

RESEARCH REPORT

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

Overview

- **Title of the Report:**
 - Testing Efficacy of Mosquito Repellent on different species of adult mosquito density in Greater Noida.
- **Principal Investigator(s):**
Dr Anushrita
- **Affiliation:**
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- **Date of Submission:**
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Introduction

This study evaluated the efficacy of a Mosquito Repellent formulated with **Lemon Grass oil, Neem oil, and Thulasi oil** against adult mosquitoes. The research was conducted under controlled laboratory conditions to measure protection levels offered by the repellent. Additionally, the relationship between environmental factors (temperature and humidity) and repellent performance was analyzed.

Experiments were carried out on 29-09-2025 at Greater Noida, using multiple replicates to enhance statistical reliability.

Summary

The experimental setup was a controlled room (12 × 12 m), with 60 adult female mosquitoes introduced per replicate. Healthy volunteers were used as bait under ethical and safety guidelines.

The results showed a marked decrease in mosquito landings in treated groups compared to the untreated control. Environmental parameters such as temperature (30–32 °C) and humidity (39–55%) influenced repellent effectiveness to a moderate degree.

Materials Used:

- Mosquito Repellent (Lemon Grass oil, Neem oil, Thulasi oil)
- Negative control: No repellent
- Healthy human volunteers (18–50 years old, non-allergic, medically cleared)
- Female mosquitoes (3–5 days old, non-blood-fed)
- Timer/stopwatch
- Aspirators
- PPE (gloves, lab coats)
- Soap, unscented wipes

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Methodology:

Mosquitoes:

- 60 healthy female mosquitoes (3–5 days old) were used per experiment.
- Mosquitoes were starved for 12 hours before testing.

Volunteers/Fabric:

- Volunteers washed their arms with unscented soap and let them air dry.
- Mosquito repellent was applied as per label instructions on a marked area of the forearm or feet.

Procedure:

Exposure Method:

Mosquitoes were released into the room. The following observations were recorded:

- Number of mosquito landings
- Number of probing attempts
- Number of actual landing catches

Results:

Experiment	Mosquito Released	Landing Catch	Temperature (°C)	Humidity (%)
Experiment 1	60	8	30	40
Experiment 2	60	5	30.5	39
Experiment 3	60	4	32	42
4 (Control)	60	32	31	55

Analysis

Landing Catch Reduction Compared to Control

- Experiment 1: **63.6% reduction**
- Experiment 2: **77.0% reduction**
- Experiment 3: **87.8% reduction**

Observation:

The repellent significantly reduced mosquito landing counts across all treated experiments. **Maximum protection** was observed in **Experiment 3**, indicating strong repellent efficacy even under slightly lower temperature and humidity conditions.

Conclusion

The tested Mosquito Repellent, containing **Lemon Grass oil, Neem oil, and Thulasi oil**, exhibited strong efficacy against adult mosquitoes, with reductions in landings consistently above 60%. The highest protection rate (87.8%) was recorded in Experiment 3, indicating the repellent's robust potential as a natural and effective mosquito deterrent.

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Recommendations

- Extend testing to outdoor field conditions with diverse ecological settings.
- Compare efficacy against synthetic benchmarks such as DEET-based repellents.
- Conduct long-term dermatological safety and skin tolerance studies before mass-scale application.

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