

## CERTIFICATE OF ANALYSIS

### TEVO CREATIONS SDN BHD (100424-K)

Plot 155, Jalan Perindustrian Bukit Minyak 7,  
Bukit Minyak Industrial Estate, MK 13, S.P.T.  
14100 Bukit Mertajam, Penang, Malaysia  
Tel: 04-5085688 Fax: 04-5085680  
Attn: Kern Ng

Certificate No : NNN16110622M01-0  
Sample Received Date : 23-Nov-2016  
Complete Analysis Date : 30-Dec-2016  
Date Issue : 30-Dec-2016

Sample description : Coating sample B

### Objective:

Determination of a product's ability to kill or prevent the growth of microorganisms over a relatively long period of time.

### Test Procedure

U.S. PHARMACOPEIA (USP 51) was used to test the sample.

### Test Organism(s)

<i>Escherichia coli</i>	ATCC 8739
<i>Staphylococcus Aureus</i>	ATCC 6538
<i>Listeria monocytogens</i>	ATCC 19115

### Frequency

0, 14 and 28 days

### Inoculum preparation:

The test organisms (*Escherichia coli*, *Staphylococcus Aureus* and *Listeria monocytogens*) had been cultured by taking the working culture inoculate the cells into soybean-casein digest agar and incubated at  $37\pm 1^{\circ}\text{C}$  for overnight. Each test organisms will be prepared in different agar plate. Then loopfuls of cells from the cultured plate is transferred into universal tube with 10 mL sterile saline TS. This universal bottle was vortexed for 10 s to bring the cells into suspension and used as the inoculum for test the sample.

### Sample preparation:

The test was conducted in three sterile universal bottles which each of it stand for one type of bacteria with 10 mL of sample in it. The volume of the suspension inoculums used was 0.1% from the volume of sample used. The concentration of sample after inoculation is between  $1.0\times 10^5$  –  $1.0\times 10^6$  CFU/mL of the product. The initial concentration of viable microorganisms in each test preparation was determined by plate count method. After inoculation and 0 hour assayed, the inoculated sample was incubate in  $22.5^{\circ}\text{C}$ . Sample was examined for its microbial count at 14 days and 28 days. Plate count at 14 and 28 days was compare to the 0 hour. Reductions of inoculum (CFU/mL) were converted to log reduction value.

**CERTIFICATE OF ANALYSIS**

TEVO CREATIONS SDN BHD (100424-K) Certificate No : NNN16110622M01-0

**Results of Analysis:**

Table 1: The sample after 14 and 28 days of incubation

Organisms	Result (Log Reduction)	
	14 days	28 days
<i>Escherichia coli</i> ATCC 8739	> 5 log reduction	> 5 log reduction
<i>Staphylococcus Aureus</i> ATCC 6538	> 5 log reduction	> 5 log reduction
<i>Listeria monocytogenes</i> ATCC 19115	> 5 log reduction	> 5 log reduction

**Performance required :**

Bacteria: Not less than 2.0 log reduction from the initial count at 14 days, and no increases from the 14 days count at 28 days.

**Finding** : Bacteria count show no increases from initial calculated count at 14 and 28 days.

**Conclusion** : The assessment showed that the antimicrobial preservative agent in the sample achieved the recommended antimicrobial efficacy against microorganism tested..




---

Ng Yee Teng  
 Microbiologist  
 B.Sc. (Hons)  
 MJMM0390