

CHEMICAL AND PHENOLIC PROFILE OF STANUŠINA RED WINES DETERMINED BY HPLC-DAD

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Stanušina is a red grape variety indigenous of the Republic of N. Macedonia and herein only cultivated, i.e. it is found nowhere else in the world. In this study Stanušina wine was studied for the first time, and the extraction of phenolic compounds during maceration was monitored with the time (3, 6 and 9 days). Spectrophotometric analyses were performed at the following wavelength: 280 nm (total phenols), 420 nm (browning degree), 520 nm and 620 nm (anthocyanins) and 515 nm (antioxidant activity) with a UV-VIS spectrophotometer. In order to determine the general chemical composition of wines, official methods of analysis of wines (OIV 2016) were used and the following parameters were determined: alcohol (OIVMA-AS312-01 A), dry extract (OIV-MA-AS2-03B), specific density (OIV-MA-AS2-01 A), total acidity (OIV-MAAS313–01), volatile acidity (OIV-MA-AS313–02), total SO₂ and free SO₂ [1]. In addition, a total of 19 individual phenolic compounds belonging to the groups of anthocyanins, phenolic acids and flavan-3-ols were identified and quantified by HPLC-DAD [2]. On average, the content of total phenols of Stanušina wines was 795 mg/L and the effect of skin maceration time was highest at day 9. The observed antioxidant activity of wines was 102, 100 and 105 mg/L TE for wines macerated for 3, 6 and 9 days, respectively, and as expected, the total phenols content was well correlated with the antioxidant activity. Among antocyanins, malvidin-3-glucoside and its derivatives were the major compounds, while caftaric acid was the predominant cinnamic acid derivative, followed by catechin, the main flavan-3-ol. The concentration of hydroxycinnamic acids, anthocyanins and (+)-catechin ranged from 454 to 511 mg/L, 113 to 153 mg/L and 139 to 262 mg/L, respectively and peaked at 3rd, 6th and 9th day of maceration, respectively. In general, Stanušina wines presented relatively low levels of anthocyanins, due to the variety characteristics and high levels of hydroxycinnamic acids, such as caftaric and caffeic acids, and high antioxidant activity, confirming that this variety has a high potential for producing typical autochthonous Macedonian red wines.

Keywords: phenolic compounds, maceration, HPLC, spectrophotometry, autochthonous variety, Stanušina.

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References

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