Title Effect of vacuum and modified atmosphere packaging on the postharvest quality and shelf life of date fruits in Khalal stage

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Abstract

Date (*Phoenix dactylifera* L.) is a berry fruit that can be consumed at three stages of its growth and development, including Khalal, Rutab and Tamar. At the Khalal stage, fruits are physiologically mature, hard and crisp, and bright yellow or red in color. Date cultivars with a low amount of tannin and low astringency are suitable for consumption at Khalal stage but due to the high moisture content, fruits are very perishable with low storage life. In this experiment, the physicochemical properties of Barhee dates under two storage temperatures (4 and 25ºC) in response to vacuum and modified atmosphere packaging (MAP) were studied. Fruits were analyzed at three time intervals after packing (0, 10 and 20 days) and evaluated for quality characteristics: weight loss, flesh firmness, total soluble solids (TSS), water activity, acidity and appearance. Results showed that fruits in MAP treatment had less than 1% weight loss, lowest percentage of Rutab fruits (14.7%), highest water activity (0.957) and low changes in other parameters tested. However, in the vacuum packaging, weight loss and the amount of crumbled fruits were least but a large portion of the fruit had changed to Rutab (22.4%) and fruit firmness was significantly reduced (4.9 kg).