Scientific documentation on UV222 efficacy

Overview

1. Hessling et al., 2021, The impact of far-UVC radiation (200–230 nm) on pathogens, cells, skin, and eyes – a collection and analysis of a hundred years of data

   In this extensive review, Hessling et al. present over 100 years of research in UVC disinfection, including UV doses required to inactivate various pathogens. The paper provides a comprehensive list of bacteria, viruses, and fungi that can be eliminated with UV222, along with an elaborate description of the safety of the technology.

2. Narita et al., 2020, Ultraviolet C light with wavelength of 222 nm inactivates a wide spectrum of microbial pathogens

   armehighly effective against bacteria, viruses, and some fungi, and even outperformed traditional 254-nm UVC against bacterial endospores. However, it was less effective on fungal spores and hyphae. Overall, 222-nm UVC shows strong potential for safe, broad-spectrum disinfection.

Air disinfection

3. Eadie et al., 2022, Far-UVC efficiently inactivates an airborne pathogen in a room-sized chamber

   In this paper, Eadie et al. compared the efficacy of UV222 with conventional ventilation systems for disinfecting air in a room-sized chamber. The study found that UV222 lamps are highly efficient in disinfecting the air. In fact, a conventional ventilation system would need to change the air 35 times per hour to achieve the same degree of disinfection as the UV222 lamps.

Surface disinfection

4. Kaple et al., 2024, Evaluation of an automated far ultraviolet-C light technology for decontamination of surfaces and aerosolized viruses in bathrooms

   This study evaluated far-UVC light for automated bathroom decontamination in hospitals. The technology, active only when rooms are unoccupied, significantly reduced bacteria, fungi, and airborne viruses on surfaces within 2 hours. It also showed potential against C. difficile spores over 24 hours. These results suggest far-UVC could help reduce pathogen transmission in bathrooms.

5. Guo et al., 2024, Investigation of Far-UVC (222 nm) disinfection of bioaerosols deposited on surfaces with different material properties

   This study examined how surface properties affect far-UVC disinfection of E. coli bioaerosols on 14 common materials. Far-UVC light was effective across all surfaces, with 69–99% disinfection at a set dose. Surface roughness and charge had little impact, while large pores and high wetness reduced effectiveness. Higher temperatures improved disinfection. These findings help optimize far-UVC use for surface disinfection.

6. Navarathna et al., 2023, Efficacy of a filtered far-UVC handheld disinfection device in reducing the microbial bioburden of hospital surfaces

   This study tested a handheld far-UVC (222 nm) device for disinfecting hospital surfaces. It reduced microbes by 81%, compared to 99% with sodium hypochlorite wipes. While not as effective as manual disinfection, the device offers a useful alternative when wiping isn't possible or as a supplemental method.

Mold

7. Mogensen et al., 2024, Intermittent low-dose far-UVC irradiation inhibits growth of common mold below threshold limit value

   This study shows that far-UVC light at 222 nm can safely and effectively reduce mold growth. Using low-dose on-off cycles, similar to real-world use, the far-UVC light significantly reduced mold growth both from airborne spores and direct contamination. These findings highlight far-UVC as a promising tool for improving indoor air quality and preventing mold, even in occupied spaces.

8. Schleusener et al., 2022, Treatment of the Candida subspecies Candida albicans and Candida parapsilosis with two far-UVC sources to minimise mycoses in clinical practice

   Fungal infections are increasing and becoming more resistant to standard treatments. This study shows that far-UVC light at 222 nm can effectively eradicate fungal pathogens at microbicidal doses. The findings highlight the potential of 222-nm far-UVC as a promising alternative for antifungal disinfection without the harmful effects associated with traditional UVC wavelengths.