Title 1-MCP pretreatment prevents bud and flower abscission in *Dendrobium* orchids

Author Narisa Uthaichay, Saichol Ketsa and Wouter G. van Doorn

Citation Postharvest Biology and Technology, Volume 43, Issue 3, March 2007, Pages 374-380

Keywords *Dendrobium*; Abscission; ACC content; ACC synthase activity; ACC to ethylene conversion; 1-MCP; Orchid; Vase life

Abstract

Dendrobium orchid inflorescences were treated for 4 h at 25 °C with or without 100–500 nl/l 1-MCP and were then placed in water at 25 °C to follow abscission. In controls, depending on the experiment, 20–80% of the floral buds and 0–20% of the open flowers abscised within 1 week. The 1-MCP pretreatment largely prevented this abscission. If flowers were exposed to 1.0 μl/l ethylene for 3 days, all floral buds and all open flowers abscised within the 3 days of treatment. 1-MCP treatment just prior to ethylene treatment largely prevented the ethylene effect. Treatment with STS was as effective as treatment with 1-MCP. *Dendrobium* inflorescences are usually shipped by air in cardboard boxes lined with plastic film. The stem ends are placed in plastic tubes filled with water. After shipment and placement in water, a considerable percentage of the buds, and some flowers, abscise. This is probably due to elevated ethylene concentrations inside the boxes. Treatment of the inflorescences with 100–500 nl/l 1-MCP prior to simulated air transport largely prevented abscission during vase life. 1-MCP treatment inhibited ethylene production of the inflorescences by lowering both ACC synthase in open flowers and ACC oxidase activity in floral buds.