

Effect of Thermal Treatments in Storage Period and Morphological Characteristics of Date Palm Fruits cv. Barhi

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Abstract:

This research was conducted to investigate effect of thermal treatments and storage conditions in the quality of date palm fruits. The results showed that the -5°C treatment reduced the rate of ripening, as gradual and limited increases in ripening percentage were observed during storage at both 4°C and 25°C , compared with the 60°C treatment, which caused a pronounced acceleration in ripening, particularly under room temperature storage, where the ripening percentage reached its highest levels.

A results also revealed a gradual decrease in fruit weight loss with increasing storage duration across all treatments. However, the lowest weight loss was recorded in fruits treated at -5°C and stored at 4°C , whereas fruits treated at 60°C stored at 25°C exhibited the highest weight loss.

Total soluble solids (TSS) and total sugars increased progressively with storage duration in all treatments, with the greatest increases observed in fruits treated at 60°C stored at 25°C . In contrast, total phenolic compounds and tannin content decreased significantly and progressively during storage time. The treatment at -5°C and stored at 4°C recorded the lowest decrease, while the treatment at 60°C with storage at room temperature recorded the highest decrease.

The treatment at -5°C with refrigerated storage resulted in significantly improved taste, texture, color, and overall acceptability, along with a decrease in astringency. In contrast, the heat treatment at 60°C with storage at 25°C led to a deterioration in sensory qualities and a decrease in overall acceptability. These results indicate that the cold treatment at -5°C with refrigerated storage is the optimal method for preserving fruit quality and extending life.

Keywords: Date palm, Thermal treatments, Storage, Morphological, Sensory Evaluation

Introduction:

The date palm trees (*Phoenix dactylifera* L.) is one of the most ancient fruit trees, and has been grown in desert oases for millennia. Its fruit has a high nutritional value and is considered a perfect food owing to their high contents of carbohydrates, fibers, lipids, antioxidants as well as its high

commercial value [26, 18, 6]. Date palm fruits can be divided into five major stages of ripening: Hababouk, Kimri, Khalal, Rutab and Tamar. The fruits at Khalal, Rutab and Tamar are generally acceptable for eating [1].