

Title Effects of 1-methylcyclopropene treatment on the antioxidant enzyme activities of strawberry fruit in shelf life

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Abstract

The ethylene action inhibitor 1-methylcyclopropene (1-MCP) reduces the rate of ripening of climacteric fruit including apple, pear and tomato. Several experiments using 1-MCP on non-climacteric fruit show the same trend. Strawberries are a non-climacteric fruit and both high in value and highly perishable. In this paper, 'Jinnong 1st' strawberry fruit were treated with 500nl/L and 1000 nl/L 1-MCP. After storage in –1°C for 21 days, fruits were moved to a shelf life temperature of 4°C during which incidence of decay and activities of antioxidant enzymes were measured. The protein content of 1-MCP treated fruits increased and incidence of decay decreased 60% at the 8th day of shelf life. Superoxide dismutase (SOD) and catalase (CAT) activity of 1-MCP treated fruits were higher than control (untreated with 1-MCP), and reached a peak on the 4th day and 3rd day of shelf life in fruit treated by 500nl/L and 1000nl/L 1-MCP, respectively. Asorbate peroxidase (APX) activities were significant higher than control and highest at the 2nd day and 6th day in fruits treated with 500nl/L and 1000nl/L 1-MCP, respectively. Maintenance of these enzyme activities by 1-MCP during shelf life may potentially help in the detoxification of active oxygen species that are generated during catabolic activities and maintain fruit quality longer.