

# Bio mosquito Repellant refill

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## Abstract

The aim of this project is to create a bio-mosquito repellent using neem oil, turmeric, camphor etc., which have the tendency to repel against the mosquito. Comparing the Bio-mosquito repellent refill with commercial refill made by chemicals.

Keywords : Bio Mosquito repellent, Neem oil, Camphor, Turmeric

## 1.INTRODUCTION

Mosquitoes are one of the deadliest animals in the world. Their ability to carry and spread disease to humans causes millions of deaths every year. The worldwide incidence of dengue has risen 30-fold in the past 30 years, and more countries are reporting their first outbreaks of the disease. Dengue, chikungunya, and yellow fever are all transmitted to humans by the *Aedes aegypti* mosquito. More than half of the world's population live in areas where this mosquito species is present. Sustained mosquito control efforts are important to prevent outbreaks from these diseases. There are several different types of mosquitoes and some have the ability to carry many different diseases. Mainly diseases are transmitted by the *Aedes*, *Culex*, and *Anopheles* mosquitoes. Recently, commercial repellent products containing plant based ingredients have gained increasing popularity among consumers. There is a need for further standardized studies in order to better evaluate repellent compounds and develop new products that offer high repellency as well as good consumer safety. The leaves of neem have natural tendency to repel against mosquito.

Neem oil is a vegetable oil pressed from the fruits and seeds of the neem (*Azadirachta indica*), an evergreen tree which is endemic to the Indian subcontinent and has been introduced to many other areas in the tropics. It is the most important of the commercially available products of neem for organic farming and medicines. Neem oil is also known as Veppennai (in Tamil). Neem oil is a natural repellent of insects and people used neem branches to get rid of mosquito by creating smoke in these branches. Turmeric is especially its most active compound curcumin have many scientifically- proven health benefits, such as the potential to prevent heart disease, Alzheimer's and cancer. It's a potent anti-inflammatory and antioxidant and may also help improve symptoms of depression and arthritis. Naturally turmeric is a mosquito repellent. Turmeric has been used as an insect repellent in Indian families for generations. The presence of curcumin in turmeric is what makes it beneficial in so many ways. It helps in soothing the itching. The strong aroma of turmeric also acts as a mosquito repellent.

Camphor is a waxy, flammable, transparent solid with a strong aroma. It is a terpenoid

with the chemical formula  $C_{10}H_{16}O$ . It is found in the wood of the camphor laurel (*Cinnamomum camphora*), a large evergreen tree found in Asia (particularly in Sumatra and Borneo islands, Indonesia) and also of the unrelated kapur tree, a tall timber tree from the same region. Camphor is believed to be toxic to insects and is thus sometimes used as a repellent. Camphor is used as an alternative to mothballs. Camphor crystals are sometimes used to prevent damage to insect collections by other small insects. It is kept in clothes used on special occasions and festivals, and also in cupboard corners as a cockroach repellent. The smoke of camphor crystal or camphor incense sticks can be used as an environmentally-friendly mosquito repellent. The vapour of camphor is a natural mosquito repellent.

## 2.LITERATURE REVIEW

[Sharma VP , Ansari MA , Razdan RK et al “Mosquito repellent action of neem (*Azadirachta indica*) oil”] Two percent neem oil mixed in coconut oil, when applied to the exposed body parts of human volunteers, provided complete protection for 12 h from the bites of all anopheline species. Application of neem oil is safe and can be used for protection from malaria in endemic countries.

[V. P. Sharma, M. A. Ansari et al “Personal Protection from Mosquitoes (Diptera: Culicidae) by Burning Neem Oil in Kerosene”] The repellent action of neem oil (extracted from the seeds of *Azadirachta indica* A. Juss) was evaluated on mosquitoes at two villages near Delhi, India. Kerosene lamps containing neem oil were burned in the living rooms, and mosquitoes resting walls or attracted to human bait were collected inside rooms from 1800 to 0600 h. Neem oil (0.01–1%) mixed in kerosene reduced biting of human volunteers and catches of mosquitoes resting on walls in the rooms. Protection was more pronounced against *Anopheles* than against *Culex*. A 1% neem oil-kerosene mixture may provide economical personal protection from mosquito bites.

[Sharma SK , Dua VK , Sharma VP et al that “Field studies on the mosquito repellent action of neem oil”] Repellent action of neem oil was evaluated against different mosquito species. 2% neem oil mixed in coconut oil provided 96-100% protection from anophelines, 85% from *Aedes*, 37.5% from *Armigeres* whereas it showed wide range of efficacy from 61-94% against *Culex* spp. Therefore, neem oil can be applied as a personal protection measure against mosquito bites.

[O.Chokechajaroenporn, N.Bunyaphatsara, S.Kongchuensin et al “Mosquito repellent activities of ocimum volatile oils”] Essential oils obtained from *Ocimum americanum*, *O. basilicum*, *O. basilicum* fa. *citratum*, *O. gratissimum* and *O. tenuiflorum*, were tested for mosquito repellent and larvicidal activities. All the oils exhibited both activities. *O. basilicum* showed the strongest larvicidal activity ( $EC_{50} = 81$ ,  $EC_{90} = 113$  ppm), while *O. gratissimum* exhibited the longest duration of action for mosquito repellent activity (more than two hours). Gas chromatographic analysis indicated the presence of camphor, caryophyllene oxide, cineole, methyleugenol, limonene, myrcene, and thymol, all known insect repellents.

[Supriya Aldar, Dr. Ganesh Deshmukh et al “Mosquito Repellent, Prevention is better than cure” ] Mosquito being the major medically important arthropod vector requires utmost attention to reduce the sufferings and economic consequences of those population living in the endemic regions. This is possible only, by minimising the human-mosquito contact by an absolute preventing measure. However, such absolute measures are yet to be developed despite

enormous efforts and huge investments world-wide. In the absence of vaccines for number of mosquito-borne diseases, repellents could be an attractive option for both military personal and civilians to minimise the risk of different mosquito-borne diseases. However, to achieve this golden goal, the detailed knowledge of a particular repellent is must, including its mode of repellency and other relevant information. Here, in the present article, an effort has been made to convey the best and latest information on repellents to enhance the knowledge of scientific community. The review offers an overview on mosquito repellents, the novel discoveries, and areas in need of attention such as novel repellent formulations and their future prospective.

[Granch Berhe Tsghai, Tekalgn Gebremedhin Belay and Abrehaley Hagos Gebremariam<sup>4</sup> et al “Mosquito Repellent Finishing of Cotton Using Pepper Tree (*Schinus molle*) Seed Oil Extract”] Mosquito repellent materials are a standout amongst the most developing approaches to propel the textile field by giving the required attributes of protection against mosquitoes, particularly in tropical territories. These kinds of materials make sure the protection of individuals from the mosquitoes and the mosquito-borne diseases like intestinal sickness, filariasis and dengue fever. In this investigation *Schinus molle* (Pepper Tree) seed oil was utilized as mosquito repellent completion. The investigation concentrated on the entrance of mosquito repellent completion in textile applications just as nature-based options in contrast to commercial synthetic mosquito anti-agents in the market. Appropriate techniques and materials to accomplish mosquito repellency are talked about and brought up. Cotton sample was treated within the sight of acrylic copolymer cover for better obsession. *Schinus molle* Seed Oil demonstrated very inspiring repellency to mosquitoes without causing much impact on the mass properties of the texture like quality, solidifies and bowing length. Be that as it may, the absorption was altogether diminished.

### **CHEMICALS IN OTHER MOSQUITO REPELLENTS**

The chemicals that are harmful and cause side effects to human beings are

1. Methyl anthranilate and other anthranilate.
2. DEET (N,N-diethyl-m-toluamide).
3. Dimethyl carbate.
4. Dimethyl phthalate.
5. Ethylhexanediol.
6. Icaridin, also known as picaridin, Bayrepel.
7. Butopyronoxyl (trade name Indalone). Widely used in a "6-2-2" mixture (60% Dimethyl phthalate, 20% Indalone, 20% Ethylhexanediol) during the 1940s and 1950s before the commercial introduction of DEET
8. Ethyl butylacetylaminopropionate (IR3535 or 3-[N-Butyl-N-acetyl]-aminopropionic acid, ethyl ester).
9. Metofluthrin.

### **HEALTH EFFECTS**

1. The tiny smoke produced by mosquito coils could lead to fire outbreak in home.
2. The emitted smoke released by a coil has been proven to have traces of chemicals and other

carcinogens.

3. It attacks your respiratory health.
4. It has a full possibility to cause you chronic health issues as it's damaging capacity is beyond the safe healthy indoor air quality standards.
5. The smoke from one mosquito coil burnt from beginning to end releases particulates into the air that are equivalent to between 75 and 135 cigarettes.
6. In the case of mosquito coils, there are some harmful side effects on continuous usage.
7. Mosquito coils contain carcinogens which can cause various types of cancer, especially cancer of lungs.
8. Mosquito coils are the major cause of cough and catarrh as many of its users tend to breath in the air from its smoke. It is also a major cause of skin irritation and other throat discomfort.
9. It causes lung diseases and rashes to our human skin on continuous usage.

## **THINGS REQUIRED**

- Empty Liquidator (Refill)
- Neem oil
- Turmeric powder
- Camphor pellets

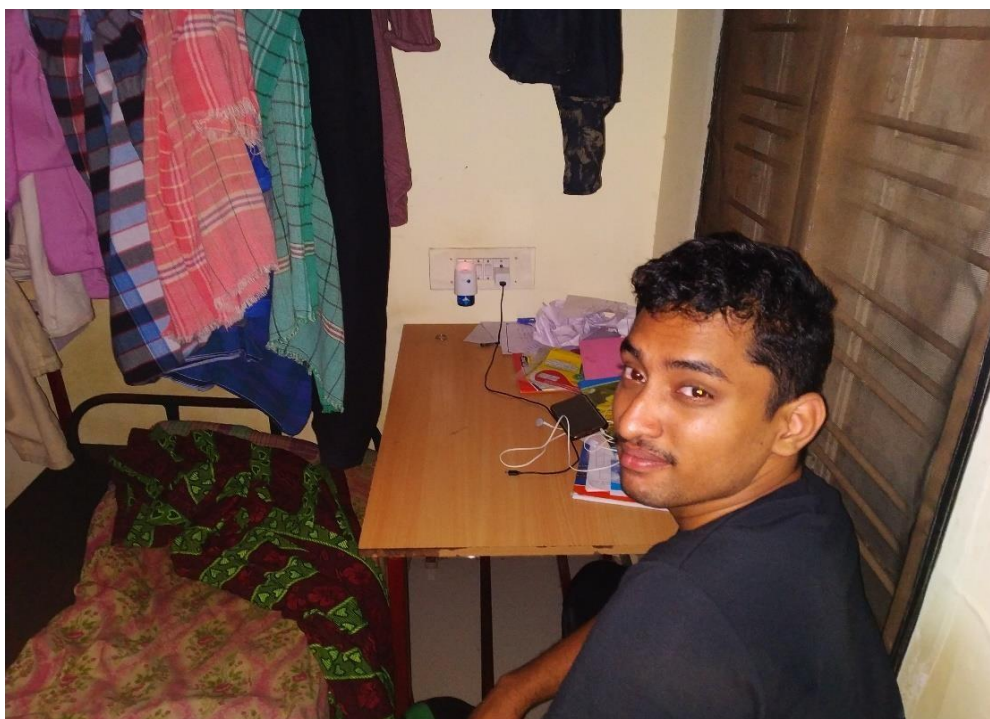
## **METHODOLOGY**

We collect the waste liquidator and wash it. The camphor pellets are crushed to make fine powder. We mix the turmeric powder and camphor powder in neem oil. The mixture is mixed well using an agitator in a vessel. This mixture is transferred to the empty liquidator and it is ready to use.

Desired amount of Liquidator

1. 40ml of neem oil
2. 1g of camphor
3. 0.5g of turmeric powder

## PEOPLE USED OUR BIO-MOSQUITO REPELLENT LIQUIDATOR (REFILL)



## COMPARISON BETWEEN BIO-MOSQUITO REPELLENT

BIO-MOSQUITO REPELLENT	COMMERCIAL REPELLENT
<ul style="list-style-type: none"><li>• Cost is very low</li></ul>	<ul style="list-style-type: none"><li>• Cost is high compared to bio-mosquito repellent.</li></ul>
<ul style="list-style-type: none"><li>• It is very much safer.</li></ul>	<ul style="list-style-type: none"><li>• It is not much safer.</li></ul>
<ul style="list-style-type: none"><li>• Doesn't cause any problems</li></ul>	<ul style="list-style-type: none"><li>• Causes respiratory problems.</li></ul>
<ul style="list-style-type: none"><li>• Does not cause rashes to our human body and skin.</li></ul>	<ul style="list-style-type: none"><li>• It causes lung diseases and rashes to our human skin on continuous usage.</li></ul>

## ADVANTAGES

- The cost is very low.
- It can be easily made in our home.
- It is much safer than other commercial repellents.
- It is much safer to repel against the mosquitoes without harmful side effects.

## CONCLUSION

Bio-mosquito repellent was produced from neem oil, turmeric, and camphor is mixed in a desired ratio. This Bio-mosquito repellent is different from normal coils or liquids and was not harmful to human beings. It is easily prepared and cost effective.

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