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# Antimicrobial, Stimuli-responsive Polysaccharide

Tech ID: 28937 / UC Case 2018-062-0

## BRIEF DESCRIPTION

State of the art antimicrobial therapeutics, while effective and promising, remain only short-term solutions to the overall challenge of drug-resistant microbes. UCI researchers have developed a chitosan-based nanoantibiotic that is non-toxic and carries potential for broad spectrum use.

## FULL DESCRIPTION

State of the art antimicrobials have up to 14 years of efficacy before resistance develops in microbes, after which a new antimicrobial compound must be researched and developed. The process can take years and millions of dollars, which has led many pharmaceutical companies to reduce investment in new antibiotics. Nanoantibiotics have recently gained attention as a therapeutic strategy. They are nanomaterials that have inherent antimicrobial activity or improve efficacy and safety of antibiotics administration. Nanoantibiotics have different attack mechanisms that result in advantages over conventional antibiotics.

Chitosan is a natural material derived from the shells of shrimp and other crustaceans which have shown promise as a nanoantibiotic. However, native chitosan has low solubility at biological pH and therefore low therapeutic potential against the microbes. UCI researchers have developed a way to make acid-transforming chitosan (ATC) to enhance solubility and lower toxicity, while sustaining the bioactivity. The researchers believe that the method can create a chitosan that targets various locations in the body.

## SUGGESTED USES

· Broad spectrum nanoantibiotics

## ADVANTAGES

- » Reduced toxicity and similar efficacy in reducing bacterial growth compared to native chitosan
- » Can be selectively returned to native chitosan at low pH to target specific areas

## PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	2019/01439	01/17/2019	2018-062

Patent Pending

## STATE OF DEVELOPMENT

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## OTHER INFORMATION

### CATEGORIZED AS

- » Medical
  - » Delivery Systems
  - » New Chemical Entities, Drug Leads
  - » Other
  - » Therapeutics

## RELATED CASES

2018-062-0

Various formulations have been made and in vitro and in vivo studies have been performed to understand the appropriate pharmacological doses.

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