

Effects of high CO₂ on the quality and antioxidant capacity of postharvest blueberries (*Vaccinium* spp.)

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Abstract

Blueberries have a high commercial value on the international market but deteriorate rapidly after harvest, which is caused by high temperature and humidity. In the present work, the effects of high CO₂ (25%) were evaluated at 0 °C for 35 days on the quality and Antioxidant capacity (AC) of blueberries (*Vaccinium* spp.). The results indicated that 25% CO₂ treatment significantly delayed the respiration rate and preserved the aroma compounds. Meanwhile, the levels of aldehydes and limonene were enhanced, but esters and ethanol contents were decreased by 25% CO₂-treated. In addition, the activity of the enzymes (Peroxidase (POD), Catalase (CAT) and Superoxide dismutase (SOD)) was promoted, while 25% CO₂-treated inhibited Ascorbate peroxidase (APX) activity. Simultaneously, 25% CO₂ increased the accumulation of antioxidants (Total phenolic [TPC], flavonoid, Ascorbic acid [AsA] and Glutathione [GSH]), and the free radical-scavenging capacity (hydroxyl (·OH) and 1, 1-Diphenyl-2-picrylhydrazyl (DPPH)) was also enhanced. This study showed that high CO₂ could maintain the quality of blueberries by inhibiting respiration as well as maintaining the aroma and AC.