

# An Analysis of the Tulsi Plant (*Ocimum sanctum* L.)

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**Abstract:** Native to the Indian subcontinent, Tulsi (*Ocimum sanctum* L.), sometimes known as holly basil, is highly esteemed for its curative properties within the Ayurvedic and Siddha therapeutic frameworks. Several *in vitro*, animal, and human studies have documented tulsi's various restorative properties, such as adaptogenic, antimicrobial, sedative, cardioprotective, and immunomodulatory effects; however, there are currently no comprehensive reviews of human studies regarding tulsi's clinical suitability and safety. I oversaw a thorough written audit of human examinations that provided a description of a clinical outcome following tulsi consumption. I searched electronic resources such as the Cochrane Library, Google Scholar, Embase, Medline, PubMed, Science Direct, and Indian Medical databases, as well as books, theories, conference protocols, and other materials for examinations. A total of 24 tests were identified that revealed beneficial effects for metabolic disorders, cardiovascular disease, resistance, and neurocognition. Every study reported perfect clinical outcomes, and no tests found any significant antagonistic events. The investigated studies support traditional applications and suggest tulsi is a potential treatment for lifestyle-related chronic illnesses such as diabetes, metabolic syndrome, and high blood pressure. More research is needed to determine the population's readiness to benefit from tulsi's beneficial effects, clarify dosage and portion structure, and look at the activity's instruments.

**Keywords:** Antioxidant, Anti-inflammatory, Anti-bacterial, Coughand Cold, Tulsi

## I. INTRODUCTION

Tulsi (*Ocimum sanctum* L.), also known as Tulasi in Sanskrit (holy basil in English), is a highly prized culinary and medicinal herb belonging to the Lamiaceae family. It is native to the Indian subcontinent and has been used in Ayurvedic medicine for more than three millennia. Tulsi is recognized to treat a wide range of common health issues and is often referred to as a "Solution of Life" in the Ayurvedic framework because of its healing properties. Tulsi leaf separates are described as a remedy for pyrexia, illness, and bronchitis in the Indian Materia Medica. In India, it's considered to be a common plant. It belongs to the Lamiaceae family of fragrant plants. It is a 30–60 cm tall, erect, much-stretched sub bush with fuzzy stems and simple, inversely green, strongly perfumed leaves. Tulsi is considered to be the queen of natural plants and plays a significant role in our day-to-day lives. It is the most popular family plant in India, and Hindu tradition regards it as sacred. Several Hindu myths explain the meaning, qualities, and uses of tulsi. Because of its many intricate medicinal benefits, the tulsi plant is extremely valuable to humankind. Tulsi leaves are often used in Ayurvedic medicine preparation.

It has been demonstrated to lengthen life expectancy. The plant's extracts are commonly used to treat a variety of ailments, including the common cold, irritability, intestinal illness, heart disease, headaches, stomach problems, kidney stones, heart problems, and more. It is very important in the fight against malaria. They were followed, and positive results were obtained. As a result, holy basil tulsi helped to prevent intestinal illness and slow the growth of mosquitoes. The Tulsi plant is used for many different purposes. Plants are gradually making their way into Ayurvedic medicine to cure illnesses. Tulsi leaves are often used for their restorative properties. It works as a tonic for the senses, which makes it very beneficial for improving memory. This aromatic plant supports clearing the bronchial cylinder of mucus and catarrhal issues.

It also performs a fantastic job of preventing stomach problems. Tulsi herb is well renowned for curing respiratory problems. The concoction made by mixing honey, ginger, and Tulsi leaves is excellent for treating asthma, the flu, and bronchitis. When diseases like dengue and jungle fever rob the country, Tulsi leaves become extremely essential in the windy season. Warm the delicate Tulsi tea leaves and present them to the patient. The finest remedy for reducing fever

is the juice extracted from tulsi plants. An essential ingredient in the formulation of Ayurvedic cough syrups is tulsi. It is very beneficial for treating colds and influenza.

**Medicinal Properties:** Basil has carminative, galactagogue, appetizer, stomachic, and antispasmodic properties. Constipation, intestinal catarrh, vomiting, stomach cramps, and enteritis are among the conditions for which it is used. It had occasionally been used as an antispasmodic for whooping cough. Tulsi lowers blood sugar levels and possesses antioxidant qualities. Thus, diabetics can benefit from it. Total cholesterol is lowered by tulsi. Thus, people with heart problems can benefit from it. Blood pressure is lowered with tulsi.

**Health benefits of tulsi in our daily life:** The tulsi plant is a multipurpose herb. The leaves improve memory and are a nerve tonic. The leaves help the stomach and cause a lot of sweating. The plant produces mucilaginous seeds.

**Fever and Common Cold:** Basil leaves provide special benefits for numerous fevers. Tender leaves boiled in tea can protect against malaria and dengue fever during the rainy season, when these illnesses are most common. When boiled with powdered cardamom in half a liter of water, the leaves can be decocted and combined with sugar and milk to lower fevers. Fever can be reduced by using tulsi leaf juice. Every two to three hours, tulsi leaf extract in fresh water should be administered (Kothari et al., 2008).

**Respiratory Disorders:** An essential ingredient in a lot of Ayurvedic cough syrups and expectorants is tulsi. It aids in the mobilization of mucus in asthma and bronchitis. Tulsi leaves can be chewed to treat the flu and cold (Staples et al., 1999). For a sore throat, you can sip boiling water with basil leaves. You can gargle with this water (Kuhn et al., 2007). The herb can be used to treat disorders of the respiratory system. Bronchitis, asthma, influenza, coughing, and colds can all be effectively treated with a decoction of the leaves made with honey and ginger. When someone has the flu, a decoction made of the leaves, cloves, and regular salt also provides fast relief. According to Puri et al. (2002), they should be cooked in half a liter of water until only half of the water remains.

**Kidney Stone:** The kidneys are strengthened by the effects of basil. If taken consistently for six months, the juice of basil leaves and honey will help the urinary tract eliminate kidney stones (Biswas and Biswas, 2001).

**Heart Disorders:** Basil can help with heart disease and the weakness that comes with it. Blood cholesterol levels are lowered by it. (Jyoti et al., 2004).

**Children's Ailments:** Basil leaf juice works well for common pediatric issues like fever, diarrhea, vomiting, and coughing colds. Taking basil leaves with saffron can speed up the formation of chicken pox pustules if they are delayed (Devi et al, 1999).

**Stress and Headaches:** Basil leaves are considered an anti-stress agent, or "adaptogen." According to recent research, the leaves provide a considerable level of stress protection. Chewing 12 leaves of basil twice a day can help reduce stress in even healthy individuals. It helps avoid certain common elements and purifies blood. An effective headache medication is made from basil. For this disease, a decoction of the leaves may be administered. Additionally, mashed leaves combined with sandalwood paste can be applied to the forehead to relieve headaches, reduce heat, and promote general coolness.

**Eye Disorders:** A vitamin A deficiency is typically the cause of night blindness, which can be effectively treated with basil juice. Every night before bed, two drops of black basil juice are applied to the eyes.

**Mouth Infections:** When it comes to mouth infections and ulcers, the leaves are highly efficient. Chewing on a few leaves can treat these ailments.

**Skin Disorders:** When applied locally, ringworm and other skin conditions can be effectively treated with basil juice. Certain naturopaths have also effectively used it to treat leukoderma.

**Disorder of Teeth:** Teeth diseases can benefit from the plant. It can also be used as toothpaste by combining it with mustered oil to form a paste. This works wonders for massaging the gums, preventing bad breath, and preserving oral health. Additionally, it helps with other dental conditions including pyorrhea.

**Tulsi used as Traditional Indian Ayurvedic Medicine:** Stress-reduction is one of the features that make the Tulsi plant such a powerful medical herb, according to Organic India, an organization devoted to organic agriculture and sustainable development. Antioxidants and essential oils found in abundance in tulsi are incredibly powerful at lessening the negative effects of stress on the body.

Tulsi provides a variety of therapeutic benefits. Despite being used exclusively by Hindus or Indians in the past, other people are now taking it due to its enormous therapeutic benefits. One of tulsi's qualities is that it functions as an

adaptogen. It helps a lot with stress management and regulates many bodily systems. The old Indian Ayurvedic medical system has made use of Tulsi extracts. Additionally, the Unani medical system makes use of it. Tulsi is used in Ayurvedic treatments for heart illness, poisoning, malaria, headaches, stomach problems, inflammation, infections, and cataracts. Tulsi enhances and influences the nervous system. It makes the heart stronger. It aids with digestion and serves as an appetizer. It reduces flatulence and promotes the release of digestive enzymes. Tulsi's detoxifying qualities enable it to remove any toxins that may be in the blood. It's possible that tulsi can guard against radiation poisoning. Additionally, there have been indications that Tulsi has anti-cancer effects.

**Tulsi in Modern Medicine:** Research in contemporary medicine has suggested that Tulsi may be useful in treating diseases such as ulcers, high cholesterol, Type 2 diabetes, obesity, and weakened or suppressed immune systems (caused by diseases like cancer and AIDS). According to Plant Cultures, the many varieties of Tulsi have intrinsic properties that may account for their traditional uses in Ayurveda. These properties include essential oils that contain the anti-inflammatory compound eugenol and various acids that have anti-inflammatory and antioxidant qualities. These properties may help to explain why Ayurveda claims that Tulsi can treat a wide range of conditions.

**Natural Medicinal Uses:** Tulsi is used in Sidha, Unani, and Ayurvedic medicine to treat a broad range of skin disorders, fevers, coughs, and internal illnesses. Indians use cardamom or lemon juice with tulsi leaves to make a liquid tonic that is used in Ayurvedic medicine to cure bronchitis. All three of the traditional medical systems are rooted in natural healing methods, mostly utilizing plants and herbs. They are all very old.

**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, 4.2g; Fat: 0.5 g; Carbohydrate 2.3g; Calcium: 25mg; Phosphorus 287mg; Iron: 15.1mg and Edible portion 25 mg vitamin C per 100g.

**Phytochemical Constituents:** Synergistic interactions between numerous active phytochemicals provide the whole herb its nutritional and pharmacological qualities when consumed in its natural state, as it has been traditionally utilized. As such, individual components or extracts are unable to completely replicate the entire effects of Tulsi. Tulsi's natural botanical and biochemical complexity has prevented contemporary science from standardizing the plant up until this point. Eugenol (1-hydroxy-2-methoxy-4-allylbenzene), eugenol (also known as eugenol acid), ursolic acid, carvacrol

(5-isopropyl-2-methylphenol), linalool, limonene, methyl chavicol (also called Estragol) and sitosterol are present in the leaf volatile oil.

Polysaccharides and xylose make up the sugars. Despite its reputation as a general vitalizer and its ability to boost athletic endurance, tulsi doesn't contain caffeine or other stimulants. Holy basil has a range of compounds, including saponins, flavonoids, triterpenoids, and tannins, that may have biological activity in the stem and leaves. Moreover, the following phenolic actives have been found to have anti-inflammatory and antioxidant properties: rosmarinic acid-3-(3,4-dihydroxyphenyl) propanoic acid, cirsimaritin (5,4'-dihydroxy-6,7-dimethoxyflavone), isothymusin (6,7-dimethoxy-5,8,4'-trihydroxyflavone), and isothymonin. In human blood cells, it has been demonstrated that 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), offer protection against chromosomal damage caused by radiation (Claus et al., 2003). Antioxidant: Tulsi's chemical makeup contains the polyphenol rosmarinic acid, which has potent antioxidant properties. It shields the body's cells from disintegrating because free radicals are present. Cell damage is also brought on by the body's excessive oxidation. Excess oxidation cannot form because of this acid (Simoons and Frederick 1998).

**Antibacterial** – This amazing plant has two antibacterial agents: terpene and carvacrol. This ingredient, which is found naturally in tulsi, is a food additive permitted by the FDA. It aids in protecting the body against disease-causing bacteria. Anti-inflammatory: In addition to being an excellent antioxidant, rosmarinic acid also has anti-inflammatory properties. Another substance in the mixture that has the same purpose is pegenin. Other than these two, "eugenol" is the primary anti-inflammatory component of tulsi. It is the primary component in charge of regulating the body's blood sugar levels. It increases insulin secretion by manipulating the pancreatic beta cell activity.

**Adaptogenic:** Terpene and carvacrol are the two antibacterial components of this incredible plant. Sesquiterpene B-caryophyllene also fails to achieve the same goal. This component is approved by the FDA as a food additive and is

naturally occurring in tulsi. It helps shield the body from microorganisms that cause illness. Inflammatory-reducing: Rosmarinic acid is a great antioxidant that also has anti-inflammatory qualities. Apart from these two, the main anti-inflammatory ingredient in tulsi is "eugenol". It is the main element responsible for controlling blood sugar levels in the body. By adjusting the activity of the pancreatic beta cells, it raises the release of insulin.

**Immuno-modulator:** The body needs some sort of immuno-modulator to regulate, heal, and sustain the immune system's healthy, balanced operation. Excellent immune-boosting qualities of tulsi help the body fight against foreign substances such as bacteria, viruses, germs, allergies, etc.

Consequently, it keeps the body's general equilibrium intact (Chatterjee 2001).

## II. CONCLUSION

Tulsi is an indispensable ingredient for a more contented and peaceful existence because of all these healing properties. Without a doubt, this small plant is a fantastic source of healing qualities. It has been proven and confirmed after extensive research that Tulsi may be safely consumed in any kind of building. Modern science has universally acknowledged and respected each of these therapeutic qualities. The herb tulsi is what keeps humanity afloat in the current shallow and unsatisfactory manner of existence. It is regarded as the royal herb of India. They have a significant role in Ayurvedic medicine. It possesses both remedial and restorative qualities. In almost every Indian home, tulsi is grown. Treat a sore throat using water that has been infused with tulsi leaves. It can also be wished upon. Tulsi leaf is used to cure colds and the flu. When consumed in the morning, tulsi leaves purify blood. The leaves are usually dried and then mixed with water to make tooth powder. It aids in protecting the respiratory system as a whole. It is used as a body scrub and in homegrown cleanser due of its many restorative qualities. It aids in dandruff management. Dandruff can be managed with the help of tulsi oil. It is usually used by mixing it with coconut oil. Squeezed tulsi leaves with ginger juice relieves cramps and throbs in the stomach, as well as stomach worms.

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