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CONFIDENTIAL TEST REPORT

OUR REF NO.: C0015/1415/08/MR/0001 **DATE: 07/08/2014**
YOUR REF NO.: NA / 31/07/2014
CLIENT: SMART INOVATION, PORTUGAL.

SiRi Life sciences Pvt Ltd

Testing Services Division - Entomology

STUDY REPORT

Mouse feed Method – Fabric Samples

Study No. : **SiRi / SI / E / 008 /001**
Document No. : **SiRi / SI / E / 08 / 01**
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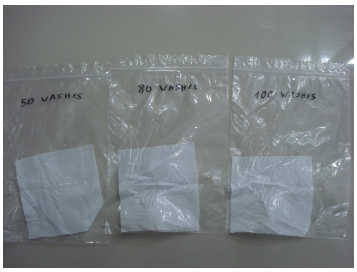
Details of the Product: Fabric Samples 50 wash, 80 wash, 100 wash & control (without fabric)



Test Protocol Used: Mosquito Repellency Testing on washed Textile samples treated with Insect Repellent Actives as meal target (mouse) against *Aedes aegypti*

Reported by:	**Authorized by**
Md. Afaque Hussain	*Dr. P. Gayatri Hela*
Scientist	*Principal Scientist*

**Computer generated report, hence does not need signatures.*

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Table of Contents:

S.No.	Content	Page No.
1.0.0	Subject	4
1.1.0	Background	4
1.2.0	Test	4
2.0.0	Method	4
2.1.0	Definition	4
2.2.0	Rearing technique for mosquito	4
2.3.0	Number of mosquito	5
2.4.0	Test Time	5
3.0.0	Test Method	5
3.1.0	Test material	5
3.2.0	Size of the material	5
4.0.0	Mosquito used	5
4.1.0	Apparatus	5
5.0.0	Result	6
5.1.0	Table 1:summary of the result	6
5.2.0	Table 2: % Efficacy	6
6.0.0	Conclusion from the report	7

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1.0.0 Sub: Mosquito Repellency Testing on Textile samples treated with Insect Repellent Actives against *Aedes aegypti* mosquitoes

1.1.0 Background:
This test is to measure the effectiveness of washed textiles treated with insect repellent actives, to protect against biting insects. Results are shown for washed treated fabrics, against an untreated control (without fabric).

1.2.0 Test: To assess repellency effect of an impregnated fabric towards adult mosquitoes.

2.0.0 Method: The procedure is to compare the behavior of mosquitoes towards a blood – meal target (mouse).

2.1.0 Definitions:
Bite refers to an insect penetrating skin with its mouthparts and ingesting blood

First bite refers to the first bite received by the volunteer on the exposed test area of the mouse from the test insects.

Landing refers to an insect that lands on the exposed area on the mouse, but does not probe or bite.

Bite or probe refers to an insect landing and penetrating the skin with its mouthparts, without ingesting blood.

Protection time (PT) refers to the time from application of the repellent to the time until the first bite (FB). This is the period of time a repellent is expected to remain efficacious.

Repellence refers to a lack of insect's probing or biting mouse skin where repellent has been applied.

Species - 5 days old, un- fed female *Aedes aegypti* mosquitoes.

2.2.0 Rearing technique for mosquitoes: The larvae / pupae are reared under optimal conditions at 27± 2°C, relative humidity 80±10%, and photoperiod 16:8 hours (light : dark). Feeding of adults is done by providing a cotton pad soaked with 10% sucrose solution. No blood meal is given before the test.

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Mosquitoes are starved for 12 hours before the test. The test insects are used for only one test, and post test they are incinerated.

2.3.0 Number of Mosquitoes: 100 nos. per cage

2.4.0 Test Time:
One hour with control (without fabric) and one hour with washed treated samples.

3.0.0 Test Method

3.1.0 Test material: Fabric with Mosquito repellant
3.2.0 Size of the material: 10 cm x 10 cm square of the fabric placed on the mouse covering the maximum portion.

4.0.0 Mosquitoes used:

- The mosquitoes are 5 days old females *of Aedes aegypti.*
- The mosquito progenies are maintained in drain water in a cage under room temp (27 ± 2°C), ventilation and relative humidity (75%).
- The mosquitoes are starved from blood meal for 24 hours before testing and fed on sugar water. They should be eager to bite.
- 100 mosquitoes are used for each trial.

4.1.0 Apparatus:

- The trial is conducted in square repellent test chamber (with a mosquito net as walls and a mosquito net top and white cloth underneath under lab conditions containing :

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- A mouse is maintained in a tight net cage with eyes protected. The Time interval for each study is One hour (60 min). The number of mosquitoes landed on the target and on the fabric is recorded along one hour of testing every 10 min for every 3 min landing.
- The data are then compared with the data obtained without fabric or without fabric (control).
- Trial conditions: Room temp, pressure and illumination.
- The knockdown effect on the insects is also noted.

5.0.0 Result:

5.1.0 Table 1: Summary of the result

S.No.	Sample type	Activity Observed		
		Landings/Probing on fabric	Landing/Probing on exposed area	Knockdown effect
1	Control(without fabric)	NA	68	0
2	50 wash	0	7	0
3	80 wash	0	11	0
4	100 wash	0	17	0

From the observation of landings and the effect on mosquito activity compared to an untreated with no insect repellent efficacy) – we can calculate the average % insect repellency as shown in the table overleaf:

% Efficacy = 100 – ((no. of landings on the treated/no. of landings on the untreated)*100)

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5.2.0 Table 2: % Efficacy

S.No.	Sample Type	% Efficacy	
		On fabric	On exposed area
1	50 wash	100%	89.70%
2	80 wash	100%	83.82%
3	100 wash	100%	75.00%

6.0.0 Conclusion from the report:

- **No landing or probing was observed on the fabric of 50wash, 80wash & 100wash.**
- Landing & probing was observed only on the exposed area of mouse.
- Fabric sample has shown excellent mosquito repellency.

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