

Title Effects of oxygen concentrations in controlled atmosphere storage on physiological changes in cucumber fruit (*Cucumis sativus*)

Author V. Srilaong, A. Uthairatanakij, S. Kanlayanarat and Y. Tatsumi

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Abstract

The effects of controlled atmosphere (CA) at 5%, 21% (air, control), and 100% O₂ on chilling injury, respiratory and hydrogen peroxide formation at 5°C in cucumber fruit were determined. The appearance of chilling injury symptoms in cucumber was delayed in both CA treatments; 100% O₂ effectively reduced pitting as did the 5% O₂ treatment. Respiration and ethylene production rates were suppressed in cucumber fruit stored at 5°C to a greater extent in 100% O₂ than in 5% O₂ and air. The increase of membrane permeability and weight loss from cucumber was not significantly different among treatments. Hydrogen peroxide concentration in flesh tissue of cucumber fruit stored in 5% and 100% O₂ temporarily increased on day 1 and thereafter declined to concentrations less than in control fruit for the remainder of the storage period. These results revealed that both CA conditions might suppress oxidative processes in cucumber fruit during cold storage.