

Chitosan and sodium alginate nanoparticles synthesis and its application in food preservation.

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ABSTRACT

Nano-chitosan and nano-sodium alginate were prepared. Transmission electron microscopy was used to test the nanochitosan and nano-sodium alginate morphology and their effects against pathogens and microorganisms. Nano-chitosan and nano-sodium alginate were evaluated as edible coating to improve the microbiological quality of Ras and soft white cheeses during ripening. Nano-chitosan showed maximum antibacterial and antifungal activities with an inhibition zone of 29 mm for *Staphylococcus aureus* and 12 mm for *Aspergillus niger*. Sodium alginate nanoparticles treated with 2% acetic acid showed a higher antimicrobial impact than 1% and 1.5% glacial acetic acid at 40 mg/mL. The minimum inhibitory and lethal concentrations of nano-chitosan and nano-sodium alginates were 40, 80 mg/mL, and 80, 160 mg/mL for *Staph. aureus* and *Sal. enteritidis*, respectively. The highest decreasing percentage of yeast and fungi was observed in Ras cheese coated with nano-sodium alginate. Chitosan and sodium alginate nanoparticles' edible coating might be promising in food preservation.

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