

Title Sugar and organic acid profile of blackberry cultivars grown in Northwest Pacific region and their comparison with advanced thornless selections

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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 blackberry; sugar; organic acid

Abstract

Blackberries are popular fruits because of their pleasant flavor and health benefits for hundreds of years. Sugars and organic acids are major components of blackberries. They not only influence the soluble solids ($^{\circ}$ Brix) and titratable acidity (TA), the key parameters in the blackberry processing but are also important in the overall flavor perception. 'Marion' blackberries (*Rubus* sp. L) are the predominant cultivar planted since the early 1980's. With good ratio of sugar and acids, 'Marion' is highly preferred by consumers. Study was stimulated to breed new thornless blackberries with 'Marion' flavor. The purpose of this study is to characterize the contents of sugar and organic acids of 17 representative blackberry varieties planted in the Pacific Northwest using high performance liquid chromatography (HPLC). Sugar profile was analyzed using HPLC with LICHROSORB NH₂ column while the organic acid was purified with C18 SPE cartridge and analyzed on AMINEX Ion exclusion HPX-87H column. Analysis of nonvolatile acids and sugars were conducted on 28 samples of 17 blackberry varieties from the year 2001 and 2002. The glucose level ranged from 2.26 to 4.58 with a mean of 3.53 g/100g. The fructose level ranged from 2.26 to 4.03 with a mean of 3.30 g/100g. The overall ratio of glucose: fructose is from 1.00 to 1.22 with a mean of 1.07. The citric and malic acid are the predominate acids found in blackberries. The citric acid levels were highly variable from 0.43 to 2.72 with a mean of 1.32 g/100g. The malic acid ranged from 0.26 to 0.78 with a mean of 0.44 g/100g. The results reflect the genetic difference of the blackberry varieties. These quality attributes are important for blackberry breeders to develop advanced thornless blackberry cultivars while ensuring attractive flavor of the product.