

Abstract

The effects of superatmospheric oxygen levels on anthocyanins, phenolics, antioxidant activity and fruit quality of blueberries (*Vaccinium corymbosum* L.) and strawberries (*Fragaria x ananassa* Duch.) during storage at 5°C were investigated. High oxygen treatment increased the levels of total anthocyanins, total phenolics as well as several individual flavonoid compounds during the first 21 days of storage for blueberries and first 7 days of storage for strawberries. Antioxidant activity, measured as oxygen radical absorbance capacity or ORAC, also increased in these fruit during the same period after exposure of the fruit to superatmospheric oxygen concentrations. However, these effects diminished with prolonged storage duration. No significant differences in total anthocyanins, total phenolics, ORAC values or individual flavonoid compounds were observed between high oxygen and air-treated fruit during the later part of storage. Little differences were also found in titratable acidity, total soluble solids or surface color among the fruits treated with various concentrations of oxygen throughout the storage period. These results suggest that high oxygen treatments may improve the antioxidant activities of blueberry and strawberry fruits during the initial stage of storage, but no significant advantages in fruit quality may be attained by exposure of these fruits to high oxygen atmospheres over long-term periods.