



CERTIFICATE OF ANALYSIS

TEVO CREATIONS SDN BHD (1100424-K)	Certificate No	: NNN22110005M01-0
No. 2, Lorong Beringin 1,	Sample Received Date	: 03-Nov-2022
Taman Industri Beringin,	Analysis Start Date	: 08-Nov-2022
14100 Simpang Ampat,	Complete Analysis Date	: 23-Nov-2022
Pulau Pinang, Malaysia.	Date Issued	23-Nov-2022
Tel : 04-5085688	Fax : 04-5085680	
Attn : Farina		

Sample Description : A bottle of sample labelled Veggie and Fruit Cleaner.

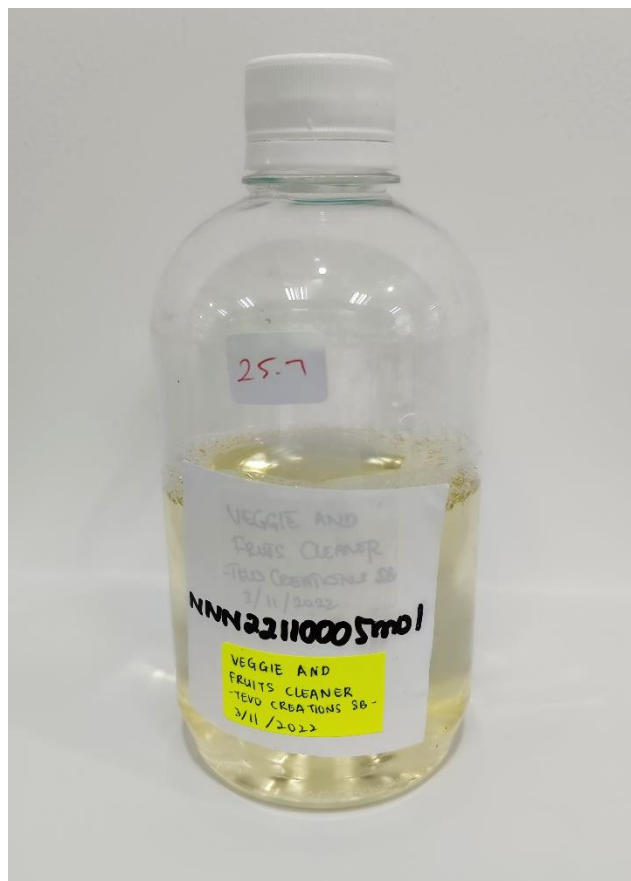


Figure 1 : A bottle of sample labelled Veggie and Fruit Cleaner.

NNN22110005M01

Objective :

Determine the capability of a product to produce at least 5 decimal log reductions in the number of viable bacterial cells of tested organisms under defined contact condition.

Test Organism(s) :

Escherichia coli (ATCC 8739)

Staphylococcus aureus (ATCC 6538)

Listeria monocytogenes (ATCC 19115)



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Inoculum preparation :

Bacteria *Escherichia coli* (ATCC 8739), *Staphylococcus aureus* (ATCC 6538) and *Listeria monocytogenes* (ATCC 19115) were cultured on suitable agar till it ripe and fruiting (18-24 hours) at 35.0 °C. By scraping the fruity culture, the spore collected had been transfer to 10 mL sterilized Phosphate-buffered saline solution in a universal bottle to obtain a microbial count of about 1.5×10^8 CFU/mL for *Escherichia coli*, 2.6×10^8 CFU/mL for *Staphylococcus aureus* and 2.4×10^8 CFU/mL for *Listeria monocytogenes*. The test organism was prepared in a universal bottle. The universal bottle was vortexed for 10 seconds to bring the spores into suspension.

Sample preparation :

1.0 ± 0.1 mL of sterilized distilled water and inoculum was pipetted in a test tube. The tube was vortex for 10 seconds and let for 2 minutes \pm 10 seconds. At the end of this time, 8.0 ± 0.1 mL of tested sample (80%) which had been diluted with sterilize deionized water was added. The tube was vortex again for 10 seconds. The solution then was let for 5 minutes contact time. Just before the end of contact time, the tube was mixed again.

At the end of contact time, 1.0 ± 0.1 mL from the tube was pipetted and transferred to a new tube containing 1.0 ± 0.1 mL of sterilized distilled water and 8.0 ± 0.1 mL Dey-Engley Neutralizer which act as neutralizer. This neutralization process was let for 5 minutes. After the neutralization, the tube was mixed and the neutralized test mixture was plated out for duplicate and mixed with 15 mL of melted Tryptic Soy Agar (TSA) using pour plate technique. The sample was incubated at 37 ± 1 °C and read after 48 hours.



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Results :

Table 1: Log Reduction and Percentage Reduction of Organisms After 5 Minutes of Contact Time.

Organisms	Contact Times (minutes)	N ₀ = N/10	N _a = X x 10	R (lg N ₀ - lg N _a)	R (%)
<i>Escherichia coli</i> (ATCC 8739)	5	1.5x10 ⁷	<10	7.18	99.99999
<i>Staphylococcus aureus</i> (ATCC 6538)	5	2.6x10 ⁷	<10	7.41	99.99999
<i>Listeria monocytogenes</i> (ATCC 19115)	5	2.4x10 ⁷	<10	7.38	99.99999

N₀ = Initial Count of Test Microorganism per mL of Test Mixture

N_a = Count of Surviving Test Microorganism per mL of Test Mixture at the End of Contact Time

X = Average of Count per Plate

R = Reduction of Viability

Remark:

- 1 decimal log reduction = 90% reduction
- 2 decimal log reduction = 99% reduction
- 3 decimal log reduction = 99.9% reduction
- 4 decimal log reduction = 99.99% reduction
- 5 decimal log reduction = 99.999% reduction
- 6 decimal log reduction = 99.9999% reduction
- 7 decimal log reduction = 99.99999% reduction



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Performance required : At least 5 decimal log reduction

Finding : More than 5 decimal log reduction of test organisms.

Conclusion : The tested sample achieved the recommended disinfectant efficacy against *Escherichia coli* (ATCC 8739), *Staphylococcus aureus* (ATCC 6538) and *Listeria monocytogenes* (ATCC 19115).



Nur Ain Bt Mohd Hashim
Microbiologist
B.Sc.(Hons)
MJMM001073