

Nanochitosan augmented with essential oils and extracts as an edible antimicrobial coating for the shelf life extension of fresh produce: a review

C. Karthik, D. G. Caroline and S. Pandi Prabha

Polymer Bulletin 79:8009–8032. (2022)

Abstract

With increasing population and growing demands for ‘ready-to-consume’ high-quality fresh produce with longer shelf life, development of smart and intelligent food packaging systems has garnered extensive attention. Chitosan is a linear polysaccharide obtained from chitin, the second most abundant natural biopolymer on earth. Chitosan nanoparticles possess excellent physico-chemical, antimicrobial properties and are versatile due to their surface functionality. Though well-established research on chitosan nanocoatings in aquaculture, meat and meat products are in process, the use of nanochitosan edible formulations—films and coatings with the incorporation of essential oils and extracts for the shelf life extension of fruits remain largely unexplored. This review aims to highlight the significance of nanochitosan and its edible films and coating formulations with a particular focus on edible coatings of nanochitosan supplemented with essential oils and plant extracts to encourage more research work to further explore and develop better coatings for the shelf life extension of fresh produce.