

Comparative transcriptome analysis of genes involved in volatile compound synthesis in blueberries (*Vaccinium virgatum*) during postharvest storage

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Abstract

Transcriptional regulation of aroma formation genes during postharvest storage remains poorly understood in the blueberry. In order to have a better understanding of the transcriptional regulation processes that occur in rabbiteye blueberry during storage and their effect on the volatile composition change, we performed volatile metabolite profiling and transcriptomic analysis. Our study reveals that during postharvest storage, 'Garden blue' blueberry volatile composition changed by regulating several secondary metabolic pathways, in particular, by stimulating the expression of pyruvate decarboxylase (PDC) genes, resulting in a high production of ethyl acetate. Postharvest storage also modulated some terpene synthase (TPS) genes associated with linalool production. The concentration of C6 aldehydes and alcohols decreased during the postharvest storage accompanied by lower lipoxygenase (LOX) gene expression. These findings illustrate the molecular and biochemical mechanisms that occur in blueberry during the postharvest storage period, especially with regard to volatile composition changes.