



# The effects on red wine of pre- and post-fermentation additions of grape-derived tannin

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## Introduction

- The 2003 'Tannin' winemaking trial focused on red wine with tannin additions made pre- and post- alcoholic fermentation vs. a control with no added tannin.
- 200 mg/L of a 'colourless', grape seed-derived tannin from an Australian producer used,
  - wine colour parameters were monitored spectrophotometrically;
  - wine phenolics, tannin and pigmented polymer concentration, monitored by HPLC;
  - the final products were characterised by quantitative descriptive sensory analysis.

## Trial Design

Tank	Pre-fermentation tannin addition	Post-fermentation tannin addition
1	No	No
2	No	No
3	No	No
1A*	No	200 mg/L
2A*	No	200 mg/L
3A*	No	200 mg/L
4	200 mg/L	No
5	200 mg/L	No
6	200 mg/L	No

\*Tanks 1-3 each divided into two after alcoholic fermentation completed

## Experimental

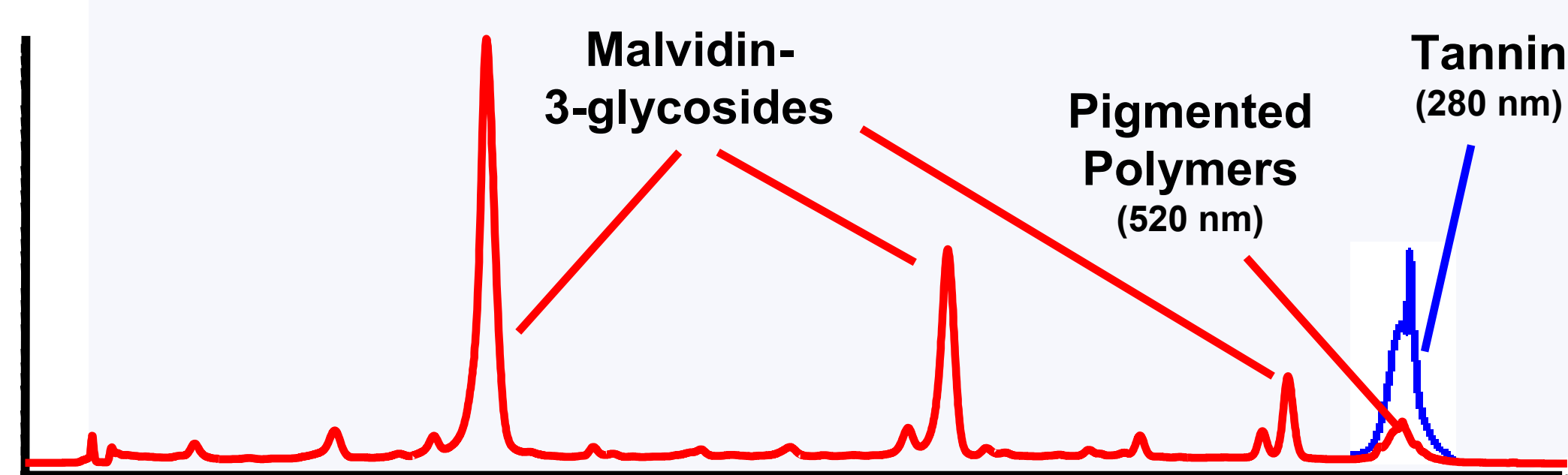
- 5 tonnes of Riverland Shiraz grapes
- Saccharomyces cerevisiae* (EC1118), 20 °C
- Malolactic fermentation (EQ54), 20 °C
- Consistent wine chemistry
- 1100 L Potter fermenters
- Unoaked
- Bottled under screw cap
- Chemical characterisation done 4 months post-bottling

## Results: Wine chemistry at bottling

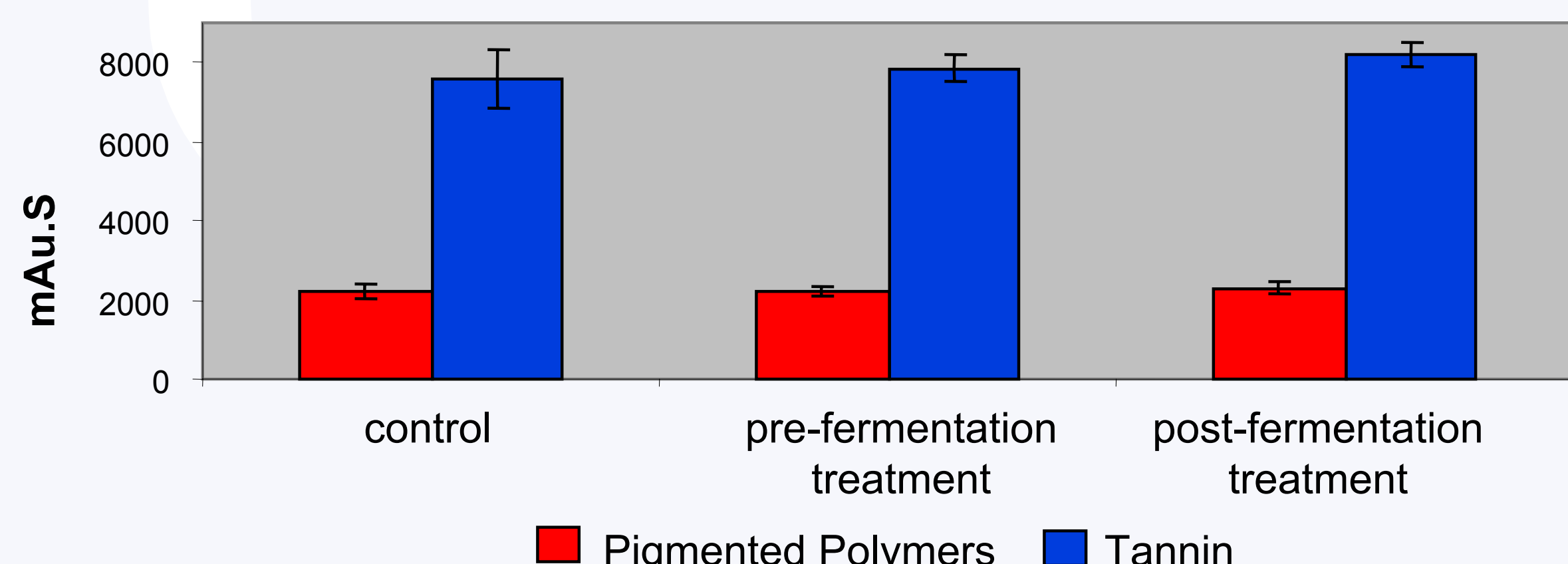
Treatment	pH	TA	Free/Total SO <sub>2</sub>	Alcohol
control	3.47	5.8	33/64	12.6
pre-fermentation	3.46	5.8	32/63	12.4
post-fermentation	3.47	5.8	35/65	12.6

## Results: HPLC analysis of phenolic compounds

- No significant differences ( $p > 0.05$ ) for all phenolic compounds measured.

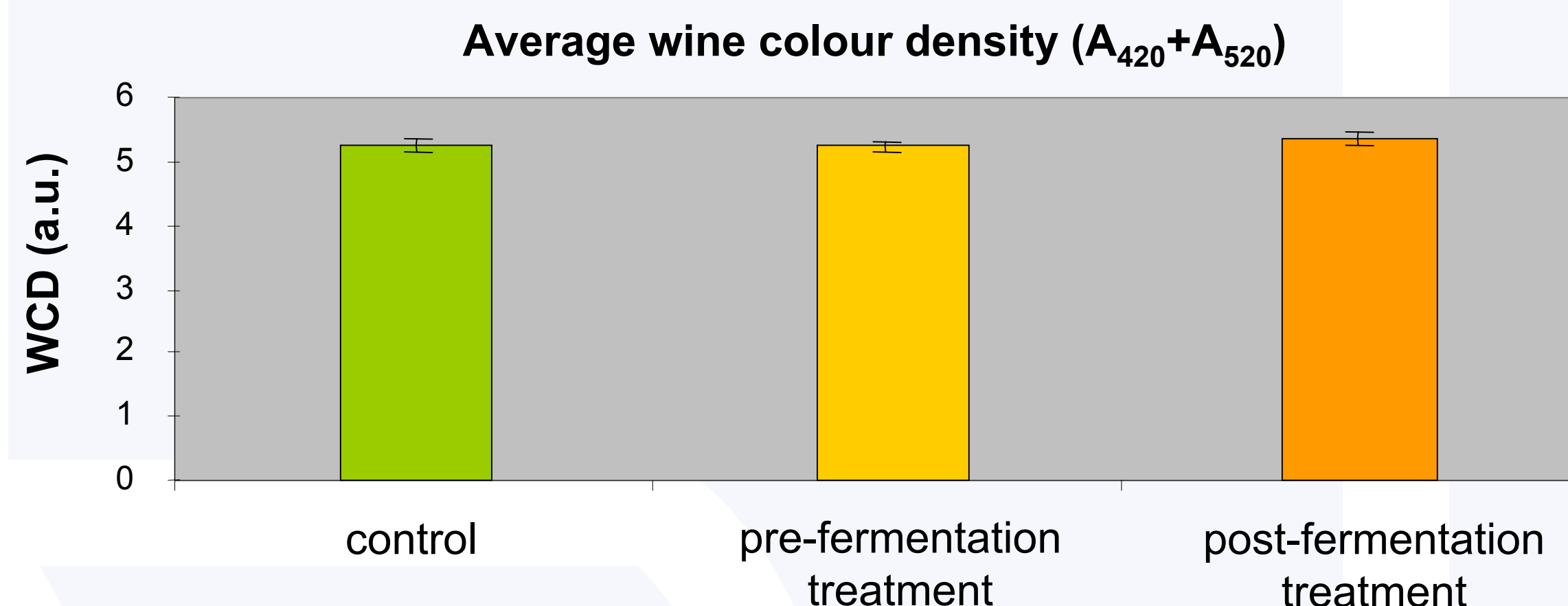


## Average tannin and pigmented polymer concentration



## Results: Colour measurement

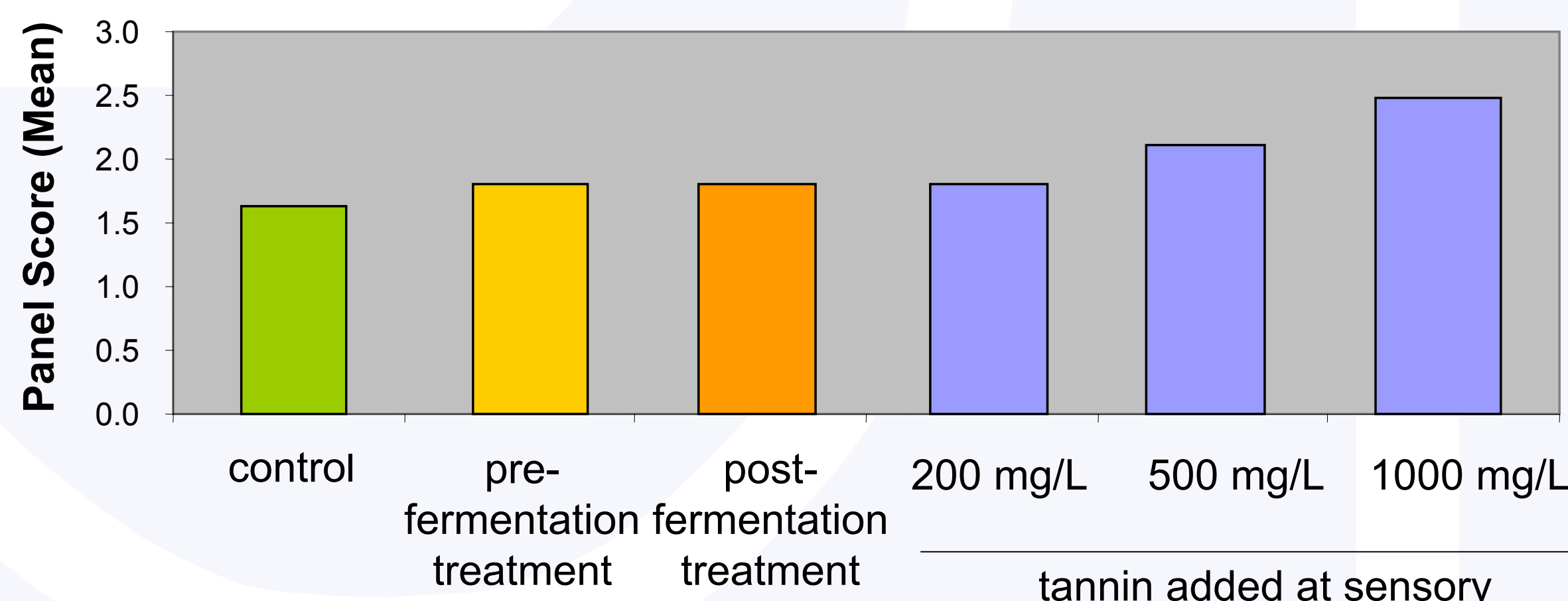
- Somers' measurements showed no significant differences ( $p > 0.05$ ).



## Results: Sensory studies

- Quantitative descriptive analysis was performed one year after the wines were made.
- The control wine was also spiked with tannin (200, 500, and 1000 mg/L) on the day of sensory, to test the panel's performance.
- Small but significant differences ( $p < 0.001$ ) were found between the control and the two treatments for the 'overall astringency', 'adhesive', 'drying' and 'surface texture' attributes.
- No significant differences in attributes were found between wines with pre-fermentation or post-fermentation tannin additions.
- On average, the panel considered the wines to have a 'moderate' level of overall astringency.

## Panel score for 'overall astringency'



## Summary

- No significant differences between any treatments and/or the control for the analytical measurements of colour, tannin and pigmented polymers.
- A repeat small-scale experiment with additions of 200 and 1000 mg/L tannin also did not result in any difference in colour parameters or phenolics by HPLC.
- Small but significant differences between the control and the two treatments (large-scale fermentations) were found for some palate attributes using a sensory panel.
- Other tannin products of alternate composition or purity may cause larger effects and/or alternate winemaking styles or fruit may give alternate outcomes to those presented here.
- The value of conducting your own trials cannot be underestimated.

## Acknowledgements

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