Title Fatty acid composition and antioxidant system in relation to susceptibility of loquat fruit to chilling injury

Author Shifeng Cao, Zhenfeng Yang, Yuting Cai and Yonghua Zheng

Citation Food Chemistry, Volume 127, Issue 4, 15 August 2011, Pages 1777-1783

Keywords Loquat fruit; Chilling injury; Fatty acid; Antioxidant system

Abstract

Two cultivars of loquat fruit with contrasting chilling resistance were stored at 1 °C for 35 days to investigate the relationship between chilling injury and fatty acid composition and its antioxidant system. No symptoms of chilling injury occurred in the fruit of 'Qingzhong' cultivar during the whole storage, whereas in 'Fuyang' fruit, chilling injury increased sharply after 21 days of storage at 1 °C. 'Qingzhong' fruit had lower levels of superoxide radical and H_2O_2, in addition to lower lipoxygenase activity, but higher membrane lipid unsaturation and higher activities of superoxide dismutase and catalase than 'Fuyang'. Furthermore, the chilling resistant 'Qingzhong' fruit also showed higher activities of antioxidant enzymes involved in ascorbate–glutathione cycle and higher levels of ascorbate acid and reduced glutathione. These results suggest that the higher membrane lipid unsaturation and the more efficient antioxidant system were both beneficial in enhancing resistance of loquat fruit to chilling injury.