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Korea develops implant coating triggering antibiotic release against bacterial infection

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The material contains antibiotics under normal conditions, but in the event of a bacterial infection and subsequent acidification, it releases 70 percent of the antibiotics within eight hours

A collaborative research team from the Department of Chemical Engineering and the School of Convergence Science and Technology at Pohang University of Science and Technology (POSTECH), and from the Department of Biomedical Convergence Science and Technology of the College of Advanced Technology Convergence at the Kyungpook National University, South Korea has developed a coating material for implants. This material, based on mussel adhesion proteins, is designed to release antibiotics in response to bacterial invasion.

In implant procedures, bacterial infections not only compromise the stability of the implant but also give rise to various complications. Moreover, highly antibiotic-resistant bacteria often lead to recurrent infections even after antibacterial treatment, requiring additional procedures.

The immediate and sustained antimicrobial effect of the adhesive implant coating material has the potential to significantly enhance the success rate of implant procedures. By releasing antibiotics selectively in response to actual need, this could represent a groundbreaking technology in preventing the emergence of superbacteria in the future. The quantity of antibiotics discharged by the material corresponds to the extent of bacterial infection, and the researchers additionally validated the antibacterial efficacy of the coating material based on varying bacterial concentrations.