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):**
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- **Affiliation:**
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- **Date of Submission:**
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Introduction

This report evaluated the efficacy of Mosquito Repellent (Lemon Grass, Basil, Nilgiri, Citronella, Neem) as a herbal control agent against different species of adult mosquitoes in four replicates from Greater Noida. It also correlated adult mosquito density with environmental factors (temperature and humidity) and provided recommendations for sustained mosquito control. The dataset spanned 08-08-2025 and covered treatment readings.

Summary

The experiment was conducted in a lab – testing room (12 × 12 m), where 60 adult mosquitoes from different species were released. Mosquito Repellent (Lemon Grass, Basil, Nilgiri, Citronella, Neem) showed substantial reduction in mosquito landings across all treated replicates when compared to the control. Humidity (58–66%) and temperature (29–31 °C) showed a moderate correlation in influencing repellent efficacy.

Materials Used:

- Mosquito Repellent
- 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

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.
- The 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	14	30	61
Experiment 2	60	9	29	58
Experiment 3	60	5	29	60
4 (Control)	60	38	31	66

Analysis

Landing Catch Reduction – Compared to the control:

- Experiment 1: 63.2% reduction
- Experiment 2: 76.3% reduction
- Experiment 3: 86.8% reduction

Observation:

The repellent significantly reduced mosquito landing catches in all three treated experiments compared to the control. The average number of landing catches in the treated group was **9.33**, versus **38** in the untreated group.

Conclusion

The mosquito repellent (Lemon Grass, Basil, Nilgiri, Citronella, Neem) demonstrated notable efficacy against different species of adult mosquitoes. It consistently reduced mosquito landing catches by more than 60% under controlled conditions, with maximum protection observed in Experiment 3. This suggests strong potential for use as a natural and effective mosquito repellent.

Recommendations

- Conduct further field trials under varied environmental conditions to validate lab findings.
- Perform comparative studies with widely used synthetic repellents like DEET.
- Undertake long-term safety and skin sensitivity evaluations before widespread commercial deployment.

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