



# **APITHERAPY**

## **A New Approach for Honey and Hive Products**

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National Institute for R & D in Food Bioresources – IBA Bucharest

6th APIMEDICA & 5th APIQUALITY Symposium

Rome, Italy 22-25th November 2016

# ACTUAL REGULATORY STATUS OF BEE PRODUCTS

- Food (dietary supplements)
- Functional food
- Novel food\*
- Cosmetics
- Medicines\* - EMEA
- \*Novel Food is defined as food that has not been consumed to a significant degree by humans in the EU prior to 1997, when the first Regulation on novel food came into force.
- Examples of Novel Food include agriculture products from third countries (chia seeds), newly produced nutrients (synthetic zeaxanthin) or extracts from existing food (rapeseed protein).
- Novel Food **must be: Safe** for consumers; Properly **labelled** to not mislead consumers



# BEE PRODUCTS AND APITHERAPY



- Currently, **Apitherapy is a NON-REGULATED PRACTICE**, (*herbal or naturopathic medicine, dietary and nutritional supplement regulations*)

- **Apitherapists may integrate:**

- techniques,
- products or
- therapies

only as a **therapeutic partnership** with people towards improving their overall health and well being.

- Doing so DOES NOT NEGATE THE VALIDITY OF, OR REPLACE conventional medical therapies, but **SERVES AS A COMPLEMENT**, to help individuals access their greatest healing potential.

- <http://savannahbee.com/blog/the-buzz-bee-venom> ;

- <http://lebeautiquespa.co.uk/portfolio/honeymassage/>



# A WORLD OF HONEY



# HONEY



# HONEY AS FOOD

- Conventional honey
- **Organic honey – the product is not certified**

## Honey in food supplements (vehicle)

- Bee products, essential oils, medicinal and aromatic plants (herbs)

## **NO CLAIMS AUTHORIZED FOR HONEY! (EFSA)**

Scientific Opinion on the substantiation of health claims related to honey and “respiratory health through presence of antioxidant phytochemicals” (ID 1161),

“the unique composition and ratio of effective substances adds energy to the human body” (ID 3188), and “it stimulates the whole metabolism and the

immune system” (ID 3189) pursuant to Article 13(1) of Regulation (EC) No 1924/2006



# HONEY AS MEDICINE



## Medicinal honeys:

- excellent wound healing agents
- good antibacterials

**Defensin -1** – burns and skin infections (antibiotic resistant infections)



**Activon® Manuka Honey**  
Wound dressing selection guide

Typical Aims	Heavily Infected / Odorous	Toughy Nonviable slough	Infected / Odorous Abscess / Ecthyma / Ulcer / Ulcerate cavity	Granulating Proliferic granulation	Spitting/Slough Autolytic debridement
Product	Alginon Alginon Plus Alginon Plus 2000mg Alginon Tube	Alginon Alginon Plus Alginon Plus 2000mg Alginon Tube	Alginon Alginon Plus Alginon Plus 2000mg Alginon Tube	Alginon Tube Alginon	Alginon

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# BEE COLLECTED POLLEN





# BEE COLLECTED POLLEN



- Unequivocally, bee pollen can be recommended as **A VALUABLE DIETARY SUPPLEMENT.**
- The health-enhancing value of bee pollen is expected due to the **wide range of secondary plant metabolites** (tocopherol, niacin, thiamine, biotin and folic acid, polyphenols, carotenoid pigments, phytosterols), besides enzymes and co-enzymes.
- There are promising reports on the antioxidant, anti-inflammatory, antibacterial, antifungal, hepato-protective, anti-atherosclerotic, immune enhancing potential, but they still require long-term and large clinical studies.
- The main difficulty in the application of bee pollen in modern phyto-medicine is related to the **wide species-specific variation in its composition.**
- Although the bee-pollen components have potential bioactive and therapeutic properties, extensive research is required before bee pollen can be used in therapy.

Journal of the Science of Food and Agriculture  
[Volume 96, Issue 13](#), pages 4303–4309, October **2016**

# BEE COLLECTED POLLEN



## What is the best ?

### Antibacterial and antifungal



Fatrcová-Šramková K. et al., *J Environ Sci Health B*. **2016**;51(3):176-81

The best **antibacterial effects** of the **dried sunflower bee pollen extracts** were found against *Paenibacillus larvae*, *Pseudomonas aeruginosa*, and *Enterococcus raffinosus*.

The best **inhibitory properties** of the **frozen sunflower bee pollen** extracts were found against *Escherichia coli*, *Pseudomonas aeruginosa*, and *Paenibacillus larvae*.

Very good **inhibitory effects** of **freeze-dried sunflower bee pollen** were found against *Paenibacillus larvae*, *Brochotrix thermosphacta*, and *Enterococcus raffinosus*.

The best **antifungal activity** of the sunflower bee pollen was found in the **frozen** bee pollen extracts against *Aspergillus ochraceus* and **freeze-dried** bee pollen extracts against *Aspergillus niger*.

Fatrcová-Šramková K. et al., *J Environ Sci Health B*. **2013**

The most sensitive bacteria of the poppy pollen ethanolic extract (70%) was *Staphylococcus aureus*

The most sensitive bacteria of rape bee pollen methanolic extract (70%) and sunflower ethanolic extract (70%) was *Salmonella enterica*.



# BEE COLLECTED POLLEN



	Fresh bee pollen 1				Fresh bee pollen 2				Dry bee pollen 1				Dry bee pollen 2			
	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16
<b>Gram-ve bacteria</b>																
★ <i>E. coli</i> 1	25	20	10	-	14	11	9	-	23	20	10	-	-	-	-	-
<i>E. coli</i> 2	31	28	22	14	13	11	10	8	35	24	19	14	19	9	-	-
<i>E. coli</i> ATCC 25921	12	-	-	-	14	12	10	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> 1	12	-	-	-	13	10	8	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> 2	10	9	-	-	15	12	10	-	-	-	-	-	-	-	-	-
<i>P. aeruginosa</i> ATCC 29733	12	8	-	-	25	20	18	14	15	13	-	-	10	9	-	-
<i>Salmonella enteritidis</i>	33	29	21	-	14	12	11	8	19	14	-	-	9	-	-	-
<b>Gram+ve bacteria</b>																
★ <i>S. aureus</i> 1	13	10	9	-	12	11	8	-	13	11	-	-	12	10	-	-
<i>S. aureus</i> 2	15	10	-	-	16	12	10	-	12	-	-	-	11	10	-	-
<i>S. aureus</i> ATCC 25923	15	12	11	-	18	14	11	8	12	11	9	-	13	11	-	-
<i>Streptococcus</i> 1	14	10	9	-	20	19	13	10	28	20	9	-	21	18	10	-
<i>Streptococcus</i> 2	9	8	-	-	14	12	11	9	-	-	-	-	9	-	-	-
<i>Streptococcus</i> 3	11	9	-	-	15	12	11	10	9	-	-	-	10	-	-	-
<i>Bacillus cereus</i>	16	12	10	-	15	11	9	8	12	10	9	-	12	10	9	-

Effect of different concentrations of **fresh** and **dried** bee pollen on different bacterial isolates

Abouda, I. Zerdani, I. Kalalou, M. Faid and M.T. Ahami, 2011. The Antibacterial Activity of Moroccan Bee Bread and Bee-Pollen (Fresh and Dried) against Pathogenic Bacteria. *Research Journal of Microbiology*, 6: 376-384.

# BEE COLLECTED POLLEN



## Functional and biological properties

- **a probiotic effect of fresh (deep frozen pollen)** but not of dry pollen was announced (Percie du Sert, 2009).
- The **probiotic lactic bacteria** are not viable in dry pollen. In rat experiments it was shown that pollen ingestion improves food digestability, stimulates growth and weight gain (Chauvin, 1968; Chauvin, 1987).
- The **hepatoprotective** and the **anti-radiation** activity are often closely correlated.
- Hepatoprotective activity of **pollen** on rats (Uzbekova et al., 2003), (Eraslan et al., 2008a) and pesticide induced intoxication of rats (Eraslan et al., 2008b).

# BEE BREAD



# BEE BREAD



Bee bread was found to have a high **antioxidant activity** (Nagai et al., 2004; Baltrusaityte et al., 2007b).

- **Antibacterial activity** against *Staphylococcus aureus* and *S. epidermidis* (Baltrusaityte et al., 2007a).
- Three extracts, namely **hot-water fraction** (HWF), **water-soluble fraction** (WSF), and **ethanol-soluble fraction** (ESF), were prepared from fresh bee bread imported from Lithuania. The protein and total phenolic contents of these samples were very high.
- Among them, **WSF at 100% concentration showed the highest antioxidant** ability and scavenging ability. On the other hand, ESF at 10% concentration possessed the highest ability against 1,1-diphenyl-2-picrylhydrazyl (DPPH) and hydroxyl radicals.
- Bee bread will apply more and more as **health food and medicine** due to its functional properties such as antioxidative ability and scavenging activities of reactive oxygen species.





# BEE BREAD - *Antibacterial*



Abejitapayoya.blogspot.com.es

Strains	Bee bread 1				Bee bread 2				Bee bread 3				Bee bread 4			
	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16	1/2	1/4	1/8	1/16
<b>Gram-ve bacteria</b>																
<i>E. coli</i> 2	10	9	-	-	14	-	-	-	17	-	-	-	20	14	-	-
<i>E. coli</i> 3	13	10	-	-	16	11	-	-	27	24	19	18	14	11	9	-
<i>E.coli</i> ATCC25921	12	11	-	-	14	12	10	9	18	11	-	-	14	10	-	-
<i>P. aeruginosa</i> 1	15	12	-	-	20	14	12	-	18	11	-	-	14	10	-	-
<i>P. aeruginosa</i> 2	19	18	15	10	20	14	12	-	17	15	11	-	9	9	-	-
<i>P. aeruginosa</i> ATCC 29733	13	-	-	-	16	14	12	10	16	14	10	-	16	12	10	9
<i>Salmonella enteritidis</i>	26	20	10	-	16	13	10	-	12	9	-	-	27	22	17	-
<b>Gram+ve bacteria</b>																
<i>S. aureus</i> 1	13	12	9	-	15	10	-	-	18	16	-	-	14	12	11	-
<i>S. aureus</i> 2	16	12	10	-	14	10	9	-	29	20	18	14	28	25	19	18
<i>S. aureus</i> ATCC25923	10	9	-	-	16	13	10	-	24	19	15	12	12	10	9	-
<i>Streptococcus</i> 1	11	9	-	-	24	20	15	10	25	18	15	11	20	14	11	-
<i>Streptococcus</i> 2	13	10	8	-	14	11	-	-	14	11	-	-	14	10	-	-
<i>Streptococcus</i> 3	11	9	-	-	12	11	-	-	14	12	11	9	12	10	-	-
<i>Bacillus cereus</i>	12	-	-	-	20	18	15	13	16	13	9	-	18	15	13	10

# PROPOLIS

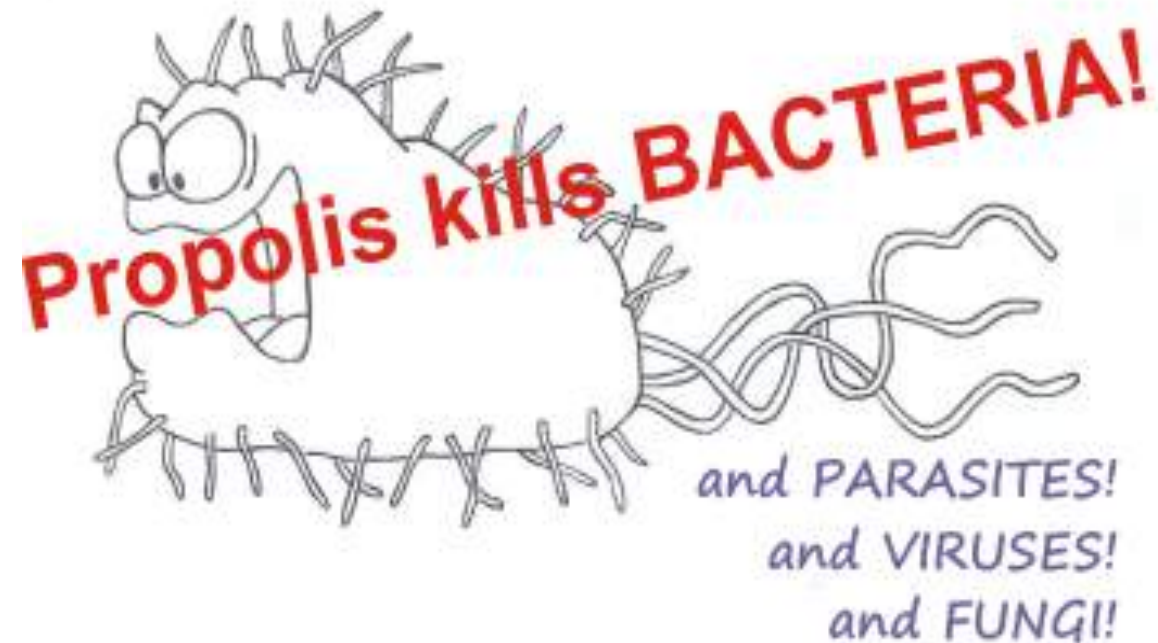




# PROPOLIS AS DIETARY SUPPLEMENT

- As a dietary supplement, propolis is available in products for the protection of health and prevention of diseases.
- It can also be found in **biopharmaceuticals**, and as a constituent of (bio)cosmetics.
- While it cannot be found under the label “antibiotic”, we can use it raw, in extracts or tinctures to heal ourselves from unwanted microorganisms like bacteria, viruses, fungi, parasites.

# PROPOLIS



<http://healthywithhoney.com>

- Although the composition of propolis differs considerably depending on its **botanical origin**, all examined types of propolis revealed a **strong antibacterial activity**. There are some differences in the antibacterial activity of some types of propolis, which are due to the type of honey bee that gathered it. E.g. Poplar propolis gathered by *Apis mellifera caucasica* had a higher antibacterial activity than the one gathered by *Apis mellifera anatolica* and *Apis mellifera carnica*.

# PROPOLIS - ANTIBACTERIAL

Gram-positive bacteria	Gram negative bacteria	Fungi	Viruses	Parasites
<p>Bacillus cereus, Bacillus mesentericus, Corynebacterium spp., Corynebacterium diphtheriae, Diplococcus pneumoniae, Enterococcus spp., Mycobacteria sp., Mycobacterium tuberculosis, Staphylococcus aureus, Streptococcus: critecus epidermis faecalis mutans, pyogenes, viridans, Sobrinus, Micrococcus luteus</p>	<p>Branhamella catarrhalis, E. coli, Helicobacter pylori, Klebsiella ozaemae, Klesbsiella pneumoniae, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella: choleraesuis, dublin, enteritidis, exneri, gallinarum, pullorum, typhimurium, paratyphi-A, paratyphi-B, typhi Shigella: dysinteriae, sonnei</p>	<p>Aspergillus sp., Candida: albicans, guiliermondi, parapsilosis, tropicalis; Cryptococcus sp., Cryptococcus neoformans Histoplasma encapsulatum, Madurella mycetomi, Microsporum: audoinini, canis, cepleo, distortum, ferrugeneum, gypseum; Piedra hortae, Phialophora jeanselmei, Saccharomyces sp. , Trichophyton: sp., mentagrophytes, rubrum, Trichosporon cutaneum</p>	<p>Adenovirus, Coronavirus, Herpes symplex, Influenza A and B virus, Newcastle disease virus, Polio virus, Vaccinia, Rotavirus; Vesicular Stomatitis Virus, Corona virus</p>	<p>Cholomonas paramecium, Eimeria: magna, media, Perforans; Giardia lambia, Giardia duodenalis, Trichomonas vaginalis, Trypanosoma cruzi, Trypanosoma evansi.</p>

# PROPOLIS RESEARCH



## J. Sforcin - Biological Properties and Therapeutic Applications of Propolis: *Phytotherapy Research*: Vol. 30, Issue 6 June 2016 Pages 894–905

- Efforts have been carried out to explain propolis mechanisms of action *in vivo* and *in vitro*, but the majority of propolis targets and actions are still unclear.
- The number of **formulations containing propolis and patents have increased**, although propolis extracts have been used deliberately with different recommendations, not always mentioning the chemical composition, vegetal source and the methods of extraction.
- Clinical studies will help to obtain recommendations in view of the expected outcomes.
- Further investigation should explore the effects of common compounds found in the samples from all over the world in an attempt to **standardize the research on propolis** and to obtain new drugs.



# PROPOLIS RECENT RESEARCH



- [Antibacterial effect of triantibiotic mixture, chlorhexidine gel, and two natural materials Propolis and Aloe vera against Enterococcus faecalis: An ex vivo study](#), Bazvand L et al, July 2014;
- [Antibacterial activity of a cardanol from Thai Apis mellifera propolis](#), by Boonsai P et al, Feb 2014;
- [A Comparison between Antibacterial Activity of Propolis and Aloe vera on Enterococcus faecalis \(an In Vitro Study\)](#), by Ehsani M et al, 2013
- [Chemical and botanical characterization of Chilean propolis and biological activity on cariogenic bacteria Streptococcus mutans and Streptococcus sobrinus](#), by Leticia Barrientos et al, 2013
- [Omani propolis: chemical profiling, antibacterial activity and new propolis plant sources](#), by Milena Popova et al, 2013
- [The antibacterial effect of ethanol extract of polish propolis on mutans streptococci and lactobacilli isolated from saliva](#), by Dziedzic A, March 2013
- [Antimicrobial and antiproliferative activities of stingless bee Melipona scutellaris geopropolis](#) by da Cunha MG et al, Jan 2013;
- [In vitro antimicrobial activity and biocompatibility of propolis containing nanohydroxyapatite](#), Grenho L et al, march 2015;
- [Antibacterial activity and inhibition of adherence of Streptococcus mutans by propolis electrospun fibers](#), by Asawahame C et al, Feb 2015;

# BRAZILIAN PROPOLIS



(a)



(b)



(a)



(b)

A relatively new type of propolis, (Brazilian **Red** Propolis - BRP), has been arousing attention for the **promising pharmacological properties** of some of its isolated compounds (*vestitol, neovestitol, quercetin, medicarpin, formononetin*, etc). Due to a distinct chemical composition, BRP and its isolated compounds (mainly *isoflavones*) affect a wide range of biological targets and could have an impact against numerous diseases as an antimicrobial, anti-inflammatory and immunomodulatory, antioxidant and antiproliferative agent.

106 articles in Pubmed (2000-2016) about red propolis

# ROYAL JELLY



# What makes royal jelly good for health?

## 1. HDA and fatty acids

antibacterial, immuno activating, immuno modulating, anti-cancer, anti-diabetes, collagen promoting and skin protecting, anti-ulcer, facilitates differentiation of brain cells, estrogenic, antidepressant, anti-rheumatic.

## 2. Proteins and peptides

- Up to 90% of proteins found in royal jelly are of the MRJP type (major royal jelly protein). This protein type belongs to the albumin protein class and has immuno-modulating effects. Other proteins, like glycoproteins, and peptides have been identified: apisimin, one with antihypertensive activity and “jeleines” with antibacterial properties.

## 3. AMP-N1 Oxide

- AMP-N1 Oxide stands for Adenosine monophosphate N1 oxide and is a unique compound, ***found only in royal jelly***. It is connected with the effects on centrally nervous system. It stimulates differentiations, promotes generation of all 3 types of cells: neurons, astrocytes and oligodendrocytes, against neuronal damage.



# What makes royal jelly good for health?

## 4. Adenosine

- Adenosine is a biomolecule with many physiological effects. It produces inhibition in vascular smooth muscle cells of coronary arteries and neurons in the brain, by its hyperpolarising effect on the membrane potential of excitable cells. Royal jelly contains 5.9 to 2057.4 mg/kg adenosine.

## 5. Acetylcholin

- Acetylcholin is a nerve transmitter, with a number of hormone-like effects in the central and vegetative nervous system. There is 1 mg of it at every gram of dry weight of royal jelly.

## 6. Hormones: testosterone, progesterone, prolactine, estradiol.

- These hormones help increase the fertility of both male and female, and also increase male power and endurance

## 7. Polyphenols

- The polyphenols present in royal jelly have been associated with its antioxidant effects.

# ROYAL JELLY – *Nervous system*



## **Scientific research directions: ANIMAL STUDIES !!!**

Hashimoto M, et al., Biosci Biotechnol Biochem. **2005** Apr;69(4):800-5.

Oral administration of royal jelly facilitates mRNA expression of glial cell line-derived neurotrophic factor and neurofilament H in the **hippocampus** of the adult mouse brain;

Hattori N. et al., Biomed Res. **2007** Oct;28(5):261-6.

Royal jelly and its unique fatty acid, 10-hydroxy-trans-2-decenoic acid, **promote** neurogenesis by neural stem/progenitor cells in vitro;

Pyrzanowska J, Piechal A, et al., J Ethnopharmacol. **2014** Aug 8;155(1):343-51.

Long-term administration of Royal Jelly improves spatial memory and influences the concentration of brain neurotransmitters in naturally aged Wistar male rats.

Minami A, Matsushita H., et al., Climacteric. **2016** Dec;19(6):568-573.

RJ has a beneficial effect on neurological symptoms of menopausal disorders (memory impairment and depression as well as metabolic syndrome and osteoporosis)



# ROYAL JELLY – *Hormonal Effects – Estrogene*



## **Scientific research directions: animal and human studies**

Mishima S., et al., J Ethnopharmacol. **2005** Oct 3;101(1-3):215-20.

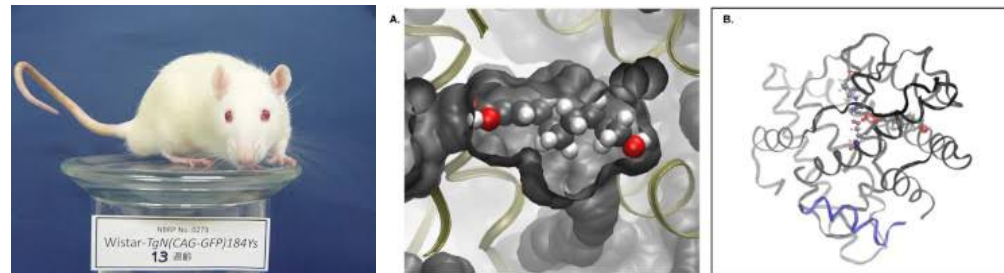
RJ has estrogenic activities through interaction with estrogen receptors followed by endogenous gene expressions (*in vitro* and *in vivo*).

Moutsatsou P, Papoutsi Z, et al., PLoS One. **2010** Dec 22;5(12)

Fatty acids derived from royal jelly are modulators of estrogen receptor functions.

Seyyedi F., et al., J Clin Diagn Res. **2016** May;10(5)

Royal jelly in treatment of sexual and urinary problems of postmenopausal women is related to its estrogenic properties and could be suitable in promotion of life quality in ***postmenopausal women***.



# ROYAL JELLY – *Hormonal Effects - Testosterone*

## ***Scientific research directions: Animal studies***

Ghanbari E, Nejati V, et al., *Int J Fertil Steril*. **2015** Apr-Jun;9(1):113-20.

RJ improved reproductive parameters such as testicular weight, sperm count, viability, motility, deformity, DNA integrity, chromatin quality, serum testosterone and testicular tissue MDA levels in diabetic rats.

Karaca T, Demirtaş S, Karaboğa İ, Ayvazz S. *Turk J Med Sci*. **2015**;45(1):27-32.

Protective effects of royal jelly against testicular damage in streptozotocin-induced diabetic rats.

Ghanbari E, Nejati V, Khazaei M. *Int J Reprod Biomed (Yazd)*. **2016** Aug;14(8):519-26.

RJ improved diabetes-induced impairment in testis, probably through its antioxidant property.



# ROYAL JELLY - *Cancer*



- According to a study published in a **2009** edition of the *BMC Complementary and Alternative Medicine*, **royal jelly fights cancer by suppressing the blood supply to tumors.**
- Also, according to a study published in the December **2010** edition of *PLoS One*, since the fatty components of the jelly contain estrogenic effects, it is possible that it can treat **breast and cervical cancer.**
- There are studies regarding royal jelly in treating **leukemia**. Several clinical trials have shown that it **reduces the harmful effects of cisplatin (chemotherapy drug) on the kidneys and liver.** Also, some of the **side effects of chemotherapy** and radiation treatments such as “chemo skin” and other serious skin irritations can be repaired by royal jelly supplements.
- Royal jelly lessens the effect of lipid peroxidation (degradation of necessary fats in the blood due to free radicals).
- It also enhances the antioxidants superoxide and glutathione and is rich in nucleic acids, RNA, and DNA.



# LARVAL BEES



[en.wikipedia.org](https://en.wikipedia.org)



[blog.dnevnik.hr](http://blog.dnevnik.hr)

Drone brood triturate (apilarnil)  
Queen larvae (following the extraction of royal jelly)

# LARVAL BEES - *Drones*



Seres A, Ducza E, Gáspár R. Acta Pharm Hung. 2014; 84(2):77-81.

**Drone milk (triturate)** is traditionally used to treat infertility and to promote vitality in both men and women.

The **oestrogenic** and **androgenic** effects of drone milk (triturate) have recently been reported in rats and the effective compounds have also been identified.

Seres AB, Ducza E, et al., J Med Food. 2013 May;16(5):404-9

Drone Milk (triturate) was reported to elicit a **hormone-like strengthening** effect.

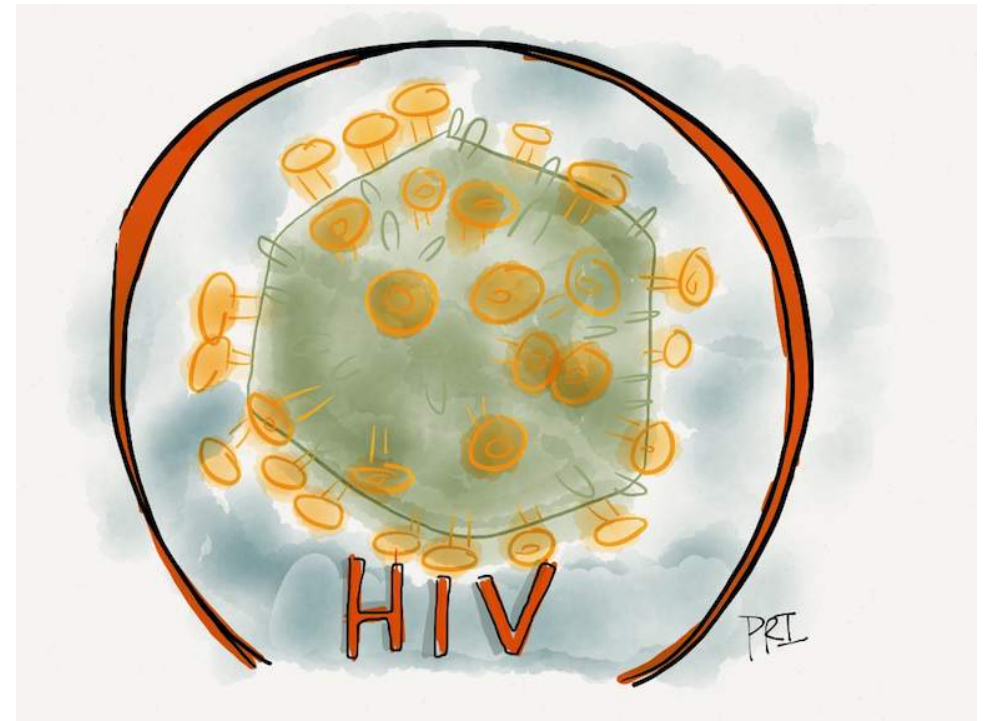
The active compound (identified by the NMR and MS) as ***E*-dec-2-enedioic acid**, very similar to the fatty acids with estrogenic activity that were previously isolated from royal jelly.

These results lead to the supposition that ***E*-dec-2-enedioic acid** is responsible for the **estrogen-like effect** of drone triturate.

This appears to be the first report on the pharmacological effects of drone larvae triturate and ***E*-dec-2-enedioic acid** in mammals.



# BEE VENOM - APITOXIN

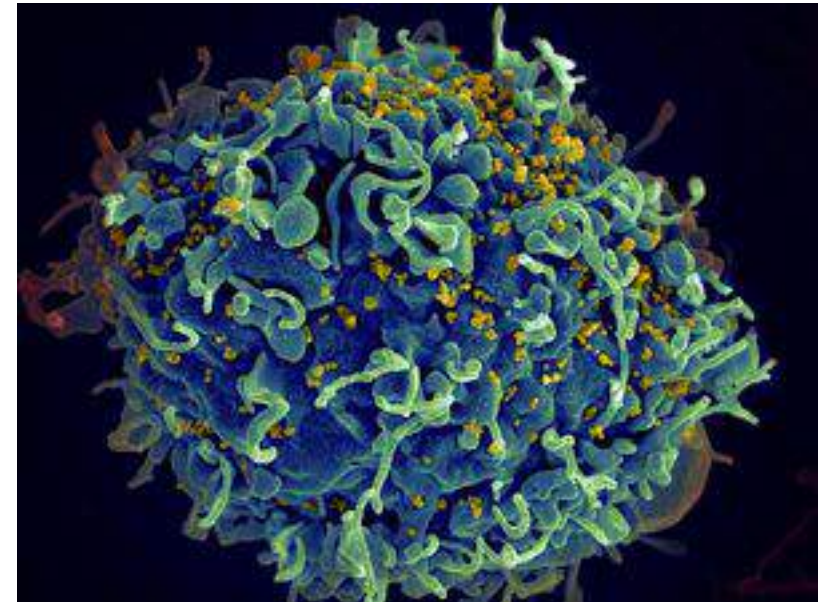




# BEE VENOM - HIV



- [Pubmed – 28 papers](#)
- [Monash Bioeth Rev.](#) **2013** Sep;31(2):4. - **New research finds HIV can be killed with bee venom**
- **Bee venom destroyed HIV without damaging cells.** ([AIDS Policy Law.](#) 2013 Apr;28(5):1.)
- **Nanoparticles containing bee venom toxin *melittin* can destroy human immunodeficiency virus (HIV) while at the same time leaving surrounding cells unharmed, scientists from Washington University School of Medicine reported in the March 2013 issue of *Antiviral Therapy*.**



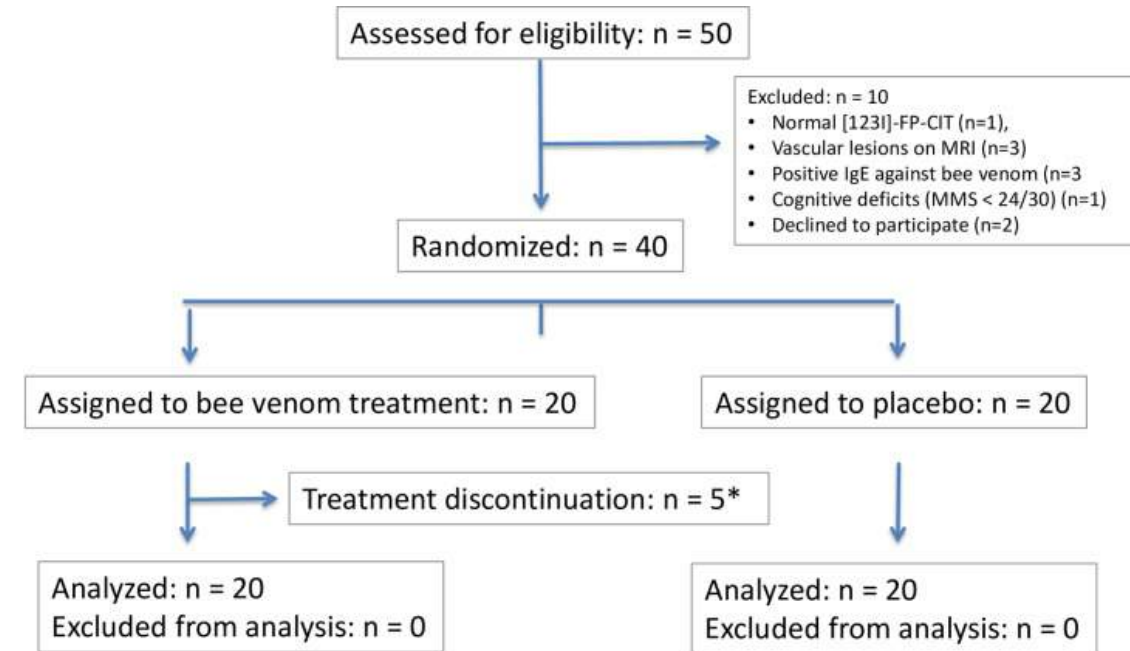
# BEE VENOM – PARKINSON DISEASE



## BEE VENOM THERAPY

[PLoS One](#). 2016 Jul 12;11(7):e0158235. doi:Parkinson's disease

- Evaluation of the efficacy of repeated (monthly) injections of bee venom on motor symptoms of Parkinson's disease over a period of one year, also the potential effects of this treatment on disease progression compared to placebo (saline injections).
- Dr. Andreas Hartmann
- **Bee Venom Alleviates Motor Deficits and Modulates the Transfer of Cortical Information through the Basal Ganglia in Rat Models of Parkinson's Disease**
- The data obtained provide **the first evidence** for a **beneficial action of bee venom** on the pathological functioning of the cortico-basal ganglia circuits underlying motor PD symptoms with potential relevance to the symptomatic treatment of this disease.



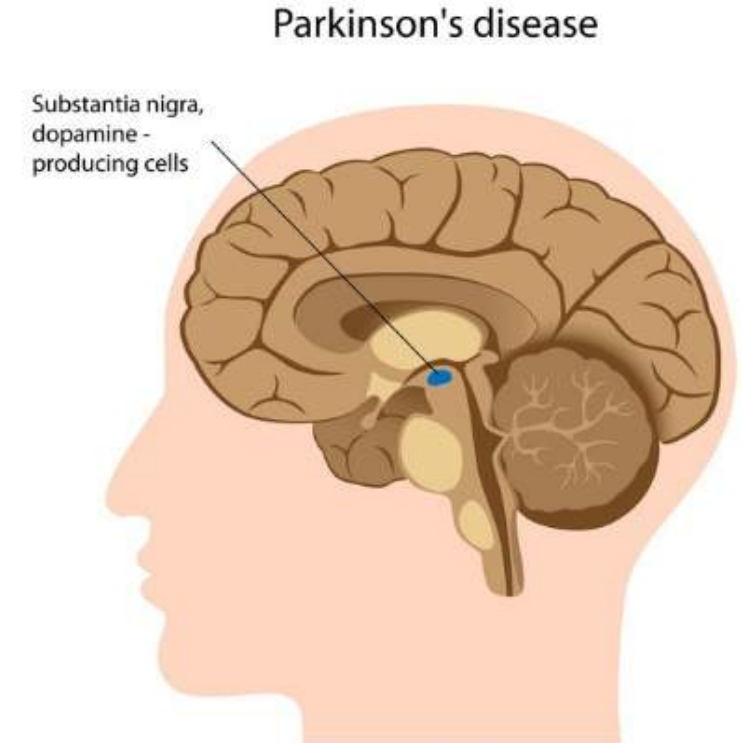
\* According to the protocol, these patients were followed until the end of study

# BEE VENOM – PARKINSON DISEASE



[Doo KH, Lee JH et al., J Altern Complement Med. 2015 Oct;21\(10\):598-603.](#)

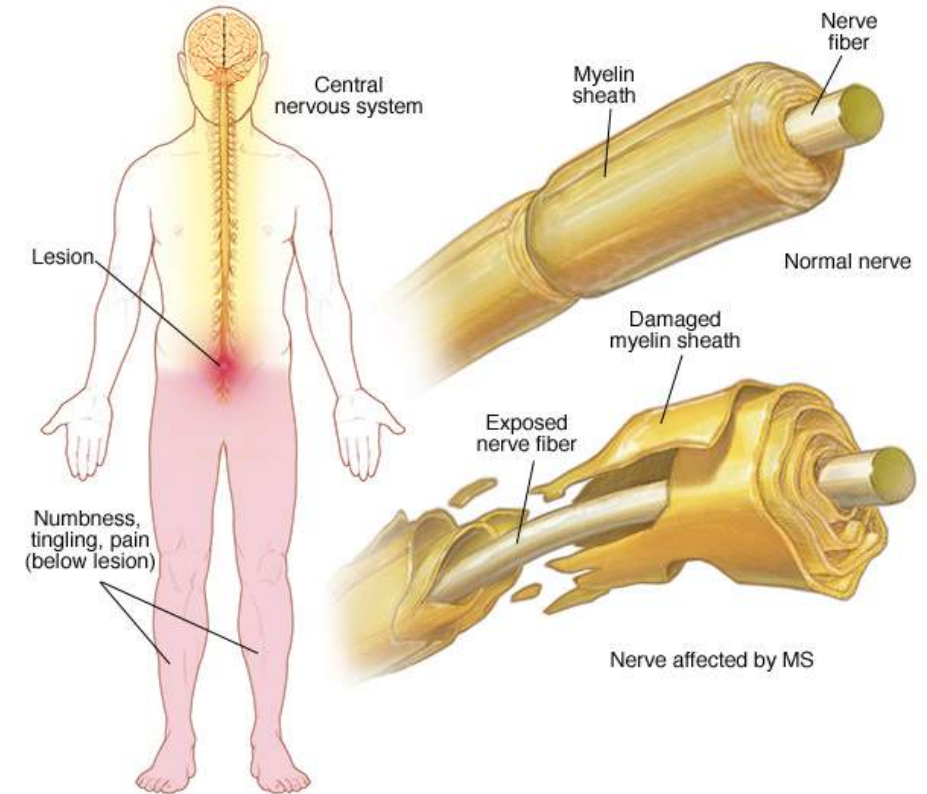
- **A Prospective Open-Label Study of Combined Treatment for Idiopathic Parkinson's Disease Using Acupuncture and Bee Venom Acupuncture as an Adjunctive Treatment.**
- **Results:** 12 weeks of twice-weekly combined treatment with acupuncture and BVA showed significant improvements;
- **Still more clinical trials are necessary to draw a clear conclusion;**



# BEE VENOM - MULTIPLE SCLEROSIS



- 8 years study (2008-2016)
- MS patients and animal models
- Further studies with a focus on the molecular mechanisms of the protective natural compounds are needed to decrease possible side effects and to develop new medicines for MS.
- **Apigenin, chrysin**, baicalein, cyanidin, flavone glycoside, daidzein, coumestrol, sulforaphane, **bee venom** and huperzine A are the candidates for more prospective investigations.
- [Curr Drug Targets](#). 2016 Nov 8. (ahead of print)



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World Health Organization

# ***WHO Traditional Medicine Strategy 2014-2023***



## **Strategic objectives:**

- **1) building the knowledge base and formulating national policies;**
- **2) strengthening safety, quality and effectiveness through regulation**
- **3) promoting universal health coverage by integrating T&CM services and self-health care into national health systems.**
- „It is my conviction that it will be a valuable tool for governments, system planners and health practitioners and – most crucially – will benefit individuals seeking the right care, from the right practitioner, at the right time.”
- Dr. Margaret Chan - Director-General WHO



# CONCLUSIONS

# MAJOR CHALLENGES FOR APITHERAPY



- a) recognition by governments;**
- b) enough or sound scientific evidence concerning the efficacy of the products or protocols used;**
- c) protection of indigenous traditional medicine knowledge;**
- d) ensuring its proper use;**



# MAJOR CHALLENGES FOR APITHERAPY



To overcome the above-mentioned challenges,

- policy,
- regulations,
- standards,
- clinical practice,
- researches,
- education and
- information

**MUST BE** implemented under the theme of "**Standardization with evidence-based approaches.**"



# HOW CAN WE GO FORWARD: THREATS FOR CREDIBILITY

- The **quality of bee products** (adulteration, use of synthetic products, industrial glucose syrups for feeding the bees;)
- Need for **standards**; - a large diversity – biological action could be an important parameter and not the chemical composition
- **Organic certification** for the beekeeping practice is not a certificate for an organic product;
- **Clinical studies**: to have a certain clear result they should use the same or a (homogenous) raw material and the same protocols) accepted by allopathic medicine;
- **Various doses**: sometimes high amounts (3g, 10 g of royal jelly) – these are not medicinal doses!



(a)



(b)

## Brazilian green propolis

<http://www.intechopen.com/books/alternative-medicine/antifungal-activity-of-propolis-oral-clinical-studies-in-humans>



## Other types of propolis

<http://www.beevpp.com/propolis/4/Ce-este-propolisul.html>

# CLINICAL RESEARCH COLLABORATION



- Research on efficacy and effectiveness of apitherapy ***is severely hampered*** by the conglomerate of regulation.
- Practices and practitioners ***are not comparable*** across the world, and any observational or experimental ***study will therefore be generalizable only within a narrow national or cultural context.***
- Research should be strengthened on the ***monitoring and safety aspects on apitherapy practices.***



# CLINICAL TRIALS



- ***Clinical studies***: to have a certain clear result they should use the same or a (***homegenous***) raw material;
- A dose-dependend relationship;
- Studies with chinese (*Apis cerana*) royal jelly might not offer the same results as those carried out with royal jelly produced by *Apis mellifera*;
- Propolis ( EFSA : a conclusion cannot be drawn on the health relationship mentioned as studies carried out with various types of propolis with various compositions);
- EFSA Journal 2011;9(4):2083 - Scientific opinion

# WHAT COULD BE DONE?



- The process of **sharing ideas** about health has already begun in some universities and on governmental committees.
- A need for **high education**: students in medicine and pharmacy should have training on complementary natural therapies (apitherapy included);
- **Post – graduate education** – competence in apitherapy; training for practitioners;



Medical Students >

# WHAT COULD BE DONE?



- **Clinical studies** according to agreed protocols in conventional medicine (drawbacks: the large variations of compositions, large doses (royal jelly, bee pollen, bee bread))
- Modern, **joint health programmes** where doctors, psychotherapists and complementary medicine practitioners work together to create ***the theoretical and practical groundwork*** for a **NEW STYLE OF MEDICINE.**
- Prevalence of ***chronic diseases and cancer*** are increasing especially in industrialized countries, and now, they are considered as complex diseases that demand **study from multiple perspectives** – a great chance for apitherapy to prove its efficacy as an **ALTERNATIVE/COMPLEMENTARY** therapy.

**THANK YOU FOR YOUR ATTENTION!**  
**GRAZIE !**



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