A Review on Medicinal Uses of Tulsi Plant (Ocimum Sanctum) In Cough Syrup

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Abstract

The medicinal benefits of tulsi, or Ocimum sanctum, are significant in our day-to-day life. Its leaf juice, when extracted, relieves cough, bronchitis, fever, and colds. Every day, millions of people consume the raw leaves of Tulsi, also known as holy basil, which has long been prized for its remarkable healing qualities. The majority of herbal toiletries contain the oil extracted from Karpooratulsi, which also acts as a barrier against bacteria and insects. Additionally, tulsi helps to cure malaria. Extensive evidence from modern science supports the benefits of Tulsi, including its ability to lower blood pressure, improve cholesterol, relieve inflammation, flush out toxins, protect against radiation exposure, prevent gastric ulcers, lower fevers, and aid in digestion. Numerous research suggest that tulsi may be an anti-inflammatory medication that relieves pain in a range of illnesses. Tulsi is used to treat a variety of skin conditions, including ringworm, eczema, acne, and other infections. It also relieves symptoms of many skin allergies.

Herbal plants are considered as the most Significant source of medicines. These herbal Plants are in practice from ancient times. Traditionally, all the parts of the plant are used For curing various diseases. One of the most Important herbal plants is the Ocimum sanctumAlso called tulsi. This plant is considered a Sacred plant in Indian culture and used for holy Purposes as well. The name Tulsi comes from Sanskrit word which means "the incomparable One".(2)

Keywords:-Tulsi, Ocimum sanctum, medicinal, therapeutic, Cough Syrup, etc.

Introduction:-

Holy basil, or tulsi (Ocimum sanctum), is a herb with a variety of possible medical applications, including the treatment of colds and coughs. Warmth-promoting and antitussive qualities: Tulsi's warming and antitussive qualities can ease colds and coughs. Immune system: Tulsi helps strengthen the immune system, which helps lessen the symptoms of the flu and cough. Stress reduction: Taking a regular cup of Tulsi tea can help lower stress levels. Antimicrobial and anti-allergic qualities: Tulsi is a herb that helps treat colds and coughs by having antimicrobial and anti-allergic qualities. Digestion: Tulsi has been shown to aid in digestion. Skin conditions: Tulsi is useful in treating conditions like eczema, ringworm, and acne. Antioxidant qualities: There are many antioxidants in tulsi.Other medical systems, such as the Greek, Roman, and Unani, also use tulsi. In Indian culture, it is used for sacred purposes and is regarded as a sacred plant. You can produce tinctures, teas, and decoctions with tulsi leaves, flowers, and oil. To lessen toothaches, you can also use the water that is derived from tulsi leaves as a mouthwash. Because of its

powerful therapeutic qualities, tulsi is utilized as a traditional medicine. In Ayurveda, it has been utilized for millennia to enhance health. Its antipyretic qualities have been its main application in easing fever, cough, and cold symptoms.Tulsi, also known as holy basil or OcimumSanctum .in Hindi and Sanskrit, is an extraordinary herb from the Lamiaceae Family. Because of its therapeutic properties, tulsi has been utilized for at least 3000 years in Ayurveda as a treatment for life's troubles. Indian medical literature describes the use of tulsi leaf extracts for the treatment of pyrexia, sickness, and bronchitis. The most well-known family plant in India, it is held in high regard in Hindu culture. Many Hindu stories classify the properties, applications, and significance of tulsi. For humans, the tulsi herb is very significant.

Since ancient times, plants have been known for their diverse therapeutic qualities. The essential oils that are extracted from medicinal plants are readily available, affordable, safe, and effective. More than 8000 species of vascular plants may be found in India, of which 1748 are thought to have medicinal use. Also known as "Holy Basil" or "Queen of Herbs," tulsi (Ocimum sanctum L.) is one of the most often utilized herbs in the traditional Indian medicine system."The incomparable one" is the Sanskrit term from whence the name Tulsi originates. It is referred to as "Vishnupriya" and is highly revered in Indian culture. Ocimum sanctum (Linn), the scientific name for Tulsi, is a member of the Labiatae family. The term ozo, which means "to smell" or "having a strong odor" in Greek, is the genus name for Ocimum. Ocimum sanctum, Ocimumgratissimum, Ocimumcanum, Ocimumbasilicum, Ocimumkillimandscharicum, Ocimumameicanum, Ocimumcamphora, and Ocimummiranthum are among the approximately 160 species of this plant that are significant for therapeutic purposes. Three varieties of tulsi are generally regarded as the most popular ones: Ocimumtenuiflorum (also known as Krishna tulsi),RamaTulsi'sOcimum sanctum and VanaTulsi'sOcimumgratissimum. Numerous phytochemical elements identified from this plant which are responsible for their medical usefulness both in modern medicine system and traditional medication system i.e. Ayurveda, Unani, Siddha, Greek and Roman. Because of how this plant is grown and harvested, its phytochemical content can change. It is referred to as "the elixir of life" in Ayurveda and is said to lengthen life. Our review focuses on a thorough explanation of Tulsi (Ocimum L) and its therapeutic importance according to many medical systems.

According to modern Indian literature, Tulsi is a revered, common, and therapeutic herbal plant. Known as the queen of the herbal herbs, tulsi is an essential part of our daily lives. Ocimumtenuiflorum (tulsi) is a fragrant plant belonging to the family Lamiaceae is a erect, heavily branched shrub 30-60 cm tall with hairy stems and simple opposite green leaves that are powerfully perfumed. The seeds are used to treat various genito-urinary system disorders since they are mucilaginous and have palliative qualities. According to Kumar et al. (2010), tulsi is beneficial for the heart, improves digestion, lessens coughing, and eases breathing problems.According to ancient writings by Charaka and Sushruta, it has also been used to cure scorpion stings and snake bites.It serves as a barrier for our Hindu beief, shielding the home from evil energy and promoting self-control and chastity. Bhadra P. and others, 2020). The benefits, characteristics, and applications of tulsi are described in numerous Hindu epics. According to reports, tulsi is a shrub with a delicate scent and a variety of antioxidants that can help treat a wide range of illnesses (Kulkarni et al., 2018). As a result, each portion of the plant serves a purpose.[6]

Literature of Review:-

A review medicinal and traditional uses on Tulsi plant (Ocimum sanctum L.)

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A review on Ocimum sanctum linn (Tulsi) and its medicinal importance

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Tulsi – A Review Based Upon Its Ayurvedic and Modern Therapeutic Uses

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Aim :-

Tulsi, also known as Ocimum sanctum, is a herb with many potential therapeutic properties, including adaptogenic, antimicrobial, anti-inflammatory, cardioprotective, and immunomodulatory.

Objectives:-

The objective of a review of tulsi on cough syrup may be to assess the clinical efficacy and safety of tulsi as a treatment for coughs. Some studies have reviewed the clinical efficacy and safety of tulsi in humans, but there are no systematic reviews that focus on tulsi as a single herbal intervention.

TulsiIs an aromatic plant that is used in traditional Indian medicine to treat a variety of diseases, including the common cold, inflammation, malaria, and heart disease. Tulsi is also sacred in Hindu tradition and is believed to help purify the atmosphere and repel insects.

Plan of Work:-

- Selection of herbal plant
- Collect the information from Sources
- Rearrange the all Information
- Add new Information
- Create a new Review
- Publish and Discussion

Medicinal properties Cough disease can be treated with tulsi :-

- Tulsi leaves and honey: Take a teaspoon of honey and chew three to four tulsi leaves on an empty stomach.
- Tulsi tea: Sip tulsi tea on a daily basis to ease tension and promote calmness.
- Inhale the steam produced by boiling tulsi leaves.
- Tulsi leaf juice: To treat coughs, colds, bronchitis, asthma, and influenza, mix tulsi leaf juice with honey and ginger.
- Because of its antibacterial, anti-inflammatory, antitussive (cough-relieving), and anti-allergic qualities, tulsi is helpful in reducing the symptoms of cough and colds.
- Taking a few Tulsi leaves with honey strengthens the immune system and helps with cough and flu relief.

- Other conditions that can be treated with Tulsi include bad breath, skin conditions, ringworm infection, diarrhea, headaches, eye issues, mouth infections, insect bites, and teeth problems.[1]

Fig.1.1:- Tulsi (Ocimum sanctum)

Health benefits of Tulsi :-

There are several health advantages to tulsi plants. Its leaves help to cleanse mucus and catarrh from the bronchial passageways, and they are a nerve tonic and memory enhancer. The leaves strengthen the stomach and promote perspiration.

Antioxidants like eugenol and vitamin C found in holy basil shield the heart from the damaging effects of free radicals. Additionally helpful in lowering blood cholesterol levels is eugenol.

Holy basil contains phytonutrients, vitamin C and A, which are excellent antioxidants that shield the skin from practically all free radical damage.

Because of its mild diuretic and detoxifying properties, tulsi aids in reducing the body's uric acid levels. Holy basil's acetic acid aids in the disintegration of the stones.

One natural remedy for headaches that also helps with migraine pain is tulsi.

Holy basil aids in the destruction of germs and illnesses. Eugenol, the main active ingredient in holy basil oil, aids in the treatment of skin conditions. Both exterior and interior skin infections can be treated with ocimum sanctum.

Fever is traditionally treated with the herb tulsi. It is a key component in many ayurvedic medications and over-the-counter treatments.

Because tulsi has anti-inflammatory qualities, it helps prevent bacterial, fungal, and viral infections that can harm the eyes. It also lessens stress and relieves inflammation in the eyes.

Tulsi is an oral disinfectant and natural mouth freshener. Mouth ulcers can also be healed with ocimum sanctum. In addition to shielding the teeth, holy basil eliminates the microorganisms that cause dental cavities, plaque, tartar, and foul breath.

Owing to the chemicals cineole, eugenol, and camphene, tulsi treats respiratory tract infections caused by bacteria, fungi, and viruses. It can treat a number of respiratory conditions, including tuberculosis and bronchitis.

Vitamin K is a necessary fat-soluble vitamin that is crucial for heart and bone health.[1-5]

Species Name	**Area of Distribution**
Rama tulsi (Ocimum sanctum)	Gir national &sasangir national park
Aamritatulsi (Ocimumtenuflorum	Estran Nepal
Vanatulsi **(**Ocimumgratissum**)**	Brazil , china
Sweet Basil(Ocimumbasilcum)	Asea, Africa
Thia Basil (Ocimumthyrsiflora)	Asea, Africa
PurpleBasil (Ocimumbasilcum)	Africa , America and asea
Lemon Basil (Ocimumcitriodorum)	Central Africa and south east asea

Table 1. Geographical distribution of Tulsi

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Lamiales
Family	Lamiaceae
Genus	Ocimum
Species	Ocimum sanctum

Table 2.Botanical Classification of Tulsi

Phytochemical constituents of OcimumSanctum :-

Ocimum sanctum leaves are said to be a rich source of volatile oil, with a level of eugenol (71%) and methyl eugenol(20%). Sesquiterpine hydrocarbon caryophyllene and carvacrol are also present in the volatile oil. Fatty acids, phenolics, flavonoids, and terpenoids are the additional chemical components that are present. Plant seeds are enhanced with β-Sitosterol, polysaccharides, mucilage, and fixed oil (18–22%). The primary component of seed oil is thought to be linoleic acid. The remaining chemical components that are there are:[3]

1. Phenolics:-

The phenolic content of the OS plant is comprised of menthylsalicylic glycoside, ocimumnaphthanoic acid, vanillic acid, caffeic acid, and chlorogenic acid, which are isolated from the plant's aerial parts. Gallic acid ethyl ester, protocatechuic acid, 4-hydroxynbenzoic acid,gallic acid methyl ester, vanillin, and 4-hydroxybenzaldehyde are among the additional chemical elements that were confirmed to be present by HPLC.

2. Flavonoids :-

Flavonoids are regarded as The primary components of the OS plant are the C-Glycoside flavonoids (vicenin, isovitexin, isoorientin, and orientin) and the methyl flavonoids and their glycosides (cirsimartin, isothymusin, luteolin).Using atmospheric pressure chemical ionization mass spectrometry (APCI-MS), the remaining flavones were identified as salvigenin, cirsumaritin, crisilineol, gardenin, apigenin, eupatorin, and isothymusin.

3. Phenyl propanoidsEugeno :-

Is the primary ingredient in OS leaves' essential oil. The leaves of the OS plant were used to extract the additional phenyl propanoids derivatives,which include ociglycoside, also known as eugenyl-β-D-glucoside, ferualdehyde, citrusin C, and dehydrodieugenol.

4. Neolignans :-

The OS plant's methanolic extracts include neolignans. Tulsinol A through Tulsinol G, which are produced by polymerization of eugenol content, make up the constituents.

5. Terpenoids:-

Sesquiterpenoids (β-Caryophyllene and 4,5-epoxy-Caryophyllene), abietanediterpenoids (carnosic acid), ursanetriterpenoids (Ursolic acid, urs-12-en-3 3β,6β,20β-Triol-28-oic acid), and oleanetriterpenoids (oleanic acid, β-Amyrin-Glucopyranoside) are the terpenoids reported in OS plant.Ursolic acid is the most prevalent constituent detected by UPLC-ESI-MS/MS and HPTLC.β-caryophyllene, elemene, α-Humulene, α-caryophyllene, germacrene, trans-α-bergamotene, and 5β-Hydroxycaryophyllene were among the other terpenoids that were found.

6. Coumarins :-

Three coumarins exist. Components known as ocimarin, aesculin, and aeculetinthat were isolated from the tulsi plant.

7. Steroids :-

The stem and leaves of OS are used to extract the steroid components, which include stigmasterol, campesterol, β-sitosterol, and β-sitosterol-3-Oβ-D-Glucopyranoside.

8. Essential oil :-

Terpenoids, which comprise phenolic acid, esters, aliphatic aldehydes, bicyclic terpenoids, acyclic monoterpenoids, and sesquiterpenoids, make up the majority of the essential oil that is extracted from the leaves of the OS plant. The climate, methods of cultivation, and harvesting influence the chemical makeup, which differs from place to region. The primary phytochemicals found in essential oils are methyl chavicol and eugenol, or methyl eugenol, which have antibacterial and anthelmintic properties. The remaining components found in essential oil are germacrene D, β-caryophyllene oxide, and β-caryophyllene.

9. Fixed oil (non-volatile oil):-

Linoleic acid, which makes up 66.1% of the fixed oil extracted from OS seeds, is primarily responsible for the 18.22% of the oil, which has anti-inflammatory, hypotensive, and chemopreventive anticoagulant properties. The remaining ingredients, which are extracted from the leaves of OS leaves, are stearic acid (2.1%), oleic acid (9.0%), palmitic acid (6.94%), and A-linolenic acid (15.7%).

10. Fatty acid derivatives:-

Cerebrosides are fatty acid derivatives that have been isolated from the leaves and roots of the os plant. Additionally, the mosquitocidal properties of os leaves are attributed to the presence of sanctumoic acid and palmityl glucoside.

There are some cough syrups that contain tulsi :-

- Rhino Tulsi Plus Paediatric
- PankajakasthuriTulsi Cough Syrup
- Crux Ayurvedic Cough Syrup
- Basic Ayurvveda Van Tulsi Cough Syrup
- BaidyanathPanch (Amrit) TulsiDrops

The composition of nutrition value

It helps to enhance the efficient digestion, absorption and Use of nutrients from food and other herbs (Cohen MM 2014). The plant contains vitamin C and A, and minerals Like calcium, zinc and iron, as well as chlorophyll and many Otherphytoelements (Mohan 2011). Protein: 30 Kcal, 4.2 G; Fat: 0.5 g; Carbohydrate 2.3 g; Calcium: 25 mg; Phosphorus 287 mg; Iron: 15.1 mg and Edible portion 25 Mg vitamin C per 100g (Bhadra P 2020).[3]

Reported Therapeutic Uses of Ocimumsanctum:-

Numerous studies have been published on the application of natural materials sources, including plants, fungi, bacteria, yeast, and honey. Another well-known source for contemporary or herbal formulations is Ocimum sanctum. Numerous investigations (in-vitro and in-vivo) have been conducted about the medicinal use of Tulsi. These published research are displayed below:[3]

Analgesic:-

It has been stated that the Ocimum sanctum plant's oil has analgesic properties. Using tail flick, tail clip, tail immersion, and acetic acid-induced writhing, mice were used in this investigation. The findings demonstrated that the combined inhibitory effects of prostaglandin, histamine, and acetylcholine are what cause the oil's inhibitory function.

Anti-oxidant:-

The antioxidant activity of O. sanctum was demonstrated in an experimental investigation using diabetic rats induced by streptozocin. According to reports, this plant's hydroalcoholic extract in the leaves is what gives them their antioxidant capacity. It was shown that feeding O. sanctum leaves to streptozocin-induced diabetic rats for 30 days increased the antioxidant enzyme catalase's activity and decreased the plasma level of thiobarbituric acid in the liver and kidneys, two important organs.

Anti-ulcer:-

According to reports, O. sanctum has antiulcer properties in rats against histamine, aspirin, reserpine, serotonin, and indomethacin. The study, conducted on Wistar rats, revealed that the aqueous extract of O. sanctum provides protection against stomach ulcers caused by ethanol.

Anti-arthritic:-

An experiment using a mouse model was used to determine the anti-arthritic activity of the oil extracted from O. sanctum seeds. The results showed that the oil has anti-arthritic properties against joint discomfort caused by turpentine oil.

Anti-pyretic activity:-

Rats given the typhoid-paratyphoid A/B vaccine were given the fixed oil of OS, and it was discovered that the oil derived from the plant had antipyretic effect.

Antitussive:-

According to a research, guinea pig studies conducted on the OS plant's aqueous and methanolic extracts revealed antitussive effects.

Hepatoprotective:-

Significant hepatoprotective activity was found in the leaf extract of the O. sanctum plant when it came to preventing albino rats' liver damage caused by paracetamol.

Anti-stress:-

Research conducted on rabbits revealed that O. sanctum leaves exhibit antistress properties.

Anti-plasmodial:-

Research revealed that the presence of ethanolic extract, primarily flavonoids, phenols, saponins, alkaloids, glycosides, proteins, resins, steroids, and triterpenenoids, was the reason why O. sanctum root and leaf extract had antiplasmodial activity.

Memory Enhancer:-

Rats were used to test the aqueous and alcoholic extracts of O. sanctum leaves for their antidementia and anticholinesterase properties. Dementia was induced by electroshock, cyclosporine, and atropine. The inactive constraint was reportedly employed to evaluate memory.

Immunomodulatory:-

When tested on mice, it was found that O. sanctum leaves boost the synthesis of RBCs, WBCs, hemoglobin, and antibodies without changing other biochemical activities.

Chemopreventive:-

Numerous investigations have demonstrated that the oil derived from O. sanctum seeds has chemopreventive action against In Swiss albino mice, subcutaneous injections of 20 methylcholanthrene caused fibrosarcoma tumors. Twenty methylcholanthrene injections caused Swiss albino mice to develop fibrosarcoma tumors. It was shown that giving mice seed oil supplementation increased their survival rate and slowed the rate at which tumors spread, demonstrating its chemopreventive effect.

Antidepressant and Antianxiety:-

Swiss mice were used to evaluate the O. sanctum ethanolic extract. It was observed that the plant extract exhibits antidepressant and antianxiety effects and can act as a medicinal medication against these conditions .

Antiemetic:-

Tulsi leaves are said to have antiemetic qualities and are used to treat diarrhea caused by vomiting.

Anti-fertility:-

There have been reports of antifertility properties in tulsi leaves. The model for the experimental investigation, which used albino rats, was exposed to tulsi leaf benzene extract for 48 days. Sperm count and motility were found to have decreased.

Anti-inflammatory:-

The tulsi herb has anti-inflammatory properties due to its fatty acid content. The primary fatty acid with anti-inflammatory properties is linoleic acid, which can obstruct the pathways of cyclo-oxygenase and lipoxygenase.

Antithyroidic:-

According to reports, when tested in male mice, tulsi leaf extract has antithyroid activity and modifies the concentration of T3, T4.

Anti-helminthic:-

The eugenol content and essential oil isolated from tulsi leaves have antihelminthic capabilities, according to the in-vitro investigation. According to the Caenorhabditis model.

Antihyperlipidemic and Cardio-Protective:-

According to the published study, when evaluated in high-fat (HF) rats, fixed oil of olive oil (OS) reduces

elevated serum lipid content and exhibits cardioprotective and antiatherogenic effects against hyperlipidemia.

Antifungal:-

According to a study, tulsi leaf essential oil's methyl chavicol and linalool contents shown antifungal properties against clinically isolated dermatophytes.

Conclusion:-

The plant tulsi, or Ocimum sanctum, is revered. It is mostly used as a herbal tea and for medical purposes. Due to its high value, Indian herbal plants are utilized for treating and curing a wide range of diseases. It is a part of the Greek, Roman, Ayurvedic, Sidha, and Unani medical systems. Resounding scientific research has conclusively shown that the tulsi plant has significant medicinal value and is used to cure a wide range of illnesses all over the world. The many ailments this sacred plant treats provide people a calm and healthy existence. This small plant is unquestionably a great source of medicinal and anti-inflammatory qualities. It has been proven and confirmed after extensive, top-to-bottom research that Tulsi may be safely consumed in any kind of structure. This little plant has a lot of therapeutic qualities, no doubt about it. Experiments and a variety of results indicated that tulsi (Ocimum sanctum), a medicinal plant, is safe to eat in any form. Modern science honors and accepts each of these restorative qualities. Modern science has universally acknowledged and respected each of these therapeutic qualities.The herb tulsi is what keeps humanity afloat in the current shallow and unsatisfactory manner of existence. It is regarded as the royal herb of India. They are largely effective in treating a variety of illnesses, and we utilize them in our homes and on a local level.affected areas. It can also be wished upon. Tulsi leaf biting cures the flu and cold. When consumed in the morning, tulsi leaves filter blood. The leaves are usually dried and then mixed with water to make tooth powder. It aids in protecting the respiratory system as a whole. It aids in dandruff management. It is usually used by mixing it with coconut oil. It is referred to as the "Queen of Herbs" in India. When consumed in the morning, tulsi leaf purifies blood. Dandruff can be managed with the extract and essential oil of this remarkable plant (Ocimum sanctum).One way to use it is to combine it with coconut oil. The plant is a great skin toner for people with acne-prone skin. It also helps to keep the pH balanced, relieve dandruff, reduce hair loss, promote wellness, support metabolic activity, shield against harmful chemicals, and relieve sore throats. It can be taken internally or externally to treat fatigue, stress, anxiety, and depression.[(2)]

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