

**DETERMINATION OF ORGANIC SELENIUM COMPOUNDS IN KRATOŠIJA WINE
APPLYING HPLC-ESI-MS/MS** Violeta Ivanova-Petropulos^{1*}, Elena Bogeva¹, Aleksandra Sentkowska²

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Abstract

Organic selenium compounds, specifically selenomethionine (SeMet) and Se-methylselenocysteine (MeSeCys) are the major selenium-containing amino acids in dietary sources. SeMet is a bioactive form of selenium with antioxidant properties, playing a significant role in cardiovascular health, autoimmune conditions, and the prevention of certain cancers, while Se-methylselenocysteine is a naturally occurring organoselenium compound found in certain plants and is known for its high peroral bioavailability in humans. Selenomethionine oxide (SeMetO) is the oxidized form of the amino acid selenomethionine and possesses a protective mechanism against oxidative stress. In this study, SeMet, SeMetO and MeSeCys were determined in Kratošija wines by applying a rapid and sensitive HPLC-ESI-MS/MS technique. The HPLC method was optimized and validated through the determination of slope, R² (correlation coefficient), LOD (limit of detection) and LOQ (limit of quantification). Wines were produced by inoculating two commercial *Saccharomyces cerevisiae* yeasts: Zymaflore™ Xpure (Laffort) and Lalvin ICV D80 (Lallemand) in order to study the effect of yeasts on the selenium compounds content in the final wines. It was observed that wine fermented with Lalvin ICV D80 contained higher amounts of SeMet and MeSeCys, probably due to a better ability of the yeast to transform the inorganic selenium into organic selenium compounds (especially selenomethionine). Both wines contained high levels of SeMetO, produced as a result of the oxidation of SeMet during wine fermentation and/or storage. The results obtained are preliminary and provide a basis for future studies using various varieties and vinification processes.

Key words: *organic selenium compounds, SeMet, SeMetO, MeSeCys, HPLC-ESI-MS/MS, Kratošija wine.*