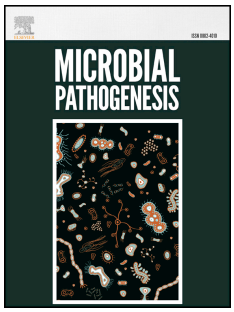
Accepted Manuscript



Evaluation of dose dependent antimicrobial activity of self-assembled chitosan, nano silver and chitosan-nano silver composite against several pathogens

Foysal Kabir Tareq, Mst Fayzunnesa, Md Shahariar Kabir, Musrat Nuzat

PII: S0882-4010(17)31609-1

DOI: 10.1016/j.micpath.2017.12.010

Reference: YMPAT 2646

To appear in: *Microbial Pathogenesis*

Received Date: 28 November 2017

Revised Date: 2 December 2017

Accepted Date: 4 December 2017

Please cite this article as: Tareq FK, Fayzunnesa M, Kabir MS, Nuzat M, Evaluation of dose dependent antimicrobial activity of self-assembled chitosan, nano silver and chitosan-nano silver composite against several pathogens, *Microbial Pathogenesis* (2018), doi: 10.1016/j.micpath.2017.12.010.

Evaluation of Dose Dependent Antimicrobial Activity of Self-Assembled Chitosan, Nano Silver and Chitosan-Nano Silver Composite against Several Pathogens

Foysal Kabir Tareq[1]*, Mst. Fayzunnesa[2], Md. Shahariar Kabir[3], Musrat Nuzat[1]

[1]Department of Chemical Engineering, Jessore University of Engineering and Technology, Dhaka-1200, Bangladesh

[2]Department of Nutrition and Food Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh

[3]Department of Inter-Disciplinary Center for Food Security - Sustainable Agriculture, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh

Corresponding Author: Foysal Kabir Tareq; Email: fktareq@yahoo.com

Abstract:

The aim of this investigation to preparation of silver nanoparticles organized chitosan nano polymer, which effective against microbial and pathogens, when apply to liquid medium and edible food products surface, will rescue the growth of microbes. Self-assembly approach used to synthesis of silver nanoparticles and silver nanoparticles organized chitosan nano polymer. Silver nanoparticles and silver nanoparticles organized chitosan nano polymer and film characterized using Ultra-violate visible spectrometer (UV-vis), X-ray diffraction (X-ray), and Scanning electronic microscope (SEM). The crystalline structured protein capped nano silver successfully synthesized at range of 12nm – 29nm and organized into chitosan nano polymer. Antimicrobial ingredient in liquid medium and food product surface provide to rescue oxidative change and growth of microorganism to provide higher safety. The silver nanoparticles organized chitosan nano polymer caused the death of microorganism. The materials in nano scale synthesized successfully using self-assembly method, which showed good antimicrobial properties.

Key words: Self-assembly; Silver nanoparticles organized chitosan; Antimicrobial agent; Food preservative