



FINAL REPORT

Efficacy Study of a UV-Light Water Bottle Cap
CrazyCap 2

ORDER Number
151906250

PREPARED FOR:

Microlyscs, LLC
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Certificate of Analysis

Client: Microlyscs

Contact: Rakesh Guduru

Project: Efficacy study of a UV-light water bottle cap

Product: CrazyCap 2 (UV-light bottle cap)



EMSL NO: 151906250

Sample received: 8/26/19

Report date: 8/30/19

Challenge Bacteria: *Escherichia coli* (*E. coli*)

Experimental Summary:

The testing procedure was designed after discussions between EMSL Analytical, the testing company, and the client, Microlyscs, LLC. The testing was conducted on a UV light bottle cap, CrazyCap 2, for its ability to kill bacteria in the contained water. The testing was conducted in our Houston Microbiology Laboratory.

Procedure:

Bacterial Inoculum Preparation

An *E. coli* stock culture was plated onto Tryptic Soy Agar with 5% sheep Blood (TSAB) and incubated at 35°C for 22 hours. Well isolated colonies were then harvested, suspended in phosphate buffered water (PBS) and vortexed for 1 minute to ensure homogenization. This suspension was used to inoculate 450 mL of sterile DI water for each replicate to test in the prototypes.

**Efficacy Testing**

The 450-mL contaminated test water was placed into the container and capped with the CrazyCap 2 then treated with UV according to the following protocols:

- 1) Normal mode once (1 min exposure) and normal mode a second time (2 min exposure)
- 2) Crazy mode once (2 min exposure) and Crazy mode a second time (4 min exposure)

Following each treatment a small aliquot of water was removed and serially diluted in PBS for plating. *E. coli* was plated onto AC Petrifilm plates and incubated at 35°C for 24 hours. After incubation any recovered colonies were counted.

Experimental Results:

Table 1: Quantitative counts for *E. coli* contaminated water treated with the CrazyCap 2.

Time Point (minutes)	CFU/mL	Log	Log Reduction	%Kill
0 (normal control)	830,000	5.919		
Normal mode (1 min)	7,300	3.863	2.06	99.1
Normal mode (2 min)	58	1.763	4.16	99.99
0 (Crazy control)	730,000	5.863		
Crazy mode (2 min)	8	0.903	4.96	99.999
Crazy mode (4 min)	3	5.39	5.39	99.9996

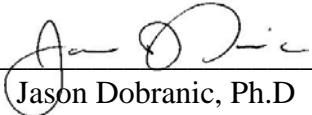
Limit of detection = 10 CFU.

% Kill = Percent difference between starting population and device-treated population.



Conclusions:

The CrazyCap 2 significantly decreased the level of bacteria in the contaminated water after 2 minutes of treatment on the Normal mode and after 2 and 4 minutes on the Crazy mode compared to the starting bacterial populations.



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