

Title Effect of limonene incorporation into geUan-based edible coating on the changes in microbiological and sensory characteristics of fresh-cut pineapple during cold storage

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Abstract

The microbiological stability of fresh-cut fruits is still one of the most challenging problems in the fresh-cut fruit industry. Essential oils have been used recently as natural antimicrobial agents. Incorporating natural antimicrobial agents into edible coatings provides a novel way to increase the shelf life and to maintain the quality of fresh-cut fruits. The aim of this work was to study the effect of different concentrations of limonene (0.1 %, 0.3% and 0.5% w/v) incorporated into gellan-based edible coating on the microbiological stability and sensory characteristics of fresh-cut 'Josapine' pineapple during 16 days storage at 10±1°C; 65±10% RH. Coated fresh-cut pineapple without limonene and uncoated fresh-cut pineapple were stored under the same conditions and served as the controls. The gellan-based edible coating formulation was an aqueous solution of gellan gum (0.56% w/v), glycerol (0.89 % w/v) and sunflower oil (0.025% w/v). The results obtained show that total plate count increased significantly ($p<0.05$) during storage for all treatments. Total plate count for edible coating formulations with 0.3% and 0.5% (w/v) limonene were significantly ($p<0.05$) lower than other formulations. There was no significant difference between total plate count for gellan-based coating without limonene and uncoated samples. The results for sensory evaluation showed that the scores for taste and overall acceptability were significantly ($p<0.05$) lower in gellan-based coated samples with 0.5% (w/v) limonene in comparison with other coated samples. Therefore, the results of this study indicate that gellan-based edible coating formulation incorporated with 0.3% (w/v) limonene significantly ($p<0.05$) reduced total plate count and maintained the sensory characteristics of fresh-cut pineapple.