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Novel Material Delivers both Antifungal and Antibiotic Drugs to Wounds

Musculoskeletal injuries are some of the most prevalent injuries in both civilian and military populations. The associated infections can be difficult to treat. Recently, fungal infections have become more prevalent in complex extremity trauma and lead to higher amputation rates than bacterial infections. Traumatic injury reduces or stops blood flow to the site of infection, which makes delivery of antibiotic and antifungal drugs to the wound very difficult. A novel material invented at the University of Memphis will provide clinicians with the first system for local delivery of both classes of drugs. This proprietary technology is available for exclusive licensing.

Application

- Sponges and bandage material for delivering antifungal and antibacterial drugs directly to wounds.

Advantages

- The sponge material is made from chitosan, which has been very well characterized for clinical applications.
- The material is the first of its kind to be able to deliver point of care loaded hydrophobic antifungal drugs, such as Amphotericin B, and hydrophilic antibiotics simultaneously.

This unique capacity to be loaded with either antibiotics or antifungals gives the clinician the flexibility to choose antimicrobials at the point of care.

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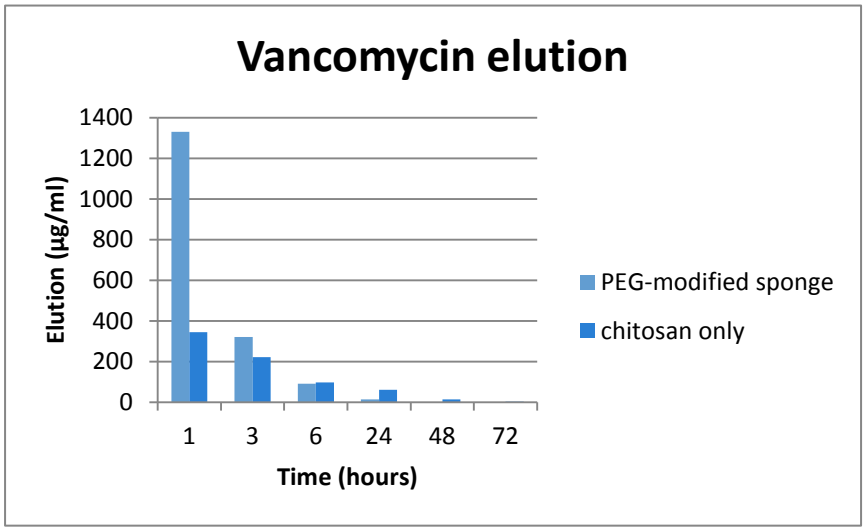
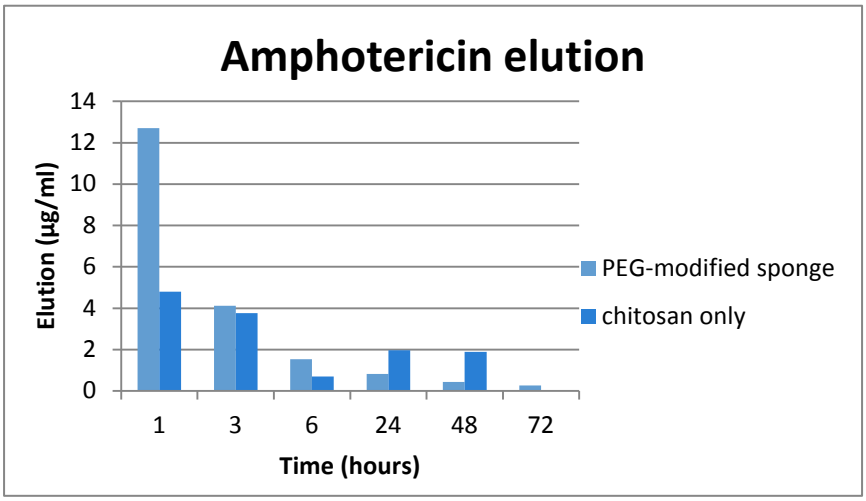
Elution Data





The Inventors

Dr. Ashley Parker is currently a Research & Development Engineer at MicroPort Orthopedics Inc. She received her Ph.D. and M.S. in Biomedical Engineering from the University of Memphis under the supervision of Dr. Warren Haggard in 2014 and 2011. While at the University of Memphis, Ashley was a National Science Foundation Graduate Research Fellow. She also received her B.S. in Polymers and High Performance Materials from the University of Southern Mississippi in 2009.

Dr. Amber Jennings is currently Research Assistant Professor in Biomedical Engineering at the University of Memphis. She received the Ph.D. in Biomedical Engineering from the University of Alabama at Birmingham in 2007. Her funded research focuses on infection control and novel biomaterials. She has published numerous research papers in peer reviewed journals. She is an active member of the Society for Biomaterials, the Orthopaedic Research Society and the Council for Undergraduate Research.

Dr. Warren O. Haggard is the Associate Dean of Research for the Herff College of Engineering and a Professor and Herff Chair of Excellence in Biomedical Engineering at the University of Memphis. He has a Ph.D. in Biomedical Engineering from University of Alabama at Birmingham. His research interests are focused on bone graft substitutes, functional tissue repair and local drug delivery for complex extremity trauma with emphasis on musculoskeletal applications. Dr. Haggard's current investigations are local antibiotic delivery to prevent bone infections, intelligent drug delivery systems, and functional musculoskeletal hard/soft tissue repair. He has translated two technologies from his university laboratory to local medical device companies.