

Lysostaphin-Delivering Hydrogels to Treat Infections (#7729)

A hydrogel developed to treat infections associated with bone fractures and orthopedic device implants

Inventors at Georgia Tech have engineered a lysostaphin-delivering injectable hydrogel to treat *S. aureus* infections in bone fractures and orthopedic device implantations. The injectable hydrogel conforms and adheres to the fracture and surrounding tissue, ensuring efficient, local delivery of lysostaphin. This injectable hydrogel formulation enhances lysostaphin stability and provides improved efficacy against bacteria growing in biofilms compared to soluble enzymes alone. Lysostaphin-delivering hydrogels effectively eliminate orthopedic *S. aureus* infections while simultaneously supporting fracture repair.

Benefits/Advantages

- **Alternative to antibiotics** – lysostaphin-delivering hydrogels can eliminate the need for systemic drugs
- **Reduced number of administrations** – localized delivery provides higher dosing at the infection site
- **Controlled dosing** - Allows for control over the amount and time over which lysostaphin is delivered
- **Versatile** - Can be administered by injection or surgically

Potential Commercial Applications

- Treatment and prevention of *S. aureus* infections – including antibiotic resistant strains such as Methicillin-resistant *Staphylococcus aureus* (MRSA)

Background/Context for This Invention

Orthopedic hardware infections are a significant clinical problem with artificial joint replacement surgeries. The most common bacterial infections are caused by *Staphylococcus aureus* (*S. aureus*) and current treatments are limited to surgical debridement and systemic antibiotic regimens. Infections almost always lead to implant removal. Lysostaphin enzymes have been shown to have high anti-*Staphylococcus* activity and thus their use to reduce infection of biomaterials associated with orthopedic implants could have significant health benefits.

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More Information

Publications

[Hydrogel delivery of lysostaphin eliminates orthopedic implant infection by Staphylococcus aureus and supports fracture healing](#)

[Hydrogel Offers Double Punch Against Orthopedic Bone Infections](#)

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/lysostaphin-delivering-hydrogels-treat-infections>

Images: