FT-IR ANALYSIS OF SMEDEREVKA WINES PRODUCED WITH HONEY ADDITION BEFORE FERMENTATION

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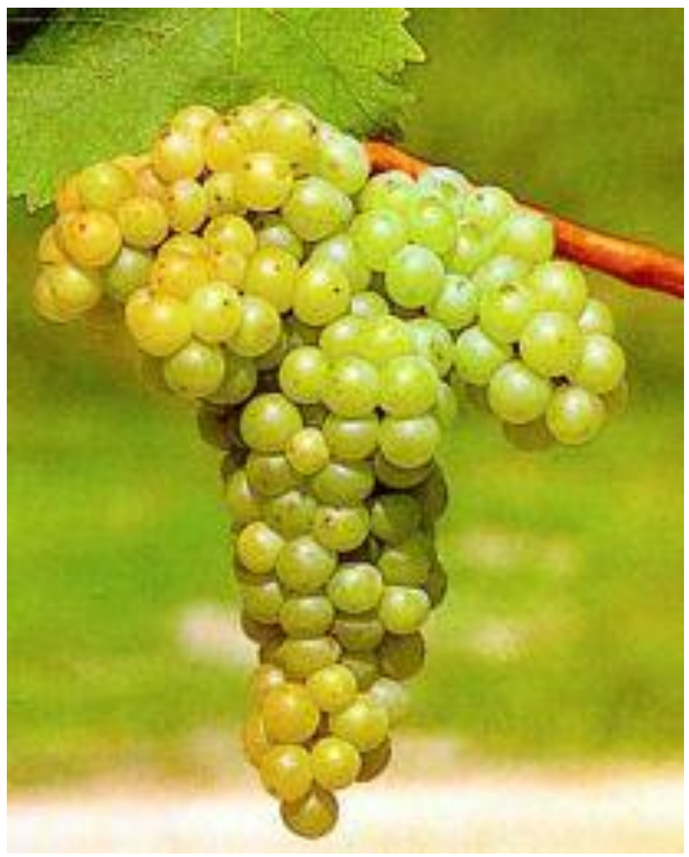
INTRODUCTION

Smederevka is a Balkan variety grown in Macedonia, Serbia and Bulgaria, as well as other parts of the Balkan. It is a leading grape variety for production of white wine in Macedonia, widely spired in the Tikveš wine region, with total area of 5 389 ha. FT-IR was applied for analysis chemical parameters in Smderevka wines produced with addition of 20 and 40 g/L honey before fermentation, as well as control wine.

Honey was produced by the Macedonian bee Apis mellifera macedonica.



MATERIALS AND METHODS

Wine samples: Smederevka wines from Tikveš wine region

Winemaking: White grapes from Smederevka variety (*Vitis Vinifera* L.) were crushed, the grape juice was separated from the pomace, transferred to 3 tanks for fermentation, followed by addition of SO_2 and yeast.

Smederevka C– control wine,
Smederevka 20– addition of 20 g/L honey
Smederevka 40– addition of 40 g/L honey.

FT-IR analyses of:

Alcohol, density, glycerol, pH, total acidity, total sugars
Carbohydrates: glucose, fructose and sucrose.
Organic acids: tartaric, lactic, malic, citric and acetic.
Total phenolic content (TPC) and total antioxidant activity (TAA).

RESULTS AND DISCUSSION

Table 1. Basic chemical parameters

Wines/Parameters	Alcohol (%)	Density (g/cm³)	pH	Total acidity (g/L)	Total sugars (g/L)	Glycerol (g/L)	Acetic acid (g/L)
Smederevka-C	12.07±0.05	0.99±0.0002	3.37±0.37	4.27±0.05	3.63±0.31	8.13±0.11	0.41±0.03
Smedrevka-20	13.10±0.0001	0.99±0.0001	3.63±0.05	4.03±0.05	5.27±0.21	8.23±0.05	0.44±0.01
Smederevka-40	13.80±0.0001	0.99±0.0001	3.10±0.00	4.27±0.15	9.10±0.26	9.70±0.1	0.50±0.02

Table 2. Content of carbohydrates, TPC and TAA

Wines/Parameters	Fructose (g/L)	Glucose (g/L)	Sucrose (g/L)	TPC (mg GAE/L)	TAA (% inhib. DPPH)
Smederevka-C	2.30±0.1	2.27±0.11	0.80±0.2	266±10.5	45.05±0.88
Smedrevka-20	2.13±0.23	3.50±0.3	1.47±0.05	248±2.46	45.75±1.29
Smederevka-40	4.30±0.17	4.77±0.31	1.73±0.15	301±9.34	45.86±1.85

Table 3. Content of organic acids

Wines/Parameters	Tartaric acid (g/L)	Citric acid (g/L)	Malic acid (g/L)	Lactic Acid (g/L)
Smederevka-C	2.06±0.09	n.d.	1.43±0.21	n.d.
Smedrevka-20	1.81±0.12	0.18±0.18	1.4±0.11	n.d.
Smederevka-40	1.78±0.07	0.36±9.36	1.40±0.17	n.d

Results are presented ad average ± SD (standard deviation). Abbreviations: C – control wine, 20 – 20 g/L honey, 40 – 40 g/L honey.

CONCLUSION

- ✓ **Wine fermented with 40 g/L honey added before fermentation presented highest content of alcohol, total sugars, glycerol, acetic acid, fructose, glucose, TPC and TAA.**
- ✓ **Tartaric acid was the dominant organic acid in wines, followed by malic and citric acid. Lactic acid was not detected which means that malolactic fermentation did not start spontaneously in the wines.**
- ✓ **Wines presented satisfactory values for alcohol, pH, total acidity and acetic acid, confirming the quality and stability of the wines.**

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