

Indian Medicinal Plants Tulsi and Its Uses

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ABSTRACT

Tulsi (*Ocimum sanctum*) Family Lamiaceae, is a native shrub to Indian subcontinent, it is cultivated all over the world. But in India it is very popular plants every one knows about it. It is also known as holy basil, hindus family is used to worshipped it, tulsi is available in every house for prayer, it is a symbol of Mata Laxmi. It has been used for thousands of years in aayurveda for its immediately healing properties. It has been used by many cultures around the world.

Tulsi is cultivated all over the india for religious and medicinal purposes. It is widely used for kadha. Tulsi can address any type of stress through a unique combination of pharmacological action. Tulsi may be protect organs and tissues against chemical stress from industrial pollutant and heavy metals or physical stress. Tulsi can be treat cold and cough. Tulsi is an aromatic plants. it is cultivated for traditional medicines and essential oils. There are three types of tulsi cultivated in India first one is Ram tulsi it is most common plant with bright green colour leaves, that are slightly sweet, second type of tulsi is krishna tulsi it's looking black steam with purplish green colour leaves, the third one is called vana tulsi, It is also called wild tulsi. Tulsi oil is also used as the ear drop. Tulsi helps in curing malaria and viral fever. It is very effective against indigestion, hysteria, headache, stress, insomnia and cholera or swine flue. The fresh leaves of Tulsi are taken by the millions of people every day. For over the centuries Tulsi (the queen of herbs) has been known for its remarkable healing properties. Modern scientific research offers impressive evidence that tulsi reduces stress, enhances stamina, relieves inflammation, lowers cholesterol, eliminates toxins, protects against radiation, prevents gastric ulcers, lower fevers, improves digestion and provides a rich supply of antioxidants and other nutrients. Tulsi leaves are used to treat skin problems like acne, blackheads and premature ageing. It is used to treat insect bites. Tulsi is especially effective in supporting the heart, blood vessels, liver and lungs and also regulates blood pressure and blood sugar. Recent studies suggest that Tulsi may be an antioxidant inhibitor, like many modern painkillers. Tulsi also shows some promise for protection from poisoning and cataracts. The oil extracted from the Karpoora. Tulsi is mostly used in the herbal toiletry. Its oil is also used against the insects and bacteria. Tulsi can not only keep the dreaded Swine flu or H1N1 flu at bay but also help in fast recovery of an afflicted person, Ayurvedic practitioners claim. "The anti-flu property of Tulsi has been discovered by medical experts across the world quite recently. Tulsi improves the body's overall defence mechanism including its ability to fight viral diseases. Tulsi is well known for its medicinal properties antibacterial, antipyretic, antifungal, antioxidant, anticancer, and antiseptic. Tulsi is able to fight viral fevers, cold and cough it is helped to improve health immunity.

1. Introduction

Tulsi is a perennial plant species of the *O. tenuiflorum* of the genus of *Ocimum*. An evergreen plant, it originates from the India, but grows wild in tropical semi tropical and different climate around the world. it is used in various cultures for treatment of various ailments. Tulsi is cultivated all kind of soils, but fairly to high rainfall areas with high humid condition is most suitable. It grows well in bright sunlight, hence high temperature is help to well growth and high oil production.

Tulsi is used in preparation of medicine since time immemorial, now days, it is used in cosmetics.

It is used in alternative medicines with more than 150 various species of tulsi. it has been popular in Indian traditional medicine for the treatment of many conditions for a long time ago.

Tulsi is an annual shrub which grows upto a height of 3-5 feet, the stems are hairy with simple toothed on entire

leaves oppositely along the stem. The leaves are light green or purple depending on the variety. Tulsi have small purple and white tubular flowers have green or purple sepals. The fruits are nutlets and holds numerous seeds. It is usually grown in gardens and in the periphery of temples. it has got a pungent taste and fragrant smell that's why it is used in various dishes. it is the only plant that can absorb carbon dioxide through-out its life, it releases the oxygen in the early morning which is beneficial for the people in breathing dis-orders. Tulsi plant has a lot of significance for mankind, due to the magical medicinal benefits. Tulsi leaves are widely used in the preparation of ayurvedic medicine.

The plant has gained immense popularity for its flavouring agents, it is used to treat skin diseases, and boosting immanue system, it helps to reduce blood sugar levels, it is very helpful for diabetics

patients. It acts as a natural fighter against all classes of infections. Tulsi extract obtained from the plant are very important and effective antioxidants that help to cure various ailments, such as wounds and boils, headache, common cold, malaria, inflammation, heart diseases, kidney stones, stomach diseases, pimples and acne etc.

Tulsi extract obtained from the plant are extensively used for curing various ailments, it is helpful to destroy mosquito and insects. There are various uses of tulsi plant, tulsi leaves are widely used for making tea, it is famous for their healing powers. Tulsi is a tonic for a nervous system thus it's great effects to sharpening memories. It is also used to treat respiratory disorders, it is used to prevent combating bronchitis, influenza and asthma.

The leaves of tulsi are extremely beneficial during rainy and winter season, when diseases like malaria, dengue and seasonal diseases spread all over the world.

2. Scientific Classification

Kingdom : Plantae
Subkingdom : Tracheobionta



Fig.1 Ram Tulsi.

The Tulsi leaves have a marked strong aroma and an astringent taste. There are some biologically active compounds like urosolic acid, luteolin and apigenin that can be extracted from the Tulsi leaves. Though it is the leaves that are usually used, the flowers, seeds and roots also find good usage. There are two main varieties of Tulsi- the dark variety or Krishna Tulsi and the light variety or Rama Tulsi. The Tulsi has also got a close cousin- the Thai Basil. This is smooth and hairless unlike the Tulsi that is slightly hairy. Besides the Thai basil has a strong aniseed or licorice smell while the Tulsi or Holy Basil has a hot and spicy flavour that is comparable to the flavour of the cloves. The plant is widely used in ayurvedic and folk medicines. It is also used as a culinary herb with pungent flavour that intensifies with cooking.

4. Other species of *Ocimum sanctum*

Ocimum monachorum L.
Geniosporum tenuiflorum (L.) Merr.
Lumnitzera tenuiflora (L.) Spreng.

Superdivision : Spermatophyta
Division : Angiosperms
Class : Eudicots
Subclass : Asteridae
Order : Lamiales
Family : Lamiaceae
Genus : *Ocimum*
Species : *O. tenuiflorum*

3. Botanical Description of Tulsi

The botanical name of Tulsi is *Ocimum sanctum*, it is found quite commonly all over the Indian sub continent. The plant can grow in the wild in the tropical and subtropical regions. It prefers fairly to high rainfall areas with high humid conditions. Long day and high temperature conditions enhance growth. The plant's height varies from 3 to 5 feet. Tulsi crop is planted in the month of April and May and it can be sown with two methods of seeds and plants. There is need for about 12 kg of seeds to cultivate it in one hectare. The flowering season is winter (December to February).



Fig.2 Krishna Tulsi.

Ocimum hirsutum Benth.
Moschosma tenuiflorum (L.) Heynh.
Ocimum anisodorum F.Muell.
Ocimum caryophyllinum F.Muell.
Ocimum inodorum Burm.f.
Ocimum scutellarioides Willd. ex Benth.
Ocimum subserratum B.Heyne ex Hook.f.
Ocimum villosum Roxb. nom. illeg.
Plectranthus monachorum (L.) Spreng.
Ocimum tomentosum Lam.

5. Medicinal Properties Of Tulsi.

Tulsi is well known for its medicinal properties, antibacterial, antifungal, antipyretic, antioxidant, anticancer, carminative, anti-inflammatory, antiseptic, stomachic, aperitif. The *Ocimum sanctum* have been studied in more than 100 of scientific studies including Vitro animals and human experiment. Tulsi is used to cure fever, tulsi leaves are used to treat various skin problems.

1. Tulsi has antiseptic properties that helps to cure wounds and boils.
2. Tulsi has phytochemical strong antioxidant properties, thus help in protecting us from skin, oral, liver, throat, and lungs cancer.
3. Tulsi has Antipyretic properties that helps to cure fever.
4. Tulsi has anti-inflammatory properties that helps to cure swelling, redness and pain.
5. Tulsi has antioxidant properties helps to reduce blood glucose levels. Thus it is useful for diabetics.
6. Tulsi has been used to treat insect bites, it is also used to treat heart diseases.
7. Tulsi reduces total cholesterol levels. Thus it is useful for heart disease patients.
8. Tulsi reduces blood pressure.
9. Tulsi is also used to prepare herbal tea. It helps in building up stamina.
10. Tulsi is slightly bitter in taste that's why it is used to treat diabetics.
11. It has been used for gastric disorders, cough, common colds, malaria, and headaches.
12. It is used as mouth wash for reducing tooth ache.
13. Tulsi oil shows larvicidal activity against malarial larva. It has immuno-modulatory properties.
14. Essential oils are used to treat various skin diseases like pimples and acne, skin infections, light dark spots and improve skin complexion.
15. Tulsi extract is used to treat cough and cold, its leaves are used to make kadha. Kadha helps to protect from various ailments and it builds immunity.

6. Chemical Constituents Of Ocimum Sanctum.

The important chemical constituents of *Ocimum sanctum* are methoxy, hydroxy, Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and β -caryophyllene, caryophyllene. These are present in the plants, consists of anti-inflammatory, antibacterial, antifungal, adaptogenic, antioxidant, immunity enhancer, tulsi can be consumed by any body for preventing diseases and ailments.

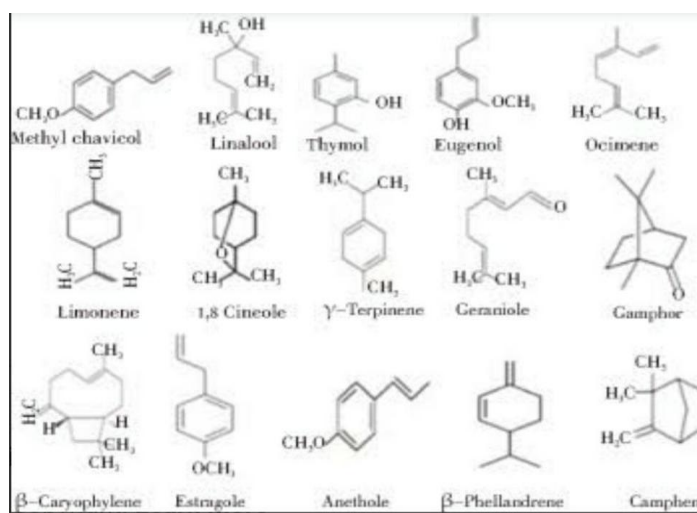


Figure.3

Methyl chavicol.

Molecular Formula: C₁₀H₁₂O

Molar mass: 148.2 g/mol

Methyl chavicol (estragole) is a natural organic compound. Its chemical structure consists of a benzene ring substituted with a methoxy group and a propenyl group.

Linalool.

Molecular Formula: C₁₀H₁₈O

Molar weight: 154.25 g/mol

Linalool contains *Coriandrum sativum*, Chinese parsley, cilantro, coriander, Citrus lemon.

Thymol.

Molecular formula: C₁₀H₁₄O

Molecular weight: 150.22 g/mol.

Thymol can be found in *Ocimum sanctum*, it is used as an antimicrobial used in mouthwashes, and nail fungus treatment.

Eugenol.

Molecular Formula: C₁₀H₁₂O₂.

Molecular weight: 164.2 g/mol.

Eugenol is also called cloves, it is found in *Ocimum sanctum*.

It is an aromatic oil extract from *Ocimum sanctum*. It is used by dentists because it has antiseptic properties that help to cure dental disorders.

Ocimene.

Molecular Formula: C₁₀H₁₆.

Molecular weight: 136.24 g/mol.

Ocimene is one of the most common monoterpenes found in nature. In the field of botanical medicine, there is an association of β -ocimene in EOs with anticonvulsant activity, antifungal activity, antitumor activity, and pest resistance.

Limonene.

Molecular formula: C₁₀H₁₆.

Molecular weight: 136.24 g/mol.

Limonene is the oil extract it is a colorless liquid aliphatic hydrocarbon classified as a cyclic monoterpene, and is the major component in the oil of *sanctum Ocimum*. It is a flavouring agent in food.

1-8cineole.

Molecular formula: C₁₀H₁₈O

Molecular weight.154.249g/mol.

1,8-Cineole (11, eucalyptol) is an achiral aromatic component of many plants, it is used in various cough syrup and, it is an ingredient of mouthwashes.

Terpinene gama.**Molecular Formula: C10H16****Molecular Weight: 136.23 g/mol.**

Terpinene gama-Terpinene and (also known as terpinolene) have been isolated from a variety of plant sources. They are all colorless liquids with a turpentine-like odor.

Geraniol.**Formula: C10H18O****Molar mass: 154.25 g/mol.**

is a monoterpenoid and an alcohol. It is the primary component of *Ocimum sanctum* essential oil, palmarosa oil, and citronella oil. It is a colorless oil, although commercial samples can appear yellow. It has low solubility in water, but it is soluble in common organic solvents.

Camphor.**Molecular formula C10H16O****Molecular weight.152.23g/mol.**

Camphor is a waxy flammable transparent solid with a strong aroma.

 β -Caryophyllene**Molecular Formula:- C15H24****Molar weight:- 204.36 g/mol**

β -caryophyllene, is a natural bicyclic sesquiterpene that is a constituent of many essential oils, especially clove oil, the oil from the stems and flowers of *Syzygium aromaticum*, the essential oil of *Cannabis sativa*, rosemary, and hops.

Estragole.**Molecular formula:- C10H12O.****Molecular weight:- 248.2g/mol.**

Estragole is a phenylpropene, a natural organic compound. Its chemical structure consists of a benzene ring substituted with a methoxy group and an allyl group. It is an isomer of anethole, differing with respect to the location of the double bond. It is a colorless liquid, although impure samples can appear yellow.

Anethole**Molecular formula:-C10H12O****Molecular weight:-148.2g/mol.**

Anethole is an organic compound that is widely used as a flavoring substance. It is a derivative of phenylpropene, a type of aromatic compound that occurs widely in nature, in essential oils.

Beta phellandrene**Molecular formula:-C10H16.****Molecular weight:-136.23g/mol.**

Phellandrene is the name for a pair of organic compounds that have a similar molecular structure and similar chemical properties.

Camphene**Molecular formula:-C10H16****Molecular weight:-136.24g/mol.**

Camphene is a bicyclic monoterpene. It is nearly insoluble in water, but very soluble in common organic solvents. It volatilizes readily at room temperature and has a pungent smell. It is produced industrially by catalytic isomerization of the more common alpha-pinene. Camphene is used in the preparation of fragrances and as a food additive for flavoring.

7. Health Benefits Of Tulsi.

- **Diabetes treatment:-** tulsi leaves is used to control lower blood glucose levels, which is used to treat diabetics ailments.
- **Good for heart:-** tulsi extract is effective in treatment of lungs or cardiovascular diseases by means of lowering blood lipid content, suppressing ischemia and stroke, reducing hypertension, and also due to its higher antioxidant properties.
- **Kidney stones treatment:-** Tulsi detoxifies the body and has diuretic properties, which is used for treating kidney stones, the juice of tulsi and honey taken regularly for some months, it will remove via urine.
- **Gastrointestinal disorders:-** Tulsi leaves extract help to cure indigestion and loss of appetite. They are also used for the treatment of flatulence and bloating.
- **Cold and Cough:-** tulsi is extremely important ingredient for cough syrup, it helps to mobilize mucus in bronchitis and asthma, chewing tulsi leaves relive cough cold and viral fever.
- **Respiratory disorders:-** tulsi is a perennial plant that helps to treat respiratory disorder. A decoction of the leaves, with honey and ginger is an effective remedy for bronchitis, asthma, influenza, cough and cold. A decoction of the leaves, cloves and common salt also gives immediate relief in case of influenza. They should be boiled in half a liter of water till only quarter third part of water is left and add and consume it.
- **Stress:-** Tulsi contains compounds Ocimunosides A and B and antistress agent. These compounds reduce stress and balance the neurotransmitters serotonin and dopamine in the brain. It purified blood, and helps prevent many of ailments. Even healthy person can consume some leaves of tulsi twice a day, to prevent stress.
- **Mouth Infections:-** tulsi leaves are quit effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions.
- **Insect Bites:-** tulsi is a prophylactic or preventive and curative for insect stings or bites. A teaspoonful of the juice of the leaves is taken and is repeated after a few hours. Fresh juice must be applied to the affected parts. A paste of fresh roots is also effective in case of bites of insects.
- **Skin Disorders:-** tulsi juice is beneficial for the treatment of ringworm and other skin diseases. It helps clear out the skin of blemishes and acne. It is rich in antioxidants, and that helps it to prevent premature ageing. It has also been tried successfully by some naturopaths in the treatment of

leucoderma. It is used to prevent the development of fungus.

- **Teeth Disorder:-** tulsi is useful in teeth disorders. Its leaves, dried in the sun light and powdered, can be used for brushing teeth. It can also be mixed with mustered oil to make a paste and used as toothpaste. This is very good for maintaining dental health, counteracting bad breath and for massaging the gums. It is also useful in pyorrhea, cavity and other teeth disorders.
- **Headaches:-** tulsi makes a good medicine for headache. A decoction of the leaves can be given for this disorder. Pounded leaves mixed with sandalwood paste can also be applied on the forehead for getting relief from heat, headache, and for providing coolness in general.
- **Natural immunity enhancer:-** tulsi extract is rich in vitamin c and zinc, thus it is act as natural immunity enhancer, and keep infections away.
- **Eye Disorders:-** tulsi juice is an effective remedy for sore eyes and night-blindness, which is generally caused by deficiency of vitamin A. Two drops of black basil juice are put into the eyes daily at bedtime that helps to solve all eyes problem.
- **Swelling of throat:-** tulsi leaves is boiled with water with add some black pepper seeds, it can be taken as drink to cure swelling of throat.

8. Tulsi used In Therapy

Tulsi is called the wonder herb or sometimes the holy herb because of its medicinal properties. There are many diseases that can affect people again after it has left the person. But with the consumption of Tulsi, you can be sure that these diseases cannot affect you. Here are some of the ways in which tulsi can sort out many medical problems

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Tulsi is also used to treat respiratory problems
Tulsi is used to cure fever, common cold and sore throat, headaches and kidney stones

Tulsi helps in treating Asthma.

Tulsi can cure fever

Tulsi leaves are used to treat skin problems like acne, blackheads and premature ageing.

Tulsi is used to treat insect bites

Tulsi is also used to treat heart disease and fever.

Tulsi is used to treat all types of stress.

In simple language, *Ocimum sanctum* is the best natural painkillers, and health tonic. It is helpful to generate milk in new mother, last but not least it is a solutions of many problems.

9. Side Effects Of Tulsi.

Holy basil contains eugenol, over dose of eugenol is affected to the liver, it may be damaged the liver. Another side effects is if someone eat tulsi regularly teeth stain is occurs.

Women who are pregnant or trying to get pregnant should not take tulsi as it may affect reproductive capacity, possibly due to its ursolic acid content. Tulsi may increase testosterone levels.

10. Conclusion.

Tulsi is a small plant, it is a very good source of medicinal properties, it is safe to consume in any form. Tulsi is called queen of herb. It has been used for treating many kinds of diseases and ailments. Tulsi is used for medicine as well as cosmetics products. Its extract is an immune booster, it has wounds healing properties that can be able to cure wounds, immediately.

Present reviews shows, that various studies and research is done in the field of medical science, but *sanctum Ocimum* used in allopathic medicine is still limited, because it need more clinical trials on human being.

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