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STUDY TITLE

Modified Time Kill Study

REPORT TITLE

MX14 AERO CONCENTRATE

Formula #

Date Received: 03/23/2020

Report Date: 04/16/2020

PROJECT NUMBER

Laboratory Number 50232

Log # 330320

AUTHOR

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Director, Kappa Laboratories, Inc.

PERFORMING LABORATORY

Kappa Laboratories, Inc.
2577 NW 74th Avenue
Miami, Florida 33122

SPONSOR

MX14 AERO
ATTN: BILL UTSET
7500 NW 52ND STREET, #107
MIAMI, FLORIDA 33166

KAPPA LABORATORIES, INC.

Project: Modified Time Kill Assay

Report Date: 04/16/2020

TEST Product – MX14 Aero Concentrate, Lot 23

RESULTS

Staphylococcus aureus	(ATCC No. (6538)
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SAMPLE DATA RESULTS

Percent Reduction indicated for test time points.

Note: NG = No Growth Detected at 48 hours incubation

G = Growth Detected at 48 hours incubation

Average Initial Bacterial Counts = 1.13×10^7 cts per 0.25 ml

Time Point	Initial Population	Average Survival (CFU)	Average Percent Reduction
30 seconds	1.13×10^7	$< 1.0 \times 10^3$	>99.99%
1 minute	1.13×10^7	$< 1.0 \times 10^3$	>99.99%
5 minutes	1.13×10^7	$< 1.0 \times 10^3$	>99.99%
10 minutes	1.13×10^7	$< 1.0 \times 10^3$	>99.99%
15 minutes	1.13×10^7	$< 1.0 \times 10^3$	>99.99%
Positive Controls	G	G	G
Negative Controls	NG	NG	NG

The MX14 Aero Concentrate product is effective at a 4 log reduction of staphylococcus aureus by 30 seconds.

A "Kills on Contact" product will reduce >99.99% or greater bacterial challenges in less than one (1) Minute.

KAPPA LABORATORIES, INC.

Project: Modified Time Kill Assay

Report Date: 04/16/2020

TEST Product – MX14 Aero Concentrate, Lot 23

RESULTS

E.coli	(ATCC No. (8739)
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SAMPLE DATA RESULTS

Percent Reduction indicated for test time points.

Note: NG = No Growth Detected at 48 hours incubation

G = Growth Detected at 48 hours incubation

Average Initial Bacterial Counts = 4×10^6 cts per 0.25 ml

Time Point	Initial Population	Average Survival (CFU)	Average Percent Reduction
30 seconds	4.0×10^6	$< 1.0 \times 10^3$	>99.9%
1 minute	4.0×10^6	$< 1.0 \times 10^3$	>99.9%
5 minutes	4.0×10^6	$< 1.0 \times 10^3$	>99.9%
10 minutes	4.0×10^6	$< 1.0 \times 10^3$	>99.9%
15 minutes	4.0×10^6	$< 1.0 \times 10^3$	>99.9%
Positive Controls	G	G	G
Negative Controls	NG	NG	NG

The MX14 Aero Concentrate product is effective at a 3 log reduction of E.coli by 30 seconds.

A "Kills on Contact" product will reduce >99.99% or greater bacterial challenges in less than one (1) Minute.

KAPPA LABORATORIES, INC.

Project: Modified Time Kill Assay

Report Date: 04/16/2020

TEST Product – MX14 Aero Concentrate, Lot 23

RESULTS

Listeria monocytogenes	(ATCC No. (7644)
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SAMPLE DATA RESULTS

Percent Reduction indicated for test time points.

Note: NG = No Growth Detected at 48 hours incubation

G = Growth Detected at 48 hours incubation

Average Initial Bacterial Counts = 2.13×10^6 cts per 0.25 ml

Time Point	Initial Population	Average Survival (CFU)	Average Percent Reduction
30 seconds	2.13×10^6	$< 1.0 \times 10^3$	>99.9%
1 minute	2.13×10^6	$< 1.0 \times 10^3$	>99.9%
5 minutes	2.13×10^6	$< 1.0 \times 10^3$	>99.9%
10 minutes	2.13×10^6	$< 1.0 \times 10^3$	>99.9%
15 minutes	2.13×10^6	$< 1.0 \times 10^3$	>99.9%
Positive Controls	G	G	G
Negative Controls	NG	NG	NG

The MX14 Aero Concentrate product is effective at a 3 log reduction of Listeria monocytogenes by 30 seconds.

A "Kills on Contact" product will reduce >99.99% or greater bacterial challenges in less than one (1) Minute.

KAPPA LABORATORIES, INC.

Project: Modified Time Kill Assay

Report Date: 04/16/2020

TEST Product – MX14 Aero Concentrate, Lot 23

RESULTS

Salmonella typhi	(ATCC No. (14028)
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SAMPLE DATA RESULTS

Percent Reduction indicated for test time points.

Note: NG = No Growth Detected at 48 hours incubation

G = Growth Detected at 48 hours incubation

Average Initial Bacterial Counts = 3.87×10^6 cts per 0.25 ml

Time Point	Initial Population	Average Survival (CFU)	Average Percent Reduction
30 seconds	3.87×10^6	$< 1.0 \times 10^3$	>99.9%
1 minute	3.87×10^6	$< 1.0 \times 10^3$	>99.9%
5 minutes	3.87×10^6	$< 1.0 \times 10^3$	>99.9%
10 minutes	3.87×10^6	$< 1.0 \times 10^3$	>99.9%
15 minutes	3.87×10^6	$< 1.0 \times 10^3$	>99.9%
Positive Controls	G	G	G
Negative Controls	NG	NG	NG

The MX14 Aero Concentrate product is effective at a 3 log reduction of Salmonella typhi by 30 seconds.

A "Kills on Contact" product will reduce >99.99% or greater bacterial challenges in less than one (1) Minute.

KAPPA LABORATORIES, INC.

SUMMARY


The MX14 Aero Concentrate appeared to be consistently effective in exerting Bactericidal Activity with a Greater than 99.9% Reduction against Staphylococcus aureus, E. coli, Listeria monocytogenes and Salmonella typhi within 30 seconds of contact. Bacteriocidal activity appeared to be equally effective against Gram Positive targets (Staph. Aureus and Listeria monocytogenes) and Gram Negative targets (E. coli and Salmonella typhi).

Controls

Negative Controls for all Medias were performed by incubation of uninoculated media. Positive Controls were performed for all organisms by plating directly onto the appropriate media employed for the assay. Broths were tested for Positive growth by inoculation with the appropriate organism.

Test Facility: Kappa Laboratories, Inc.
2577 NW 74th Avenue
Miami, Florida 33122

Kappa Laboratories has been inspected and previously recognized by the U.S. Department of Agriculture (USDA Microbiology-#0093, Chemistry-#1282); Registered with the U.S. Food and Drug Administration (FDA-#1039389) and is an FDA Accepted Laboratory for Import Testing. Kappa Laboratories is currently a Contract Laboratory to the U.S. Centers for Disease Control (CDC), Atlanta, Georgia; Vessel Sanitation Program and is U.S. Dept. of Homeland Security, U.S. Coast Guard Recognized Facility.

Signed: 
Dr. Peter J. Kmiec
Director, Kappa Laboratories, Inc.