



ATS實驗室最終報告-沙門氏菌(8hr)

STUDY TITLE

Evaluation of Antimicrobial Activity of Odorox Device

**Test Organism:**

*Salmonella enterica* serotype - typhimurium (ATCC 23564)

PRODUCT IDENTITY

Mobile Disinfection Unit M.D.U.

AUTHOR

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STUDY COMPLETION DATE

May 28, 2013

PERFORMING LABORATORY

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PROJECT NUMBER

A14989

## STUDY REPORT

### GENERAL STUDY INFORMATION

**Study Title:** Evaluation of Antimicrobial Activity of Odorox Device  
**Project Number:** A14989  
**TRF Number:** HGI01042513.CUST

### TEST SUBSTANCE IDENTITY

**Test Substance Name:** Mobile Disinfection Unit M.D.U.

### STUDY DATES

**Date Sample Received:** March 14, 2013  
**Study Initiation Date:** May 8, 2013  
**Experimental Start Date:** May 15, 2013  
**Experimental End Date:** May 17, 2013  
**Study Completion Date:** May 28, 2013

| Test Organism  | ATCC # | Culture Medium  | Incubation Parameters |
|--|--------|-----------------|-----------------------|
| <i>Salmonella enterica</i><br>serotype - typhimurium | 23564  | Synthetic Broth | 35-37°C, aerobic      |

The microorganism used in this study was obtained from the American Type Culture Collection (ATCC), Manassas, Virginia.

**Test Exposure:** 8 hours  
**Exposure Temperature:** Room temperature (25.0-29.1°C).  
**Number of Carriers Tested/lot:** Duplicate carriers per exposure time utilizing two carrier types (1" x 1" stainless steel and 1" x 1" cotton fabric)  
**Soil Load Description:** No organic soil load required  
**Neutralizing Subculture Medium:** Lethen Broth + 0.07% Lecithin + 0.5% Tween 80  
**Agar Plate Medium:** Tryptic Soy Agar with 5% Sheep Blood (BAP)

### EXPERIMENTAL DESIGN

An incubator (approximately 35" x 26" x 76.5") was prepared for testing by turning off all applicable fans and heat sources allowing the incubator to equilibrate to room temperature. The Mobile Disinfection Unit M.D.U. was placed into the incubator; the unit was powered on and was allowed to run for 76 minutes prior to placing the carriers in the incubator. Duplicate test carriers, per carrier type, per exposure time point were inoculated with a dried film of test culture and were placed within the incubator. Fabric carriers were allowed to hang freely, while stainless steel carriers were exposed within Petri dishes with the dish lids fully ajar. Following an 8 hour exposure time, the carriers were neutralized, mixed and assayed for survivors. Duplicate control carriers were neutralized immediately after drying (time zero). Additionally, duplicate control carriers were exposed for 8 hours, as in the test. Appropriate purity, carrier sterility, neutralization confirmation and neutralizing subculture medium sterility controls were performed. Percent and log<sub>10</sub> reductions were determined for the test carriers as compared to the quantitation control carriers at the same exposure time.

**TABLE 1: CONTROL RESULTS**

| Type of Control                                  |                 | Results   |
|--|-----------------|---|
|  |                 | <i>Salmonella enterica</i> serotype - <i>typhimurium</i> (ATCC 23564) |
| Purity Control                                   |                 | Pure  |
| Neutralizing Subculture Medium Sterility Control |                 | No Growth   |
| Carrier Sterility Control                        | Stainless Steel | No Growth   |
|  | Cotton Fabric   | No Growth   |

**TABLE 2: NEUTRALIZATION CONFIRMATION CONTROL RESULTS**

| Test Substance: Mobile Disinfection Unit M.D.U                        |                 |                                   |         |                              |                                   |
|---|-----------------|-----------------------------------|---------|------------------------------|-----------------------------------|
| Test Organism   | Carrier Type    | Neutralization Confirmation (CFU) |         | Log <sub>10</sub> Difference | Pass/Fail (±1 log <sub>10</sub> ) |
|   |                 | Numbers Control                   | Results |                              |                                   |
| <i>Salmonella enterica</i> serotype - <i>typhimurium</i> (ATCC 23564) | Stainless Steel | 12,8                              | 14,14   | -0.15                        | Pass                              |
|   | Cotton Fabric   |                                   | 15,10   | -0.11                        | Pass                              |

CFU = Colony Forming Units

**TABLE 3: EVALUATION OF QUANTITATION CONTROL CARRIER DATA**

| Test Organism   | Exposure Time | Carrier type    | Carrier # | CFU/carrier            | Log <sub>10</sub> | Geometric Mean (Average Log <sub>10</sub> ) |
|---|---------------|-----------------|-----------|------------------------|-------------------|---|
| <i>Salmonella enterica</i> serotype - <i>typhimurium</i> (ATCC 23564) | Time Zero     | Stainless Steel | 1         | 2.70 x 10 <sup>5</sup> | 5.43              | 2.24 x 10 <sup>5</sup><br>(5.35)            |
|   |               |                 | 2         | 1.86 x 10 <sup>5</sup> | 5.27              |   |
|   |               | Cotton Fabric   | 1         | 7.6 x 10 <sup>5</sup>  | 5.88              | 7.41 x 10 <sup>5</sup><br>(5.87)            |
|   |               |                 | 2         | 7.0 x 10 <sup>5</sup>  | 5.85              |   |
|   | 8 hours       | Stainless Steel | 1         | 2.40 x 10 <sup>4</sup> | 4.38              | 2.57 x 10 <sup>4</sup><br>(4.41)            |
|   |               |                 | 2         | 2.72 x 10 <sup>4</sup> | 4.43              |   |
|   |               | Cotton Fabric   | 1         | <1 x 10 <sup>2</sup>   | <2.00             | <1.00 x 10 <sup>2</sup><br>(<2.00)          |
|   |               |                 | 2         | <1 x 10 <sup>2</sup>   | <2.00             |   |

CFU = Colony Forming Unit

**TABLE 4: EVALUATION OF TEST CARRIER DATA**

| Test Substance: Mobile Disinfection Unit M.D.U                                       |                 |           |             |                   |   |  |
|--|-----------------|-----------|-------------|-------------------|---|--|
| Test Organism: <i>Salmonella enterica</i> serotype – <i>typhimurium</i> (ATCC 23564) |                 |           |             |                   |   |  |
| Exposure Time  | Carrier type    | Carrier # | CFU/carrier | Log <sub>10</sub> | Geometric Mean (Average Log <sub>10</sub> ) | Percent Reduction (Log <sub>10</sub> ) |
| 8 hours  | Stainless Steel | 1         | <1          | <0.00             | <1.00<br>(<0.00)                            | >99.99%<br>(>4.41)*                    |
|  |                 | 2         | <1          | <0.00             |   |  |
|  | Cotton Fabric   | 1         | <1          | <0.00             | <1.00<br>(<0.00)                            | >99.999%<br>(>5.87)**                  |
|  |                 | 2         | <1          | <0.00             |   |  |

CFU = Colony Forming Unit

\*As compared to the Quantitation Control Carrier results at the same applicable exposure time.

\*\* As compared to the Quantitation Control Carrier results at Time Zero.

**ANALYSIS**

Mobile Disinfection Unit M.D.U., demonstrated a >99.99% (>4.41 log<sub>10</sub>) reduction of *Salmonella enterica* serotype - *typhimurium* (ATCC 23564) on stainless steel carriers, as compared to the 8 hour stainless steel control carriers, when tested at room temperature (25.0-29.1°C).

Mobile Disinfection Unit M.D.U., demonstrated a >99.999% (>5.87 log<sub>10</sub>) reduction of *Salmonella enterica* serotype - *typhimurium* (ATCC 23564) on cotton fabric carriers, as compared to the Time Zero fabric control carriers, when tested at room temperature (25.0-29.1°C).

This study was performed following ATS Labs' Standard Operating Procedures (SOPs) and internal quality systems

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5.28.13  
Date

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