

Title Chilling injury in *Dendrobium* inflorescences is alleviated by 1-MCP treatment
Author Saovalak Phetsirikoon, Saichol Ketsa and Wouter G. van Doorn
Citation Postharvest Biology and Technology. Volume 67, May 2012, Pages 144–153
Keywords 1-MCP; Orchid flower; Low temperature; Electrolyte leakage; Lipoxygenase; Antioxidants; Total antioxidant capacity

Abstract

The effects of cold storage were studied in cut *Dendrobium* inflorescences. Two cultivars were used, one (cv. Princess) being more cold-sensitive than the other (cv. Sakura). Inflorescences were stored, for various intervals, at 5 °C and were then placed at 25 °C. Visible chilling injury (CI) mainly developed at 25 °C. Water-soaking, the most prominent CI symptom, was present more in closed floral buds and less in open flowers. Electrolyte leakage (EL) increased considerably more in floral buds than in open flowers, and more so during cold storage than during subsequent placement at 25 °C. Total (water-soluble) antioxidant capacity (TAC) also increased during 5 °C storage, but did not change during the period after cold storage. TAC was higher in cv. Sakura than in cv. Princess. No clear effects were found on activities of lipoxygenase (LOX), catalase and superoxide dismutase. A pulse treatment with 1-MCP prior to storage at 5 °C was studied in cv. Princess. 1-MCP reduced CI and resulted in less increase in EL, but had no effect on TAC and LOX activity. The data suggest that CI symptoms of *Dendrobium* floral buds and open flowers were related to membrane damage and antioxidant capacity, and that the chilling injury signal is mediated by ethylene.