

Effect of Wax Coating Combined with Modified Atmosphere Packaging for Shelf-Life Extension of Apple Masan (*Ziziphus mauritiana*) Fruit

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Apple masan (*Ziziphus mauritiana*) is a perishable fruit and has a relatively short shelf-life of 2-4 days at room temperature. Hence, this study was designed to evaluate the shelf-life extension of the apple masan after the application of wax coating and modified atmosphere packaging. In the first experiment, the effects of wax coating on the physicochemical and qualitative attributes of apple masan fruits were investigated during storage at room temperature ($25\pm 2^\circ\text{C}$) for seven days. The wax coating consisted of palm oil (3%), guar gum (2%), polysorbate tween 20 (2%), glycerol (30%), and distilled water (63%) according to volume-to-volume ratio. The apple masan coated with 1:1 diluted wax showed the lowest weight loss percentage ($1.65\pm 0.040\%$) and decay index percentage ($1.49\pm 0.031\%$). Moreover, wax coating delayed the change of skin color and ensured firmness in apple masan. In the second experiment, apple masan coated with 1:1 diluted wax and non-waxed apple masan were packed in modified atmosphere packaging (MAP) using low-density polyethylene (LDPE; 150 gauge) and was able to keep at room temperature ($25\pm 2^\circ\text{C}$) with 77% relative humidity for nine days. The apple masan packed with LDPE was used as a control (T1). The KMnO_4 sachets were used as an ethylene absorbent in the packages. The LDPE-packed absorbent containing non-waxed fruits (T2) showed less weight loss, low decay index, less chlorophyll degradation, and firmer color intensities than that of other treatments. The other treatments include LDPE packed and waxed (T3), and LDPE packed, waxed and absorbent contained (T4) fruit samples. These results confirmed that LDPE packed with absorbent contained non-waxing could be an effective means to contribute to the shelf-life extension and quality parameters of apple masan fruit stored at room temperature ($25\pm 2^\circ\text{C}$).

Key words: Modified Atmosphere Packaging, Shelf-Life Extension, Wax Coating, *Ziziphus mauritiana*