

PHENOLIC PROFILE AND BIOLOGICAL POTENTIAL OF VINIFICATION BYPRODUCTS

Skroza Danijela¹, Generalić Mekinić Ivana¹, Skračić Živko², Tadić Andrea¹, Nadić Antonia¹, Čagalj Martina³, Šimat Vida³

¹Department of Food Technology and Biotechnology, Faculty of Chemistry and Technology, University of Split, R. Boškovića 35, 21000 Split, Croatia; ²Secondary school "Braća Radić" Kaštel Štafilić, Put poljoprivrednika 5, 21217 Kaštel Štafilić – Nehaj, Croatia;

³University Department of Marine Studies, University of Split, R. Boškovića 37, 21000 Split, Croatia

Correspondence: danci@ktf-split.hr



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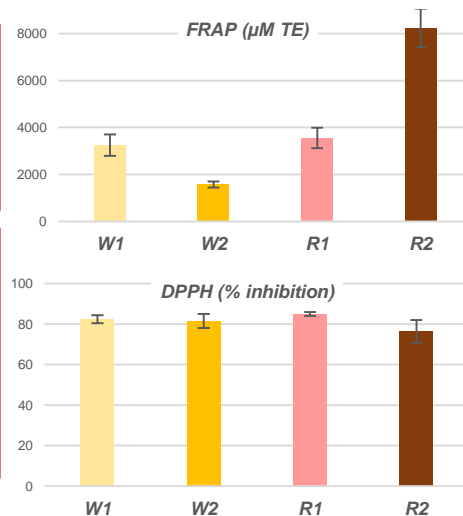
INTRODUCTION

After grapes are processed and vinified, large quantities of valuable by-products such as pomace, skins, seeds and wine lees are generated.

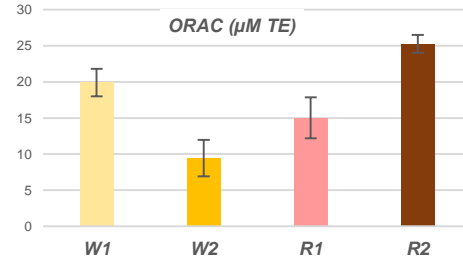
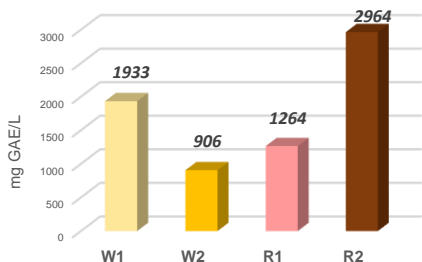
They are all rich in phenolic compounds with numerous beneficial biological properties, especially antioxidant and antimicrobial activity.

SAMPLES

The lees samples were taken during the production of white wine from the *Malvazija dubrovačka* grape variety (one sample was taken before fermentation (W1) and the other after the first racking (W2)), and rosé (R1) and red wine (R2) from the *Plavac mali* grape variety (sampling after the racking). Extracts from wine lees were prepared using an ultrasound bath (1 h, 60 °C, dried material:solvent (50% ethanol) = 1:5).



Phenolic compound (mg/L)	W1	W2	R1	R2
Galic acid	12.2 ± 0.14	5.1 ± 0.18	7.3 ± 0.01	11.5 ± 0.02
Protocatechuic acid	14.4 ± 0.02	3.5 ± 0.13	4.8 ± 0.1	1.2 ± 0.1
Tyrosol	20.1 ± 1.34	21.3 ± 0.97	37.8 ± 0.1	56.6 ± 2
<i>p</i> -hydroxybenzoic acid	64.1 ± 2.18	29.4 ± 0.00	39.9 ± 1.2	89.2 ± 1.1
Catechin hydrate	10.4 ± 0.58	5.2 ± 0.20	4.3 ± 0.04	9.0 ± 0.8
Chlorogenic acid	2.7 ± 0.47	1.0 ± 0.01	1.4 ± 0.04	0.4 ± 0.0
Genistic acid	13.3 ± 0.11	8.2 ± 0.02	10.5 ± 0.3	28.1 ± 0.2
Caffeic acid	2.8 ± 0.02	5.6 ± 0.00	1.5 ± 0.3	3.3 ± 0.0
Syringic acid	7.5 ± 0.40	2.9 ± 0.03	1.8 ± 0.01	8.1 ± 1.2
Epicatechin	20.1 ± 0.65	4.6 ± 0.06	9.5 ± 0.3	32.5 ± 11.7
Epigallocatechin gallate	12.4 ± 0.44	2.9 ± 0.03	6.4 ± 0.1	15.7 ± 0.1
Vanillin	2.8 ± 0.54	1.3 ± 0.27	2.6 ± 0.02	4.7 ± 0.01
<i>p</i> -coumaric acid	0.4 ± 0.07	0.4 ± 0.00	0.7 ± 0.0	0.6 ± 0.2
2,6-dimethoxybenzoic acid	2.8 ± 0.11	1.4 ± 0.10	2.1 ± 0.1	2.5 ± 0.1
Ferulic acid	1.4 ± 0.07	0.4 ± 0.00	0.2 ± 0.01	0.8 ± 0.2
Sinapic acid	1.4 ± 0.00	0.4 ± 0.16	0.5 ± 0.1	6.2 ± 0.2
<i>o</i> -coumaric acid	5.5 ± 0.01	1.3 ± 0.09	7.9 ± 0.1	17.6 ± 0.2
Resveratrol	1.6 ± 0.03	0.8 ± 0.02	0.9 ± 0.04	3.7 ± 0.1
Quercetin	6.5 ± 0.56	10.1 ± 0.02	6.5 ± 0.01	76.5 ± 0.1
Cinnamic acid	4.3 ± 0.21	4.0 ± 0.02	0.2 ± 0.01	0.3 ± 0.02
Naringenin	1.1 ± 1.26	0.1 ± 0.00	0.02 ± 0.0	0.3 ± 0.1



RESULTS

- ✓ extremely high phenolic content: 906-2964 mg GAE/L
- ✓ *p*-hydroxybenzoic acid, epicatechin and rutin were the most abundant compounds
- ✓ good antioxidant activity
- ✓ white wine lees obtained before fermentation (W1) and the red wine (R2) lees stood out

