Title 1-methylcyclopropene application suppresses lipid peroxidation and increases antioxidant enzyme activity in cold-stored 'Sekaki' papayas

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Abstract

The effects of postharvest application of 1-methylcyclopropene (1-MCP) at 270 ppb for 12h on lipid peroxidation and activities of superoxide dismutase (SOD), ascorbate peroxidase (APX) and catalase (CAT) in papayas (*Carica papaya* 'Sekaki') stored at 10°C for four weeks were studied. Papaya fruit treated with 1-MCP exhibited lower malondialdehyde (MDA) content when transferred to ambient temperatures (28°C) for ripening as compared to the non-MCP treated fruit suggesting that lipid peroxidation was suppressed by 1-MCP. In addition, the activities of SOD, APX and CAT were also elevated by the treatment. Chilling injury (CI) incidence was slightly alleviated; however, loss of tissue firmness was greatly arrested. These results suggest that 1-MCP being an antagonist of ethylene action may reduce cellular disintegration that involves development of oxidative stress through the enhancement of some antioxidant enzyme activity and prevent ethylene-associated degradation of cell wall components that leads to tissue softening.