

Title Sensory evaluation of fresh strawberries (*Fragaria ananassa*) coated with chitosan-based edible coatings

Author C. Han, C.L. Lederer, M.R. McDaniel and A.Y. Zhao

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Abstract

Strawberries (*Fragaria ananassa*) are highly perishable and characterized by short shelf-life. This is attributed to high respiration rates and susceptibility to fungal spoilage. Chitosan has been found to be an ideal preservative coating material for fresh fruits due to its antifungal properties. However, acid dissolved chitosan solutions develop bitterness and astringency, making chitosan-coated foods less practical on the real market. Our objectives were to develop chitosan-based coatings by controlling the astringency and thereby improving sensory quality of the solutions, and to evaluate the sensory quality of chitosan-coated fresh strawberries. Three 1% chitosan-based coatings were developed: chitosan in 0.6% acetic acid solution, in 0.6% lactic acid solution, and in 0.6% lactic acid solution plus 0.2% vitamin E. Coated strawberries were packed in clam-shell boxes and stored at 2 °C and 89% RH up to 3 weeks for sensory evaluation. Both consumer panel and free choice profiling trained panel were used for the sensory study. Consumer test indicated that lactic and acetic acid dissolved chitosan coatings increased the appearance acceptance and the overall liking of the strawberries, but coatings containing vitamin E increased the waxy/white appearance of the strawberries along with storage time. Both consumer and trained panel studies showed that chitosan coating did not change the flavor, sweetness, or firmness of the strawberries in comparison with uncoated fruits. In addition, vitamin E fortified coatings improved the attribute of overall strawberry flavor compared to other treatments at the same storage time. Chitosan coating significantly extended the shelflife of strawberries to 3 wk in cold storage with acceptable appearance and taste, while uncoated berries only lasted for 1 week as a result of mold growth and loss of surface appearance. This project significantly improved astringent taste of chitosan coatings and demonstrated its potential real market application as approved by sensory studies.