WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 6, 287-297. Review Article ISSN 2277– 7105

A REVIEW ON HERBAL DHOOP FORMULATION AND ITS EVALUATION

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Article Received on
28 January 2024,

Revised on 18 Feb. 2024,
Accepted on 08 March 2024

DOI: 10. 20959/wjpr20246-31653

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ABSTRACT

Now a day's peoples are using room fresheners and disinfectants to cleanse indoor environment. They often contain mosquito repellent activity and pleasant fragrances to create a sanitized, protect from the mosquito bite and pleasant atmosphere. Creating herbal dhoop using mosquito repellent plant parts is such a commendable effort. Our aim to provide a safe, non-toxic, and eco-friendly solution for both air purification and mosquito control. It aligns with the growing interest in sustainable and natural alternatives. It is true that some commercial mosquito repellents may contain chemicals that can cause skin irritation and other health issues. Concerned about the possible negative effects of traditional repellents, people are looking into natural alternatives like herbal dhoop. The main motive of present work is preparation and evaluation of herbal dhoop formulation for cleansing the environment.

KEYWORDS: Mosquito repellent**,** Anti-septic**,** Air-purifier**.**

INTRODUCTION

Using dhoop, which is prepared from herbal plants for sterilization is a traditional method that some believe minimise hazardous effects compared to other chemical sterilization techniques.[1] Therefore, the herbal dhoop is used for mosquito repellent or have been used to reduce the growth of mosquitos using various type of natural ingredients like Eucalyptus leaf (*Eucalytus citrodora*) Camphor (*Cinnamomum camphora*) Clove (*Syzgium aromati*), Neem (*Azadirachta indica*), Rose, Marigold, Benzoin (Sambharani), Ghee as a binder.[2]

The current emphasis on formulating and evaluating herbal dhoop is aligned with growing interest in eco-friendly and natural alternatives for environmental cleansing.[3] this approach combines traditional knowledge with modern practices to create formulations that aim to cleanse the environment effectively.[4]

Utilizing herbal products for air cleansing is a positive initiative, aiming to not only purify the air but also enhance the atmosphere with appreciable fragrances. This aligns with the desire for a more natural and pleasant approach to creating a positive indoor environment.[5] Indeed, while chemical containing products are prevalent in the market for air purification, their potential side effects and impact on living organisms raise concerns. Exploring herbal alternatives acknowledges the need of effective solutions while prioritizing safety and minimizing adverse effects on both the environment and living beings.[6]

HERBAL INGREDIENTS & THEIR DESCRIPTION

EUCALYPTUSLEAF

Fig. 1: Eucalyptus Leaf.

Synonym: River red gum, bluegum, Genus's eucalyptus.

Botanicalname: *Eucalyptusglobuluslabill*.

Family: Myrtaceae.

Morphologicalcharacteristics

Leaves: Leaves are leathery and often hang obliquely or vertically. Most species evergreen.

Flowers: The flower petals cohere to form a cap when the flower expands. The capsule fruit is surrounded by a woody cup shaped receptacle and contains numerous minute seeds.

Chemical constituents

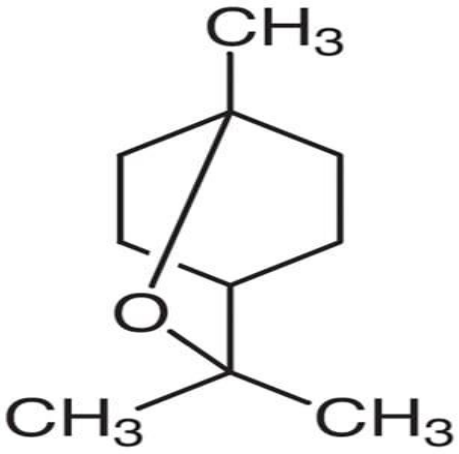

Fig. 1: (a) Chemical structure of Cineole

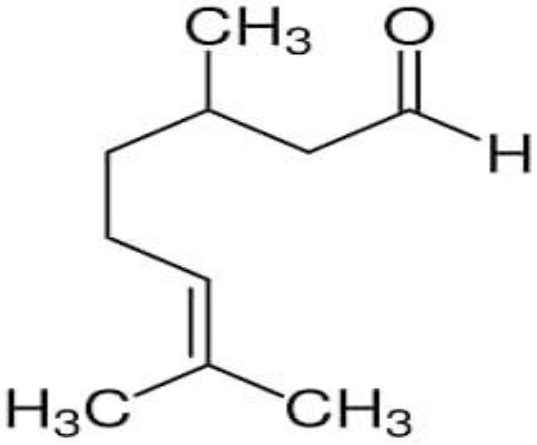

Fig. 1: (b) Chemical structure of Citronellal.

- Terpenes
- Pinene, camphene, phellandrene.
- Polyphenolic acid: Caffeicacid, gallic acid.
- Flavanoids: Eucalyptin, rutin.

Medicinaluses

- Flavouring agent.
- Cough.
- Expectorant.
- Anti-septic.
- Asthma.

CAMPHOR

Fig. 2: Camphor.

Synonym: Alcanfor, Camphora, Gomme.

Biologicalsource: It is found in the wood of the camphor laurel a large ever green tree.

Family: Lauraceae.

Botanicalname: *Cinnamomumcamphora*.

Morphologicalcharacteristics

Inflorescence: Inflorescence of panicle, axillary and shorter than the leaf.

Flowers: Calyx is yellow, slightly longer than the pedicel about 3 mm long.

Fruit: Round, fleshy 3-5cm long and black.

Chemicalconstituents: The main constituents of Cinnamomum camphora leaves essential oil were

- Camphor (40-54%).

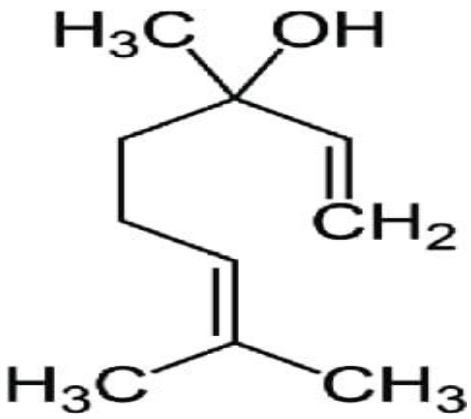

Fig. 2: (a) Chemical structure of Linalool.

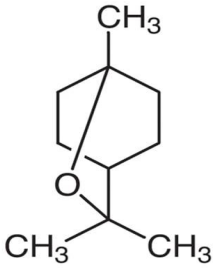

Fig. 2: (b) Chemical structure of Cineole.

3,7,11-trimethyl-3-hydroxy-6,10-dodecadien-1-yl acetate (4.50%).

Medicinaluses

- Cough.
- Pain relievers.
- Anti-fungal.
- Anti-bacterial.
- Treat skin conditions.

CLOVE

Fig. 3: Clove buds.

Synonym: Eugeina aromaticum, Eugeina caryophyllatum.

Biologicalsource: Cloves obtained from dried flower buds of eugeina caryophyllus.

Family: Myrtaceae.

Botanicalname: *Syzygiumaromaticum*.

Morphologicalcharacteristics

Colour: Crimsonto dark brown.

Odour: Slightly aromatic.

Taste: Pungent and aromatic followed by numbness.

Shape: Hypanthium is surmounted with 4 thick acute divergent surrounded by dome shaped corolla. The corolla consists of unexpanded membranous petals with several stamens and single stiff prominent style.

Chemicalconstituents

- Volatile oil (15-20%).
- Eugenol (70-90%).

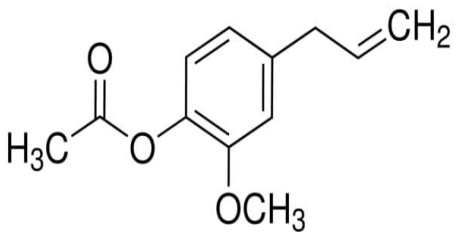

Fig: 3 (a) Chemical structure of Acetyl eugenol.

- Other substance mainly methyl furfural and dimethyl furfural.

Medicinal uses

- High in anti-oxidants. Improve liver health.
- Regulate blood sugar.
- Promote bone health.
- Stomach ulcers.

NEEM

Fig. 4: Neem leaf.

Synonym: Neem, Margosa, Indiansilica.

Biologicalsource: Neem consists of the fresh or dried leaves and seed oil of azadirachta indica.

Family: Meliaceae.

Morphologicalcharacteristics

Leaves: Imparipinnate 20-37cm in length and dark to greenish yellow in colour and bitter in taste.

Flowers: White scented 5mm long.

Fruits: Drupe 1.2 to 1.8cm long, oblong 1-seeded smooth greenish yellow in colour.

Bark: Rough, greyish to brownish in colour.

Chemicalconstituents

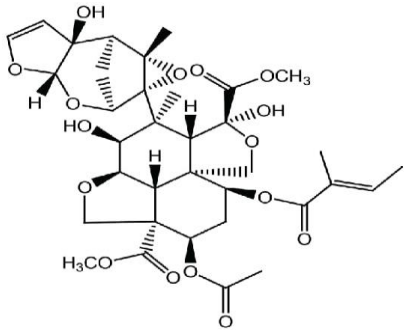

Fig. 4(a): Chemical structure of Azadirachin.

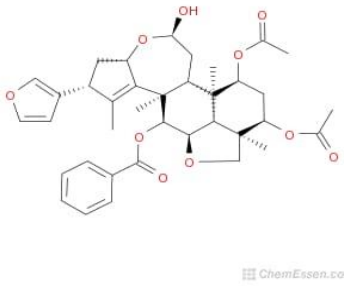

Fig. 4: (b) Chemical structure of Nimbolinin.

Nimbin, Nimbidin, Nimbidol, sodium nimbinate.

- Gedunin, salannin and quercetin.

Medicinaluses

- Anti-inflammatory.

- Treat ulcers. Nourishes skin.
- Useful detoxification.
- Treat fungal infections.

BENZOIN

Fig. 5: Benzoin.

Synonym: Gum benzoin, gum Benjamin, sambrani.

Biologicalsource: Obtained from the bark of several species of trees in the genus styrax.

Family: Styracaceae.

Botanicalname: *Styraxtonkynensis*.

Morphologicalcharacteristics

Colour: Greyish brown to Gray.

Odour: Aromatic and characteristic.

Taste: Sweetish and slightly acrid.

Size: It occurs in the form of lumps of varying sizes or tears. Tears are externally yellowish, milky white: the surface is uneven when heated fumes of benzoic and cinnamic acids are produced.

Chemicalconstituents

- Balsamic acid esters.

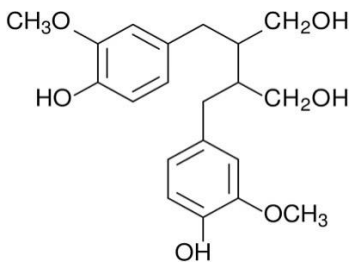

Fig. 5: (a) Chemical structure of Lignans.

- Terpenoids.
- Sesquiterpene.
- Benzoin is used on the skin for ulcer.
- Bed sores, Cracked skin.
- Small quantities in foods as a flavouring.

DRIEDFLOWERS: (**ROSE** AND**MARIGOLD**)

- You can reap many benefits from the use of dried flowers over fresh flowers such as dried flowers last longer.
- They have very low maintenance needs and do not require water, recutting of stems or flower food.
- Which is useful for people suffering from hay fever or allergies since they do not contain pollen.
- Used as a toner to cleanse and to remove impurities from the skin.

Rose petals can also be used in potpourri and confetti mixes to add a pop of scent and colour.

GHEE

- Ghee is clarified butter fat and contains about 99% of milk fat.
- Ghee is a lipophilic dairy product with 98.9% lipids 0.3% water and less than 0.9% non-fat solids.

EVALUATION PARAMETERS FOR HERBAL DHOOP

- **Physical analysis**

Colour: Brownish.

Odour: Resinous.[7]

- **Sensory analysis**

A survey also carried out in order to evaluate the acceptability of herbal dhoop among 15 students. Various parameters such as smell, appearance, smoke etc was evaluated.[8]

- **Mosquitoes Repellent**

To evaluate the dhoop against mosquitos' repellent activity. The repellency activity by the dhoop to the mosquitoes shown successful result when burning in a corner of home having mosquitoes and it explain that natural insecticide preparation is always effective than synthetic repellent. During the burning of dhoop it was shown that up to 80% of the mosquitos' number was reduced. The eucalyptus, camphor, clove show the maximum mosquito repellent activity.[9]

- **Microbiological study**

The evaluation of antimicrobial activity was carried out by preparing nutrient agar plates in duplicates set of plates exposed in same area. For performing this activity, we take 2.8 gm of nutrient broth and 3gm of agar then pour into the 50ml distilled water in conical flask. Then place the conical flask in autoclave. After sterilization the sample pour into petri plate and cover the sample and make them solidify. Open the petri plate in the test area for 10 min and place in incubator for 24 hrs. After that open the second petri plate in same area where the dhoop is burn and place in incubator, then after 24 hrs check the difference between both plates.[10]

CONCLUSION

From the above study, the formulation of herbal mosquito repellents produces long lasting protection without harming humans and environment, provide a sustainable alternative to synthetic chemical repellents. Using an herbal mosquito repellent derived from accessible and affordable sources is a practical and sustainable approach. The herbal dhoop was economical, safe, easily affordable, and environmentally beneficial. In this formulation the Eucalyptus have high degree of repellency as it contains main ingredient eucalyptol and cineole. The present work of this formulation is herbal dhoop which is cleanse the environment and air.

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