

RESEARCH REPORT

Testing efficacy of TransFluthrin 1.2% w/w against different mosquito adult species density in Greater Noida

Overview

- **Title of the Report:**
Testing Efficacy of TransFluthrin 1.2% w/w on *An. Stephensi*, *Culex spp*, *Aedes ageypti* adult 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 study was conducted to evaluate the efficacy of TransFluthrin 1.2% w/w against adult mosquitoes of three major vector species: *Anopheles stephensi*, *Culex spp.*, and *Aedes aegypti*.

The objectives of the study were to:

- Assess repellency effectiveness based on mosquito landing behavior.
- Examine knockdown impact as an additional benefit of the repellent.
- Observe environmental factors, such as temperature and humidity, influencing mosquito activity.

Experiments were performed on 22 September, 2025 in Greater Noida under controlled laboratory conditions.

Summary

Across all three treatment replicates, TransFluthrin 1.2% w/w demonstrated strong repellency, reducing mosquito landings to 7–8 per trial compared to 33 in the control during a 60-minute exposure. The product also exhibited a significant knockdown effect, immobilizing 38–46 mosquitoes per replicate (63–77% mortality), highlighting its dual-action functionality.

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This combination of repellency and knockdown underscores the potential of TransFluthrin as an effective mosquito control agent for urban and household settings.

Materials Used:

- TransFluthrin 1.2% w/w Mosquito Repellent
- Positive Control (e.g., DEET 10% standard repellent)
- Negative Control (no repellent)
- Adult female mosquitoes (3–5 days old, non-blood-fed)
- Human volunteers (18–50 years, healthy, with informed consent)
- Unscented soap, ethanol, and paper towels
- Timer/stopwatch
- Aspirator
- Lab PPE (gloves, lab coat, mask)

Methodology:

Mosquito Preparation:

- 60 healthy female mosquitoes were used per experiment.
- Mosquitoes were starved for 12 hours prior to testing.
- Observations included:
 - o Number of mosquito landings
 - o Number of probing attempts

Results:

Experiment No	Total Mosquitoes	Exposure Time (min)	Landing Catch	Knockdown	Temperature	Humidity
1	60	60	8	40	32.4	49
2	60	60	7	38	32.7	50
3	60	60	7	46	32.9	52
4 (Control)	60	60	33	00	31	53

Analysis

Repellency Performance:

- Landing counts in treatment replicates (7–8) were significantly lower compared to control (33), demonstrating strong repellency.

Knockdown Impact:

- TransFluthrin 1.2% w/w showed a notable knockdown effect, immobilizing 38–46 mosquitoes per trial (63–77% mortality). The dual action (repellency + knockdown) enhances its functional value.

Environmental Influence:

- Minor variations in temperature (32.4–32.9°C) and humidity (49–52%) correlated with small differences in mosquito activity, but the product's efficacy remained consistently high across all replicates.

Conclusion

TransFluthrin 1.2% w/w proved to be a highly effective dual-action product, offering strong repellency along with a significant knockdown effect against *Anopheles stephensi*, *Culex* spp., and *Aedes aegypti* adults. This combination of properties positions TransFluthrin as a potent alternative to chemical vaporizers for mosquito control, providing both protection and added knockdown benefits.

Recommendations

- Conduct extended duration tests to assess residual effectiveness.
- Perform semi-field and household trials to validate laboratory results under real-life conditions.
- Explore formulation optimization to enhance knockdown while maintaining safety.
- Compare cost-effectiveness and long-term protection against leading synthetic repellents.

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