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Review Article

A Review on Herbs, Spices and Functional Food Used in Diseases

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ABSTRACT

India has been recognized all over the world for spices and medicinal plants. Both exhibit a wide range of physiological and pharmacological properties. Current biomedical efforts are focused on their scientific merits, to provide science-based evidence for the traditional uses and to develop either functional foods or nutraceuticals. The Indian traditional medical systems use turmeric for wound healing, rheumatic disorders, gastrointestinal symptoms, deworming, rhinitis and as a cosmetic. Studies in India have explored its anti-inflammatory, cholekinetic and anti-oxidant potentials with the recent investigations focusing on its preventive effect on precarcinogenic, anti-inflammatory and anti atherosclerotic effects in biological systems both under in vitro and in vivo conditions in animals and humans. Both turmeric and cumin were found ases which effect increase detoxifying enzymes, prevent DNA damage, improve DNA repair, decrease mutations and tumour formation and exhibit ant oxidative potential in animals. Fenugreek seeds, a rich source of soluble fibre used in Indian cuisine reduces blood glucose and lipids and can be used as a food adjuvant in diabetes. Similarly garlic, onions, and ginger have been found to modulate favourably the process of carcinogenesis. Common herbs and spices may help protect against certain chronic conditions, such as cancer, diabetes, and heart disease. Herbs, including basil and parsley, are from plants and plant parts. Spices often come from the seeds, berries, bark, or roots of plants. Microbial and fungal infections one of major causes of epidemics and communicable diseases which is affected clinical burden on social, health and economical growth of many developing and underdeveloped country. It is needed discover novel herbal or naturally occurring ant bactericidal and an fungicidal pan products.

Key Words: Medicinal plants, Diseases, Herbs and Spices.

INTRODUCTION

Herbs and spices have been used for hundreds of years in cooking and medicine (Stephens 2010). They add a wide range of flavours to food and may also provide health benefits. For some people, using herbs and spices in cooking may be a challenge (Cantwell, 2001)

Plants have been a valuable source of natural products for a long period of time to maintain human health, especially with more intensive studies in the last decade for natural therapies (Gislene *et al,* 2000). Spices have been used for not only flavour and aroma of the foods but also to provide antimicrobial properties (Nanasombat *et al,* 2002). Spices may contribute piquancy 2007). Spices including Clove (*Eugenia caryophyllus*, family Mytraceae), Cinnamon (*Cinnamomum zylancium*, family Lauraceae), Black pepper (*Piper nigrum* L. family Piperaceae) Turmeric (*Curcuma longa* family Lauraceae) and Ajwain (Trachyspermum ammi, family Apiaceae)

against pathogenic bacteria. Spices have been recognized for their value of preserving foods and medicinal values due to the presence of bioactive antimicrobial compounds. (Shelef, 1983, Papp *et al*., 2007).

Herbal medicine, also called ‘‘phytomedicine’’, is the use of therapeutic plants, plant parts or plant derived substances to aid in fighting against infections, diseases or enhancing overall health. The word diabetes was coined by the Greek physician Aretaeus in the first century AD Diabetes mellitus has been known since ages and sweetness of urine has been mentioned in Ayurveda by Sushruta. Its pharmacother-apy is 80 year old. The presence of sugar in the urine of diabetics was demonstrated by Dobson. Yet, as we have spent one decade of new millennium, our knowledge of the nature and treatment of diabetes is still incomplete. Diabetes mellitus is most serious; chronic metabolic and characterized by high blood glucose level. Hyperglycemia is caused by relative or absolute de-ficiency of insulin or by a resistance to the action of in-sulin at the cellular level. It is most common endocrine disorder, affecting 41 million individuals in India and as many as 200 million world-wide. The worldwide preva-lence of diabetes for all age groups was estimated to be 2.8% in 2000 and it is projected to be 5.4% in 2025. (Pandeya, 2013).

Many herbal plants with hypoglycaemic properties are known from across the world. The World Health Organization (WHO) has listed 21,000 plants, which are used for medicinal purposes around the world. Among these 2500 species are in India, out of which 150 species are used commercially on a fairly large scale. India is the largest producer of medicinal herbs and is called as botanical garden of the world. Plants used as Anti diabetic in various traditional medicines, constituents isolated from these plants, various mechanisms through which herbs act against diabetes and few examples of ant diabetic formulations available in the market. (Rajesham, 2012).

According to the clinical studies, *Aegle marmelos, Allium cepa, Gymnema sylvestre, Momordica charantia, Ocimum sanctum, Nigella sativa, Ocimum sanctum, Panax quinquefolius, Salacia reticulate, Silybum marianum* and *Trigonella foenum-graecum* have shown hypoglycemic and, in some cases, hypolipidemic activities in diabetic patients. Among them, *Gymnema sylvestre, Momordica charantia, Silybum marianum* and *Trigonella foenum-graecum* have acquired enough reputation for managing diabetes. These herbs are advised for the patients to improve management of diabetes (Ghorbani, 2013).

Health Benefits of Herbs and Spices

Garlic *(Lehsun)*- Garlic (*Allium sativum*) is believed to have originated in Central Asia and belongs to the Alliance family. It is used universally as a flavouring agent, traditional medicine, and a functional food to enhance physical and mental health. Antioxidant lowers cholesterol and blood pressure, raises HDL cholesterol, anti-inflammatory, prevents cerebral aging, anti-clotting, boosts immunity.

Ginger *(Adrakh)*- Ginger (*Zingiber officinale* Roscoe, Zingiberacae) is a medicinal plant that has been widely used in Chinese, Ayurvedic and Tibb-Unani herbal medicines all over the world, since ancient times, for a wide range of unrelated ailments that include arthritis, rheumatism, sprains, muscular aches, pains, sore throats, cramps, constipation, indigestion, vomiting, hypertension, dementia, fever, infectious diseases and helminthiasis Antioxidant, improves osteoarthritis of the knee, anti-emetic, anti-inflammatory, boosts immunity, antimicrobial.

Chilli*(Mirch)*- Capsaicin is considered a safe and effective topical analgesic agent in the management of arthritis pain, herpes zoster-related pain, diabetic neuropathy, mastectomy pain, and headaches. However, a study published in 2010 has linked capsaicin to skin cancer Antioxidant,

enhances metabolic effects in weight management (Simon, 2013).

Black Pepper *(Kali Mirch)*- Pepper is an extensively used spice both in Eastern and Western food. It has an impressive antioxidant and antibacterial effect and helps with digestion and weight loss because it stimulates the breakdown of fat cells. Black pepper is considered as the king of spices, as it fetches the highest return as judged from the volume of international trade. Black pepper or its active principle piperine has been experimentally demonstrated by a number of independent investigators to possess diverse physiological effects.

Cinnamon *(Dalchini)*- Cinnamon belongs to genus *Cinnamomum*, family *Lauraceae* which is distributed in India, Egypt, China, Srilanka and Australia. *Cinnamon* leaves and bark are used extensively as spices in food or to produce essential oils .Studies have shown the antioxidant and antimicrobial potential, the antidiarrhoeal activity of Cinnamon is also well documented Also it reduced peripheral vascular resistance, suggesting an undeviating vasodilation of peripheral vessels. Increased cardiac contractile force and beating rate was also exerted by cinnamaldehyde (Parameswari,2010).

Coriander *(Dhania)*- Coriandrum sativum (Coriander) has been documented as a traditional treatment for cholesterol and diabetes patients. It has a long history as a traditional medicine. The seeds of coriander have a remarkable hypolipidemic action. The levels of total cholesterol and triglycerides decreased significantly in the tissues of the animals of the experimental group which received coriander seeds. Significant increases in -hydroxy, methyl glutaryl CoA reductase and plasma lecithin cholesterol acyl transferease activity were noted in the experimental group.

Fenugreek *(Methi)*- Fenugreek was commonly used in Ayurveda, particularly to enhance libido and masculinity. While its effects on testosterone levels are inconclusive, fenugreek does seem to have beneficial effects on blood sugar. It contains the plant protein 4-hydroxyisoleucine, which can improve the function of the hormone insulin. Many human studies have shown that at least 1 gram of fenugreek extract per day can lower blood sugar levels, particularly in diabetics.

Lemon Grass -Lemon grass is also used as an addition to tea, and in preparations such as *kadha*, which is a traditional herbal brew used against coughs, colds, etc. It has medicinal properties and is used extensively in Ayurvedic medicine. It is supposed to help with relieving cough and nasal congestion. Antioxidant, anti-cancer properties, anti-inflammatory propery (leie, 1986).

Basil *(Tulsi)* - holy basil can inhibit the growth of a range of bacteria, yeasts and molds, One small study also found that it can boost function of the immune system by increasing certain immune cells in the blood. Holy basil is also linked to reduced blood sugar levels before and after meals, as well as treating anxiety and anxiety-related depression Antioxidant, inhibits lipid per oxidation, decreases inflammation (Islam, 2011).

Dill - In India the leaves of dill and other greens are used to prepare a variety of local dishes which are served as an accompaniment to rotis or chapatis dill was used in many traditional medicines, including those against jaundice, headache, boils, lack of appetite, stomach problems, nausea, liver problems, and many other ills. Dill seeds can also be used to prepare herbal tea.Antioxidant, antimicrobial (Davison, 2003).

Parsley-Parsley is a source of flavonoid and antioxidants, especially luteolin, apigenin, folic acid, vitamin K, vitamin C, and vitamin A. Half a tablespoon (a gram) of dried parsley contains about 6.0 µg of lycopene and 10.7 µg of alpha carotene as well as 82.9 µg of lutein+zeaxanthin and 80.7 µg of beta carotene. Excessive consumption of parsley should be avoided by pregnant women. It is safe in normal

food quantities, but large amounts may have uterotonic effects (Jee,2007).

Oregano (*Ajwain Leaves*)- O. vulgare subspecies hirtum has a spicy flavor. This subspecies of oregano has furry leaves and floppy white flowers. Mexican oregano is similar in properties but comes from a different plant, Lippia graveolens KunthAntioxidant, antimicrobial ***(Mitchell, 2016).***

Marjoram- Marjoram is cultivated for its aromatic leaves, either green or dry, for culinary purposes; the tops are cut as the plants begin to flower and are dried slowly in the shade. It is often used in herb combinations such as *herbes de Provence* and *za'atar*. The flowering leaves and tops of marjoram are steam-distilled to produce an essential oil that is yellowish in color (darkening to brown as it ages). It has many chemical coymponents, some of which are borneol, camphor, and pinene Antioxidant, antimicrobial (Pimple,2012).

Thyme (*Ajwain ke Phool)* - Oil of thyme, the essential oil of common thyme (*Thymus vulgaris*), contains 20 54% thymol. Thyme essential oil also contains a range of additional compounds, such as *p*-cymene, myrcene, borneol, and linalool. Thymol, an antiseptic, is an active ingredient in various commercially produced mouthwashes such as Listerine. Before the advent of modern antibiotics, oil of thyme was used to medicate bandages. It has also been shown to be effective against various fungi that commonly infect toenails. Thymol can also be found as the active ingredient in some all-natural, alcohol-free hand sanitizers. (*Grieve,,2008)*, A tisane made by infusing the herb in water can be used for coughs and bronchitis, Antioxidant, inhibits bone resorption.

Rosemary- The active ingredient in rosemary is called acid. This substance has been shown to suppress allergic responses and nasal congestion. In a study 50 and 200 mg doses of Rosmarinic acid were shown to suppress allergy symptoms. The number of immune cells in nasal mucus also decreased, with reduced congestion. Antioxidant, inhibits bone resorption, anti-carcinogen, anti-inflammatory (Co***y, 2015)***

Since herbs and spices are naturally low or free of calories, fat, saturated fat, sugars and sodium, they are a perfect way to increase the flavour of foods without additional calories. In fact, using herbs and spices can help reduce the negative nutrients in consumers' diets. Ethno pharmacological studies on spices its anti oxidant, anti-inflammatory of foods and beverages (Praveen *et al.*, 2006). In addition to these spices are some of the most commonly used natural antimicrobial agents in foods. Some of the natural compounds found in various spices possess antimicrobial. (Hatha *et al.*, 2006). Therefore, actions must be taken to control this problem by using the plant extracts containing photochemical having antimicrobial properties (Pandey,2012)

HYPOGLYCEMIC EFFECTS- Since fenugreek is a rich source of soluble fibre, several experiments were performed in animals to assess its effects on lipids and blood glucose. In a metabolic study with a crossover design in NIDDM patients, when 100g of defatted fenugreek seed powder was administered for a period of 10 days, significant reduction in glucose levels and increased glucose tolerance was observed.14 A reduction in serum insulin levels was also documented. When subjects received fenugreek for a period of 10 and 20 days, there was not only a significant reduction in blood glucose but also a significant reduction in cholesterol, triglycerides and urinary sugar levels. The gel forming characters of fenugreek fiber reduces gastric emptying, glucose absorption and the insulin response. In a majority of patients, a mild improvement in clinical symptoms such as polydipsia and polyuria were observed with a reduction in anti-diabetic drug doses. Incorporating just around 25g fenugreek seeds in the daily diet can serve as an effective supportive therapy in the management of diabetes.(kamala,2008).

Ayurvedic Herbal Remedies for Diabetes and Cardiovascular Diseases (CVD)

- Intake of bitter gourd or bitter lemon juice daily, in empty stomach.
- Intake of 2 turmeric capsules daily thrice a day.
- Intake of 2 garlic daily twice a day.
- Intake of rose apple stones powder twice daily.
- Intake of small amounts of fenugreek, musta, Arjuna, triphala, ajwan, haritaki mixed with ghee.
- Intake of amlaki powder, haldi powder with honey, twice daily.
- Intake of fenugreek, white pepper and turmeric powder with a glass of milk, twice daily. Intake of a mixture of bay leaf, turmeric and aloe vera gel, twice daily, before lunch and dinner (Rajesham, 2012).

CONCLUSION

Using herbs and spices is a great way to reduce sodium, sugar, and fat in your diet while adding bold new flavours. It is a good idea to plan your meals before going to the grocery store so that you know which herbs and spices you will need. The diversity of their cellular actions supports their possible beneficial effects on various chronic diseases. More rigorous clinical trials are needed to determine long-term benefits. The integration of knowledge is required to determine their effect in natural human settings. Turmeric, through its kaleidoscopic effects, appears to be truly a spice of life. Food based approaches for enhancing the intake of spices and photochemical can offer an avenue to greatly impact the onset and progression of chronic diseases, oxidant stress and ageing. Although the chemo preventive approach is a recognized strategy, public health action should be directed at increases in the consumption of foods / herbs / spices / beverages, which posses a package of protective phytonutrients. The phytoprotectants act as bio enhancers of several physical and biochemical processes. For chronic disorders, chemoprevention may not be a feasible strategy except for individuals at risk. Dietary prescription as a public health measure will be sustainable and cost effective. Spices such as turmeric, fenugreek, mustard, ginger, onion and garlic have a wide variety of bio functions and their additive or synergistic actions are likely to protect the human body against a variety of insults. Traditionally spices, as part of the diets, have holistic effects on human health.

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