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"Wound Healing Effects Of Extract Of Ocimum Sanctum Linn"

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ABSTRACT

Numerous scientific research has examined the therapeutic qualities of Tulsi, including in vitro, animal, and human trials. According to these studies, Krishna Tulsi possesses a special set of properties that make it effective against a variety of diseases and conditions. These include: antimicrobial; anti-oxidant; antiinflammatory; chemo preventive; radioprotective; analgesic; anti-pyretic; anti-allergic; anti-leukodermal; and anti-coagulant properties. This study used a variety of animal models to assess the anti-inflammatory properties of Ocimum sanctum leaves used in the hydrogel manufacturing process. Supplies and Procedures: A methanol, ethanol and aqueous extract of O. sanctum leaves. The primary goal of topical medications is to ensure local contact with the skin and minimize overall drug absorption. Ocimum sanctum is a popular drug in traditional medicine and is officially accepted in many countries.

INTRODUCTION OCIMUM SANCTUM LINN.

In India, it is considered a sacred plant and a symbol of purity. The name 'Tulasi' is derived from Tulasi Devi, one of the eternal consorts of Lord Krishna in India, it is used as a religious plant and for important events such as weddings. Ocimum sanctum is 30–75 cm tall, herbaceous in shape, erect, more branched, hairy and soft. It has pointed or blunt leaves, the leaves are oval, and the flowers are tightly coiled and pale or dark red. Traditionally, Ocimum sanctum has been used to treat diarrhoea, chronic fever, malaria, skin diseases, bronchitis, red intestine, insect bites, arthritis, and bronchial asthma.

Tulsi consists highly complex chemical composition, containing many nutrients and biologically active compounds. Due to the botanical nature and inherent biochemical complexity, the standardisation of the active component of Tulsi is very complicated. The best-known active component of Tulsi leaves the source of essential oil, i.e., eugenol and ursolic acid. The major constituents idented and extracted from Tulsi are nonother than the ursolic acid.

Types of Tulsi:

There are three different types of Tulsi namely,

1. Krishna Tulsi: Also known as purple leaf Tulsi, this variety of Tulsi smells like cloves. It gives off a peppery aftertaste. This variety of Tulsi aids in the treatment of skin conditions, earaches, respiratory issues, and throat infections. Ear drops are made with Krishna Tulsi oil. Additionally, it is used to treat cholera, dyspepsia, sleeplessness, and malaria.

2. Rama Tulsi: Also known as green leaf Tulsi, this is a distinct variety of Tulsi with light purple blossoms and an aroma reminiscent of cloves. Its main ingredient is eugenol, which has a mild taste and is typically found in cloves.

3. Vana Tulsi: This herb is indigenous to Northeastern Africa, India, and Sri Lanka. This variety of tulsi is ingrained in Indian religious beliefs and is typically produced for medical purposes. This kind grows best in full sun and dry circumstances, although it needs to be sheltered from freezing. Its leaves have a light green colour and taste and scent of lemon. The leaves of the Vana Tulsi plant, which are typically used to make tea, boost immunity. It has health benefits when ingested as tea, including improved mental and physical stamina as well as an increase in bloodstream nutrition and oxygen. Biological Source: Tulsi consists of the fresh and dried leaves of Ocimum species like Ocimum sanctum Linn.

Classification:

Division: Magnoliophyte

Kingdom: Plantae

Order: Lamiales

Family: Lamiaceae

Genus: Ocimum

Species: Ocimum sanctum Linn.

Table 1: Nutritional components of Ocimum

Nutritional components	Content
Carbohydrate	2.3g
Calcium	25mg
Chromium	2.9µg
Carotene	2.5µg
Copper	0.4µg
Fat	0.5mg
Iron	15.1mg
Nickel	0.73µg
Phosphorus	287mg

Advantages of phytoconstituents of Tulsi

Tulsi, Apigenin has neurogenesis stimulant activity Bisabol has perfumery wound healing, anti-inflammatory, antimicrobial, anti-irritant, and anti-cancer activity. Borneol has insect repellent activity due to the essential oils in Tulsi. Coffee acid also has anti-cancer, antioxidant, and antifungal activity. The presence of calamine shows dermatological activity. Tulsi is also used as an anticoagulant, sunscreen cream, and medicine diagnostic due to the presence of Aesculetin.

Disadvantages of constituents of Tulsi

The overdose of Tulsi and its items influences the regenerative wellbeing of both guys and females. The impacts of this are moo weight in testicles, mortality of sperm and cause a decrease in sperm check. It is additionally watched that there's an antiestrogenic action. The side impacts in females cause compression, which leads to premature birth in pregnant ladies. It moreover influences lactation. Females too watch spasms, spinal pain, diarrhoea, dying, etc.

The logical considers incorporate the intense side impacts of Tulsi, i.e. lead harming, dental issues due to lead, hypoglycaemias, drawn out dying times lean blood etc. It is hepatotoxic.

Tulsi In Ayurvedic Medicine

Tulsi is an abundant source of essential oils and antioxidants that are tremendously effective in reducing stress on the human body. Tulsi is a potent medicinal herb that can reduce mental stress. Not only Hindus or Indians, but now the other people are also using Tulsi by recognising its immense therapeutic properties. balances different processes in the body and is of great help in stress management. In the Indian Ayurveda system, the extracts of Tulsi are used as traditional medicine.

Ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, infections, heart disease, poisoning, cataracts, and malaria use the Tulsi. The Tulsi acts on the nervous system and strengthens it. It supports the heart. It serves as an appetiser and promotes digestion too. It facilitates the secretion of digestive enzymes and prevents flatulence. Having detoxifying properties, the Tulsi purifies the blood of any toxins present in it. It has also been proved to be effective in reducing cholesterol levels. Ant- bacterial and antiparasitic properties make it suitable for combating infectious discases of various types.

Recent findings have indicated that the Tulsi may well protect from radiation poisoning. It has also been shown that Tulsi possesses anticancerous properties. There has come up a belief that a Tulsi leaf swallowed daily will ensure protection from cancer. Apart from its religious significance, it 1s of great medicinal importance and is a prime herein Ayurvedic treatment. The plant's extracts can be used to prevent and cure many illnesses and common ailments like the common cold, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning and malaria. The essential oil extracted from Karpoor Tulsi is mainly used for medicinal purposes though used in the manufacture of herbal toiletry.

The Plant Cultures project of the Medicines and Healthcare Products Regulatory Agency (MHRA) of the United Kingdom notes that the Tulsi plant in Ayurvedic medicine has been used topically for skin conditions like eczema and ringworm, and insect bites. It is also commonly used to reduce fevers, improve lung and digestion issues, reduce the effects of colds, and toxins/poisons.

Tulsi is very effective in lowering blood sugar levels and controlling diabetes. Tulsi acts as a preventative antibacterial agent.' In Ayurveda, Tulsi has been used for thousands of years for its various healing properties, as mentioned in a Hindu form of medical science. Charaka Samhita is an ancient Ayurvedic text consisting of the information of Tulsi. Tulsi is considered an Indian adaptogen, which balances the different processes in the body and helps adapt the stress. Tulsi is regarded in Ayurveda as a kind of "elixir of life" and is believed to promote longevity due to its strong aroma and astringent taste. Tulsi leaves prevent bacterial growth during the eclipses if it is sprinkled over the food in the stored water.

Tulsi In Modern Medicine

The research on modern medicine indicates that Tulsi might have been an effective treatment for conditions like ulcers, high cholesterol, Type-2 diabetes, obesity, and compromised/suppressed immune systems (from diseases like cancers and AIDS). Plant cultures say the traditional uses of Tulsi in Ayurveda might be due to some intrinsic properties in many varieties of Tulsi. such as the essential oils containing an anti-inflammatory compound called eugenol, and various acids with antioxidant and anti-inflammatory properties that could support the claims of Tulsi being a treatment for so many conditions, according to Ayurveda.

PROPERTIES:

Tulsi is known to have many properties like:

- It might be an antipyretic (relieves fever) agent
- It might have anti-inflammatory activity
- It might be an antiemetic (prevents vomiting)
- It might help lower the blood sugar (antidiabetic)
- It might act as an hypotensive (lowers blood pressure)
- It might have hypolipidemic (lowers cholesterol) activity
- It might act as an analgesic (relieves pain)
- It might have anti-asthmatic activity
- It might be an hepatoprotective (liver-protective) agent
- It might help reduce stress (antistress)
- It might be a potent expectorant (expels mucous)
- It might have anticancer potential
- It might be a diaphoretic (induces sweating)

Ocimum sanctum also known as Tulsi or Holy basil is an aromatic plant and it belongs to the family Lamiaceae. It is widely used as medicine to cure various ailments. The objective of the study was to analyse different phytochemical components of Tulsi leaf.

Tulsi has been found to protect organs and tissues against chemical stress from industrial pollutants and heavy metals, and physical stress from prolonged physical exertion, ischemia, physical restraint and exposure to cold and excessive noise.

OS contains active constituent which helps in healing of cuts, wound, etc.

Active constituents are Lanoline, Eugenol, Methyl Chavicol, methyl cinnamate, lanoline, ocimene, Pinene, anethol, Thymol, Citral and Camphor.

- LANOLINE- Treat or prevent minor irritation (skin) such as blisters, burn, dry skin, dioper skin.
- THYMOL- Anti-inflammatory, antibacterial, Antiseptic, Antiviral agent, (medicine as expect).
- CAMPHOR- Cough, Pain, Itching.
- COTRAL /CITRAL- Medicine as expectorant, antiviral, Anti-inflammatory, Antibacterial, Antiseptic

(Above constituents which present in Kirshna Tulsi (i.e. OS) Carrying major role in wound healing).

Tulsi's broad-spectrum antimicrobial activity, which includes activity against a range of human and animal pathogens, suggests it can be used as a hand sanitizer, mouthwash and water purifier as well as in animal rearing, wound healing, the preservation of food stuffs and herbal raw materials and traveller's health Infection protection Modern research has revealed that Tulsi has anti-bacterial, anti-viral and anti-fungal activity that includes activity against many pathogens responsible for human infections. Tulsi has also been shown to boost defences against infective threats by enhancing immune responses in nonstresses and stressed animals and healthy humans. While no human trials have been published, there is experimental evidence that Tulsi may help in the treatment of various human bacterial infections including urinary tract infections, skin and wound.

Tulsi's broad-spectrum activity, which includes activity against Streptococcus mutans, the organism responsible for tooth decay, further suggests that it can be used as a herbal mouth wash for treating bad breath, gum disease and mouth ulcers. This has been confirmed in clinical trials that have demonstrated that rinsing with Tulsi is as effective as 0.2% Chlorhexidine and Listerine in reducing the levels of Streptococcus mutans and that a herbal mouthwash that includes Tulsi is preferred for its taste and convenience.

PREPERATION OF OS (KRISHNA TULSI) EXTRACT

Pepretion of Tulsi extract included three different methos such as Methanolic extraction, Ethanolic extraction, Aquas extraction which as follow,

FOR EXTRACTION NEED FINE POWDER OF KRISHNA TULSI WHICH PREPARE BY COLLECTING FRESH LEAVER OF KRISHNA TULSI THEN DRY IT IN SHADE BY 7 DAYS THEN GRIND IT INTO GRINDER THEN SIEVE AND COLLECT FINE POWDER, STORE IN CLOSED CONTAINER.

• ETHANOLIC EXTRACT

I. Extraction uses the property of solubility to transfer a solute from one phase to another phase.

II. ethanol is a polar molecular hydrocarbon due to the high electronegativity of the oxygen atom and due to this it is soluble in water.

III. Mechanical stirrer:

The extraction by continues stirring and evaporating of solvent which use 100ml of 80% ethanol mix with 50gm fine powder of Krishna Tulsi. Stay with continues stirring. The time required about 3hrs. to get final product, yield about 12%.

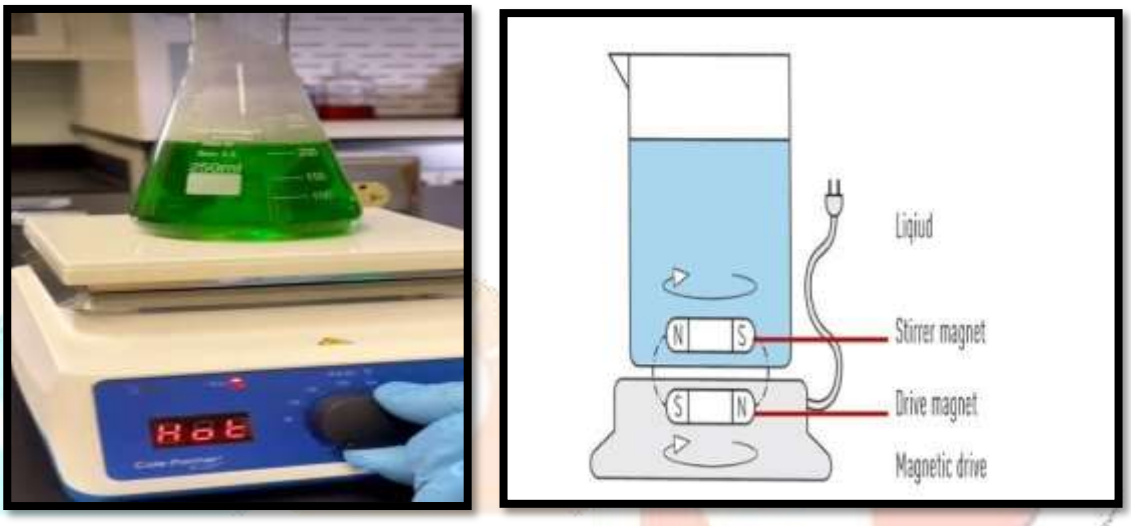

FIG. MAGNETIC STIRRER

• Methanolic extract

I. Extraction uses the property of solubility to transfer a solute from one phase to another phase.

II. Methanol is a polar solvent and is soluble in water. Methanol isn't as polar as water, but it's still pretty polar. When methanol passes through your disk, the attraction between methanol molecules and water molecules becomes stronger than the attraction between water molecules and other water molecules.

III. methanol and water are the solvents that can extract more diversity of compounds, which can explain the higher extraction efficiency.

IV. Soxhlet extraction:

extraction technique widely applied to analytes that are sufficiently thermally stable. The extraction solvent is continuously cycled though the matrix, by boiling and condensation, with the sample being collected in the hot solvent. We prepared the soxhlet apparatus and then prepared the timber using butter paper then added 50 gms of tulsi powder, 200ML of 80% methanol and left the apparatus functional for 6 hrs and then we got our product which was 17% of the total.

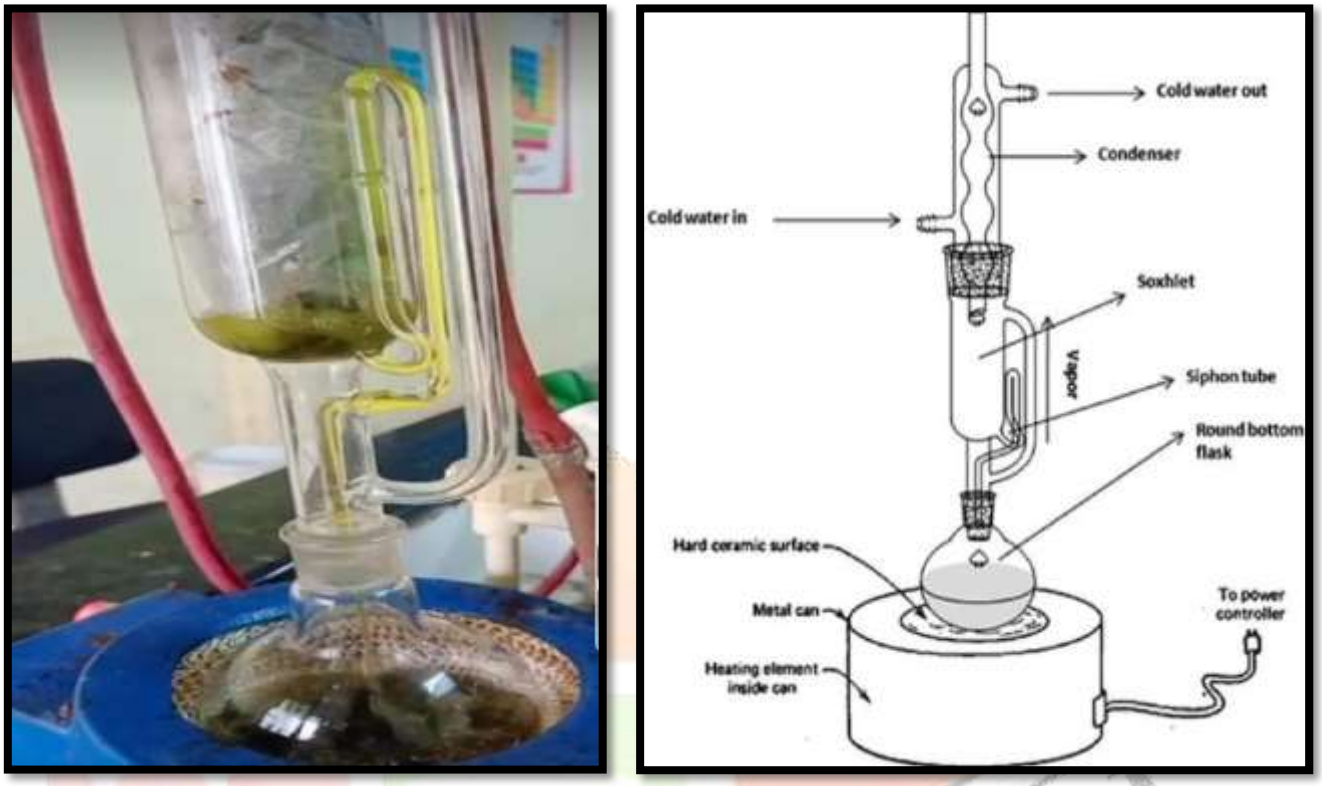

FIG. SOXHLET APPARATUS

• AQUAS EXTRACTION

I. Extraction uses the property of solubility to transfer a solute from one phase to another phase.

II. Aqueous extraction is distinguished from mechanical extraction by one characteristic all of the aqueous methods depend on the use of water or another liquid to extract and often the water is used to aid in the gravity separation of the valuable mineral.

III. Preparation of aquas solution taken of 60gm of Krishna tulsi powder mixed into 500ml of distilled water then add few drops of chloroform and stay for 3 days. Chloroform added for avoiding growth of fungus.

IV. After 3 day filter the store sample by using No.1 Whatman filter paper then collect the sample placed into the hot air one for extraction.

• HOT AIR OVEN:

Extraction done into hot air oven by placed the sample and set the temperature about 110°c. then stay for 3 hrs. the final product yield about 15%.

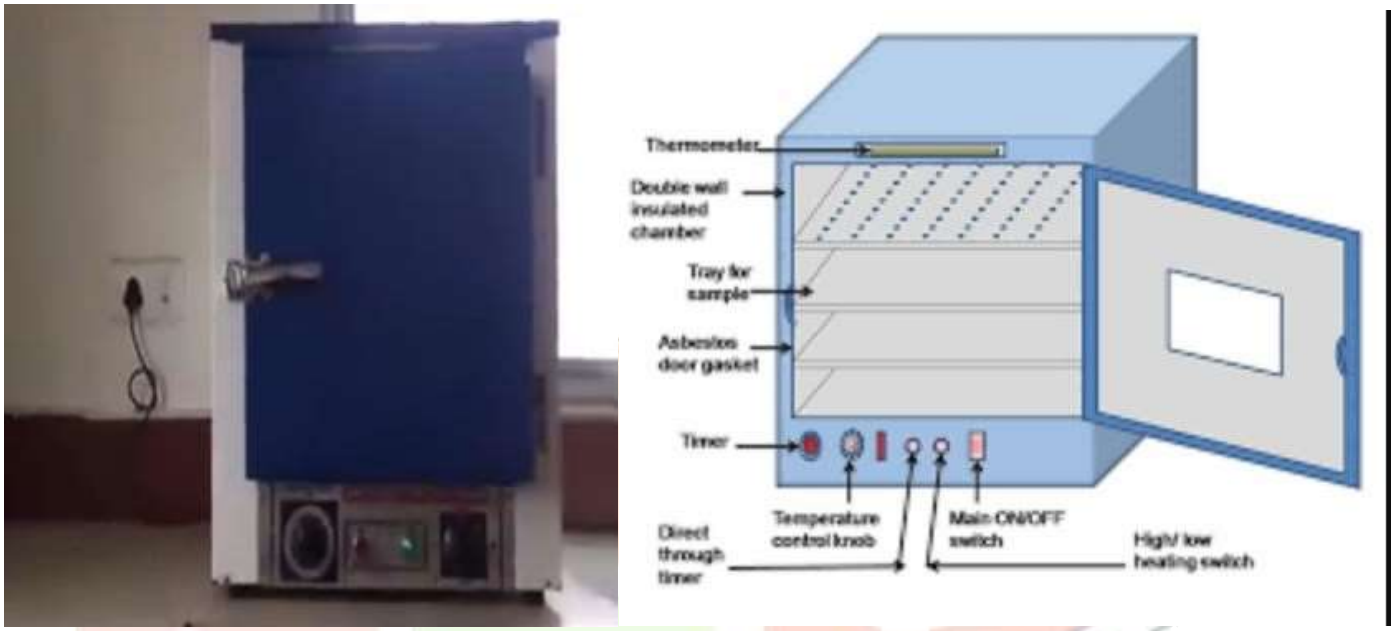

FIG. HOT AIR OVEN

CONCLUSION

• Different types of solvent used for extraction. All extract pass identification test for active constituents. However, Methanolic extraction process by using Soxhlet Extractor give higher yield.

• Aqueous extracts are better at extracting water-soluble antioxidants, while ethanol extracts are better at extracting fat-soluble antioxidants. The aqueous extract will have a higher antioxidant property if the antioxidants in the leaves are more water-soluble.

• Aqueous extracts of plants are a simple, economical and eco-friendly.

• Aqueous extraction processing (AEP) emerges as a friendly alternative since it offers advantages like eliminating organic solvent consumption and requiring lower investment costs and energy demand.

FUTURE SCOPE

The most common problems in the preparation and development of any new dosage form are the hydrophobic behaviour of drugs, resulting in poor water solubility and bioavailability. Due to the hydrophobic nature of many drugs, their entry into the biological system has been difficult. Ointments, creams and lotions are different types of drug delivery systems that have been used topically and have excellent emollient properties, but slow drug release due to oil-based bases. Compared to other topical systems, the gel releases the drug faster because the gel provides an aqueous environment for the drugs. A hydrophobic drug can be added to an oil base and applied to the skin in an emulsified form.

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