

Comparison of the polyphenolic profiles of berries from different *Vaccinium* species in relation to their nutraceutical value

C. Ancillotti¹; L. Ciofi¹; U. Chiuminatto²; J. Stahl-Zeng²; R. Bartoletti³; M. Del Bubba¹

¹Department of Chemistry, University of Florence, Via della Lastruccia 3 - 50019 Sesto Fiorentino, Florence, Italy

²Sciex Europe, Landwehrstraße 54, 64293 Darmstadt, Germany

³Department of Experimental and Clinical Medicine, University of Florence, Largo Brambilla 3 - 50134, Florence, Italy

Keywords: Metabolomic, Polyphenolic profile, *Vaccinium* species, Bilberry

Vaccinium myrtillus is a wild berry native to mountain areas of Northern and Central Europe, largely used in transformed products, as well as dietary supplements. The interest in this fruits is due to its high content of phenolic compounds, well-known for their health-protecting attributes, as anti-inflammatory, anti-hypertensive, anti-microbial and anti-cancer agents. Accordingly, many researches focusing on the characterization of selected phenolics in *V. myrtillus* berries have been published in recent years, evidencing that the most abundant class of polyphenols in *V. myrtillus* berries are anthocyanins.

The composition of phenolic compounds of *V. myrtillus* berries has been found different from the one of other *Vaccinium* species – such as the widely commercialized *V. corymbosum* – indicating the potential use of phenolic profile for the chemotaxonomic discrimination of *V. myrtillus* fruits from other cultivated and wild species.

This aspect is very important since *V. myrtillus* shows a nutraceutical value higher than that of *V. corymbosum* and the two species are not well-distinguished by consumers. However, to the best of our knowledge, no comprehensive investigation of the polyphenolic profiles of these *Vaccinium* species has been published. Moreover, the presence of a different *Vaccinium* species, namely *V. gaultherioides* (for which no data regarding the primary and secondary metabolic profiles are reported in literature) has been recently observed in the zones traditionally populated by *V. myrtillus*, such as Tuscan Apennines. In this regard, it should be underlined that the phenotype of *V. gaultherioides* berry is very similar to the one of *V. myrtillus* and the two berries can be confused by the harvesters involved in the production chain of transformed bilberry.

For this reason, the polyphenolic profile of *V. myrtillus*, *V. corymbosum* and *V. gaultherioides* berries have been comparatively investigated using liquid chromatography coupled with non-target tandem quadrupole-time of flight mass spectrometric approaches for obtaining comprehensive metabolomic profiles of polyphenolic fractions.

The results showed that the three species exhibit very different quali-quantitative profile of phenolic substances, can be discriminated according to their polyphenolic compositions and can be successfully used for health purposes according to their specific characteristics.

Acknowledgment: This research was funded by “ PRAF 2012-2015, Misura 1.2. e)” of Regione Toscana.