

# Absciscic acid accelerates postharvest blueberry fruit softening by promoting cell wall metabolism

Qian Zhou, Fan Zhang, Shujuan Ji, Hongyu Dai, Xin Zhou, Baodong Wei, Shunchang Cheng and Aide Wang

Scientia Horticulturae 288: 110325. (2021)

---

## Abstract

The plant hormone abscisic acid is important for the ripening of fruit. We investigated the relationship between abscisic acid and cell wall degradation and their roles in postharvest blueberry softening. The abscisic acid levels in harvested blueberries were hundreds of times higher than those of auxin, jasmonate, salicylate, and gibberellin and were negatively correlated with fruit firmness. Relative to the untreated control, fruit treated with abscisic acid softened faster, had higher soluble pectin, lower non-soluble pectin, cellulose, and hemicellulose content, and had enhanced pectinesterase, polygalacturonase, and *b*-galactosidase gene expression and enzyme activity. Moreover, exogenous abscisic acid induced endogenous abscisic acid biosynthesis. In contrast, the ABA inhibitor nordihydroguaiaretic acid downregulated key genes encoding abscisic acid biosynthesis, lowered abscisic acid content, and maintained firmness, cell wall-degrading gene expression levels, and sugar, total phenolic, and ascorbic acid content. Hence, abscisic acid promoted postharvest blueberry softening by regulating cell wall metabolism and phytohormone accumulation while nordihydroguaiaretic acid delayed abscisic acid-induced postharvest blueberry softening.