

Title Effects of different concentrations of 1-MCP on the yellowing of West Indian lime (*Citrus aurantifolia*, Swingle) fruit

Author Tin Ohnmar Win, Varit Srilaong, Julian Heyes, Khin Lay Kyu and Sirichai Kanlayanarat

Citation Postharvest Biology and Technology, Volume 42, Issue 1 , October 2006, Pages 23-30

Keywords 1-Methylcyclopropene; *Citrus aurantifolia*; Chlorophyll; Yellowing

Abstract

The effects of 1-methylcyclopropene (1-MCP), an ethylene inhibitor, on endogenous ethylene production and chlorophyll degradation in the West Indian lime (*Citrus aurantifolia*, Swingle cv. 'Paan') were examined under ambient conditions (24–31 °C and 73–81% RH). Fruit treated with 250 or 500 nl l^{-1} 1-MCP effectively retarded yellowing for 21 days at ambient storage. Application of 1000 nl l^{-1} 1-MCP accelerated yellowing within 9 days, while 750 nl l^{-1} 1-MCP treated fruit completely turned yellow at 15 days. Chlorophyllase and chlorophyll degrading peroxidase activities in flavedo tissue of lime peel were delayed in 1-MCP treated fruit at concentrations of 250 and 500 nl l^{-1} . Ethylene production rate of 1000 nl l^{-1} 1-MCP treated fruit was 1.6 times higher than that of untreated fruit. Nevertheless, 1-MCP at low concentrations (250 or 500 nl l^{-1}) effectively suppressed endogenous ethylene production. Ascorbic acid content was reduced in fruit treated with 1000 nl l^{-1} 1-MCP but not in fruit treated with 250, 500 or 750 nl l^{-1} . Before commercial treatment of limes with 1-MCP becomes possible, the appropriate concentration and treatment temperature, fruit maturity stage and storage temperature must be determined.