

1.0 TITLE

Laboratory evaluations of aerosol samples (SSF/024/07 and SSF/025/07) against vector mosquitoes, *Aedes aegypti*, and *Culex quinquefasciatus* and using Glass Chamber method.

2.0 OBJECTIVES

To conduct laboratory evaluations of aerosol sample (SSF/024/07 and SSF/025/07) against vector mosquitoes, *Aedes aegypti*, and *Culex quinquefasciatus* using Glass Chamber method.

3.0 RESEARCH PERSONNEL

Associate Professor Dr Zairi Jaal (Principal Investigator)
Mr Adanan Che Rus (Senior Research Scientist, Vector Control Research Unit)
Supporting staff of VCRU, USM to assist.

4.0 MATERIALS AND METHODS

4.1 Test Samples

A minimum of 6 cans of aerosol sample will be provided by the company. The products was thoroughly shaken before dispensing.

Sample	Percentage of active ingredient in aerosol (%)
SSF/024/07	Cypermethrin 1.7% w/w
SSF/025/07	Prallethrin 0.05%, Imiprothrin 0.05%, Cypermethrin 0.1% w/w
MS Standard	Prallethrin 0.07%, d-phenothrin 0.05%

4.2 Test Methods

The test was conducted essentially following WHO guidelines (WHO 1996, 1998) and Malaysian Standards (SIRIM 1990). The following was the test chamber and methodology used:

Glass Chamber Method

This test was conducted in a Glass Chamber measuring 70 x 70 x 70 cm. A total of 20 laboratory-cultured sucrose-fed adult female mosquitoes aged 2-5 days was released into the chamber. The insecticide was sprayed into the chamber by using an electronic dispenser. The discharge rate (gm/spray) of the sprayer was predetermined. Based on the dosage required, the insecticide was discharged into the Glass Chamber for an estimated period of time. Knockdown of mosquitoes was observed at the indicated intervals up to 20 minutes. After 20 minutes, all mosquitoes was then collected and placed in cylindrical polyethylene containers with 10% sucrose pad. Mortality was observed after 24 hours post-treatment. All tests was conducted at a temperature of 26-28 °C and relative humidity of 65-85%. A minimum of three tests was conducted. The knockdown values (KT50 and KT95) and regression slope was obtained using a probit analysis (SPSS Version 2000 computer program).

5.0 RESULT

Discharge rate (gm/sec) and dosage used for aerosol samples received from MSR Green Corporation (S) Pte Ltd tested against mosquitoes using the Glass Chamber method.

(Application No: MSR Green/005/2007; Dated: 16 September 2007)

Samples	Mosquitoes	Discharge rate (gm/sec)	Spraying time (sec)	Total Discharge Per Test (gm)
SSF/024/07	<i>Aedes aegypti</i>	2.43	0.29	0.67
	<i>Culex quinquefasciatus</i>	2.43	0.29	0.68
SSF/025/07	<i>Aedes aegypti</i>	2.36	0.30	0.68
	<i>Culex quinquefasciatus</i>	2.36	0.30	0.69
MS Standard	<i>Aedes aegypti</i> & <i>Culex quinquefasciatus</i>	2.09	0.33	0.72

TABLE 2

Comparative time-response values for aerosol samples received from MSR Green Corporation (S) Pte Ltd tested against sucrose-fed female *Aedes aegypti* and *Culex quinquefasciatus* mosquitoes with MS Standard sample. Knockdown values from Glass Chamber method. A minimum of 60 mosquitoes were used for the test and three replicates were conducted.

(Application No: MSR Green/005/2007; Dated: 16 September 2007)

Samples	KT50 & Confidence limit (min)	KT95 & Confidence limit (min)	Regression Coefficient \pm SE	24 HRS MORTALITY
<i>Aedes aegypti</i>				
SSF/024/07	2.68 2.55-2.82	5.29 4.78-6.07	5.58 \pm 0.49	100 \pm 0.00
SSF/025/07	0.55 0.47-0.63	1.86 1.53-2.48	3.13 \pm 0.35	100 \pm 0.00
Ms Standard	1.49 1.39-1.61	2.99 2.56-3.77	5.45 \pm 0.62	100 \pm 0.00
<i>Culex quinquefasciatus</i>				
SSF/024/07*	3.55 3.05-4.37	6.30 4.89-13.16	6.59 \pm 0.49	100 \pm 0.00
SSF/025/07*	1.15 0.94-1.36	3.09 2.40-4.84	3.84 \pm 0.31	100 \pm 0.00
Ms Standard	0.74 0.66-0.82	2.14 1.78-2.78	3.58 \pm 0.38	100 \pm 0.00

* A heterogeneity factor is used in the calculation of confidence limits

6.0 COMMENTS

The aerosol sample (SSF/025/07) performed better than MS Standard aerosol against *Aedes aegypti* whereas for the aerosol sample (SSF/024/07), MS Standard performed better against *Aedes aegypti*. While for *Culex quinquefasciatus* MS Standard perform better than both aerosol samples (SSF/024/07 & SSF/025/07) using Glass Chamber Method.

7.0 REFERENCES

- SIRIM (MS 1186:1990). Method for the evaluation of biological efficacy of household space spray insecticidal aerosol against flying insects – Glass Chamber Method. UDC 648:541.182.2
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10 OCTOBER 2007