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- Abstract

ACADEMIC PRESS
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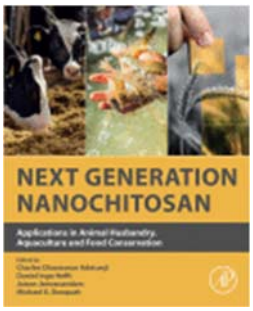
Applications in Animal Husbandry, Aquaculture and Food Conservation
2023, Pages 375-400




# Chapter 25 - Utilization of nanochitosan for enzyme immobilization of aquatic and animal-based food packages

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## Abstract

Studies have identified the properties of enzymes, functionalized molecules, and compounds in food industry applications as edible coatings and encapsulations, that assure prolonged food quality and standards. These molecules present benefits of longer shelf-life by delayed deterioration and inhibition of the proliferation of spoilage and mycotoxigenic microorganisms. However, challenges of reduced nutrient levels, miniaturized size, and low chemical stability remain concerning. Chitosan polymers naturally formed from the deacetylation of shellfish shells and exoskeletons of aquatic arthropods and crustaceans offer improved benefits when functionalized into nanoparticles as nanochitosans. These polysaccharides produced by the alkalescent deacetylation of chitin, comprise a series of 2-deoxy-2 (acetylamino) glucose linked by ß-(1-4) glycosidic linkages. This chapter considers the health impacts and microbiological health hazards associated with animal feeds quality and the enzyme immobilization potentials of nanochitosans in animal-based food and feed packages. Thereafter, nanochitosan properties and benefits are compared against traditional preservatives from microbes and plants; with highlights on **c**urrent challenges in the application of nanochitosan for enzyme immobilization**.**

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