Relationship between cuticular waxes and storage quality parameters of Korla pear under different storage methods

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Abstract

Cuticular wax is an important factor that affects storage quality of fruits and vegetables. Previous studies have shown that cuticular wax of pears changes significantly during storage, whereas there are few studies on the effects of different storage methods on the wax changes and the relationship with storage quality. Cuticular wax of Korla pear stored using different methods, was measured to analyze its total wax content, chemical compositions and their relationship with storage quality. At the end of storage, the highest cuticular wax content was observed in controlled atmosphere (CA) storage and the lowest in room temperature storage. The substances of the primary components with higher contents were nonacosane, (E, E)-α-farnesene, dodecan-1-ol, 1,1-dimethoxynonane, nonanal, palmitic acid, and oleic acid. Total wax content, olefins and fatty acids were most significantly with the storage quality, followed by alkanes and esters. Moreover, total wax content, wax composition and weight loss were closely related to postharvest senescence. Overall, an understanding of variations in the cuticular wax under different storage methods could provide theoretical basis for further study on the storage and preservation technology of pears.