

**Title** Transcript profiling of papaya fruit reveals differentially expressed genes associated with fruit ripening

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#### **Abstract**

Papaya (*Carica papaya* L.) fruit has a short shelf life due to fast ripening induced by ethylene, but little is known about the genetic control of ripening and attributes of fruit quality. Therefore, we identified ripening-related genes affected by ethylene using cDNA-AFLP (Amplified Fragment Length Polymorphism of cDNA). Transcript profiling of non-induced and ethylene-induced fruit samples was performed, and 71 differentially expressed genes were identified. Among those genes some involved in ethylene biosynthesis, regulation of transcription, and stress responses or plant defence were found (heat shock proteins, polygalacturonase-inhibiting protein, and acyl-CoA oxidases). Several transcription factors were isolated, and except for a 14-3-3 protein, an AP2 domain-containing factor, a salt-tolerant zinc finger protein, and a suppressor of PhyA-105 1, most of them were negatively affected by ethylene, including fragments of transcripts similar to VRN1, and ethylene responsive factors (ERF). With respect to fruit quality, genes related to cell wall structure or metabolism, volatiles or pigment precursors, and vitamin biosynthesis were also found.