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## OSCIMUM SANCTUM: TULSI (HOLY BASIL)

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### ABSTRACT:-

Natural herbs have always been a part of Indian tradition as well as in developing countries around the world. Several studies using herbal extracts have shown significant potential as psychotherapeutics and psychiatric pharmaceuticals. One such herbal drug is Tulsi, which is indigenous to the Indian subcontinent and vastly used in Ayurveda and Siddha medical systems. Invitro studies have been performed to determine the adaptogenic, anti-inflammatory, cardioprotective, antimicrobial and immunomodulatory effects though clinical efficacy and safety studies are still underway. An extensive literature review was performed to identify the possible effects of Tulsi on the CNS. Recent research has been carried out on Tulsi for its CNS effects including anti-stress, anti-Alzheimer, anti-depressant, anti-anxiety, anti-epileptic, anti-oxidant activity. Databases included in this article involved articles from books, theses, electronic databases Google Scholar, Medline, PubMed, Science Direct, and Indian Medical databases from the past five years of research. All the studies have reported favourable outcomes with very few adverse effects reports. Further studies are yet to be carried out to determine its exact mechanisms, dosage forms and to identify which type of population is more likely to avail the therapeutic benefits of Tulsi. This review has identified and compiled the traditional herbal approach of utilizing Tulsi in CNS disorders.

**KEY WORD's:-** Introduction, Taxonomy, Botanical description, Cultivation, pharmacological implementation.

### INTRODUCTION:-

The Tulsi plant belongs to small family Lamiaceae and the botanical name is *Ocimum sanctum* [1,2.] Tulsi is also called "Queen of herb", the one which possesses a large number of medicinal properties in herbal drugs [3] There are two types of Tulsi – Green (Ram Tulsi) and Black (Krishna Tulsi) and both are having nearly the same characteristics [4,5.] Different kinds of species are enclosed in the Genus *Ocimum*, for instance, *Ocimum Sanctum*, *Ocimum. canum* (Dulal Tulsi), *Ocimum. kilimandschicum*, *Ocimum gratissimum* (Ram Tulsi) *Ocimum* [6,7] Tulsi is an excellent herbal medicine, which has been used for five thousand years as it produces an immediate effect on most of the diseases in India. Some of the active constituents of Tulsi gives quick relief, while other active constituents of Tulsi takes a certain time to heal the diseases. It also relaxes the body and boosts up the energy in the body [8] Tulsi slows down the activity of enzyme, Acetylcholinesterase because it develops a fault against the acetylcholine neurotransmitter. Acetylcholine is liable for memory, sustaining sleep, promoting Rapid Eye Movement sleep (REM). Therefore, Tulsi has the ability to increase the level of acetylcholine neurotransmission to

develop memory and cognitive function in the brain[7] *O. basilicum* minimizes the inflammation, reduces the noxious effect of free radicals and also protects the

nerves and tissues; hence it is recognized as a good anti-inflammatory and antioxidant drug. They enhance the elimination of the mucous layer and phlegm from the bronchial tube[9]. As mentioned above, this herbal drug possesses a greater extent of medicinal properties against various diseases for example Asthma, bacterial and viral infection, cancer, convulsions, hyperlipidemia, CVS disorder, hypertension, stress, anxiety, depression, Alzheimer's diseases, and hepatotoxicity etc.[4,5.] Furthermore, Tulsi leaves show protective action for coughs, bronchitis, skin diseases, diarrhea, cholera, influenza and malaria and therapeutic action of Tulsi seeds for curing ulcers, emesis, tiredness and it achieves as an overall tonic. Tulsi (*Ocimum tenuiflorum*) extract is also utilized for synthesizing Ag nanoparticles with glucose as a capping agent[10, 11. ]

**BOTANICAL DESCRIPTION:-**

Tulsi is an upright bushy shrub that grows up to 18 inches .it's hairy stem sprouts oval leaves with serrated edges and depending the variety ,range in colour from light to dark purple .The tulsi plant blooms erect purple or reddish flower and produce tiny rust coloured fruit .It has strong pungent aroma and taste that is similar to other varieties



of basil.[12]

**CULTIVATION:-**

The tulsi is a hardy annual but can grow perennial .if the flowers are cut before blooming .sow tulsi seeds after the last frost in well drained ,fertile ,light weight soil and cover with a thin layer of soil .Allow tulsi to receive at least four hours of sunlight and protect from harsh afternoon sun and high heat water . the holy basil thoroughly and allow to dry out between watering ,use a balanced water soluble fertilizer during the active growing period and discontinue during cooler months when the tulsi plant goes dormant.[12]

**TAXONOMY OF TULSI:-**

- Kingdom :- Planta
- Divison :- Magnoliaphyta
- Class :- Magnoliopsida
- Order :- Lamiales
- Family :- Lamiaceae
- Genus :- Ocimum
- Species :- Sanctum[13]

**OTHER NAME's:-**

- English name - Holy basil/sacred basil
- Hindi name - Tulsi
- Sanskrit name - Tulasi
- Gujarati name - Tulsi[14]

**CHEMICAL CONSTITUENTS OF TULSI:-**

Table1: the chemical constituents of tulsi plant

<b>Alcoholic Extract[15]</b>	Aesculin, Vitexin, Caffeic acid, Circineol, Gallic Acid ,Galuteolin,Isorientin,Isovitexin,Luteoline,Orientin,Apigenin,Stigmsterol,Cjlorogenic acid,Urosolic acid,Vallinine,Viceni,Molludistin,Aesculetin,Procatechuic acid.	<b>Leaves/Areal parts</b>
<b>Mineral Contents [16]</b>	Vitamin C ,Zinc ,Vitamin A,Phosphorous,Calcium,Copper,IronChromium	<b>Whole plant</b>
<b>Essential oil [17,]</b>	Aromadendrene oxide,D-Limonene, Benzaldehyde, Eicosane, Borneol ,Cubanol ,Borneyl acetate ,Eucalyptol,Camphor,Caryophyllineoxide,cis-alpha Terpinol, Cardinene, Eugenol, Farnesene ,Farnesol, Furaldehyde, Germacrene ,Heptanol, Humulene ,Selinene, Limonene ,alpha-Thujene,bera-Guaiene n-butyl benzoate Oleic acid ,sabinene, phytol,Camphene ,alpha-Pinene, beta-Pinene.,Linalool.	<b>Leaves</b>
<b>Fixed oil [18]</b>	Linoleic acid, Oleic acid , Linolenic acid, Palmitric acid ,Stearic acid.	<b>Seeds</b>

**PHARMACOLOGICAL IMPLEMENTATION OF OCIMUM SANCTUM(TULSI):-**

- **ANALGESIC ACTIVITY:-**Singh etFrom the website www. allayurveda.coming in dose dependent manner suggesting that writhing inhibiting activity of the oil is peripherally mediated due to combined inhibitory effects of prostaglandins, histamine and acetylcholine.
- **ANTI -ASTHAMETIC ACTIVITY:-**50% aqueous ethanol extract of dried and fresh leaves and the volatile and fixed oils of OS was evaluated against histamine and acetylcholine induced pre-convulsive dysponea (PCD) in guinea pigs. The 50% ethanol extract and volatile oil extracted from fresh leaves and fixed oil from the seeds significantly protected the guinea pigs against histamine and acetylcholine induced preconvulsive dyspnea.

However, the 50% ethanol extract of dried leaves did not protect the guinea pigs against histamine induced preconvulsive dyspnea[19]

- **HEALING ACTIVITY:-** 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 these diseases. In case of acute fevers, a decoction of the leaves boiled with powdered cardamom in half a liter 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 to 3 hours. In between one can keep giving sips of cold water. In children, it is very effective in bringing down the temperature.[20]
- **COUGH:-**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.
- **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.[21]
- **ANTI -ALLERGIC AND IMMUNOMODULATOR:-**Essential oil of Tulsi was found to have anti-allergic properties. When administered to laboratory animals, the compound was found to inhibit mast cell degranulation and histamine release in the presence of allergen. These studies reveal the potential role of *Ocimum sanctum* extracts in the management of immunological disorder including allergies and asthma.
- **ANTI -MICROBIAL ACTIVITY:-**Essential oil of Tulsi has antibacterial, antifungal and antiviral properties. It inhibits the growth of *E. coli*, *B. anthracis*, *M. tuberculosis* etc. Its antitubercular activity is one-tenth the potency of streptomycin and one-fourth that of isoniazid. Preparations containing Tulsi extracts significantly shorten the course of illness, clinical symptoms and the biochemical parameters in patients with viral hepatitis and viral encephalitis.[22]

#### USES:-[23]

- Used for bronchial asthma; expectorant and bronchodilator effects.
- Used against respiratory ailments including bronchitis and tuberculosis.
- Used for rhinitis (inflammation of nasal mucous membrane).
- Can serve as a cure and prophylactic as well for the severe acute respiratory syndrome (SARS) – The root of the tulsi plant should be crushed and boiled with turmeric powder for a few minutes, after which it should be filtered. Consuming two spoonfuls of this potion twice daily will cure SARS and prevent contracting of the disease.
- Tulsi tea with honey is a good expectorant especially in cases where fever is involved.
- The juice of the leaves is given in catarrh and bronchitis in children.
- Chewing the leaves relieves cold and flu. A decoction of the leaves, cloves and common salt also gives immediate relief in case of influenza.

**CONCLUSION:-**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<sup>1-2</sup>. It has also aromatic, stomachic, carminative, demulcent, diaphoretic, diuretic, expectorant, alexiteric, vermifuge and febrifuge properties. 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. This review will definitely help for researchers as well as clinicians dealing with

O. sanctum to know its proper usage as this herb is seemed to be highly valuable, possessing many pharmacological/ medicinal properties.

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