

Title Fruit ripening in sour cherry: changes in expression of genes encoding expansins and other cell-wall-modifying enzymes.

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Abstract

A preliminary understanding of developmental processes among divergent species is essential to evaluate the applicability of information from model species to plants of agricultural importance. In tomato (*Lycopersicon esculentum* Mill.), where the molecular biology associated with fruit ripening has been studied most extensively, tissue softening is due at least in part to the activity of proteins called expansins, in concert with enzymatic activities that modify the pectin and xyloglucan components of the cell wall. We evaluated the potential for the concerted action of expansins and other cell wall-modifying enzymes during ripening in a highly divergent fruit species, sour cherry (*Prunus cerasus* L.). We identified a family of four expansin genes that was strongly upregulated at the advent of ripening. Activation of these genes was accompanied by strong upregulation of gene(s) encoding potential pectin methylesterases, pectate lyase(s), and xyloglucan endotransglycosylase(s). Initiation of ripening and gene induction were also associated with a rapid decrease in cell wall weight. These results suggest that expansin and several other distinct activities could be involved in ripening-associated cell wall modification in cherries.