

Title Screening varietal selections of fruits and vegetables for antioxidant capacity
Author L.R. Howard
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 antioxidant; fruit; vegetable

Abstract

Fruits and vegetables contain a wide array of compounds that possess antioxidant capacity. Since oxidative damage has been associated with the development of many chronic diseases, much attention had focused on measuring the antioxidant capacity of fruits and vegetables. Unfortunately, little information is available on how advanced breeding lines and commercial varieties of fruits and vegetables vary in antioxidant capacity. The objective of this research was to screen advanced breeding lines and commercial varieties of blueberries and spinach grown over several seasons for antioxidant capacity and total phenolics. Advanced breeding lines and commercial varieties of blueberries and spinach were harvested at commercial maturity over two growing seasons and stored at -20°C until analysis. Aqueous methanolic extracts (60:37:3, methanol-water-formic acid) of spinach and blueberry samples were analyzed for total phenolics (TPH) using the Folin Ciocalteu assay and Oxygen Radical Absorbing Capacity (ORAC). Spinach samples were also analyzed for flavonoid content by HPLC, and blueberry samples analyzed for total anthocyanins (ACY), as well as berry weight (BW). ORAC of blueberries was affected more by genotype than by growing season. ORAC, TPH, ACY and BW of advanced breeding selections and commercial varieties of blueberries varied up to 2.5, 2.6, 4.4 and 3.7-fold, respectively. ORAC correlated better with TPH than with ACY, while BW correlated inversely with ORAC, ORAC of spinach was significantly affected by genotype, growing season and maturation. ORAC, TPHG and FLA of advanced breeding selections and commercial varieties of spinach varied up to 2.3, 2.1 and 2.8-fold, respectively, with linear relationships observed between ORAC, and levels of TPH and FLA. Our results show that advanced breeding lines and commercial varieties of blueberries and spinach vary significantly in antioxidant capacity indicating excellent potential for genetic manipulation. Breeding lines should be evaluated over several growing seasons in order to identify antioxidant rich-germplasm.