EFFICACY SUMMARY

Spectra 1000 UV Light Hard Surface and Room Air Disinfection Device*

Effectiveness of UV disinfection device to inactivate common pathogens in the healthcare setting.

Introduction

Reducing surface and air contamination is essential in healthcare environments due to the potential presence of harmful microorganisms. Environmental disinfection practices, particularly the use of UV light for surface and air disinfection, offer a valuable supplemental approach to maintaining cleaner spaces. UV light has been shown to reduce contamination levels on various surfaces by targeting microorganisms at a cellular level.

The Spectra 1000 UV Disinfection device from Medline is designed to aid in reducing environmental contamination on hard, non-porous surfaces and in the air in common healthcare areas. Independent laboratory testing has validated the Spectra 1000's ability to significantly reduce microbial contamination levels on high-touch surfaces. This UV disinfection device provides an effective, time-efficient solution to complement regular environmental cleaning protocols. A series of studies were conducted through a third party laboratory to evaluate the efficacy of Spectra 1000 UV in deactivating various pathogens commonly present in the healthcare space.

Methods

Spectra 1000 UV was tested for air disinfection against pathogens, MS2 Bacteriophage[1], a surrogate for SARS-CoV-2, *Staphylococcus aureus (S. aureus)*[1], *Escherichia coli (E. coli)*[3] and *Cladosporium cladosporioides*[2]. It was also tested for surface disinfection against Human Enterovirus[4], Human Coronavirus (HCoV)[6], Feline Calicivirus, a surrogate for Ebola virus[7], and tested for surface sanitization against *Clostridium difficile (C. diff)*[5], Methicillin-Resistant *Staphylococcus aureus* (MRSA)[3], *Listeria monocytogenes*[7] and *Candida auris*.[8]

After each microorganism was appropriately grown and treated with Spectra UV 1000, percent reduction and log10 reduction of each microorganism was reported. Statistical analysis of the study data results was additionally conducted by Medline.**[9]

* This product is not a medical device and is not intended for use in the disinfection or sterilization of medical devices. It is designed solely for use as a supplemental cleaning step to help reduce pathogens on hard, non-porous surfaces and in the air. This product is not a substitute for other required disinfection protocols and should be used as part of a comprehensive cleaning routine. Always follow all relevant cleaning and disinfection guidelines for your specific environment.

** Shapiro-Wilk tests were conducted for the respective pathogens. Wilcoxon Rank Sum Tests were performed to evaluate the significance. Mean, Median, Average Percent Reduction and Average Log_{10} Reduction were all calculated for every data table, with reduction calculations looking at total average results vs control sample.

Results

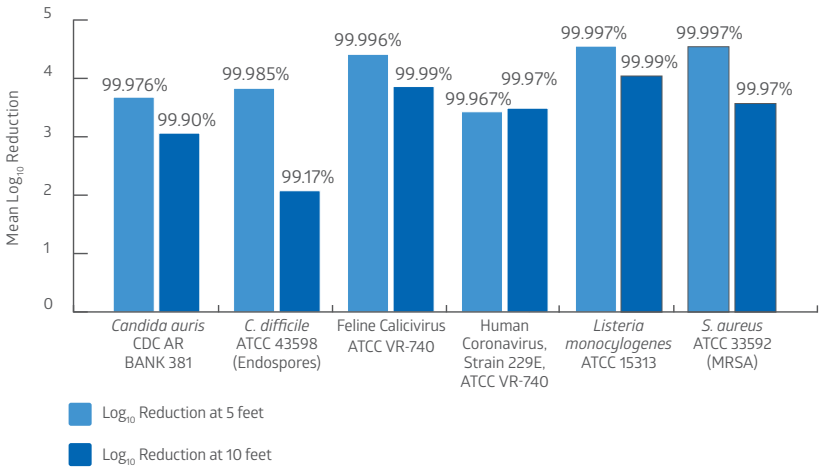
Surface Efficacy

Spectra 1000 UV was highly effective at eliminating pathogens on surfaces when used at distances of 5 feet and 10 feet for a duration of 5 minutes. The *Candida auris* results were also highly effective at distance of 5 and 10 feet. Across tested pathogens, there was an average 99.9% reduction in microorganism count after treatment with Spectra 1000 UV.

Table 1. Spectra 1000 UV Surface Efficacy

Pathogen	Average Per Carrier	Average Percent Reduction from Control		Mean Log_{10} Reduction from Control	
		5 feet	10 feet	5 feet	10 feet
Candida auris CDC AR BANK 381	4.50E+02	99.976%	99.90%	3.62	2.99
C. difficile ATCC 43598 (Endospores)	8.52E+04	99.985%	99.17%	3.83	2.08
Feline Calicivirus ATCC VR-740	7.31E+02	99.996%	99.99%	4.41	3.86
Human Coronavirus, Strain 229E, ATCC VR-740	9.55E+01	99.967%	99.97%	3.49	3.49
Listeria monocylogenes ATCC 15313	4.96E+02	99.997%	99.99%	4.55	4.04
S. aureus ATCC 33592 (MRSA)	8.13E+02	99.997%	99.97%	4.54	3.57

Figure 1. Mean Log_{10} Reduction of Surface Pathogens After Spectra 1000 UV Exposure by Distance from Device in Feet



Air Efficacy

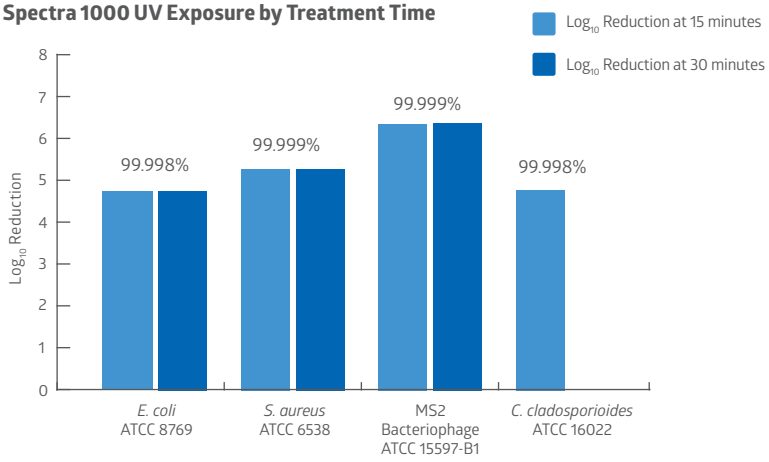
Across tested pathogens in air disinfection studies, treatment with Spectra 1000 UV at 15 minutes was highly effective in reducing colonies for each respective microorganism. Treatment with Spectra 1000 UV demonstrated an average 4 log reduction of air pathogen colonies.

Table 2. Spectra 1000 UV Air Efficacy

Treatment Time Point	Percent Reduction		Log_{10} Reduction		Average Recovery (Colony Forming unit/m^3)
	15 Min	30 Min	15 Min	30 Min	
E. coli ATCC 8769	99.998%	99.998%	4.73	4.74	7.80E+01
S. aureus ATCC 6538	99.999%	99.999%	5.26	5.27	7.80E+01
MS2 Bacteriophage ATCC 15597-B1	99.999%	99.999%	6.34	6.35	7.80E+01
C. cladosporioides ATCC 16022†	99.998%	–	4.77	–	7.76E+01

† Measurements were not collected for *C. cladosporioides* at 30 minutes.

Figure 2. Log_{10} Reduction of Air Pathogens after Spectra 1000 UV Exposure by Treatment Time



Conclusions

UV disinfection devices are effective supplemental air and surface disinfection tools for healthcare settings. The results of efficacy studies demonstrate that Spectra 1000 UV can effectively reduce various pathogens, including pathogens such as MRSA, *S. aureus, Candida auris and C. diff.* In both air and surface efficacy studies, the Spectra 1000 UV performed extremely well in reducing air pathogens at 15 minutes and 30 minutes, and in reducing surface pathogens at distances of 5 feet and 10 feet at 5 minutes (10 minutes for *Candida auris).*

References: 1. Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG6090-I. **2.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG6090-II. **3.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG5138. **4.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG5702. **5.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG6152. **6.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG5314-A2. **7.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG5648. **8.** Antimicrobial Test Laboratories. Study Report. Study Identification Number: NG21121. **9.** Statistical Report on File.

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