



TECHNOLOGY

Protein-Coated Microspheres for the Treatment of Inflammatory Bowel Conditions

OVERVIEW

Chronic inflammation of the bowel is estimated to affect over 20% of Americans with only a small subset of individuals being clinically diagnosed with the autoimmune diseases Crohn's and ulcerative colitis (UC). Researchers at the University of Maryland, Baltimore have developed a targeted therapeutic approach that may be broadly successful in treating IBS, Crohn's, and UC, providing relief to the millions of sufferers of these painful and embarrassing ailments.

Defensins are proteins produced by immune cells and function to kill bacteria, fungi, and viruses by binding to and creating pores in their outer cell walls and protein envelopes. Surface-like proteins (Slp) are produced by various bacterial species and allow for their binding to the epithelial cells lining our intestinal tract. Microspheres are small spherical particles with diameters ranging from 1-1000 micrometers (μm) and can be designed to function as drug delivery capsules. The patented therapeutic approach combines these three entities creating a Slp-coated microsphere containing a defensin-like protein which can be administered orally with targeted delivery and retention of the therapeutic at the site of inflammation. The microspheres can be engineered to be biodegradable which would slowly release the encapsulated proteins providing immune system support in clearing the infection, reducing or eliminating the painful side effects of inflammation.

ADVANTAGES

This microsphere technology provides targeted delivery and retention of antimicrobial peptides with broad specificity for common gut pathogens to the gut lumen-epithelial interface.

STAGE OF DEVELOPMENT

In vitro preclinical proof-of-concept studies have been performed and validated demonstrating the efficacy of human defensin alpha type 5 (HD-5?) at inhibiting growth of *S. aureus* and *E. coli* as well as the binding of surface layer protein A (SlpA) to extracellular matrix proteins fibronectin, laminin and collagen. Further studies demonstrating efficacy *in vivo* by oral gavage are needed.

LICENSING POTENTIAL

UM seeks to develop and commercialize by an exclusive or non-exclusive license agreement and/or sponsored research with a company active in the area.

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PATENT STATUS

Patented: WO 2007/087557 A2; US 8,895,062 B2

CATEGORIES

- Therapeutics
- Biologics
- Methods of Treatment

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ED-2010-131