RESEARCH REPORT

Comparative Evaluation of Citronella and Camphor + Lemongrass in Relation to Environmental Conditions

Overview

- **Title of the Report:**
  Testing Efficacy of Citronella and Camphor + Lemongrass against adult mosquitoes in relation to Environmental conditions in Greater Noida.
- **Principal Investigator(s):**
  Dr Anushrita
- **Affiliation:**
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- **Date of Submission:**
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Objective

This study aimed to evaluate and compare the efficacy of two mosquito repellent products—"**Citronella**" and "**Camphor + Lemongrass**"—by assessing adult mosquito catch rates during specified time intervals under semi-field conditions. Environmental variables such as temperature and humidity were recorded alongside mosquito catch counts to assess their influence.

Summary

The experiment was conducted in semi-field conditions – testing room (12*12 m), (inside GN premises) where adult mosquitoes were allowed to enter naturally. This aimed to compare the effectiveness of Camphor + Lemongrass and Citronella osquito control products under varying environmental conditions (temperature and humidity) during different night-time intervals.

Methodology

- **Location: Dish TV**
- **Observation Period: From 06:45 PM (10 July, 2025) to 04:35 AM (11 July, 2025).**
- **Approach:**
  - Mosquitoes were captured using standardized traps in both treatment setups (with Citronella or Camphor + Lemongrass) and control setups (without any product).
  - Each product was tested during four hourly intervals, with one period serving as the **control** (no incense sticks used). For treatment periods, **6 incense sticks** were used consistently. Adult mosquitoes were

monitored using human landing catch methods. Ambient temperature and relative humidity were recorded concurrently.

- Environmental parameters such as temperature (°C) and humidity (%) were recorded during each time slot.

Results

Citronella (10 July, 2025)

Time Period	Incense sticks used	Mosquito Catch	Temperature (°C)	Humidity (%)
06:45 PM – 07:45 PM (Control)	0	3	28.7	69
08:00 PM – 09:00 PM	6	5	29.1	78
09:30 PM – 10:30 PM	6	0	29.2	77
10:40 PM – 11:40 PM	6	0	28.7	72

- The control period recorded **3 mosquito catches** without incense stick.
- Application of **6 incense sticks** initially resulted in a rise in mosquito catch (5), followed by **complete repellency** (0 catches) in the last two hours.

Camphor + Lemongrass (11 July, 2025)

Time Period	Incense sticks used	Mosquito Catch	Temperature (°C)	Humidity (%)
00:10 AM – 01:10 AM (Control)	0	5	27.8	81
01:15 AM – 02:15 AM	6	5	27.5	82
02:25 AM – 03:25 AM	6	6	27.2	84
03:35 AM – 04:35 AM	6	6	26.8	84

- The control period recorded **5 mosquito catches**.
- Despite using **6 incense sticks**, mosquito catch remained consistent (5–6), indicating **no significant repellent effect**.

Discussion:

- Citronella incense sticks demonstrated a delayed but effective repellent action. Although mosquito catch increased in the first treatment hour, complete suppression was achieved in subsequent hours with continuous incense burning.
- Camphor + Lemongrass incense sticks did not reduce mosquito activity; catches were similar or even slightly higher than during the control period.
- Environmental conditions remained within comparable ranges for both tests, with slightly higher humidity during Camphor + Lemongrass testing, which may have marginally favored mosquito activity, but not enough to solely account for the lack of efficacy.

Conclusion:

The findings suggest that "Citronella " incense sticks were more effective than "Camphor + Lemongrass" in repelling mosquitoes under the given test conditions. With 6 sticks used, "Citronella" achieved complete mosquito deterrence within 1.5 hours, while "Camphor + Lemongrass" showed no noticeable reduction compared to its control. Future trials should include replication and varying incense dosages for more robust conclusions.

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