

Title Pre and postharvest treatment for enhancing shelf life and quality in sweet cherry (*Prunus avium* L.)

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Abstract

Sweet cherries have a short postharvest shelf life. The effects of preharvest application of an enhanced freshness formulation (EFF) and postharvest treatments of hexanal and 1-MCP, independently and in combination, on quality parameters and shelf life of sweet cherries were investigated. Sweet cherries sprayed with EFF had higher colour values, brightness and firmness than unsprayed sweet cherries, even after 30 days of postharvest storage at 4°C in air. The EFF sprayed sweet cherries treated postharvest with hexanal plus 1-MCP had the highest red colour and brightness at the end of the 30-day storage period. However, EFF treated sweet cherries exposed to 1-MCP had slightly higher firmness. The levels of anthocyanins and phenolics in EFF-sprayed sweet cherries exposed to hexanal and 1-MCP were enhanced or maintained during storage. Moreover, such a combined exposure to hexanal vapour and 1-MCP increased the antioxidant enzyme activities. However, postharvest treatments did not inhibit phospholipase D activity during 30 days of storage. The results suggest that a preharvest application of EFF combined with a postharvest treatment of hexanal and 1-MCP may enhance the quality and shelf life of sweet cherries.