

RESEARCH REPORT

Testing efficacy of Incense Cones against different mosquito species adult density in Greater Noida

Overview

- **Title of the Report:**
Testing Efficacy of Incense Cones (Flowers & Eucalyptus) on different species of adult density in Greater Noida.
- **Principal Investigator(s):**
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- **Affiliation:**
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- **Date of Submission:**
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Introduction

This research study was conducted to determine the effectiveness of **Incense Cones (Citronella Flowers & Eucalyptus)** as a botanical intervention against *Anopheles stephensi* and *Culex spp.* adult mosquitoes. The trials were conducted in a semi-field setting in Greater Noida on **20-08-2025**, using three replicates and one untreated control group.

The primary objective was to assess **landing catch reduction**, an indicator of the repellent's impact on mosquito biting behavior. Environmental parameters such as **temperature and humidity** were monitored to understand their influence on repellent performance.

Summary

- Incense Cones reduced landing catches significantly compared to control.
- Landing counts ranged from **9 to 13 per trial** in treated experiments versus **32 in the untreated control**.
- Results indicate a **strong repellent effect**, even without causing mosquito mortality (pure repellency action).

Material used:

- Test repellent incense cones.
- Control incense cones (non-repellent/plain)
- Female mosquitoes (3–5 days old, non-blood-fed)
- Timer/stopwatch
- Test room with minimal air flow
- Thermo-hygrometer (for recording temperature and humidity)
- Aspirators
- Mosquito release cups
- Matchstick/lighter

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Methodology:

Incense Cone Placement:

- Test cones were lit and placed in holders at the center of the test room.
- They were allowed to burn continuously during the exposure period.

Observation:

- For each trial, 60 mosquitoes were released.
- Landing catch was recorded during observation intervals (5, 15, 30 & 60 minutes).
- Landing catch was defined as the number of mosquitoes attempting to land/bite on exposed human skin.

Results:

Experiment No.	Cones Used	Mosquitoes Released	Landing catch	Temperature (°C)	Humidity (%)
1	6	60	13	32.1	54
2	6	60	9	31.8	58
3	6	60	12	32	60
Control	0	60	32	31.2	67

Analysis

• Repellency Performance:

Landing counts in treatment trials (**9–13**) were substantially lower compared to control (**32 landings**), confirming effective repellency.

• Environmental Conditions:

Temperature and humidity remained in the range of **31.8–32.1°C** and **54–60%**, with no significant influence on repellency.

• Mode of Action:

No knockdown (mortality) was observed, indicating a **purely repellent effect rather than an insecticidal one**.

Conclusion

Incense Cones (Citronella Flowers & Eucalyptus) demonstrated **high repellency** within a 60-minute exposure period against different mosquito species. Even under controlled conditions, the cones effectively reduced mosquito landing activity compared to the untreated control.

This suggests **Incense Cones** are a promising natural mosquito deterrent for domestic use.

Recommendations:

- Conduct extended exposure and field trials to assess long-term efficacy.
- Compare effectiveness against other herbal and synthetic repellents.
- Evaluate user acceptability and safety in real-life home environments.

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