

Title Effects of refrigerated storage and processing technologies on the bioactive compounds and antioxidant capacities of ‘Marion’ and ‘Evergreen’ blackberries

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Citation LWT - Food Science and Technology, Volume 43, Issue 8, October 2010, Pages 1253-1264

Keywords Blackberries; Bioactive compounds; Antioxidant capacities; Refrigeration; Freezing; Drying; Canning; Jamming; Processing; Storage

Abstract

The effects of refrigerated storage at 2 °C and 95% RH and processing treatments on the bioactive compounds and antioxidant capacities of ‘Marion’ and ‘Evergreen’ blackberries were investigated. During refrigerated storage, total phenolics (TPC), total monomeric anthocyanins (ACY), and radical scavenging activity (RSA) fluctuated in ‘Marion’, but TPC and ACY continuously declined in ‘Evergreen’. Oxygen radical absorbance capacity (ORAC) and ferric reducing antioxidant power (FRAP) decreased by 20% and increased by 19% in ‘Evergreen’, respectively after 7-d refrigerated storage, while no changes ($P > 0.05$) in ‘Marion’ were observed. Compared with frozen samples, freeze-dried ‘Evergreen’ had higher TPC (21%), ACY (5.5%), and RSA (14%), while hot-air dried “Marion” had lower ACY (56%), ORAC (37%), and FRAP (27%) and hot-air dried ‘Evergreen’ had lower TPC (37%), ACY (84%), and RSA (13%). ORAC and FRAP in canned ‘Marion’ was 21–61% lower than that of frozen samples. Jam also had lower TPC and ACY (67–84%), RSA (~80%), and ORAC and FRAP (65–77%) values than frozen ones in both varieties ($P < 0.05$). The 6-mo post-process room storage had little effect on the bioactive compounds of frozen and freeze dried samples, but reduced ACY in hot-air dried, canned, and jam samples, and antioxidant capacities of all samples ($P < 0.05$).