

**Title** Characterization of wound-regulated cDNAs and their expression in fresh-cut and intact papaya fruit during low-temperature storage

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#### **Abstract**

Fresh-cut papaya fruit undergo rapid tissue deterioration during storage. A comparative gene expression study was conducted to isolate genes differentially expressed upon fresh-cut processing by means of mRNA differential display RT-PCR. Differential display analysis was performed on intact and fresh-cut papaya fruit stored in parallel for 12 h at 5 °C with three different one-base-anchored oligo dT and eight arbitrary primers. Confirmation of true positive bands was performed by northern blotting. Fourteen differentially expressed cDNAs ranging from 154 to 777 bp were cloned, sequenced and compared to GenBank sequences. The partial cDNAs showed significant homologies to signaling pathway genes, membrane proteins, cell-wall enzymes, proteases, ethylene biosynthetic enzymes, and enzymes involved in plant defense responses. Northern blot analysis with probes of each of the partial clones revealed that most of the genes corresponding to partial cDNAs were expressed in a fresh-cut dependent manner during 8 days storage. The transcripts for PC18-5, PA19-3 and PC17 were not detectable on northern blots. The results suggest that fresh-cut processing induces the expression of proteins involved in membrane degradation, free radical generation, and enzymes involved in global stress responses.