

Title Phospholipase D and lipoxygenase activity of cucumber fruit in response to chilling stress
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Abstract

Harvested cucumber (*Cucumis sativus* L. cv. Jinyou-1) fruit were placed at 37 °C (heat treatment) or at 20 °C (control) for 24 h prior to storage at 2 °C. In order to determine the responses of phospholipase D (PLD) and lipoxygenase (LOX) to chilling stress, their activities and the expression pattern of the PLD gene in cucumber fruit were measured during storage. Chilling injury assessed as electrolyte leakage and malondialdehyde (MDA) content was alleviated by heat treatment. Heated fruit showed reduced activities of LOX and PLD with suppressed expression of PLD mRNA compared with control fruit over the storage. The data indicate that PLD and LOX may be the major lipid-degradative enzymes involved in the induction of chilling injury in cucumber fruit. Our results suggest that PLD and LOX might be associated with the initiation of chilling injury by involvement in membrane deterioration.