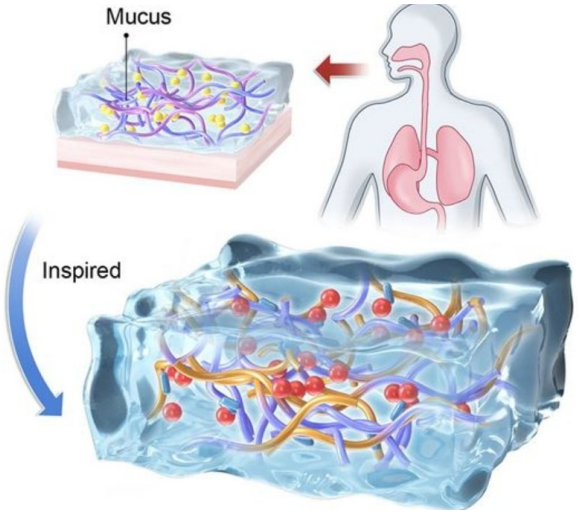
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Hong Kong develops mucus-inspired hydrogel to boost gastrointestinal wound healing

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Aiming to create smart gastrointestinal devices capable of real-time treatment and monitoring



The Hong Kong Polytechnic University (PolyU) has developed an acid-resistant “ultra-stable mucus-inspired hydrogel” (UMIH), marking a breakthrough in the field of gastrointestinal medicine.

Traditional hydrogels—gelatin-like materials that absorb and retain water—are widely used to aid wound healing and extend drug release. However, they usually break down in acidic environments like the stomach.

Inspired by the natural properties of gastric mucus, a PolyU research team has developed UMIH, a hydrogel that adheres 15 times more strongly than conventional gastric mucosal protectants, showing considerable potential for wound repair and targeted drug delivery and promising largeÃ¢â?¬â??scale commercialisation.

The research was carried out by the PolyU team in collaboration with researchers and clinicians from Sichuan University. The research showed that UMIH significantly improved gastrointestinal wound healing in animals and outperformed a clinically approved mucosal protectant used to protect the stomach lining.

While clinical trials will be needed to validate UMIH’s safety and efficacy in humans, it holds strong potential for commercialisation. It is low-cost, easy to mass-produce and developed from components with established safety profiles. The material is ready to use both in operating room and on the production line. Looking ahead, the research team plans to integrate UMIH with drug release systems and implantable flexible electronics to create smart gastrointestinal devices capable of real-time treatment and monitoring.