

Title Organic acids change in postharvest pummelo fruits analyzed by capillary electrophoresis
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Abstract

Organic acids and reducing sugars metabolism associate with respiration in postharvest citrus fruits, which play significant roles in the quality changes during citrus storage. Therefore, tracing the contents of organic acids and reducing sugars in postharvest citrus fruit is important to monitor the storage quality and screen the varieties with good storage ability. In present study, fully mature fruits of Hirado Buntan Pummelo (HBP) (*Citrus grandis* × *C. paradisi*) and Shatianyou pummelo (SP) (*C. grandis*) were harvested, and divided into two groups for storage experiments. One group was stored at 4°C and the other was stored at ambient temperature. Fruits were sampled with an interval of 5 days for the ambient storage and 11 days for cold storage. The flavedo, abeldo and pulp were separated by a sharp scalpel, frozen in liquid nitrogen, and stored at -80°C until use. Three grams of pulp was ground in 15 ml of 80% ethanol, heated for 15 min at 80°C and centrifuged for 10 min at 12,000 × g (4°C). The supernatant was diluted to 25 ml with ethanol. Prior to use, all solutions and separation buffers were degassed by ultrasound for 10 min and filtered with a 0.22 μm filter. Separation and identification of mixture organic acids by capillary electrophoresis were conducted by the UV absorption at the wavelength of 200 nm. The adopting pressure injection was 0.5 psi for 3 s, the separate condition was 12 KV at 20°C. Reducing sugars, including glucose and fructose were indirectly detected by UV absorption at a wavelength of 214 nm with borax buffer (75 mM; pH 10.5). The separation voltage and temperature was 15 KV and 25°C respectively. The latest results showed that, the main organic acid in HBP and SP was citric acid, and acid contents in SP were decreasing gradually with the storage life prolonged. However, regardless of the storage temperatures, organic acids in HBP were uniformly increased and generated an obvious peak after been stored for 2 month. Previous investigations revealed that HBP showed some peculiar postharvest traits including good flavor, high juice and rare granulation. To prove whether some internal correlations existed between these organic acid accumulation and postharvest characters, as well as to explore the mechanisms for the acid peak forming in HBP, further experiments were underway.