Title Role of oxidative stress and the activity of ethylene biosynthetic enzymes on the formation of spongy tissue in 'Alphonso' mango

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Abstract

Spongy tissue formation in 'Alphonso' mangoes (*Mangifera indica* L) is a major national problem leading to loss for farmers and traders. Spongy tissue is whitish sponge like tissue formed near the seed with insipid taste and off odour. Lipid peroxidation of membranes as studied by malondialdehyde formation was significantly higher in spongy tissue. Activities of antioxidative enzymes like superoxide dismutase, catalase, peroxidase and polyphenol oxidase were lower in spongy tissue. Among the antioxidative enzymes, activities of catalase and peroxidases were severely reduced leading to membrane damage in spongy tissue. A significant reduction in 1-aminocyclopropane-1-carboxylic acid (ACC) oxidase and accumulation of ACC was also observed in spongy tissue. However, ACC synthase activity in spongy tissue was more compared to healthy tissue. Results indicate that the membrane peroxidation leading to lower activity of ACC oxidase might lead to the formation of spongy tissue in 'Alphonso' mango.