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A Phytochemical and Pharmacological Review on Holy Basil

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Abstract: *Herbal plants are considered as the most significant source of medicine. These herbal plants are in practice from ancient times. Traditionally all the parts of the plants are used for curing various disease. One of the most important herbal plants is the Ocimumsantum also called Tulsi. The name Tulsi comes from Sanskrit word which means "the incomparable one".Plant are richest resource of drugs in traditional system of medicine, modern medicine, neutraceuticals,food supplements, pharmaceutical Intermediates and chemical entities for synthetic drugs. The Tulsi plant possesses different therapeutical properties due to the presence of several phytochemical constituents in its roots, stem, fruit, and leaves due to the presence of eugenol, vallinin, gallic acid, palmitic acid, oleic acid, linoleic acid, and many more. Tulsi have the properties like anti-ulcer, antioxidant, anti-inflammatory, anti-cancer, antidiabetic, anti-arthritic, analgesic, antistress, anti-asthmatic.*

Keywords: Ocimumsantum, eugenol, tulsi, Phytochemical, Pharmacological Activity.

I. INTRODUCTION

In recent times, focus on plant research has increased all over the word and large body evidence has collected to show immerse potential of medicinal plants used in various traditional system. Plants are known for various medicinal properties from ancient times. The essential oils extracted from therapeutic plants are safe,economical effective and easily available. India is the home for More than 8000 species of vascular plant out Of which 1748 are considered for their Therapeutical uses. Tulsi (Ocimum Sanctum L) is one of the most common herb Used in Indian traditional system and also Named as “Holy Basil”, “Queen of Herbs”

In Indian culture, it is worshiped very Religiously and known as “Vishnupriya”. The scientific name of Tulsi is Ocimum Sanctum (Linn) which belongs to the Labiatae family. There are commonly three Types of Tulsi that are considered the most i.e. Ocimumtenuiflorum (Krishna tulsi), Ocimum sanctum (Rama Tulsi) and Ocimum Gratissimum (VanaTulsi).[1]

1.1 Botanical Description

A. Botanical classification of Ocimum sanctum

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Taxonomical rank	Taxon
Kingdom	Plantae
Division	Magnoliophyta
Calss	Magnoliopsida
Order	Lamiales
Family	Lamiaceae
Genus	Ocimum
Species	Ocimum sanctum
Taxonomical rank	Taxon

Tulsi is straight, branched shrubs that develop up to 30-60 in height.The lives are arranged in the plain,branched are incompatible thick and oval shaped and arranged with dental margines. Flowers are purlie in colour and are elongated. Fruits are moderate and seeds are raddish yellow in colour. After reany season it will harvested.

B. Phytochemicals Constitution of *Ocimum Sanctum*

Fresh Leaves and steam of Ocimum sanctum extract yielded some phenolic compounds (antioxidant) such as cirsilineol, circimaritin, isotyymusine, apesgenin and rosameric acid and appreciable quantities of eugeno. The leaves of OcimumsanctumReported to be a rich source of volatile oil Containing eugenol (71%) and methyl Eugenol (20%) content. The volatile oil also consists of carvacrol and sesquiterpine Hydrocarbon caryophyllene.

C. Pharmacological Activity of Holy Basil

There are several reports on the use of natural materials sources like plants, bacteria, fungi, yeast and honey. Ocimum sanctum is also considered as a wide source for the modern or herbal formulation. Various studies (like in-vivo, in-vitro) have been done for the therapeutical uses of Tulsi. Those reported studies are shown below:

1. **Analgesic**: It was reported that the oil Extracted from Ocimum sanctum plant Possesses analgesic activity. This study Was carried out in mice using acetic Acid-induced writhing methods, tail Flick, tail clip and tail immersion. From The results, it was clear that the Inhibitory activity of the oil is due to the Combined inhibitory effect of Acetylcholine, histamine and Prostaglandin [2]
2. **Anti-oxidant:** The experimental study on streptozocin-induced diabetic rats showed the antioxidant activity of O. sanctum. It was reported that the leaves of this plant contain hydroalcoholic extract which is responsible for the anti-oxidant property. When the leaves of O. sanctum were provided with streptozocin-induced diabetic rats for 30 days, it was found to improve the activity of antioxidant enzyme catalase and reduce the plasma level of thiobarbituric acid in the vital organs like kidneys and liver.[3]
3. **Anti-ulcer:** It was reported that the O. sanctum plant possesses to have antiulcer activity against histamine, aspirin, reserpine, serotonin aspirin indomethacin in rats. The experiment was performed in Wistar rats where it was found that the aqueous extract of o. sanctum protects against ethanol-induced gastric ulceration.[4]
4. **Anti-arthritic:** In order to find out the anti-arthritic activity, the experiment was conducted in a mice model where it was found that the oil extracted from the seeds of o. sanctum possesses anti-arthritic activity against turpentine oil-induced joint pain.[6]
5. **Anti-pyretic Activity:** The fixed oil of OS was tested against typhoid-paratyphoid A/B vaccine-induced pyrexia in rats and it was found that the oil extracted from the plant exhibit antipyretic activity.
6. **Antitussive**: It was reported that the aqueous and methanolic extracts of the OS plant showed antitussive activity when studied in guinea pigs [6]
7. **Hepatoprotective:** It was reported that the leaf extract of the O. sanctum plant possesses significant hepatoprotective activity when studied against paracetamol-induced liver damage against albino rats.[7]
8. **Anti-stress:** It was reported that the leaves of O. sanctum possess antistress activity when studied in rabbits.[8]
9. **Anti-plasmodial:** It was studied that the root and leaf extract of O. sanctum showed antiplasmodial activity because of the presence of ethanolic extract mainly flavonoids, phenols, saponins, alkaloids, glycosides proteins, resins, steroids, triterpenenoids[9]
10. **Memory Enhancer:** To study the antidementia and anticholinesterase activity, the aqueous and alcoholic

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extract of the leaves of O. sanctum were studied in rats. Atropine, cyclosporine, and electroshock were used to activate dementia. It was reported that the inactive restraint was used to assess memory.[10]

11. **Immunomodulatory:** It was studied that leaves of O. sanctum increase the RBCs, WBCs hemoglobin and antibodies production without affecting other biochemical activities when tested in mice.[11]
12. **Antiemetic:** It was reported that the leaves of Tulsi possess antiemetic properties and used to treat vomiting diarrhea.[12]
13. **Anti-fertility:** The tulsi leaves were reported to have antifertility property. The experimental study was carried out in albino rats where the model was treated with benzene extract of tulsi leaves for 48 days. Results showed a decrease in sperm count and sperm motility.[13,14]
14. **Antifungal:**It was studied that the linalool and methyl chavicol content extracted from the essential oil of tulsi leaves showed antifungal property against clinically isolated dermatophytes.[15]

II. CONCLUSION

This plant is most important & shows various therapeutic properties. The Different parts of plant contains various Chemical Constituents Shows activity against several disease. A Ocimum sanctum extracts has proved to possess various pharmacalogical properties & potent therapeutic agent A safety profile analysis showed that the Ocimum sanctum is safe in therapeutic doses.

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