

A Review on Herbal Plant Tulsi

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Abstract: *In Hindu tradition, Tulsi has an important place in the form of a religious symbol. The meaning of name Tulsi is “the incompatible one”. It is also known a “Vishnupriya” which means to please Lord Vishnu. Tulsi is the part of Indian Tradition from ages and the plant is found in nearly every home in India, People worship it and attached to it emotionally and religiously.*

Keywords: *Tulsi.*

I. INTRODUCTION

In Hindu tradition, Tulsi has an important place in the form of a religious symbol. The meaning of name Tulsi is “the incompatible one”. It is also known a “Vishnupriya” which means to please Lord Vishnu. Tulsi is the part of Indian Tradition from ages and the plant is found in nearly every home in India, People worship it and attached to it emotionally and religiously. In Hindu religion tree worship is common. It is known as a threshold point between heaven and earth.



There is a traditional prayer telling about the creator-bramha residing in its branches, the Ganges flows through its roots, all Hindu pilgrimage centres reside in its roots, all deities in its stem and its leaves and the Vedas in the upper part of its branches. It is considered as household god particularly referred as a "Women's deity". Vaishnavas regard it as "the manifestation of god in the vegetable kingdom.

Vernacular names:

Bengali: Tulsi

Gujrati: Tulsi

Hindi: Tulsi

Kannada: Vishnu- Tulsi

Malyalam: Trittaru

Marathi: Tulsi



Botanical and English name: Tulsi is known as holy basil in English and its botanical name is *Ocimum sanctum*, belonging to plant family Lamiaceae.

Contributions: It has made important contribution to the field of science from ancient times as also to modern research due to its large number of medicinal properties. Tulsi is a popular home remedy for many ailments such as wound, bronchitis, liver diseases, catarrhal fever, otalgia, lumbago, hiccup, ophthalmia, gastric disorders, genitourinary disorders, skin diseases, various forms of poisoning and psychosomatic stress disorders. It has also aromatic, stomachic, carminative, demulcent, diaphoretic, diuretic, expectorant, alexiteric, vermifuge and febrifuge properties.

Morphology: Tulsi has been described as of two types- vanya (wild) and gramya (grown in homes). Although having identical usage, the former has darker leaves.

It is an erect, much branched, fragrant and erected plant attaining a height of about 30-60 cm when mature.

Leaves: Its aromatic leaves are simple, opposite, elliptic, oblong, obtuse or acute with entire or serrate or dentate margins, growing up to 5 cm long.

Flowers: The Tulsi flowers are small, purplish in elongate racemes in close whorls.

Fruits: The fruits are small and the seeds are reddish-yellow in colour.

Taste: The plant is bitter and acrid.

Traditional uses: Tulsi is also known as "the elixir of life" since it promotes longevity. Different parts of plant are used in Ayurveda and Siddha Systems of Medicine for prevention and cure of many illnesses and everyday ailments like common cold, headache, cough, flu, earache, fever, colic pain, sore throat, bronchitis, asthma, hepatic diseases, malaria fever, as an antidote for snake bite and scorpion sting, flatulence, migraine headaches, fatigue, skin diseases, wound, insomnia, arthritis, digestive disorders, night blindness, diarrhea and influenza. The leaves are good for nerves and to sharpen memory. Chewing of Tulsi leaves also cures ulcers and infections of mouth.

Phyto-constituents:

The leaves of OS contain 0.7% volatile oil comprising about 71% eugenol and 20% methyl Eugenol.

The oil also contains carvacrol and sesquiterpine hydrocarbon caryophyllene

Fresh leaves and stem of OS extract yielded some phenolic compounds (antioxidants) such as cirsilinole, circimaritin, isothymusin, apigenin and rosmarinic acid, and appreciable quantities of eugenol.

Two flavonoids, viz., orientin and vicenin from aqueous leaf extract of OS have been isolated³. Ursolic acid, apigenin, luteolin, apigenin-7-O-glucuronide, luteolin-7-O glucuronide, orientin and molludistin have also been isolated from the leaf extracts.

OS also contains a number of sesquiterpenes and monoterpenes viz., bornyl acetate, -pinenes, camphene, β - and α -elemene, neral, β -sitosterol, β -campesterol, cholesterol and stigmasterol

TAXONOMY

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Asteridae

Order: Lamiales

Family: Lamiaceae

Genus: *Ocimum*

Pharmacological uses:

Antioxidant activity:

The antioxidant activity of OS has been reported by many workers⁸⁻¹¹. The antioxidant properties of flavonoids and their relation to membrane protection have been observed²⁷. Antioxidant activity of the flavonoids (orientin and



vicenin) in vivo was expressed in a significant reduction in the radiation induced lipid per oxidation in mouse liver²⁵. OS extract has significant ability to scavenge highly reactive free radicals²⁸. The phenolic compounds, viz., cirsilineol, cirsimaritin, isothymusin, apigenin and rosmarinic acid, and appreciable quantities of eugenol (a major component of the volatile oil) from OS extract of fresh leaves and stems possessed good antioxidant activity.

Antihypertensive and cardioprotective activities:

The transient cerebral ischemia and long term cerebral hypoperfusion (causing cellular oedema, gliosis and perivascular inflammatory infiltrate) have been prevented by OS²⁸. The OS fixed oil administered intravenously produced hypotensive effect in anaesthetized dog, which seems to be due to its peripheral vasodilatory action. Essential fatty acids like linoleic and linolenic acids, contained in the OS oil produce series 1 and 3 (PGE1 and PGE3) prostglandins and inhibit the formation of series 2 prostglandins (PGE2) ²⁹. The long term feeding of OS offers significant protection against isoproterenol-induced myocardial necrosis in Wistar rats through enhancement of endogenous antioxidant.

sore throat: Water boiled with Tulsi leaves can be consumed to help cure a sore throat. This water can also be used to gargle.

Respiratory disorders: A decoction of the leaves along with honey and ginger is an effective remedy for bronchitis, asthma, influenza, cough and cold. A decoction of the leaves, cloves and common salt should be boiled in half a litre of water until only half the water is left. Drinking this can give immediate relief in case of influenza.

Kidney stone: The juice of Tulsi leaves and honey, if taken regularly for six months, will break down, dislodge and expel the stones via the urinary tract.

Headache: Dried and powdered leaves are mixed with sandalwood paste and applied on the forehead to get relief from the heat and headaches.

Eye disorders: Tulsi juice is an effective remedy for sore eyes and night-blindness, which is generally caused by a deficiency of vitamins A. Two drops of black basil juice can be put the eyes daily at bed time.

Rationale of the study

Tulsi has been used in ayurveda for its supposed treatment of diseases. Traditionally, tulsi is taken as herbal tea, dried powder, fresh leaf or mixed with ghee. Basil plant and its various parts are used in case of insect bite, fever, cardiac diseases, gynecological disorders, respiratory problems, skin disorders.

Objective of the study

To carry out the Phytochemical Screening and Extraction of Plant “Ocimum scantum” Tulsi.

PLAN OF WORK

Phytochemical screening of Tulsi: Alkaloidal test

Glycocide

Test for steroids

Determination of flavonoids

Determination of tannins

Test for carbohydrates or reducing suger

Extraction of essential oils:

Collect the plant material

Distillation

Layer separation

storage



II. LITERATURE SURVEY

Kemper et al., (1999):

evaluated Ginger (*Zingiber officinale*) Principal Use: Nausea due to— motion sickness, morning sickness, general anesthesia or chemotherapy Other Proposed Uses: Headaches and arthritis, chills associated with viral infections, high cholesterol Ginger is primarily used to treat nausea, but it is also used as an anti-inflammatory, a pain remedy, a warming remedy and a cholesterol-lowering herb. Randomized controlled trials support its use in preventing nausea. Case studies suggest usefulness in treating migraines and inflammatory arthritis, but no randomized trials have been reported. Animal studies suggest thermogenic effects, but this has not been evaluated in humans. Data are insufficient to recommend ginger as a cholesterol-lowering supplement.

Reynolds et al., (2004):

Evaluated pharmacology of cough is an indispensable defensive— reflex. Although generally beneficial, cough is also a common symptom of diseases such as asthma, chronic obstructive pulmonary disease (COPD) and lung cancer. Cough remains a major unmet medical need and, although the centrally acting opioids have remained the antitussive drug of choice for decades, such opioids possess many unwanted side-effects. However, new research into the behaviour of airway sensory nerves has provided greater insight into the mechanisms of cough and new avenues for the discovery of novel nonopioid antitussive drugs.

Maimes (2004):

2Proved cardiogenic- prevents heart attack. Normalizes blood pressure. Mild— property of blood thinning that prevents the heart strokes by decreasing dangerous cholesterol. Reduces the effect of irritating drugs on stomach lining and increases the protection of protective stomach. Antimicrobial effect inhibits growth of *E.coli*. Enhances the digestion and absorption. Lowers the stress induced release of adrenal hormones. Antiaging effect. Reduces the asthmatic and other allergic reactions. Antiviral effect is seen specially in viral hepatitis and AIDS virus.

Lee, et al., (2005):

Studied to determine the effects of a placebo treatment on cough in— patients with cough associated with acute upper respiratory tract infection (URTI). Patients with dry or slightly productive cough associated with a history of URTI were recruited. Cough frequency (CF) over 15 minutes was recorded by means of a microphone connected to a pen recorder.

Laxmi et al., (2005):

Study *ocimum sanctum* Linn (*Labiatae*) popularly known as the holy— basil or Tulsi in India is a home remedy for various illnesses. Traditionally, the fresh fruit and leaf juice were commonly used in the treatment of cough as demulcent, mild upper respiratory tract infection, general stress syndrome, worm infestations, superficial fungal infections, and also as a diuretic. This plant has been evaluated pharmacologically for immunomodulatory, antistress, antimicrobial, anti-inflammatory antiasthmatic, hypoglycemic, hypotensive and analgesic activities and found to be effective in varying degrees in the animal models.

Kokate et al., (2007):

Evaluated Antispasmodic an agent which relieves or eases muscular—cramps.ss Demulcent -a substance that soothes inflamed mucous membranes and protects them from irritation. Diuretic-an agent that increases the volume and flow of urine which cleanses the urinary system. Expectorant -an agent that promotes the discharge of mucous and secretions from the respiratory passages.



Gupta et al., (2009):

Proved cough is the most common symptom of respiratory diseases.→ When cough becomes serious, opioids are effective, but they have side effects like sedation, constipation, some addiction liability and also compromise the respiratory function. Therefore, there is need to have effective anti-tussive agent which do not have respiratory suppressant activity. The present study was carried out to evaluate anti-tussive activity of combination of herbal drugs as formulations in sulphur dioxide (SO₂)-induced cough model in mice. Albino mice of either sex, weighing 25-30 g were divided into eight groups, (n = 6).

Alex et al., (2010):

Proved Cough is a common and distressing symptom in lung cancer→ patients. The clinical management of cough in lung cancer patients is suboptimal with limited high quality research evidence available. The aim of the present paper is to present a clinical guideline developed in the UK through scrutiny of the literature and expert opinion, in order to aid decision making in clinicians and highlight good practice. Two systematic reviews, one focusing on the management of cough in respiratory illness and one Cochrane review specifically on cancer, were conducted. Also, data from reviews, phase II trials and case studies were synthesized.

Caroline et al., (2011): evaluated immunomodulatory activity of aqueous extract of *Ocimum sanctum* in rat. Biochemical, haematological and Immunomodulatory effect of *Ocimum sanctum* in rat was studied. To evaluate the immunomodulatory effect of *Ocimum sanctum* in rat Aqueous extract of *Ocimum sanctum* were administered orally at doses of 100, 200 mg/kg/day for 45 days in wistar albino rats.

III. METHODOLOGY

PHYTOCHEMICAL SCRRERING

Preliminary phytochemical analyses were carried out by the reported procedure (Balasundrum et al., 2005) in which powder sample or extracts of samples (freshly prepared) was treated with different reagents and the result showed the presence of targeted compound.

Determination of alkaloids: The determination of alkaloids in each sample was carried out by the described method of Harborne (1973). A 50g of sample was well mixed with 10 per cent acetic acid solution in pure ethanol and left for 4 hours at room temperature, after that the mixture was filtered and concentrated to one fourth of its original volume by rotary evaporator. Concentrated NH OH was added drop wise in concentration till the alkaloid was precipitated. The precipitate was collected on weighted filter paper, washed with 1 per cent ammonia, dried in oven at 80°C.

Test for glycosides (Keller Killiani's test): When a pinch the extract was treated with glacial acetic acid and few drops of ferric chloride solution, followed by the addition of conc. sulphuric acid, formation of ring at the junction of two liquids indicated the presence of glycosides.

Test for steroids (Salkowski's test): About 100 mg extract was dissolved in 2 ml of chloroform. Sulphuric acid was carefully added to form a lower layer. A reddish brown colour at the interface is indicative of the presence of steroidal ring (Sofowora, 1993).

Determination of flavonoids: The total flavonoids were also determined by a previous method (Harborne, 1973), accordingly 10 of each sample boiled in 50 ml Hydrochloric acid (2M solution) by reflux condensation for 30 minutes, cooled and filtered. The filtrate was then mixed with equal volume of ethyl acetate. The flavonoids were recovered from the filtrate and the calculated results expressed in mg/g.

Determination of tannins: Tannins in leaves and stem of *Ocimum sanctum* were determined using 2g of each grinded sample was mixed with 20 ml of 50 per cent methanol, covered with paraffin and placed on water bath at 80°C. After one hour the extract was filtered. 1 ml from extract was taken in volumetric flask, added 20ml distilled water, 10 ml Na CO (17%) and 2.5ml Folin denis reagent and made the volume 50ml with distilled water. A bluish green colour



developed after 20 minutes. The absorption was read at 760nm by spectrophotometer with the different concentration 0-10 ppm of tannic acid standard treated as a sample and tannin concentration was calculated in mg/g (Swain et al., 1979).

Test for carbohydrates and reducing sugar: The small quantities of the filtrate was dissolved in 4ml of distilled water and filtered. The filtrate was subjected to :**Fehling's test** : The extract was treated with Fehling's reagent A and B. The appearance of reddish brown colour precipitate indicates the presence of reducing sugar.

Benedict's test: The extract was treated with Benedict's reagent; appearance of reddish orange colour precipitate indicates the presence of reducing sugar.

Determination of saponins: Saponins were determined using 1 g of grinded sample taken in 250 ml beaker, added isobutyl alcohol (100ml) and shaken for 5 hours on orbital shaker. After that the mixture was filtered through Whatman No.1 filter paper into beaker, added 20 ml MgCO saturated solution and again filtered to obtain colourless solution. Then took 1 ml of solution in 50ml flask, mixed with 2ml FeCl (5% solution) and made the volume with distilled water. It was allowed to stand for 30 minutes to develop red colour. The absorbance was recorded at 380nm with the different concentration 0-10 ppm standard saponins. The standard solutions were also treated as a sample and the concentration of saponins was also calculated in mg/g (Brunner, 1984).

Extraction of Essential Oil by Steam Distillation of Tulsi (Ocimum Basillicum)

Essential oils are insoluble in water and evaporate easily. We can obtain essential oil from plant tissues by distillation or extraction processes. Generally essential oils are obtain from every part of plant like stem, root, leaves, flowers, seed, branches etc. And these essential oils are used in the preparation of drugs, cosmetics and perfumes.

The extraction of essential oil by steam distillation of ocimum basillicum (Tulsi) is a solid-liquid extraction process. This process completes in following steps-

1. Collect plant material and dry it if required.
2. Fill this plant material in distillation vessel.
3. Add water or solvent (like Ethanol, n-Hexane) in distillation vessel.
4. Heat the mixture in well-equipped distillation vessel in control environment and controlled temperature, then
5. Diffusion of essential oil from inside of solid material of plant to its surface occurs, then
6. Transfer of mass from surface of plant solid material to surrounding liquid occurs, then
7. This liquid contains essential oil which is obtained by reverse cooler.
8. Then the collection of above liquid obtained from reverse cooler is put to stand for some time then essential oil come over water, then
9. We perform layer separation to separate out essential oil from water, then
10. Store this essential oil in dark, closed vessel for future use.

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