

ASSESSMENT OF THE ANTHOCYANIN VARIATION IN BULGARIAN BILBERRY (*VACCINIUM MYRTILLUS* L.) AND LINGONBERRY (*VACCINIUM VITIS-IDAEA* L.)

IVAYLA DINCHEVA & ILIAN BADJAKOV

Agro BioInstitute, Plant Genetic Resources Group, Sofia, Bulgaria

ABSTRACT

Wild *Vaccinium* spp. berries are considered a valuable source of antioxidants, mainly belonging to phenolic compounds, provide significant protection against the development and progression of many chronic pathological conditions including cancer, diabetes, osteoporosis, cardio-vascular and neurodegenerative diseases. High-performance liquid chromatography-electro spray ionization-high resolution mass spectrometry operated in the tandem mode (LC-ESI/HRMS/MS) approach was applied to evaluate and compare the anthocyanin profiles of bilberry (*Vaccinium myrtillus* L.) and lingonberry (*Vaccinium vitis-idaea* L.) growing in direct sun light (open) and under closed forest cover (shadow) natural habitats in Bulgaria (altitude ranged from 1460 to 2060 m above sea level). The anthocyanidins in bilberry (average $\pm$ SD; $n = 60$) were mainly combined to glucosides ($42 \pm 10\%$) followed by galactosides ($34 \pm 5\%$) and arabinosides ($24 \pm 3\%$) (II). Instead, anthocyanidin glucosides formed the lowest relative proportion ($\sim 5\%$) in lingonberry. For the galactosides and arabinosides, the respective values were $\sim 75\%$ and $\sim 20\%$. The total phenolics, the total anthocyanin content and the total antioxidant capacity were estimated by Folin-Ciocalteu method, pH-differential assay and FRAP, respectively. Higher amounts of total phenolics and total anthocyanins were detected in samples harvested from localities exposed to the sun in comparison with berries grown in shadow. Also, it could be seen that total anthocyanins amount slightly increase with the increase of altitude.

KEYWORDS: Bilberry, Lingonberry, Anthocyanins, Antioxidants, LC-ESI-HR-MS/MS

Original Article

Received: May 18, 2016; **Accepted:** Jun 02, 2016; **Published:** Jun 10, 2016; **Paper Id.:** IJMPSJUN201605