

# INFLUENCE OF DIFFERENT GRAPE POLYSACCHARIDES ON PHENOLIC COMPOUNDS AND COLOUR CHARACTERISTICS OF *Tempranillo* RED WINES

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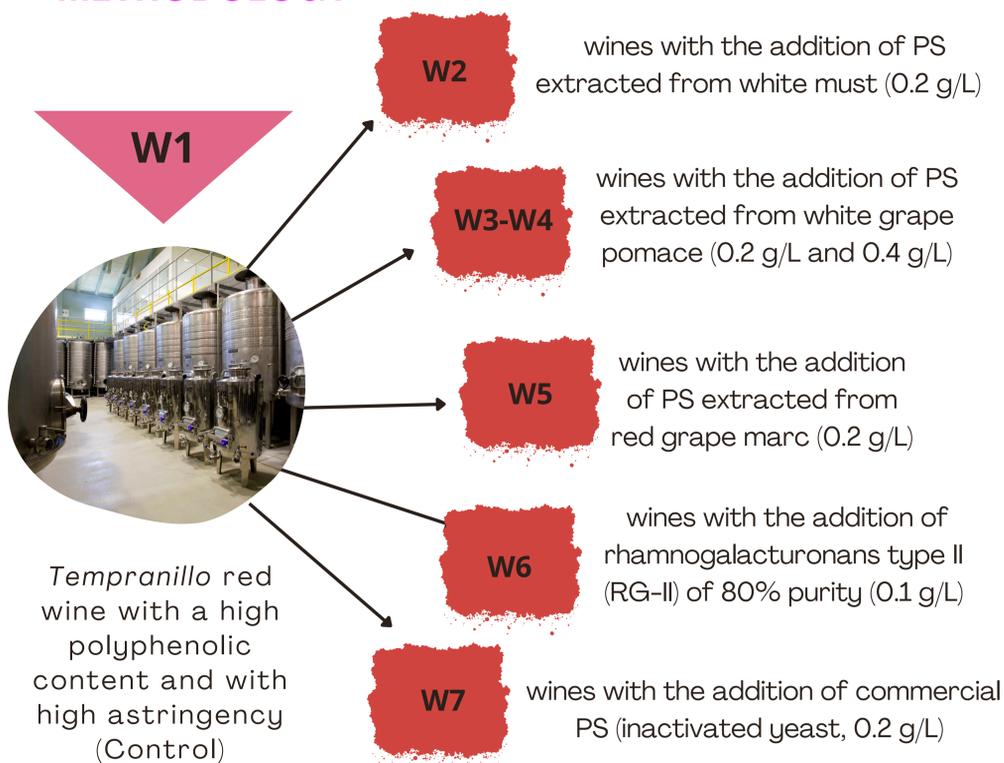
## INTRODUCTION

Polysaccharides (PS) are one of the main compounds found in wines, and they come mainly from the grape cell walls or from the yeasts, and they play an important role in the technological and sensory characteristics of wines.

## OBJETIVES

The aim of this work was to study the effect of the addition of different fractions of polysaccharides extracted for grape by-products on phenolic composition and colour parameters of red wines in order to improve their quality.

## METHODOLOGY



COMPOUND ANALYSED	
TP	Total Polyphenols
TT	Total Tannins
To	Tonality
Flav.	Flavonols
CI	Colour Intensity
T-Acy	Total Anthocyanins
COP-Acy	Copigmented Anthocyanins
MON-Acy	Monomers Anthocyanins
POL-Acy	Polymeric Anthocyanins
TE-HA	Tartaric Esters of Hydroxycinnamic Acids
T-PS	Total Polysaccharides
LMWP	Low Molecular Weight Polysaccharides
MMWP	Medium Molecular Weight Polysaccharides
HMWP	High Molecular Weight Polysaccharides



## STATISTICAL ANALYSES

ANOVA and LSD test and principal component analysis (PCA) were carried out to determine differences between wines by treatment.

Statistical packages: Statgraphics Centurion XVIII and the RStudio program.



## ACKNOWLEDGEMENTS

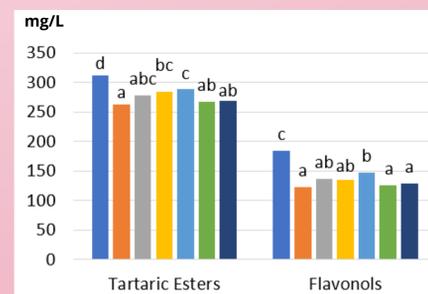
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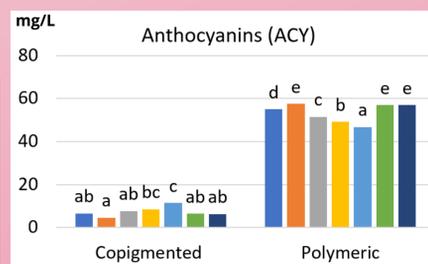
## RESULTS

Statistically significant differences were found in all the analysed compounds and colour parameters between treatments.

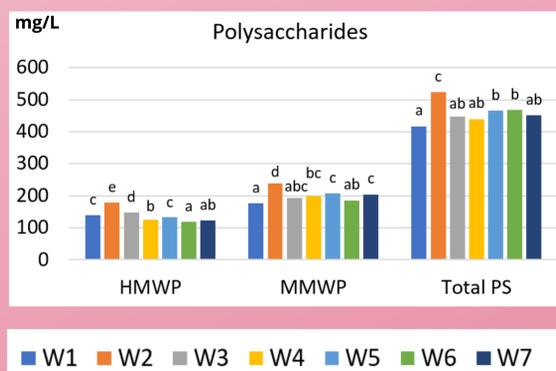
The addition of PS from grape pomace (W3-W4) and grape marc (W5) reduced the content of total polyphenols, tannins, tartaric esters of hydroxycinnamic acids and flavonols. However, W4 and W5 maintained the highest total anthocyanin content.



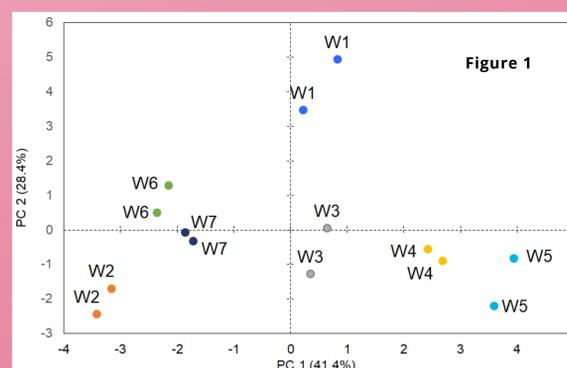
	TP (mg/L)	TT (mg/L)	ACY (mg/L)	CI	To
W1	2681 b	2971 b	374 d	15.8 e	0.62 c
W2	2594 a	2858 a	313 a	15.8 e	0.61 b
W3	2599 a	2804 a	351 c	14.5 c	0.62 d
W4	2617 a	2827 a	402 e	13.2 b	0.64 e
W5	2577 a	2843 a	422 f	12.6 a	0.66 f
W6	2688 b	2850 a	323 ab	15.4 d	0.61 a
W7	2593 a	2813 a	333 b	15.4 d	0.61 a



Values with different letters in each compound indicate statistically significant differences by treatment at  $p < 0.05$



The concentration of total polysaccharides (HMWP and MMWP) increased mainly in the W2 wines, followed by the W5 and W6 wines respect to the control wines (W1).

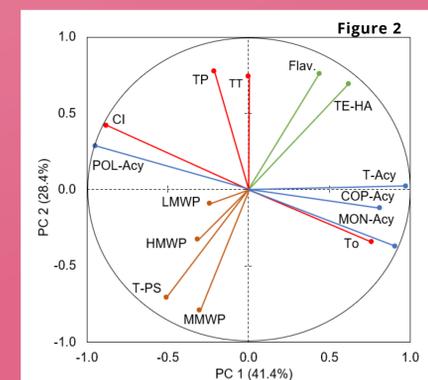


The PCA of the *Tempranillo* wines selected three components with an eigenvalue greater than 1, which explained the 86.4% of the total variance. Figure 1 shows the distribution of the different wines in the plane defined by the first two principal components (PC) that explained the 69.8% of the total variance.

The two first PC clearly separated the wines treated with PS from control wines. The control wines (W1) were located in the upper part of the plane, while the treated wines in the lower part.

Therefore, the variables associated with the two PC allow differentiating the wines by treatment (Figure 2).

The W4 and W5 were characterised by higher concentrations of anthocyanins (monomeric and copigmented) and lower of polymeric anthocyanins and colour intensity than the other wines. The control wines had the highest phenolic content, and the W2 wines stood out for their highest PS content.



## CONCLUSION

The addition of different fractions of PS extracts modified the phenolic composition and colour characteristics of red wines and increased the total polysaccharide content that can influence the sensory characteristics of the wines. Further studies will be carried out to see the influence of these PS extracts on the volatile composition of red wines.