

THE IMPACT OF THE YEAR OF HARVESTING, DRYING AND LYOPHILIZATION ON THE MINERAL PROFILE OF GRAPE POMACE

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Abstract

Wine pomace is characterized by relatively high mineral content and provides an interesting alternative for foodstuff fortification. Therefore the aim of this study was to determine the mineral profile of dried and lyophilized grape pomace from three different cultivars of *Vitis vinifera* sp.

We investigated grape pomace from Merlot, Silvaner and Pinot Gris from Slovakia, harvested in years 2018 and 2019 as a possible sources for animal and human nutrition. Mineral profile analysis was performed by using the high resolution continuum source atomic absorption spectrometer contraAA 700 for: calcium, phosphorus, magnesium, sodium, potassium, zinc, copper, iron and manganese. In order to calculate basic statistic characteristics, determine significance of differences, and compare the results analysis of variance, one-way ANOVA was performed, using a $P < 0.05$.

The harvesting year strongly affected the mineral content of dried pomaces. Significant ($P < 0.05$) differences in magnesium, sodium, potassium, iron, and manganese concentration were detected in all cultivars. Despite several significant differences ($P < 0.05$) in the mineral profile of some cultivars, the effect of the harvest year was less pronounced in the case of lyophilized samples. There were only few differences ($P < 0.05$) in minerals concentration of dried and lyophilized pomaces, in relation to the method used, mainly in year 2019 and cultivar Merlot. However, the difference between the two drying methods was not confirmed ($P > 0.05$). The phosphorus content of the analyzed pomaces was not affected either by the year of harvesting or drying or lyophilization. These results indicate a significant impact of the harvesting year and grape variety on the mineral profile of grape by-products. Consequently, their composition should be determined on a case-by-case basis.

Overall, it can be concluded that the use of grape pomace as a source of minerals in food industry is promising, but further research is required.

Key words: Grape pomace, Wine by-products, Mineral profile, Nutrition, Additives, Fortification, Lyophilization.