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Evaluation of mineral and heavy metal contents in Croatian blackberry wines

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The mineral and heavy metal contents in 17 commercially available Croatian blackberry wines were determined by FAAS/FAES and GFAAS. The concentrations of potassium, sodium, calcium, magnesium, iron, copper, manganese, zinc, cobalt, chromium, and cadmium were between (in mg/l) 924 – 1507, 11.81 – 120.10, 86.4 – 457.1, 183.4 – 381.2, 0.082 – 6.273, 0.058 – 0.767, 1.47 – 11.53, 0.247 – 6.645, and (in µg/l) 3.21 – 11.89, 10.08 – 15.88, and 0.55 – 9.9, respectively. A negative correlation was found between the concentrations of macro (Mg) and micro (Fe) minerals. Furthermore, positive correlations were observed between the concentrations of manganese, cadmium, and cobalt that indicated the origin of

source. Multivariate analyses (PCA/LDA) showed that the distinct patterns of the metal contents in blackberry wines could be identified with quite satisfactory accuracy (sensitivity and specificity) with the subregion of the origin. In regard to the results obtained, Croatian blackberry wines could be considered as safe from the health risk point of view and as a good additional source of the essential nutrients investigated such as manganese, magnesium, and potassium.

Keywords:

blackberry wine; minerals; heavy metal; multivariate analyses; PCA; LDA

[fulltext]