

# Review on clinical efficacy and safety of tulsi in human

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**Abstract-** Tulsi also known as holy basil, is indigenous to the Indian continent and highly revered for its medicinal uses within the Ayurvedic and Siddha medical systems. Many in vitro, animal and human studies attest to tulsi having multiple therapeutic actions including adaptogenic, antimicrobial, anti-inflammatory, cardioprotective and immunomodulatory effects, yet to date there are no systematic reviews of human research on tulsi's clinical efficacy and safety. We conducted a comprehensive literature review of human studies that reported on a clinical outcome after ingestion of tulsi. We searched for studies published in books, theses, conference proceedings as well as electronic databases including Cochrane Library, Google Scholar, Embase, Medline, PubMed, Science Direct and Indian Medical databases. A total of 24 studies were identified that reported therapeutic effects on metabolic disorders, cardiovascular disease, immunity and neurocognition. All studies reported favourable clinical outcomes with no studies reporting any significant adverse events. The reviewed studies reinforce traditional uses and suggest tulsi is an effective treatment for lifestyle-related chronic diseases including diabetes, metabolic syndrome and psychological stress. Further studies are required to explore mechanisms of action, clarify the dosage and dose form, and determine the populations most likely to benefit from tulsi's therapeutic effects.

**Keywords:** Tulsi, clinical studies, review, efficacy, safety.

## INTRODUCTION:

Tulsi in Hindi or Tulasi in Sanskrit (holy basil in English) is a highly revered culinary and medicinal aromatic herb from the family Lamiaceae that is indigenous to the Indian subcontinent and been used within Ayurvedic medicine more than 3000 years. In the Ayurveda system tulsi is often referred to as an "Elixir of Life" for its healing powers and has been known to treat many different common health conditions. In the Indian Materia Medica tulsi leaf extracts are described for treatment of bronchitis, rheumatism, and pyrexia. Other reported therapeutic uses include treatment of epilepsy, asthma or dyspnea, hiccups, cough, skin and haematological diseases, parasitic infections, neuralgia, headache, wounds, and inflammation and oral conditions. The juice of the leaves has been applied as a drop for earache, while the tea infusion has been used for treatment of gastric and hepatic disorders. The roots and stems were also traditionally used to treat mosquito and snake bites and for malaria. [1,2,3,4,5,6]

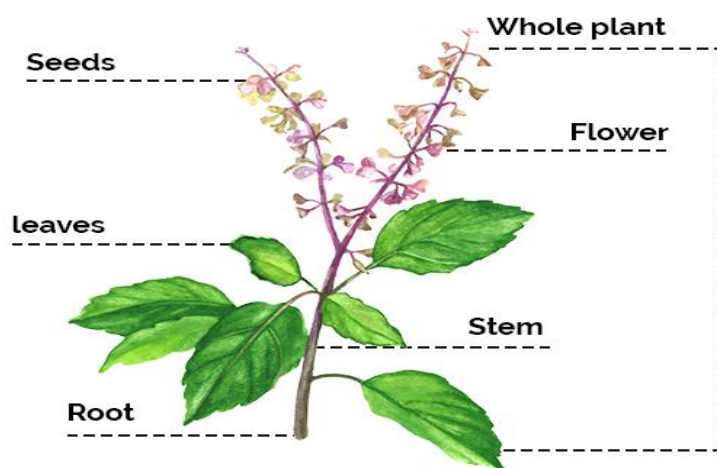


Fig No.01 Tulsi Plant

## 2. TYPE OF TULSI. [7]

### A. HOLY BASIL

There are four different types of tulsi or holy basil namely

It is known as Tulsi and is the most revered houseplant, in India it is associated with ayurveda and hindu religion as goddess of wealth, health and prosperity. The plants have strong medicinal properties compared to second group species. There are several varieties popular based on the regional religious beliefs which are known by a several vernacular and common names such as in

Sanskrit it is named as Rama Tulsi and Krishna Tulsi, in Malayalam it is called Trittavu, in Marathi as Tulshi, Tulasi in Tamil, Thulasi in Telugu and Holy Basil in English. Not to be confused with Ocimum

tenuiflorum, it is a synonym for Ocimum Sanctum. There 4 species popular of Holy basil

1. Rama tulsi (ocimum sanctum)
2. Krishna tulsi (ocimum tenuiflorum)
3. Amrita tulsi (ocimum tenuiflorum)
4. Vana tulsi (ocimum gratissum)

## B. MEDITERRANEAN BASIL

It is known as Sweet basil and is the most popular variety of basil which is found all over the world including Asia, Europe, America and Africa. It is most consumed herb world wide and known by several common names such as king of herbs, royal herb, great basil and Saint-Joseph's-wort etc, it is used in culinary preparations and used in several types of popular cuisines like Italian, Thai etc.

5. Sweet basil (ocimum basilicum)
6. Thai basil (ocimum thyrsoiflora)
7. Purple basil (ocimum basilicum)
8. Lemon basil (ocimum citriodorum)
9. Vietnamese basil (ocimum cinnamom)
10. American basil (ocimum americanum)
11. African blue basil (ocimum kilimandscharicum)
12. Italian genovese basil (ocimum basilicum)

### 2.1. RAMA TULSI (OCIMUM SANCTUM)

The plant has pure green leaves and better tolerance to winters, sun light, plant requires more watering and fertilization than the other varieties. The Queen of herbs is one of the most worshiped aromatic herbs that is found at almost every house in India.

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 15 to 40 degree celsius

Common names – Ram Tulsi

Botanical name – Ocimum Sanctum



Fig No.02 Rama Tulsi

### 2.2. KRISHNA TULSI (OCIMUM TENUIFLORUM)

The plant has purple fringed leaves and purple stems with pungent and strong taste of leaves, it has more medicinal properties than the other species. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 20 to 45 degree celsius

Common names – Krishna Tulsi

Botanical name – Ocimum tenuiflorum



**Fig No.03 Krishna Tulsi**

### **2.3. AMRITA TULSI (OCIMUM TENUIFLORUM)**

The plant is less commonly grown perennial, aromatic and sacred species of holy basil in India. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 15 to 40 degree celsius

Common names – Amrita Tulsi

Botanical name – *Ocimum tenuiflorum*



**Fig No.04 Amrita Tulsi**

### **2.4. VANA TULSI (OCIMUM GRATISSUM)**

It is woody type perennial, aromatic and sacred species of holy basil in India. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 15 to 40 degree celsius

Common names – Vana Tulsi

Botanical name – *Ocimum gratissum*



**Fig No.05 . Vana Tulsi**

### **2.5. SWEET BASIL (OCIMUM BASILICUM)**

It is most commonly grown perennial, aromatic and culinary type species of basil, the plant has bigger green color leaves and stems.

Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree celsius

Common names – Basil

Botanical name – Ocimum basilicum



**Fig No.06 Sweet Basil**

### **2.6. THAI BASIL (OCIMUM THYRSIFLORA)**

It is perennial, aromatic and culinary type species of basil, the plant has green color pointed leaves, reddish purple color stem and dark purple color flowers. Below are its growing habits:

Location-Outdoors

Light-FullSun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree celsius

Common names – Thai Basil

Botanical name – Ocimum thyriflora



**Fig.N07 Thai Basil**

### **2.7. PURPLE BASIL (OCIMUM BASILICUM)**

It is commonly grown perennial, aromatic and culinary type species of basil, the plant has bigger purple color leaves and stems. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree celsius

Common names – Purple Basil

Botanical name – *Ocimum basilicum*



**Fig No.08 Purple Basil**

### **2.8. LEMON BASIL (OCIMUM CITRIODORUM)**

The plant is perennial, aromatic and culinary type species of basil, the plant has green color leaves and white color flowers. It has strong lemon scent and all parts of the flower, leaves and stems are edible. It is known by several common names such as Lemon basil, hoary basil, Thai lemon basil, or Lao basil etc it is a hybrid between sweet basil and american basil. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree celsius

Common names – Lemon Basil

Botanical name – *Ocimum citriodorum*



**Fig No.09 Lemon Basil**

### 2.9. VIETNAMESE BASIL (OCIMUM CINNAMON)

It is perennial, aromatic and culinary type species of basil, the plant has green color leaves, reddish purple color stem and pink color flowers. Below are its growing habits

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree celsius

Common names – Vietnamese Basil

Botanical name – Ocimum cinnamon



**Fig No.10 Vietnamese Basil**

### 2.10. AMERICAN BASIL (OCIMUM AMERICANUM)

It is perennial, aromatic and culinary type species of basil, the plant is known for its rich color, sweet flavor, cleanliness and uniformity of particle size, it is considered to be of very high quality which has green color pointed leaves, purple color stem and purple color flowers. Below are its growing habits:

Location–Outdoors

Light–Full Sun

Watering–Daily,except winters

Temperature–Loves range 10 to 35 degree celsius

Common names–Americal Basil

Botanical name – Ocimum Americanum



**Fig No.11 American Basil**

### 2.11.AFRICAN BLUE BASIL (OCIMUM KILIMANDSCHARICUM)

It is perennial, aromatic and culinary type species of basil, the plant has green color leaves and purple color flowers. It has strong camphor scent and all parts of the flower, leaves and stems are edible. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree Celsius

Common names – Blue Basil, Kapur Tulsi

Botanical name – Ocimum kilimandscharicu



**Fig No.12 African Blue Basil**

### **2.12. ITALIAN GENOVESE BASIL (OCIMUM BASILICUM)**

It is classic Italian species with large dark green leaves, it is most common grown perennial, aromatic and culinary type species of basil, the plant has bigger green colour leaves and stems. Below are its growing habits:

Location – Outdoors

Light – Full Sun

Watering – Daily, except winters

Temperature – Loves range 10 to 35 degree Celsius

Common names – Italian Basil

Botanical name – Ocimum Basilicum



**Figno.13 Italian Genovese Basil**

### **3. Benefits of tulasi [8]**

#### **3.1. Tulsi for Skin**

Tulsi is proven to be the safest skin cream that can be used and the benefits are massive. Tulsi reflects on your skin when you consume it as well as applied. This wonder herb is used to treat acne, skin infections, lighten dark spots and improve skin texture. Here is a list of benefits that tulsi does to your skin.

- Tulsi helps in skin brightening.
- Tulsi helps in curing acne face marks.
- Tulsi mixed with eggs and mixed can help in tightening skin pores.
- Tulsi helps in curing skin infections and any sort of skin allergies.

#### **3.2. Tulsi for Hair:**

Holy Basil can be applied to your hair for multiple reasons and all that it does is it makes your hair look better in all ways. Here are some of the ways in which tulsi can benefit your hair.

- Tulsi can help prevent hair fall.
- Tulsi can reduce greying of the hair and keep it thick and black.
- Tulsi can reduce dandruff.
- Tulsi can help prevent dry scalp.

#### **3.3. Tulsi for Weight Loss:**

Tulsi is a natural ingredient that aids weight loss. If you're wondering how to burn fat in a quick way without any side effects, then you need to opt for drinking tulsi tea. Two cups a day will make a difference. Also, you need to keep in mind that drinking tulsi tea will act more efficiently only if you work out. Of course without exercising tulsi tea can slim you down, but exercising will make the process faster. Here are some ways in which tulsi can help you lose weight.

- Tulsi tea controls your metabolism and helps your body absorb essential nutrients.
- Tulsi tea helps boost your digestive system which is important for losing weight quickly.
- Tulsi tea has zero calories that boost your stamina.

#### **3.4. Tulsi for Eyes:**

Your eyes are prone to a lot of dust and pollution every day. Thus most people develop eye-related problems and Tulsi acts as an immediate cure for eye-related problems such as:

- Tulsi soothes the eyes.
- Tulsi leaves left in boiled water overnight can be used to wash your eyes.
- Tulsi eyewash can also reduce strain on your eyes.

Most importantly, it reduces the strain on your eyes and makes them feel relaxed. Tulsi eyewash can also help you prevent many other eye-related problems such as conjunctivitis and boils.

### 3.5. Tulsi Prevents Premature Ageing

Vitamin C & A and phytonutrients are essential oils that are found in Tulsi, which are used as excellent antioxidants that protect the body from premature [ageing](#). If herbal tea is said to make you feel and look young, imagine what Tulsi can do. Consuming 2 cups of Tulsi tea can help you look younger and prevent premature ageing.

### 3.6. Tulsi To Quit Smoking

Tulsi leaves help fight cancer and prevents it from attacking you. The best aid to stop smoking is by munching tulsi leaves and this help get the nicotine content off your body. It helps in the purification of blood. Here are some ways in which tulsi can help you stop smoking.

- Every time you get the urge to smoke, chew Tulsi leaves.
- Make it a point to drink tulsi tea.

Tulsi can definitely help you stop smoking, provided you learn ways to deviate and curtail yourself from going against the urge. It's all in your mind and the power of becoming a deviant from the habit is the 1st step to change the habit.

### 3.7. Medical Use of Tulsi

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 various medical problems.

- Tulsi can help 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 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.

### 4. Medicinal Properties of tulasi [9]

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.

- 1. 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

### 5. Diseases of modern life[5]

Despite the many wonders of science and industry, modern life is fraught with stress. Mobile devices and the web have vastly increased the pace of life so that many people feel that they are now drowning in an ever-expanding ocean of data, while industrial agriculture has burdened us with increasing exposure to unhealthy processed and packaged food and a plethora of pesticides, food packaging materials and other toxic industrial chemicals. Urban dwellers are also faced with increasing wealth inequality, social isolation, excessive noise, air, water and soil pollution and disconnection from nature. Thus, while industrialization has led to longer lifespans and vast increases in human populations, it is now recognized that the greatest causes of death and disease on the planet are preventable lifestyle-related chronic diseases. We are in the midst of a global pandemic of obesity, diabetes, cancer, dementia, depression and other chronic diseases caused by modern lifestyles and their associated lack of physical activity, high intake of sugar, fat, salt, alcohol and tobacco and exposure to a toxic cocktail of industrial chemicals. The solutions to this current health crisis are therefore more likely to be found in the homes and behaviors of individuals than in medical clinics, hospital or pharmacies.

### 6. ACTIVE INGREDIENT OF TULSI [10]



Active Ingredient	Property/Use	Action Mechanism
Eugenol	antiseptic and anaesthetic used in perfumes, flavorings, and essential oils, antidiabetic etc.	Beta cell of pancreas & inhibition of voltage-gated sodium channel.
Thymol	Strong antimicrobial attributes.	GABA receptor- body temperature.
Beta Caryophyllene	Relief of anxiety and depression.	cannabinoid receptor like marijuana.
Rosmarinic acid	Antioxidant	Inhibit lipid peroxidation
Carvacrol	Protective effects for the liver, antioxidant, activity against harmful organisms.	Inhibition of prostaglandin synthesis.

Table

No.1

#### Active Ingredients Of Tulsi

### 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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