

# Enhancement of table grape flavor by postharvest application of monoterpenes in modified atmosphere

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## Abstract

Consumers expect ready-to-eat grapes to have excellent quality and flavor. In practice, most table grape cultivars have a neutral flavor relying mainly on the combination of sugar and acidity due to limited levels of volatiles that impart the unique aromas. This study investigated the possibility of improving grape flavor by incubating the berries in monoterpene-enriched modified atmosphere. The berries were sanitized by dipping in ethanol and packaged in trays sealed with plastic films of different perforation levels. The optimal conditions selected for further study were one micro-perforation per package containing 250 g berries and storage at 5 °C for 2 weeks. To test the possibility of improving grape flavor during storage, berries of the cultivars Flame Seedless, Adominique, 4111 and Crimson Seedless were stored in the presence of the monoterpenes linalool or geraniol. After two weeks of storage in the presence of linalool, it accumulated in the berries to levels of 551, 704 and 3273  $\mu\text{g kg}^{-1}$  in Adominique, 4111 and Crimson Seedless, respectively. Application of linalool or geraniol resulted in appearance of many other monoterpenes, probably by the action of endogenous enzymes. Organoleptic preference assays indicated that berries of Adominique and 4111 stored in the presence of linalool were favored over the control berries. Overall, the results demonstrate the feasibility of using monoterpenes to enhance berry flavor during storage.