



An Overview of Tulsi and New Innovations in Tulsi Production

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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. We directed a complete writing audit of human examinations that gave an account of a clinical result after ingestion of Tulsi. We 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. In this article we are explain the different type of Tulsi, and various health benefits of Tulsi in our daily life and various new innovation in Tulsi products.

Keywords: *Ocimum Sanctum* L, Holly basil (Tulsi), Anti-bacterial, Cough and Cold, Herbal Medicine

Introduction :

Tulsi (*Ocimum sanctum* L.), also known as holy basil in English and Tulasi in Sanskrit, is an extremely popular culinary and healing plant from the Lamiaceae family that is native to the Indian subcontinent and has been used in Ayurvedic medicine for over three thousand years.

Tulsi is commonly referred to as a "Solution of Life" in the Ayurvedic tradition for its healing properties and has been used to treat a variety of common health issues. Tulsi leaf isolates are shown as treatments for bronchitis, illness, and pyrexia in the Indian Materia Medica. In India, it is considered to be a widespread shrub. It is a flowering shrub belonging to the Lamiaceae family. It is a 30-60cm tall, upright, greatly stretched sub bush with furry stalks and basic, inverse green, strongly scented leaves. Tulsi is regarded as the ruler of all natural plants and plays an important role in our everyday lives. It is considered sacred in Hindu tradition and is the most well-known household plant in India.

Numerous Hindu myths and tales explain the purpose, characteristics, and applications of tulsi. Tulsi is an upright, fragrant shrub that can grow to a height of three to five feet. It typically grows in parks and on the edges of sanctuaries. It tastes flavorful and smells enticing. It is the only plant with this astoundingly long carbon dioxide retention capacity. It releases oxygen in the morning, which is beneficial for people with respiratory disorders.

Types Of Tulsi :

A. THE HOLY BASIL

Tulsi is the most revered indoor plant and is associated with ayurveda and the hindu religion in India as a symbol of wealth, health, and prosperity. In contrast to species from the second category, the plants have strong therapeutic properties. There are several well-known variants based on regional religious practises that are known by a variety of common and vernacular names, including Rama Tulsi and Krishna Tulsi in Sanskrit, Trittavu in Malayalam, Tulshi in Marathi, Tulasi in Tamil, Thulsi in Telugu, and Holy Basil in English.

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. MEDIEVAL BASIL

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5. Sweet basil (*ocimum basilicum*)
6. Thai basil (*ocimum thyriflora*)
7. Purple basil (*ocimum basilicum*)
8. Lemon basil (*ocimum citriodorum*)
9. Vietnamese basil (*ocimum cinnamon*)
10. American basil (*ocimum americanum*)
11. African blue basil (*ocimum kilimandscharicum*)
12. Italian genovese basil (*ocimum basilicum*)
13. Lettuce basil
14. Green ruffles basil
15. Cardinal basil
16. Greek basil
17. Spicy globe basil
18. Summer long basil

1. RAMA TULSI (*OCIMUM SANCTUM*)

Compared to other types, the plant requires more watering and fertilization, but it has pure green foliage and is more resistant to winters and sunlight.

The Queen of Herbs, one of the most revered aromatic plants, can be found in almost every Indian household.

Location: Daily Watering in Full Sun Light, with the exception of Winter

The warmth of loves varies from 15 to 40 degrees Celsius.

Common names: Shri Tulsi

Ocimum Sanctum is the name of the plant; get the plant now.



2. KRISHNA TULSI (*OCIMUM TENUIFLORUM*) (*OCIMUM TENUIFLORUM*)

The plant has more therapeutic advantages than other species and has purple-fringed leaves, purple stems, and intensely flavoured leaves. These are its development tendencies:

Location: Outside

Sun is fully visible. Daily watering, excluding seasons

Loves a variety of temperatures from 20 to 45 degrees Celsius

Known by: Krishna Tulsi

Name of the plant: *Ocimum tenuiflorum*



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*,



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*



5. *SWEET BASIL (OCIMUM BASILICUM)*

The perennial basil species that is most frequently grown is aromatic and culinary in nature.

The plant's leaves and stems are a deeper shade of green. Its growth tendencies are as follows:

Location: Outside

Sun is fully visible.

Daily watering, excluding winters

The temperature is between 10 and 35 degrees Celsius.

Generic names: Basil

Name of the plant: *Ocimum basilicum*



6. *THAI BASIL (OCIMUM THYRSIFLORA)*

It is a perennial variety of basil that is used in cooking. It has pointed green leaves, a stem that is reddish-purple in colour, and dark purple flowers. Its growth tendencies are as follows:

Location: Outside

Sun is fully visible.

Daily watering, excluding winters

The temperature is between 10 and 35 degrees Celsius.

Regular names: Thai Basil

Name of the plant: *Ocimum thyriflora*



7. PURPLE BASIL (*OCIMUM BASILICUM*)

The plant has more therapeutic advantages than other species and has purple-fringed leaves, purple stems, and intensely flavoured leaves. These are its development tendencies:

Location: Outside

Sun is fully visible. Daily watering, excluding seasons

Loves a variety of temperatures from 20 to 45 degrees Celsius

Known by: Krishna Tulsi

Name of the plant: *Ocimum tenuiflorum*



8. LEMON BASIL (*OCIMUM CITRIODORUM*)

The shrub is an aromatic, culinary-use perennial variety of basil. It has green foliage and white flowers. It has a distinctive lemon fragrance and all of its parts—the bloom, leaves, and stalks—are edible.

Numerous popular names, such as Lemon basil, hoary basil, Thai lemon basil, or Lao basil, are used to describe this hybrid of sweet basil and american basil. The following is a list of its growth patterns.

Location: Outdoors Lighting: Full Sun Watering: Daily, with the exception of the winters

Temperature: Loves between 10 and 35 degrees Celsius.

Common names : Lemon *Ocimum citriodorum* is the botanical name of basil.



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*,



10. American Basil (*OCIMUM AMERICANUM*)

It is a perennial species of basil that is used in cooking. It is highly prized for its vibrant colour, sweet flavour, cleanliness, and consistency of particle size. It also contains purple stems and blooms in addition to its aromatic, culinary qualities. Its growth tendencies are as follows:

Location: Outside

Full Sun Light Daily Watering, with the exception of winters

The temperature is between 10 and 35 degrees Celsius.

Known as: American Basil

Ocimum americanum, the botanical name



11. BLUE BASIL FROM AFRICAN (*OCIMUM KILIMANDSCHARICUM*)

It is a perennial species of basil that is aromatic and used in cooking. Its leaves are green, and its blooms are purple. The bloom, leaves, and stalks are all edible, and it has a potent camphor aroma.

These are its behaviours for growing:

Outside is the location

Luminous - Full Sun

watering: every day, excluding winters

10 to 35 degrees Celsius is the ideal temperature range.

Typical names include Blue Basil and Kapur Tulsi.

Ocimum kilimandscharicum is the name of the plant.



12. Italian-Genovese Basil (*OCIMUM BASILICUM*)

It is a traditional Italian variety with broad, dark green leaves. It is a perennial species of basil that is used in cooking and has strong aromatic qualities. These are its behaviours for growing:

Outside is the location

Luminous - Full Sun

watering: every day, excluding winters

10 to 35 degrees Celsius is the ideal temperature range.

Regular names: Italian Basil

Ocimum basilicum is its botanical name.[1]

A large-leaf cultivar of *Ocimum basilicum* is lettuce leaf basil (sweet basil). The small, wide plant's big, crinkled leaves are delicious but not as potent as those of other sweet basil. Because of this, they are especially ideal for salads and for stuffing with rice, chicken, or fish before grilling.[2]



13. Lattuce Basil

Green ruffles basil is an annual herb with rich, lime green leaves that have a distinct ruffled and quilted appearance. It is larger plant than common sweet basil and very ornamental, so green ruffles basil makes a nice border or accent plant in the garden. This basil variety grows to 60cm high and 40cm wide. The leaves are deeply serrated, ovate and opposite and are quite large at 10-15cm long.

The spikes of pink, sometimes white, flowers grow in racemes at the end of the stems.

Usually available: August to March

Life cycle: Annual

Height: 60cm

Position: Full sun , Soil preference: Well drained[3]



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**15. Cardinal basi**

excellent culinary basil with enormous, deep purple blossom heads! These are wonderful in flower bouquets. Incorporate the hot-and-sweet leaves into your favourite dishes. They go nicely in many Mexican and Asian dishes, and they are ideal for salads, soups, and curries. A large and spectacular variety for your kitchen and yard. Fantastic flavour! constructed in Israel.

8-12 hours of Sun

Sprouts in 6-10 Days

Ideal Temperature: 70-85 Degrees F

Seed Depth: 1/4"

Plant Spacing: 8-12"

Frost Hardy: No

Ocimum basilicum[4]

**16.greek basil**

Greek basil is a small-growing plant with distinctively tiny pointed leaves.

This is the basil you encounter while vacationing in the Mediterranean! Basil, which is native to warm tropical areas, has come to be associated with the Mediterranean because of the region's hot, sunny atmosphere.

In chilly summers, it struggles to grow outside. In Britain, basil is regarded as an annual, but if it is brought indoors when the weather cools, it can live longer. For ongoing leaf production as a culinary herb, basil must be cut; otherwise, it will grow woody and produce tiny white flowers. Flowers should be removed as soon as they start to appear to prevent the plant from going to seed. [5]



17. *Spicy globe basil*

In most gardens, spicy globe basil plants are small and compact, only growing 6 to 12 inches (15-30 cm) tall. Their lovely spherical shape is a wonderful accent to the herb garden or sunny flower area.

The basil herb known as the "Fiery Globe" has a flavour distinct from that of ordinary basil and gives pasta dishes and pestos a spicy edge. It is simple to grow, and regular harvesting promotes further expansion.

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*HEALTH BENEFITS OF TULSI IN OUR DAILY LIFE *

Healing Power:

The tulsi plant has many medicinal properties. The leaves are a nerve tonic and also sharpen memory. They promote the elimination of the catarrhal mucus and phlegm from the bronchial tube. The leaves toughen the belly 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 wet season, when malaria and dengue fever are broadly prevalent, tender leaves, boiled with tea, act as preventive against these diseases. In case of acute fevers, a decoction of the leaves boiled with powdered cardamom in half of a liter of water and combined 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 be given each 2 to 3 hours. In between one can maintain giving sips of cold water. In children, it is every effective in bringing down the temperature.

Coughs:

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 bloodless and flu. Sore Throat: Water boiled with basil leaves can be taken as drink in case of sore throat. This water can also be used as a gargle.(11)

Kidney Stone:

Basil has strengthening effect on the kidney. In case of renal stone the juice of basil leaves and honey, if taken commonly for 6 months it will expel them by the urinary tract. Heart Disorder: Basil has a really helpful effect in cardiac sickness and the weak spot ensuing from them. It reduces the level of blood cholesterol.

Stress:

Basil leaves are viewed as an 'adaptogen' or anti-stress agent. Recent studies have shown that the leaves have enough money large protection against stress. Even healthful individuals can bite 12 leaves of basil, twice a day, to stop stress. It purifies blood and help

Infections:

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

Skin Disorders:

Applied locally, basil juice is beneficial in the cure of ringworm and different skin diseases. It has additionally been tried efficiently by using some naturopaths in the cure of leucoderma.(12)

Teeth Disorder:

The herb is beneficial in teeth disorders. Its leaves, dried in the sun and powdered, can be used for brushing teeth. It can also be blended with mustered oil to make a paste and used as toothpaste. This is very right for maintaining dental health, counteracting terrible breath and for massaging the gums. It is additionally beneficial in pyorrhea and other teeth disorders.

Headaches:

Basil makes a exact medicinal drug for headache. A decoction of the leaves can be given for this disorder. Pounded leaves mixed with sandalwood paste can additionally be applied on the brow for getting alleviation from heat, headache, and for providing coolness in general.(13)

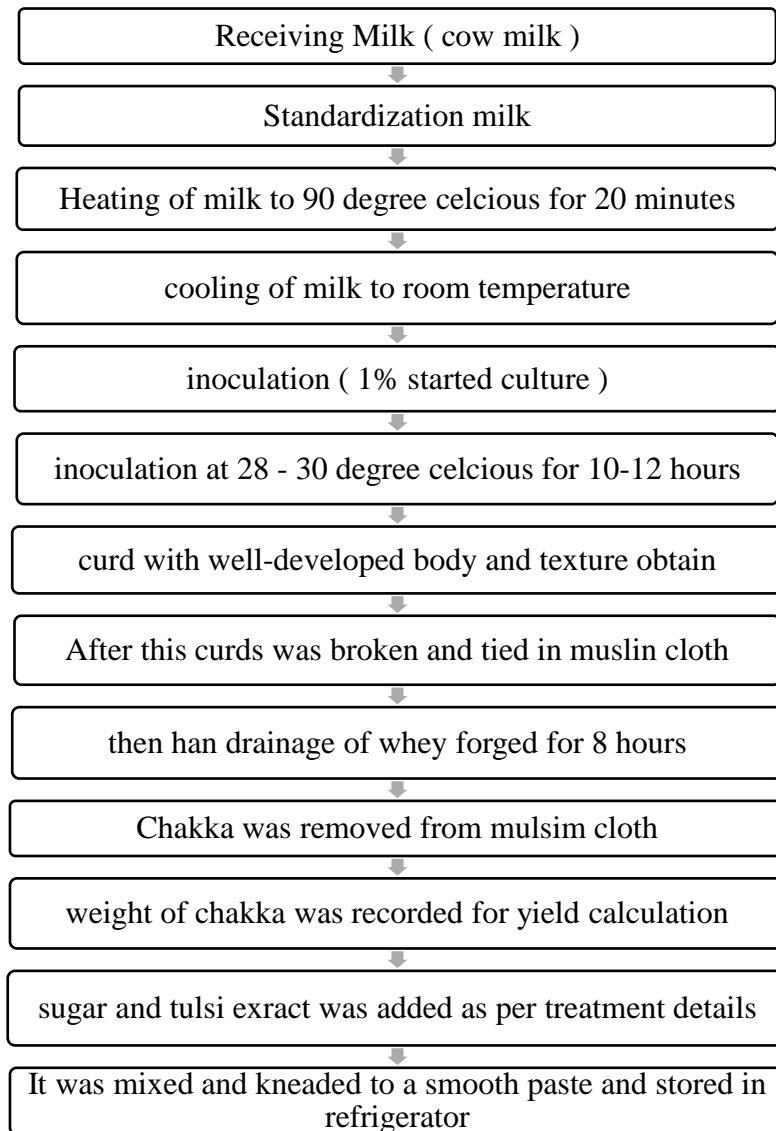
***NEW INNOVATIONS IN TULSI PRODUCTS ***

▪ HERBAL SHRIKHAND**Manufacturing of Shrikhand :**

Shrikhand was manufactured by the standard procedure given by De (1980) [7] with slight modification. The lot of standardized cow milk (4.5% fat) was heated to 90 oC for 20 min and then cooled at 30 oC. It was inoculated with starter culture (LF 40) at the rate of 1 per cent and incubated at 30 oC for 12hr. Curd with well-developed body and texture obtained after incubation was broken and tied in muslin cloth. It was then placed in hanging position for draining of whey for 8 hr. Chakka was removed from muslin cloth, weight of Chakka and whey was recorded for calculation of yield. Chakka was stored under refrigeration until taken for analysis and preparation of Shrikhand.(14)

The Chakka was divided into 4 portions and Shrikhand was prepared by adding sugar and Tulsi extract as per the treatment details. It was mixed and kneaded to a smooth paste and stored in refrigerator for organoleptic, chemical and microbiological analysis. Separate samples were drawn for respective analysis. The flow diagram for preparation of herbal Shrikhand has been shown in figure below:

Process of Shrikhand Preparation



Flow diagram for herbal shrikhand Preparation (8)

HERBAL MILK (USING TULSI JUICE , GINGER JUICE AND TURMERIC POWDER)**Material :**

Milk has been procured from students' training dairy of the institute while Tulsi, turmeric powder, ginger and sugar has been brought from the local market.

Method:**Preparation of Tulsi juice**

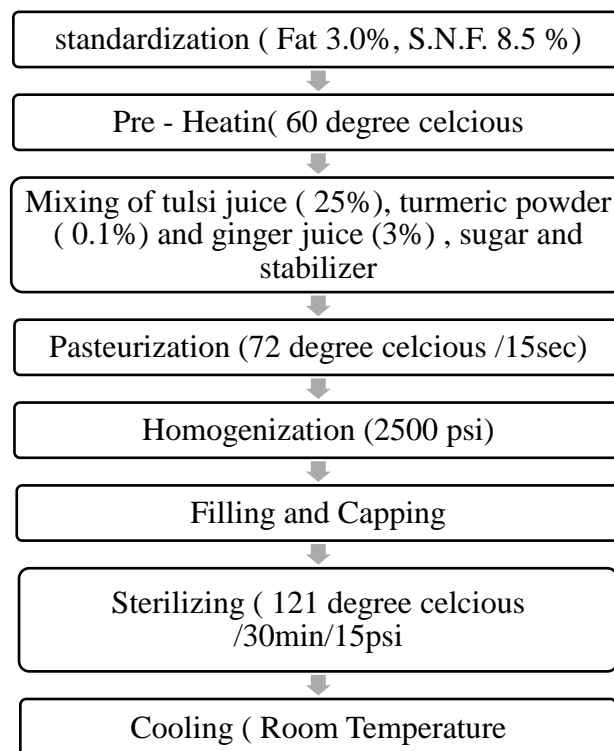
Tulsi leaves were sorted out and washed with potable water thoroughly and juice was prepared by heating Tulsi at 65 degree C for 5 min in 1:4 amount of water. The heat treated Tulsi was crushed in the juice maker along with the water to obtain a fine paste. It was then filtered through a clean, sanitized fine double layered muslin cloth to obtain Tulsi juice and kept at refrigeration temperature ($7\pm 10^{\circ}\text{C}$) until used (Trivedi et al.,2014) [9]

Preparation of ginger juice

Ginger rhizomes were washed in running tap water, peeled and then shredded to make juice. The juice was filtered through two fold muslin cloth.

Preparation of herbal milk :

The herbal milk was prepared using Tulsi juice (25%), ginger juice (3%), turmeric powder (0.1%), sugar (7%) and stabilizer (carrageenan, 0.025%). The flow chart for preparation of herbal milk using Tulsi juice, ginger juice and turmeric powder is given in Figure 1. Control was prepared by same procedure with addition of sugar in it. Figure 1 illustrate the flow diagram for preparation of herbal milk using Tulsi juice, ginger juice and turmeric powder.

Process of Herbal Milk Preparation

Flow chart of preparation of herbal milk using tulsi , turmeric and Ginger (10)

TO SAVE TAJ MAHAL FROM POLLUTANTS:

Tulsi (*Occimum sanctum*) was selected as an ornamental shrub near the Taj Mahal because of its anti-pollutant, antioxidation, and air-purifying properties. Tulsi is now being used to help the Taj Mahal keep its spotless appeal.

Planting a Tulsi drive in Agra is a quick-fix project that forest branch has thought of while the monument of love, which is becoming more and more faded with age, has been patiently waiting for its promised beauty pack for beautifully over two years. Officers assert that historical texts fully support the suggested skin care regimen and maintain Tulsi as the cure-all for all issues, cosmic and cosmetic. The Tulsi Plantation Power will be made available by the government starting in January 2009.

The sensitive Taj trapezium zone encircling the 17th-century structure as well as the two different World Heritage Sites, Agra Fort and Aitma-ud-Daula tomb, are expected to receive an eco-protection cover from the public-private joint endeavour. (15)

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