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ABSTRACT BOOK

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R8. "FOOD PROFILING": NEW HORIZONS OF HIGH-RESOLUTION MASS SPECTROMETRY APPLICATION

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Among the European countries, Italy owns one of the highest numbers of food products labelled with brands of protected geographical indications and traditional specialities. A traceability system, or rather the ability to track the production chain, from processing to distribution, and locate the food origin, becomes essential to protect people from food frauds. High resolution mass spectrometry (QOrbitrap) can help us to achieve the necessary results. Practical applications are the combined use of sugars and simple phenols analyses for the botanical traceability of commercial tannins, and of vitamins and amino acids for the characterisation of grapes, musts and fermentation adjuncts. High resolution mass spectrometry is permitted also to characterize simple phenols and glycosylated phenols, using targeted and untargeted approaches, in red wines (Primitivo di Manduria and Negroamaro). With this approach we could also characterize vanilla, cocoa, green coffee and tannins.

In this work we will also present in more detail a targeted and untargeted method for alkaloid analyses. On-line concentration/purification was performed with a SolEx HRP spray ionization source, while the chromatographic separation with a Raptor Biphenyl analytical column. The mass spectrometer was operated in positive ion mode using the following parameters: sheath gas flow rate set at 30 arbitrary units; aux gas flow rate at 10 arbitrary units; spray voltage at 3.5 kV; capillary temperature at 330°C; aux gas heater temperature at 300°C; Mass spectra were acquired in full MS-data dependent MS/MS analysis (full MS-dd MS/MS) at mass resolving power of 140.000.

The method was applied to a broad characterization of alpine pasture herbs (N=67), herbal mixes (48) representative of the natural daily intake of cows (8) grazing on alpine pastures (2) in north-eastern Italy, and milks (48) produced by the same cows. The aim was to evaluate the possible transfer of alkaloids from herb to milk in order to differentiate different mountain origins, or mountain products from lowland ones. 35 alks were identified and quantified in reference to the pure analytical standards, 48 were confirmed for chromatographic retention time and fragmentation profile analyzing the extracts of herbs already well documented in literature, and other 200 alks were identified using literature information regarding exact mass and isotopic pattern.