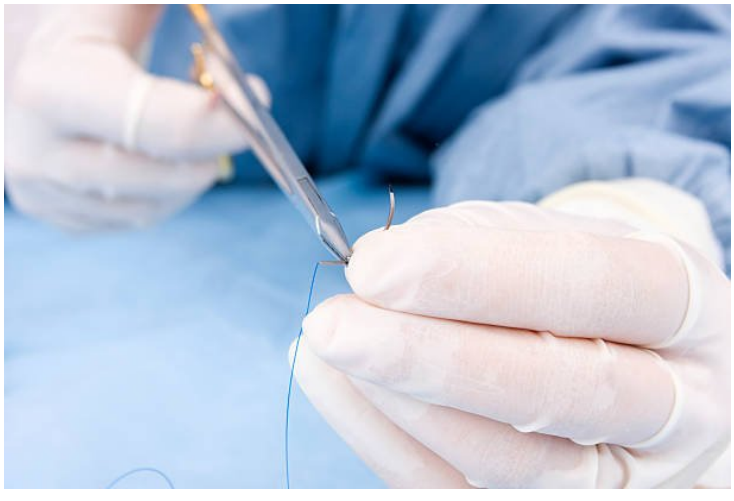
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ARCI designs non-cytotoxic nano composite coatings to prevent post-surgical infections

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A newly developed nano composite coating can inhibit biofilm formation and also kill attached bacteria



Researchers from Hyderabad-based International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an autonomous institute of the Department of Science and Technology (DST), have developed a nanocomposite coating (named as ATL) by combining water repellence and biocidal property, which exhibits both hydrophobic and biocidal behaviour. The developed coating not only inhibits biofilm formation by restricting bacterial and water adhesion but also kills attached bacteria.

Post-operative surgical site infections (SSIs), which according to the World Health Organisation (WHO), affect 11 percent of patients in low and middle-income countries, are caused by the development of biofilms i.e. groups of bacteria growing in formation that are highly resistant to antibiotics, on the incision site or in the soft tissue inside the site. Thus, it is important to have an antibacterial coating on the surface of the materials that can act as potential sources of SSI.

The coatings developed in the present study can be used as a non-cytotoxic alternative to the commercially available antibacterial coatings, especially for healthcare applications on surgical sutures/surgical instruments to prevent the rise of multidrug-resistant bacteria.

The ATL-coated vicryl sutures exhibited higher percentage biofilm inhibition when compared to commercially available triclosan-coated antibacterial sutures. Cytotoxicity of the formulation was evaluated on coated surface, and it was found that ATL coatings are non-cytotoxic.