From apple to cider: biochemical characterization and biological activity of an autochthonous cultivar grown in Aosta Valley

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Ravèntze is an ancient apple cultivar typically grown in Aosta Valley mountain areas technologically suited to the cider making. Ancient apple cultivars have so far been largely unexplored and might represent an important source of phenolic compounds due to the characteristics of the environment where they grown. Polyphenols play important roles in the cider quality as they are related to the color, bitterness and astringency; this balance defines the overall mouthfeel of the beverage. The phenolic and aroma profile of apples and apple products is influenced by several factors: variety, climate, maturity, storage and processing.

The aim of this study was to characterize, for the first time, Ravèntze apple and his ciders and to evaluate the influence of cider making and alcoholic fermentation on phenolic profile and aroma composition of these final products. Total polyphenol content was analysed by Folin-Ciocalteu method, phenolic profile by HPLC-MS and aroma composition by SPME/GC-MS. Biological activity was also investigated using antiradical power and system biology approach on apple extracts, must and ciders.

Results obtained from Ravèntze cultivar were compared with those from other apple varieties harvested in our region. This study suggests that ancient varieties are an important source of antioxidant compounds and represents the first characterization of Italian ciders from the point of view of aroma and phenolic composition.

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