



A Review on Poly Herbals Using Mosquito Repellent Incense Sticks

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ABSTRACT :

This discusses the impact of climate change on the increase of vector-borne diseases like malaria and dengue, with malaria being a significant global health concern, particularly affecting young children and pregnant women. About half of the world's population in 87 countries is at risk of malaria transmission. It emphasizes the importance of mosquito control and personal protection against bites. The current market is filled with expensive and potentially harmful chemical-based mosquito repellents. The paper aims to develop cost-effective herbal mosquito repellent sticks made entirely from herbal ingredients.

The project aims to create a safer and cost-effective mosquito repellent using natural ingredients instead of synthetic chemicals that pose risks to health and the environment. The formulation includes dried herbs such as acorus, pyrethrum, camphor, benzoin, and neem leaves, combined with binders and additives like joss powder and charcoal. These ingredients are formed into incense sticks, which are scented with lemongrass oil. When burned, the sticks release vapors that effectively repel mosquitoes. Tests conducted near mosquito cages showed their effectiveness, and feedback from users indicated high satisfaction with their performance in controlling

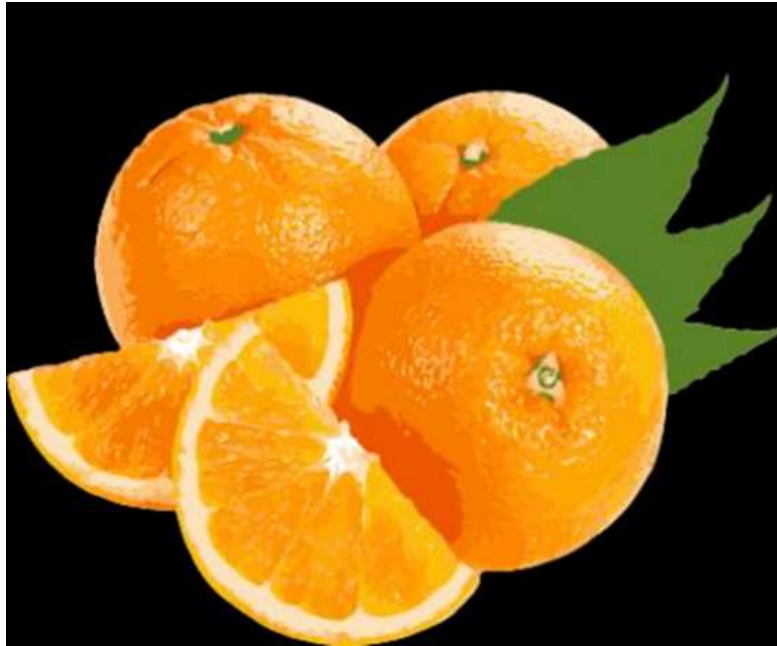
Keyword : Herbal plant against the mosquito bite , Different types of herba,l Uses of herbal Different Types of Incense, Herbs and additives Chemical N,N Diethyl-Meta-Toluamide,And Method of Prepration, Use of Incense stick , Safety and environmental consideration.

Introduction :

Mosquito vectors are crucial in spreading severe diseases such as malaria, dengue, chikungunya, zika, filariasis, and certain encephalitis types. Synthetic insecticides are commonly used for their rapid effectiveness, but their prolonged use can lead to resistance and environmental harm. Consequently, there has been significant effort to create effective repellents and insecticides against these harmful insects. Repellent agents, like DEET, are designed to prevent insects from landing or biting humans. DEET works by blocking the olfactory receptors in insects, which helps them detect human scents, specifically the compound l-octen-3-ol found in sweat. However, DEET does not prevent insects from sensing carbon dioxide in human breath.

Mosquitoes are a significant nuisance and transmit diseases like dengue fever and malaria. Effective control measures are still lacking, and currently, vaccines are only available for Japanese encephalitis and yellow fever. Consequently, preventing mosquito bites is the primary strategy to reduce the incidence of mosquito-borne diseases.

Repellents are widely used for protection against mosquito bites due to their effectiveness, availability, and ease of use. They can be classified into synthetic and natural products. DEET, a synthetic repellent in use since the 1950s, is effective at low doses but has raised concerns about side effects and environmental toxicity. These issues, along with resistance in some mosquito vectors, have led to increased interest in natural, eco-friendly alternatives. One such alternative is para-menthane-3,8-diol (PMD), a natural repellent that is considered safe and effective.

1) Citrous fruit :**Citrus**

- Synonym :- Citrous fruit
- Biological Source :- Flavonoid Phenolic Acid and Coumarins
- Family :- Rutaceae
- Geographical Source :- Topical regions of Southeast Asia, India, Burma, and Western India
- Chemical Constituents: - Carotenoid, Flavonoid, Terpenes, Limonoids
- Uses:
 - Antioxidant
 - Cancer prevention
 - Fights cold and flu
 - Improve Digestion
 - Liver cleanser
 - Control Blood pressure
 - Natural Antihistamine
 - Boost Immune System
 - Prevents kidney stone

2) Tulsi :**Tulsi (Sacred basil)**

- Synonym :- Holy Basil
- Biological Source :- It obtained by leaves of *ocimum sanctum* , *ocimum Bacilicum*
- Family :- Labiatae
- Geographical source :- Annual herb found throughout India
- Chemical Constituent :- Eugenol Methylugenol cineole linalool carvacrol Camphor Caryophyllene
- Use:
 - Expectorant
 - Bronchitis
 - Carminative
 - Stimulants
 - Flavouring agent
 - Antifertility agent Antibacterial

3) Neem :

Azadirachta Indica (Neem)

- Synonym :- Margasa oil
- Biological Source :- Azadirachta Indica
- Family :- Miliaceae
- Chemical Constituent :- Azadirachtin Nimbin Nimbidin
- Geographical source :- India , Myanmar, Tropical countrical
- Part Used :- Leaves , Seeds ,Flower ,Barks
- Uses:
 - Moistcturing
 - Cooling
 - Antibacterial
 - Antiseptic
 - Immunomodulators
 - Insectiside
 - Bitter tonik

5) Lemon grass

- **Cymbopogon citretus (Lemon Grass**
- Synonym :- East indian lemon grass
- Biological Source :- volatile oil obtained by steam distillation from the leaves and aerial parts of plant of Cymbopogon flexuosus
- Family :- Graminae
- Chemical Constituent :- Citral , Methyl heptenol Nerd Geraniol
- Uses:
 - Flavouring agent
 - Purumary

- Source of synthesis of vitamin

6) Eucalyptus oil :



Eucalyptus globulus labill (Eucalyptus)

- Synonym :- Stringy bark tree
- Biological Source :- Eucalyptus globules and wther speacies ike E. Polybractea
- Family:- Myrtaceae
- Geographical source :- Brazil , Australia, Tasmania , United States, south africa , India , France

Types of Incense :

Different types of incense have various healing properties. Dragon's Blood Incense aids in relieving fevers, ulcers, stomach viruses, and diarrhea. Lavender Incense offers a soothing effect, helping to relax after a stressful day. Sandalwood Incense reduces anxiety and promotes spirituality. Indian Cedar Incense supports recovery from mood disorders and depression. Amber Incense helps balance the body's systems.

Herbs and additives used in the formulation :

Neem, a widely available plant, has numerous beneficial properties, including its effectiveness as a mosquito repellent. It has been used for generations, with studies confirming its efficacy. The compound Azadirachtin found in neem irritates mosquito mucous membranes and acts as an antifeedant, preventing mosquitoes from feeding on human blood.

- **Lemon grass :**

Lemon grass oil, also known as Citronella oil, is an essential oil derived from the Cymbopogon nardus plant. Its strong aroma repels mosquitoes and other insects, making it an effective mosquito repellent while also having a pleasant fragrance.

- **Camphor :**

Camphor is a white, oily resin from the Cinnamomum camphora tree, with widely available crystals. It has been used for generations as an effective mosquito repellent.

- **Charcoal :**

This is used as a binder obtained from partially burnt husk of coconut shel

Chemical used in mosquito repellent:

N,N Diethyl – Meta – Toluamide

DEET is a common ingredient in mosquito repellents known for its effectiveness as a pesticide. However, it poses significant health risks, particularly for pregnant women, including the potential for fetal abnormalities, as well as neurological and olfactory problems. Additionally, DEET negatively impacts the environment, especially affecting freshwater fish and zooplankton.

Method of Preparation of incense sticks :

1. Part one contain the base material like neem powder, tulsi powder, camphor , activated charcol etc
2. Part two contain active constituent like orange peels and extract lemon grass oil ghee
3. All ingredients taken in mortar except oil and water mixed them properly added given amount of oil
4. Added water per requirement for binding the sticks dough rolled on bamboo sticks by hand
5. Kept in hot air oven at 50 degrees Celsius for 6 Hrs

1. Antimicrobial Properties :

- Many ingredients in mosquito incense sticks, such as neem, eucalyptus, and tea tree oil, possess natural antimicrobial properties. When burned, these substances can help purify the air by reducing the presence of harmful bacteria, fungi, and viruses. This can be especially beneficial in enclosed spaces where pathogens may thrive, contributing to a healthier indoor environment.

2. Aromatherapy :

- The aromatic compounds released from burning mosquito incense sticks can have various effects on mental and emotional well-being. Scents like lavender, sandalwood, and citronella can promote relaxation, reduce anxiety, and enhance mood. Using these sticks during meditation or yoga can deepen the experience, helping individuals achieve a more focused and tranquil state of mind.

3. Cleansing Spaces :

- In many cultures, the act of burning incense is believed to cleanse spaces of negative energy and impurities. This practice can create a more positive environment, enhancing the overall atmosphere of a room. The smoke acts as a natural air freshener, masking unpleasant odors and providing a sense of renewal and clarity.

4. Enhancing Focus :

- Certain fragrances found in mosquito incense sticks, such as rosemary or peppermint, can help improve concentration and cognitive performance. These scents stimulate the brain and can enhance alertness, making them ideal for use during study sessions or when working on tasks that require mental clarity.

5. Creating a Pleasant Ambiance :

- Burning mosquito incense sticks adds a soothing and inviting aroma to any space, making it more enjoyable for social gatherings, relaxation, or intimate dinners. The pleasant scent can help set the mood, creating a welcoming atmosphere that encourages social interaction and comfort.

6. Traditional Medicine :

- Many of the herbs and plants used in mosquito incense have roots in traditional medicine. For example, neem is often used in Ayurvedic practices for its healing properties. The use of these natural ingredients in incense sticks offers a holistic approach to wellness, integrating the benefits of herbal medicine with pest control.

7. Insect Deterrent :

- Beyond mosquitoes, the natural scents of mosquito incense sticks can also deter other common insects such as flies, gnats, and even cockroaches. This broader insect-repelling effect can help maintain a more pleasant outdoor environment, making it useful for outdoor dining, parties, or relaxing in the garden.

8. Sleep Aid :

- Scents like lavender and chamomile are well-known for their calming effects. Burning mosquito incense sticks infused with these fragrances before bedtime can create a serene atmosphere conducive to sleep. This can help reduce insomnia and promote deeper, more restful sleep by creating a soothing bedtime routine.

9. Stress Relief :

- The ritual of lighting incense and the gentle, aromatic smoke can be a therapeutic experience. The sensory experience of engaging with the scent can help alleviate feelings of stress and anxiety, providing a moment of peace in a busy day. This can be particularly effective when combined with mindfulness practices or relaxation techniques.

10. Cultural Significance :

- Burning incense has significant cultural and spiritual importance in many societies. It is often used in religious ceremonies, rituals, and festivals to honor deities or mark special occasions. The smoke is believed to carry prayers or intentions, making it an integral part of spiritual practices that connect individuals to their beliefs and traditions.

Safety and Environmental Considerations:

• Non-Toxic Aspects Compared to Chemical Repellents

1. Natural Ingredients:

- Poly herbal incense sticks are made from natural plant materials, such as citronella, neem, eucalyptus, and lemongrass. These ingredients are generally regarded as safe for human use and can be less irritating than synthetic chemicals found in many commercial repellents.

2. Reduced Chemical Exposure:

- Many conventional mosquito repellents contain synthetic chemicals, such as DEET or picaridin, which can cause skin irritation, allergic reactions, or respiratory issues in some individuals. In contrast, herbal formulations often pose a lower risk of such adverse effects.

3. Safety for Sensitive Populations:

- Natural repellents are often safer for children, pets, and individuals with sensitivities or allergies. Their mild formulations can provide peace of mind for families looking to minimize chemical exposure.

4. Biodegradability:

- The materials used in poly herbal incense sticks are typically biodegradable, meaning they break down naturally in the environment without leaving harmful residues.

• Impact on the Environment and Sustainability

1. Eco-Friendly Production:

- Many brands of herbal incense prioritize sustainable sourcing of their ingredients. This can include using plants grown without harmful pesticides or herbicides, reducing the overall environmental impact.

2. Lower Carbon Footprint:

- The production of herbal products often requires less energy and resources compared to the chemical synthesis of synthetic repellents. This can result in a smaller carbon footprint and less pollution.

3. Promoting Biodiversity:

- Using herbal ingredients supports agricultural practices that can encourage biodiversity, as many herbal plants can be grown in harmony with local ecosystems. This contrasts with large-scale monoculture farming of some synthetic chemicals.

4. Waste Reduction:

- Many herbal incense products come in minimal packaging, often made from recyclable or biodegradable materials, contributing to reduced waste in comparison to conventional chemical repellents that may use non-recyclable plastic packaging.

5. Healthier Indoor Air Quality:

- Burning poly herbal incense sticks can release fewer harmful volatile organic compounds (VOCs) into the air compared to some chemical repellents, improving indoor air quality and making them a better option for use in enclosed spaces.

Performance Evaluation :

A. Effectiveness Against Mosquitoes :

1. Personal Experience with the Product:

- **Duration of Effectiveness:** Many users report that the effectiveness of poly herbal incense sticks can last between 30 minutes to several hours, depending on the formulation and environmental conditions (e.g., wind, humidity). Some users find that lighting multiple sticks can enhance the duration of protection.

- **Range:** The effective range can vary, but typically, these incense sticks can cover an area of approximately 10 to 15 feet. In enclosed spaces, the range may be more pronounced, while outdoor use may require multiple sticks for optimal coverage.

2. Comparative Analysis with Other Repellents:

- When compared to traditional chemical repellents like DEET or picaridin, users often note that while poly herbal incense sticks provide a natural alternative, they may not offer the same level of immediate potency or longevity. However, many prefer the herbal options for their safety profile and pleasant aroma. In head-to-head trials, some users report that herbal incense is effective for light to moderate mosquito presence but may not suffice in heavily infested areas.

B. Aroma and User Experience :

1. Description of Scent:

- The scent of poly herbal incense sticks is generally described as fresh and earthy, with notes of the specific herbs used, such as lemongrass or minty eucalyptus. Most users find the aroma pleasant and soothing, often contributing to a relaxing atmosphere. However, some may find it a bit strong, especially in confined spaces.

2. How It Affects Indoor/Outdoor Ambiance:

- **Indoor:** In indoor settings, the fragrance can create a calming and inviting environment, enhancing relaxation during activities like yoga or meditation. Users often appreciate the natural scent as a complement to home décor.
- **Outdoor:** Outdoors, the scent can help mask the odor of mosquitoes, making gatherings more enjoyable. However, some users suggest that a gentle breeze can disperse the scent quickly, which might require repositioning sticks for optimal effect.

C. Ease of Use :

1. Instructions for Use:

- To use poly herbal incense sticks, simply place the stick in a suitable holder, light the tip, and allow it to burn for a few seconds before extinguishing the flame. The incense should then smolder and release aromatic smoke. Users are advised to position the sticks in well-ventilated areas for best results.

2. Convenience of Application:

- **Simplicity:** The application is straightforward and requires minimal setup. Users appreciate that they do not need to apply anything directly to their skin, unlike lotions or sprays.
- **Portability:** Incense sticks are easy to carry and can be taken along for camping, picnics, or outdoor events. They do not require batteries or special equipment, making them an accessible option.
- **Cleanup:** After use, the ashes can be easily disposed of, and many users find this less messy compared to applying sprays or oils.

Conclusion :

In summary, poly herbal mosquito repellent incense sticks provide an effective and natural solution for repelling mosquitoes, combining safety with pleasant aromas. Users appreciate their non-toxic ingredients, which make them suitable for families and pets, as well as their ability to enhance indoor and outdoor ambiance. While their effectiveness can vary based on conditions, many find them to be a practical alternative to traditional chemical repellents.

For optimal use, these incense sticks are ideal for home settings, outdoor gatherings, and camping trips. They are easy to apply, portable, and contribute to a more enjoyable environment. Overall, poly herbal incense sticks are a commendable choice for anyone looking to embrace a more natural approach to pest control. If you're seeking a safer, eco-friendly option that doesn't compromise on effectiveness, these incense sticks are worth considering.

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