



PYURE

DYNAMIC PROTECTION™

Testing on Surface Pathogens

RESULTS FOR MULTIPLE DEVICES & PATHOGENS

February 2021 - CONFIDENTIAL BUSINESS INFORMATION



POWERED BY
PYURE TECHNOLOGY™



Legend for Virus Reduction

1 Log reduction	90% reduction of virus
2 Log reduction	99% reduction
3 Log reduction	99.9% reduction
4 Log reduction	99.99% reduction
5 Log reduction	99.999% reduction
6 Log reduction	99.9999% reduction

1. Pathogen Reduction on Surfaces

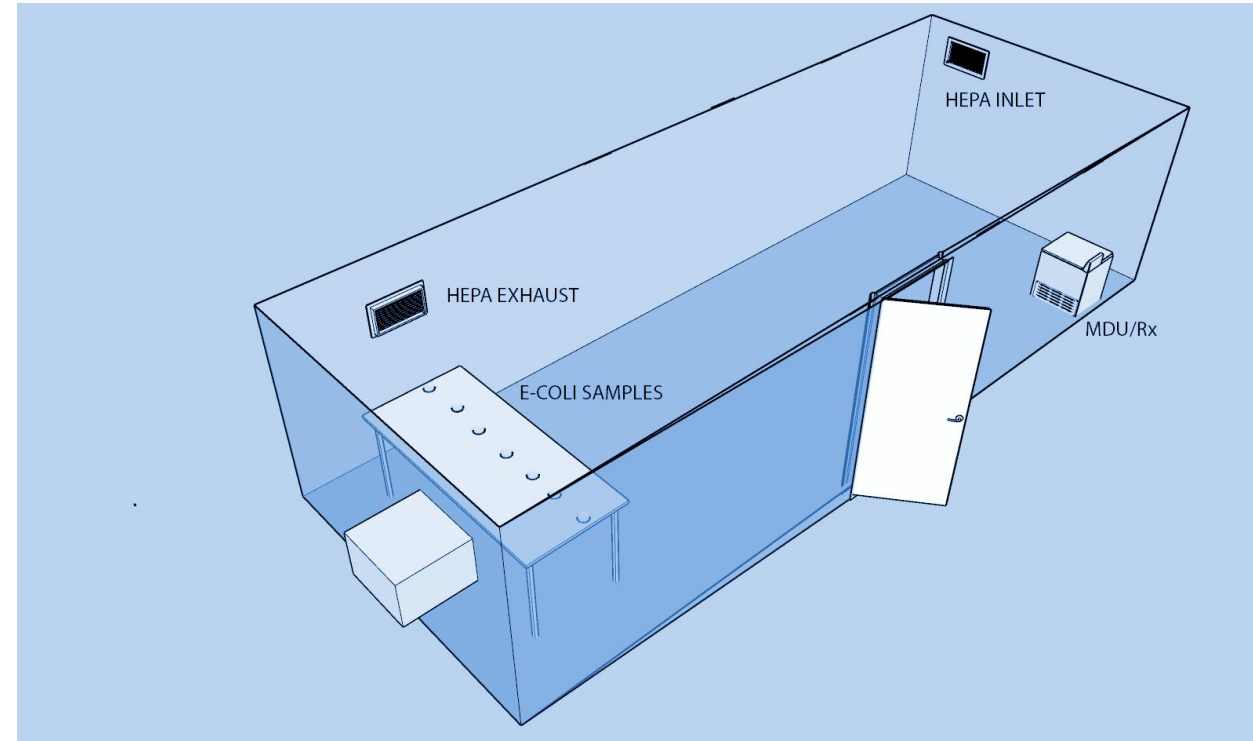
Tests Undertaken by Innovative Bioanalysis

(individual reports for each pathogen available upon request)

Study Design

HIGHLIGHTS

- **Laboratory:** Study performed by Innovative Bioanalysis (GLP compliant, Biosafety Level 3)
- **Study objective:** designed to replicate real world use of the devices - a large test chamber with device located in one corner of the room and the inoculated coupons on a table ~ 20' away
- **Chamber size:** 1,280 ft³ (8' x 20' x 8')
- **Temperature:** 75 F +/- 2F
- **Humidity:** 43% +/- 3%
- **Layout:** see diagram to the right
- **Challenge strains:** various bacteria
- **Device tested:** MDU/Rx™
- **Sampling:** stainless steel coupons inoculated, sampled at T= 0, 20, 40, 60, 80, 120, 180, 360 and in some cases, 420 and 480 min.
- **Controls:** identical design without device running
- **Decontamination:** done between each experiment



Summary of MDU/Rx Test Results - Net Reductions vs. Controls

E.Coli O157:H7

ATCC: 11775

2 hr: 97%

3 hrs: 99.99%

MRSA

ATCC: BAA-1762

3 hr: 51%

7 hrs: 99.99%

C. Difficile

ATCC: 700792-EZ

3 hr: 65%

8 hrs: 98%

Staphylococcus A.

ATCC: 12600

3 hr: 89%

6 hrs: 99.98%

VREF

ATCC: 19433

3 hr: 54%

6 hrs: 99%

Salmonella Ent.

ATCC: 51741

2 hr: 97%

3 hrs: 99.99%

Pseudomonas A.

ATCC: 10145

3 hr: 51%

6 hrs: 88%

Klebsiella Pneu.

ATCC: 13883

3 hr: 47%

6 hrs: 80%

Aspergillus Niger

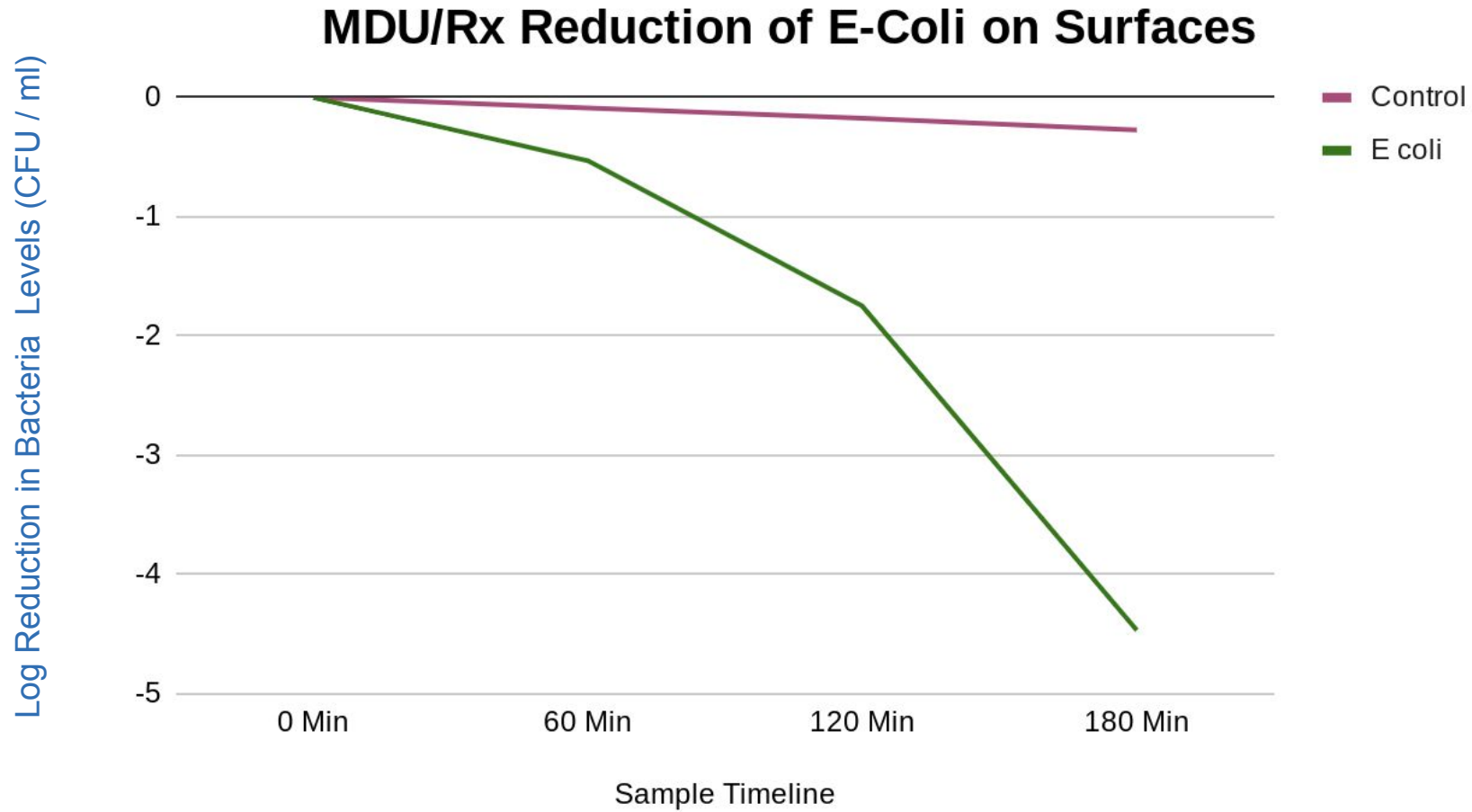
ATCC: 10578

3 hr: 63%

6 hrs: 90%

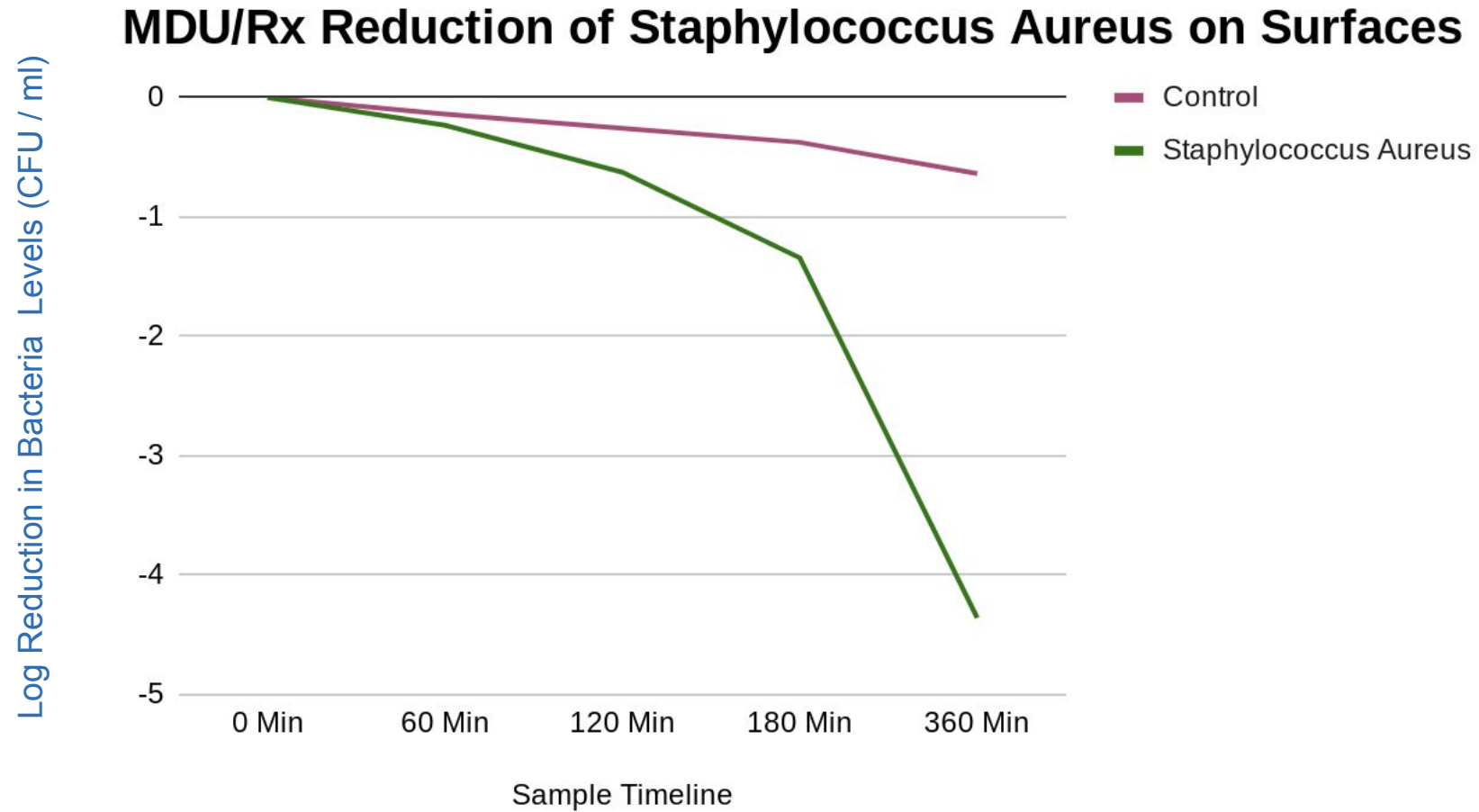
E. Coli 0157:H7 Results

Starting concentration: 29,228 CFU / ml



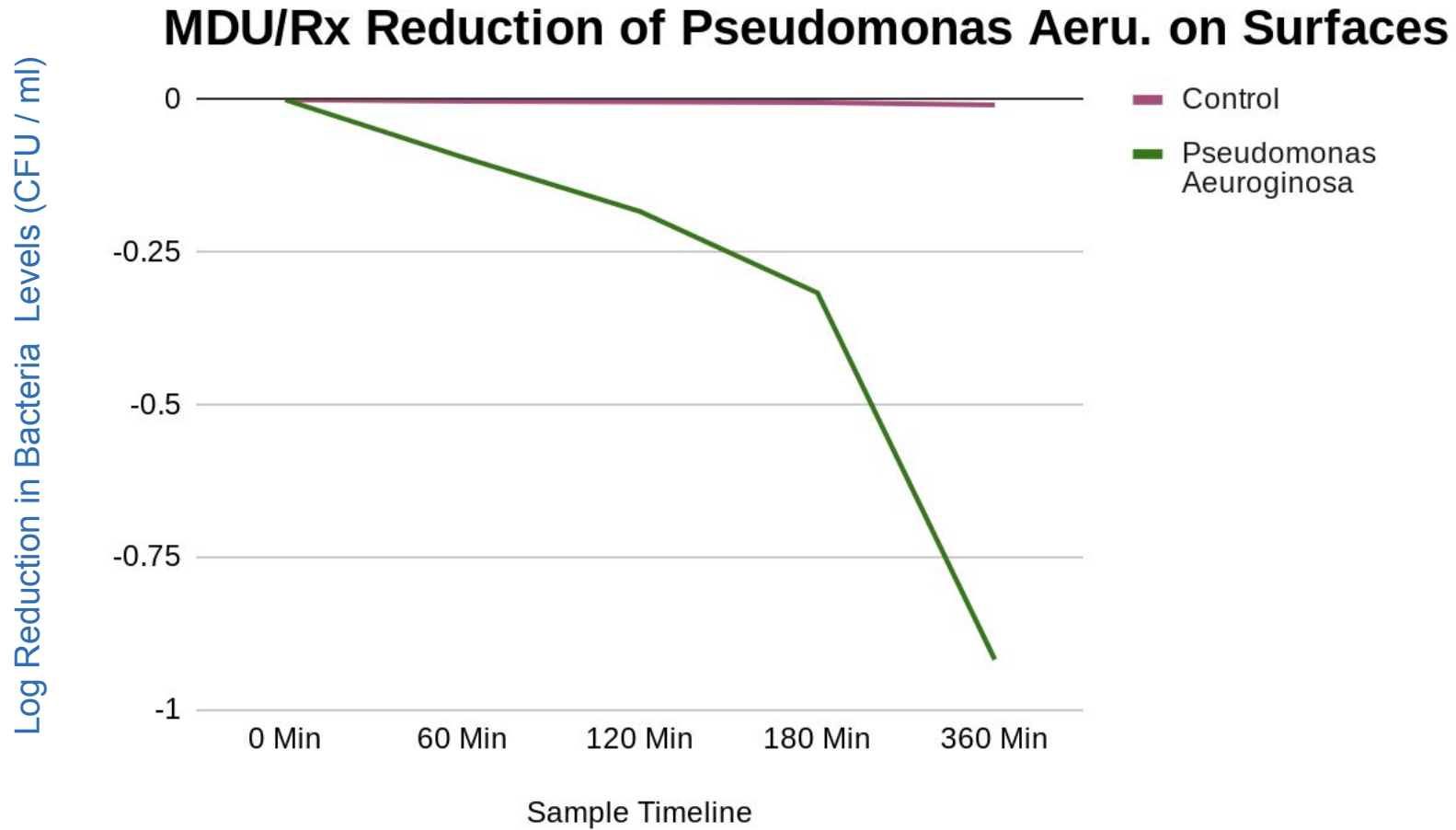
Staphylococcus Aureus Results

Starting concentration: 22,636 CFU / ml



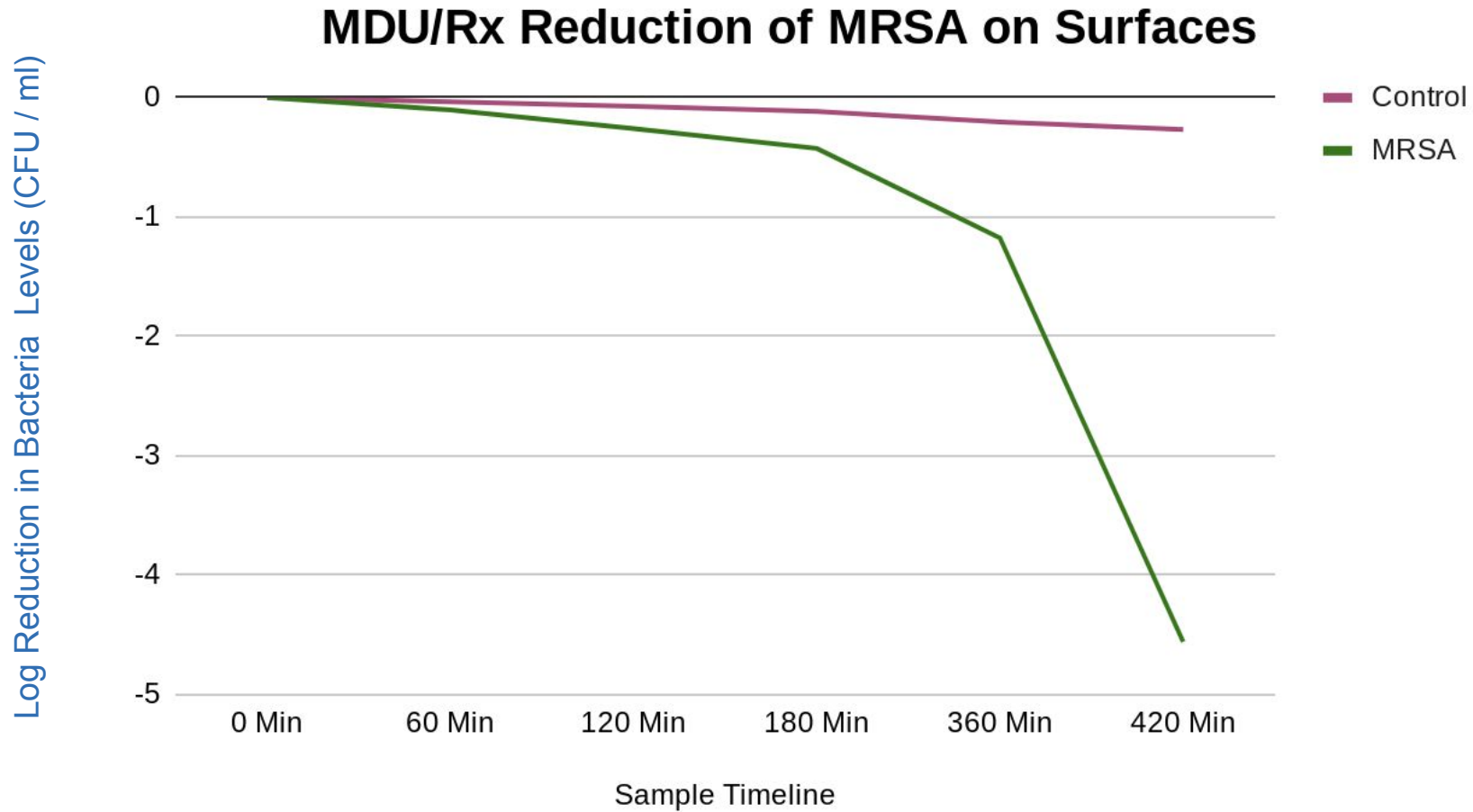
Pseudomonas Aeruginosa Results

Starting concentration: 8,565 CFU / ml



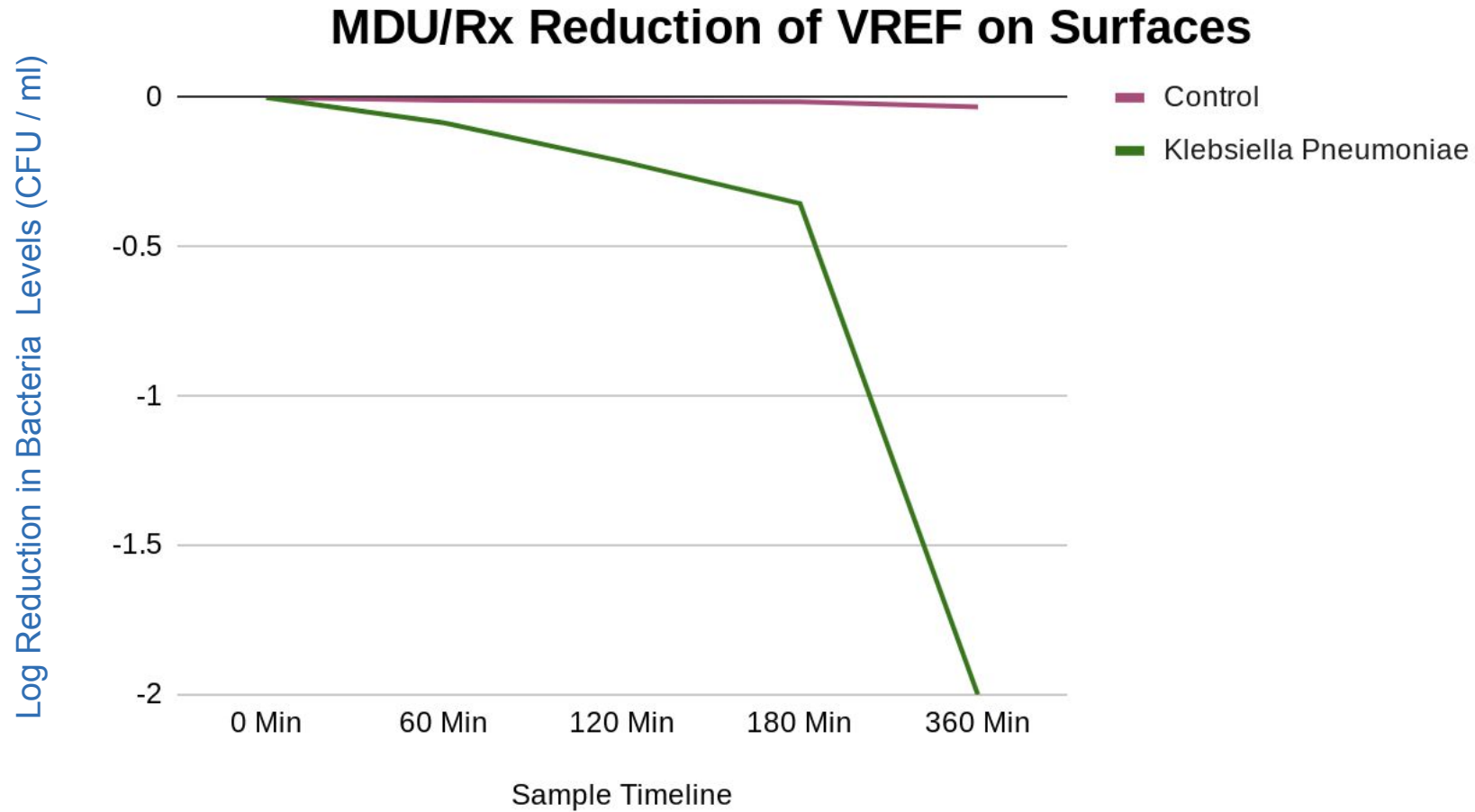
MRSA (Methicillin Resistant Staphylococcus Aureus) Results

Starting concentration: 36,000 CFU / ml



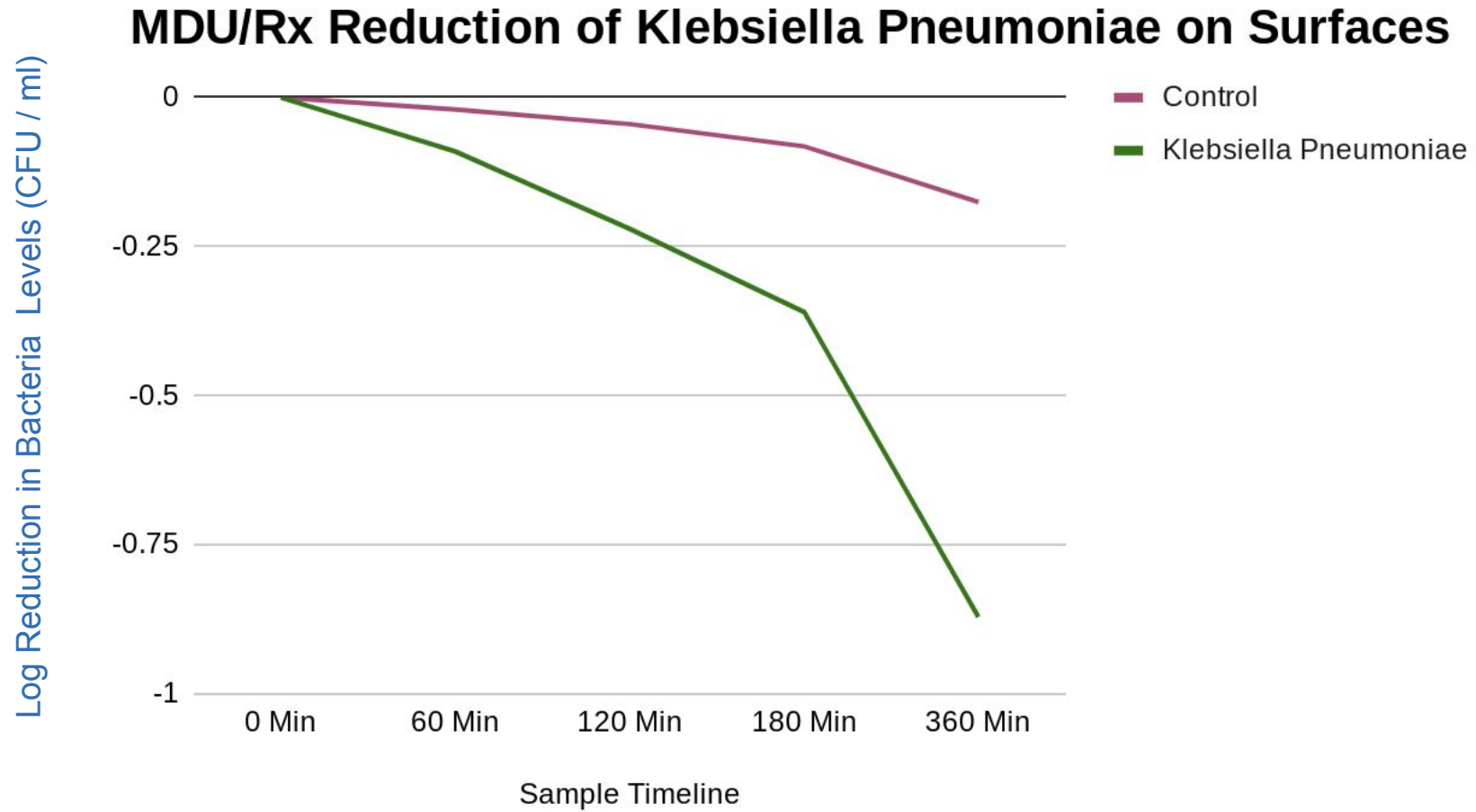
VREF (Vancomycin Resistant Enterococci Faecium) Results

Starting concentration: 100,000 CFU / ml



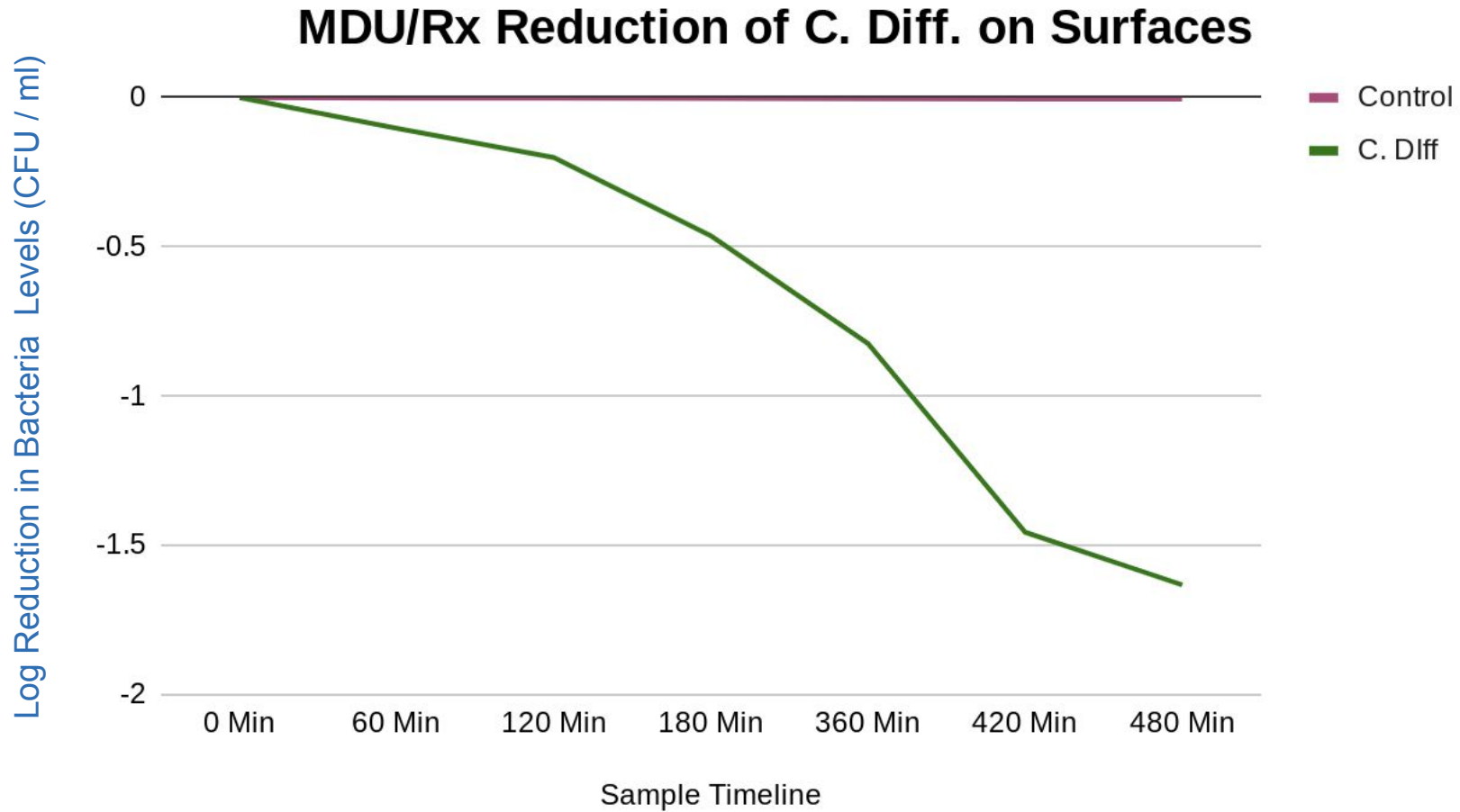
Klebsiella Pneumoniae Results

Starting concentration: 90,000 CFU / ml



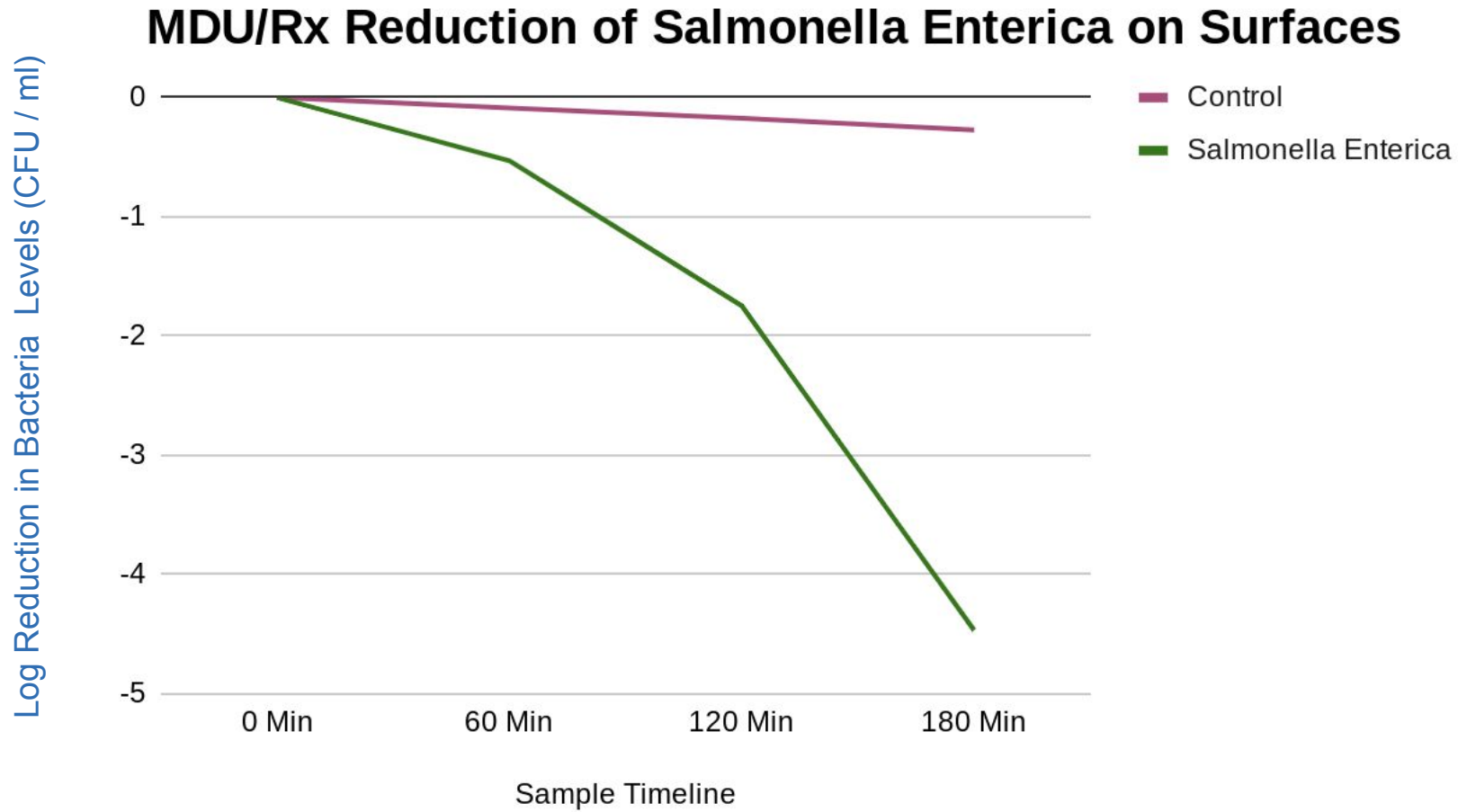
Clostridium Difficile Results

Starting concentration: 3,600,000 CFU / ml



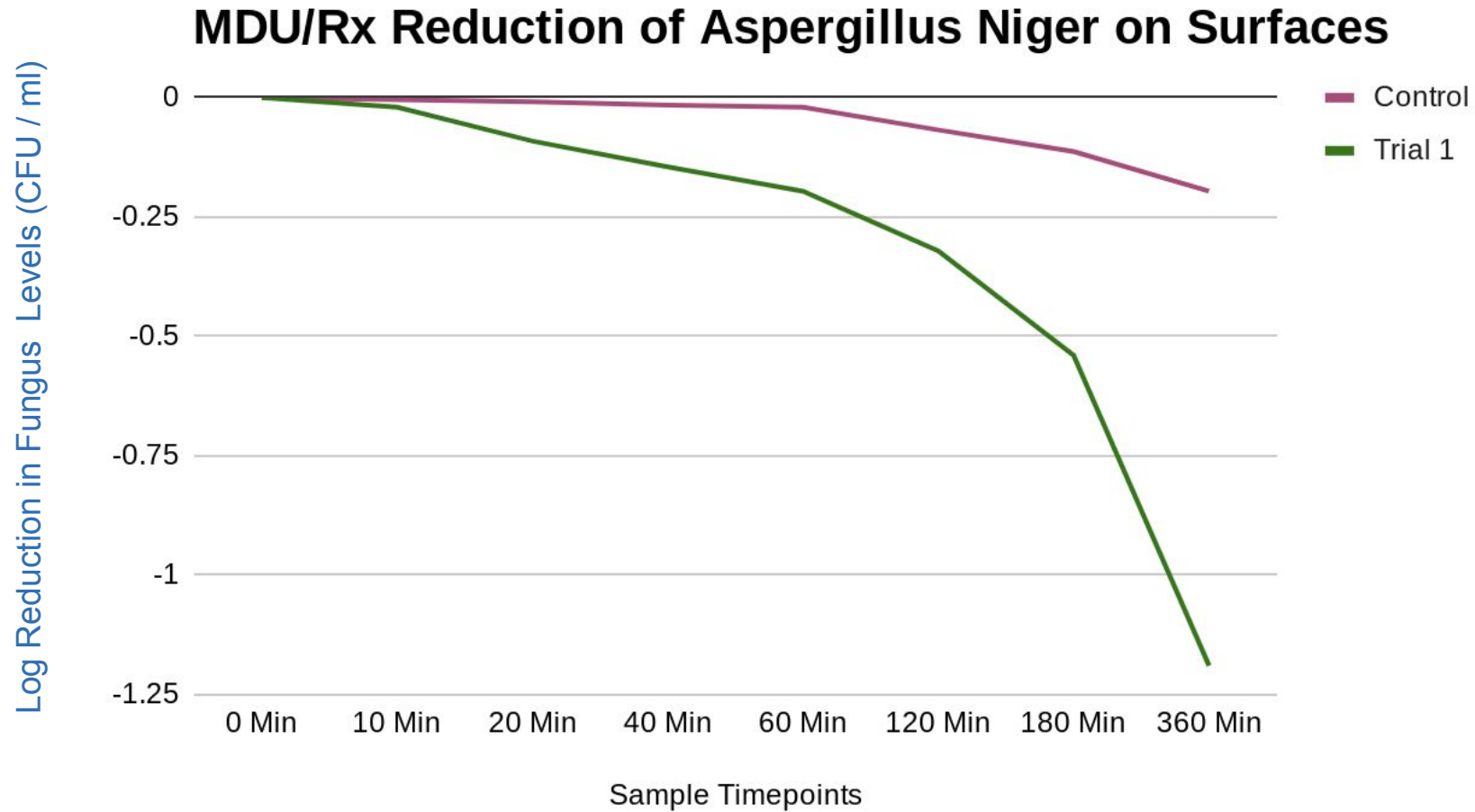
Salmonella Enterica Results

Starting concentration: 29,228 CFU / ml



Aspergillus Niger Results

Starting concentration: 201 CFU / ml



2. Pathogen Reduction on Surfaces

Tests Undertaken by University Vita-Salute San Raffaele

(Reports for virus and bacteria/fungus testing available upon request)

Study Design

HIGHLIGHTS

- **Laboratory:** Study performed by Prand of. Massimo Clementi, University Vita-Salute San Raffaele, Milan, Italy
- **Standard:** The European standard EN 17272:2020 was applied (chemical disinfectants and antiseptics: methods of airborne room disinfection by automated processes)
- **Study objective:** designed to replicate real world use of the devices - inoculated coupons on a table 4 to 5' away
- **Runs:** all trials run in triplicate - each time point pooled
- **Chamber size:** 1,059 ft³ (30 cubic meters)
- **Temperature:** 70 F (21 Celcius)
- **Devices tested:** MDU/Rx™ and IDU™
- **Sampling:**
 - For virus: 0 hours, 1 hour and 6 hours
 - For bacterial 0 hours and 48 hours
- **Controls:** identical design without device running
- **Decontamination:** done between each experiment

Viruses Evaluated

- Adenovirus type 5 (ATCC VR5)
- Poliovirus 1 (LSC 2ab)
- Murine norovirus (strain S99 RVB)
- Influenza virus H1N1 (ATCC VR95)

Bacteria & Fungi Evaluated

- Pseudomonas aeruginosa (ATCC 15442)
- Staphylococcus aureus (ATCC 6538)
- Bacillus subtilis (ATCC 6633)
- Candida albicans (ATCC 10231)
- Aspergillus niger (ATCC 16404)

Summary of MDU/Rx™ Test Results - Net Reductions vs. Controls

Adenovirus type 5

ATCC: VR5

6 hrs: - 4.40 log

6 hrs: >99.99%

Influenza H1N1

ATCC: VR95

6 hrs: - 5.20 log

6 hrs: >99.999%

Bacillus Subtilis

ATCC: 6633

48 hrs: - 4.11 log

48 hrs: >99.99%

Poliovirus 1

LSC: 2ab

6 hrs: - 4.20 log

6 hrs: >99.99%

Pseudomonas A.

ATCC: 15442

48 hrs: - 5.10 log

48 hrs: >99.999%

Candida Albicans

ATCC: 10231

48 hrs: - 4.51 log

48 hrs: >99.99%

Murine Norovirus

RVB: S99

6 hrs: - 4.60 log

6 hrs: >99.99%

Staphylococcus A.

ATCC: 6538

48 hrs: - 5.24 log

48 hrs: >99.999%

Aspergillus Niger

ATCC: 16404

48 hrs: - 5.00 log

48 hrs: 99.999%

Summary of IDU™ Test Results - Net Reductions vs. Controls

Adenovirus type 5

ATCC: VR5

6 hrs: - 4.30 log

6 hrs: >99.99%

Influenza H1N1

ATCC: VR95

6 hrs: - 5.11 log

6 hrs: >99.999%

Bacillus Subtilis

ATCC: 6633

48 hrs: - 4.11 log

48 hrs: >99.99%

Poliovirus 1

LSC: 2ab

6 hrs: - 4.10 log

6 hrs: >99.99%

Pseudomonas A.

ATCC: 15442

48 hrs: - 5.00 log

48 hrs: 99.999%

Candida Albicans

ATCC: 10231

48 hrs: - 4.31 log

48 hrs: >99.99%

Murine Norovirus

RVB: S99

6 hrs: - 4.50 log

6 hrs: >99.99%

Staphylococcus A.

ATCC: 6538

48 hrs: - 5.04 log

48 hrs: >99.999%

Aspergillus Niger

ATCC: 16404

48 hrs: - 4.70 log

48 hrs: >99.99%

3. SARS-CoV-2 Virus on Surfaces

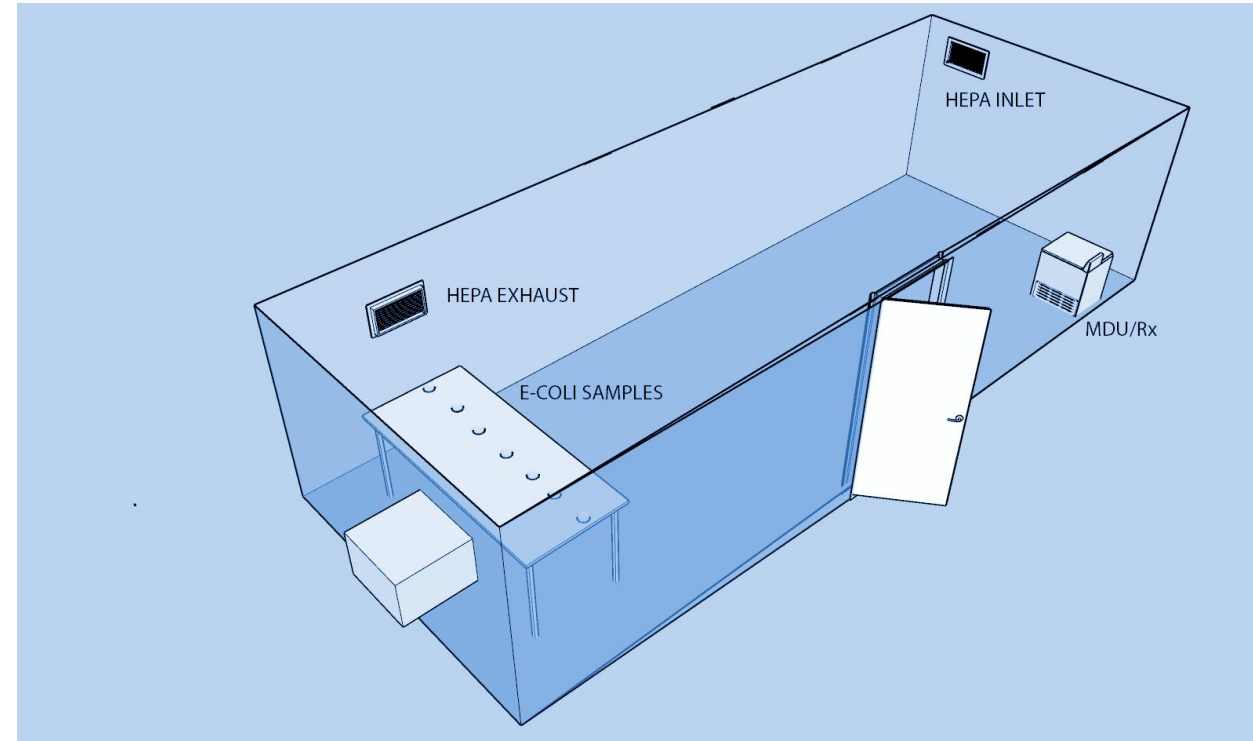
Tests Undertaken by Innovative Bioanalysis

(Report on SARS-CoV-2 testing available upon request)

Study Design

HIGHLIGHTS

- **Laboratory:** Study performed by Innovative Bioanalysis (GLP compliant, Biosafety Level 3)
- **Study objective:** designed to replicate real world use of the devices - a large test chamber with device located in one corner of the room and the inoculated coupons on a table 20' away
- **Chamber size:** 1,280 ft³ (8' x 20' x 8')
- **Temperature:** 75 F +/- 2F
- **Humidity:** 43% +/- 3%
- **Layout:** see diagram to the right
- **Challenge strain:** SARS-CoV-2 USA-CA1/2020
- **Starting Concentration:** 4.02 X 10⁷ TCID50 / ml
- **Devices tested:** MDU/Rx™, Slimline™, Myspace™
- **Sampling:** stainless steel coupons inoculated, sampled at T= 0, 20, 40, 60, 80, 120, 180 min.
- **Controls:** identical design without device running
- **Decontamination:** done between each experiment



Summary of PYURE Testing Results

All three PYURE devices rapidly destroy COVID-19 virus on surfaces

MDU/Rx™ Results

Highlights

99% reduction
after

1 hour

Undetectable
on surfaces after

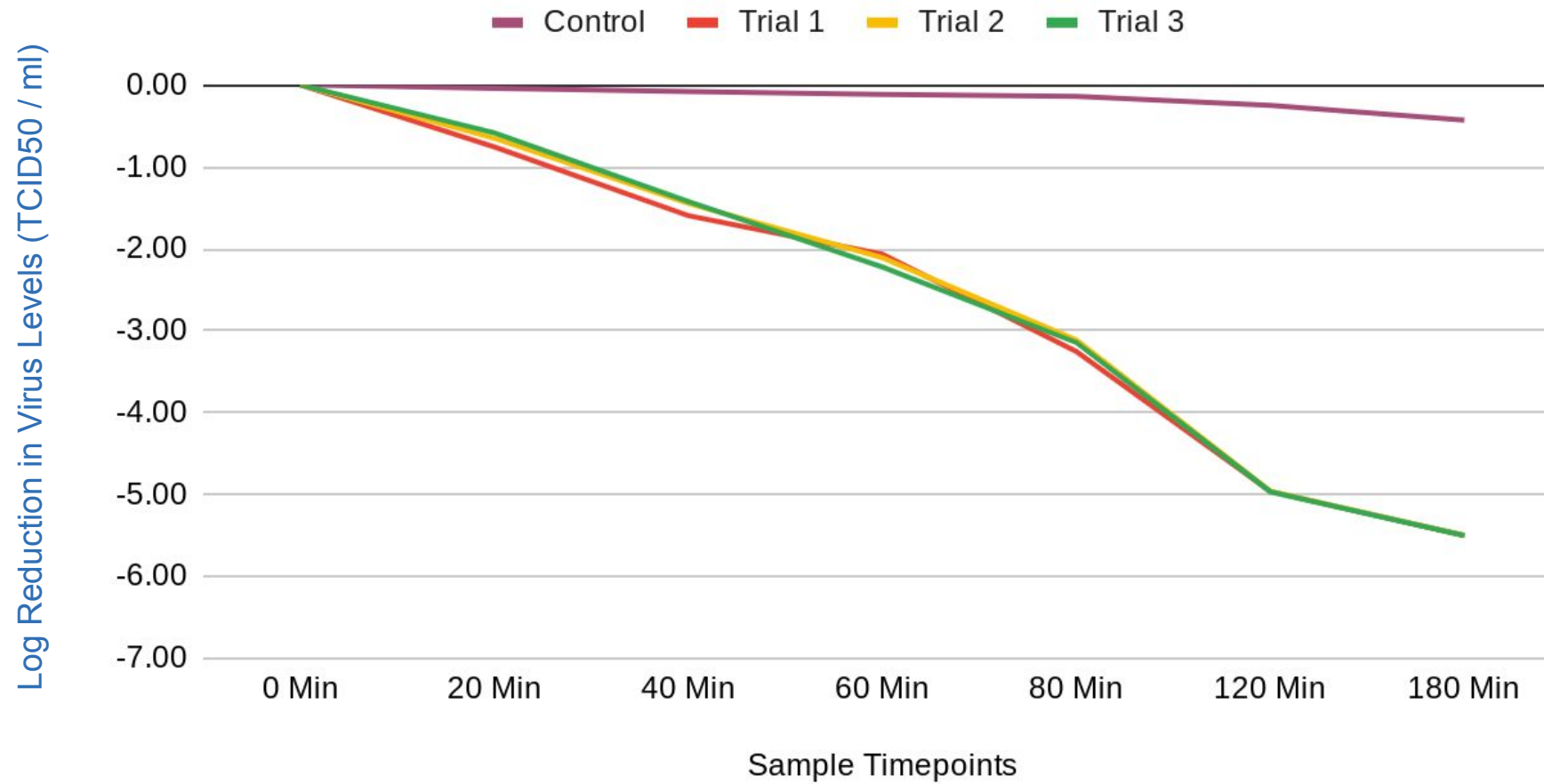
3 hours

Slimline™ device achieved identical
kill rates to the MDU/Rx™

Myspace™ device achieved near
identical kill rates to the MDU/Rx™

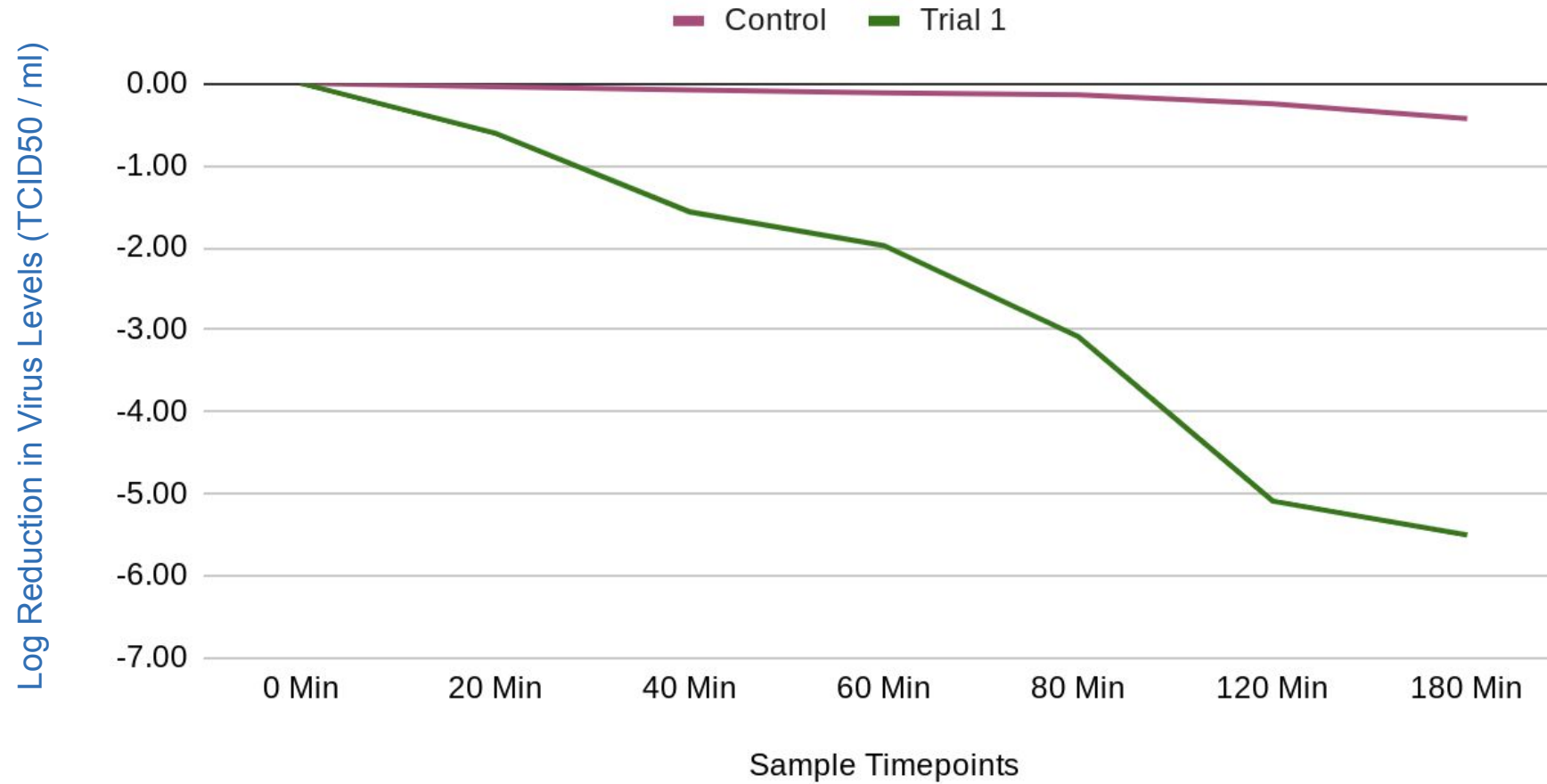
MDU/Rx™ Results: SARS-CoV-2 on a Non-Porous Surface

MDU/Rx Surface SARS-CoV-2 Reduction



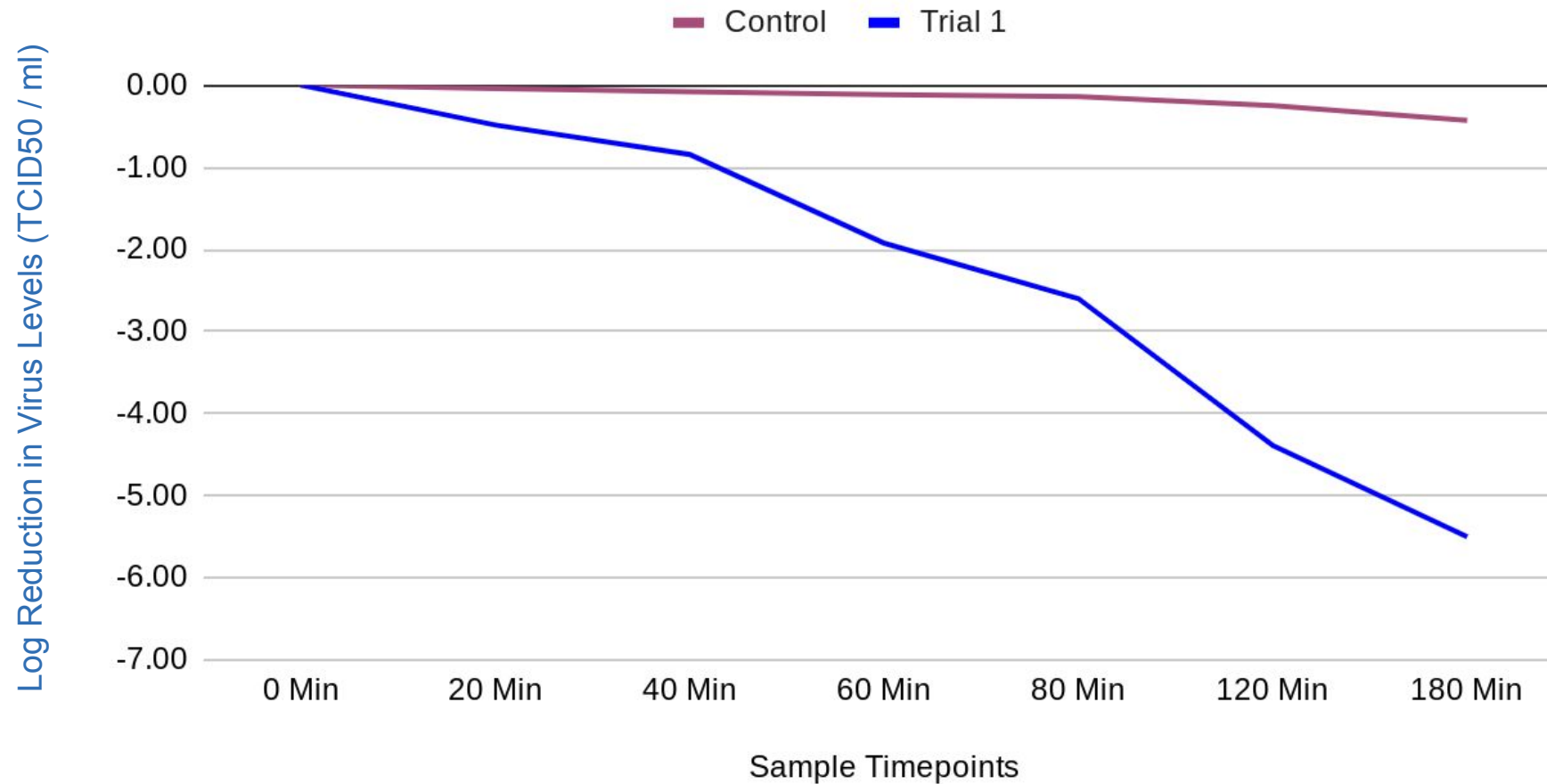
Slimline™ Results: SARS-CoV-2 on a Non-Porous Surface

Slimline Surface SARS-CoV-2 Reduction

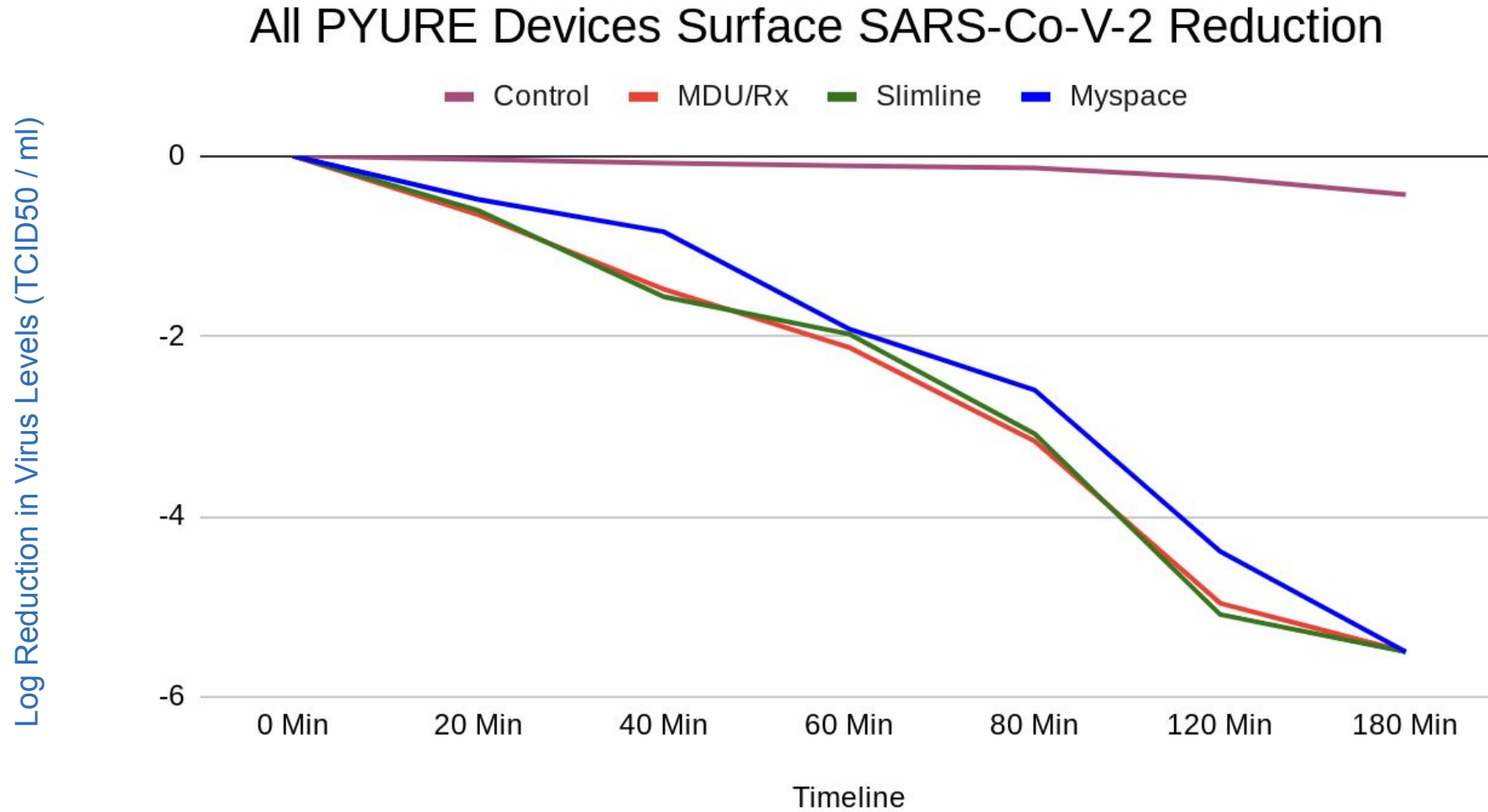


Myspace™ Results: SARS-CoV-2 on a Non-Porous Surface

MySpace Surface SARS-CoV-2 Reduction



Comparison of PYURE Devices on Surfaces



END

