

Effectiveness of the Wellisair Model WADU-02 Disinfection Purifier Against SARS-CoV-2 Contaminated Surfaces

This report was prepared at MRIGlobal for the work performed under MRIGlobal Task No. 311732.01.001, “Effectiveness of the Wellisair Model WADU-02 Disinfection Purifier against SARS-CoV-2 Contaminated Surfaces.”

The experimental phase of this task was initiated by MRIGlobal on April 20, 2021 and ended on April 23, 2021.

Objective:

The objective of this project was to determine if the Wellisair Model WADU-02 Disinfection Purifier device has the ability to decrease viral infectivity of SARS-CoV-2 *in vitro* after exposure. The device was tested on SARS-CoV-2 virus inoculated on stainless steel coupons.

Study Design:

Stainless steel coupons were inoculated with 200 μ L virus stock ($2.37E5$ TCID₅₀/ml of Washington 1 USA SARS-CoV-2 isolate). Virus was evenly spread over the coupons and allowed to dry. Test coupons were transferred to the testing room and placed into an aerosol test system inside a Class III Biosafety and exposed to Wellisair Model WADU-02. After the exposure time, any remaining virus was resuspended with a cell scraper and 2 ml Dulbecco’s Modified Eagle Medium with supplement F-12 (DMEM/F12). Samples were diluted 1:10 down a 96 deep well plate in DMEM/F12. These dilutions were transferred to a plate of Vero E6 cells with media removed. After approximately 45 minutes, DMEM/F12 supplemented with 5% fetal bovine serum (FBS) was added to cells to feed them for the next three days. The inoculated plates were then read for cytopathic effects (CPE).

Results

Plates were read 3 days after the initiation of the assay. Wellisair Model WADU-02 exposure resulted in a log reduction of 1.08 compared to controls. Thus, in two hours 91.75% of SARS-CoV-2 infectivity was reduced *in vitro*.

Table 1. Results of viral exposure to Wellisair Model WADU-02

Sample Name	Test Article	Description	TCID ₅₀ /ml	Log 10 TCID ₅₀ /ml	avg TCID ₅₀ /ml	avg log ₁₀ TCID ₅₀ /ml	Log Reduction	% Reduction
T1	Wellisair WADU-02	Test	6.81E+03	3.83	8.78E+03	3.92	1.08	91.75%
T2			6.81E+03	3.83				
T3			1.47E+04	4.17				
T4			6.81E+03	3.83				
C1		Control	4.22E+04	4.63	1.24E+05	5.00		
C2			1.47E+05	5.17				
C3			6.81E+04	4.83				
C4			2.37E+05	5.38				

Conclusions:

Based on these experiments, viral infectivity was reduced by 1.08 log (91.75%) after exposure to Wellisair Model WADU-02 for two hours when compared to control samples.