CZE-ESI/QTOF-MS analysis of organic acids in red Vranec wines from different locations

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Organic acids are important compounds influencing the stability, flavor, aroma and color of grapes and wine and contributing to the pH, chemical and microbiological stability of the wines. In this study, capillary zone electrophoresis hyphenated to electrospray ionization/quadrupole-time-of-flight-mass spectrometry (CZE-ESI/QTOF-MS) was applied for analysis of organic acids (lactic acid, succinic acid, malic acid, tartaric acid, shikimic acid and citric acid) in red wines [1]. All wines were produced from Vranec *V. vinifera* grapes, grown in different wine areas in Republic of Macedonia, applying same winemaking technology. Results showed that Vranec wines produced under controlled winemaking protocols presented relatively high content of tartaric, citric, lactic, malic and succinic acids compared to commercial Macedonian wines [2], while shikimic acid was present in a significantly low concentration. In fact, high concentration of tartaric acid in Vranec wines is nevertheless, typical for this variety, influencing higher chemical stability and colour, and giving soft freshens of the wines. Thus, tartaric acid ranged from 14.03 to 33.29 mM, followed by malic acid (range: 0.45 – 30.3 mM). Lactic acid was formed during the spontaneous malolactic fermentation, ranging between 1.24 to 6.74 mM. The concentrations of the naturally present citric acid in the samples (ranging from 1.36 to 4.66 mM) were in accordance to the official regulations, *i.e.*, not higher than 1 g/L (5.24 mM). These results here provide a clear view for the organic acids profile in Vranec wines produced from various wine areas and they are useful for winemakers to manage and/or modify the winemaking protocols for this variety in order to obtain stable and high quality wines for the global market.

Keywords: organic acids, Vranec wines, CZE-ESI/QTOF-MS.

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