

# Novel Chitosan Derivative as a Systemic Drug Delivery Agent and an Antibiotic Treatment

Tech ID: 24412 / UC Case 2015-035-0

## BRIEF DESCRIPTION

Researchers at the University of California, Irvine have developed a novel chitosan derivative that may be used simultaneously as a systemic drug delivery agent and a systemic antibiotic treatment.

## FULL DESCRIPTION

Proposed uses of chitosan now under research include drug delivery and currently it is used as a topical antibiotic in bandages. However chitosan is a highly insoluble material. Researchers at UCI have modified chitosan with a few hydrophilic functional groups so that the chitosan derivative is more water soluble. This novel chitosan derivative may be used as a systemic drug delivery agent and/or an oral or intravenous antibiotic.

Novel siRNAs or other nucleic acids may be complexed with this novel derivative chitosan so the complex may be delivered as a drug therapy to a patient. Upon acidic conditions, the nucleic acid is freed from the complex and the derivative chitosan is hydrolyzed thus releasing chitosan which may act as an antibiotic therapy.

## SUGGESTED USES

This chitosan derivative may be used to deliver prokaryotic gene silencing CRISPR RNA as a possible treatment for drug resistant infections. Upon acidification, the native chitosan is released. This native chitosan may then damage the bacterial cell membrane and/or interrupt bacterial biological processes by stimulating reactive oxidative species generation. This chitosan/siRNA complex may deliver a one-two punch to combat drug resistant infections.

## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,610,601	04/07/2020	2015-035

## TESTING

This chitosan derivative has been tested for its efficiency as a delivery vehicle for pGFP in HeLa cells.

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## OTHER INFORMATION

## KEYWORDS

Chitosan, Drug delivery, Drug resistance

## CATEGORIZED AS

- » **Biotechnology**
  - » Genomics
  - » Health
- » **Materials & Chemicals**
  - » Polymers
- » **Medical**
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