

**Title** Ethylene biosynthesis and membrane microviscosity changes of cut rose *Rosa hybrid cv.* 'Nobless' by calcium chloride pulse and dry cold storage

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#### **Abstract**

In cut roses, *Rosa hybrida* L. cv. 'Nobless', pulsed with 10 mM proline and 10 mM CaCl<sub>2</sub>, water uptake capability was enhanced and flower opening promoted after cold storage. In such stored cut roses characteristic changes occurred in membranes, and ethylene production and electrolyte leakage increased. When flowers were pulsed with CaCl<sub>2</sub> at 10 mM. ACO activity was significantly inhibited, ethylene production was reduced, and membrane microviscosity was less than control flowers during vase life. Nevertheless, post cold storage. ACC accumulated in petals and an earlier and higher ethylene peak occurred. At 8°C, the ethylene reached a peak of 1.34 nl/g/hr on the third day in the vase. The cut roses low temperature stress when stored at 8 °C. Once flowers were rewarmed, the membrane microviscosity reached 2.24 poise which was similar to the controls at the fully open stage. Both cortical and pith cells of pedicel tissue were deformed as a result of water loss after 8°C storage.