

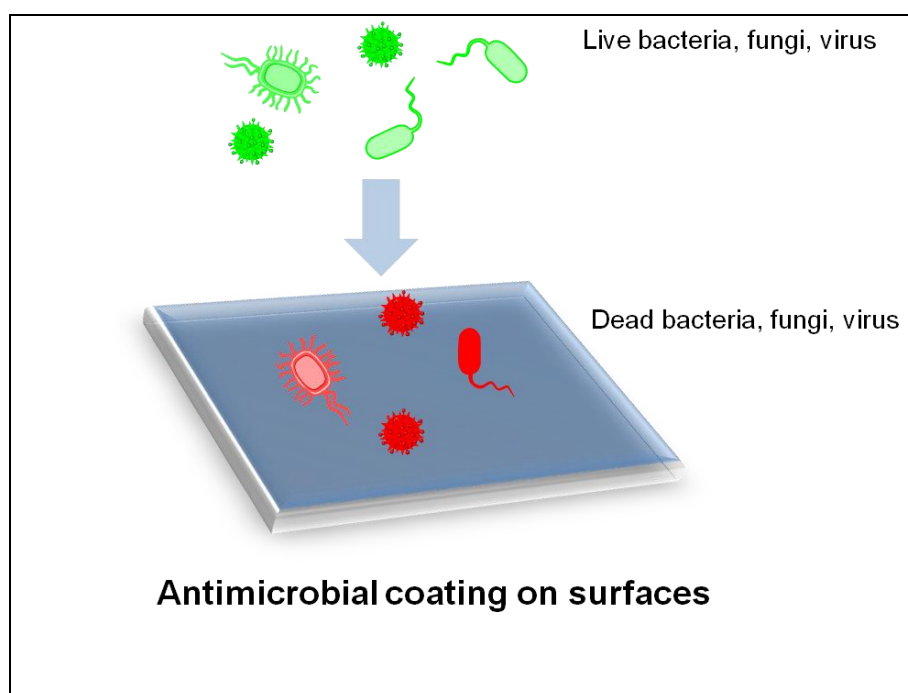
JNCASR develops versatile coating to stop spread of viruses like influenza and COVID 19

An antimicrobial coating, developed by Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, an autonomous institute under Department of Science & Technology (DST), has shown excellent results in tackling the spread of deadly influenza virus, the root cause of severe respiratory infections, by inactivating large loads of influenza virus. The Science and Engineering Research Board, a unit of the DST is supporting the further development of this coating for the country's war against COVID-19.

The proven efficiency of the coating in 100% destruction of influenza virus (an enveloped virus) shows that the coating may be effective in destroying COVID 19 – another enveloped virus upon contact. The technology which is simple and hence do not require skilled personnel for its development is already set to be tested against COVID 19. If found to be active, a number of PPEs, such as masks, gowns, gloves, face shields, used by doctors and nurses can be coated with it, imparting enhanced protection and safety to them. This will aid them to fight the battle against COVID 19 more effectively.

"It is very heartening that the best of our research institutions globally acknowledged for deep strengths in basic sciences are also increasingly translating their knowledge into challenging and useful applications. This product from JNCASR is a compelling example of that. I don't any doubt that we will see many more successful examples with the adequate help by industry in manufacturing", said Prof Ashutosh Sharma, Secretary, DST.

The technology has been developed by Prof. Jayanta Haldar's group at JNCASR including Mr. Sreyan Ghosh, Dr. Riya Mukherjee and Dr. Debajyoti Basak. The compound that the scientists have synthesized for the coating is soluble in a range of solvents such as water, ethanol, methanol and chloroform. Aqueous or organic solutions of this compound can be used to coat different daily life and medically important materials, such as textiles, plastic, PVC, polyurethane, polystyrene, in a single step. The coating displays excellent antiviral activity against influenza virus completely killing them within 30 minutes of contact. It disrupts the membranes of pathogens (i.e. bacteria) leading to their death.



During the research, the coated surfaces also completely killed different drug-resistant bacteria and fungi such as methicillin resistant *S. aureus* (MRSA) and fluconazole resistant *C. albicans* spp, respectively, most of them with 30 to 45 minutes, thus displaying rapid microbicidal activity. The cotton sheets coated with the compound showed complete killing of more than a million bacterial cells.

Molecules have been designed to achieve optimum solubility in a wide range of solvents using a cost-effective three to four step synthetic approach with easy purification and high yield. Besides, the coating can be fabricated on a variety of surfaces with ease and simplicity of the technology eliminates the necessity of skilled personnel for its development.

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