



# A Review Paper on Tulsi Plant (*Ocimum sanctum* L.)

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## ABSTRACT

Tulsi (*Ocimum sanctum* L.), holy basil, is indigenous to the Indian mainland and profoundly respected for its restorative uses inside the Ayurvedic and Siddha clinical frameworks. Numerous in vitro, creature and human investigations bear witness to tulsi having different restorative activities including adaptogenic, antimicrobial, calming, cardioprotective, and immunomodulatory impacts, yet to date there are no precise surveys of human research on tulsi's clinical adequacy and security. I directed a complete writing audit of human examinations that gave an account of a clinical result after ingestion of tulsi. I scanned for examines distributed in books, theories, meeting procedures, and electronic databases including Cochrane Library, Google Scholar, Embase, Medline, PubMed, Science Direct, and Indian Medical databases. An aggregate of 24 examinations were distinguished that announced restorative consequences for metabolic disarranges, cardiovascular malady, resistance, and neurocognition. All investigations detailed ideal clinical results without any examinations revealing any noteworthy antagonistic occasions. The explored examinations strengthen customary uses and propose tulsi is a viable treatment for way of life related constant maladies including diabetes, metabolic condition, and mental pressure. Further examinations are required to investigate instruments of activity, explain the dose and portion structure, and decide the populaces well on the way to profit by tulsi's helpful impacts.

**Key words:** *Antioxidant, Anti inflammatory, Anti bacterial, Cough and Cold, Tulsi*

## INTRODUCTION

Tulsi (*Ocimum sanctum* L.) in Hindi or Tulasi in Sanskrit (holy basil in English) is an exceptionally adored culinary and restorative fragrant herb from the family Lamiaceae that is indigenous to the Indian subcontinent and been utilized inside Ayurvedic medication over 3000

years. In the Ayurveda framework tulsi is frequently alluded to as a "Solution of Life" for its mending powers and has been known to treat a wide range of basic wellbeing conditions. In the Indian Materia Medica tulsi leaf separates are portrayed for treatment of bronchitis, ailment and pyrexia. It is viewed as a pervasive plant in India. It is a fragrant plant in the family lamiaceae. It is an erect, much stretched sub bush 30-60cm tall with furry stems and basic inverse green leaves that are unequivocally scented. Tulsi assumes a crucial job in our regular daily existence and is supposed to be the sovereign of natural plants. It is the most well-known family plant in India and it is hallowed in Hindu custom. Numerous Hindu legends clarify the significance, properties and employments of tulsi. Tulsi is an erect pleasant smelling bush which develops upto a stature of 3 - 5 feet. It is ordinarily developed in gardens and in the outskirts of sanctuaries. it has an impactful taste and fragrant smell. It is the main plant that can retain carbon dioxide for a mind-blowing duration. It discharges the oxygen in the early morning which is useful for the individuals in breathing disorders.

Tulsi plant has a great deal of essentialness for humankind, because of the complex restorative advantages it gives. Tulsi leaves are broadly utilized in the readiness of Ayurvedic prescriptions. It is known to advance the life span of life. The extricates acquired from the plant are widely brought to use for relieving different illnesses, for example, the basic cold, irritation, intestinal sickness, coronary illness, migraines, stomach issue, kidney stones, heart issue, and some more. The Indian basil Tulsi additionally helps in the decontamination of environment. Tulsi plant fills in as a marvelous repellent in battling against flies, mosquitoes and creepy crawlies (Warrier 1995). It is particularly significant in fighting malarial fever. It is said that at the hour of foundation of Victoria cultivates in Bombay (presently Mumbai), the laborers became survivors of mosquito nibbles and experienced interminable jungle fever. Seeing the pitiable circumstance of the laborers, a portion of the Hindu supervisors suggested the manor of Tulsi plant in the nursery. On following their recommendation, productive outcomes were gotten.

Accordingly, sacred basil Tulsi assisted with subsiding the development of mosquitoes and control intestinal sickness. There are various employments of Tulsi plant. The plant is progressively discovering its way in the Ayurvedic treatment of infections. Tulsi leaves are broadly utilized because of their recuperating power. It is a tonic for the sensory system and in this manner helps a lot in honing the memory. This fragrant plant underpins the evacuation of mucus and catarrhal issue from the bronchial cylinder. It additionally does something amazing in forestalling stomach issue. The herb Tulsi is known to fix the respiratory issue. The decoction arranged by blending nectar, ginger and Tulsi leaves is very useful in fighting bronchitis, flu and asthma. The leaves of Tulsi plant are amazingly valuable during the blustery season, when infections like jungle

fever and dengue defraud the nation. Heat up the delicate leaves of Tulsi tea and offer it to the patient. The juice separated from Tulsi leaves fills in as the best solution for cut down fever. Tulsi is a fundamental fixing in the planning of Ayurvedic hack syrups. It is exceptionally valuable in disposing of cold and influenza.

Indeed, for sore throat, the leaves of therapeutic plant Tulsi is of extraordinary worth. Simply heat up the leaves of Tulsi in water and request that the patient swish with this decoction. Tulsi can reinforce the kidneys. For those experiencing the issue of renal kidney stones, the decoction arranged by blending the juice of Tulsi leaves with nectar, whenever taken truly for six successive months can remove these stones through the urinary tract. For keeping up solid heart, Tulsi is of most extreme worth. It helps in bringing down the degree of cholesterol in blood. Consequently, Tulsi plant fills in as the best solution for dispose of cardiovascular maladies (Gordon and David , 2001).

### **Medicinal Properties**

Basil is antispasmodic, appetizer, carminative, galactagogue, and stomachic. It is used for stomach cramps, gastric catarrh, vomiting, intestinal catarrh, constipation, and enteritis. It had been sometimes used for whooping cough as an antispasmodic. Tulsi has antioxidant properties and reduces blood glucose levels. Thus it is useful for diabetics. 2. Tulsi reduces total cholesterol levels. Thus it is useful for heart disease patients.3.Tulsi reduces blood pressure.

### **Health benefits of tulsi in our daily life**

The tulsi plant has many medicinal properties. The leaves are a nerve tonic and also sharpen memory. They promote the removal of the catarrhal matter and phlegm from the bronchial tube. The leaves strengthen the stomach and induce copious perspiration. The seed of the plant are mucilaginous. Fever and Common Cold: The leaves of basil are specific for many fevers. During the rainy season, when malaria and dengue fever are widely prevalent, tender leaves, boiled with tea, act as preventive against theses diseases. In case of acute fevers, a decoction of the leaves boiled with powdered cardamom in half a litre of water and mixed with sugar and milk brings down the temperature. The juice of tulsi leaves can be used to bring down fever. Extract of tulsi leaves in fresh water should be given every 2-3hrs (Kothari et.al, 2008).

### **Respiratory Disorders**

Tulsi is an important constituent of many Ayurvedic cough syrups and expectorants. It helps to mobilize mucus in bronchitis and asthma. Chewing tulsi leaves relieves cold and flu (Staples et.al, 1999). Water boiled with basil leaves can be taken as drink in case of sore throat. This water

can be used as a gargle (Kuhn et.al, 2007).The herb is useful in the treatment of respiratory system 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 litre of water till only half the water is left and add then taken (Puri et al, 2002).

### **Kidney Stone**

Basil has strengthening effect on the kidney. In case of renal stone the juice of basil leaves and honey, if taken regularly for 6 months it will expel them via the urinary tract (Biswas and Biswas, 2001).

### **Heart Disorders**

Basil has a beneficial effect in cardiac disease and the weakness resulting from them. It reduces the level of blood cholesterol (Jyoti et.al, 2004).

### **Children's Ailments**

Common pediatric problems like cough cold, fever, diarrhea and vomiting respond favorably to the juice of basil leaves. If pustules of chicken pox delay their appearance, basil leaves taken with saffron will hasten them (Devi et al, 1999).

### **Stress and Headaches**

Basil leaves are regarded as an 'adaptogen' or anti-stress agent. Recent studies have shown that the leaves afford significant protection against stress. Even healthy persons can chew 12 leaves of basil, twice a day, to prevent stress. It purifies blood and helps prevent several common elements. Basil 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.

### **Eye Disorders**

Basil 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.

### **Mouth Infections**

The leaves are quit effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions.

## **Insect Bites**

The herb 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 also be applied to the affected parts. A paste of fresh roots is also effective in case of bites of insects and leeches (Sharma et.al. 1998).

## **Skin Disorders**

Applied locally, basil juice is beneficial in the treatment of ringworm and other skin diseases. It has also been tried successfully by some naturopaths in the treatment of leucoderma.

## **Teeth Disorder**

The herb is useful in teeth disorders. Its leaves, dried in the sun 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 and other teeth disorders

## **Tulsi used as Traditional Indian Ayurvedic Medicine**

According to Organic India, an organization dedicated to organic agriculture and sustainable development, one of the qualities that make the Tulsi plant such a potent medicinal herb is its ability to reduce stress. Tulsi is abundant in essential oils and antioxidants, which are tremendously effective in reducing the effect of stress, on the body. Tulsi has got diverse healing properties. Though traditionally used by Hindus or Indians now others are using it too recognizing its immense therapeutic properties. The Tulsi has the property of acting as an adaptogen. It balances different processes in the body and is of great help in stress management. The extracts of Tulsi have been used in traditional Indian Ayurvedic system of medicine. It is also used in the Unani system of medicine. Ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, infections, heart disease, poisoning, cataracts and malaria make use of the Tulsi. The Tulsi acts on the nervous system and strengthens it. It strengthens the heart. It acts as an appetizer and promotes digestion too. It facilitates the secretion of digestive enzymes and prevents flatulence. Having detoxifying properties the Tulsi purifies blood of any toxins that might be present in it. Tulsi may well provide protection from radiation poisoning. It has also been indicated that Tulsi possesses anti cancerous properties. There has come up a belief that a Tulsi leaf swallowed daily will ensure protection from cancer. Apart from its religious significance it is of great medicinal significance, and is a prime herb in Ayurvedic treatment. Marked by its strong aroma and a stringent taste, tulsi is a kind of "the elixir of life" as it promotes longevity. The plant's

extracts can be used to prevent and cure many illnesses and common ailments like common cold, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning and malaria. Essential oil extracted from karpooira tulsi is mostly used for medicinal purposes though of late it is used in the manufacture of herbal toiletry. The Plant Cultures project of the Medicines and Healthcare Products Regulatory Agency (MHRA) of the United Kingdom notes that in Ayurvedic medicine the Tulsi plant has been used topically for skin conditions like eczema, ringworm and insect bites. It is also commonly used to reduce fevers, improve lung and digestion issue reduce the effects of colds, eliminate toxins/poisons and as a preventative antibacterial for infections.

### **Tulsi in Modern Medicine**

In modern medicine there has been research indicating Tulsi might potentially be an effective treatment for conditions like ulcers, high cholesterol, Type 2 diabetes, obesity and compromised/suppressed immune systems (from conditions like cancers and AIDS). Plant Cultures says the traditional uses of Tulsi in Ayurveda might be due to some intrinsic properties in many varieties of Tulsi--such as the essential oils containing an anti-inflammatory compound called eugenol, and various acids with antioxidant and anti-inflammatory properties that could support the claims of Tulsi being a treatment for so many conditions, according to Ayurveda. Tulsi in your home: The Tulsi plant, like most herbs, is a delicious way to enhance the flavor of your cooking, or make an excellent tea. This sub-shrub looks quite attractive in a decorative pot, is not harmful to animals and it is fairly easy to grow. Even outside of its medicinal properties, the Tulsi plant can make a great addition to your household either in your spice rack or in your garden. Diabetes-- Western medicine: According to diabeteshealth.com, "Researchers have theorized that holy basil (tulsi) leaves may improve pancreatic beta cell function and thus enhance insulin secretion." The website reports that a small research study of patients with type 2 diabetes found blood glucose fasting levels lower in patients who took 2.5 grams of powdered tulsi compared to patients who took a placebo. Diabeteshealth.com reports that drug interactions with tulsi have not been reported; however, some interactions might be possible in "diabetics treated with insulin or insulin secretagogues such as sulfonylurea (glyburide, glipizide, Amaryl), Prandin or Starlix." Because of this, diabetics who might consider using tulsi should check with their physicians first.

**Natural Medicinal Uses-:** Sidha, Unani and Ayurvedic medicine use tulsi to treat a wide variety of skin conditions, fevers, coughs and internal ailments. Ayurvedic medicine treats bronchitis with a liquid tonic made from tulsi leaves, which Indians mix with cardamom or lemon juice. All three medicinal systems date to ancient times and are based on natural remedies and treatments, primarily based on herbs and plants.

## Snake and Insect Bites

According to Plantcultures.org, oil from tulsi is a natural antiseptic and natural anti-inflammatory. According to Botanical.com, tulsi effectively treats snake bites, including those of poisonous snakes, when all parts of the plant are either ingested or mixed with other plants to form a paste that is applied to the bite area. Residents of the Asian subcontinent often put tulsi leaves into bowls of water outside their homes and in their bath water to ward off insects, which do not like the smell.

## Nutrition Value

Contains vitamin C and A, and minerals like calcium, zinc and iron, as well as chlorophyll and many other phytonutrients. Also enhances the efficient digestion, absorption and use of nutrients from food and other herbs. Protein: 30 Kcal, 4.2 g; Fat: 0.5 g; Carbohydrate 2.3 g; Calcium: 25 mg; Phosphorus 287 mg; Iron: 15.1 mg and Edible portion 25 mg vitamin C per 100 g.

## Phytochemical Constituents

The chemical composition of Tulsi is highly complex, containing many nutrients and other biologically active compounds, the proportions of which may vary considerably between strains and even among plants within the same field. Furthermore, the quantity of many of these constituents is significantly affected by differing growing, harvesting, processing and storage conditions that are not yet well understood.

The nutritional and pharmacological properties of the whole herb in its natural form, as it has been traditionally used, result from synergistic interactions of many different active phytochemicals. Consequently, the overall effects of Tulsi cannot be fully duplicated with isolated compounds or extracts. Because of its inherent botanical and biochemical complexity, Tulsi standardization has, so far, eluded modern science. The leaf volatile oil contains eugenol (1-hydroxy-2-methoxy-4-allylbenzene), euginal (also called eugenic acid), urosolic acid (2,3,4,5,6,6a,7,8,8a,,10,11,12,13,14b-tetradecahydro-1H-picene-4a-carboxylic acid ), carvacrol (5-isopropyl-2- methylphenol), linalool (3,7-dimethylocta-1,6-dien-3-ol), limatrol, caryophyllene (4,11,11-trimethyl-8-methylene-bicyclo[7.2.0]undec-4-ene), methyl carvicol (also called Estragol: 1-allyl-4-methoxybenzene) while the seed volatile oil have fatty acids and sitosterol; in addition, the seed mucilage contains some levels of sugars and the anthocyanins are present in green leaves. The sugars are composed of xylose and polysaccharides. Although Tulsi is known as a general vitalizer and increases physical endurance, it contains no caffeine or other stimulants. The stem

and leaves of holy basil contain a variety of constituents that may have biological activity, including saponins, flavonoids, triterpenoids, and tannins. In addition, the following phenolic actives have been identified, which also exhibit antioxidant and anti-inflammatory activities, Rosmarinic acid ((2R)-2-[[[(2E)-3-(3,4-Dihydroxyphenyl)-1-oxo-2-propenyl]]oxy]-3-(3,4-dihydroxyphenyl) propanoic acid), apigenin (5,7-dihydroxy-2-(4-hydroxyphenyl)-4H-1-benzopyran-4-on), cirsimaritin (5,4'-dihydroxy-6,7-dimethoxyflavone), isothymusin (6,7-dimethoxy-5,8,4'-trihydroxyflavone) and isothymonin. Two water-soluble flavonoids: Orientin (8-C-beta-glucopyranosyl-3',4',5,7-tetrahydroxyflav-2-en-3-one) and Vicenin (6-C-beta-D-xylopyranosyl-8-C-beta-D-glucopyranosyl apigenin), have shown to provide protection against radiation-induced chromosomal damage in human blood lymphocytes (Claus et al, 2003).

**Antioxidant** - Polyphenol Rosmarinic acid present in the Tulsi chemical composition acts as the powerful antioxidant. It protects the cells in the body from smash up due to the presence of free radicals. Excess of oxidation in the body also causes the cell damage. This acid prevents the formation of excess oxidation (Simoons and Frederick 1998).

**Antibacterial** – Carvacrol and terpene are the antibacterial agents present in this remarkable plant. Sesquiterpene B-caryophyllene also serves the same purpose. This constituent is FDA approved food additive which is naturally present in Tulsi. It helps keeping the body safe from bacterium that causes illness. Anti-inflammatory - Rosmarinic acid also is a good source of anti-inflammatory along with being an antioxidant. Pegenin is one more compound available in the composition serving the same function. Apart from these two, the most important anti-inflammatory driving force in Tulsi is 'eugenol'. It is main ingredient responsible for controlling the blood sugar levels in the body. It rigs the beta cell function of the pancreas and as a result augments the insulin secretion.

**Adaptogenic** – Tulsi is ideal source of adaptogenic properties that controls the frequent mood swings and provide the mental peace and clarity. Eugenol and caryophyllene are the most imperative adaptogen agents present in the chemical formula of Tulsi. These are very effective in lowering the corticosterone levels that are main cause of stress. It also enhances the memory and minimizes the risk of mental problems that occur due to growing age. Ursolic acid and oleanolic acid also perform the same function of adaptogen and are very effectual in dropping the stress levels (Gavin 2001).

**Immuno-modulator** – It is very vital to have some immuno-modulator in the body that stabilizes, recovers and maintains the proper balanced functioning of the immune system. Tulsi possess excellent immune-enhancing properties that prepare the body against foreign elements like

bacteria, viruses, microbes, allergens etc. Thus, it maintains the overall balance in the body (Chatterjee 2001).

## CONCLUSION

All these restorative fixings make Tulsi an unquestionable requirement have for more and serene life. This little plant is unquestionably an excellent wellspring of restorative properties. After top to bottom and thorough research it has been demonstrated and ensured that it is sheltered to devour Tulsi in any structure. All these medicinal properties are all around acknowledged and respected by present day science. Tulsi is the herb that fixes the humankind from all chances normally in the present shallow not very great way of life. It is considered as India's sovereign of herbs. They are to a great extent utilized in ayurvedic medicines. It has restorative properties just as corrective properties. Tulsi is developed in practically all Indian homes. Water overflowed with tulsi leaves is useful for sore throat. It can likewise be swished. Biting tulsi leaves treats cold and flu. Tulsi leaf when eaten in the first part of the day filters blood. It tends to be utilized as tooth powder by drying its leaves and blended in with water. It helps in securing the whole respiratory tract. It has numerous corrective properties and utilized in home grown cleanser and furthermore for body scour. It helps in controlling dandruff. Tulsi oil can be utilized for controlling dandruff. It tends to be utilized by blending in with coconut oil. Tulsi leaves squeeze and ginger juice fixes stomach throb, cramps and furthermore gets alleviation from stomach worms.

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