RESEARCH REPORT

Testing efficacy of Citronella, Lemongrass and Lavender Spray against different species of adult mosquito density in Greater Noida

Overview

- **Title of the Report:**
  Testing Efficacy of mosquito repellent spray (Citronella, Lemongrass and Lavender) 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:**
  18-07-25

Introduction

This report evaluated the efficacy of mosquito repellent spray (Citronella, Lemongrass, and Lavender) as herbal control agent against different species of adult mosquito density in three replicates from Greater Noida. It also examined the correlation between adult mosquito density and environmental factors such as temperature and humidity, and provided recommendations for sustained mosquito control. The dataset was collected on **17-07-2025**, covering treatment readings.

Summary

The experiment was conducted in lab – testing room (12*12 m), where 60 adult mosquitoes 20 of each of three viz. *Aedes, Anopheles and Culex* were released. The mosquito repellent spray (Citronella, Lemongrass, and Lavender) achieved reduction in landing catch on 17-07-2025 in three replicates and one untreated control, with 60 mosquitoes released in each trial, demonstrating initial efficacy.

Humidity (60%) and temperature (28.8°C) showed a moderate correlation with adult mosquito density, which appeared to enhance the repellent's efficacy.

Materials Used:

- Mosquito repellent spray.
- Healthy adult volunteer (18–50 years old), medically examined and informed.
- Laboratory-reared female mosquitoes (4–6 days old, non-blood-fed).
- Control repellent (e.g., DEET-based formulation).
- Timer or stopwatch.
- Aspirators.
- Hand gloves.
- Ethanol/disinfectant.

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Methodology:

Mosquito Preparation:

- 3 - 5-day-old female mosquitoes starved for 12 hours were used.

Volunteer Preparation:

- Volunteers washed the foot area using unscented soap and dried it thoroughly before testing.
- A specific area on the feet was marked for repellent application.

Application:

- The repellent was applied uniformly to the marked area (as per product dosage).
- Control volunteers used a standard repellent.

Exposure: Observations included:

- Landing attempts
- Probing

Results:

Experiment No.	Total Mosquitoes	Landing Count	Temperature (°C)	Humidity (%)
1	60	12	29.7	62
2	60	7	28	61
3	60	4	28.8	59
4 (Control)	60	31	29.9	62

Analysis

Compared to the control (31 landings), the experimental setups showed a marked reduction in mosquito landings:

- **Experiment 1**: 12 landings (61.3% reduction)
- **Experiment 2**: 7 landings (77.4% reduction)
- **Experiment 3**: 4 landings (87.1% reduction)

Recommendations

- Further testing under **field conditions** to validate performance.
- Consider **longer duration exposure** and **species-specific evaluation**.

Conclusion

The experimental formulation demonstrated **significant repellency** against mosquitoes when compared to the untreated control. The **maximum efficacy was observed in Experiment 3**, with only **4 landings (87.1% reduction)**. The results indicate strong potential for the test product as an effective mosquito repellent under controlled conditions.

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