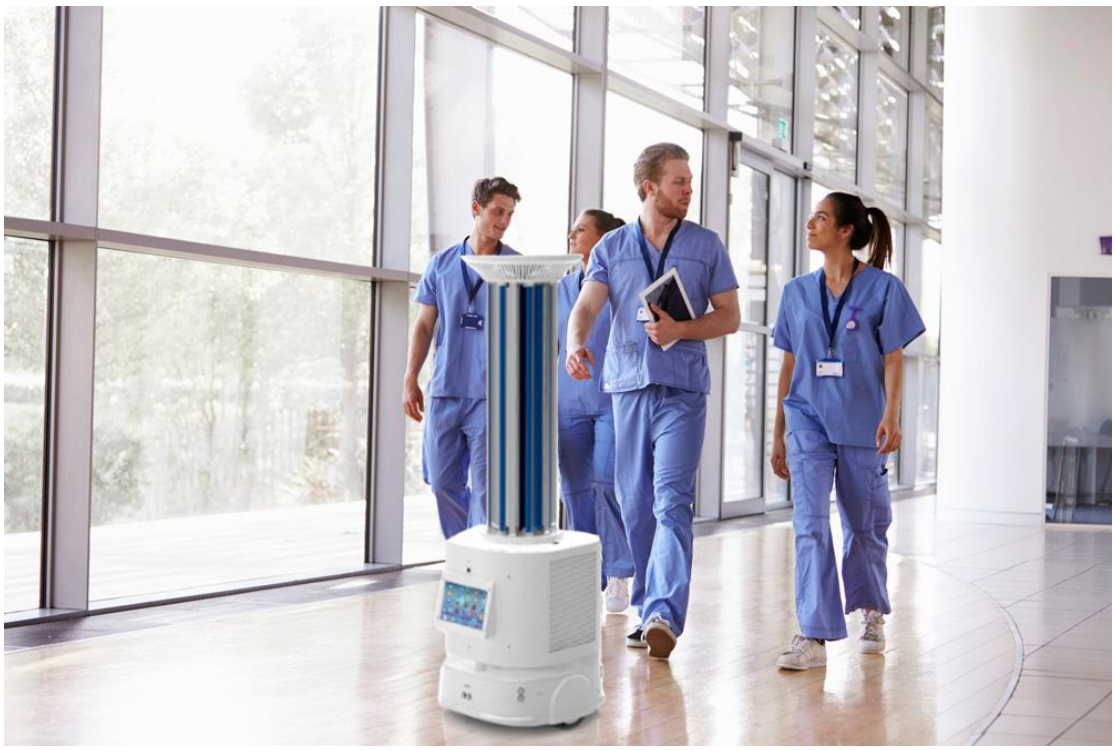
UVC BACTERIA AND VIRUS DISINFECTION COMPARED TO TRADITIONAL CLEANING



HELIOS UVC ROBOT

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INTRODUCTION

UVC disinfection works by detaching the DNA structure of living cells. Destruction of molecular chains requires a dose of UV light that is matched to the type of organism, and that is at the germicidal wavelength of 253.7nm. As the genetic UVC disinfection works by detaching the DNA structure of living cells. Destruction of molecular chains requires a dose of UV light that is matched to the type of organism, and that is at the germicidal wavelength of 253.7nm. As the genetic structure of bacteria or viruses is visible to the UVC, it will be destroyed. However, the success of surface disinfection using UVC depends significantly on the consistency of the material to be disinfected. UVC disinfection of surfaces has the advantage of being an automatic method, no manual labor is needed, and relatively short exposure time is required. Also, UVC leaves no residue in the indoor environment, and the new style UVC light units are not subject to temperature limitations. Traditional disinfection styles have been adopted centuries, but the question is, "are they good enough?" The bitter truth is that even the most rigorous cleaning with hot water, bleach as well as disinfectants can allow dangerous germs and bacteria to escape. In the worst situation, those things may bring illness or even death. The room must be empty during UVC disinfection because accidental irradiation effects have been described.

Definition of Concept

It is essential to define some crucial keywords for proper understanding.

UVC can be defined as the ultraviolet light wavelength that is between 200-280(nm). Water disinfection, destruction of dangerous microorganism and sterilizations surface of food substances make use of UVC light wavelength.

Bacteria are tiny, single-celled organisms that can live in a various environment.

The virus is seen as a submicroscopic infectious agent that duplicates in the internal part of the living cells of an organism.

Disinfection is a method of cleaning something most, especially with a chemical to destroy bacteria. It is intended to kill microbial microorganisms that are actively growing.

Discussion on the use of UVC for bacterial and virus disinfection compared to traditional cleaning

The most crucial benefit of UVC disinfection is that it is non-toxic when likened to other customary cleaning procedure that have a high concentration of severe chemicals that are sometimes used in cleaning and sanitization. The usage of UVC poses no threat to the environment, and its disinfection is a physical process and not a chemical one. It is very safe to enter a room after UVC is at work, but it might be hard to breathe in a room that just encountered the spraying of chemicals.

UVC puts a stop to a wide array of harmful organisms. It kills molds and spores which other traditional cleanings may not or may even leave a damp environment where fungi can thrive. UVC is a dry method that can take care of existing mold and prevent its development or growth in the future.

UVC disinfectant terminates pathogens without immunity. Statistics have shown that using traditional antimicrobial methods and disinfectants had a dire consequence. UVC disinfection is a physical method of eradicating bacteria. Thus, bacteria in this situation cannot build immunity to it. The light of UV disrupts the cell wall and blows up the bacteria for it to die. UVC will pick up effectively where traditional cleaning leaves off, killing the cell on contact within a certain amount of time.

Pathogens scientists emphasized that using UVC disinfection kills more than 30HAI-causing pathogens in less than five minutes at a distance of 8 feet. This method of disinfection has been suggested in homes, emergency rooms, intensive care units (ICU), patient rooms, and restrooms.

UVC can bring a change to the DNA and RNA of Bacteria and Viruses, thereby destroying their capabilities to procreate. Bacteria and viruses tend to be resistant to other traditional methods, but they cannot build up a resistance against UVC.

Statistics on the usage of UVC

Shimomura et al. examined the usage of UVC and found out that: UVC irradiation was conducted in 18cases that consistently revealed bacteria on the culture at the catheter exit site. 10cases (55%) became culture-negative, 3cases showed a microbial decrease, and 5cases remained unchanged. The result suggests that UVC can eradicate microorganisms and be of prophylactic use for exit-site contagions.

Over the years, no-contact systems for ecological disinfecting are progressively being thought of, for example, the UVC no-contact innovation that should be complete routinely and quickly in different hospital settings after patient discharge or transfer. In their study, they discovered Pulsed-UVC sterilization effective in diminishing microbial infection, indicating just 18% (15/85) of positive samples after treatment contrasted with 63% (72/115) after SOP, and 12% expanded decrease of positive samples in patient rooms, 8% in ICUs, 93% in OTs with low turnover, and 183% in OTs with high turnover. The treatment effectiveness was likewise seen without any manual cleaning and use of a substance disinfectant. In OT, with high turnover, between one clinical operation and another, the standard convention was not applied. In spite of the fact that the normal bacterial burden recognized before the cleaning and disinfection strategies were low (7 ± 12 SD CFU/24 cm2), 13 inspecting samples out of 20 demonstrated bacterial burden, three destinations more than 15 CFU/24 cm2. Pulsed-

UV sterilization decreased oxygen consuming microorganisms without manual cleaning and disinfection. Similar outcomes were acquired in a study conducted by Jinadatha et al. where Pulsed-UV purification effectively diminished MRSA province counts without manual disinfection and the authors suggested the use of Pulsed-UV disinfection as an adjunct to existing terminal cleaning protocols since it offers a safety net when the primary approaches fail.

Conclusion

UVC is believed to be an active instrument in the disinfection of viruses and bacteria. But it is essential to know that UV light can also be injurious if it is used in the wrong application. Hence, the statistics given above are important for individuals and hospitals to adopt this method of disinfection.

Pulsed-UV technology was effective at minimizing overall bacterial count and more successful than manual disinfection alone on hospital surface. Observing at the strengths of UVC in the above paper, infections caused by microorganisms can be globally reduced if UVC is practically adopted.

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