

## Correlation between Polysaccharides Molecular Weight Changes and Pectinases Gene Expression during Papaya Ripening

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**Abstract :** Fruit softening is the main change that occurs during papaya (*Carica papaya* L.) ripening. It is characterized by the depolymerization of cell wall polysaccharides, especially the pectic fractions, which causes cell wall disassembling. However, it is uncertain how the modification of the two main pectin polysaccharides fractions (water-soluble - WSF, and oxalate-soluble fractions - OSF) accounts for fruit softening. The aim of this work was to correlate molecular weight changes of WSF and OSF with the gene expression of pectin-solubilizing enzymes (pectinases) during papaya ripening. Papaya fruits obtained from a producer were harvest and storage under specific conditions. The fruits were divided in five groups according to days after harvesting. Cell walls from all groups of papaya pulp were isolated and fractionated (WSF and OSF). Expression profiles of pectinase genes were achieved according to the MIQE guidelines (Minimum Information for publication of Quantitative real-time PCR Experiments). The results showed an increased yield and a decreased molecular weight throughout ripening for WSF and OSF. Gene expression data support that papaya softening is achieved by polygalacturonases (PGs) up-regulation, in which their actions might have been facilitated by the constant action of pectinesterases (PMEs). Moreover, BGAL1 gene was up-regulated during ripening with a simultaneous galactose release, suggesting that galactosidases (GALs) could also account for pulp softening. The data suggest that a solubilization of galacturonans and a depolymerization of cell wall components were caused mainly by the action of PGs and GALs.

**Keywords :** carica papaya, fruit ripening, galactosidases, plant cell wall, polygalacturonases

**Conference Title :** ICFSN 2015 : International Conference on Food Science and Nutrition

**Conference Location :** London, United Kingdom

**Conference Dates :** June 28-29, 2015