

A Review of the Therapeutic Properties of Holy Basil (Tulsi) In General and Oral Medicine

Dr. Puneet Kumar¹, Dr. Chandni Batra^{2*}

¹Professor, Department of Public Health Dentistry, Santosh Dental College & Hospital, Santosh Deemed to be University, Ghaziabad.

^{2*}Reader, Department of Oral Medicine, Diagnosis & Radiology, Santosh Dental College & Hospital, Santosh Deemed to be University, Ghaziabad.

Corresponding Author: ^{2*}Dr. Chandni Batra

ABSTRACT

Background: Nature has endowed us with an exceptionally rich botanical diversity, and numerous distinct plant species can be seen growing throughout the nation. In traditional systems of medicine, modern medications, nutraceuticals, food supplements, folk remedies, pharmaceutical intermediates, and chemical entities for synthesised pharmaceuticals, plants are the most abundant source of drugs. All around the world, medicinal plants are a source of significant economic value. A well-known plant called *Ocimum sanctum* Linn (Tulsi) is employed in the Indian medical system. This essay examines the plant's therapeutic potential for the management of numerous dental and medical conditions.

Keywords: Oral medicine, Medicinal plant, Tulsi, *Ocimum sanctum* Linn

1. INTRODUCTION

The world has recently placed more emphasis on plant study, and a wealth of data has accumulated to demonstrate the enormous potential of the therapeutic plants employed in diverse traditional systems. Since the dawn of human civilization, people have used plants and plant-based products as medicines. The "Rigveda," which is thought to be the oldest collection of human knowledge and to have been composed between 4500 and 1600 BC, has the earliest reference of the medical usage of plants in Hindu culture. [1] Nowadays, a significant portion of the pharmaceuticals that are used come from plants, such as morphine from *Papaver somniferum*, aswagandha from *Withania somnifera*, ephedrine from *Ephedra vulgaris*, atropine from *Atropa belladonna*, and reserpine from *Rauwolfia serpentina*, among others. The therapeutically significant essential oils and secondary metabolites found in medicinal plants are abundant. In addition to being affordable, efficient, and readily available, medicinal plants' major benefits for therapeutic usage in treating various illnesses include safety. [2, 3] Ayurveda, which translates to "science of long life," is an Indian medical system that dates back at least 5000 years (1500–1000 BC). It was used by doctors and surgeons to promote health and longevity rather than treat disease (called *bheshaja* or *vaidya*). This science was spoken about amongst sages and healers up to 700 B.C. 4Tulsi's therapeutic properties have been widely recorded in Ayurveda, where it is known as *Kaphaghna* and *Dashemani Shwasaharni* (an asthma remedy) (Anti-cough). [4]

Indian mythology and history related to Tulsi

In Sanskrit, the word "tulsi" denotes "one that is unmatched or unmatchable." Ancient Rishis recognised tulsi as one of India's most potent healing herbs thousands of years ago. They discovered that this herb was so effective in promoting health and healing that it was worshipped as a deity. The herb tulsi has its own legendary history. According to legend, Lord Krishna, a previous manifestation of Lord Vishnu, adored this object. In order to guarantee that every home and temple had at least one Tulsi bush nearby, Tulsi was then identified as one of the eight essential elements in any Vedic worship rite. Tulsi continues to play a significant role in healing, religion, spirituality, culture, and decorative aesthetics. It is still grown in most Indian homes and is regarded as one of the most revered and honoured herbs. Even in the West, it is now so easily accessible that one of its names is Sulabha, meaning "the easily obtained one." [5]

Plants from the genus *Ocimum* include *Ocimum sanctum* Linn (tulsi)

The plants in the genus *Ocimum* that are members of the Labiatae family are among those known for their therapeutic potential. *Ocimum sanctum* L. (Tulsi), *Ocimum gratissium* (RamTulsi), *Ocimum canum* (Dulal Tulsi), *Ocimum basilicum* (Ban Tulsi), *Ocimum kilimandscharicum*, *Ocimum ammericanum*, *Ocimum camphora*, and *Ocimum micranthum* are a few examples of well-known major species of the genus *O*. The erect, softly hairy, scented plant or undershrub *Ocimum sanctum* L., often known as "Tulsi" in Hindi and "Holy Basil" in English, can be found growing all across India. Tulsi is frequently grown in gardens. There are two varieties of *Ocimum sanctum* L. that can be grown: (i) Sri Tulsi, which has green leaves, and (ii) Krishna Tulsi, which has purple foliage. Hindus revere *Ocimum sanctum* L. as a sacred plant, and Indian households often employ it as a medicine for a variety of illnesses. [6, 7]

Drug-Related Effects

Ocimum sanctum L. is said to possess a number of therapeutic qualities. Different Tulsi plant parts, such as the leaves, flowers, stem, root, and seeds, have been used as expectorants, analgesics, anticancer, antiasthmatic, antiemetic, diaphoretic, antidiabetic, antifertility, hepatoprotective, hypotensive, hypolipidmic, and antistress agents by traditional medical practitioners. Additionally, tulsi has been used to treat convulsions, arthritis, pneumonia, fever, and other conditions. [8] The numerous therapeutic applications in dentistry and medicine are covered in the section that follows.

Medicine use

Disorders of the digestive system

Patients with liver and stomach issues are given an aqueous infusion of Tulsi leaves. [6, 9] *Ocimum sanctum* L.-based herbal medicines have been proposed to reduce the duration of disease, clinical symptoms, and biochemical markers in viral hepatitis patients. Effective in boosting the GI tract's peristaltic motions. It aids in enhancing appetite. Additionally, they have some modest laxative characteristics, which aid in bowel evacuation and colon health maintenance. [9] Patients are also given the juice of fresh leaves to treat persistent fever, diarrhoea, bleeding, and dyspepsia. [6, 9] Tulsi leaves are an anthelmintic and also check for vomiting. Tulsi is said to prevent gastric ulcers and secretion in albino rats. [8, 10]

Disorders of the Eye (Ocular)

In Ayurvedic eye drop compositions used for glaucoma, cataract, persistent conjunctivitis, and other excruciating eye illnesses, *Ocimum sanctum* L. leaf juice is combined with *Triphala*. [6, 9]

Cardiovascular conditions

It is helpful for heart conditions and the weakness brought on by different cardiac problems. Even blood cholesterol levels are decreased by it. It has been thoroughly demonstrated that eugenol (extracted from tulsi leaves) has a vaso-relaxing effect on rabbit vascular tissue, emphasising the therapeutic relevance of eugenol as a vasodilator. [11, 12]

Breathing disorders

The common cold can be effectively treated with tulsi. Bronchitis, bronchial asthma, influenza, coughing, and colds can all be treated with a decoction of the leaves made with honey and ginger. The combination of leaves, cloves, and common salt in a decoction can also provide quick relief from influenza cases. Tulsi is a key component of several Ayurvedic expectorants and cough syrups. It is quite good for maintaining a very healthy respiratory passageway because it aids in the mobilisation of mucus in bronchitis and asthma. Tulsi leaf chewing improves cold and flu symptoms. When you have a sore throat, you should drink water that has been boiled with Tulsi leaves. It is also possible to gargle with this water. [8, 13]

Renal Conditions

The kidney can be improved by tulsi. If taken daily for six months, the juice of Tulsi leaves and honey can help to flush out kidney stones through the urinary tract. Tulsi plant leaves and seeds have been found to have diuretic properties and lower blood and urine uric acid levels in albino rabbits. [14] *Ocimum sanctum* L.'s fresh leaves and blossom tips have been utilised as antispasmodics (smooth muscle relaxants). [6, 8] The mucilaginous, demulcent seeds are administered for genitourinary system diseases. [6]

Dermal Conditions

Tulsi juice, when applied locally, is effective in treating ringworm and other skin conditions. In cases of skin conditions like leucoderma, it is also quite helpful. [8]

Psychological conditions

Adaptogens or stress-reducers are thought to exist in tulsi leaves. Recent research has demonstrated that leaves offer their user great protection against stress. Even healthy people can reduce stress by chewing on 12 Tulsi leaves twice daily. Even the blood is purified, and it helps prevent a number of prevalent psychological diseases. [15]

Mellitus Diabetes

The Tulsi plant's leaves contain a variety of essential oils. Therefore, it is particularly helpful in boosting insulin secretion and improving pancreatic beta cell activity, which helps people with diabetes maintain control over their blood sugar levels. [16]

Defecative Abnormalities

Tulsi blocks the enzymes in our systems that cause inflammation and are responsible for pain and other symptoms of inflammation. Tulsi has similar anti-inflammatory properties to ibuprofen, naproxen, and aspirin. Even better, tulsi improves adrenal function by reducing

cortisol levels. As a result, the harmful effects of stress are diminished. Tulsi is very good in preventing any edoema from developing in the body. It helps treat any form of swelling in the body by improving blood circulation throughout the body. [17]

Impact on infertility

Ocimum sanctum l. Leaves are thought to have an abortifacient effect on females. Furthermore, ocimum sanctum l. has an antifertility effect. One of the main components of tulsi leaves, ursolic acid, has been linked to antifertility effects in male mice and rats of both sexes. Ursolic acid has an anti-estrogenic action, which slows down spermatogenesis and lowers sperm counts. [18, 19]

The anti-tumor impact

Ocimum sanctum seed oil was tested for its ability to prevent Swiss albino mice from developing the fibrosarcoma tumours that were brought on by subcutaneous injection of 20-methylcholanthrene. The occurrence and volume of tumours caused by 20-methylcholanthrene were dramatically decreased by supplementing the oil at the maximum permissible dose (100 ml/kg body weight). The findings of this study imply that the oil's possible chemopreventive capabilities are also responsible for some of that activity. Comparable to 80 mg/kg of vitamin E, 100 ml/kg of seed oil has chemopreventive effects. [16]

Uses of Oro-Dental

Oral diseases

The treatment of common oral infections with tulsi leaves is highly successful. A few chewed leaves also aid in keeping good oral hygiene. The antibacterial components of this plant are carracrol and tetpene. The same function is served by sesquiterpene b-caryophyllene as well. This naturally occurring ingredient in tulsi is a food additive that has received FDA approval. [15]

Toothache: Due to the substantial amount of Eugenol in tulsi, it can operate as a COX-2 inhibitor, similar to contemporary painkillers (1 - hydroxyl - 2methoxy - 4 allyl benzene) 0.7% of the volatile oil found in ocimum sanctum leaves is made up of roughly 71% eugenol and 20% methyl eugenol. [13]

Dental Conditions

Use powdered tulsi leaves to clean your teeth after they have been sun-dried. Additionally, a paste made from it and mustard oil can be used as toothpaste. This is excellent for preserving tooth health and reducing bad breath (halitosis). In order to cure various periodontal and gingival problems, this can also be used to massage the gingiva. [9, 10]

Agent Anticariogenic

A bacteria known as Streptococcus mutans has been strongly linked to the development of tooth caries. The composition of Tulsi extract at 4% had the most antibacterial power, according to an in-vitro study that evaluated the effects of different Tulsi extract concentrations on streptococcus mutans. [12]

Candidiasis

Linalool is more promising and effective against candida, according to a study that examined the antifungal activity of the essential oil of Ocimum sanctum and its two main constituents, eugenol and linalool, against two species of Candida (C. albicans and C. tropicalis), both of which are known to cause oral candidiasis. [13]

Lichen planus

One of the therapy choices in Ayurveda for treating lichen planus is Lichen planus Ocimum sanctum, which has the unusual ability of operating on the skin and blood tissue as well as bringing about the needed immunomodulation. [14]

Oral submucous fibrosis and leukocytosis

Tulsi's polyphenol rosmarinic acid, which acts as a potent antioxidant, can be used therapeutically to treat diseases and lesions that are frequently associated with precancerous lesions in the mouth. [15, 16]

Pemphigus

The goal of ayurvedic treatment is to strengthen the immune system and hasten blister and sore recovery. Ocimum sanctum may be useful in treating immunologically mediated mucosal conditions like pemphigus because of its immunomodulating properties. [17]

Acne Ulcerations

In a study, ocimum sanctum at a dose of 100 mg/kg was discovered to be an efficient antiulcer agent. The cytoprotective impact of Ocimum sanctum rather than its antisecretory activity may be the cause of its anti-ulcer effects. Ocimum sanctum is discovered to have strong anti-ulcerogenic and ulcer-healing capabilities, suggesting that it could be used as a potent treatment agent for peptic ulcer disease. Oral ulcers may benefit from this quality as well. [18]

Nutrient

Calcium, zinc, iron, and vitamins A and C are all contained in tulsi. Along with other phytonutrients, it also contains chlorophyll. Numerous oral disorders have been linked to vitamin deficiencies in this group. [19]

2. CONCLUSION

Plants have been used in therapies for thousands of years; some of them may even be older than human civilisation. One of these healing plants is "Tulsi," which is revered as the "Queen of Herbs" for both its wide range of therapeutic uses and mythological significance. The therapeutic applications of this plant now have a solid scientific foundation thanks to a number of pharmacological research. It has historically been utilised in Ayurveda to treat a number of systemic ailments. Because of its antibacterial, anti-inflammatory, ulcer-healing, antioxidant, and immunomodulatory qualities, it may potentially be helpful in the treatment of oral disorders. Future research should focus on examining and evaluating the therapeutic value of this amazing plant in oral medicine.

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