Effects of precooling on storage and ROS metabolism of longan fruit

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Abstract

Litchi fruit (*Litchi chinensis* Sonn.) is a popular export commodity due to its attractive skin color and exotic flavor. Pericarp browning, postharvest decay and desiccation are identified as major constraints affecting the commercial quality of litchi fruits during storage, transportation or at the consumer shelf. This present study was carried out during the two successive seasons 2011 and 2012 to investigate the effects of postharvest coating with gum arabic (GA) on pericarp browning and aril decay of litchi during storage. Litchi fruits, 'Mauritius', were harvested (at the commercially mature stage with 90-95% of the peel exhibiting red color) from an orchard located in the North West Egyptian Delta. The fruits were rapidly cooled with crushed ice in water (0°C) for 10 min and then transferred to the postharvest laboratory within 4 h of harvest and dipped in commercial GA solutions at: 0 (water as control), 5, 10, 15 and 20% (w/v). The coated fruits were air dried, packed in commercial perforated polyethylene boxes each containing 20 fruits (approximately 450 g), and then the boxes were divided into 2 groups: the first was stored at 5°C and 95% relative humidity (RH) and the second was stored at room temperature (28°C and 55% RH). The results showed that browning index (BI), weight loss, decay and respiration rate were significantly lowered in coated fruits with 10% GA either at 5°C or at room temperature. The results suggested that GA plays an active role in reducing pericarp browning, desiccation and decay, thus improving litchi fruit quality and storability. The role of GA in delaying pericarp browning and desiccation of litchi fruits is discussed.