ISSN: 2320 - 4230

Journal of Drug Discovery and Therapeutics 1 (5) 2013, 01-04

REVIEW ARTICLE

MULTIFACETED USAGE OF HOLY BASIL

***Raaz Maheshwari[1], Bina Rani[2]**

[1]Department of Chemistry, SBRMGC, Nagaur, Rajasthan

[2]Department of Engineering Chemistry & Environmental Engineering, PCE. Sitapura, Jaipur, Rajasthan

ABSTRACT

The unique chemistry of Tulsi is highly multifarious. Tulsi contains hundreds of beneficial compounds known as phyto-chemicals. Working together, these compounds possess strong antioxidant, antibacterial, antiviral, adaptogenic, and immune-enhancing properties that promote general health and support the body's natural defense against stress and diseases. The essential oils in the leaves of Tulsi that contribute to the fragrance and refreshing flavor of Tulsi Tea, are a particularly rich source of valuable phyto-chemicals. It acts as adaptogen (an adaptogen is an agent that helps the body adapt more efficiently to stress. Adaptogens reduce the intensity and negative impact of the stress caused by mental tension, emotional difficulties, poor lifestyle habits, disease and infection, pollution and other factors. Tulsi is one of the most effective adaptogens known.), antioxidant (an antioxidants slow down the process of excess oxidation and protect cells from the damage caused by free radicals. When cells are attacked by free radicals, excess oxidation occurs which damage and destroy cells. Antioxidants stop this process. The cellular damage caused by free radicals can be responsible for causing and/or accelerating many diseases. Tulsi is rich in antioxidants and is recommended to guard against free radicals and protect from damaging excess oxidation.), and as an immuno-modulator which is an agent that balances and improves the immune response of the body in fighting antigens (disease causing agents such as bacteria, viruses, microbes, allergens etc.) and maintaining health. In this article various therapeutic applications of tulsi leaves have been delineated precisely.

KEYWORDS: *Antioxidant; Adaptogen; Immuno-modulator;Eugenol;Metabolism;COX-2*

INTRODUCTION:

"The Queen of Herbs" - is the most sacred herb of India. Tulsi (Ocimum sanctum), although also known as Holy Basil, is a different plant from the pesto variety of Basil (*Ocimum basilicum*). Tulsi has been revered in India for over five thousand years, as a healing balm for body, mind and spirit, and is known to bestow an amazing number of health benefits. Some of Tulsi effects are quite immediate, while others develop gradually after weeks of regular use. For example, you may feel more relaxed and energized after the first cup. Although Tulsi has many specific effects on different body systems, its main benefits arise from its impressive general capacity to assist the body's natural process of healing and maintaining health. Tulsi overall health promotion and disease prevention effects are powerful, but often subtle. For example, you may simply notice that you do not seem to be bothered by stress or common illnesses, such as colds or flu, nearly as often as before. Or you may notice that you generally tire less easily. As with many other herbal supplements, it usually takes at least a week or so of consistent use for the body to experience major benefits. Recent studies suggest *tulsi* may be a **(**cyclooxygenase-2) COX-2 inhibitor, like many modern painkillers, due to its high concentration of eugenol (Prakash and Gupta, 2005). One small study showed it to reduce blood glucose levels in type 2 diabetics when combined with hypoglycemic drugs (Rai et al., 1997). The same study showed significant reduction in total cholesterol levels with *tulsi*. Another study showed its beneficial effect on blood glucose levels is due to its antioxidant properties (Sethi et al., 2004).

Figure 1:

***Corresponding author:** *Raaz Maheshwari* **/Email:** *drraazecoethics151260@gmail.com*

Tulsi also shows some promise for protection from radiation poisoning (Devi and Ganasoundari, 1999) and cataracts (Sharma et al., 1998). It has anti-oxidant properties and can repair cells damaged by exposure to radiation. The fixed oil has demonstrated antihyperlipidemic and cardioprotective effects in rats fed a high fat diet (Suanarunsawat et al., 2010). Experimental studies have shown an alcoholic extract of *tulsi* modulates immunity, thus promoting immune system function (Mondal et al., 2011). Some of the main chemical constituents of *tulsi* are: oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, linalool, β-caryophyllene (about 8%), β-elemene (c.11.0%), and germacrene D (about 2%). β-Elemene has been studied for its potential anticancer properties, but human clinical trials have yet to confirm its effectiveness. *O. sanctum* extracts acts against *E. coli*, *S. aureus* and *P. aeruginosa* (Golshahi, et al., 2011).

Figure 2:

Tulsi is a native plant of India and is religiously significant. Planting tulsi inside the house is a common phenomenon. Tulsi is a Sanskrit name. The name Tulsi refers to one who does not tolerate. Tulsi, in fact, is a symbol of culture and religious inclinations of the family. The scientific name for tulsi is Ocimum tenuiflorum. It is known as Holy Basil in English. However there are other species of Tulsi as well. For instance, Hyptis suaveolens, Ocimum americanum, Ocimum gratissimum, Ocimum sanctum and others are also found in India. Abundantly found in rural areas, it is called `Gramya`, the village maiden. It has also earned the name Shoolaghni, because of its ability to alleviate pain. One of the English names for Tulsi is `the Mosquito Plant`. Sir George Birdward wrote that the Victoria Gardens and the Prince Albert Museum were `malarial`. The cultivation of the Tulsi plants freed it from mosquitoes. Besides these, tulsi is also known as Surasa and Sulabha.

Figure: 3

TYPES OF TULSI:

Three types of Tulsi are generally found in the Indian subcontinent: Rama Tulsi has green leaves; the Krishna Tulsi generally has purple leaves and the Vana Tulsi. The medicinal value as well as the size of Tulsi varies to a large extent with the changes in rainfall and the type of soil in which they are grown. The Tulsi plant or the holy basil is three to four feet tall. Though black sticky and moist soils are most suitable for its growth but it can be cultivated on other soils as well. The plant bears inflorescences about two inches long. The maximum diameter of the trunk may be about the size of a wrist, and the branches may grow to a thickness of half an inch. The leaves are of an elongated oval shape. Tulsi has a sharp taste and an odour which kills germs. It is always used when fresh. A number of household remedies are prepared by mixing Tulsi with dry ginger, pepper, billa fruit pulp, the tender shoots of the neem tree, cardamom, and such other ingredients.

THERAPEUTIC APPLICABILITY OF TULSI:

The uses of tulsi are manifold. In India these are primarily known for their medicinal values. The leaves of tulsi are used to treat a number of diseases like coughs, bronchitis, skin diseases, diarrhoea, cholera, influenza and malaria. Tulsi seeds are used to treat ulcers, vomiting, low energy levels and it acts as an overall tonic. Recent research has shown that small doses of Tulsi are able to protect a person against high blood pressure. It also helps to control high blood sugar levels. Tulsi is also believed to cancer at bay. Tulsi plant is rich in bio available antioxidants, Vitamins A and C.

The practitioners of the Unani system regard that Tulsi stimulates the activity of the brain, reduces swellings, destroys gas, relieves congestion in the heart, stimulates the appetite, and counters dilapidation of the skin and vitiation of the blood.

A decoction of the plant is taken internally to relieve coughs and fever. The leaves for used for treating dysentery and as a mouthwash for relieving toothache. The leaves, widely used for flavouring sauces, soups and salads, are considered diuretic and tonic. The leaf paste is used externally for treating parasitic skin diseases.

Besides the medicinal uses, tulsi is also used in several Hindu rituals. Its leaves are offered to gods while worshipping. The leaves are given prime position in religious rituals, as prasad or offerings to Gods, in devotion, in preparing `Panchamrit` and in alms to the poor. It is even believed that the messengers of death (diseases) cannot approach a home where Tulsi is planted. Vedas mention that God does not accept any offering if it does not include Tulsi leaves. Indian Puranas describes Tulsi as the consort of Lord Krishna.

HEALTH BENEFITS OF TULSI:

Tulsi is rich in antioxidant and renowned for its restorative powers, Tulsi has several benefits:

- Relieves stress / adaptogen
- Bolsters immunity
- Enhances stamina
- Provides support during cold season
- Promotes healthy metabolism
- A natural immuno-modulator

"Modern scientific research offers impressive evidence that Tulsi reduces stress, enhances stamina, relieves inflammation, lowers cholesterol, eliminates toxins, protects against radiation, prevents gastric ulcers, lowers fevers, improves digestion and provides a rich supply of antioxidants and other nutrients. Tulsi is especially effective in supporting the heart, blood vessels, liver and lungs and also regulates blood pressure and blood sugar.

Figure 4:

DEFLUOREDATION OF CONTAMINATED WATER BY TULSI:

Fluoride levels in drinking water in 196 districts of 19 Indian states are much higher than the maximum concentration of 1.5 parts per million (ppm) deemed safe. Poor people in these areas do not need expensive gadgets to get rid of the contaminant anymore. All they need is a tulsi plant. Fluorosis, which causes dental and skeletal decay, is endemic in at least 25 countries across the world. According to estimates by Fluoride Action Network, a US-based non-profit, 25 million people are affected by fluorosis in India and another 66 million are at a risk. It's simple. All one needs to do is either boil or shake a handful of holy basil or tulsi leaves with water for a while. This is enough to decontaminate about 20 litres of water. To test the efficacy of the method, we experimented with various water samples having different fluoride concentrations. When 75 mg of fresh leaves were added to 100 ml of water with a fluoride concentration of 5 ppm, nearly 95 per cent fluoride was removed in 20 minutes. Stems and dried leaves had a fluoride removal efficiency of 74 to 78 per cent for the same water sample. During a study in 2009, it was found that 24 per cent of water samples from Rajura tehsil in Chandrapur district have fluoride concentration higher than the permissible limit. Most fluorosis victims

here were poor. This prompted researchers to work towards finding a fluoride removal method that is accessible even to those having little money. It was thought that a locally available plant is the best option. Due to their proven medicinal properties, tulsi leaves have been used since ages to consecrate drinking water during festivals. It was decided to experiment with the plant and see if it can remove fluoride from water. It's being planned to carry out the experiment on a larger scale. The method is safe and certainly better than drinking untreated water but more studies are still needed to find out how tulsi leaves absorb fluoride (Kamble, 2012).

CONCLUSION:

Tulsi has been used for thousands of years in Ayurveda for its diverse healing properties. It is mentioned in the Charaka Samhita-an ancient Ayurvedic text. *Tulsi* is considered to be an adaptogen, balancing different processes in the body, and helpful for adapting to stress. Marked by its strong aroma and astringent taste, it is regarded in Ayurveda as a kind of "elixir of life" and believed to promote longevity. *Tulsi* extracts are used in ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning, and malaria. Traditionally, *tulsi* is taken in many forms: as herbal tea, dried powder, fresh leaf, or mixed with *ghee*. Essential oil extracted from Karpoora *tulsi* is mostly used for medicinal purposes and in herbal cosmetics, and is widely used in skin preparations. For centuries, the dried leaves have been mixed with stored grains to repel insects. Recently its use has been found in fighting fluorosis.

REFERENCES:

1. Devi, P. U. Ganasoundari, A. 1999. Modulation of Glutathione and Antioxidant Enzymes by Ocimum sanctum and its Role in Protection against Radiation Injury. *Indian Journal of Experimental Biology,* **37** (3), pp. 262–268.
2. Golshahi H., Ghasemi E., and Mehranzade E. 2011. Antibacterial activity of Ocimum sanctum extract against E. coli, S. aureus and P. aeruginosa. *Clinical Biochemistry. Conference: 12th Iranian Congress of Biochemistry, ICB and 4th International Congress of Biochemistry and Molecular Biology, ICBMB* Mashhad Iran, Islamic Republic of. Conference Start: 20110906 Conference End: 20110909. Conference Publication: (var.pagings). 44 (13 SUPPL. 1) (pp S352), 2011. Date of Publication: September 2011. [Journal: *Conference Abstract*]
3. Kamble, R. 2012. Tulsi Fights Fluorosis. *Down To Earth,* **10** (1), pp. 53.
4. Maheshwari, R**. 2005.** Healing Power of Antioxidants. *Planta Indica*, **1** (3), pp. 36-37.
5. Mondal, S., Varma, S., Bamola, V. D.,Naik, S. N., Mirdha, B. R., Padhi, M. M., Mehta, N. and Mahapatra, S. C. 2011. Double-blinded Randomized Controlled Trial for Immunomodulatory Effects of *Tulsi* (*Ocimum sanctum* Linn.) leaf Extract on Healthy Volunteers. *Journal of Ethnopharmacology,* **136** (3), pp. 452–456.
6. Padalia, R. C. and Verma, R. S. 2011. Comparative volatile oil composition of four Ocimum species fromNnorthern India. *Natural Product Research,* **25** (6), pp. 569–575.
7. Peng, X., Zhao, Y., Liang, X., Wu, L., Cui, S., Guo, A. and Wang, W 2006. Assessing the Quality of RCTs on the Effect of β-elemene, One Ingredient of a Chinese Herb, against MalignantTtumors. *Contemporary Clinical Trials,* **27** (1), pp 70–82.
8. Prakash, P. and Gupta, N. 2005. Therapeutic Uses of Ocimum Sanctum Linn (Tulsi) With a Note on Eugenol and its Pharmacological Actions: A short Review. *Indian Journal of Physiology and Pharmacology,* **49** (2), pp. 125–131.
9. Rai, V., Mani, U.V. and Iyer, U.M. 1997. Effect of Ocimum sanctum Leaf Powder on Blood Lipoproteins, Glycated Proteins and Total Amino Acids in Patients with Non-insulin-dependent Diabetes Mellitus. *Journal of Nutritional and Environmental Medicine,* **7** (2), pp.113–118.
10. Sethi, J. Sood, S., Seth, S and Talwar, A. 2004. Evaluation of Hypoglycemic and Antioxidant Effect of *Ocimum sanctum*. *Indian Journal of Clinical Biochemistry,* **19** (2), pp.152–155.
11. Sharma, P. Kulshreshtha, S. Sharma, A.L. 1998. Anti-cataract Activity of Ocimum Sanctum on Experimental Cataract. *Indian Journal of Pharmacology,* **30** (1): 16–20.
12. Suanarunsawat, T., Boonnak, T., Na Ayutthaya, W. D. and Thirawarapan, S. 2010. Anti-Hyperlipidemic and Cardioprotective Effects of Ocimum Sanctum L. Fixed Oil in Rats Fed a High Fat Diet. *Journal of Basic and Clinical Physiology and Pharmacology,* **21** (4), pp. 387–400.
13. Qingdi Q. Li, Gangduo ., Manchao, Z, Christopher F., Cuff, L. H. and Eddie, R. 2009. β-Elemene, a Novel Plant-derived Antineoplastic Agent, Increases Cisplatin Chemosensitivity of Lung Tumor Cells by Triggering Apoptosis. *Oncology Reports,* **22**, pp. 161–170.