

RESEARCH REPORT

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

Overview

- **Title of the Report:**
Testing Efficacy of Mosquito Repellent (Rosemary oil, Peppermint oil, Cinnamon oil, Citronella Java oil) on different adult mosquito species 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 evaluated the repellent efficacy of **Mosquito Repellent** (Rosemary oil, Peppermint oil, Cinnamon oil, Citronella Java oil) against adult mosquitoes under controlled laboratory conditions. The objective was to determine the product's ability to reduce mosquito landings during a **60-minute exposure period**. Trials were performed on **26-08-2025** in Greater Noida under laboratory-controlled conditions to ensure consistent temperature and humidity for reliable results.

Summary

- **Testing Room Dimensions:** 12 × 12 meters
- **Mosquito Release Per Trial:** 60 adult female mosquitoes (3–5 days old, sugar-fed, starved for 12 hours)
- **Exposure Duration:** 60 minutes per trial
- **Control Group:** Plain water (no repellent)
- **Environmental Conditions:**
 - Average Temperature: 30.9 °C
 - Average Relative Humidity: 71%

Mosquito Repellent was tested in three replicates, and one control trial was conducted to validate mosquito activity in the absence of repellent.

Materials Used:

- Mosquito Repellent spray.
- Negative Control (no repellent)
- Female mosquitoes (3–5 days old, sugar-fed, starved 12 hrs.)
- Human volunteers
- Cotton fabric (if testing on fabric)
- Timer/stopwatch
- Aspirators

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- Lab PPE (gloves, mask)
- Thermo-hygrometer

Procedure: Mosquito Repellent Room Spray

Step 1: Mosquito Preparation

- 60 healthy female mosquitoes were selected per trial.
- They were acclimatized for 30 minutes prior to exposure.

Step 2: Application inside room

- No other repellents or sprays were used in the test room prior to trials.
- The spray was applied as per label instructions to a designated area.

Step 3: Observations

The following parameters were observed and recorded:

- Number of landings
- Number of probing attempts

Results:

Trial No.	Total Mosquitoes	Exposure Time (min)	Landing Catch	Temperature	Relative Humidity
1	60	60	19	30.6	72
2	60	60	11	30.4	66
3	60	60	9	30.6	69
(Control)	60	60	33	32	80

Analysis

Average Landing Catch (Treated):

$$(19+11+9) \div 3 = 39 \div 3 = 13$$

Landing Catch (Control): 33

Repellency Percentage:

$$\text{Repellency} = \frac{\text{Control} - \text{Treated}}{\text{Control}} \times 100 = \frac{33 - 13}{33} \times 100 \approx 60.6\%$$

Observation:

Mosquito Repellent demonstrated a **60.6% reduction** in mosquito landings compared to the control. The product provided **moderate protection**, reducing most landings but not achieving complete deterrence under the tested conditions.

Conclusion

Mosquito Repellent (Rosemary oil, Peppermint oil, Cinnamon oil, Citronella Java oil) exhibited **moderate efficacy** in reducing mosquito landings during a 60-minute exposure period. Its herbal formulation offers a **safe and natural alternative** for short-term indoor mosquito control.

Recommendations

- Increase exposure duration in future studies to evaluate **longer-term protection**.
- Compare with **synthetic repellents** and other herbal formulations.
- Expand testing across **diverse mosquito species** and **different climatic conditions**.
- Conduct **field trials** to validate real-world performance outdoors.
- Consider **product optimization** to enhance repellency and prolong protection duration.

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