Light-activated antibacterial coating is new weapon in fight against hospital-acquired infections

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A new hard coating with antibacterial properties that has been tested by researchers at the UCL Eastman Dental Institute has been shown to kill 99.9% of *Escherichia coli* bacteria when a white hospital light was shone on its surface to activate it.

Miss Zoie Aiken and her colleagues presented the work at the Society for General Microbiology meeting in Harrogate today (Tuesday 31 March). The veneer-like surface is made of titanium dioxide with added nitrogen. When it is activated by white light, similar to those used in hospital wards and operating theatres, it produced a decrease in the number of bacteria surviving on the test surface.

The hospital environment acts as a reservoir for the microbes responsible for healthcare-associated infections (HCAI) and new ways of preventing the spread of these pathogens to patients are needed. Antibacterial coatings could be applied to frequently touched hospital surfaces to kill any bacteria present and help reduce the number of HCAI.

Titanium dioxide based coatings can kill bacteria after activation with UV light. The addition of nitrogen to these coatings enables photons available in visible light to be utilised to activate the surface and kill bacteria.

Commenting on the results, Miss Aiken said, "The activity of the coating

will be assessed against a range of different bacteria such as MRSA and other organisms which are known to cause infections in hospitals. At present we only know that the coating is active against *Escherichia coli*. However, *E. coli* is more difficult to kill than bacteria from the Staphylococcus group which includes MRSA, so the results to date are encouraging."

"The coating has currently been applied onto glass using a method called APCVD (atmospheric pressure chemical vapour deposition)," she continued. "We are also experimenting with different materials such as plastic. As an example, the coating could be applied to a plastic sheet that could be used to cover a computer keyboard on a hospital ward. The lights in the ward will keep the coating activated, which will in turn continue to kill any bacteria that may be transferred onto the keyboard from the hands of healthcare workers."

Source: Society for General Microbiology

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