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Entitled

THE EFFECT OF NATURAL ELICITORS AND COLD STORAGE PERIOD ON QUALITY IMPROVEMENT OF UAE DATE PALM FRUITS (Phoenix dactylifera, CV. BARHI)

by

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Abstract

Date palm, is an extremely important subsistence crop in most of the Arabian countries. Among various varieties of date palms produced in UAE, the Barhi cultivar is highly appreciated and commonly consumed at the Bisr stage (first edible stage) of maturity. However, maintaining its quality for long time after harvest and throughout marketing is the main challenge for this fruit at Bisr stage. The aim of this study was assessed the synergistic impact of pre-harvest spray application of a natural elicitor namely chitosan (Ch) 1 % alone and in combination with salicylic acid (SA) 2 mM and calcium chloride (Ca) 3 % on the quality parameters, storage life, and bioactive compounds content of date fruit from the 'Barhi' cultivar at harvest and during cold storage for two months. The obtained results revealed that, all treatments significantly delayed the ripening and decay of 'Barhi' date as compared to the control. Ch treatment followed by Ch+SA, and Ch+SA+Ca had the lowest weight loss. Ch+Ca, Ch+SA+Ca, and Ch+SA treatments had significantly lower levels of total soluble solids (TSS) compared to the control fruit. Ch+Ca and Ch+Ca+SA treatments had no decayed fruit after 60 days of cold storage. At the end of storage time, the Ca treatment followed by Ch+Ca+SA had the greatest total phenolic (TPC), flavonoids (TFC), and tannins (TC) contents. Ch+SA+Ca, Ch+SA and Ch had significantly higher antioxi-dants and antimicrobial activities compared to control. Based on these findings, these treatments may be recommended to prolong the shelf life of 'Barhi' date fruit. Our results show that the use of elicitor combinations to increase the shelf life of date fruit during cold storage by preserving its quality and decreasing postharvest pathogen damage is a promising strategy.

Keywords: date palm; quality; preharvest; chitosan; fruit decay; storage life