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

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