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A REVIEW ARTICLE ON *OCIMUM SANCTUM* LINN.Sandip G. Buddhadev¹, Mrs. Sheetal S. Buddhadev², Niraj D. Mehta³¹ Associate Professor, Dravyaguna Dept., Govt. Ayurved College, Junagadh- Gujarat.² Assistant Professor, Atmiya Pharmacy College, Rajkot-Gujarat.³ Assistant Professor, Agad tantra Dept., Govt. Ayurved College, Junagadh- Gujarat.**ABSTRACT:**

Ocimum sanctum Linn. is a plant in the family Lamiaceae. It is also called Holy Basil. In Ayurvedic system of medicine, different parts (leaves, stem, flower, root, seeds and even whole plant) of *Ocimum sanctum* Linn. have been recommended for the treatment of bronchitis, malaria, diarrhea, dysentery, skin disease, arthritis, eye diseases, insect bites and so on. The *Ocimum sanctum* Linn. has also been suggested to possess, anticancer, anti-diabetic, anti-fertility, antifungal, antimicrobial, cardio protective, analgesic, antispasmodic and adaptogenic actions. Eugenol (1-hydroxy-2-methoxy-4-allylbenzene) is the active constituents present in *Ocimum sanctum* Linn. have been found to be largely responsible for the therapeutic potentials. The main aim of this article is to highlight the latest review of scientifically proved medicinal activity against various diseases.

KEY WORDS: *Ocimum sanctum*, *Ocimum tenuiflorum*, Anti-diabetic,

INTRODUCTION**Correspondent:****Dr. Sandip G. Buddhadev**Associate Professor,
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The plant Tulsi or Holy Basil
(Botanical name *Ocimum Sanctum* Linn.)

belongs to family Lamiaceae. It is a tropical plant which grows as weed and also cultivated. Tulsi is worshipped by Hindus and is an important symbol of Hindu religion. The beneficial medicinal effects of plant materials typically result from the combinations of secondary products present in the plant. The

medicinal actions of plants are unique to particular plant species or groups are consistent with this concept as the combination of secondary products in a particular plant is taxonomically distinct.¹ The herbal preparations are considered moderate in efficacy and are less toxic than the most commonly used pharmaceutical drugs.² It is mentioned by Charaka in the Charaka Samhita; an 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.

DESCRIPTION

The natural habitat of Tulsi varies from sea level to an altitude of 2000 m. It is found growing naturally in moist soil nearly all over the globe. Tulsi is a branched, fragrant and erect herb having hair all over. It attains a height of about 75 to 90 cm when mature. Its leaves are nearly round and up to 5 cm long with the margin being entire or toothed. These are aromatic because of the presence of a kind of scented oil in them. A variety with green leaves is called Shri Tulsi and one with reddish leaves is called Krishna Tulsi. Tulsi flowers are small having purple to reddish color, present in small compact clusters on cylindrical spikes. Stalk less

heart-shaped bracts are there at the base of each flower cluster. Sepal cup is not hairy within. Flowers are rarely longer than 5 mm, calyx tube bearded outside near base. Flower tube is hairy. The fruits are small and the seeds yellow to reddish in colour.

Among the plants known for medicinal value, the plants of genus *Ocimum* belonging to family Labiate are very important for their therapeutic potentials. *Ocimum sanctum* L (Tulsi), *O. gratissimum* (Ram Tulsi), *O. canum* (DulalTulsi), *O. basclicum* (Ban Tulsi), *O. kilimandschricum*, *O. americanum*, *O. camphora* and *O. micranthum* are examples of known important species of genus *Ocimum* that grow in different parts of the world and are known to have medicinal properties.³⁻⁵

TRADITIONAL USES

Tulsi extracts are used in Ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning and malaria. Traditionally, *Ocimum sanctum* is taken in many forms, as herbal tea, dried powder or fresh leaf. For centuries, the dried leaves of Tulsi have been mixed with stored grains to repel insects.⁶

CHEMICAL CONSTITUENTS

Different part of plant containing various amounts of constituents. Leaves contain 0.7% volatile oil comprising about 71% eugenol and 20% methyleugenol. In

oil carvaxrol and sesquiterpine hydrocarbon caryophyllene⁷ Ursolic acid has been isolated from the leaves.⁸ So main constituents can be counted as oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, Linalool and β -caryophyllene.

Various activities of *Ocimum sanctum*

Linn.

Analgesic activity

The *Ocimum sanctum* oil was found to be devoid of analgesic activity in experimental pain models (tailflick, tailclip and tail immersion methods). However, it was effective against a cetic acid induced writhing method in mice in a dose dependent manner. The writhing inhibiting activity of the oil suggested of peripherally mediated due to combined inhibitory effects of prostaglandins, histamine and acetylcholine⁹.

Anticataract activity

The AqE of fresh leaves of *Ocimum sanctum* delayed the process of cataractogenesis in experimental models of cataract (galactose cataract in rats by 30% galactose and naphthalene cataract in rabbits by 1g/kg naphthalene). *Ocimum sanctum* 1 and 2g/kg delayed the onset as well as subsequent maturation of cataract significantly in both the models¹⁰.

Anti-arthritis activity

The anti-arthritis activity of *Ocimum sanctum* fixed oil was evaluated against formaldehyde-induced arthritis in rats. The fixed oil significantly reduced the diameter of inflamed paw. On intra-peritoneal administration of the fixed oil daily for 10 days, there was marked improvement in the arthritic conditions in rats. The anti-arthritis effect at 3 ml/kg dose was comparable to aspirin by 100 mg/kg, ip¹¹. The fixed oil inhibited carrageenan and inflammatory mediators (e.g., serotonin, histamine, bradykinin and PGE₂) induced inflammation. It is natural that the oil could inhibit any inflammatory response involving these mediators. The result suggests potentially useful anti-arthritis activity of the inflammation models, including adjuvant as well as turpentine oil-induced joint oedema in rats¹².

Anti-diabetic activity

Leaves of *Ocimum sanctum* have been shown to possess hypo-glycemic effects in experimental animals¹³⁻¹⁶. Decoction prepared with various parts of plant lowers the blood sugar level¹⁷. A study conducted¹⁸ on rats has suggested that constituent of *Ocimum sanctum* leaf extracts have stimulatory effects on physiological pathways of insulin secretion. Various studies have been performed on the anti-glycemic properties of *Ocimum* but its mechanism of action has not been elucidated as yet¹⁸⁻¹⁹. Study

²⁰ conducted with tulsi plus neem has suggested that this combination is better for the diabetic patients in lowering the sugar level.

Anticancer activity

Cancer has been a leading cause of death in the developing countries. With changing standard of living and food habits and also due to availability of curative treatment for many infectious diseases, cancer is surpassing other ailments as a principle cause of morbidity and mortality even in developing countries. Surgery, radiotherapy and chemotherapy- the established treatment modalities for various cancers are costly, mutilating, having serious side effects and associated with residual morbidity as well as frequent relapses. In ayurveda, various plants are used as a potential source of anticancer and antitumor properties. It has been found that ethanolic extract of *Ocimum sanctum* mediated a significant reduction in tumor cell size and an increase in lifespan of mice having Sarcoma-180 solid tumors ²¹. Similar results were also obtained by others where anticancer activity of *O. sanctum* in Lewis lung carcinoma animal model has been reported ²². Urosolic acid and oleanic acid possess anticancer property. *Ocimum* has the ability to protect the DNA of the body from dangerous radiations ²³.

Anticoagulant activity

The *Ocimum sanctum* fixed oil (3 ml/kg,ip) prolonged blood clotting time and the response was comparable to that obtained with aspirin(100mg/kg). The effect appears to be due to the antiaggregation of oil on platelets²⁴.

Toxicity

The median lethal dose (LD50) of *Ocimum sanctum* fixed oil was determined after ip administration in mice. The fixed oil was well tolerated upto 30 ml/kg, while 100% mortality was recorded with a dose of 55 ml/kg. The LD50 of oil was 42.5ml/kg. There was found no untoward effect on subacute toxicity study of *Ocimum sanctum* fixed oil at a dose of 3 ml/ kg/day, ip for 14 day in rats¹¹.

CONCLUSION

Plants have been used for the treatment of diseases throughout the world since the beginning of civilization. Tulsi is cultivated for religious and medicinal purposes. It is widely known across South Asia as a medicinal plant and an herbal tea. The vast survey of literature showed that *Ocimum sanctum* has a broad spectrum of pharmacological activities. It has an esteemed status in herbs with diverse biological potentials and has a great scope for further new area of investigations. Traditionally crude extracts of various parts of plant have been used for their analgesic anticancer, anticoagulant, and

antibacterial and many other properties. Future research on sacred basil should be emphasized for control of various diseases especially it should be explore as a

significant remedy regarding neuropsychological disorders for the welfare and service of mankind.

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