Title Effect of 1-MCP and ethylene treatments on 'Fuji' apples at room temperature

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Abstract

The objectives of this study were to determine the efficacy of 1-methylcyclopropene (1-MCP) and the interaction of 1-MCP and ethylene on the quality of 'Fuji' apples during storage. Fruit were harvested in late October and treated with 1-MCP at 0.0, 0.5, 1.0, and 2.0 ppm for 16 hours. Fruit were also treated with 1-MCP at different times after harvest, or were treated with ethylene at 10, 20 and 40 ppm for 16 hours following a pre-treatment with 1.0 ppm 1-MCP at room temperature. Apples were also treated with ethylene at 0, 10, 20 and 40 ppm for 16 hours after 1.0 ppm 1-MCP pre-treatment in order to study the interaction between 1-MCP and ethylene. In another experiment, fruit were treated with ethylene for 16 hr first and then treated with 1.0 ppm 1-MCP after 8, 32 and 56 hr respectively. Fruit treated with 10 ppm ethylene and then 1.0 ppm 1-MCP, retarded ripening at room temperature, as indicated by improved retention of firmness. Ripening was delayed regardless of 1-MCP concentration and exposure time compared with control fruit. However, 1-MCP did not affect soluble solids concentration and titratable acidity. Ethylene treatment immediately before and/or after the 1-MCP treatment did not affect responses to 1-MCP. Although its effectiveness by 1-MCP concentration and exposure period was not significant, the results indicate that 1-MCP has excellent potential for maintaining apple quality during storage.