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LC-ESI-MS/MS characterization of phenolic compounds, selenium species and vitamins in red winemaking

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Red winemaking has a very long tradition in Republic of N. Macedonia. The dominant red variety is Vranec, followed by Merlot, Cabernet Sauvignon and Kratošija. Kratošija is as an old ancient Balkan variety, grown at the Macedonian vineyards in the period when wine was produced in amphora. In the period of Yugoslavia, specifically in the 1950s, Kratošija was replaced with Vranec variety and nowadays, Kratošija is found in a small vineyards alone, and mainly in a combination with the Vranec vines[1]. Since there are limited published studies for Kratošija, the aim of this work was application of HPLC-ESI-MS/MS technique for chemical characterization of Kratošija wines, including identification, quantification and semi-quantification of various compounds such as phenolic compounds (flavonoids and nonflavonoids), selenium species and vitamins. Moreover, Kratošija wines were produced by inoculation of two commercial yeasts (Zymaflore™ Xpure (Laffort) and Lalvin ICV D80 (Lallemand)), in order to study the effect of the yeast on the content of the determined compounds. It was noticed that yeast affected the phenolic profile of wines, probably as a result of the different fermentation rates. Thus, flavan-3-ols, antohocyanins monoglycosides and antohocyanins acetylglycosides were present in a higher content in the wine fermented with the Lalvin ICV D80 yeast. Flavones chrysin and luteolin, flavanone naringenin, flavanonol taxifolin, stilbenoid ε-viniferin, as well as selenium species (selenomethionine, selenomethionine oxide and selenium methylselenoselenocysteine) and vitamins (panthotenic acid (B5), thiamine (B1) and nicotinic acid (B3)) were reported for the first time in Macedonian red wine.

Keywords: Polyphenols, selenium species, vitamins, yeast fermentation, red winemaking, Kratošija, HPLC-ESI-MS/MS.

References

1. Ivanova-Petropulos, V., Biesaga, M., Bogeva, E., Pobozy, E., Ailer S. Targeted characterization of flavonoids and nonflavonoids in Kratošija red wine with HPLC-ESI-MS/MS technique, *Food Anal Methods*, 2025, accepted for publication.

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