



FINAL REPORT

Efficacy Study of the UVC LED CrazyCap Pro

ORDER Number
152109621

PREPARED FOR:

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Certificate of Analysis

Client: UBO-Technology, LLC

Contact: Rakesh Guduru

Project: Efficacy study of UVC LED CrazyCap Pro

Product: CrazyCap Pro



EMSL NO: 152109621

Sample received: 12/13/2021

Report date: 1/18/2022

Challenge Bacteria: *Mycobacterium terrae* (*M. terrae*) – ATCC 15750



Experimental Summary:

The testing procedure was designed after discussions between EMSL Analytical, the testing company, and the client, UBO-Technology, LLC. The testing was conducted on the UVC LED CrazyCap Pro for its ability to kill bacteria in the contained water. The testing was conducted in our Houston Microbiology Laboratory.

Procedure:

Bacterial Inoculum Preparation

An *M. terrae* stock culture was plated onto Middlebrook 7H10 agar and incubated for 10 days at 35±1°C. Well-isolated colonies were then harvested, suspended in sterilized de-ionized water, and vortexed for 1 minute to ensure homogenization. This suspension was used to inoculate 450 mL of sterile DI water for each replicate test of the cap. All tests were performed in triplicate with untreated controls for comparison.

Efficacy Testing

The 450-mL contaminated test water was placed into the container and capped with the CrazyCap Pro then treated with UV on Pro Mode (3 minutes). Following each replicate test, a small aliquot of water was removed and serially diluted. Each dilution was plated onto Middlebrook 7H10 agar plates and incubated for 12 days at 35±1°C. All tests were performed in triplicate. After incubation any recovered colonies were counted.

Experimental Results:

Table 2: Quantitative counts for *M. terrae* contaminated water treated with the CrazyCap Pro.

Test Treatments Pro Mode Treatment time = 3 minutes	<i>M. terrae</i> CFU/mL	LOG	LOG Reduction	% Kill
Untreated Replicate 1	2,300,000	6.36		
Untreated Replicate 2	1,450,000	6.16		
Untreated Replicate 3	1,550,000	6.19		
Pro Mode Treatment, Replicate 1	1,150	3.06	3.30	99.95
Pro Mode Treatment, Replicate 2	9,000	3.95	2.21	99.4
Pro Mode Treatment, Replicate 3	270	2.43	3.76	99.98
Average kill rate in Pro Mode				99.8

Limit of detection = 1 CFU/mL

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



Conclusions:

The CrazyCap Pro significantly decreased (99.8%) the level of the test bacteria in the contaminated water after UV treatment on the Pro mode (3 minutes) compared to the starting untreated bacterial populations.

Signatures:

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