

Switched-on new nanotechnology paints for hospitals could kill superbugs

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New nanotechnology paints for walls, ceilings, and surfaces could be used to kill hospital superbugs when fluorescent lights are switched on, scientists heard today at the Society for General Microbiology's Autumn meeting being held this week at Trinity College, Dublin.

The new paints contain tiny particles of titanium dioxide, which is the dazzling white compound often used as a brightener in commercial paints. It will also be familiar to tennis fans as the powder used for the white lines to mark out the courts at Wimbledon.

Scientists have discovered that extremely small, nanoparticle-sized forms of titanium dioxide can kill bacteria and destroy dirt when they absorb ultraviolet light (UV) energy from the sun. They produce active molecules which clean up the painted surfaces.

"It would be best if the titanium was antibacterial at wavelengths of light that you find indoors, such as fluorescent light, so that paints containing the nanoparticles could be used in hospitals and other places where a clean environment is important," said Lucia Caballero from Manchester Metropolitan University, UK.

The researchers looked at the survival of the food poisoning bacterium *Escherichia coli* on different formulations of paints containing the titanium nanoparticles under different types and intensities of lights.

"We found that paints containing titanium dioxide are more successful at killing bacteria if the concentration of the nanoparticles is stronger than

in normal paint. Our best results showed that all the E. coli were killed under ordinary fluorescent lights," said Lucia Caballero.

"However, other common additives in paints, such as calcium carbonate, silica or talc decreased the antibacterial efficiency of the paint. If calcium carbonate was present the kill rate dropped by up to 80%," said Lucia Caballero. "Our tests on a commercially available paint showed that the ability of the paint to inactivate bacteria was massively reduced compared with a paint formulation which did not contain such additives."

With rising concern about the spread of hospital superbugs, healthcare trusts are increasingly looking to find better ways to maintain hygienic standards in hospitals. The same concerns are driving developments in the food industry and in pharmaceutical companies. These new nanoparticle paints could provide a simple and cost-effective solution.

"Facilities such as bathrooms and child care facilities, public conveniences and domestic bathrooms would all benefit from good hygiene control," said Lucia Caballero. "In all these places, surface hygiene could be improved by the action of fluorescent light on catalytic surfaces such as paints containing nanotitanium. This would slow down contamination and save on the costs of cleaning maintenance."

Source: Society for General Microbiology

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