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Liquid chromatographic tandem mass spectrometric analysis of polyphenolic compounds in Italian spontaneous and cultivated berries: target and non-target approaches for their comparison and valorisation

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Berries of different *Vaccinium* species are widely considered important sources of polyphenolic compounds, especially anthocyanidin, in the human diet, thus providing interesting health-protecting attributes [1]. In fact, these compounds are well-known for their anti-inflammatory, antihypertensive, anti-microbial and anti-cancer properties [2].

Among *Vaccinium* berries, *V. myrtillus* (i.e the bilberry) is a wild species native to mountain areas of Northern and Central Europe, widely diffused also in Italian Alps and Apennines. In these zones the increasing presence of a different *Vaccinium* species, namely *V. uliginosum* subsp. *gaultherioides* (locally named “false bilberry”) has been recently observed. The cultivation of *V. corymbosum* berries (i.e. the blueberry) is also widespread in the same area. Many studies focusing on the determination of selected anthocyanins and less frequently of other phenolic compounds, were carried out on bilberries from different European areas, as well as on various blueberry cultivars [3,4]. Nevertheless, no comprehensive investigation of the polyphenolic profiles of these *Vaccinium* species has been published to date, whereas for “false bilberry” the first information concerning its polyphenolic composition has been recently obtained by our team [5]. In this lecture the results of an in-depth comparison of the polyphenolic metabolomes of the three aforementioned *Vaccinium* species are presented. Data were obtained by coupling liquid chromatography with advanced quadrupole-linear trap-quadrupole, triple quadrupole and quadrupole-time of flight mass analysers, and were used in a Principal Component Analysis, achieving the clear separation of object scores in the principal component cartesian plane. Among the most interesting results, a general prevalence of anthocyanins in bilberry than in “false bilberry” and blueberry was highlighted, with the exceptions of (i) malvidin-3-glucoside and xyloside derivatives, and (ii) acylated anthocyanins, respectively.

References:

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