STUDY REPORT

Title

Laboratory Evaluation of BerryC Moisturizing Insect Repellent Lotion Against *Aedes aegypti* Using the Bioassay Method for Mosquito Repellent on Human Skin (4 Hours Observation)

Report Author

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Study Report No.

PQ2502024-0

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Report Submission Date

29 July 2025

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Approval of Study Report No.: PQ2502024-0

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Abstract

The present study was conducted to evaluate the bio efficacy of BerryC Moisturizing Insect Repellent Lotion against *Aedes aegypti* using the bioassay method for mosquito repellent on human skin (4 hours) observation). The product was thoroughly shaken before dispensing. The right arms of human volunteers were left untreated whilst the left arms were treated with the test sample. The arms were exposed simultaneously for 5 minutes every hour and the number of mosquitoes landing/biting was recorded.

BerryC Moisturizing Insect Repellent Lotion gave total protection rate up to 1’30” hours. After the third interval, BerryC Moisturizing Insect Repellent Lotion gave protection rate of 95.54% (2’00” hours), 92.74% (2’30” hours), 97.44% (3’00” hours), 55.36% (3’30” hours) and 73.54% (4’00” hours).

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Test Method and Materials

(A) Sample Details

Sample was received with the details as follow :

Sample Description	:	BerryC Moisturizing Insect Repellent Lotion
Batch Number	:	BEZFBCIRLZC
Physical State	:	Translucent liquid
Formulation	:	Lotion
Active Ingredient	:	Natural tea tree oil, lavender extract
Sample Identification	:	PQ2502024-001
Source	:	Tevo Creations Sdn. Bhd.
Production Date	:	03 June 2025
Expiry Date	:	June 2028
Sample Received Date	:	05 June 2025

(B) Test Method

The test was conducted essentially following Malaysian Standards (MS 1497:2007). The following were the test chambers and methodologies used:

Experiments were conducted in screened, aluminium cages measuring 60 x 60 x 60 cm. The cage is divided into two compartments with a partition. Each compartment has 15 cm diameter circular openings fitted with cloth sleeves. A batch of 25 sucrose-fed female *Aedes aegypti* mosquitoes (aged 5 to 7 days old) were introduced into the cage.

The right arms of human volunteers were left untreated whilst the left arms were treated with the test sample. An amount of 0.5 g of test sample was applied. Application was left to dry before covering it with a rubber sleeve within 30 minutes after treatment. For each arm, a surface area of 24 cm^2 (3 cm x 8 cm) was exposed to mosquito landing/biting activities through an opening on the rubber sleeves. Both hands (up to the wrists) were covered with thick rubber gloves to prevent from unwanted bites. The arms were exposed simultaneously for 5 minutes **every hour** and the number of mosquitoes landing/biting was recorded. **The assessment period was continued up to 4 hours post-application of the test sample.**

A fresh batch of mosquitoes was introduced to replace the exposed mosquitoes at each assessment period. The experiment was done in **triplicates**. All test were conducted at temperature of 26 °C ± 2 °C. The effectiveness of a repellent product was assessed by determining the percentage reduction of mosquito biting/landing on treated arm when compared with the untreated arm.

$$\% \text{ reduction} = \frac{\text{No. mosq. on untreated arm} - \text{No. mosq. on treated arm}}{\text{No. mosq. on untreated hand}} \times 100\%$$

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Results of Analysis

The repellency effects of BerryC Moisturizing Insect Repellent Lotion tested against *Aedes aegypti* are tabulated in table below.

Table 1: The Repellency Effects Against *Aedes aegypti*

	No of mosquito landed on untreated arm	No of mosquito landed on treated arm
0'30"hours	13.33±2.60	0.00±0.00
% Reduction	**100.00±0.00**	
1'00"hours	17.00±2.52	0.00±0.00
% Reduction	**100.00±0.00**	
1'30" hours	11.67±0.88	0.00±0.00
% Reduction	**100.00±0.00**	
2'00" hours	14.00±1.15	0.67±0.33
% Reduction	**95.54±2.25**	
2'30" hours	18.00±2.31	1.33±0.33
% Reduction	**92.74±1.02**	
3'00" hours	11.67±0.88	0.33±0.33
% Reduction	**97.44±2.56**	
3'30" hours	15.33±0.88	7.00±2.89
% Reduction	**55.36±16.74**	
4'00" hours	15.33±1.33	4.00±1.73
% Reduction	**73.54±12.55**	
TOTAL	116.33±7.22	13.33±4.98
% Reduction	**88.04±5.00**	

BerryC Moisturizing Insect Repellent Lotion gave total protection rate up to 1'30" hours. After the third interval, BerryC Moisturizing Insect Repellent Lotion gave protection rate of 95.54% (2'00" hours), 92.74% (2'30" hours), 97.44% (3'00" hours), 55.36% (3'30" hours) and 73.54% (4'00" hours).

Discussion / Conclusion

The bio-efficacy testing showed that BerryC Moisturizing Insect Repellent Lotion provide good protection rate up to 3'00" hours.

Reference

1) MALAYSIAN STANDARD (MS 1497:2007). Household Insecticide Products – Personal mosquito repellent – Evaluation method for biological efficacy. (First Revision). ICS: 65.100.10, 71.100.99.

Appendices

Appendix 1 - MS ISO/IEC 1702 Certificate of Accreditation.

Appendix 1 - MS ISO/IEC 17025 Certificate of Accreditation

MINISTRY OF INVESTMENT, TRADE AND INDUSTRY
DEPARTMENT OF STANDARDS MALAYSIA

Certificate of Accreditation

Accreditation No: SAMM 253

Accredited since: 11-June-2025
Valid Until: 25-August-2028

This is to certify that

ALS TECHNICHEM (MALAYSIA) SDN. BHD.,
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for the current scope of accreditation

Has been granted accreditation in respect of the scope of accreditation described in the schedule, subject to the terms and conditions governing the Skim Akreditasi Makmal Malaysia (SAMM), the Laboratory Accreditation Scheme of Malaysia.

Laboratories accredited under SAMM meet the requirements of MS ISO/IEC 17025. This Malaysian Standard is identical with ISO/IEC 17025 published by the International Organization for Standardization (ISO).

Jabatan Standard Malaysia
STANDARDS MALAYSIA
Department of Standards Malaysia

(HUSSALMIZZAR HUSSAIN)
for the Director General
Department of Standards Malaysia
Issue Date: 11-June-2025

This certificate is made pursuant to subsections 16(2) and 16(3).[Act 549]

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