

Title Chitosan: an edible coating for fresh-cut fruits and vegetables
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Abstract

Chitosan is a non toxic polymer derived from chitin. The physicochemical and biological properties of chitosan justify its introduction in food formulations since it could improve nutritional, hygienic and/or sensory properties, because of its emulsifying, antimicrobial, antioxidant and gelling properties, while also acting as a functional fiber. This makes it particularly suitable for the formulation of edible coatings, for maintaining the quality and extending the shelf-life of fruits and vegetables such as citrus, peach, kiwifruit, strawberries, tomatoes and apples. The effects of chitosan coating on the storage life of fresh-cut products such as strawberries, carrot, mango, cantaloupe, pineapple, and mushroom were investigated. Strawberries were treated with a solution of 1% chitosan, packaged in modified atmosphere (MA) with high (80%) and low (5%) percentage of O₂ and then stored at 4, 8, 12 and 15°C. A chitosan coating inhibited the growth of microorganisms and affected the stability time products positively, especially when the samples were packaged in MA. Besides, the presence of high percentage O₂, combined with chitosan coating, seemed to affect color positively. Application of chitosan coating of fresh-cut mushrooms delayed discoloration associated with reduced activities of polyphenoloxidase, peroxidase, catalase, phenylalanine ammonia lyase and laccase, as well as lower total phenolic content and reduced activities of cellulase, total amylase and α -amylase. Microbiological development of the samples treated with chitosan coating was also inhibited compared to the control. The effect of chitosan/methyl cellulose films on microbial characteristics of fresh-cut cantaloupe and pineapple was examined. Chitosan/ methyl cellulose and vanillin films provided an inhibitory effect against *E. coli* and *S. cerevisiae*. The functional properties of chitosan-based films can be improved by combining them with other hydrocolloids and film-forming materials.