

**Title** Using polysaccharide-based edible coatings to maintain quality of fresh-cut Fuji apples  
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### **Abstract**

The effect of alginate and gellan-based edible coatings on the shelf-life of fresh-cut Fuji apples packed in trays with a plastic film of a known permeability to oxygen ( $110 \text{ cm}^3 \text{ O}_2 \text{ m}^{-2} \text{ bar}^{-1} \text{ day}^{-1}$ ) was investigated by measuring changes in headspace atmosphere, color, firmness and microbial growth during 23 days of storage at 4 °C. Concentration of  $\text{O}_2$  and  $\text{CO}_2$  in the package was measured and no significant differences between coated and uncoated fresh-cut apples were observed. Ethylene concentration in coated apples seemed to be delayed since it remained below  $50 \mu\text{l l}^{-1}$  throughout the whole refrigerated storage period, while production of this gas was detected in uncoated apples from the very initial days of storage. Coated apple wedges exhibited ethanol and acetaldehyde formation from the second week of storage indicating fermentative metabolism. Polymers were crosslinked with a calcium chloride solution, to which the antibrowning agent *N*-acetylcysteine was added, being incorporated into the coatings formulation and helping to maintain firmness and color of apple wedges during the entire storage time. The application of the edible coatings also retarded the microbiological deterioration of fresh-cut apples. Alginate and gellan edible coatings effectively prolonged the shelf-life of Fuji apple wedges by 2 weeks of storage compared with the control apple slices which showed a considerable cut surface browning and tissue softening from the very early days of storage, limiting their shelf-life to less than 4 days.