

Title Activity and gene expression of ethylene biosynthetic enzymes of Irwin mango during fruit ripening

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Citation Program and Abstracts, 4th International Symposium on Tropical and Subtropical Fruits, November 3-7 2008, Bogor, Indonesia. 215 pages.

Keyword ACC synthase; ACC oxidase; different temperatures; ethylene biosynthetic enzymes; gene expression of specific enzymes

Abstract

The present investigation was undertaken to study the effect of storage temperature for controlling ethylene production through the activity and gene expression of ethylene biosynthetic enzymes of Irwin mango during fruit storage. Ethylene evolution and activities of ethylene biosynthetic enzymes, 1-aminocyclopropane-1-carboxylic acid (ACC) synthase and ACC oxidase were investigated using Irwin mango fruits harvested at commercial ripe stage and stored at 20°C and 13°C, together with gene expression of these enzymes. Just after harvest the respiration was high although it soon decreased. Climacteric peak was observed at the 6th day after storage at 20°C and 8th day at 13°C. Peak of ethylene evolution was observed on the 2nd day after storage at 20°C and 12th day after storage at 13°C although the ethylene evolution steadily increased from 4th day of storage at 13 °C. In accordance with the peak of ethylene evolution, activities of ACC synthase and ACC oxidase were recorded highest at 2nd day after storage at 20°C and 8th day after storage at 13°C. Expression of both genes of ACC synthase and ACC oxidase was higher for the fruits stored at 13°C than those stored at 20°C. The dynamism of ethylene biosynthetic enzyme activity and gene expression of those enzymes also supports the effectiveness of lower temperature storage.