Changes in Firmness and Pectin Properties of Different Peach Types during Ripening

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Abstract


The interaction between pectin molecules affects the changes of texture in both fruit and vegetables. To investigate the linkage of firmness and pectin to texture changes in different flesh types of peach, traits of firmness, degree of esterification (DE), bound calcium content, and non-methoxy ester linkage (NME) content of melting flesh peach (‘Spring Honey’ and ‘Premier’) and stony hard peach (‘Yinggetao’) were analyzed during twelve-day ripening period after harvest. Results indicated that firmness of ‘Spring Honey’ and ‘Premier’ decreased rapidly and their values were three-fold lower than ‘Yinggetao’ in three days after harvest, suggesting a different flesh characteristic between these two types of peach. The total pectin content and DE value of all peach cultivars were decreased after harvest, from 513 to 350 mg anhydrogalacturonic acid g⁻¹ alcohol insoluble solids⁻¹ in total pectin and from 45 to 29% in DE value, respectively. ‘Spring Honey’ showed the largest decreased. The bound calcium had a positive effect on firmness and was decreased with the increasing of ripening after rising in the early stage. ‘Yingtao’ contained highest bound calcium, 6.7 mg g⁻¹ AIS⁻¹, at three days after harvest, but its content decreased during ripening, reached to about 2 mg g⁻¹ AIS⁻¹ at the end of experiment as other peach cultivars. NME also had a positive effect on firmness, whereas, different types of peach had vary contents and changing patterns during ripening period. The total ester linkages and NME followed the same changing pattern in the same peach type; ‘Spring Honey’ and ‘Premier’ were first increased and then decreased, while ‘Yingtao’ was increased throughout the storage. As a result, for establishing a better relationship between pectin molecules and pectinase activity for different types of peach during initial phase of storage after harvest, storing conditions and methods of processing and preservation should be taken into account altogether.

Key words: Peach, Pectin, Degree of esterification, Bound calcium, Non-methoxy ester linkage.