Title Antioxidant capacity versus total phenolic, total flavonoid and anthocyanin content of endemic azorean *Vaccinium cymindraceum*: comparison with commercial bilberry and highbush blueberry

Author E.C. Lima, J.B. Baptista and L.M. Albuquerque

Citation ISHS Acta Horticulturae 810:901-910. 2009.

Keyword berries; antiradical activity; polyphenolics; plant pigments; RP-HPLC

Abstract

Samples of the endemic *Vaccinium cylindraceum* (Vc) from four different Azorean Islands – S. Miguel (SM), Terceira (T), Pico (P) and Flores (F) – and two commercial*Vaccinium* species from the USA (*V. corymbosum* - VcoUSA) and Germany (*V. myrtillus* - VmG) were compared for antiradical activity (free radical scavenging activity - FRSA), total phenolic and total flavonoid content, and anthocyanin profiles. Among the *Vaccinium* species, the greatest FRSA, after 30 min of reaction time, was observed for VcF (67.7%) followed by VcP (59.6%), VcSM (51.5%) and VcT (47.5%), and the lowest were found in VmG (29.6%) and VcoUSA (13.3%), showing 2-4 times lower FRSA as compared with Vc samples. The highest content of total phenolics, expressed in mg of gallic acid equivalents (GAE) per g of fruit material dry weight (dw), and total flavonoids expressed in quercetin equivalents (value in the parentheses), was observed in VcF followed by VcP and VcSM with 39.1 (17.0), 33.3 (15.2) and 30.1 (14.4) mg, respectively, and the lowest content were found in VmG, VcoUSA and VcT with 29.7 (13.5), 25.6 (7.4) and 21.7 (10.4) mg, respectively. The average of total phenolics in Vc samples (31.1 mg GAE/g dw) is slightly higher as compared with VmG and VcoUSA. The anthocyanin content of Vc samples and commercial *Vaccinium* species were compared by RP-HPLC/DAD and also confirmed by GC/MS analysis. The Vc samples show similar anthocyanin profiles, but richer in individual components as compared with VmG and VcoUSA. The characteristic colour and high anthocyanin content of the Vc berries combined with their natural abundance may have some positive impact in Azorean economy, for use as food natural pigments and/or health food supplements.