

RESEARCH REPORT

Testing efficacy of Lemon Eucalyptus and Alcohol against different adult mosquito species density in Greater Noida

Overview

- **Title of the Report:**
Testing Efficacy of Lemon Eucalyptus and Alcohol on different adult species density in Greater Noida.
- **Principal Investigator(s):**
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- **Affiliation:**
EKO Lifesciences
- **Date of Submission:**
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Introduction

This study was conducted to evaluate the efficacy of, mosquito repellent formulated with *Lemon Eucalyptus* and *Alcohol*, against adult mosquito species. The evaluation was conducted in Greater Noida under semi-controlled laboratory conditions across four replicates. The study also aimed to understand the influence of environmental variables—specifically temperature and humidity—on repellent effectiveness.

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. Lemon Eucalyptus and Alcohol demonstrated an average 72.7% reduction in landing catches compared to the control. The treatment was found to be most effective under conditions of lower temperature (29°C) and moderate humidity (44%), suggesting a potential link between environmental conditions and repellent performance. The datespan of the test is 28 July, 2025.

Materials Used:

- Mosquito Repellent spray
- Negative Control (no repellent)
- Female mosquitoes (3–5 days old, non-blood-fed, healthy)
- Human volunteers (ethically approved, screened for allergies)
- Cotton fabric (for simulated tests)
- Timer/stopwatch
- Aspirator
- PPE (gloves, lab coat, face mask)
- Thermo-hygrometer
- Soap (unscented) and ethanol
- Data recording sheets

Procedure:

Mosquito Preparation:

Mosquitoes were starved for 12 hours prior to testing.

Volunteer Preparation:

- Volunteers washed their forearms/feet with unscented soap and dried them with paper towels.
- An area was marked on the forearm/feet for repellent application.
- Lemon Eucalyptus and Alcohol repellent was applied according to product label instructions and allowed to dry for 5 minutes.

Observation:

- Record the number of:
 - Landing catch
 - Probing attempts

Results:

Experiment No	Total Mosquitoes	Time (min)	Landing catch	Temperature (°C)	Humidity (%)
1	60	60	13	33	46
2	60	60	8	30	46
3	60	60	6	29	44
Control	60	60	33	32	47

Analysis

- The control group recorded 33 mosquito landings, establishing a high baseline of mosquito activity in the absence of repellent.
- The Lemon Eucalyptus and Alcohol -treated group showed a significant reduction in mosquito landings, with counts of 13, 8, and 6, averaging 9 landings per trial.
- This represents a 72.7% average reduction in landing catch compared to control.
- Variations in temperature and humidity may have influenced efficacy, with the lowest landing (6) observed at 29°C and 44% humidity.

Conclusion

Lemon Eucalyptus and Alcohol demonstrated substantial efficacy in reducing mosquito landings under controlled test conditions. With a 72.7% reduction in landing catches, Lemon Eucalyptus and Alcohol shows promise as a natural, plant-based mosquito repellent. Environmental factors such as temperature and humidity appear to play a moderate role in influencing repellent performance.

Recommendations

- Field trials under varied environmental and urban conditions are

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recommended to validate laboratory findings.

- Future studies should evaluate duration of protection beyond 60 minutes to determine residual efficacy.
- A species-specific breakdown of repellent effectiveness could provide valuable insights for targeted control strategies.
- Comparative testing with other botanical and chemical repellents is advised to benchmark performance and consumer positioning.

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