

**Title** 1-Methylcyclopropane (1-MCP) for extending postharvest quality of 'Cuiguan' pears (*Pyrus pyrifolia* Nak.)

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#### **Abstract**

'Cuiguan' pear is a new pear variety with high fruit quality bred in China, but its postharvest shelf-life is short (often only 7 days) at room temperature. The potential for commercial application of 1-MCP, an ethylene inhibitor, to maintain quality of 'Cuiguan' pears during storage at room temperature was investigated. Pear fruit were harvested at 80% ripe stage, treated with 1-MCP at  $1 \mu\text{L.L}^{-1}$  for 15h at room temperature ( $25 \pm 2^\circ\text{C}$ ), and then stored at  $20 \pm 2^\circ\text{C}$  in unsealed plastic bags. Ethylene production, firmness, soluble solids concentration, titratable acidity, and malonyl dialdehyde (MDA) content were determined at 5-day intervals, and the development of black skin, a physiological disorder with a symptom similar to that of superficial scald was noted during storage. 1-MCP not only delayed the ethylene climacteric peak by 10 days but reduced the ethylene production rate as well. The magnitude of the ethylene peak was 50% lower in fruit treated with 1-MCP than in control fruit. Fruit treated with 1-MCP were firmer throughout storage compared with control. Firmness was  $4.75 \text{kg/cm}^{-2}$  in fruit treated with 1-MCP on day 30 (last day of control), while only  $4.02 \text{kg/cm}^{-2}$  in control. Soluble solids concentration, titratable acidity and MDA content in fruit treated with 1-MCP were higher than in control fruit during storage. 1-MCP was very effective in preventing the development of black skin. It did not occur during storage in 1-MCP treated fruit, but it developed to 69% from day 15 to the end of storage, in control fruit. These results indicated that 1-MCP had a positive effect on maintaining postharvest shelf-life of 'Cuiguan' pear fruits.