

Formulation and Evaluation of polyherbal mosquito repellent Dhoop

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ABSTRACT:-

Background: -Mosquitoes, the Culicidae, are a family of small flies consisting of 3,600 species. Mosquito causes disease as chikungunya, dengue fever, malaria.

Herbal dhoop is natural product which is composed of natural mosquito repellent plant parts. It is made from unique blend of plant extracts and aromatic oils which repels the mosquito or insects away and it is safe, non-toxic, eco-friendly. In the present study the essential oils and plants extract were tested at different concentrations with handmade mosquito stick at the corner of the room where large number of mosquitoes are present. The results revealed that the different combinations of herbal plants show mosquito repellent activities. Camphor, rutidosperma, Neem, Tulsi and Lantana camara show highest mosquito repellences and no irritability was reported on the skin. Hence it is safe and eco-friendly in use.

Aim: - To reduce the eye irritation through the polyherbal mosquito repellent dhoop as well as to show minimum carcinogenesis effect due to absence of sticks.

Objectives: - To develop commercial repellent products containing plant based ingredients have gained increasing popularity among consumer, as these are commonly perceived as safe in comparison to long established synthetic repellents.

Method: -The solubility of our herbals are soluble in various solvent. Formulation of dhoop with various composition with different fragrance. Selected formulation from this different formulations based on its evaluation with activity.

Result: - In this research work done all preformulation parameters of powder form gives a result with specific criteria, also perform all evaluation test of dhoop with proper result.

Conclusion: - The present study was concluded that the formulated herbal dhoop is effective cheaper and non-poisonous than the presently available chemical based marketed mosquito

repellent and maintain mosquito free healthy environment for the society.

Keywords: - Herbal dhoop, malaria, mosquito, Tulsi, Lantana camara.

I. INTRODUCTION:-

Mosquitoes, the **Culicidae**, are a family of small flies consisting of 3,600 species. Mosquitoes have a slender segmented body, one pair of wings, three pairs of long hair-like legs, and specialized, highly elongated, piercing-sucking mouthparts. All mosquitoes drink nectar from flowers females of some species have in addition adapted to drink blood. The mosquito life cycle consists of four stages: egg, larva, pupa, and adult. Eggs are laid on the water surface they hatch into motile larvae that feed on aquatic algae and organic material. Insect repellents are applied on skin and give short-term protection against mosquito bites. Insects. Mosquito causes disease such as chikungunya, dengue fever, malaria. For a mosquito to transmit disease, there must be favourable seasonal conditions, primarily humidity, temperature, and precipitation. El Niño affects the location and number of outbreaks in East Africa, Latin America, Southeast Asia and India. Climate change impacts the seasonal factors and in turn the dispersal of mosquitoes. Climate models can use historic data to recreate past outbreaks and to predict the risk of vector-borne disease, based on an area's forecasted climate. Mosquito-borne diseases have long been most prevalent in East Africa, Latin America, Southeast Asia, and India. An emergence in Europe was observed early in the 21st century. It is predicted that by 2030, the climate of southern Great Britain will be suitable for transmission of Plasmodium vivax by Anopheles mosquitoes for two months of the year, and that by 2080, the same will be true for southern Scotland. Dengue fever, too, is spreading northwards with climate change. Environmental Impact and Disease Transmission: Mosquitoes play a crucial role in diverse

ecosystems by acting as a food source for various organisms like birds, bats, and fish. Nevertheless, their capacity to spread illnesses to both humans and animals is a notable worry. Mosquitoes are the carriers of diseases such as malaria, dengue fever, Zika virus, yellow fever, and West Nile virus. When a mosquito feeds on an infected host, it can pick up the pathogen, which might then be transferred to a new host when it takes subsequent blood meals. The mosquitoes' capability to transmit diseases makes them a significant public health concern in numerous regions around the globe. The different types of Mosquitoes and diseases caused by them are given below: ^[4] 1. Aedes Mosquito: The Aedes mosquito is the culprit behind diseases like Dengue fever, yellow fever, West Nile fever, and Zika virus. These mosquitoes are recognizable by the distinct white and black markings on their legs and body. 2. Aedes albopictus: The Aedes albopictus, also known as the Asian tiger mosquito, is responsible for transmitting various viral pathogens such as yellow fever, Zika fever, and dengue fever. It's also a carrier for certain filarial

nematodes like dirofilaria immitis . This mosquito species is commonly found in tropical and subtropical regions, particularly in Southeast Asia. 3. Marsh Mosquito (Anopheles Mosquito): Malaria, encephalitis, and dirofilaria immitis are attributed to them. They thrive in colder climates as

Mosquito repellent dhoop:-

Dhoop sticks' calming scents assist to soothe the mind and foster a tranquil environment around them. Many plants have mosquito-repelling properties, which is necessary for disease protection. Since they are made of plants, they are environmentally friendly and frequently have no adverse effects. By doing this, they provide mosquito protection without any negative side effects. Natural coil is efficient and useful, however synthetic coil can be dangerous due to its adverse effects. To prevent the harmful effects of the chemicals added to commercial mosquito repellents, which have an impact on both humans and the environment, herbal dhoop sticks can be a perfect substitute.

Materials and Methodology:-

Sr.No	Botanical name	Common name	Properties	Protection against mosquito
1.	Azadirachtaindica	Neem	Antiviral,antibacterial	Yellow fever mosquito
2.	Ocimumtenuiflorum	Tulsi	Antifungal	Yellow fever mosquito
3.	Lantana camara	Lantana	Antimicrobial	Aedes mosquito
4.	Cleome rutidosperma	Rooster tree	Analgesic,antioxidant	Yellow fever mosquito
5.	Eucalyptuscitriodora	Eucalyptus oil	Antiviral	Filarial mosquitoes

Formulation table:-

Sr.No.	Ingredients	F1	F2	F3	Uses
1.	Neem powder	1 gm	-	1 gm	Insecticide mosquito repellency
2.	Tulsi powder	1 gm	-	1 gm	Insecticide
3.	Rostertree powder	-	1 gm	1 gm	Insecticide
4.	Lantana powder	-	1 gm	1 gm	Insecticide
5.	Marigold powder	1 gm	1 gm	1 gm	Smoke masking agent
6.	Sandalwood powder	1.5 gm	1.5 gm	1 gm	Healing agent
7.	Coconut fiber	2 gm	1.5 gm	1 gm	Binding agent
8.	Clove	0.5 gm	0.5 gm	0.5 gm	Spicy Fragrance
9.	Camphor	0.5 gm	0.5 gm	0.5 gm	Air purifier
10.	Cinnamon	0.5 gm	0.5 gm	0.5 gm	Mood booster

11.	Eucalyptus oil	0.5 ml	0.5 ml	0.5 ml	Treat on cough
12.	Clarified butter	1.5 ml	2 gm	1 ml	Burning agent
13.	Perfume	QS	QS	QS	Fragrance
14.	Rose water	QS	QS	QS	Natural vehicle

Method of preparation:-

Weigh accurately all the powders according to formula and mix it well in mortar and pestle.

The marigold petals, coconut fiber, cinnamon and clove were shed dried and powdered by using domestic grinder and mixed to the above powder mixture.

The fine powder of camphor is mixed into it.

Then add sandalwood powder & clarified butter in it and mix it properly.

Finally add rose water, Eucalyptus oil and perfume mix it well in mortar-pestle and formed dump mass with dhoop sticks.

Dry it with shade dry.



Fig. Mosquito repellent dhoop

Evaluation of Mosquito Killing and Repellent Dhoop from Herbal Ingredients:

1. **Organoleptic characters:** - Colour, odour and appearance by using visual inspection.

2. **Moisture content:** - The initial weight of the prepared dhoop was ignited and also the final weight of the dried dhoop was noted.

3. **Ash value:** - The dhoop stick was burnt completely and the ash was collected and weighed.

4. **Mosquito Landing Test:** - This test involves counting the number of mosquitos that land in a persons exposed skin when they are in the vicinity of the dhoop. To perform this test, you can have a person sit in a room with the dhoop burning and count the number of mosquitos that land on their skin in a set period, such as 5 minutes.

5. **Fume Test:** - A fume test is used to detect the colour and smell if the fumes that are released when a product is burned, to identify the presence of specific compounds

6. **Irritability Test:** - The irritability test is performed to check that whether the prepared the dhoop cause any irritation to the skin

7. **Mosquito Killing Time:** - This test is performed to check the effect of mosquito killing either slow or fast.

8. **Burning on Users:** - The test was done by giving mosquito dhoop to the persons living in the area and investigate the effect like coughing, tears were observed.

II. RESULT AND DISCUSSION:-

1. Organoleptic characters:-

- a) Colour:- Black
- b) Odour:- musk
- c) appearance:-

2. Moisture content:-

Initial weight of one Dhoop = 2.863gm.
 Final weight of dried Dhoop = 2.388gm.
 Moisture content = $\frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$
 $= \frac{2.863 - 2.588}{2.863} \times 100$
 $= 9.60 \%$

3. **Ash Value:** -The weight of ash- 0.20gm

Sr. No	Test	F1	F2	F3
4.	Mosquito landing Test	15 min	10 min	5 min
5.	Fume Test	Poor	Good	Good
6.	Irritability Test	Less skin irritation	Less skin irritation	No Skin irritation
7.	Mosquito killing time test	Very slow effective	Very slow effective	Slow effective
8.	Burning on users	No any harmful effect on users	No any harmful effect on users	No any harmful effect on users

III. CONCLUSION: -

In summary, the project report focuses on creating and assessing a herbal-based mosquito-killing and repellent dhoop. The study thoroughly examines the process of developing an environmentally friendly approach to mosquito control. By utilizing specific herbal components known for their mosquito-repelling and insecticidal qualities, the experiments conducted in controlled settings demonstrate positive outcomes, indicating their efficacy in incapacitating and eradicating mosquitoes. To conclude, the project report underscores the viability of harnessing herbal elements to produce a dhoop that is both ecologically sound and harmless for addressing mosquito-related issues. It was concluded that the formulated herbal dhoop stick is effective, cheaper and non-poisonous than the presently available chemical based marketed mosquito repellents and maintenance mosquito free healthy environment for the society.

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