

Polyphenolic profiles of berries from different *Vaccinium* species by liquid chromatography coupled with tandem mass spectrometry

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Vaccinium myrtillus is a spontaneous plant species native to mountain areas of Northern and Central Europe, widely diffused also in Italian Alps and Apennines. The fruit of this species has a large commercial importance, due to its consume, mainly in transformed products, as well as for the preparation of dietary supplements. The interest in this berry species is due to its high content of phenolic compounds, which are plant secondary metabolites, 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 phenolic compounds in *V. myrtillus* berries from different European countries (e.g. Italy, Slovenia, Serbia, Sweden and Finland) have been published in recent years, evidencing that the most abundant class of polyphenols in *V. myrtillus* berries are anthocyanins [1].

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 compositions of *V. myrtillus*, *V. corymbosum* and *V. gaultherioides* berries have been comparatively investigated using liquid chromatography coupled with mass spectrometry. Target and non-target tandem quadrupole-time of flight mass spectrometric approaches have been used for obtaining comprehensive metabolomic profiles of polyphenolic fractions, following the same metabolomic approach previously adopted in our group for wild strawberry [2].

The results showed that the three species exhibit very different quali-quantitative profile of phenolic substances and can be discriminated according to their polyphenolic compositions.

Acknowledgments: This research was co-funded by the Fondazione Cassa di Risparmio di Pistoia e Pescia.

References:

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