

## Effects of different wax coatings on the flavor of Mandarins (Tangerines)

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### Abstract

Mandarins (tangerines) have an excellent flavor, easy to peel, and are convenient for consumption. However, they are perishable after harvest and suffer from flavor deterioration. The application of wax coatings, on one hand, imparts shine and reduces water loss but on the other hand, it restricts gas exchange through the peel surface. This introduces anoxic conditions and ethanol build-up inside the fruit resulting in off-flavors development. The goal of this study was to examine the effects of the application of wax coatings on the flavor of mandarins. For this purpose, mandarins were harvested and washed by rinsing with tap water on brush rollers and allowed to dry for 20-30 mins at room temperature. Afterward, the fruit was treated with different wax formulations as follows: 1) Control (non-waxed), 2) 'Tag' wax, 3) 'Carnauba' wax, 4) Diluted 'Tag' wax, 5) 'SPD' wax, and 6) 'Exp. B' wax. Wax coatings were then applied to the fruit by spraying the different wax formulations with the addition of  $1,000 \mu\text{L}\cdot\text{L}^{-1}$  Imazalil fungicide followed by hand brushing using a 1.5" painting brush. The fruit was then transferred for storage for 3 weeks and 6 weeks at 5°C and later transferred for 5 more days to shelf-life conditions at 22°C. Postharvest storage evaluation included; total soluble solids (TSS), ethanol levels, acidity, weight loss, and sensory evaluation (acceptance and descriptive sensory tests). The observed results indicated that application of all wax coatings significantly increased juice ethanol levels in the fruit, but only a few waxes imparted flavor acceptability and increased off-flavor perception. From this study, it is concluded that the application of wax coatings increases the levels of ethanol thus reducing the fruit acceptability and eventually deteriorating the flavor of mandarins. Therefore, there is a need to identify new wax formulations that do not hamper the fruit-flavor quality.

**Keywords:** Wax, Flavor, mandarins

