

Title Development of vanillin/chitosan/methylcellulose film for fresh-cut fruit
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Abstract

Films were developed from mixtures of chitosan and methylcellulose (1.5:0.5, 1.5: 1.0, 2.0:0.5 and 2.0:1.0). The chitosan/methylcellulose film (ratio 1.5:0.5) had the best elongation and equal tensile strength. Chitosan/methylcellulose based films incorporating vanillin as an antimicrobial agent and polyethylene glycol 400 (PEG) as plasticizer were developed in this study. Their effects on microbial growth and fruit quality were investigated during storage at 10°C compared with commercial stretch film. Fresh-cut fruit without any film wrapping served as control. Chitosan/methylcellulose film and vanillin film had an inhibitory effect against *Escherichia coli* on fresh-cut cantaloupe. The chitosan/methylcellulose film rapidly reduced the number of *Saccharomyces cerevisiae* yeast inoculated on cantaloupe and pineapple. Vanillin film was more efficient than chitosan/methylcellulose in reducing the number of yeast, which decreased by 4 logs on fresh-cut pineapple after 6 days storage. Vanillin film increased the intensity of the yellow color of the pineapple. Cantaloupe wrapped with the vanillin film had a lower respiration rate and ethanol content than the control and that wrapped with stretch film. The stretch film maintained the moisture content in fresh-cut fruit better than other treatments. The vanillin film reduced the ascorbic acid content of the pineapple. After 12 days storage, ascorbic acid in pineapple wrapped with vanillin film was only 10% of its initial concentration. Vanillin film had an adverse effect on sensory properties while the sensory scores of fruit wrapped with chitosan/methylcellulose film were acceptable.