

OCIMUM SANCTUM (TULSI): OVERVIEW

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ABSTRACT

The medicinal and therapeutic use of the Tulsi plant in conventional medicine are discussed in the current review study. The aromatic plant tulsi (*Ocimum sanctum* [OS] Linn.) is a member of the Lamiaceae family. The leaves of ocimum are rich source of Oleanolic acid, It has long been utilized to prepare numerous Ayurvedic formulations for the Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, linalool and β – caryophyllene are main constituents of Thulasi. It is treatment of asthma, influenza, and bronchitis. scalding mixture. They are commonly used for quick relief from colds, sneezing, coughing, malaria, and dengue. Tulsi reduces stress, boosts stamina, eases inflammation, lowers cholesterol, eliminates toxins, protects against radiation, prevents gastric ulcers, lowers fevers, improves digestion, and offers a rich supply of antioxidants and other nutrients, according to impressive scientific research. Tulsi is particularly effective at supporting the heart, blood vessels, liver, and lungs while also controlling blood pressure and blood sugar.

KEYWORDS: *Ocimum sanctum*, β – cayophyllene, Eugenol, Urosolic Acid, Pharmacological Activity.

INTRODUCTION

Tulsi “Queen of herbs” is described as sacred and medicinal plant of ancient literature.^[1] Ayurveda has its roots in the Vedas, specifically the Atharvaveda, and emphasizes the use of locally sourced plant-based medicines to heal illnesses.^[2] This plant's seeds, roots, and leaves have all been employed in numerous Ayurvedic medicines. Antioxidant, stress-relieving, hepatoprotective, immunostimulating, anti-inflammatory, antibacterial, antiviral, antifungal, antipyretic, antidiuretic, antidiabetic, antimalarial, and hypolipidemic, to name a few of its numerous beneficial characteristics with a high degree of safety. In the Ayurvedic therapy of infections, the herb is gradually finding its place. Because of their ability to heal, tulsi leaves are widely used. In warm climates and tropical areas, tulsi grows wild. India is the home of the plant's distribution and cultivation. When fully grown, it is a fragrant, upright, heavily branched plant that reaches a height of roughly 30 to 60 cm. Growing up to 5 cm long,

its aromatic leaves are simple, opposite, elliptic, oblong, obtuse, or acute with whole, subserrate, or dentate edges.^[27] Reports of a high incidence of substitution with surrogate herbs, such as *Ocimum basilicum*, have prompted questions about the quality of the product in European "tulsi" products. To assure batch-to-batch quality, the safety and botanical integrity of standardized extracts, and high-performance liquid chromatography fingerprints, this can be addressed by microscopic assays.

TAXONOMY

Kingdom : Planate
Subkingdom : Tracheobionta
Superdivision : Spermatophyte
Division : Magnoliophyta
Class : Magnoliopsida
Subclass : Asteridae
Order : Lamiales

PHYSICAL PROPERTIES

SYNONYMS	Large Fennel, Sweet Fennel, Fennel fruit, Saunf, Fructus Foeniculi
FAMILY	Laminaceae
CLASS	Magnoliopsida
ODOUR	Lamiales
COLOUR	Green
TASTE	Astringent
SPECIES	<i>Ocimum canum</i> (Ram Tulasi or kali Tulsi), <i>Ocimum kalimand</i> , <i>Ocimum scharicum</i> .
MEDICINAL USE	Cough, Sore throat, Respiratory diseases, Skin disorder, Huminity Booster

MEDICINAL PROPERTIES

The properties of basil include antispasmodic, carminative, galactagogue, and stomachic. It is used to treat intestinal catarrh, vomiting, gastric cramps, constipation, and enteritis. As an antispasmodic, it had occasionally been used for whooping cough. Turmeric lowers blood sugar and has antioxidant qualities. For diabetics, this is helpful. Tulsi lowers cholesterol levels overall. For those with heart disease, this is beneficial. Blood pressure is lowered by tulsi.^[28]

TRADITIONAL USES

As a longevity enhancer, tulsi is also referred to as "the elixir of life". Several plant parts are used in the Ayurvedic and Siddha medical systems to prevent and treat a wide range of illnesses and common ailments, including fever, earaches, coughs, influenza, sore throats, bronchitis, asthma, hepatic diseases, malarial fever, flatulence, migraine headaches, fatigue, skin conditions, wounds, insomnia, arthritis, digestive disorders, night blindness, and diarrhoea.^[4] The leaves have nerve-soothing and memory-enhancing properties. Ulcers and oral infections can also be healed by chewing tulsi leaves. Tears can be used to destroy bacteria and sanitize drinking water and food supplies. Holy Basil tastes amazing.^[3]

Eye Disese

Ayurvedic eye drop remedies for glaucoma, chronic conjunctivitis, and other painful eye diseases contain *Ocimum sanctum* leaf juice and triphala. It is said that using three drops of tulsi oil and honey in a regular practice will help with vision.^[15]

Picture of Tulsi

PHARMACOLOGICAL ACTIVITY

Anti Cancer Activity

Many plants are used in ayurveda as possible sources of anticancer and antitumor effects.^[5] It has been discovered that mice with solid Sarcoma-180 tumours lived longer and the ethanolic extract of *Ocimum sanctum* significantly reduced the size of the tumor cells.^[6] Others reported comparable outcomes, with oral leaf extract (200 mg/kg, p.o.) significantly reducing tumor volume, increasing average body weight, and increasing the survival rate of mice. *Ocimum* possesses the capacity to shield the body's DNA from harmful radiation.^[7]

Anti diabetic Activity

O. sanctum has been reported to possess very good anti diabetic properties. There have been reports of excellent anti-diabetic potential for *O. Sanctum*. In rats with diabetes caused by streptozotocin and nicotimanide, the hydroalcoholic extract of *O. tenuiflorum* exhibited considerable anti-diabetic action at doses of 250 and 500 mg/kg body weight^[8]; this effect was comparable to that of glibenclamide. Both acute and long-term feeding trials involving rats with alloxan diabetes showed a reduction in hyperglycemia when *O. sanctum* ethanol extract was given to the rats.^[9] In a different investigation conducted

by J M A Hannan et al., the ethanol extract and three partition (ethylacetate, butanol, and aqueous) fractions of *O. sanctum* were found to have significant effects on insulin secretory responses in the rat pancreas. Acute insulin-release experiments with isolated rat islets revealed similar results.^[10]

Antilipidemic Activity

These days, atherosclerosis, hyperlipidemia, and associated disorders are important health issues. Rats with acute hyperlipidemia caused by triton WR-1339 have lower levels of LDL-cholesterol, triglycerides, and total cholesterol when exposed to an aqueous extract of *Oregano basilicum*.^[11] A diet supplemented with 1%–2% fresh Tulsi leaves for 28 days decreased the total cholesterol levels in a research done on rabbits.^[12]

STRESS MANAGEMENT

The numerous demands and quick pace of modern life are linked to increased levels of psychological stress in addition to physical, chemical, and infectious stress. Stress exacerbates the harmful effects of chemical pollutants, and ongoing anxiety over ubiquitous hazardous chemicals can create further stress and anxiety that could be just as harmful as the chemicals generating it. Not only does regular consumption of tulasi help protect and detoxify the body's cells and organs a fact that cannot be denied it can also help reduce toxic stress by calming and relaxing the mind and providing numerous psychological benefits, such as antidepressant activity and positive effects on memory and cognitive function.

Antibacterial Activity

The antibacterial properties of the oil, alcoholic, chloroform, and aqueous extracts made from *Ocimum sanctum* leaves were investigated against *S. aureus*, *P. aeruginosa*, *S. typhimurium*, and *E. coli*. Gram-positive and gram-negative pathogenic bacteria were reported to be equally susceptible to the *O. sanctum* extract.^[13] Tulsi essential oil from fresh leaves exhibited more antibacterial qualities than that from dried leaves, while the opposite was true for fungi.^[14]

Anti – fertility activity

It has been observed that Tulsi leaf extracts in benzene and petroleum ether exhibit 80% and 60%, respectively, antifertility efficacy in female rats.^[16] It has been stated that Tulsi leaves are used for their antifertility properties by both Ayurvedic doctors and native women in Kerala.^[17] Ursolic acid, one of the main ingredients of Tulsi leaves, has been shown to have anti-fertility properties. Its anti-estrogenic action, which may be the cause of the spermatogenesis arrest in males, and its inhibitory effect on the ovum implantation in females have been linked to this effect. This ingredient has the potential to be a safe, effective anti-fertility medication. Tulsi leaves slow down sertoli cells, which reduces spermatogenesis in males.^[18]

Mosquitocidal Activity

The eugenol and triglyceride extracted from Tulsi's hexane extract were used to study the plant's ability to repel mosquitoes in fourth-instar *Aedes aegypti* larvae.^[19] The Tulsi seed exudes a mucilaginous material (polysaccharides) within an hour of being submerged in water, and any larvae that come into touch with the seeds stick to them tightly and drown.^[20]

Anti – Ulcer Activity

Aspirin, indomethacin, alcohol (ethanol 50%), histamine, reserpine, serotonin, and stress-induced ulcers in rats were all significantly inhibited by the fixed oil of OS when given intraperitoneally.^[21] Because of its lipoxigenase inhibitory, histamine antagonistic, and antisecretory properties, the fixed oil exhibited considerable antiulcer activity.^[22]

Anti Oxidant Activity

Numerous researchers have documented OS's antioxidant properties. Research has shown that flavonoids have antioxidant qualities and are related to membrane protection.^[24] Radiation-induced lipid peroxidation in mouse liver was significantly reduced by the flavonoids vicenin and orientin, demonstrating their antioxidant potential in vivo.^[23] Highly reactive free radicals can be significantly scavenged by OS extract.^[25] The OS extract of fresh leaves and stems included significant amounts of eugenol, a main component of the volatile oil, and other phenolic compounds with strong antioxidant action, including cirsilineol, cirsimaritin, isothymusin, apigenin, and rosmarinic acid.^[26]

Stress Reliving Activity

Stress is a universal occurrence that affects every person. "Non specific result of any demand upon the body" is the definition of stress. Stress comes in both bodily and psychological forms. Stress needs to be treated since it is bad for the body when it gets too bad. Numerous ailments, including psychiatric conditions like anxiety and depression, immunosuppression, endocrine conditions like diabetes mellitus, male impotence, cognitive impairment, peptic ulcer, hypertension, and ulcerative colitis, are associated with stress. Rejuvenating properties of tulsi include stress reduction, mental relaxation, and memory improvement support for the body. Tulsi has an antihypoxic action that prolongs anoxic stress survival.^[29]

Detoxification

Tulsi not only offers protection against the deterioration that some toxic substances cause, but it also helps the body convert and eliminate them more effectively by enhancing the function and mechanism of the liver detoxifying enzymes, such as some of the cytochrome P450 enzymes that deactivate and safely metabolize toxic substances.^[30]

Defence Mechanism

During the COVID-19 pandemic, when people were consuming Tulsi drops in their normal diets and meals, tulsi consumption also increased. A number of commercial goods that target maintaining a generally healthy body and naturally enhancing human immunity also become popular. *Ocimum sanctum* is crucial in helping people develop their resistance to illness. In addition to curing disorders like colds, coughs, and other serious illnesses, it also strengthens and boosts the body's immune system, preparing it to combat invading microorganisms.^[31]

DISCUSSION

There are numerous limitations to this review, which examined every English-language human clinical research on tulsi consumption alone. We cannot be certain that all studies were located, even though the review included 24 studies and minimized bias by using an independent, systematic search strategy without limiting publication year or study design. This is especially true because almost all studies were conducted in India and published in regional journals, some of which are very difficult to access or search. Unpublished studies that report adverse results can possibly exist. Furthermore, only 7 out of 24 studies could be regarded as good quality studies with tulsi, despite the fact that the evaluated studies were consistent in finding positive benefits of tulsi in humans.

CONCLUSION

Tulsi is a very significant holy basil for a longer and more serene life because of all these therapeutic components. In Hindu societies as well as other societies, it holds a great traditional importance. This little plant is undoubtedly a great source of therapeutic qualities. Tulsi is regarded as the "Queen of Herbs" because of its varied healing powers & mythological values. Tulsi offers a wide range of advantages, including scientific evidence and conventional wisdom. These studies showed that the habitual insertion. Adding *Ocimum sanctum*, usually known as Tulsi, to the menu, as well as in medications, can undoubtedly help in safeguard or demotion of diverse health settings and requires additional medical evaluation.

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