

Title Antioxidant capacity, phenolics, and anthocyanins in blueberry fruit as affected by high oxygen storage atmosphere

Author C.Y. Wang and Y. Zheng

Citation Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.

Keyword blueberry; antioxidant; phenolic

Abstract

Antioxidants have been shown to scavenge potentially harmful free radicals and have been suggested to play a role in the prevention of cancer, heart failure, and other diseases. In particular, blueberry fruit (*Vaccinium corymbosum* L. cv. Duke) has been shown to contain high antioxidant levels. Our objective was to determine the effect of high oxygen treatment on total phenolic, total anthocyanin, individual phenolic compounds and antioxidant capacity (measured as oxygen radical absorbance capacity, ORAC) in blueberries. Freshly harvested blueberries were placed in jars ventilated continuously with air or with 40, 60, 80 or 100% O₂ at 5 °C for up to 35 d. Samples were taken initially and at 7 d intervals during storage. While the quality parameters of titratable acidity, total soluble solids and surface color were only slightly affected by the super atmospheric O₂ treatments, the antioxidant levels were markedly increased by 60-100% O₂ treatments as compared with 40% O₂ treatments as compared with 40% O₂ treatment or air control during 35 d of storage. Elevated O₂ between 60-100% also promoted the increases of total phenolics and total anthocyanins as well as the individual phenolic compounds analyzed by HPLC. Fruit treated with O₂ concentrations at 60% or higher also exhibited significantly less decay. Data obtained in this study suggest that high oxygen treatments may improve the antioxidant capacity of blueberry fruit. Furthermore, antioxidant capacity may be correlated with total phenolic and anthocyanin contents in blueberries.