Title Effect of 1-MCP on postharvest quality of loquat fruit

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Abstract

Loquat (*Eriobotrya japonica* Lindl. cv. Luoyangqing) is a fruit with a limited postharvest life. Postharvest treatments of 1-methylcyclopropene (1-MCP: 0.5, 5 and 50 μL/L) and ethylene (100 μL/L) were applied to loquat fruit and their effects on postharvest fruit quality during 8 d storage at 20 °C, and 0 °C for 39 d plus 5 d at 20 °C, were investigated. Of the three concentrations, 5 μL/L 1-MCP had the most positive effects on fruit quality. Fruit firmness increased steadily after harvest and this increase was positively correlated with an increase in electrical conductivity of the fruit tissues. Ethylene treatment enhanced, while 1-MCP delayed significantly, the postharvest increase in firmness. There was also an increase in flesh browning after harvest and this increase was significantly and inversely related to the total phenolic content of the tissue, and positively correlated to polyphenol oxidase (PPO) activity. 1-MCP treatment was associated with lower lipoxygenase (LOX) and PPO activities, reduced $O_2^{\bullet -}$ accumulation and maintenance of cell membrane integrity, decreased oxidation of polyphenols, and thus retarded enzyme reactions involved in browning. Fruit firmness increased over the first few days at 0 °C and then did not change much until the fruit were removed to 20 °C. Browning increased significantly at 0 °C and during subsequent shelf life, and the 1-MCP treatment reduced browning, while ethylene enhanced it. 1-MCP may be useful to maintain postharvest quality of loquat fruit and provide longer storage life.