Technology using 405 nm light for pathogen inactivation and its envisioned role in environmental disinfection and infection control

M. Maclean*, K. McKenzie, J.G. Anderson, G. Gettinby, S.J. MacGregor

*University of Strathclyde, UK

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background

Ultraviolet (UV) light has long been known to have bactericidal properties, but visible light (405 nm), blue-violet light, has been discovered to have antibacterial properties and is now being used for or environmental disinfection and infection control. It was only recently.

the purpose

To provide a review on the antibacterial activity of 405 nm light and its use in environmental decontamination techniques, especially disinfection of hospital environments.

method

Detailed literature search for relevant scientific papers and reports.

result

Current findings form the basis for photodynamic inactivation processes using 405 nm light that are involved in killing a wide range of microbial species from prokaryotic to eukaryotic (including resistant forms such as bacterial and fungal spores). , a lot of scientific evidence has been obtained. For practical purposes, a high-intensity narrowband light environmental disinfection system (HINS-light EDS) has been developed and is being tested in hospital isolation rooms.

Test results show that this 405 nm light system is capable of continuous disinfection of air and exposed surfaces in hospital bed areas, significantly enhancing standard cleaning and infection control procedures. is shown.

This paper examines the antibacterial effect of 405 nm blue-violet light.

If stable irradiation can be achieved using the latest high-tech light sources such as LEDs, it is expected that a stable effect will be achieved over a long period of time in a shielded space.