

FORMULATION AND EVALUATION OF HERBAL MOSQUITO REPELLENT CANDALE

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Abstract

Herbal plants contain various biologically active compounds that are useful for life enhancement and they are the main origins of modern and conventional herbal medicine for the prevention of diseases. The nature of different kind of life supporting voters of plants that have been studied by scientists for their applications. The purpose of the research was to devise a herbal mosquito repellent candle that would include the Peppermint, clove, Camphor, Rose water and The candle was tested for flammability, time for burning and Checked the repellency of mosquito. It may be attributed to the presence of the Different active constituents of the oils. The test showed that the manufactured poly herbal candle had become more effective, Cheaper and non-poisonous than the candle repellents currently available on the market based on chemical in fighting mosquitoes.

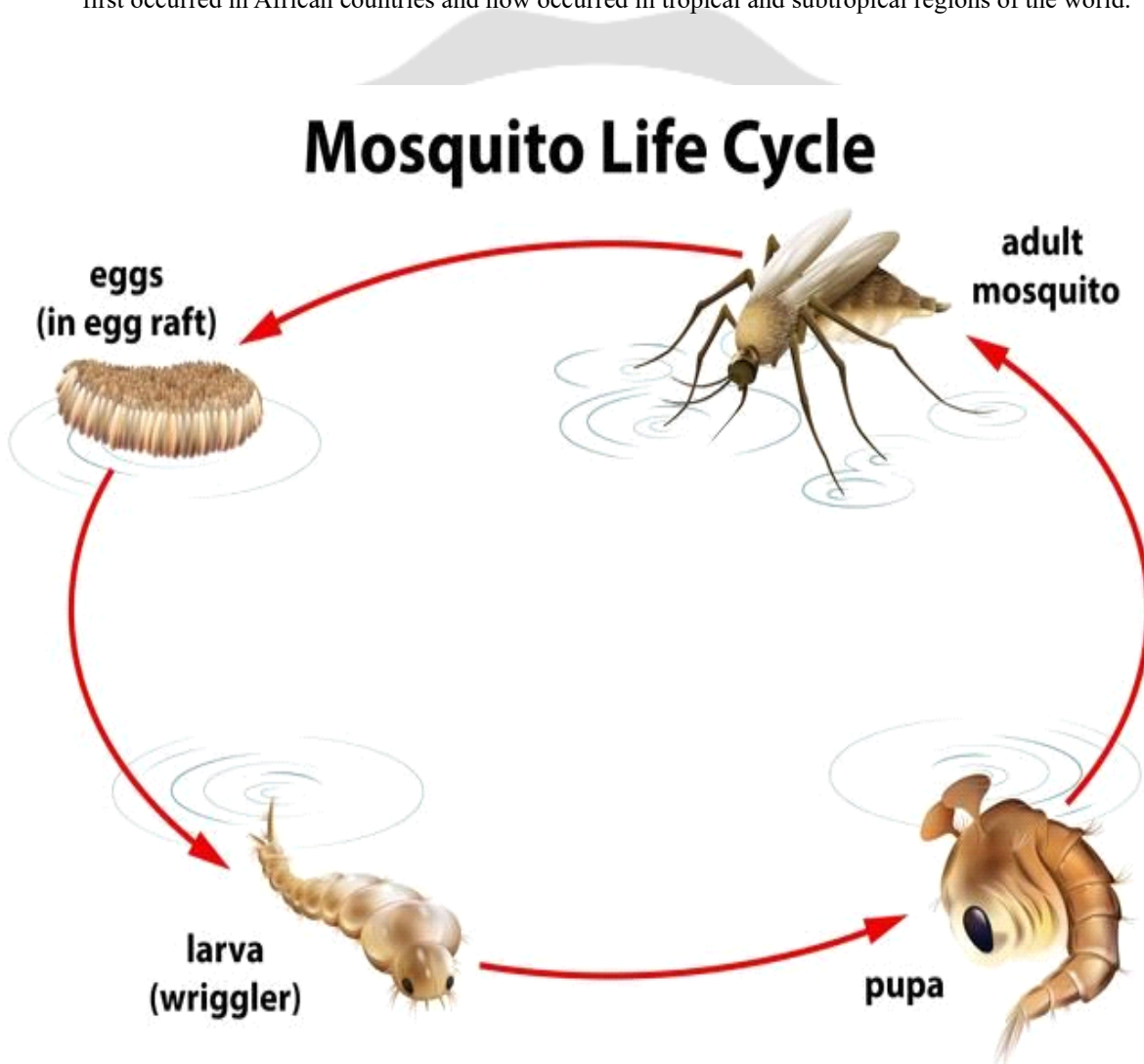
Keywords : *Mosquitos, Mosquito repellent candle,*

➤ Introduction

Mosquito borne disease are major human health problem in all tropical and subtropical countries. The disease transmitted include malaria, ilariasis, yellow fever, Japanese encephalitis and dengue fever Culexquinquefasciatus, the potential vector of lymphatic ilariasis, isthe mostwidely distributed tropical disease with around 120 million people infected worldwide and 44 million people having common chronic manifestation. Controls of such serious diseases are becomingincreasingly difficult because of highrate of reproduction and development of resistance to insecticides in mosquitoes.Synthetic pesticides have been extensively used for mosquito control by either killing, preventing adultmosquito to bite human beings or by killing mosquito larvae at the breeding sites of vectors. However itsdeleterious impact on non- target population and the development of resistanceprompted for the search of alternative, simple and sustainable methods of Mosquito control. Inthe most part of the world, synthetic chemical larvicides continue to be applied for controlling mosquitoes but many of these chemicals are toxic to human, animal and plant life and resistance can be problematic in regulating the control. Therefore, researchers are currentlyexploiting natural substanceto be used asinsecticides for controlling larval mosquitoes. These formulationsare safe, eco friendly, cheap, easy to use and has maximum repellence against mosquitoes.

The different types of Mosquitos and diseases caused by them are given below:

- **Aedes Mosquito:** Aedes Mosquito cause Dengue fever, yellow fever, West Nile fever, Zika virus etc. white and black markings on their legs and body are main identification of them.
- **Aedes albopictus:** Aedes albopictus (Asian tiger) responsible for number of Viral pathogens Such as yellow fever virus, Zika fever, Dengue fever as well as some filarial nematodes e.g. *Dirofilaria immitis* They found in tropical and subtropical Areas of south east Asia.
- **Anopheles Mosquito:** They are responsible for malaria, brain tremor, *dirofilaria immitis*, they occurred in Colder climates, tropical areas, commonly found in sub Saharan Africa .
- **Yellow fever Mosquito:** they cause disease like dengue fever, Zika fever, yellow fever etc. this Mosquito first occurred in African countries and now occurred in tropical and subtropical regions of the world.



To get rid from Mosquitoes there are various types of repellents available in the market but they have high potential to cause various harmful effects on human being there are also some natural ingredients which useful to get rid from Mosquito which does not cause any problem to human health.

> Material**> Beeswax**

Beeswax is a natural biological polymer containing a mixture of several non-toxic and cheap substances (esters of fatty acids, alcohols, acids, etc.). The number of reported individual components contained in beeswax exceeds 300, which are from various species of honeybees. Depending on the honeybee species and the geographical zone, the concentrations of individual components and substance classes may have only small differences. In addition, from the view point of chemistry it is a stable and water-repellent substance. Beeswax is a highly crystalline natural product that is used in pharmaceutical, cosmetics, food and other industries. It is also frequently used in the preparation of controlled release drug preparations. It is a natural pesticide and it is also used in the mosquito repellent candle.

> Camphor

Mosquitoes have a strong sense of smell. They can find human bodies by smelling their carbon dioxide emissions. So, when you burn camphor in the room, its strong smell overwhelms the mosquitoes; plus, it confuses them with their own odor and repels them from the room. Moreover, camphor is known for its robust aroma that reaches every corner of the house, so there is no way mosquitoes can find any place to hide and even if they do, the smell will make them come out of the corners and send them out of your house.

➤ **Tulsi**



> **Synonyms:**-Ocimum sanctum

> **Biological source:**-fresh and dried leaves of Ocimum species like Ocimum sanctum L. and Ocimum basilicum L.

> **Family:**-Lamiaceae

Tulsi, or holy basil, is a widely used medicinal plant in Indian homes. Every part of the plant, like the stem, leaves, seeds, root, and flowers, has healing properties. It's used to treat various illnesses such as coughs, sore throats, kidney stones, eye disorders, respiratory problems, and stress. People also use it to repel mosquitoes. The Tulsi used here was collected from a botanical garden and the leaves were washed and dried slowly to retain its beneficial properties.

➤ **Peppermint**



> **Synonyms** – Pudina

> **Biological source** – Mentha piperita

> **Family**- Lamiaceae

The smell of peppermint is a mosquito repellent. Peppermint contains menthol, which produces a concentrated odor. Like other natural oil repellents, this causes mosquitoes to go “nose blind” to the wearer’s presence because it’s so overpowering to their senses! This means mosquitoes are not able to find humans to bite.

➤ **Clove**



> **Synonym**- Lavang

> **Biological source**- Eugenia caryophyllus

> **Family** –Myrtaceae

Clove oil is known to have mosquito repellent properties due to its high concentration of a compound called eugenol., and also release a strong aroma. Add that to the sour and distasteful flavour of lemon, and you’ve got a foolproof mosquito repellent.

➤ **Rose water**



> **Synonym-** Gulab

> **Biological source** - Rosa

> **Family** –Rosaceae

Among all the flowers, rose has been used extensively in fragrance products such as perfumes and candles. The gentle and non-overpowering fragrance of rose water makes it a popular choice for those who prefer light, floral scents.

➤ **Formulation of candle**

Ingredient Name	Quantity
Beeswax	220 gm
Camphor	10 gm
Tulsi	10 gm
peppermint	8 ml
Clove	8 gm
Rose water	3 ml

➤ **Procedure**

- Take a beeswax and weigh the beeswax accurately.
- Cut the beeswax in small cuts and melt the beeswax in beaker with the help of heating mantle.
- After properly melting start combining the peppermint extract, clove powder and camphor.
- After the adding extract then start the mechanical stirrer slowly.
- Then add the Rose water in given quantity for the fragrance.
- After adding all ingredient, keep stirring upto 10 minutes.
- Pour above mixture in suitable size mould.
- Allow the mould to be cooled at room temperature.
- After 1 hour remove the candle from mould.



➤ Evaluation Test

Flammable test- The prepared candle was tested for flammability to explore mosquito repelling habits, and burned Quality with respect to burning time and subsequently its Spotting process effectiveness. Inflammability test for candle was conducted to verify its apparent combustibility in the laboratory. Simple Thus, on results, the time taken to light the candle and its causal symptoms such as pain, coughing were documented and registered In established vulnerable Na at night and in the field above Time such as the chicken shops and village houses.

Public Survey of Final Product-

Public end product surveys are carried out on 50 volunteers to study safety and effectiveness of the Product Specifications. The formulation was circulated to all participants and collected feedbacks. Studies Would it take 30 days. Statistically the data gathered were analyzed and described.

➤ Result

Every formulated candle was tested in a laboratory in a standard usual room Environment in a confined area with a greater population of mosquitoes, by lightening and contrasting with the same size aromatic herbal candle and flammability rate ,burning efficiency with respect to burning time and overall efficient repellent operation. The test showed greater quality and efficacy than the commercialized candle.

➤ Table - 1 : Flammable test of poly herbal mosquito repellent candle

Flammability	Application Time	Burning Time(min)	Effective Repellency
Marketed mosquito repellent aromatic candle	7:00 pm and 5:00am	60	Lower and efficient mosquito repellency Till 1.25 hours
F1	7:00 pm and 5:00am	90	There were no Mosquitoes around for a min of 2.30

Prepared poly herbal mosquito repellent candle				hours
	F2	7:00 am and 5:00	90	There were no mosquitoes around for a min of 2.30 hours
	F3	7:00 am and 5:00	90	There were no mosquitoes around for a min of 2.30 hours

➤ **Table No.2 - Quality and Usefulness of this product**

Quality	No of Volumeters	%
Poor	0	0
Average	2	4
Good	11	22
Very Good	17	34
Excellent	20	40
Total	50	100

➤ **Table No.3 - Easy Handling of this product.**

	No of Volumeters	%
YES	50	100
NO	0	0
TOTAL	50	

➤ **Conclusion**

Natural base poly herbal mosquito repellent candle was successfully developed in this research work. Evaluation tests found that the drug was very effective and safe to use. Statistically it indicates that the commodity being offered is really successful. Public at large Survey also conducted to determine whether or not it is safe and for its efficacy. No complaints from any volunteers about allergic effects. And this is a absolutely healthy product. While the formulation does not treat malaria, it may reduce the disease's prevalence. Even the wording was climate conscious, competitive and wallet safe.

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