rx: indigestion
digoxin (LANOXIN/CAPS): cardiac glycoside Rx: CHF, supraventricular dysrhythmias
digoxin (LANOXIN): cardiac glycoside Rx: CHF, dysrhythmias
dihydrocodeine bitartrate + aspirin + caffeine (SYNALGOS-DC): aspirin, caffeine, narcotic analgesic compound
dihydroergotamine mesylate (MIGRANAL): nasal spray Rx: migraines
DILATOR XR (diltiazem hydrochloride): calcium blocker Rx: HTN, angina
DILANTIN (phenytoin sodium): anticonvulsant
DILATRATE SR (isosorbide): long-acting nitrate Rx: angina
DILAUDID, DILAUDID HP (hydromorphone hydrochloride): narcotic analgesic
DILOR, DILOR-200, DILOR-400, DILOR ELIXIR (diphylline): xanthine bronchodilator Rx: asthma, COPD
DILOR-G (diphylline): guaifenesin, bronchodilator/expectorant
diltiazem hydrochloride (CARDIZEM, CARDIZEM CD): calcium blocker Rx: angina, HTN
diltiazem hydrochloride (DILACOR XR): calcium blocker Rx: HTN, angina
diltiazem hydrochloride (TIAZAC): calcium blocker Rx: HTN, angina
dimenhydrinate (DRAMAMINE): antineaustrant
DIMETANE-DX (brompheniramine): pseudoephedrine, dextromethorphan, antihistamine / decongestant / antitussive
DIOVAN (valsartan): angiotensin II inhibitor Rx: HTN
DIPENTUM (olsalazine sodium): anti-inflammatory agent Rx: ulcerative colitis
diphenhydramine (BENADRYL): antihistamine Rx: allergies
diphenhydramine (BENLYN): antihistamine
diphenhydramine (DYTUSS): alcohol, antihistamine
diphenoxylate (LONOX): atropine, narcotic antidiarrheal / antispasmodic compound
diphenoxylate hydrochloride (LOMOTIL): atropine, narcotic antidiarrheal / antispasmodic compound
diphtheria & tetanus toxoids (TETRAMUNE): vaccine
DIPRIVAN (propofol): general anesthetic agent
DIPROLENE (betamethasone dipropionate): synthetic cortisone-like steroid cream, gel or lotion Rx: itchy rashes
dipyridamole (PERSANTINE): cerebral & coronary vasodilator Rx: CVA, angina
dirthromycin (DYNABAC): antibiotic
DISALCID (salsalate): NSAID Rx: arthritis
disopyramide phosphate (NORPACE, NORPACE CR): antiarrhythmic
disulfiram (ANTABUSE): inhibits metabolism of alcohol Rx: alcohol addiction
DITROPAN, DITROPAN XL (oxybutynin chloride): anticholinergic / antispasmodic Rx: urinary frequency, incontinence, dysuria
DILCARDIN (hydroflumethiazide): antihypertensive / diuretic
DIURIL (chlorothiazide): antihypertensive / diuretic
DIUTENSEN-R (methylclothiazide): reserpine, antihypertensive / diuretic compound
divalproex (DEPAKOTE): antiepileptic Rx: absence seizures
divalproex sodium (DEPACON): antiepileptic Rx: absence seizures
dobelasol (CORMAX): steroid anti-inflammatory Rx: dermatoses
docosate (COLACE): stool softener
docosate (SOF-LAX): stool softener Rx: hemorrhoids, hernias, rectal surgery patients
docosate (SURFAC LIQUI-GELS): stool softener Rx: hemorrhoids, hernia patients
DOLOBID (diflunisal): NSAID analgesic
DOLOPHINE (methadone): narcotic analgesic
domase alfa or dnase (PULMOZYME): lytic enzyme which dissolves infected lung secretions Rx: cystic fibrosis
donepezil hydrochloride (ARICEPT): cholinergic enhancer Rx: Alzheimer's disease
donepezil (COMBIPRES): chlorothalidone, antihypertensive/diuretic
DONNAGEL (kaolin): pectin, belladonna alkaloids, antispasmodic / stool binder Rx: diarrhea
DONNATAL (phenobarbital + hycosamine sulfate + atropine sulfate): belladonna alkaloids, barbiturate sedative, antispasmodic Rx: ulcers
DONNAZYME, pancreatic enzymes Rx: pancreatic insufficiency
DOPRAM (doxapram): respiratory stimulant Rx: COPD, surgery
DORAL (quazepam): sleeping medication Rx: insomnia
DORYX (doxycycline hyclate): antibiotic
doxizolamide (TRUSOPT) Rx: glaucoma, reduction of IOP
DORTINEX (cabergoline): dopaminergic Rx: hyperprolactinemia
DOVONEX (calcipotriene): topical agent Rx: psoriasis
doxapram (DOPRAM): respiratory stimulant Rx: COPD, surgery
doxazosin mesylate (CARDURA): alpha blocker Rx: HTN, prostatic hypertrophy
doxepin hydrochloride (SINEQUAN): tricyclic antidepressant
DOXIL (doxorubicin): antineoplastic Rx: AIDS-related tumors
doxorubicin (DOXIL): antineoplastic Rx: AIDS-related tumors
doxycycline (MONODOX): antibiotic
doxycycline (PERIOSTAT): antibiotic
doxycycline (VIBRAMYCIN): antibiotic

doxycycline (VIBRA-TABS): antibiotic
doxycycline hyclate (DORYX): antibiotic
doxylamine (UNISOM): antihistamine sedative Rx: insomnia
DRAMAMINE (dimenhydrinate): antineaustrant
dronabinol (MARJOL): appetite stimulant Rx: weight loss in AIDS, chemotherapy
DULCOLAX (bisacodyl): laxative
DUPHALAC (lactulose): laxative Rx: constipation
DURAGESIC (fentanyl): narcotic painkiller
DURAMORPH (morphine): narcotic analgesic
DURATUSS (hydrocodone): pseudoephedrine, guaifenesin antitussive / decongestant / expectorant Rx: colds, allergies
DURATUSS DM (dextromethorphan): guaifenesin antitussive, expectorant Rx: colds, allergies
DURATUSS G (guaifenesin expectorant) Rx: colds, allergies
DURA-VENT (phenylpropranolamine): guaifenesin, decongestant / expectorant
DURICEF (cefadroxil monohydrate): antibiotic
dutasteride (AVODART): shrinks enlarged prostate Rx: benign prostatic hyperplasia (BPH)
DYAZIDE (hctz): triamterene, antihypertensive / diuretic Rx: HTN
DYLIX (diphyltin): xanthine bronchodilator Rx: asthma
DYNABAC (dirthromycin): antibiotic
DYNACIN (micyocline): antibiotic
DYNACIRC CR (isradipine): calcium blocker Rx: HTN, angina
dyphyllin (DYLIN): xanthine bronchodilator Rx: asthma
dyphylline (DILOR, DILOR-200, DILOR-400, DILOR ELIXIR): xanthine bronchodilator Rx: asthma, COPD
dyphylline (DILOR-G): guaifenesin, bronchodilator/expectorant
dyphylline (LUFYLLIN): bronchodilator Rx: COPD, asthma
DYRENUM (triamterene): potassium-sparing diuretic Rx: CHF
DYTUSS (diphenhydramine): alcohol, antihistamine

E

EASPRIN (asa): NSAID analgesic Rx: arthritis
econazole nitrate (SPECTAZOLE): antifungal agent
ECONTRIN (enteric-coated aspirin): NSAID analgesic
EDCRIN (ethacrynic acid): diuretic Rx: CHF
edrophonium (TENSILON): cholinergic Rx: Myasthenia Gravis
EES (erythromycin): antibiotic
efavirenz (SUSTIVA): antiviral Rx: HIV, AIDS
EFFEXOR, EFFEXOR XR (venlafaxine hydrochloride): antidepressant
EFUDEX (flourouracil): cream used to treat overexposure to UV Rx: actinic or solar keratoses
ELAVIL (amitriptyline hydrochloride): tricyclic antidepressant
ELDEPRYL (selegiline hydrochloride): MAO inhibitor Rx: Parkinson's disease
elotriptan hydrobromide (RELPAK): anti-migraine drug Rx: migraines
ELIDEL (pimecrolimus): non-steroidal cream Rx: eczema
ELIMITE (permethrin): topical scabicide agent Rx: scabies, lice
ELMIRON (pentosan): urinary tract analgesic Rx: cystitis
ELOCON (mometasone furoate): topical steroid anti-inflammatory
ELSPAR (asparagine): antineoplastic Rx: leukemia, sarcoma
EMCYT (estramustine): anticancer agent Rx: prostate CA
EMLA (lidocaine): procaine, topical anesthetic
E-MYCIN (erythromycin): antibiotic
enalapril (VASERETIC): HCTZ, antihypertensive / diuretic
enalapril maleate + felodipine (LIXELLE): felodipine, ACE inhibitor, calcium blocker Rx: HTN
enalaprilat (VASOTEC): ACE inhibitor Rx: HTN, CHF
ENBREL (etanercept): TNF blocker Rx: rheumatoid arthritis
ENDAL-HD (hydrocodone): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine
ENDURON (methylclothiazide): antihypertensive / diuretic
enoxacin (PENETREX): antibacterial Rx: STDs, UTI
entacapone (COMTAN): extends the effect of Sinemet Rx: Parkinson's
enteric-coated aspirin (ECOTRIN): NSAID analgesic
ENTEX CAPSULES (phenylephrine, phenylpropranolamine, guaifenesin): decongestant / expectorant
ENTEX LA (phenylpropranolamine, guaifenesin): decongestant / expectorant compound
ENTEX PSE (pseudoephedrine, guaifenesin): decongestant / expectorant
ENTOCORT EC (budesonide): anti-inflammatory steroid budesonide Rx: Crohn's disease
ephedrine (BRONCHOLATE SYRUP): guaifenesin, bronchodilator, expectorant Rx: colds, bronchitis
ephedrine (MARAX): theophylline, hydroxyzine, bronchodilator compound Rx: asthma
epinephrine (ADRENALIN): bronchodilator Rx: asthma
epinephrine (EPI-PEN): bronchodilator / vasoconstrictor Rx: allergic reaction
epinephrine (PRIMATENE MIST): bronchodilator Rx: asthma
EPI-PEN (epinephrine): bronchodilator / vasoconstrictor Rx: allergic reaction
EPIVIR 3TC (lamivudine): antiviral Rx: HIV
epoetin alfa (EPOGEN): increases RBC production Rx: anemia
EPOGEN (epoetin alfa): increases RBC production Rx: anemia
eprosartan mesylate (TEVETEN): angiotensin II receptor blockers Rx: high blood pressure
eprosartan mesylate hydrochlorothiazide (TEVETEN HCT): antihypertensive / diuretic Rx: high blood pressure
EQUAGESIC (meprobamate): ASA, tranquilizer/analgesic
EQUANIL (meprobamate): tranquilizer
ERCAF (ergotamine): caffeine, vasoconstrictors Rx: migraine headache
ERGAMISOL (levamisole): immunomodulator Rx: colon CA
ergold mesylates (HYDERGINE): relieves symptoms of declining mental capacity
ERGOMAR (ergotamine): antimigraine Rx: vascular I/A
ergotamine (ERGCAF): caffeine, vasoconstrictors Rx: migraine headache

ergotamine (ERGOMAR): antimigraine Rx: vascular H/A
ergotamine (WIGRAINE): caffeine, alpha blocker/cranial vasoconstrictor Rx: migraine headache
ergotamine tartrate + caffeine (CAFERGOT): prevents vascular headaches Rx: migraine, migraine variants, cluster headaches
ERYCETIE (erythromycin): antibiotic
ERYPED (erythromycin): antibiotic
ERY-TAB (erythromycin): antibiotic
ERYTHROCIN (erythromycin): antibiotic
erythromycin (AKNE-MYCIN): antibiotic Rx: infection
erythromycin (EES): antibiotic
erythromycin (E-MYCIN): antibiotic
erythromycin (ERYCETTE): antibiotic
erythromycin (ERYPED): antibiotic
erythromycin (ERY-TAB): antibiotic
erythromycin (ERYTHROCIN): antibiotic
erythromycin (PCE): antibiotic
erythromycin (THERAMYCIN 2): antibiotic
erythromycin (topical) (AT/IS): antibiotic Rx: acne
erythromycin + benzoyl peroxide (BENZAMYCIN): benzoyl peroxide, topical antibiotic / keratolytic compound Rx: acne
erythromycin + ethylsuccinate + sulfisoxazole acetyl (PEDIAZOLE): antibiotic compound
erythromycin, oral (LOSONE): antibiotic Rx: Gonorrhea, pinkeye, acute pelvic inflammatory disease, Rectal infections
escitalopram oxalate (LEXAPRO): antidepressant Rx: depression
ESCLIM (estradiol): treats low levels of estrogen Rx: menopause
ESGIC (apap): caffeine, butalbital, analgesic / muscle relaxant / antianxiety compound Rx: headache
ESGIC-PLUS (butalbital): APAP, caffeine, sedative / analgesic
ESKALITH (lithium carbonate): tranquilizer Rx: mania, depression
esomeprazole magnesium (NEXIUM): suppresses gastric acid pump Rx: ulcers, esophagitis
estazolam (PROSOM): hypnotic Rx: insomnia
ESTRACE (estradiol): estrogen Rx: menopause
ESTRADERM (estradiol): topical estrogen Rx: menopause
estradiol (ALORA): hormone Rx: menopause
estradiol (COMBIPATCH): norethindrone, estrogens Rx: menopause symptoms
estradiol (ESCLIM): treats low levels of estrogen Rx: menopause
estradiol (ESTRACE): estrogen Rx: menopause
estradiol (ESTRADERM): topical estrogen Rx: menopause
estradiol (VIVELLE) Rx: osteoporosis, menopausal symptoms
estradiol hormone (CUMARA) Rx: menopause
estradiol vaginal tablets (VAGIFEM): estrogen replacement Rx: menopause
estramustine (EMCYT): anticancer agent Rx: prostate CA
ESTRATEST (estrogens methyltestosterone): methyltestosterone Rx: menopause
estrogen + progestin (ACTIVELLA/EMHRT): Hormone replacement therapy Rx: menopause, Vaginal atrophy
estrogen + progestin (FEMHRT): HRT Rx: menopause
estrogens (MENEST): hormones Rx: menopause, breast CA, prostatic CA
estrogens (PREMARIN) Rx: menopause
estrogens (PREMPRO): hormone Rx: menopause
estrogens methyltestosterone (ESTRATEST): methyltestosterone Rx: menopause
estropipate (OGEN): estrogen Rx: menopause
estropipate (ORTHO-EST): estrogen Rx: menopause, osteoporosis
ESTROSTEP (norethindrone): estradiol, oral contraceptive
etanercept (ENBREL): TNF blocker Rx: rheumatoid arthritis
ethacrynic acid (EDECRIN): diuretic Rx: CHF
ethambutol (MYAMBUTOL): chemotherapeutic Rx: tuberculosis
ethchlorvynol (PLACODYL): hypnotic Rx: insomnia
ethyl estradiol + norelgestromin (ORTHO EVRA): contraceptive skin patch Rx: birth control
ethionamide (TRECATOR-SVC): bacteriostatic Rx: tuberculosis
ETHMOZINE (moricizine) Rx: severe ventricular dysrhythmias
ethosuximide (ZARONTIN): Rx: absence seizures
ethotoin (PEGANONE): antiepileptic drug Rx: seizures
etidronate (DIDRONEL): bone metabolism regulator Rx: Paget's disease, total hip replacement
etodolac (LODINE, LODINE XL): NSAID, analgesic
etonogestrel and ethinyl estradiol vaginal ring (NUVARING): contraceptive device
ETOPOSIDE (VEPESID): anticancer agent Rx: lung, testicular CA
ETRAFON (phenepazine): amitriptyline, major tranquilizer, tricyclic antidepressant Rx: anxiety with depression
EULEXIN (flulamide): anticancer agent Rx: prostate CA
EVISTA (raloxifene hydrochloride) Rx: osteoporosis prevention
EXELON (rivastigmine tartrate) Rx: Alzheimer's
EXGEST LA (phenylpropanolamine, guaifenesin): decongestant / expectorant
EXTENDRYL (phenylephrine, guaifenesin): antihistamine, decongestant Rx: allergies
ezetimibe (ZETIA): lowers cholesterol Rx: high cholesterol

F

FACTIVE (gemifloxacin): antibiotic Rx: bronchitis and pneumonia
factor viii (MONOCLATE-P): antihemophilic factor
factor viii (RECOMBINATE): clotting agent Rx: hemophilia
famciclovir (FAMVIR): antiviral Rx: herpes zoster, genital herpes
famotidine (PAMID): Histamine-2 blocker which inhibits gastric acid production Rx: ulcers
FAMVIR (famciclovir): antiviral Rx: herpes zoster, genital herpes
FASTIN (phentermine): stimulant Rx: appetite suppression
Fe-50 (iron): iron supplement
felbamate (FELBATOL): antiepileptic Rx: seizures
FELBATOL (felbamate): antiepileptic Rx: seizures
FELDENNE (piroxicam): NSAID analgesic

felodipine (PLENDIL): calcium blocker Rx: HTN, angina
FEMARA (letrozole): estrogen inhibitor Rx: breast cancer
FEMHRT (estrogen + progestin): HRT Rx: menopause
FEMNESIN (guaifenesin): expectorant Rx: colds
FEMNESIN DM (dextromethorphan): guaifenesin, antitussive / expectorant Rx: colds
fenofibrate (TRICOR): lowers cholesterol Rx: high cholesterol
fenpropfen (NALFON): NSAID analgesic
fentanyl (DURAGESIC): fentanyl painkiller
FEOSOL, iron supplement
FERO-FOLIC-500 (iron): folic acid, vitamin C, vitamins
FERO-GRAD-500 (iron): vitamin C, vitamin / mineral
FETRIN, iron, vitamin C, cyanocobalamin, vitamins
foxfenadine hydrochloride (ALLEGRA): antihistamine Rx: allergies
fligrastrim (NEUROGEN): nutrient Rx: chemotherapy
finasteride (PROPECIA) Rx: hair loss prevention
finasteride (PROSCAR) Rx: prostatic hypertrophy
FLORICET (butalbital): APAP, caffeine, analgesic Rx: H/A
FLORICET WITH CODEINE (butalbital): APAP, caffeine, codeine, sedative / narcotic analgesic
FLORINAL (butalbital + aspirin + caffeine): ASA, caffeine, non-narcotic analgesic
FLORINAL with CODEINE (butalbital): ASA, caffeine, codeine, narcotic analgesic compound
FLAGLY (metronidazole): antimicrobial agent
flavoxate (FLOXIPAS): urinary tract antispasmodic Rx: urinary incontinence
flcainide acetate (TAMBOCOR): ventricular anti-arrhythmic
FLXERIL (cyclobenzaprine hydrochloride): skeletal muscle relaxant
FLONAX (tamoxifen hydrochloride): alpha-1 blocker Rx: enlarged prostate
FLONASE (fluticasone): steroid Rx: allergic rhinitis
FLORICAL (fluoride): calcium, mineral supplement
FLOVENT (fluticasone): steroid anti-inflammatory Rx: asthma
FLOXIN (ofloxacin): antibiotic
fluconazole (DIFLUCAN): antifungal agent
flucytosine (ANCOBON): antifungal agent
FLUMADINE (rimantadine): antiviral Rx: influenza A
flunisolide (AEROBID): steroid anti-inflammatory inhaler Rx: asthma, bronchitis
flunisolide (NASALIDE): steroid anti-inflammatory agent
flunisolide (NASAREL): steroid anti-inflammatory Rx: rhinitis
flunisolone (LIDEX, LIDEX E): steroid anti-inflammatory agent
fluocinolone (SYNEMOL): topical steroid anti-inflammatory
fluoride (FLORICAL): calcium, mineral supplement
fluoride (MONOCAL): calcium, mineral supplement
fluoride (PEDIAFOLAR): mineral Rx: osteoporosis, dental caries
fluorometholone (FML): steroid eye ointment Rx: eye inflammation
fluorouracil (EFUDEX): cream used to treat overexposure to UV Rx: actinic or solar keratosis
fluoxetine (PROZAC): heterocyclic antidepressant
fluoxetine hydrochloride (SARAFEM): antidepressant Rx: major depression
flurandrenolide (CORDRAN): steroid anti-inflammatory
flurazepam hydrochloride (DALMANE): benzodiazepines Rx: insomnia
flurbiprofen (ANSIAD): NSAID Rx: arthritis
flutamide (EULEXIN): anticancer agent Rx: prostate CA
fluticasone (CUTIVATE): topical steroid anti-inflammatory Rx: dermatoses
fluticasone (FLOXONASE): steroid Rx: allergic rhinitis
fluticasone (FLOVENT): steroid anti-inflammatory Rx: asthma
fluticasone propionate (ADVAIR DISKUS): oral inhaler Rx: asthma
fluvastatin sodium (LESCOL): cholesterol reducer
flvoxamine (LUVOX): antidepressant Rx: Obsessive Compulsive Disorder
FML (fluorometholone): steroid eye ointment Rx: eye inflammation
FOCALIN (dexmethylphenidate hydrochloride)
FORADIL (formoterol): relaxes airway muscles Rx: asthma
formoterol (FORADIL): relaxes airway muscles Rx: asthma
FORTAZ (cefazidime): antibiotic
FORTOVASE (saxaquiniv): protease inhibitor Rx: HIV
FOSAMAX (alendronate sodium): reduces bone loss Rx: osteoporosis, Paget's disease
fosfomicin tromethamine (MONUROL): antibiotic Rx: UTI
fosinopril (MONOPRIL): ACE inhibitor Rx: HTN
FROVA (frovaipratin succinate): serotonin agonists Rx: migraines
frovaipratin succinate (FROVA): serotonin agonists Rx: migraines
FULVICIN (griseofulvin): antifungal agent
FUMATINIC (iron): vitamins, vitamin / mineral supplement
FURADANTIN (nitrofurantoin): antibacterial agent Rx: UTI
furazolidone (FUROXONE): antimicrobial Rx: diarrhea
furosemide (LASIX): loop diuretic Rx: high blood pressure, congestive heart failure, cirrhosis of the liver, kidney disease
FUROXONE (furazolidone): antimicrobial Rx: diarrhea

G

gabapentin (NEURONTIN): antiepileptic
galantamine (REMINYL): boosts acetylcholine levels Rx: Alzheimer's disease
ganciclovir (CYTOVENE): antiviral Rx: cytomegalovirus, ARC, AIDS
GANTRISIN (sulfisoxazole acetyl): antibacterial agent Rx: urinary tract infections, bacterial meningitis
GARAMYCIN OPTHALMIC (gentamicin sulfate): antibiotic Rx: conjunctivitis
GASTROCOR (cromolyn): antihistamine, antiallergic Rx: diarrhea, H/A, urticaria, nausea
gatifloxacin (TEQUIN): quinolone antibiotic Rx: sinus infections, pneumonia, gonorrhea, kidney and urinary tract infections
GAVISON (magnesium): aluminum, antacid, laxative
gemfibrozil (LOPID): lowers serum lipids
gemifloxacin (FACTIVE): antibiotic Rx: bronchitis and pneumonia
GEMZAR (gemtazabine): antineoplastic Rx: lung, pancreatic CA
GENERIC Name First



GENORA, oral contraceptive

GENOTROPIN (somatropin): growth stimulator Rx: AIDS, wasting syndrome, growth disorders

gentamicin sulfate (GARAMYCIN OPTHALMIC): antibiotic Rx: conjunctivitis

GECLILIN (carbenicillin): antibiotic

GEODON (ziprasidone hydrochloride): oral inhibitor serotonin and dopamine Rx: schizophrenia

germactibine (GEMZAR): antineoplastic Rx: lung, pancreatic CA

glatiramer (COPAXONE): neurologic agent Rx: Multiple Sclerosis

glimepiride (AMARYL): oral hypoglycemic Rx: diabetes mellitus

glipizide (GLUCOTROL): oral hypoglycemic Rx: diabetes

glipizide + metformin hydrochloride (METAGLIP): antidiabetic medication Rx: type 2 diabetes

GLUCOPHAGE (metformin hydrochloride): oral hypoglycemic Rx: diabetes

GLUCOTROL (glipizide): oral hypoglycemic Rx: diabetes

GLUCOVANCE (glipizide + metformin): metformin, oral hypoglycemic

GLUTOFAC-MX (vitamins): minerals Rx: dietary supplement

glyburide (DIABETA): oral hypoglycemic Rx: diabetes

glyburide (GLYBURIDE): oral hypoglycemic Rx: diabetes

glyburide + metformin (GLUCOVANCE): metformin, oral hypoglycemic

glycerol (TUSSEI-ORGANIDIN): codeine, narcotic antitussive / expectorant compound

glycopyrrolate (ROBINUL, ROBINUL FORTE): anticholinergic Rx: peptic ulcers

GLYNASE (glyburide): oral hypoglycemic Rx: diabetes

GLYSET (miglitol): oral hypoglycemic Rx: diabetes

GLYTELY (polyethylene glycol): electrolytes, bowel evacuant

goserelin gonadotropin-releasing hormone agonist (ZOLADEX) Rx: endometriosis

granisetron (KYTRIL): anti-nauseant / antiemetic

GRIFULVIN V (griseofulvin): antifungal Rx: ringworm

GRISACTIN (griseofulvin): antifungal agent

griseofulvin (FULVICIN): antifungal agent

griseofulvin (GRIFULVIN V): antifungal Rx: ringworm

griseofulvin (GRISACTIN): antifungal agent

griseofulvin (GRIS-PEG): antifungal Rx: ringworm

GRIS-PEG (griseofulvin): antifungal Rx: ringworm

GUAIFED, GUAIFED-PD (guaifenesin): pseudoephedrine, expectorant / decongestant

guaifenesin (ANATUSS DM): pseudoephedrine, dextromethorphan, expectorant / decongestant / antitussive

guaifenesin (ANATUSS LA): pseudoephedrine, expectorant / decongestant

guaifenesin (FENESIN): expectorant Rx: colds

guaifenesin (GUAIFED, GUAIFED-PD): pseudoephedrine, expectorant / decongestant

guaifenesin (HUMIBAL LA): expectorant Rx: colds

guaifenesin (MUCO-FEN LA): expectorant Rx: colds

guaifenesin (NOREL): phenylpropanolamine, phenylephrine, expectorant / decongestant Rx: colds

guaifenesin (ORGANIDIN NR): expectorant Rx: bronchitis

guaifenesin (PNEUMOMIST): expectorant Rx: asthma, bronchitis

guaifenesin (RESPA-GF): expectorant

guaifenesin (ROBITUSSIN A-C): codeine, alcohol, expectorant, cough suppressant Rx: colds

guaifenesin (ROBITUSSIN): expectorant

guaifenesin (ROBITUSSIN43AC): codeine, alcohol, pseudoephedrine, expectorant, cough suppressant, decongestant Rx: colds

guaifenesin (SAFE TUSSIN 30): dextromethorphan, expectorant / antitussive

guaifenesin (SAFE TUSSIN 60): dextromethorphan, expectorant / antitussive

guaifenesin (PNEUMOTUSSIN HC): hydrocodone, expectorant / narcotic antitussive

GUAJ-VENT (pseudoephedrine): guaifenesin, decongestant / expectorant Rx: colds, bronchitis

guanadrel (HYLOREL): sympathetic antihypertensive

guanfacine (TENEX): antihypertensive agent

GYNAZOLE-I (butoconazole): antifungal Rx: yeast infections

GYNE-LOTIRIMIN (clotrimazole): antifungal agent Rx: ringworm, athlete's foot, jock itch

H

HABITROL (nicotine) Rx: relief of nicotine withdrawal symptoms

HALICIN (triazolam): benzodiazepine hypnotic Rx: insomnia

HALDOL (haloperidol): major tranquilizer

HALFPIN (aspirin) Rx: acute MI prophylaxis

haloperidol (HALDOL): major tranquilizer

hctz (ALDACTAZIDE): spironolactone, diuretics Rx: HTN

hctz (DYAZIDE): triamterene, antihypertensive / diuretic Rx: HTN

HCTZ (hydrochlorothiazide): antihypertensive / diuretic Rx: HTN

hctz (HYDRODIURIL): antihypertensive / diuretic

hctz (MICROZIDE): thiazide antihypertensive / diuretic

HEALTHY HEART (vitamins): vitamin supplement

HELIDAZ THERAPY (bismuth subsalicylate + metronidazole + tetracycline hydrochloride) Rx: stomach ulcers

HEMOCTE (iron): iron supplement

HEMOCTE F ELIXIR (iron): vitamins, alcohol, vitamin / mineral supplement

HEMOCTE TABLETS (iron): folic acid, iron supplement Rx: hepatic dysfunction

HEMOCTE PLUS (iron): vitamins, minerals, vitamin / mineral supplement

hepatitis vaccine (VAQTA): inactivated virus vaccine

hepatitis B vaccine (RECOMBIVAX HB): vaccine Rx: hepatitis B

HEP-FORTE (protein): vitamins, mineral, nutritional supplement

HEXALEN (altretamine): anticancer agent Rx: ovarian cancer

HISTUSSIN D (hydrocodone): pseudoephedrine, narcotic antitussive /

decongestant

HISTUSSIN HC (hydrocodone): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine

HIVID (zalcitabine): antiviral Rx: AIDS

hormone (MELATONIN) Rx: jet lag, depression

HUMALOG (insulin): hypoglycemic Rx: diabetes mellitus

HUMATE-P (antihemophilic factor iv) Rx: hemophilia

HUMATROPE (somatropin): human growth hormone

HUMEGON (menotropins): gonadotropin hormone Rx: infertility

HUMIBID LA (guaifenesin): expectorant Rx: colds

HUMORSOL (demecarium): topical miotic Rx: glaucoma

HUMULIN N, HUMULIN R (insulin): hypoglycemic Rx: diabetes

HYALGAN (sodium hyaluronate): intra-articular polymer injection Rx: osteoarthritis

HYCAMINT (topotecan): antineoplastic Rx: ovarian, hepatic CA

HYCODAN (hydrocodone): expectorant, narcotic antitussive

HYCOMINE COMPOUND (hydrocodone): chlorpheniramine, APAP, caffeine, phenylephrine, narcotic antitussive / antihistamine / decongestant Rx: colds, URI

HYCOMINE SYRUP (hydrocodone): phenylpropanolamine, narcotic antitussive / decongestant Rx: cough, nasal congestion

HYCOTUSS (hydrocodone): guaifenesin, narcotic antitussive / expectorant

HYDERGINE (ergoloid mesylates): relieves symptoms of declining mental capacity

hydralazine (HYDRA-ZIDE): HCTZ, antihypertensive / diuretic

HYDRA-ZIDE (hydralazine): HCTZ, antihypertensive / diuretic

HYDREA (hydroxyurea): anticancer agent Rx: melanoma, leukemia, ovarian CA

HYDROCET (hydrocodone bitartrate + acetaminophen): APAP, narcotic analgesic comp.

hydrochlorothiazide (HCTZ): antihypertensive / diuretic Rx: HTN

hydrochlorothiazide + triamterene (MAXZIDE): HCTZ, antihypertensive/diuretic Rx: HTN

hydrocodone (ANAPLEX HD): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine

hydrocodone (CODICLEAR DM): guaifenesin, narcotic antitussive / expectorant Rx: colds

hydrocodone (CODIMAL DH): phenylephrine, pyrilamine, narcotic antitussive / decongestant Rx: colds, allergies

hydrocodone (DURATUSS): pseudoephedrine, guaifenesin antitussive / decongestant / expectorant Rx: colds, allergies

hydrocodone (ENDAL-HD): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine

hydrocodone (HISTUSSIN D): pseudoephedrine, narcotic antitussive / decongestant

hydrocodone (HISTUSSIN HC): phenylephrine, chlorpheniramine, narcotic antitussive / decongestant / antihistamine

hydrocodone (HYCODAN): homatropine, narcotic antitussive

hydrocodone (HYCOMINE COMPOUND): chlorpheniramine, APAP, caffeine, phenylephrine, narcotic antitussive / antihistamine / decongestant Rx: colds, URI

hydrocodone (HYCOMINE SYRUP): phenylpropanolamine, narcotic antitussive / decongestant Rx: cough, nasal congestion

hydrocodone (HYCOTUSS): guaifenesin, narcotic antitussive / expectorant

hydrocodone (LORCET 10/650, LORCET HD, LORCET PLUS): APAP, narcotic analgesic compound

hydrocodone (LORTAB): APAP, narcotic analgesic

hydrocodone (NALLEX HD): phenylephrine, alcohol, narcotic antitussive / decongestant Rx: colds

hydrocodone (NORCO CM): APAP, narcotic analgesic compound

hydrocodone (TUSSAFEX HC): phenylephrine, guaifenesin, narcotic antitussive / decongestant / expectorant

hydrocodone (TUSSEND EXPECTORANT): pseudoephedrine, guaifenesin, narcotic antitussive / decongestant / expectorant

hydrocodone (VICODIN HP, VICODIN ES): APAP, narcotic analgesic / antitussive compound

hydrocodone (VICODIN TUSS): guaifenesin, narcotic analgesic / antitussive expectorant compound

hydrocodone (VICOPROFEN): ibuprofen, narcotic analgesic compound

hydrocodone bitartrate + acetaminophen (HYDROCET): APAP, narcotic analgesic comp.

hydrocodone polistirex + chlorpheniramine polistirex (TUSSIONEX): chlorpheniramine, narcotic antitussive / antihistamine Rx: coughs, allergies, the cold

hydrocodone, pseudoephedrine (TUSSEND SYRUP, TUSSEND TABLETS): chlorpheniramine, narcotic antitussive / decongestant / antihistamine

hydrocortisone (ANUSOL HC): steroid anti-inflammatory

hydrocortisone (CORTENEM-A): steroid anti-inflammatory Rx: colitis

hydrocortisone (CORTIFOAM): steroid anti-inflammatory Rx: proctitis

hydrocortisone (CORTISOL): steroid anti-inflammatory

hydrocortisone (HYDROCORTONE): steroid anti-inflammatory

hydrocortisone (HYTONE): steroid anti-inflammatory

hydrocortisone (LOCODI): steroid anti-inflammatory

hydrocortisone (PENECORT): steroid anti-inflammatory

hydrocortisone (PRAMOSONE): pramoxine, steroid anti-inflammatory / anesthetic Rx: dermatoses

hydrocortisone (TERRA-CORTLRL): oxytetracycline, steroid anti-inflammatory, antibiotic Rx: ocular infections

HYDROCORTONE (hydrocortisone): steroid anti-inflammatory

HYDRODIURIL (hctz): antihypertensive / diuretic

hydroflumethiazide (DIUCARDIN): antihypertensive / diuretic

hydrophorone hydrochloride (DILAUDID, DILAUDID HP): narcotic analgesic

hydroxychloroquine (PLAQUENIL): antimalarial agent

hydroxyurea (HYDREA): anticancer agent Rx: melanoma, leukemia, ovarian CA

hydroxyine (VISTARIL): antiemetic/antiarrhythmic/sedative

hydroxyine hydrochloride (ATHARX): sedative / tranquilizer / antihistamine Rx: urticaria, anxiety

HYGROTON (chlorhalidone): antihypertensive / diuretic

HYLOREL (guanadrel): sympathetic antihypertensive

hycosamine (CYSTOSPAZ, CYSTOSPAZ-M): urinary tract antispasmodic

hyocysamine sulfate (LEVBIID): antispasmodic Rx: ulcers
hyocysamine sulfate (LEVSIN, LEVSINEX): antispasmodic Rx: ulcers
HYPERSTAT (diazoxide): antihypertensive Rx: HTN
HYTONE (hydrocortisone): steroid anti-inflammatory
HYTRIN (terazosin hydrochloride): antihypertensive agent
HYZAR (losartan potassium + hydrochlorothiazide): antihypertensive Rx: high blood pressure

I
IBERET (iron): vitamins, mineral, vitamin / mineral supplement
IBU (ibuprofen): NSAID, analgesic
ibuprofen (ADVIL): NSAID analgesic
ibuprofen (MOTRIN): nonsteroidal anti-inflammatory drug Rx: rheumatoid arthritis, menstrual pain, mild to moderate pain
ibuprofen (NUPRIN): NSAID analgesic
ILETIN (insulin preparations) Rx: diabetes mellitus
ILOSONE (erythromycin, oral): antibiotic Rx: Gonorrhea, pinkeye, acute pelvic inflammatory disease, Rectal infections
IMDUR (isosorbide mononitrate): long-acting nitrate Rx: angina
imiglucerase (CEREZYME): enzyme Rx: Gaucher disease
imipramine hydrochloride (TOFRANIL): tricyclic antidepressant
IMITREX (sumatriptan succinate) Rx: migraine headache
immune globulin (WINRHO SD): immunizing agent Rx: prevents isoimmunization in pregnant Rh- women given Rh+ blood
IMODIUM (loperamide hydrochloride): slows peristalsis Rx: diarrhea
IMODIUM A-D (loperamide): anti-diarrheal agent
IMURAN (azathioprine): immunosuppressant Rx: organ transplants, ulcerative colitis, lupus, severe arthritis
indapamide (LONERIL): antihypertensive / diuretic
INDERAL, **INDOZAL LA** (propranolol hydrochloride): b-blocker Rx: HTN, angina, cardiac dysrhythmias, MI, and migraine headache
INDERIDE (dipyrilone hydrochloride): HCTZ, beta blocker, antihypertensive / diuretic compound Rx: hypertension
indinavir (CRIXIVAN): protease inhibitor antiviral Rx: AIDS
INDOCIN, **INDOCIN SR** (indomethacin): NSAID Rx: arthritis
indomethacin (INDOCIN, INDOCIN SR): NSAID Rx: arthritis
INFERGEN (interferon alfacon-1): antiviral Rx: hepatitis C
INH (isoniazid): antibiotic Rx: tuberculosis
insulin (HUMALOG): hypoglycemic Rx: diabetes mellitus
insulin (HUMULIN N, HUMULIN R): hypoglycemic Rx: diabetes
insulin (LANTUS): hypoglycemic agent Rx: diabetes
insulin (NOVOLIN) Rx: diabetes mellitus
insulin (VELOSULIN): hypoglycemic Rx: diabetes mellitus
insulin preparations (ILETIN) Rx: diabetes mellitus
INTAL (cromolyn sodium): anti-allergic Rx: asthma prophylaxis
interferon (BETASERON): immunologic Rx: Multiple Sclerosis
interferon (ROFERON A): immunoadjuvant Rx: hairy cell leukemia, AIDS-related Kaposi's sarcoma
interferon alfa (REBETRON): ribavirin, antiviral Rx: Hepatitis C
interferon alfacon-1 (INFERGEN): antiviral Rx: hepatitis C
interteron (AVONEC): antiviral Rx: MS
INVERSINE (mecamylamine): antihypertensive agent
INVIRASE (saquinavir): protease inhibitor antiviral Rx: HIV
iodoquinol (YODOXIN): amebicide Rx: intestinal amebiasis
IONAMIN (phenfermine hydrochloride): stimulant Rx: appetite suppression
ipratropium bromide (ATROVENT): anticholinergic bronchodilator Rx: COPD
irbesartan (AVAPRO): angiotensin II receptor antagonist Rx: diabetes
irbesartan hydrochlorothiazide (AVALIDE): controls angiotensin II, diuretic iron (CHROMAGEN): vitamin C, folic acid Rx: anemia
iron (FE-500): iron supplement
iron (FERO-FOLIC-500): folic acid, vitamin C, vitamins
iron (FERO-GRAD-500): vitamin C, vitamin / mineral
iron (FUMATINIC): vitamins, vitamin / mineral supplement
iron (HEMOCYTE F ELIXIR): vitamins, alcohol, vitamin / mineral supplement
iron (HEMOCYTE F TABLETS): folic acid, iron supplement Rx: hepatic dysfunction
iron (HEMOCYTE PLUS): vitamins, minerals, vitamin / mineral supplement
iron (HEMOCYTE): iron supplement
iron (IBERET): vitamins, mineral, vitamin / mineral supplement
iron (NIFEREX-PN, NIFEREX-PN FORTE): multivitamins, iron / vitamin supplement
iron (NIPEREX, NIFEREX-150): mineral Rx: anemia
iron (NIPEREX-150 FORTE): vitamins, iron / vitamin supplement
iron (NU-IRON PLUS): vitamins, iron/vitamin supplement
iron (NU-IRON V): vitamins, iron/vitamin supplement
iron (NU-IRON) Rx: anemia
ISMO (isosorbide mononitrate): vasodilator Rx: angina
isomestherone mucate + dichlorophenazone + acetaminophen (MIDRN): dichlorophenazone, APAP, vasoconstrictor/sedative/analgesic Rx: headache
isoniazid (RIFATER): rifampin, pyrazinamide, antibiotic Rx: TB
isoniazid (INH): antibiotic Rx: tuberculosis
ISOPTIN SR (verapamil hydrochloride): calcium blocker Rx: angina, HTN, headache
ISOPTO CARPINE (pilocarpine hydrochloride): reduces pressure in the eye Rx: glaucoma
ISORDIL (isosorbide dinitrate): long-acting nitrate Rx: angina
isosorbide (DILATRATE SR): long-acting nitrate Rx: angina
isosorbide dinitrate (ISORDIL): long-acting nitrate Rx: angina
isosorbide dinitrate (SORBITRATE): nitrate Rx: angina
isosorbide mononitrate (ISORLON): long-acting nitrate Rx: angina
isosorbide mononitrate (ISMO): vasodilator Rx: angina
isosorbide mononitrate (MONOKET): nitrate Rx: angina
isretretinoin (ACCUTANE) Rx: severe cystic acne
isradipine (DYNACIRC CR): calcium blocker Rx: HTN, angina
itraconazole (SPORANOX): antifungal
ivermectin (STROMECTOL): anti-parasite Rx: intestinal nematodes

K
KADIAN (morphine sulfate): narcotic analgesic
KALETRA (lopinavir + ritonavir): protease inhibitors Rx: HIV
kaolin (DONNAEGEL): pectin, belladonna alkaloids, antispasmodic / stool binder Rx: diarrhea
kaolin (KAOPRECTATE): pectin, stool binder Rx: diarrhea
KAOPRECTATE (kaolin): pectin, stool binder Rx: diarrhea
KAYEXALATE (sodium polystyrene): ion exchange resin Rx: hyperkalemia
kci (K-LOR): potassium supplement
kci (KLOR-CON): potassium supplement
kci (K-TAB): potassium supplement
K-DUR (potassium chloride): treats and prevents low potassium levels Rx: digitalis patients
KEFLEX (cephalexin hydrochloride): antibiotic
KEFTAB (cephalexin): antibiotic
KEFUROX (cefuroxime): antibiotic
KEFZOL (cefazolin): antibiotic
KEPPRA (levetiracetam): epileptic medication Rx: epileptic seizure
KERLON (betaxolol): beta-1 blocker Rx: HTN
ketocozole (NIZORAL): antifungal agent Rx: yeast infections
ketoprofen (ORUDIS): NSAID Rx: arthritis
ketoprofen (ORUVAJIL): NSAID analgesic
ketorolac tromethamine (TORADOL): NSAID analgesic
ketorolac tromethamine (ACULAR): nonsteroidal antiinflammatory drug Rx: allergies
ketotifen fumarate (ZADITOR): antihistamine Rx: allergies
KIE SYRUP (potassium iodide): ephedrine, expectorant / bronchodilator Rx: asthma
KINERET (anakinra): anti-rheumatic drug Rx: rheumatoid arthritis
KIONEX (sodium polystyrene): ion exchange resin Rx: hyperkalemia
KLARON (sulfacetamide): antibacterial
KLONOPIN (clonazepam): benzodiazepine hypnotic Rx: seizures
K-LOR (kci): potassium supplement
KLOR-CON (kci): potassium supplement
KOGENATE (antihemophilic factor viii) Rx: hemophilia
K-PHOS (potassium phosphate): potassium ion
KRISTALOSE (lactulose): stool softener Rx: constipation
KRONOFED-A (pseudoephedrine): chlorpheniramine, decongestant, antihistamine Rx: colds, allergies
KUTRASE (digestive enzymes): hyocysamine, phenyltoloxamine, antispasmodic / sedative Rx: indigestion
KU-ZYME (digestive enzymes) Rx: indigestion
KWELL (lindane): parasiticide Rx: lice, scabies
KYTRIL (granisetron): anti-nauseant / antiemetic

L
labetalol (TRANDATE): beta blocker Rx: hypertension
labetalol hydrochloride (NORMODYNE): beta blocker Rx: HTN, angina
LAC-HYDRIN (ammonium lactate): treats dry scaly skin Rx: ichthyosis vulgaris
LACTOCAL-F (multivitamin / mineral supplement)
lactulose (DUPHALAC): laxative Rx: constipation
lactulose (KRISTALOSE): stool softener Rx: constipation
LAMICTAL (lamotrigine): anticonvulsant Rx: seizures
LAMISIL (terbinafine hydrochloride): antifungal Rx: fungal infections
lamivudine (COMBIVIR): zidovudine, antiviral Rx: HIV, AIDS
lamivudine (EPIVIR 3TC): antiviral Rx: HIV
lamotrigine (LAMICTAL): anticonvulsant Rx: CHF, supraventricular arrhythmias
LANOXIGAPS (digoxin): cardiac glycoside Rx: seizures
LANOXIN (digoxin): cardiac glycoside Rx: CHF, dysrhythmias
lanoprazole (PREVACID): gastric acid pump inhibitor Rx: ulcers, esophagitis
LANTUS (insulin): hypoglycemic agent Rx: diabetes
LARIAM (meloxicam): antinflammatory agent
LASIX (furosemide): loop diuretic drug Rx: high blood pressure, congestive heart failure, cirrhosis of the liver, kidney disease
Ibuprofen (IBU): NSAID, analgesic
lead chelator (CHEMET) Rx: lead poisoning
leflunomide (ARAVA): antinflammatory Rx: rheumatoid arthritis
LESCOL (fluvastatin sodium): cholesterol reducer
letrozole (FEMARA): estrogen inhibitor Rx: breast cancer
LEUKERAN (chlorambucil): anticancer agent Rx: leukemia, lymphoma, Hodgkin's disease
LEUKINE (sargramostim): white blood cell mobilizer Rx: chemotherapy, bone marrow transplant
leuprolide acetate (LUPRON DEPO): hormone Rx: endometriosis
levamisole (ERGAMISOL): immunomodulator Rx: colon CA
LEVAQUIN (levofloxacin): antibacterial Rx: pneumonia
LEVATOL (venlaxine): beta blocker Rx: hypertension
LEVBIID (hyocysamine sulfate): antispasmodic Rx: ulcers
levetiracetam (KEPPRA): epileptic medication Rx: epileptic seizure
LEVLEN 21, 28 (levonorgestrel): estradiol, oral contraceptive
levonulol hydrochloride (BETAGAN): eyedrops Rx: chronic open-angle glaucoma
levocarnitine (CARNITOR) Rx: carnitine deficiency
LEVO-DROMORAN (levorphanol): narcotic analgesic
levofloxacin (LEVAQUIN): antibacterial Rx: pneumonia
levomephthol (ORLAAM): opiate agonist Rx: narcotic addiction
levonorgestrel (ALESSE 21, ALESSE 28): estradiol, oral contraceptive
levonorgestrel (LEVLEN 21, 28): estradiol, oral contraceptive
levonorgestrel (LEVORA): estradiol, oral contraceptive
levonorgestrel (NORPLANT): contraceptive
LEVORA (levonorgestrel): estradiol, oral contraceptive
levorphanol (LEVO-DROMORAN): narcotic analgesic



LEVOTHROID (levothyroxine): thyroid hormone
levothyroxine (LEVOTHROID): thyroid hormone
levothyroxine (LEVOXYL): thyroid hormone
levothyroxine (SYNTHROID): synthetic thyroid hormone Rx: goiter, thyroid cancer
levothyroxine (UNITHYROID): synthetic thyroid hormone Rx: goiters, thyroid disease
LEVOTHYL (levothyroxine): thyroid hormone
LEVIN, LEVINSINEX (hycosamine sulfate): antispasmodic Rx: ulcers
LEXAPRO (escitalopram oxalate): antidepressant Rx: depression
LEXXEL (enalapril maleate + felodipine): felodipine, ACE inhibitor, calcium blocker Rx: HTN
LIBRAX (chlordiazepoxide hydrochloride + cildinium bromide) Rx: peptic ulcers, irritable bowel syndrome, acute enterocolitis
LIBRIUM (chlordiazepoxide): benzodiazepine hypnotic
LIDEX, LIDEX E (flucinolone): steroid anti-inflammatory agent
lidocaine (EMLA): prilocaine, topical anesthetic
LIMBITROL, LIMBITROL DS (chlordiazepoxide): amitriptyline, benzodiazepine hypnotic/tricyclic antidepressant Rx: depression with anxiety
lidiane (KWELL): parastichole Rx: lice, scabies
linezolid (ZYVOX): oxazolidinone antibiotic Rx: pneumonia, skin infections
liothyronine (CYTOMEL): thyroid hormone Rx: hypothyroidism
liotrix (THYROLAR): thyroid hormone
LIPITOR (atorvastatin): antihyperlipidemic Rx: high cholesterol
lisinopril (PRINIVIL): ACE inhibitor Rx: HTN, CHF
lisinopril (PRINZIDE): HCTZ, antihypertensive compound
lisinopril (ZESTORETIC): HCTZ, ACE inhibitor/diuretic Rx: HTN
lisinopril (ZESTRIL): ACE inhibitor Rx: HTN, CHF
lithium (LITHOBID): antimanic agent Rx: depression, mania
lithium carbonate (ESKALITH): tranquilizer Rx: mania, depression
LITHIOD (lithium): antimanic agent Rx: depression, mania
LO/OVIRAL (LO/OVIRAL 28, oral contraceptive)
LOCOID (hydrocortisone): steroid anti-inflammatory
LODINE, LODINE XL (etodolac): NSAID, analgesic
LODRANE ALLERGY CAPSULES (brompheniramine): antihistamine
LODRANE LD CAPSULES (brompheniramine): pseudoephedrine, antihistamine / decongestant
LODRANE LIQUID (brompheniramine): pseudoephedrine, antihistamine / decongestant
LOESTRIN 21, FE (norethindrone): estradiol, oral contraceptive
lofloxacin hydrochloride (MAXAQUIN): antibiotic
LOMOTIL (difenoxylate hydrochloride): atropine, narcotic anti-diarrheal / antispasmodic compound
LONOX (difenoxylate): atropine, narcotic anti-diarrheal / antispasmodic compound
loperamide (IMODIUM A-D): anti-diarrheal agent
loperamide hydrochloride (IMODIUM): slows peristalsis Rx: diarrhea
LOPID (gemfibrozil): lowers serum lipids
lopinavir + ritonavir (KALETRA): protease inhibitors Rx: HIV
LOPRESSOR (metoprolol tartrate): β -1 blocker Rx: hypertension
LOPRESSOR HCT (metoprolol tartrate): hydrochlorothiazide, β -1 blocker, diuretic Rx: hypertension
LOPROX (coloprox): antifungal Rx: ringworm, Candida
LORABID (loracarbef): antibiotic Rx: sinusitis
loracarbef (LORABID): antibiotic Rx: sinusitis
loratadine (CLARITIN): non-sedating antihistamine Rx: allergies
loratadine (CLARITIN-D): pseudoephedrine, antihistamine / decongestant Rx: allergic rhinitis
lorazepam (ATIVAN): benzodiazepine hypnotic
LORCET 10/650, LORCET HD, LORCET PLUS (hydrocodone): APAP, narcotic analgesic compound
LORTAB (hydrocodone): APAP, narcotic analgesic
losartan (COZAAR): antihypertensive
losartan potassium + hydrochlorothiazide (HYGZAAR): antihypertensive Rx: high blood pressure
LOTENSIN (benazepril hydrochloride): ACE inhibitor Rx: HTN, CHF
LOTENSIN HCT (benazepril hydrochloride+ hydrochlorothiazide): ACE inhibitor + diuretic Rx: HTN
LOTREL (amlodipine + benazepril hydrochloride): benazepril, calcium blocker / ACE inhibitor Rx: HTN
LOTRIMIN (clotrimazole): antifungal agent
LOTRISONE (clotrimazole + betamethasone dipropionate): betamethasone, topical antifungal / steroid anti-inflammatory compound
LOTRONEX (alosetron): anti-diarrheal Rx: irritable bowel syndrome
lovastatin (ALTOCOR): reduces LDL cholesterol
lovastatin (MEVACOR): lowers serum cholesterol
lovastatin + niacin (ADVICOR): lowers cholesterol
LOW- OGESTREL, oral contraceptive
loxapine (LOXITANE): tranquilizer
LOXITANE (loxapine): tranquilizer
LOZOL (indapamide): antihypertensive / diuretic
LUFYLLIN (dipylline): bronchodilator Rx: COPD, asthma
LUMIGAN (bimatoprost): reduces pressure in the eye Rx: open-angle glaucoma
LUPRON DEPOT (leuprolide acetate): hormone Rx: endometriosis
LURIDE (sodium fluoride): fluoride treatment Rx: tooth decay
LUVOX (fluvoxamine): antidepressant Rx: Obsessive Compulsive Disorder
LYSDREN (miltane): antidepressant agent Rx: adrenal

magnesium (GAVISCON): aluminum, antacid, laxative
magnesium (MAG-OX): mineral dietary supplement
magnesium (MAGSAL): phenytoxolamine, sedative compound
magnesium (MAGTAB SR): nutritional supplement
magnesium (URO-MAG): magnesium supplement
magnesium carbonate (MAG-CARB): nutritional supplement
magnesium gluconate (MAGONATE): electrolyte sedative Rx: alcoholism, HTN, asthma
MAGONATE (magnesium gluconate): electrolyte sedative Rx: alcoholism, HTN, asthma
MAG-OX (magnesium): mineral dietary supplement
MAGSAL (magnesium): phenytoxolamine, sedative compound
MAGTAB SR (magnesium): nutritional supplement
MALARONE (atovaquone): proguanil, antimalarial agents
MARAX (ephedrine): theophylline, hydroxyxanthine, bronchodilator compound Rx: asthma
MARINOL (dronabinol): appetite stimulant Rx: weight loss in AIDS, chemotherapy
MARVIA: vitamin supplement
MATULANE (procarbazine): anticancer drug Rx: Hodgkin's disease
MAVIX (trandolapril): ACE inhibitor Rx: HTN
MAXAIR (pirbuterol): β -2 stimulant Rx: asthma, COPD
MAXALT (rizatriptan benzoate) Rx: migraines
MAXAQUIN (lofloxacin hydrochloride): antibiotic
MAXIDE (hydrochlorothiazide + triamterene): HCTZ, antihypertensive/diuretic Rx: HTN
MEBARAL (mephobarbital): barbiturate sedative / anticonvulsant
mebendazole (VERMOX): anthelmintic Rx: intestinal worms
mecamylamine (VERESINE): antihypertensive agent
meclizine (BONINE): antiemetic Rx: N&V, vertigo
meclizine hydrochloride (ANTIVERT): antinauseant Rx: vertigo
MEDGESIC (butalbital): APAP, caffeine, analgesic compound Rx: headache
MEDROL (methylprednisolone): corticosteroid drug Rx: rheumatoid arthritis, acute gouty arthritis, severe asthma
medroxyprogesterone (AMEN): hormone Rx: endometriosis, amenorrhea, uterine bleeding
medroxyprogesterone (PREMPHASE): estrogens, hormones Rx: menopause, osteoporosis
medroxyprogesterone (PROVERA): hormone Rx: amenorrhea
medroxyprogesterone acetate (CYCRIN): hormone Rx: uterine bleeding
medroxyprogesterone acetate (DEPO-PROVERA): contraceptive / anticancer agent Rx: endometrial or renal CA
MEFOXIN (cefotixin): antibiotic
MEGACE (megestrol): appetite stimulant Rx: anorexia with AIDS; also antineoplastic Rx: breast, endometrial CA
MEGADOSE (vitamin / mineral complex)
megestrol (MEGACE): appetite stimulant Rx: anorexia with AIDS; also antineoplastic Rx: breast, endometrial CA
MELATONIN (hormone) Rx: jet lag, depression
MELLARIL (thioridazine hydrochloride) Rx: schizophrenia
meloxicam (MOBIC): NSAID analgesic
melfalan (ALKERAN): anticancer agent Rx: multiple myeloma, ovarian CA
MENEST (estrogens): hormones Rx: menopause, breast CA, prostatic CA
MENTAX (butenafine): antifungal Rx: ringworm, athlete's foot
mentopins (HUMEGON): gonadotropin hormone Rx: infertility
mentopins (PERGONAL): gonadotropin hormone Rx: stimulates ovulation, spermatogenesis
mentopins (REPRONEX): fertility drug, induces ovulation
MEPERIDINE (meperidine): promethazine, narcotic analgesic, phenothiazine sedative / antiemetic
meperidine (MEPERGAN): promethazine, narcotic analgesic, phenothiazine sedative / antiemetic
meperidine hydrochloride (DEMEROL): narcotic analgesic
mephobarbital (MEBARAL): barbiturate sedative / anticonvulsant
MEPHYTON (vitamin K-1) Rx: coagulation disorders
meprobamate (EQUAGESIC): ASA, tranquilizer/analgesic
meprobamate (EQUANIL): tranquilizer
meprobamate (MILTOWN): tranquilizer
MEPRON (atovaquone): antibiotic Rx: pneumocystis carinii - pneumonia in AIDS
mercaptapurine (PURINE THIO): antileukemia agent
MERIDIA (sibutramine hydrochloride): weight loss Rx: obesity
mesalamine (ASUTRA-DL): anti-inflammatory agent Rx: colitis
mesalamine (PENTASA): for ulcerative colitis
mesalamine (ROWASA): anti-inflammatory Rx: colitis, proctitis
mesorizidine besylate (SERENTIL): major tranquilizer
MESTINON (pyridostigmine): anticholinesterase Rx: myasthenia gravis
METAGLIP (glipizide + metformin hydrochloride): antidiabetic medication Rx: type 2 diabetes
metaproterenol sulfate (ALUPENT): β -2 bronchodilator Rx: COPD, asthma
metaxalone (SKELAXIN): sedative / analgesic
metenacoin acid (PONSTEL): NSAID analgesic
metformin hydrochloride (GLUCOPHAGE): oral hypoglycemic Rx: diabetes
methadone (DOLOPHINE): narcotic analgesic
methamphetamine hydrochloride (DESOXYN): stimulant
methazolamide (NEPTAZANE): reduces aqueous humor production Rx: glaucoma
methamphetamine (URISID): anti-nauseant Rx: HTN
methenamine (URISID): methylene blue, alicyclyate, atropine, hycosamine, antiseptic/analgesic/antispasmodic Rx: UTI
methenamine (URO-QID ACID NO. 2): bactericide Rx: UTI
METHERGINE (methylergonovine maleate): uterotic Rx: postpartum hemorrhage
methimazole (TAPAZOLE): antithyroid Rx: hyperthyroidism
methocarbamol (ROBAXIN 750): sedative Rx: painful musculoskeletal conditions
methocarbamol (ROBAXIN): sedative Rx: painful musculoskeletal conditions

M -----
MAALOX, Antacid
MACROBID (nitrofurantoin): antibacterial Rx: UTI
MACRODANTIN (nitrofurantoin): antibacterial Rx: UTI
MAG-CARB (magnesium carbonate): nutritional supplement
magnesium (BEELITH): pyridoxine, magnesium / vitamin B6 supplement

methocarbamol (ROBAXISAL): aspirin, sedative / analgesic Rx: painful musculo-skeletal conditions

METHOTREXATE (methotrexate and trexall): anticancer drug Rx: leukemia, lymphoma

mexoxamine (VASOXYL): vasoconstrictor Rx: increases BP

methsuximide (CELONTIN): anticonvulsant Rx: absence Sz

methylclothiazide (AQUATENSEN): antihypertensive / diuretic

methylclothiazide (ENDURON): antihypertensive / diuretic

methylclothiazide (DIUTENSEN-R): reserpine, antihypertensive / diuretic compound

methyldopa (ALDOMET): antihypertensive

methyldopa + chlorothiazide (ALDOCHLOR): antihypertensive / diuretic compound

methyldopa + hctz (ALDORIL): antihypertensive compound

methylglucovine maleate (METHERGINE): uterolonic Rx: postpartum hemorrhage

methylphenidate (CONCERTA): stimulant Rx: attention deficit hyperactivity disorder in children, narcolepsy

methylphenidate hydrochloride (RITALIN, RITALIN-SR): stimulant Rx: attention deficit disorder in children, narcolepsy

methylprednisolone (DEPO-MEDROL): steroid anti-inflammatory

methylprednisolone (MEDROL): corticosteroid drug Rx: rheumatoid arthritis, acute gouty arthritis, severe asthma

methyltestosterone (ANDROID): androgen / steroid / masculinizing hormone Rx: hypogonadism

methyltestosterone (TESTRED): androgenizing hormone

methyltestosterone (VIRILON): androgen / masculinizing hormone

metoquinine (LARIAM): antimalarial agent

metoclopramide hydrochloride (REGLAN): Improves gastric emptying Rx: heartburn, ulcers

metolazone (MYKROX): antihypertensive / diuretic

metolazone (ZAROXOLYN): antihypertensive / diuretic

metoprolol (TOPROL-XL): cardioselective beta blocker Rx: HTN, angina, arrhythmias

metoprolol tartrate (LOPRESSOR HCT): hydrochlorothiazide, b-1 blocker, diuretic Rx: hypertension

metoprolol tartrate (LOPRESSOR): b-1 blocker Rx: hypertension

METROGEL (metronidazole) Rx: Rosacea

metronidazole (FLAGYL): antimicrobial agent

metronidazole (METROGEL) Rx: Rosacea

metirosine (DEMSEK): antihypertensive Rx: pheochromocytoma

MEVACOR (lovastatin): lowers serum cholesterol

mexiletine hydrochloride (MEXITIL): antiarrhythmic

MEXITIL (mexiletine hydrochloride): antiarrhythmic

mezlocillin (MEZLIN): broad spectrum antibiotic

MEZLIN (mezlocillin): broad spectrum antibiotic

MIACALCIN (calcitonin-salmon): synthetic hormone Rx: postmenopausal osteoporosis

MICARDIS (telmisartan): ACE inhibitor Rx: HTN

miconazole (MONISTAT, MONISTAT DUAL-PAK, MONISTAT 3): antifungal agent Rx: candidiasis

MICRONASE (glyburide): oral hypoglycemic Rx: diabetes

MICRONOR (norethindrone): oral contraceptive

MICROZIDE (hctz): thiazide antihypertensive / diuretic

MIDAMOR (amlodine): potassium-sparing diuretic

mizolam (VERSED): benzodiazepine hypnotic

MIDRIN (somethiphen maleate + dichlorophenazone + acetaminophen): dichlorophenazone, APAP, vasoconstrictor/sedative/analgesic Rx: headache

miglitol (GLYSET): oral hypoglycemic Rx: diabetes

MINIRALAN (dihydroergotamine mesylate): nasal spray Rx: migraines

MILTOWN (meprobamate): tranquilizer

MINIPRESS (prazosin hydrochloride): alpha-1 blocker Rx: hypertension

MINITRAN (transdermal nitroglycerin): nitrate Rx: angina

MINIZIDE (prazosin): polythiazide, antihypertensive

MINOCIN (minocycline hydrochloride): antibiotic

minocycline (DYNACIN): antibiotic

minocycline (VECTRIN): antibiotic

minocycline hydrochloride (MINOCIN): antibiotic

minoxidil (ROGAINE): topical hair growing agent Rx: baldness, HTN

MIRADON (anisidine): anticoagulant Rx: blood clots, pulmonary embolism, heart conditions

MIRALAX (polyethylene glycol): laxative

MIRAPLEX (pramipexole dihydrochloride): boosts dopamine levels Rx: Parkinson's disease

MIRACETTE, oral contraceptive

mirtazapine (REMERON): antidepressant Rx: depression

misoprostol (CYTOTEC): prevents gastric ulcers caused by NSAIDs

mitotane (LYSDOREN): chemotherapy agent Rx: adrenal

MOBAN (molindone hydrochloride): tranquilizer

MOBIC (meloxicam): NSAID analgesic

MODERIL (rescinnamine): antihypertensive

MODICON 21, 28, oral contraceptive

MODURETIC (amlodine + hydrochlorothiazide): HCTZ, antihypertensive / diuretic

moexipril (UNIRETIC): HCTZ, ACE inhibitor/diuretic Rx: HTN

moexipril hydrochloride (UNIVASC): ACE inhibitor Rx: HTN

molindone hydrochloride (MOBAN): tranquilizer

mometasone furoate (ELOCON): topical steroid anti-inflammatory

mometasone furoate (NASONEX): steroid antiallergy Rx: allergies

MONISTAT, MONISTAT DUAL-PAK, MONISTAT 3 (miconazole): antifungal agent Rx: candidiasis

MONOCAL (fluoride): calcium, mineral supplement

MONOCALTE-P-F (factor viii): antihemophilic factor

MONODOX (doxycycline): antibiotic

MONOKET (isosorfaide mononitrate): nitrate Rx: angina

MONOPRIL (fosinopril): ACE inhibitor Rx: HTN

montelukast sodium (SINGULAIR) Rx: asthma

MONUROL (fosfomycin tromethamine): antibiotic Rx: UTI

morphine (ETHMOZINE) Rx: severe ventricular dysrhythmias

morphine (ASTRAMORPH PF): narcotic analgesic

morphine (DURAMORPH): narcotic analgesic

morphine (MSIR CAPSULES, SOLUTION, CONCENTRATE): narcotic analgesic

morphine (ROXANOL 100): narcotic analgesic

morphine sulfate (KADJIAN): narcotic analgesic

morphine sulfate (MS CONTIN): narcotic analgesic

morphine sulfate (ORAMORPH): narcotic analgesic

morphine sulfate (RMS): narcotic analgesic suppositories

MOTOFEN (difenoxin): atropine, narcotic anti-diarrheal agent

MOTRIN (ibuprofen): nonsteroidal anti-inflammatory drug Rx: rheumatoid arthritis, menstrual pain, mild to moderate pain

moxifloxacin hydrochloride (AVELOX): antibiotic Rx: sinus and lung infections

MS CONTIN (morphine sulfate): narcotic analgesic

MSIR CAPSULES, SOLUTION, CONCENTRATE (morphine): narcotic analgesic

MUCO-FEN DM (dextromethorphan): guaifenesin, antitussive / expectorant Rx: colds

MUCO-FEN LA (guaifenesin): expectorant Rx: colds

MULTIVITAMIN / MINERAL SUPPLEMENT (LACTOAL-F)

MULTIVITAMINS (BEROCCA PLUS): minerals, nutritional supplement

MULTIVITAMINS (BEROCCA): nutritional supplement

MULTIVITAMINS (NESTABS CBF): vitamin supplement

MULTIVITAMINS AND MINERALS (VITAFOL, VITAFOL SYRUP, VITAFOL-PN)

MYAMBUTOL (ethambutol): chemotherapeutic Rx: tuberculosis

MYCELEX, MYCELEX G (clotrimazole): antifungal Rx: candidiasis

MYCOBUTIN (rifabutin): antibiotic Rx: AIDS

MYCOSTATIN (nystatin): antifungal Rx: candidiasis

MYCO-TRIAECET II (nystatin + triamcinolone acetonide): antifungal Rx: candidiasis

MYKROX (metolazone): antihypertensive / diuretic

MYLERAN (busulfan): anticancer agent Rx: leukemia

MYLCON (simethicone): antiflatulent

MYOSLINE (primidone): anticonvulsant Rx: epilepsy

N

nabumetone (RELAFEN): NSAID Rx: arthritis

nafarelin acetate (SYNAREL): treats endometriosis Rx: endometriosis

naftifine (NAFTIN): topical antifungal agent

NAFTIN (naftifine): topical antifungal agent

nalbufine (NUBAN): narcotic analgesic

NALEX DH (hydrocodone): phenylephrine, alcohol, narcotic antitussive / decongestant Rx: colds

NALEX-A (chlorpheniramine): phenylephrine, alcohol, antihistamine / sedative / decongestant Rx: colds

NALFON (fenpropofen): NSAID analgesic

nalfurafine hydrochloride (REVIA): opioid antagonist, alcohol deterrent

naphazoline (NAPHCON): steroid anti-inflammatory Rx: itching eyes, ocular congestion

NAPHCON (naphazoline): steroid anti-inflammatory Rx: itching eyes, ocular congestion

NAPRELAN (naproxen sodium): NSAID analgesic

NAPROSYN (naproxen): NSAID analgesic

naproxen (NAPROSYN): NSAID analgesic

naproxen sodium (ALEVE): NSAID analgesic

naproxen sodium (ANAPROX, ANAPROX DS): NSAID analgesic / anti-inflammatory agent

naproxen sodium (NAPRELAN): NSAID analgesic

naratriptan hydrochloride (AMERGE): migraine headaches

NARDIL (phenelzine sulfate): MAO inhibitor Rx: depression, bulimia

NASACORT, NASACORT AQ (triamcinolone acetonide): steroid anti-inflammatory Rx: allergies

NASALCROM (cromolyn sodium): antiasthmatic/antiallergic medication Rx: asthma, allergies

NASALIDE (flunisolide): steroid anti-inflammatory agent

NASAREL (flunisolide): steroid anti-inflammatory Rx: rhinitis

NASCOBAL (cyclosporin): vitamin B-12 Rx: anemia

NASONEX (mometasone furoate): steroid antiallergy Rx: allergies

nateglinide (STARLIX): antihypertensive Rx: diabetes

natural thyroid hormones to and ta (ARMOUR THYROID): treats thyroid gland and goiters, suppression test Rx: overactive thyroid

NAVANE (thiothixene): major tranquilizer

NAVELBINE (vinorelbine): antineoplastic Rx: breast and ovarian CA, Hodgkin's disease

NECON, oral contraceptive

nedocromil sodium (TILADE): anti-inflammatory Rx: asthma

nefazodone hydrochloride (SERZON): antidepressant Rx: depression

nefinavir (VIRACEPT): protease inhibitor antiviral Rx: HIV

NEMBUTAL (pentobarbital): barbiturate sedative / hypnotic

NEODECADRON (neomycin): dexamethasone, antibiotic / steroid anti-inflammatory

neomycin (CORTISPORIN): polymyxin, hydrocortisone, antibiotic / steroid anti-inflammatory

neomycin (NEODECADRON): dexamethasone, antibiotic / steroid anti-inflammatory

neomycin (PEDOTIC): polymyxin, hydrocortisone, antibiotic / steroid Rx: ear infections

NEORAL (cyclosporin): immunosuppressant Rx: organ transplant

NEOSPORIN OINTMENT (polymyxin): bacitracin, neomycin, antibiotic compound

neostigmine (PROSTIGMIN): anticholinesterase Rx: myasthenia gravis

NEO-SYNEPHRINE (phenylephrine): vasoconstrictor, decongestant

NEPTAZANE (methazolamide): reduces aqueous humor production Rx: glaucoma

NESACAINE (chloroprocaine): local anesthetic



NESTABS CBF (multivitamins): vitamin supplement
netilmicin (NETROMYCIN): antibiotic
NETROMYCIN (netilmicin): antibiotic
NEUROGEN (flgrastim): nutrient Rx: chemotherapy
NEURONTIN (gabapentin): antiepileptic
NEUTREXIN (trimetrexate): anti-neoplastic Rx: CA and pneumocystis pneumonia in AIDS
nevirapine (VIRAMUNE): antiviral Rx: HIV
NEKXUM (esomeprazole magnesium): suppresses gastric acid pump Rx: ulcers, esophagitis
niacin (NIACOR): vitamin B-3 Rx: lowers serum cholesterol
niacin (SLO-NIACIN): reduces serum cholesterol
NIACIN (vitamin b-3): reduces serum cholesterol
NIACOR (niacin): vitamin B-3 Rx: lowers serum cholesterol
nicardipine hydrochloride (CARDENE): calcium blocker Rx: angina, HTN
NICORETTE, nicotine chewing gum Rx: cigarette withdrawal
nicotine (HABITROL) Rx: relief of nicotine withdrawal symptoms
nicotine (NICOTROL NS, NICOTROL TRANSDERMAL) Rx: relief of nicotine withdrawal symptoms
NICOTROL NS, NICOTROL TRANSDERMAL (nicotine) Rx: relief of nicotine withdrawal symptoms
nifedipine (ADALAT, ADALAT CC): Ca++ blocker Rx: angina, HTN
nifedipine (PROCARDIA, PROCARDIA XL): calcium channel blocker Rx: angina, hypertension
NIFEREX-PN, NIFEREX-PN FORTE (iron): multivitamins, iron / vitamin supplement
NILANDRON (nilutamide): antandrogen Rx: prostate CA
nilutamide (NILANDRON): antandrogen Rx: prostate CA
nimodipine (NIMOTOP): calcium channel blocker, improves neurological deficits after subarachnoid hemorrhage
NIMOTOP (nimodipine): calcium channel blocker, improves neurological deficits after subarachnoid hemorrhage
NIPEREX, NIFEREX-150 (iron): mineral Rx: anemia
NIPEREX-150 FORTE (iron): vitamins, iron / vitamin supplement
nisoldipine (SULAR): calcium channel blocker Rx: HTN
nizatizidine (ALINIA): treats infectious diarrhea
NITRO-DUR (nitroglycerin): long-acting nitrate Rx: angina prophylaxis
nitrofurantoin (FURADANTIN): antibacterial agent Rx: UTI
nitrofurantoin (MACROBID): antibacterial Rx: UTI
nitrofurantoin (MACRODANTIN): antibacterial Rx: UTI
nitroglycerin (DEPONIT): transdermal nitrate Rx: angina
nitroglycerin (NITRO-DUR): long-acting nitrate Rx: angina prophylaxis
nitroglycerin (NITROL): nitrate ointment Rx: angina
nitroglycerin (NITROLINGUAL SPRAY): nitrate Rx: angina
nitroglycerin (NITROSTAT): vasodilator Rx: angina
nitroglycerin (TRANSDERM NITRO): nitrate vasodilator Rx: angina prophylaxis
NITROL (nitroglycerin): nitrate ointment Rx: angina
NITROLINGUAL SPRAY (nitroglycerin): nitrate Rx: angina
NITROSTAT (nitroglycerin): vasodilator Rx: angina
NIX (permethrin): parasiticide Rx: head lice
nizatizidine (AXID): Histamine-2 antagonist, which inhibits gastric acid secretion Rx: ulcers
NIZORAL (ketoconazole): antifungal agent Rx: yeast infections
NOLAHIST (phenidamine): antihistamine Rx: allergies
NOLAMINE (phenidamine): chlorpheniramine, phenylpropanolamine, antihistamine / decongestant
NOLVADEX (tamoxifen citrate): anticancer agent Rx: breast CA
NORCO CM (hydrocodone): APAP, narcotic analgesic compound
NORCO, oral contraceptive
NOREL (guafenesin): phenylpropanolamine, phenylephrine, expectorant / decongestant Rx: colds
NOREL PLUS (apap), phenyltoloxamine, chlorpheniramine, analgesic / decongestant / antihistamine Rx: colds
norethindrone (ESTROSTEP): estradiol, oral contraceptive
norethindrone (LOESTRIN 21, FE): estradiol, oral contraceptive
norethindrone (MICRONOR): oral contraceptive
norethindrone (NOR-QD): oral contraceptive
norethindrone acetate (AYGESTIN): hormone Rx: amenorrhea, endometriosis
NORFLEX (orphenadrine): non-narcotic analgesic
norfloxacin (NOROXIN): urinary tract antibiotic
NORGESIC (orphenadrine citrate + aspirin + caffeine): non-narcotic analgesic
norgestrel (OVRETTE): oral contraceptive
NORNYL, oral contraceptive
NORMODYNE (labetalol hydrochloride): beta blocker Rx: HTN, angina
NOROXIN (norfloxacin): urinary tract antibiotic
NORPACE, NORPACE CR (disopyramide phosphate): antiarrhythmic
NORPLANT (levonorgestrel): contraceptive
NORPRAMIN (desipramine hydrochloride): tricyclic antidepressant
NOR-QD (norethindrone): oral contraceptive
norriptyline hydrochloride (PAMELOR): tricyclic antidepressant
NORVASC (amlodipine besylate): calcium blocker Rx: HTN, angina
NORVIR (ritonavir): protease inhibitor antiviral Rx: HIV
NOVOLIN (insulin) Rx: diabetes mellitus
NUBAIN (nalbuphine): narcotic analgesic
NUCOFED (codeine): pseudoephedrine, narcotic antitussive / decongestant compound
NUCOFED EXPECTORANT (codeine): pseudoephedrine, guafenesin, narcotic antitussive / decongestant / expectorant
NU-IRON (iron) Rx: anemia
NU-IRON PLUS (iron): vitamins, iron/vitamin supplement
NU-IRON V (iron): vitamins, iron/vitamin supplement
NUMORPHAN (oxymorphone): narcotic analgesic
NUPRIN (ibuprofen): NSAID analgesic
NUVARING (etonogestrel and ethinyl estradiol vaginal ring): contraceptive device

nystatin (MYCOSTATIN): antifungal Rx: candidiasis
nystatin (NYSTOP): antifungal Rx: Candida
nystatin + triamcinolone acetamide (MYCO-TRIACTET II): antifungal Rx: candidiasis
NYSTOP (nystatin): antifungal Rx: Candida

O

OBEGYN (vitamins and minerals)
octreotide (SANDOSTATIN): anti-tumor, growth inhibitor Rx: carcinoid tumor, acromegaly, intestinal tumors, diarrhea
OCUFLOX (ofloxacin): ophthalmic anti-infective Rx: conjunctivitis, corneal ulcers
ofloxacin (FLOXIN): antibiotic
ofloxacin (OCUFLOX): ophthalmic anti-infective Rx: conjunctivitis, corneal ulcers
OGEN (estropipate): estrogen Rx: menopause
olanzapine (ZYPREXA): manages schizophrenia Rx: schizophrenia
olmesartan medoxomil (MENACAR): blocks angiotensin II Rx: hypertension
olopatadine (PATANOL) Rx: allergic conjunctivitis
olisalazine sodium (DIPENTUM): anti-inflammatory agent Rx: ulcerative colitis
omeprazole (PRILLOSEC): gastric acid pump inhibitor Rx: ulcers, esophagitis
OMNICEF (ceftin): antibiotic Rx: pneumonia, bronchitis
OMNIHIST LA (chlorpheniramine): phenylephrine, methscopolamine, antihistamine / decongestant
ondansetron (ZOFAN): anti-nauseant Rx: chemotherapy
oral contraceptive (APRI)
oral contraceptive (OVCON)
ORAMORPH (morphine sulfate): narcotic analgesic
ORAP (pimozide): antipsychotic Rx: psychotic disorders
ORASON (prednisone): steroid Rx: rheumatoid arthritis, severe asthma
ORGANIDIN NR (guafenesin): expectorant Rx: bronchitis
ORINASE (tolbutamide): oral antidiabetic medication Rx: type II diabetes
ORLAAM (levomephadryl): opiate agonist Rx: narcotic addiction
orlistat (XENICAL): lipase inhibitor Rx: obesity
ORNADE (chlorpheniramine): phenylpropanolamine, antihistamine / decongestant compound
orphenadrine (NORFLEX): non-narcotic analgesic
orphenadrine citrate + aspirin + caffeine (NORGESIC): non-narcotic analgesic
ORTHO EVRA (ethinyl estradiol + norelgestromin): contraceptive skin patch Rx: birth control
ORTHO TRI-CYCLEN-21, 28, oral contraceptive
ORTHO-CEPT 21, 28, oral contraceptive
ORTHO-CYCLEN-21, 28, oral contraceptive
ORTHO-EST (estropipate): estrogen Rx: menopause, osteoporosis
ORTHO-NOVUM, oral contraceptive
ORUDIS (ketoprofen): NSAID Rx: arthritis
ORUVAL (ketoprofen): NSAID analgesic
OS-CAL (calcium and vitamin D supplement)
oseltamivir phosphate (TAMIFLU): neuramidase inhibitors Rx: influenza
OVCON (oral contraceptive)
OVRL (oral contraceptive)
OVRETTE (norgestrel): oral contraceptive
OXANDRIN (oxandrolone): anabolic steroid Rx: osteoporosis, weight loss
oxandrolone (OXANDRIN): anabolic steroid Rx: osteoporosis, weight loss
oxaprozin (DAYPRO): NSAID Rx: arthritis
oxcarbazepine (TRILEPTAL): antiseizure Rx: epilepsy
oxiconazole nitrate (OXISTAT): topical antifungal agent
OXISTAT (oxiconazole nitrate): topical antifungal agent
oxycodone (TYLXO): acetaminophen, narcotic analgesic
oxybutynin chloride (DITROPAN, DITROPAN XL): anticholinergic / antispasmodic Rx: urinary frequency, incontinence, dysuria
oxycodone (PERCOCET): APAP, narcotic analgesic
oxycodone (PERCODAN): aspirin, narcotic analgesic
oxymorphone (NUMORPHAN): narcotic analgesic
oxytetracycline (TERRAMYCIN WHH POLYRYNYN B): antibiotics
oxytetracycline (TERRAMYCIN): antibiotic
oxytetracycline (UBOBIOTIC): sulfamethizole, phenazopyridine, antibiotic / analgesic Rx: UTI

P

PACAPS (butalbital): caffeine, APAP, sedative / analgesic Rx: headache
PAMELOR (nortriptyline hydrochloride): tricyclic antidepressant
PANCREASE, PANCREASE MT (pancreatic enzymes) Rx: cystic fibrosis, pancreatitis
pancreatic enzymes (PANCREASE, PANCREASE MT) Rx: cystic fibrosis, pancreatitis
pancreatic enzymes (ULTRASE, ULTRASE MT) Rx: cystic fibrosis, pancreatitis
pancreatic enzymes (ZYMASE) Rx: cystic fibrosis, pancreatitis
pancrelipase (COTAZYM, COTAZYM-S): digestive enzyme Rx: pancreatitis, cystic fibrosis
pancrelipase (CREON): pancreatic enzyme replacement
pancuronium (PAVULON): paralytic Rx: surgery, endotracheal intubation
protaprazole (PROTONIX): proton pump inhibitor Rx: ulcers
PARAFON FORTE (chlorzoxazone): acetaminophen, muscle relaxant / analgesic compound
PARAPLATIN (carboplatin): anti-cancer agent Rx: ovarian CA
PARLODEL (bromocriptine mesylate): ergot Rx: Parkinson's disease, hypogonadism, infertility, amenorrhea
PARNATE (tranylcypromine sulfate): MAO inhibitor Rx: depression
paroxetine hydrochloride (PAXIL): antidepressant
PASER (aminosalicylic acid): bacteriostatic Rx: TB
PATANOL (olopatadine) Rx: allergic conjunctivitis
PAVULON (pancuronium): paralytic Rx: surgery, endotracheal intubation
PAXIL (paroxetine hydrochloride): antidepressant
PCE (erythromycin): antibiotic
PEDIACOF (codeine): phenylephrine, chlorpheniramine, potassium iodide, narcotic

antitussive / decongestant / antihistamine
PEDIAFLOR (fluoride): mineral Rx: osteoporosis, dental canes
PEDIAAPRED (prednisolone sodium phosphate): steroid Rx: allergies, arthritis, MS
PEDIAZOLE (erythromycin + ethylsuccinate + sulfisoxazole acetyl): antibiotic compound
PEDICOTIC (neomycin): polymyxin, hydrocortisone, antibiotic / steroid Rx: ear infections
PEGANONE (ethoin): antiepileptic drug Rx: seizures
perimolast (ALAMAST): prevents itchy eyes Rx: allergies
penolmine (CYLERT): stimulant Rx: Attention Deficit Disorder in children
perbutolol (LEVATOL): beta blocker Rx: hypertension
peniclovir (DENAVIR): topical anti-viral Rx: recurrent cold sores
PENECORT (hydrocortisone): steroid anti-inflammatory
PENETREX (enoacin): antibacterial Rx: STDs, UTI
penicillamine (CUPRIMINE): chelating agent, anti-inflammatory Rx: Wilson's disease, arthritis, heavy metal toxicity
penicillamine (DEPEN): DMARD Rx: arthritis, pain
penicillin (BICILLIN): antibiotic
penicillin (PFIZERPEN): antibiotic
penicillin (WYCILIN): antibiotic
penicillin v potassium (PENICILLIN VK): antibacterial Rx: dental infections, infections in the heart, middle ear infections, rheumatic fever, scarlet fever
PENICILLIN VK (penicillin v potassium): antibacterial Rx: dental infections, infections in the heart, middle ear infections, rheumatic fever, scarlet fever
penicillin vk (VEETIDS): antiviral/bacterial Rx: dental infections, infections in the heart, middle ear infections
PENLAC (ciclopirox): antifungal nail lacquer Rx: ringworm of the nails
penaerythritol tetranitrate (PENTRITOL): long-acting nitrate Rx: angina prophylaxis
PENTASA (mesalamine): for ulcerative colitis
pentazocine (TALWIN COMPOUND): ASA, narcotic analgesic
pentazocine (TALWIN NX): naloxone, narcotic analgesic
pentazocine + apap (TALACEN): narcotic analgesic
pentobarbital (NEMBUTAL): barbiturate sedative / hypnotic
pentosan (ELMIRON): urinary tract analgesic Rx: cystitis
pentothal (THIOPENTAL): general anesthetic
pentoxifylline (PENTOXIL): reduces blood viscosity, improves circulation in peripheral vascular disease
pentoxifylline (TRENAL): reduces blood viscosity, improves circulation in peripheral vascular disease
PENTOXIL (pentoxifylline): reduces blood viscosity, improves circulation in peripheral vascular disease
PENRITROL (penaerythritol tetranitrate): long-acting nitrate Rx: angina prophylaxis
PERPID (famotidine): Histamine-2 blocker which inhibits gastric acid production Rx: ulcers
PERCOCET (oxycodone): APAP, narcotic analgesic
PERCODAN (oxycodone): aspirin, narcotic analgesic
PERCODAN-DEMI (oxycodone): aspirin, narcotic analgesic
PERCOLONE (oxycodone): narcotic analgesic
PERDIEM (psyllium): bulk-forming laxative
pergolide (PERMAX): dopamine receptor stimulator Rx: Parkinson's disease
PERGONAL (menotropins): gonadotropin hormone Rx: stimulates ovulation, spermatogenesis
PERIACTIN (cyproheptadine): antihistamine
PERI-LCOLACE (casanthranol): docusate, laxative / stool softener
PERIDIN C (vitamins): antioxidants, dietary supplement
PERIGARD (chlorhexidine): oral rinse
perindopril (ACEON): ACE inhibitor Rx: HTN
PERIOSTAT (doxycycline): antibiotic
PERMAX (pergolide): dopamine receptor stimulator Rx: Parkinson's disease
permethrin (ELIMITE): topical scabicide agent Rx: scabies, lice
permethrin (NIX): parasiticide Rx: head lice
perphenazine (ETRAFON): amitriptyline, major tranquilizer, tricyclic antidepressant Rx: anxiety with depression
perphenazine (TRILAFON): major tranquilizer
PERSANTINE (dipyridamole): cerebral & coronary vasodilator Rx: CVA, angina
PFIZERPEN (penicillin): antibiotic
PHENAPHEN WITH CODEINE (apap): codeine, narcotic analgesic
phenazopyridine (PRODIUM): urinary tract analgesic Rx: UTI
phenidmetrazine (PRELU-2): amphetamine appetite suppressant Rx: obesity
pheninezine sulfate (NARDIL): MAO inhibitor Rx: depression, bulimia
PHENERGAN (promethazine): phenothiazine sedative / antiemetic
phenindamine (NOLAHIST): antihistamine Rx: allergies
phenindamine (NOLAMINE): chlorpheniramine, phenylpropanolamine, antihistamine / decongestant
phenobarbital + hysocyamine sulfate + atropine sulfate (DONNATAL): belladonna alkaloids, barbiturate sedative, antispasmodic Rx: ulcers
phenox benzamine (DIBENZYLUNE): alpha blocker Rx: HTN, sweating
phentermine (FASTIN): stimulant Rx: appetite suppression
phentermine hydrochloride (ADIPEX-P): appetite suppressant / stimulant
phentermine hydrochloride (IONAMIN): stimulant Rx: appetite suppression
phenylephrine (ATROHIST PLUS): phenylpropanolamine, chlorpheniramine, hysocyamine, atropine, scopolamine, decongestant / antihistamine Rx: allergies, colds
phenylephrine (NEO-SYNEPHRINE): vasoconstrictor, decongestant
phenylephrine (RYNATAL): chlorpheniramine, pyrilamine, antihistamine / decongestant compound
phenylephrine (SINUTAB): guaifenesin, decongestant / expectorant
phenylephrine, guaifenesin (EXTENDRYL): antihistamine, decongestant Rx: allergies
phenylephrine, phenylpropanolamine, guaifenesin (ENTEX CAPSULES): decongestant / expectorant
phenylpropanolamine (DURA-VENT): guaifenesin, decongestant / expectorant

phenylpropanolamine (PROFEN-LA, PROFEN II): guaifenesin, decongestant / expectorant
phenylpropanolamine (PROPAGEST): nasal decongestant
phenylpropanolamine (SINUVENT): guaifenesin, decongestant / expectorant
phenylpropanolamine, guaifenesin (ENTEX LA): decongestant / expectorant compound
phenylpropanolamine, guaifenesin (EXGEST LA): decongestant / expectorant
phenytoin sodium (DILANTIN): anticonvulsant
PHOTOFORIN (porfimer): antineoplastic Rx: esophageal CA, lung CA
PHRENILIN (butalbital): APAP, analgesic compound
piocarpine (SALAGEN): parasympathomimetic Rx: glaucoma
piocarpine hydrochloride (ISOPTO CARPINE): reduces pressure in the eye Rx: glaucoma
PIMA (potassium iodide): expectorant Rx: asthma, bronchitis
pimecrolimus (ELIDEL): non-steroidal cream Rx: eczema
pimozide (ORAP): antipsychotic Rx: motor & phonic tics
pioglitazone hydrochloride (ACTOS): oral hypoglycemic Rx: diabetes
piperacillin (PIPRACIL): antibiotic
PIPRACIL (piperacillin): antibiotic
pirbuterol (MAXAIR): beta-2 stimulant Rx: asthma, COPD
piroxicam (FELDENE): NSAID analgesic
pitcher plant extract (SARAPIN): analgesic Rx: nerve block for sciatic pain, neuritis, neuralgia
PLACIDYL (ethylchlovyron): hypnotic Rx: insomnia
PLAQUENIL (hydroxychloroquine): antimalarial agent
PLENDIL (felodipine): calcium blocker Rx: HTN, angina
PNEUMOMIST (guaifenesin): expectorant Rx: asthma, bronchitis
PNEUMOTOSSIN HC (guaifenesin): hydrocodone, expectorant / narcotic antitussive
PODOCON-25 (podophyllin): cytotoxic Rx: venereal warts
podoflox (CONDYLOX): antimetabolic Rx: anogenital warts
podophyllin (PODOCON-25): cytotoxic Rx: venereal warts
polyethylene glycol (GOLYTEL): electrolytes, bowel evacuant
polyethylene glycol (MIRALAX): laxative
polymyxin (NEOSPORIN OINTMENT): bacitracin, neomycin, antibiotic compound
polythiazide (RENESE): antihypertensive/diuretic Rx: CHF, HTN
POLYTRIM (trimethoprim): polymyxin, antibacterial Rx: eye infections
PONSTEL (metenacine acid): NSAID analgesic
porfimer (PHOTOFORIN): antineoplastic Rx: esophageal CA, lung CA
POTABA (aminobenzoate) Rx: fibrosis, scleroderma
potassium (RUM-K): potassium supplement
potassium chloride (K-DUR): treats and prevents low potassium levels Rx: digitalis patients
potassium citrate (UROCT-K): urinary alkalinizer Rx: kidney stones
potassium iodide (KIE SYRUP): ephedrine, expectorant / bronchodilator Rx: asthma
potassium iodide (PIMA): expectorant Rx: asthma, bronchitis
potassium iodide (SSKI): expectorant
potassium phosphate (K-PHOS): potassium ion
pramipexole dihydrochloride (MIRAPEX): boosts dopamine levels Rx: Parkinson's disease
PRAMOSONE (hydrocortisone): pramoxine, steroid anti-inflammatory / anesthetic Rx: dermatoses
PRANDIN (repaglinide): Increases insulin release Rx: diabetes
PRAVACHOL (pravastatin): cholesterol reducer
pravastatin (PRAVACHOL): cholesterol reducer
prazosin (BLITRIGIDE): antihelmintic Rx: schistosomiasis, flukes
prazosin (MINIZIDE): polythiazide, antihypertensive
prazosin hydrochloride (MINIPRESS): alpha-1 blocker Rx: hypertension
PRECOSE (acarbose): delays carbohydrate digestion Rx: diabetes mellitus
prednisolone (PRELONE SYRUP): steroid anti-inflammatory
prednisolone sodium phosphate (PEDIAAPRED): steroid Rx: allergies, arthritis, MS
prednisone (DELTAZONE): steroid anti-inflammatory Rx: rheumatoid arthritis, severe asthma
prednisone (ORASONE): steroid Rx: rheumatoid arthritis, severe asthma
prednisone (STERAPRED, STERAPRED DS): steroid anti-inflammatory
PRELONE SYRUP (prednisolone): steroid anti-inflammatory
PRELU-2 (phenidmetrazine): amphetamine appetite suppressant Rx: obesity
PREMARN (estrogens) Rx: menopause
PREMPHASE (medroxyprogesterone): estrogens, hormones Rx: menopause, osteoporosis
PRENATAL (estrogens): hormone Rx: menopause
prenatal vitamins (ADVANCED NATALACER): prenatal supplement
PREVACID (lansoprazole): gastric acid pump inhibitor Rx: ulcers, esophagitis
PREVALITE (cholestyramine): cholesterol reducer
PRIOLOSEC (meprazole): gastric acid pump inhibitor Rx: ulcers, esophagitis
PRIMATENE MIST (epinephrine): bronchodilator Rx: asthma
PRIMATENE TABLETS (theophylline): ephedrine, phenobarbital xanthine bronchodilator Rx: asthma
primidone (MYSOLINE): anticonvulsant Rx: epilepsy
PRINIVIL (lisinopril): ACE inhibitor Rx: HTN, CHF
PRINIZIDE (lisinopril): HCTZ, antihypertensive compound
probenecid (BENEMID): Licosuric Rx: gout. Also prolongs effects of penicillin
probenecid (COLBENEID): colchicine, uricosuric Rx: gout
procainamide (PROCANABID): antiarrhythmic
PROCANABID (procainamide): antiarrhythmic
procabazine (MATULANE): anticancer drug Rx: Hodgkin's disease
PROCARDIA, PROCARDIA XL (nifedipine): calcium channel blocker Rx: angina, hypertension
prochlorperazine (COMPAZINE): phenothiazine antiemetic
prochlorperazine (COMPRO): phenothiazine antiemetic
PRODIUM (phenazopyridine): urinary tract analgesic Rx: UTI



PROFEN-LA, PROFEN II (phenylpropanolamine): guaifenesin, decongestant / expectorant

PROMETHAZINE (diazoxide): increases blood glucose Rx: hypoglycemia

PROGLYCEXAM (PHENERGAN): phenothiazine sedative / antiemetic

propafenone (RYTHMOL): antiarrhythmic Rx: severe ventricular dysrhythmias

PROPAFEST (phenylpropanolamine): nasal decongestant

PROPECIA (finasteride) Rx: hair loss prevention

propofol (DIPRIVAN): general anesthetic agent

propoxyphene (WYGESIC): APAP, narcotic analgesic

propoxyphene napsylate + acetaminophen (DARVOCE-T-N): APAP, narcotic analgesic

propoxyphene napsylate + acetaminophen (DARVON COMPOUND): ASA, caffeine narcotic analgesic compound

propoxyphene napsylate + acetaminophen (DARVON): narcotic analgesic

propranolol hydrochloride (INDERAL, INDERAL LA): β -blocker Rx: HTN, angina, cardiac dysrhythmias, MI, and migraine headache

propranolol hydrochloride (INDERIDE): β -blocker, antihypertensive / diuretic compound Rx: hypertension

PROPULSID (cisapride): increases gastric emptying

PROSCAR (finasteride) Rx: prostatic hypertrophy

PROSOM (eszolam): hypnotic Rx: insomnia

PROSTIGMIN (neostigmine): anticholinesterase Rx: myasthenia gravis

protein (HEP-FORTE): vitamins, mineral, nutritional supplement

PROTID (apap): chlorpheniramine, phenylephrine, analgesic / antihistamine / decongestant Rx: colds

protirelin (THYREL TRH): increases release of thyroid stimulating hormone

PROTONIX (pantoprazole): proton pump inhibitor Rx: ulcers

protriptyline (VIVACTIL): tricyclic antidepressant

PROTROPIN (somatrem): human growth hormone

PROVENTIL HFA (albuterol): beta-2 bronchodilator Rx: asthma

PROVERA (medroxyprogesterone): hormone Rx: amenorrhea

PROZAC (fluoxetine): heterocyclic antidepressant

pseudoephedrine (DECONSAL II): guaifenesin, decongestant / expectorant Rx: colds

pseudoephedrine (DEFEN-LA): guaifenesin, decongestant, expectorant Rx: the common cold

pseudoephedrine (GUAJ-VENT): guaifenesin, decongestant / expectorant Rx: colds, bronchitis

pseudoephedrine (KRONOFED-A): chlorpheniramine, decongestant, antihistamine Rx: colds, allergies

pseudoephedrine (RESPAIRE-SR): guaifenesin, decongestant/expectorant

pseudoephedrine (RESPA-LST): guaifenesin, decongestant/expectorant

pseudoephedrine (SUDAFED COLD & ALLERGY): chlorpheniramine, decongestant / antihistamine

pseudoephedrine (SUDAFED): nasal decongestant

pseudoephedrine (INTESTINE PEX): decongestant/expectorant

pseudoephedrine, guaifenesin (ZEPHREX, ZEPHREX LA): decongestant / expectorant

psyllium (PERDIEM): bulk-forming laxative

PULMICORTURBUHATER (budesonide): steroid anti-inflammatory Rx: asthma

PULMOZYME (dornase alfa or dnase): lytic enzyme which dissolves infected lung secretions Rx: cystic fibrosis

PURINETHOL (mercaptopurine): antileukemia agent

pyridostigmine (MESTINON): anticholinesterase Rx: myasthenia gravis

pyridostigmine (REGONOL): anticholinesterase Rx: Myasthenia Gravis

pyrimethamine (DARAPRIM): antiparasitic Rx: malaria, toxoplasmosis

Q -----

Q-BID (coenzyme q-10): helps maintain healthy muscle, increases ATP production

quazepam (DORAL): sleeping medication Rx: insomnia

quetiapine fumarate (SEROQUEL): antipsychotic Rx: schizophrenia

QUINAGLUTE (quinidine): antiarrhythmic Rx: supraventricular and ventricular dysrhythmias

quinapril (ACCUPRIL): ACE inhibitor Rx: HTN, CHF

quinapril hydrochloride+hydrochlorothiazide (ACCURETIC)

QUINIDEX (quinidine): antiarrhythmic Rx: supraventricular and ventricular dysrhythmias

quinidine (CARDIOQUIN): antiarrhythmic Rx: cardiac dysrhythmias

quinidine (QUINAGLUTE): antiarrhythmic Rx: supraventricular and ventricular dysrhythmias

R -----

rabepizate (AOPHEX): inhibits gastric acid secretion Rx: ulcers

rabepazole sodium (ACIPHEX): proton pump inhibitor Rx: GERD, duodenal ulcers, Zollinger-Ellison syndrome

raloxifene hydrochloride (EVISTA) Rx: osteoporosis prevention

ramipril (ALTACE): ACE inhibitor Rx: hypertension

ranitidine (TRITEC): histamine-2-blocker Rx: ulcers

ranitidine (ZANTAC): histamine-2-blocker, inhibits gastric acid secretion Rx: ulcers

REBETOL (ribavirin) Rx: Hepatitis C

REBETRON (interferon alfa): ribavirin, antiviral Rx: Hepatitis C

RECOMBINATE (factor viii): clotting agent Rx: hemophilia

RECOMBIVAX HB (hepatitis b vaccine): vaccine Rx: hepatitis B

REGLAN (metoprolamide hydrochloride): Improves gastric emptying Rx: heartburn, ulcers

REGONOL (pyridostigmine): anticholinesterase Rx: Myasthenia Gravis

REGREXAN (becaplermin): cellular growth agent Rx: ulcers, diabetes

RELAFEN (nabumetone): NSAID Rx: arthritis

RELENZA (zanamivir): antiviral drug Rx: influenza

RELPAK (eletriptan hydrobromide): anti-migraine drug Rx: migraines

REMERON (mirtazapine): antidepressant Rx: depression

REMENYL (galantamine): boosts acetylcholine levels Rx: Alzheimer's disease

RENISE (polythiazide): antihypertensive/diuretic Rx: CHF, HTN

RENOVA (tretinoin): anti-acute, anti-wrinkle agent

repaglinide (PRANDIN): increases insulin release Rx: diabetes

REPROMEX (menotropins): fertility drug, induces ovulation

REQUIP (ropinirole hydrochloride): dopaminergic Rx: Parkinson's disease

resacinnamine (MODERIL): antiarrhythmic

RESCRIPTOR (delavirdine): antiviral Rx: HIV

RESCULLA (unoprostone): lowers intraocular pressure Rx: glaucoma

RESPA-DM (dextromethorphan): guaifenesin, antitussive / expectorant

RESPA-GF (guaifenesin): expectorant

RESPAHIST (brompheniramine): pseudoephedrine, antihistamine / decongestant

RESPAIRE-SR (pseudoephedrine): guaifenesin, decongestant/expectorant

RESPA-LST (pseudoephedrine): guaifenesin, decongestant/expectorant

RESTORIL (temazepam): benzodiazepine hypnotic

RETIN-A (tretinoin): anti-acute, anti-wrinkle agent

RETROVIR (zidovudine): antiviral agent Rx: HIV, AIDS virus

REVIJA (naltrexone hydrochloride): opioid antagonist, alcohol deterrent

REZUIUM (triglitazone): oral hypoglycemic Rx: diabetes

RHEUMATREX (trexall): anticancer drug Rx: lymphoma, leukemia

rheumatrex and trexall (METHOTREXATE): anticancer drug Rx: leukemia, lymphoma

RHINOCORT (budesonide): corticosteroid Rx: allergic rhinitis

ribavirin (REBETOL) Rx: Hepatitis C

ribavirin (VIRAZOLE): antiviral Rx: chronic Hepatitis C

RIDAURA (auranofin): anti-inflammatory drug Rx: rheumatoid arthritis

rifabutin (MYCOBUTIN): antibiotic Rx: AIDS

RIFADIN (rifampin): antibiotic Rx: tuberculosis, meningitis

RIFAMATE (rifampin): isoniazid, antibiotics Rx: tuberculosis

rifampin (RIFADIN): antibiotic Rx: tuberculosis, meningitis

rifampin (RIFAMATE): isoniazid, antibiotics Rx: tuberculosis

rifampin (RIMACTANE): antibiotic Rx: TB, meningitis

RIFATER (isoniazid; rifampin, pyrazinamide, antibiotic Rx: TB

RILUTEJ (riluzole): Rx: amyotrophic lateral sclerosis, ALS

riluzole (RILUTEK) Rx: amyotrophic lateral sclerosis, ALS

RIMACTANE (rifampin): antibiotic Rx: TB, meningitis

rimantadine (FLUMADINE): antiviral Rx: influenza A

risedronate (ACTONEL): strengthens bones, prevents osteoporosis, bisphosphonate Rx: paget's disease, osteoporosis

RISPERDAL (risperidone): antipsychotic Rx: schizophrenia

risperidone (RISPERDAL): antipsychotic Rx: schizophrenia

RITALIN, RITALIN-SR (methylphenidate hydrochloride): stimulant Rx: attention deficit disorder in children, narcolepsy

ritonavir (NORVIR): protease inhibitor antiviral Rx: HIV

rivastigmine tartrate (EXELON) Rx: Alzheimer's

rizatriptan benzoate (MAXALT) Rx: migraines

RMS (morphine sulfate): narcotic analgesic suppositories

riminacin (BACTROBAN): topical antibacterial Rx: skin infections

ROBAXIN (methocarbamol): sedative Rx: painful musculoskeletal conditions

ROBAXIN 750 (methocarbamol): sedative Rx: painful musculoskeletal conditions

ROBAXISAL (methocarbamol): aspirin, sedative / analgesic Rx: painful musculoskeletal conditions

ROBINUL, ROBINUL FORTE (glycopyrrolate): anticholinergic Rx: peptic ulcers

ROBITUSSIN (guaifenesin): expectorant

ROBITUSSIN A-C (guaifenesin): codeine, alcohol, expectorant, cough suppressant Rx: colds

ROBITUSSIN43AC (guaifenesin): codeine, alcohol, pseudoephedrine, expectorant, cough suppressant, decongestant Rx: colds

ROCALTRON (calcitrol): vitamin D analog Rx: hypocalcemia, bone disease

ROCEPHIN (ceftriaxone): antibiotic

rofecoxib (VIOXX): NSAID analgesic

ROFERON-A (interferon): immunoadjuvant Rx: hairy cell leukemia, AIDS-related Kaposi's sarcoma

ROGAINE (minoxidil): topical hair growing agent Rx: baldness, HTN

RONDEC CHEWABLE TABLET (brompheniramine): pseudoephedrine, antihistamine / decongestant

RONDEC DM (carbinoxamine): pseudoephedrine, dextromethorphan, antihistamine / decongestant / antitussive

RONDEC ORAL DROPS, RONDEC SYRUP, RONDEC TABLET, RONDEC TR TABLET (carbinoxamine): pseudoephedrine, antihistamine / decongestant

ropinirole hydrochloride (REQUIP): dopaminergic Rx: Parkinson's disease

rosiglitazone maleate (AVANDIA): oral hypoglycemic Rx: diabetes

rosiglitazone maleate, metformin hydrochloride (AVANDAMET): oral hypoglycemic Rx: type II diabetes

ROMASA (mesalamine): anti-inflammatory Rx: colitis, proctitis

ROMAID 100 (morphine): narcotic analgesic

ROXICET (acetaminophen oxycodone hydrochloride): narcotic analgesic Rx: moderate to severe pain

ROXICODONE (oxycodone): narcotic analgesic

ROXILOX (oxycodone): APAP, narcotic analgesic compound

ROXIPRIN (oxycodone): ASA, narcotic analgesic compound

RUM-K (potassium): potassium supplement

RYNATAN (phenylephrine): chlorpheniramine, pyrilamine, antihistamine / decongestant compound

RYNATUSS, antitussive / decongestant / antihistamine

RYTHMOL (propafenone): antiarrhythmic Rx: severe ventricular dysrhythmias

salicylate (THERA-GESIC): topical NSAID analgesic Rx: arthritis
salicylic acid (SAL-ACID) Rx: removes warts
salicylic acid (SALACTIC GEL) Rx: removes warts
salicylic acid (SALPLANT FLM) Rx: removal of common warts
salmeterol xinafoate (SEREVENT): Beta-2 bronchodilator Rx: asthma, COPD
SALPLANT GEL (salicylic acid): for removal of common warts
salsalate (DISALCID): NSAID Rx: arthritis
salsalate (SALFLEX): NSAID analgesic Rx: arthritis
SANDIMMUNE (cyclosporine): immunosuppressant agent Rx: prophylaxis of rejection of transplanted organs
SANDOSTATIN (octreotide): antidiarrheal, growth inhibitor Rx: carcinoid tumor, acromegaly, intestinal tumors, diarrhea
SANGCYA (cyclosporine): immunosuppressant agent Rx: prophylaxis of rejection of transplanted organs
squainavir (FORTOVASE): protease inhibitor Rx: HIV
squainavir (INVIRASE): protease inhibitor antiviral Rx: HIV
SARAFEM (fluoxetine hydrochloride): antidepressant Rx: major depression
SARAPIN (pliciter plant extract): analgesic Rx: nerve block for sciatic pain, neuritis, neuralgia
sargramostim (LEUKINE): white blood cell mobilizer Rx: chemotherapy, bone marrow transplant
scopolamine (TRANSDERM-SCOP): anticholinergic antiemetic Rx: motion sickness prophylaxis
SECTRAL (acebutolol hydrochloride): B-blocker Rx: KTN, cardiac dysrhythmias
SEDAPAP (butabital): APAP, sedative/analgesic Rx: tension H/A
selegiline (ATAPRYL): MAO inhibitor Rx: Parkinson's disease
selegiline (DEPRENYL): MAO inhibitor Rx: Parkinson's disease
selegiline hydrochloride (ELDEPRYL): MAO inhibitor Rx: Parkinson's disease
SEMPREX-D (acrivastine + pseudoephedrine hydrochloride): pseudoephedrine, antihistamine / decongestant
senna (SENKOT-S): docusate, laxative / stool softener Rx: constipation
senna extract (SENKOT XTRA): laxative Rx: constipation
senna fruit extract (SENKOT): laxative
SENKOT (senna fruit extract): laxative
SENKOT XTRA (senna extract): laxative Rx: constipation
SENKOT-S (senna): docusate, laxative / stool softener Rx: constipation
SENSORCAINE WITH EPI (bupivacaine): epinephrine, local anesthetic with vasoconstrictor
SENSORCAINE-MPP (bupivacaine): local anesthetic
SEPTRA, SEPTRA DS (trimethoprim + sulfamethoxazole): sulfamethoxazole, antibacterial compound Rx: UTI, ear infection, bronchitis
SERENTIL (mesoridazine besylate): major tranquilizer
SEREVENT (salmeterol xinafoate): Beta-2 bronchodilator Rx: asthma, COPD
SEROMYCYN (cytosteine): antibiotic Rx: TB, UTI
SEROPHENE (clomiphene citrate): induces ovulation
SERQUEL (quetiapine fumarate): antipsychotic Rx: schizophrenia
SEROSTIM (somatropin): hormone Rx: AIDS wasting
sertraline (ZOLOFT): antidepressant
SERZONE (nefazodone hydrochloride): antidepressant Rx: depression
sibutramine hydrochloride (MERIDIA): weight loss Rx: obesity
sildenafil (VIAGRA) Rx: penis erectile dysfunction
SILVADENE (silver sulfadiazine): topical antimicrobial agent Rx: infection prophylaxis for burns of the skin
silver sulfadiazine (SILVADENE): topical antimicrobial agent Rx: infection prophylaxis for burns of the skin
simethicone (MYLICON): antiflatulent
simvastatin (ZOCOR): cholesterol reducer
SINEMET, SINEMET CR (carbidopa + levodopa): levodopa, dopamine precursors Rx: Parkinson's Disease
SINEQUAN (doxepin hydrochloride): tricyclic antidepressant
SINGULAR (montelukast sodium) Rx: asthma
SINULIN (apap): phenylpropanolamine, chlorpheniramine, analgesic / decongestant / antihistamine Rx: colds, allergies
SINUTAB (phenylephrine): guaifenesin, decongestant / expectorant
SINUTAB SINUS (apap): pseudoephedrine, analgesic / decongestant
SINUTAB SINUS ALLERGY (apap): pseudoephedrine, chlorpheniramine, analgesic / decongestant / antihistamine
SINUVENT (phenylpropanolamine): guaifenesin, decongestant / expectorant
SKELAXIN (metaxalone): sedative / analgesic
SLO-BID (theophylline): bronchodilator Rx: COPD, asthma
SLO-NIACIN (niacin): reduces serum cholesterol
SLO-PHYLIN (theophylline): bronchodilator Rx: COPD, asthma
sodium citrate (BICITRA) citric acid, urinary alkalinizer Rx: acidosis
sodium fluoride (LURIDE): fluoride treatment Rx: tooth decay
sodium hyaluronate (HYALGAN): intra-articular polymer injection Rx: osteoarthritis
sodium polystyrene (KAYEXALATE): ion exchange resin Rx: hyperkalemia
sodium polystyrene (KIONEX): ion exchange resin Rx: hyperkalemia
SODIUM SULAMYD (sulfacetamide sodium): eye drops Rx: eye inflammation, corneal ulcer, trachoma
SOF-LAX (docusate): stool softener Rx: hemorrhoids, hernias, rectal surgery patients
SOMA (carisoprodol): sedative / antispasmodic
SOMA COMPOUND (carisoprodol): aspirin, sedative / antispasmodic / analgesic Rx: muscle spasm
somatrem (PROTROPIN): human growth hormone
somatropin (GEMTROPIN): growth stimulator Rx: AIDS, wasting syndrome, growth disorder
somatropin (HUMATROPE): human growth hormone
somatropin (SAIZEN): growth hormone
somatropin (SEROSTIM): hormone Rx: AIDS wasting
SONATA (zaleplon): sleep sedative Rx: insomnia
SORBITRATE (isosorbide dinitrate): nitrate Rx: angina
SORBITANE (acitretin): retinoid Rx: psoriasis
sotalol (BETAPACE): beta-blocker Rx: angina, HTN, arrhythmias

sparfloxacin (ZAGAM): antibiotic Rx: pneumonia, bronchitis
SPECTAZOLE (econazole nitrate): antifungal agent
SPECTROBID (bacampicillin): antibiotic
sprinolactone (ALDACTONE): potassium-sparing diuretic
SPORANOX (itraconazole): antifungal
SSKI (potassium iodide): expectorant
STADOL NS (butorphanol): narcotic analgesic
stanazolol (WINSTROL): anabolic steroid / androgen Rx: hereditary angioedema
STARLIX (nateglinide): antihypertensive Rx: diabetes
stavudine d4t (ZERTI): antiviral Rx: HIV
STELAZINE (trifluoperazine hydrochloride): major tranquilizer
STERAPRED, STERAPRED DS (prednisone): steroid anti-inflammatory
STIMATE (desmopressin acetate): pituitary hormone Rx: hemophilia
STRATTERA (atomoxetine hydrochloride): boosts norepinephrine Rx: ADHD
streptozocin (ZANOSAR): antineoplastic Rx: pancreatic cancer
STROMECTOL (ivermectin): anti-parasite Rx: intestinal nematodes
sucralfate (CARAFATE): anti ulcer agent
SUDAFED (pseudoephedrine): nasal decongestant
SUDAFED COLD & ALLERGY (pseudoephedrine): chlorpheniramine, decongestant / antihistamine
SUFENTA (sufentanil): narcotic analgesic / anesthetic
sufentanil (SUFENTA): narcotic analgesic / anesthetic
SULAR (nisoldipine): calcium channel blocker Rx: HTN
sulfacetamide (BLEPHAMIDE): prednisolone, antibacterial, steroid anti-inflammatory Rx: ocular infections
sulfacetamide (KLARON): antibacterial
sulfacetamide sodium (SODIUM SULAMYD): eye drops Rx: eye inflammation, corneal ulcer, trachoma
sulfasalazine (AZULFININE-EN): anti-infective, anti-inflammatory Rx: colitis, arthritis
sulfisoxazole acetyl (GANTRISIN): antibacterial agent Rx: urinary tract infections, bacterial meningitis
SULINDAC (CLINORIL): NSAID analgesic Rx: arthritis
sumatriptan succinate (IMITREX) Rx: migraine headache
SUMYDIN (tetracycline): broad spectrum antibiotic Rx: Rocky Mountain spotted fever, typhus fever, tick fevers, upper respiratory infections
SUPRAX (cefixime): broad spectrum antibiotic
SURFAC LIQUI-GELS (docusate): stool softener Rx: hemorrhoids, hernia patients
SURMONTIL (trimipramine maleate): tricyclic antidepressant
SUSTIVA (efavirenz): antiviral Rx: HIV, AIDS
SYMMETREL (amantadine): antiparkinsonian / antiviral, fluoclonide, topical steroid anti-inflammatory
SYNALGOS-DC (dihydrocodeine bitartrate + aspirin + caffeine): aspirin, caffeine, narcotic analgesic compound
SYNAREL (nafarelin acetate): treats endometriosis Rx: endometriosis
SYNEMOL (eflozacin): topical steroid anti-inflammatory
SYNTHROID (levothyroxine): synthetic thyroid hormone Rx: goiter, thyroid cancer

T
tacrine (COGNEX): cholinomimetic/ACh-ase inhibitor Rx: Alzheimer's Disease
TAGAMET (timetidine): histamine-2 blocker which inhibits gastric acid secretion Rx: ulcers
TALACEN (pentazocine + apap): narcotic analgesic
TALWIN COMPOUND (pentazocine): ASA, narcotic analgesic
TALWIN NX (pentazocine): naloxone, narcotic analgesic
TAMBOCOOR (flecainide acetate): ventricular antiarrhythmic
TAMIFLU (oseltamivir phosphate): neuraminidase inhibitors Rx: influenza
tamoxifen citrate (NOLVADEX): anticancer agent Rx: breast CA
tasolotinib hydrochloride (TOSYMYA): alpha-1 blocker Rx: enlarged prostate
TAD (triazolam): antibiotic Rx: pneumonia, URI
TAPAZOLE (methimazole): antithyroid Rx: hyperthyroidism
TARKA (trandolapril + verapamil hydrochloride): verapamil, ACE inhibitor/calcium blocker Rx: HTN
tasartone (TAZORAC): topical cream Rx: psoriasis, acne
TASMAR (tocapone): reduces symptoms of Parkinson's disease Rx: Parkinson's disease
TAVIST (clemastine): antihistamine Rx: allergies
TAVIST-D (clemastine): phenylpropanolamine, antihistamine / decongestant Rx: allergies
TAZICEF (ceftazidime): antibiotic
TAZORAC (tasartone): topical cream Rx: psoriasis, acne
TEDRAL (theophylline): epinephrine, phenobarbital, bronchodilator compound Rx: asthma, bronchitis
TEGRETOL, TEGRETOL XR (carbamazepine): anticonvulsant Rx: epilepsy
telmisartan (MICARDIS): ACE inhibitor Rx: HTN
temazepam (RESTORIL): benzodiazepine hypnotic
TEMOPATE (clobetasol propionate): steroid anti-inflammatory
TENEX (guanfacine): antihypertensive agent
tenofovir disoproxil fumarate (VIREAD): antiviral Rx: HIV
TENORETIC (atenolol + chlorthalidone): chlorthalidone, beta-1 blocker/diuretic Rx: HTN
TENORMIN (atenolol): beta-1 blocker Rx: dysrhythmias, HTN, angina, MI prophylaxis
TENSILON (edrophonium): cholinergic Rx: Myasthenia Gravis
TENUATE (diethylpropion hydrochloride): appetite suppressant Rx: weight loss
TEQUIN (tefluprostacin): quinolone antibiotic Rx: sinus infections, pneumonia, gonorrhea, kidney and urinary tract infections
TERAZOL (terconazole): antimicrobial Rx: candidiasis
terazosin hydrochloride (HYTRIN): antihypertensive agent
terbinafine hydrochloride (LAMISIL): antifungal Rx: fungal infections
terbutaline sulfate (BRETCHINE): beta-2 bronchodilator Rx: asthma, COPD
terconazole (TERAZOL): antimicrobial Rx: candidiasis
TERRA-CORTIL (hydrocortisone): oxytetracycline, steroid anti-inflammatory,



antibiotic Rx: ocular infections

TERRAMYCIN (oxyltetracycline): antibiotic
TERRAMYCIN WHX POLYRRYNXIN B (oxyltetracycline): antibiotics
TESLAC (testolactone): antineoplastic Rx: breast cancer
TESTALON (benzonatate): non-narcotic cough suppressant
TESTIM (testosterone gel): hormone replacement product Rx: impotence, low levels of testosterone
TESTODERM (testosterone): androgen Rx: hypogonadism
testolactone (TESLAC): antineoplastic Rx: breast cancer
TESTOPEL (testosterone pellets): hormone replacement product Rx: low levels of testosterone, delayed puberty
testosterone (TESTODERM): androgen Rx: hypogonadism
testosterone gel (ANDROGEL): hormone replacement product Rx: Hypogonadism
testosterone gel (TESTIM): hormone replacement product Rx: impotence, low levels of testosterone
testosterone patches (ANDRODERM): increase testosterone
testosterone pellets (TESTOPEL): hormone replacement product Rx: low levels of testosterone, delayed puberty
TESTRED (methyltestosterone): androgenizing hormone
tetracycline (SUMYCIN): broad spectrum antibiotic Rx: Rocky Mountain spotted fever, typhus fever, tick fevers, upper respiratory infections
tetracycline (ACHROMYCIN V): antibiotic Rx: acne, conjunctivitis, bacterial infections
TETRAMUNE (diphtheria & tetanus toxoids): vaccine
TEVETEN (erospan mesylate): angiotensin II receptor blockers Rx: high blood pressure
TEVETEN HCT (erospan mesylate hydrochlorothiazide): antihypertensive/diuretic Rx: high blood pressure
thalidomide (THALOMID): immunosuppressant Rx: HIV, leprosy
THALITONE (chlorthalidone): antihypertensive / diuretic Rx: HTN, CHF
THALOMID (thalidomide): immunosuppressant Rx: HIV, leprosy
THEO-24 (theophylline): bronchodilator Rx: asthma, COPD
THEO-DUR (theophylline): bronchodilator Rx: asthma, COPD
THEOLAIR (theophylline): bronchodilator Rx: asthma, COPD
theophylline (AEROLATE, AEROLATE II, AEROLATE JR.): xanthine bronchodilator Rx: asthma, COPD
theophylline (PRIMATENE TABLETS): ephedrine, phenobarbital xanthine bronchodilator Rx: asthma
theophylline (SLO-BID): bronchodilator Rx: COPD, asthma
theophylline (SLO-PHYLUN): bronchodilator Rx: COPD, asthma
theophylline (TEDRAL): ephedrine, phenobarbital, bronchodilator compound Rx: asthma, bronchitis
Thera-GESIC (sallycyle): topical NSAID analgesic Rx: arthritis
THIARAMYCIN Z (erythromycin): antibiotic
thiamine (BETALIN): vitamin B-1
THIOLA (tiopronin): cysteine-depleting agent Rx: kidney stone prevention
THIOPENTAL (penthal): general anesthetic
THIOPLEX (thiopental): antineoplastic Rx: breast, ovarian, and urinary cancer
thioridazine hydrochloride (MELLARIL): Rx: schizophrenia
thiotepa (THIOPEX): antineoplastic Rx: breast, ovarian, and urinary cancer
thiothixene (NAVANE): major tranquilizer
THORAZINE (chlorpromazine): major tranquilizer
THYREL TRH (prolirelin): increases release of thyroid stimulating hormone
thyroid hormone (THYROID TABLETS)
THYROID TABLETS (thyroid hormone)
THYROLAR (liotrix): thyroid hormone
TIAZAC (diltiazem hydrochloride): calcium blocker Rx: HTN, angina
TICAR (ticarcillin): antibiotic
ticarcillin (TICAR): antibiotic
ticarcillin / clavulanate (TIMENTIN): antibiotic compound
TICLID (ticlopidine): platelet inhibitor Rx: stroke prophylaxis
ticlopidine (TICLID): platelet inhibitor Rx: stroke prophylaxis
TIGAN (trimethobenzamide hydrochloride): antiemetic
TILADE (nedocromil sodium): anti-inflammatory Rx: asthma
TIMENTIN (ticarcillin / clavulanate): antibiotic compound
TIMOLIDE (timolol): HCTZ, b-blocker/antihypertensive/diuretic
timolol (BETIMOL): reduces pressure in the eye Rx: glaucoma
timolol (BLOCADREN): b-blocker Rx: angina, HTN, arrhythmias
timolol (COSOPT): dorzolamide, b-blocker, decreases intraocular pressure Rx: glaucoma
timolol (TIMOLIDE): HCTZ, b-blocker/antihypertensive/diuretic
TIMOFTIC (timolol): ffrbctoker Rx: glaucoma
timolol (TIMOPTIC): ffrbctoker Rx: glaucoma
tiopronin (THIOLA): cysteine-depleting agent Rx: kidney stone prevention
tizanidine (ZANAFLEX): muscle relaxant Rx: muscle spasticity
TOBRADEX (tobramycin): dexamethasone, antibiotic / steroid Rx: eye infection / inflammation
tobramycin (AKTOB): eye drops Rx: bacterial eye infections
tobramycin (TOBRADEX): dexamethasone, antibiotic / steroid Rx: eye infection / inflammation
tobramycin (TOBREX): antibiotic Rx: eye infection / inflammation
TOBREX (tobramycin): antibiotic Rx: eye infection / inflammation
tocainide hydrochloride (TONOCARD): ventricular antiarrhythmic
TOFRANIL (imipramine hydrochloride): tricyclic antidepressant
tolazamide (TOLINASE): oral antidiabetic Rx: diabetes
tolterodine (ORINASE): oral antidiabetic medication Rx: type II diabetes
tolcapone (TASMAR): reduces symptoms of Parkinson's disease Rx: Parkinson's disease
TOLECTIN (tolmetin sodium): NSAID analgesic
TOLINASE (tolazamide): oral antidiabetic Rx: diabetes
tolmetin sodium (TOLECTIN): NSAID analgesic
tolterodine tartrate (DETROL): cholinergic Rx: urinary urgency

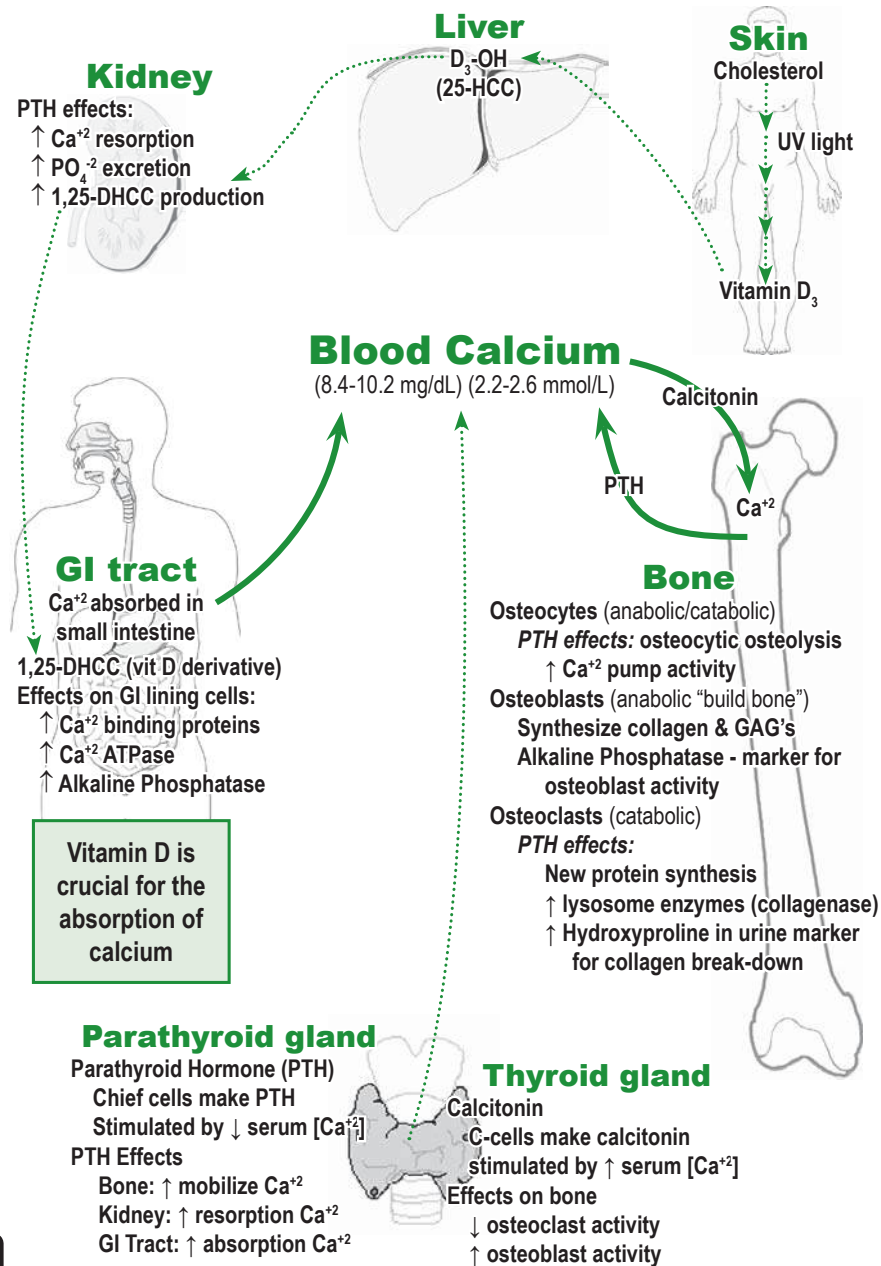
TONOCARD (tocainide hydrochloride): ventricular antiarrhythmic
TOPAMAX (topiramate): anticonvulsant Rx: seizures
TOPICORT (desoximetasone): antiinflammatory cream Rx: various skin conditions
topiramate (TOPAMAX): anticonvulsant Rx: seizures
topotecan (HYCAMTIN): antineoplastic Rx: ovarian, hepatic CA
TOPROL-XL (metoprolol): cardioselective beta blocker Rx: HTN, angina, arrhythmias
TORADOL (ketorolac tromethamine): NSAID analgesic
TORNALATE (bipolterol): B bronchodilator Rx: asthma
torsemide (DEMADEX): diuretic Rx: HTN, edema, CHF, kidney disease, liver disease
tramadol (ULTRAM): analgesic Rx: pain relief
tramadol hydrochloride + acetaminophen (ULTRACET): pain-reliever Rx: moderate to severe pain
TRANDATE (labetalol): beta blocker Rx: hypertension
trandolapril (MAVIK): ACE inhibitor Rx: HTN
trandolapril + verapamil hydrochloride (TARKA): verapamil, ACE inhibitor/calcium blocker Rx: HTN
TRANSDERM NITRO (nitroglycerin): nitrate vasodilator Rx: angina prophylaxis
transdermal clonidine (CATAPRES ITS): antihypertensive
transdermal nitroglycerin (MINITRAN): nitrate Rx: angina
TRANSDERM-SCOP (scopolamine): anticholinergic antiemetic Rx: motion sickness prophylaxis
TRANXENE T-TAB, TRANXENE-SD (clorazepate dipotassium): benzodiazepine hypnotic Rx: anxiety, seizures
tranylcypromine sulfate (PARNATE): MAO inhibitor Rx: depression
TRAUMEEL, anti-inflammatory Rx: arthritis
TRAVATAN (travoprost): eyedrop Rx: open-angle glaucoma
travoprost (TRAVATAN): eyedrop Rx: open-angle glaucoma

trazodone hydrochloride (DESYREL): anti-depressant Rx: depression
TREACATOR-SC (ethionamide): bacteriostatic Rx: tuberculosis
TRENTAL (pentoxifylline): reduces blood viscosity, improves circulation in peripheral vascular disease
tretinoin (RENOVA): anti-acne, anti-wrinkle agent
tretrinoin (RETIN-A): anti-acne, anti-wrinkle agent
tretrinoin (VESANOID): anticancer agent Rx: leukemia
trexall (RHEUMATREX): anticancer drug Rx: lymphoma, leukemia
triamcinolone (ARISTOCORT): steroid anti-inflammatory
triamcinolone acetate (AZIACORT): steroid anti-inflammatory Rx: asthma, bronchitis
triamcinolone acetonide (NASACORT, NASACORT AQ): steroid anti-inflammatory Rx: allergies
triarterene (DYRENIUM): potassium-sparing diuretic Rx: CHF
TRIAVIL (amitriptyline): perphenazine, tricyclic antidepressant / major tranquilizer combination
TRIAZ (benzoyl peroxide): antiacne Rx: acne
triazolam (HALCION): benzodiazepine hypnotic Rx: insomnia
TRICOR (fenofibrate): lowers cholesterol Rx: high cholesterol
TRIDESILON (desonide): antiinflammatory steroid cream Rx: variety of skin conditions
trifluoperazine hydrochloride (STELAZINE): major tranquilizer
trihexphenidyl hydrochloride (ARTANE): antiparkinsonian Rx: prophylaxis of EPS
TRILAFAN (perphenazine): major tranquilizer
TRILEPTAL (oxcarbazepine): antiseizure Rx: epilepsy
TRI-LEVEN, oral contraceptive
TRILISATE (choline magnesium trisilicylate): anti-inflammatory/analgesic
trimethobenzamide hydrochloride (TIGAN): antiemetic
trimethoprim (POLYTRIM): polymyxin, antibacterial Rx: eye infections
trimethoprim + sulfamethoxazole (BACTRIM, BACTRIM DS): sulfamethoxazole, antibacterials Rx: UTI, ear infection, bronchitis
trimethoprim + sulfamethoxazole (SEPTRA, SEPTRA DS): sulfamethoxazole, antibacterial compound Rx: UTI, ear infection, bronchitis
trimetrexate (NEUTREXIN): antineoplastic Rx: CA and pneumocystis pneumonia in AIDS
trimipramine maleate (SURMONTIL): tricyclic antidepressant
TRINALIN (azatidine maleate + pseudoephedrine sulfate): pseudoephedrine, antihistamine / decongestant compound
TRI-NORINYL 21, 28, oral contraceptive
TRINICON (vitamins): anti-anemia compound
TRIPHASIL (oral contraceptive): oral contraceptive
triprodine + pseudoephedrine (ACTIFED): antihistamine / decongestant Rx: allergies
TRITEC (ranitidine): histamine-2 blocker Rx: ulcers
TRIZIVIR (abacavir, lamivudine, zidovudine): antiviral Rx: HIV
troglitazone (REZULIN): oral hypoglycemic Rx: diabetes
trospiumdomylin (TAD): antibiotic Rx: pneumonia, URI
TRUSOPT (dorzolamide) Rx: glaucoma, reduction of IOP
TUSSAFED HC (hydrocodone): phenylephrine, guaifenesin, narcotic antitussive / decongestant / expectorant
TUSS-DA XR (dextromethorphan): pseudoephedrine, antitussive / decongestant
TUSSEN EXPECTORANT (hydrocodone): pseudoephedrine, guaifenesin, narcotic antitussive / decongestant / expectorant
TUSSEN SYRUP, TUSSEN TABLETS (hydrocodone, pseudoephedrine): chlorpheniramine, narcotic antitussive / decongestant / antihistamine
TUSSIONEX (hydrocodone polistirex + chlorpheniramine polistirex): chlorpheniramine, narcotic antitussive / antihistamine Rx: coughs, allergies, the cold
TUSSORGINAN (glycerol): codeine, narcotic antitussive / expectorant compound
TUSSI-ORGANIDIN DM (dextromethorphan): iodinated glycerol, antitussive / mucolytic, expectorant Rx: COPD, asthma, colds
TYLENOL (acetaminophen): pain reliever Rx: headache, fever, aches
TYLENOL WITH CODEINE (appap): codeine, narcotic analgesic
TYLOX (oxcodone): acetaminophen, narcotic analgesic

UBI-QGEL (coenzyme q-10): helps maintain healthy muscle, increases ATP production Rx: mitochondrial cytopathy
UBOBIOTIC (oxytetracycline): sulfamethizole, phenazopyridine, antibiotic / analgesic Rx: UTI
ULTRABROM, ULTRABROM PO (brompheniramine): pseudoephedrine, antihistamine / decongestant
ULTRACET (tramadol hydrochloride + acetaminophen): pain-reliever Rx: moderate to severe pain
ULTRAM (tramadol): analgesic Rx: pain relief
ULTRASE, ULTRASE MT (pancreatic enzymes) Rx: cystic fibrosis, pancreatitis
UNI-DUR (theophylline): bronchodilator Rx: asthma, COPD
UNIPHYL (theophylline): bronchodilator Rx: asthma, COPD
UNIRETIC (moexipril): HCTZ, ACE inhibitor/diuretic Rx: HTN
UNISON (doxylamine): antihistamine sedative Rx: insomnia
UNITHYROID (levothyroxine): synthetic thyroid hormone Rx: goiters, thyroid disease
UNIVASC (moexipril hydrochloride): ACE inhibitor Rx: HTN
unoprostone (RESCUA): lowers intraocular pressure Rx: glaucoma
URECHOLUNE (bethanechol): bladder tone modifier Rx: urinary retention
UREX (methenamine): antiseptic Rx: UTI
URISED (methenamine): methylene blue, salicylate, atropine, hysocyamine, antispasmodic/analgesic/antispasmodic Rx: UTI
URISPAS (flavoxate): urinary tract antispasmodic Rx: urinary incontinence
UROKIT-K (potassium citrate): urinary alkalinizer Rx: kidney stones
URO-MAG (magnesium): magnesium supplement
URO-QID ACID NO. 2 (methenamine): bactericide Rx: UTI
URSO (ursodiol): dissolves gallstones Rx: prevents gall stones in rapid weight loss
ursodiol (ACTIGALL): bile acid - dissolves gall stones
ursodiol (URSO): dissolves gallstones Rx: prevents gall stones in rapid weight loss

V
VAGIFEM (estradiol vaginal tablets): estrogen replacement Rx: menopause
valaciclovir (VALTREX): antiviral Rx: herpes, shingles
VALCYTE (valganciclovir): antiviral Rx: cytomegalovirus retinitis
valdecoxib (BEXTRA): COX-2 inhibitor Rx: osteoarthritis, rheumatoid arthritis, dysmenorrhea
valganciclovir (VALCYTE): antiviral Rx: cytomegalovirus retinitis
VALIUM (diazepam): benzodiazepine hypnotic
valproic acid (DEPAKENE): antiepileptic Rx: epilepsy
valsartan (DIOVAN): angiotensin II inhibitor Rx: HTN
VALTREX (valaciclovir): antiviral Rx: herpes, shingles
VANECANASE, VANECANASE AQ (beclothemethasone): steroid anti-inflammatory agent Rx: allergic rhinitis, nasal polyps
VANCERIL, INHALER (beclomethasone): steroid Rx: asthma
VANCOCIN (vancomycin): antibiotic
vancomycin (VANCOCIN): antibiotic
VANOXIDE HC (benzoyl peroxide): hydrocortisone, skin cleanser, steroid anti-inflammatory Rx: acne
VANTIN (cetopodoxime): antibiotic
VAQTA (hepatitis vaccine): inactivated virus vaccine
VASCOR (bepridil): calcium blocker Rx: angina prophylaxis
VASERETIC (enalapril): HCTZ, antihypertensive / diuretic
VASOTEC (enalapril): ACE inhibitor Rx: HTN, CHF
VASOXYL (methoxamine): vasoconstrictor Rx: increases BP
VECTRIX (minocycline): antibiotic
VEETIDS (penicillin vk): antiviral/bacterial Rx: dental infections, infections in the heart, middle ear infections
VELBAN (vinblastine): antineoplastic Rx: Hodgkin's disease, lymphoma, Kaposi's sarcoma
VELOSULIN (insulin): hypoglycemic Rx: diabetes mellitus
venlafaxine hydrochloride (EFFEXOR, EFFEXOR XR): antidepressant
VENLAFAXIN (albuterol): beta-2 bronchodilator Rx: asthma, COPD
VEPESID (etoposide): anticancer agent Rx: lung, testicular CA
verapamil (COVERA HS): calcium blocker Rx: HTN, angina
verapamil (VERELAN, VERELAN PM): calcium blocker Rx: angina, hypertension, headache
verapamil hydrochloride (ISOPTIN SR): calcium blocker Rx: angina, HTN, headache
VERELAN, VERELAN PM (verapamil): calcium blocker Rx: angina, hypertension, headache
VERMOX (mebendazole): anthelmintic Rx: intestinal worms
VERSED (midazolam): benzodiazepine hypnotic
VESANOID (tretinoin): anticancer agent Rx: leukemia
VIAGRA (sildenafil): Rx: penis erectile dysfunction
VIBRAMYCIN (doxycycline): antibiotic
VIBRA-TABS (doxycycline): antibiotic
VICODIN HP, VICODIN ES (hydrocodone): APAP, narcotic analgesic / antitussive compound
VICODIN TUSS (hydrocodone): guaifenesin, narcotic analgesic / antitussive expectorant compound
VICON FORTE, vitamins
VICOPROFEN (hydrocodone): ibuprofen, narcotic analgesic compound
VIDEX (didanosine): antiviral Rx: AIDS
vinblastine (VELBAN): antineoplastic Rx: Hodgkin's disease, lymphoma, Kaposi's sarcoma
vinorelbine (NAVELBINE): antineoplastic Rx: breast and ovarian CA, Hodgkin's disease
VIOKASE, pancreatic enzymes Rx: cystic fibrosis, pancreatitis
VIOXX (rofecoxib): NSAID analgesic
VIRACEPT (nelfinavir): protease inhibitor antiviral Rx: HIV
VIRAMUNE (nevirapine): antiviral Rx: HIV
VIRAZOLE (ribavirin): antiviral Rx: chronic Hepatitis C
VIREAD (tenofovir disoproxil fumarate): antiviral Rx: HIV
VIRILON (methyltestosterone): androgen / masculinizing hormone

VISTARIL (hydroxyzine): antiemetic/antihistamine/sedative
VITAFOL, VITAFOL SYRUP, VITAFOL-PN (multivitamins and minerals)
vitamin / mineral complex (MEGADOSE)
vitamin b-3 (NIAICIN): reduces serum cholesterol
vitamin k-1 (MEPHYTON): Rx: coagulation disorders
VIVACTIL (protriptyline): tricyclic antidepressant
VIVELLE (estradiol): Rx: osteoporosis, menopausal symptoms
VOLMAX (albuterol): beta-2 bronchodilator Rx: asthma, COPD
VOLTAREN (diclofenac): NSAID analgesic Rx: arthritis
VOSPIRE (albuterol sulfate): antispasms Rx: bronchial spasms
W
warfarin (COUMADIN): anticoagulant Rx: thrombosis prophylaxis
WELCHOL (colesevelam): lowers cholesterol Rx: high cholesterol
WELLBUTRIN (bupropion): antidepressant
WIGRAINE (ergotamine): caffeine, alpha blocker/cranial vasoconstrictor Rx: migraine headache
WINRHO SD (immune globulin): immunizing agent Rx: prevents isoimmunization in pregnant Rh- women given Rh+ blood
WINSTROL (stanozolol): anabolic steroid / androgen Rx: hereditary angioedema
WYCIULIN (penicillin): antibiotic
WYGESIC (propoxyphene): APAP narcotic analgesic
WYMOX (amoxicillin): antibiotic Rx: gonorrhea, middle ear infections, skin infections, urinary tract infections
X
XANAX (alprazolam): benzodiazepine hypnotic
XELODA (capecitabine): oral anticancer agent Rx: breast CA
XENICAL (orlistat): lipase inhibitor Rx: obesity
YASMIN (oral contraceptive): oral contraceptive
Y
yellow fever vaccine (YF-VAX): vaccine
YF-VAX (yellow fever vaccine): vaccine
YOCIN (yohimbine hydrochloride): regulates norepinephrine Rx: male impotence
YODOXIN (iodoquinol): amebicide Rx: intestinal amebiasis
yohimbine (APHRODYNE): alpha-blocker Rx: impotence
yohimbine hydrochloride (YOCIN): regulates norepinephrine Rx: male impotence
Z
ZADITOR (ketotifen fumarate): antihistamine Rx: allergies
zafirlukast (ACCOLATE): bronchospasm inhibitor Rx: asthma
ZAGAM (sparfloxacin): antibiotic Rx: pneumonia, bronchitis
zalcitabine (HIVID): antiviral Rx: AIDS
zaleplon (SONATA): sleep sedative Rx: insomnia
ZANAFLEX (tizanidine): muscle relaxant Rx: muscle spasticity
zanamivir (ZENLEZA): antiviral drug Rx: influenza
ZANOSAR (streptozocin): antineoplastic Rx: pancreatic cancer
ZANTAC (ranitidine): histamine-2 blocker, inhibits gastric acid secretion Rx: ulcers
ZARONTIN (ethosuximide): anticonvulsant Rx: absence seizures
ZAROXOLYM (metolazone): antihypertensive / diuretic
ZEBETA (bisoprolol): B-blocker antihypertensive
ZEPHREX, ZEPHREX LA (pseudoephedrine, guaifenesin): decongestant / expectorant
ZERIT (stavudine d4): antiviral Rx: HIV
ZESTORETIC (lisinopril): HCTZ, ACE inhibitor/diuretic Rx: HTN
ZESTRIL (lisinopril): ACE inhibitor Rx: HTN, CHF
ZETIA (ezetimibe): lowers cholesterol Rx: high cholesterol
ZIAC (bisoprolol): HCTZ, antihypertensive / diuretic Rx: HTN
ZIAGEN (abacavir sulfate): antiviral Rx: HIV/AIDS
zidovudine (AZT): antiviral agent Rx: HIV, AIDS virus
zidovudine (RETROVIR): antiviral agent Rx: HIV, AIDS virus
zileuton (ZYFLO): bronchospasm inhibitor Rx: asthma
ziprasidone hydrochloride (GEODON): oral inhibitor serotonin and dopamine Rx: schizophrenia
ZITHROMAX (azithromycin): antibiotic
ZOCOR (simvastatin): cholesterol reducer
ZOFRAN (ondansetron): antiemetic Rx: chemotherapy
ZOLADEX (goserelin gonadotropin-releasing hormone agonist) Rx: endometriosis
zolmitriptan (ZOMIG) Rx: migraine headache
ZOLOFT (sertraline): antidepressant
zolpidem tartrate (AMBIEN): hypnotic Rx: insomnia
ZOMIG (zolmitriptan): Rx: migraine headache
ZONEGRAN (zonisamide): antiseizure Rx: epilepsy
zonisamide (ZONEGRAN): antiseizure Rx: epilepsy
ZOVIA (oral contraceptive)
ZOVIRAX (acyclovir): antiviral agent Rx: herpes, shingles
ZYBAN (bupropion hydrochloride): nicotine-fene quit-smoking aid Rx: smokers
ZYDONE (apap): hydrocodone, narcotic analgesic
ZYFLO (zileuton): bronchospasm inhibitor Rx: asthma
ZYLOPRIM (allopurinol): reduces serum uric acid Rx: gout
ZYMASE (pancreatic enzymes) Rx: cystic fibrosis, pancreatitis
ZYPREXA (olanzapine): manages schizophrenia Rx: schizophrenia
ZYRTEC, ZYRTEC SYRUP (cetirizine): antihistamine Rx: allergy, hives, asthma
ZYVOX (linezolid): oxazolidinone antibiotic Rx: pneumonia, skin infections



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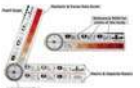
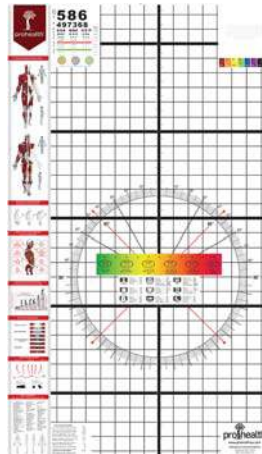
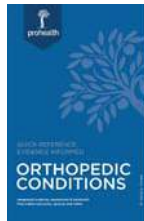
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