

Title Differential expression of pectate lyase during ethylene-induced postharvest softening of mango (*Mangifera indica* var. Dashehari)

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Abstract

Fruit ripening is characterized by progressive depolymerisation of pectic and hemicellulosic polysaccharides of the cell wall. Several cell-wall hydrolases have been studied and their role implicated in the softening of various fruits. However, studies related to pectate lyases (PL), which degrade pectins through beta -elimination of glycosidic linkages, have been very limited in fruit tissue. We have cloned a PL homologue, MiPel1 from ripening mango (*Mangifera indica* var. Dashehari), which shows sequence similarity to higher plant PL genes. The 1.7-kb complementary DNA of MiPel1 (accession number AY987389) encodes a putative protein of 437 amino acids, which possesses all the motifs and active site residues conserved in other PL. A progressive increase in transcript accumulation was observed during ripening but expression was delayed significantly in 1-methylcyclopropene-treated and control fruits kept in air without exogenous ethylene. The expression was specific to fruits and triggered only during ripening. No transcript was detected in other tissues such as leaf, stem and flower and during development of the fruit. The increase in transcript accumulation of MiPel1 during ripening was associated with an increase in the Ca super(+2)-dependent PL activity and pectin solubilization. It is proposed that expression of PL may be closely associated with pectin degradation during ripening and play an important role in mango softening.