Effects of six commercial *Oenococcus oeni* cultures on volatile smoke-taint compounds during Malolactic Fermentation

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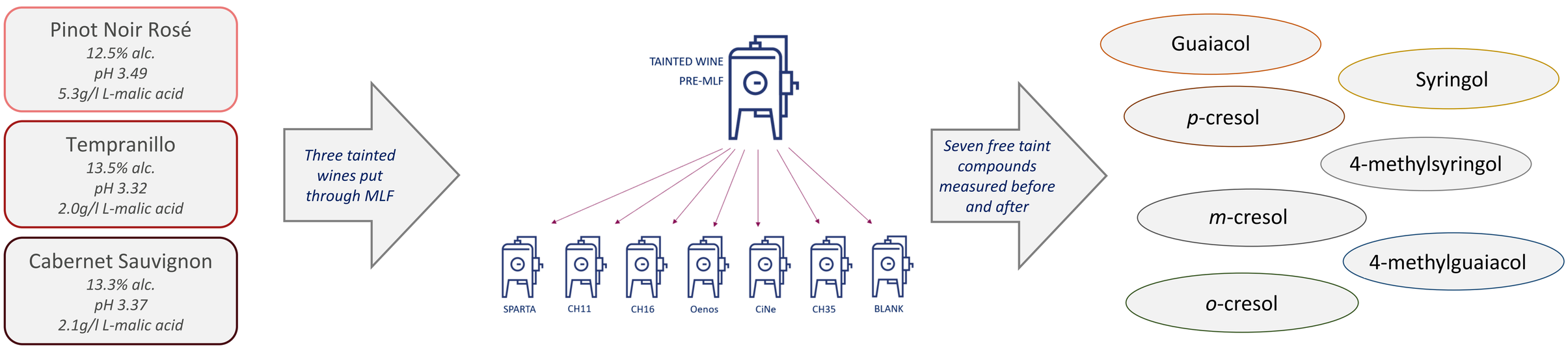
Introduction

The phenolic compounds responsible for smoke taint in wine move from odourless glycosides to unbound volatile forms during vinification processes. Little scientific data exists however on how malolactic fermentation (MLF) contributes to this. Previous work found Viniflora® CH16 did not release free taint compounds from bound glycosides[1] while anecdotal recommendations are to avoid spontaneous MLF and strains with a high degree of glycosidic activity[2]. This work set out to determine the effect of six commercial strains of *Oenococcus oeni*, by measuring the concentration of seven unbound taint compounds in three affected wines, before and after MLF.

Methodology



Results

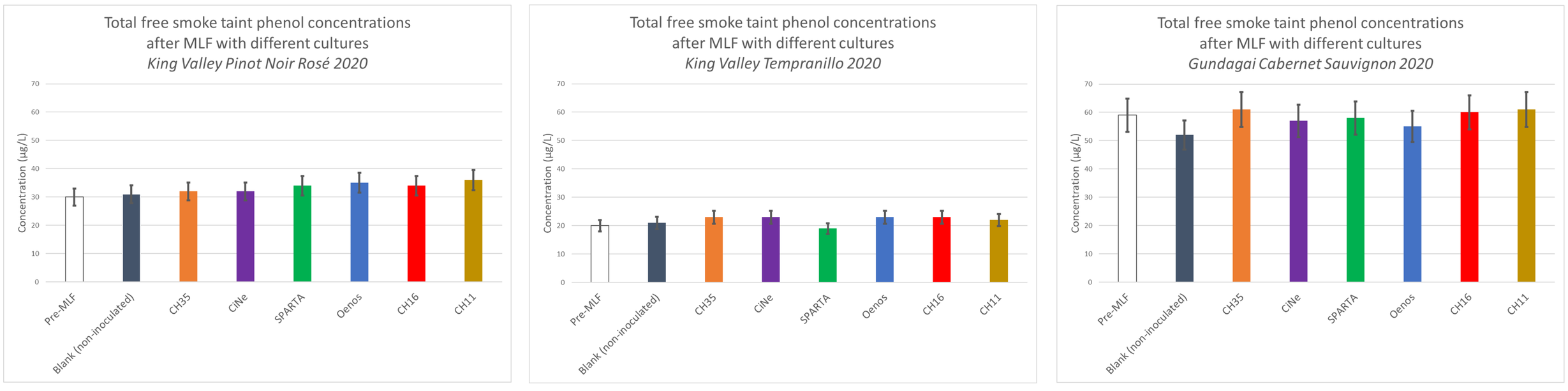


Figure 1-3. Concentrations of seven taint phenols before and after MLF

The concentration of seven unbound taint phenols (guaiacol, p-cresol, syringol, 4-methylsyringol, m-cresol, 4-methylguiacol and o-cresol) was measured using GC-MS, after a solvent extraction[3]. The sum of the seven phenols is shown before and after MLF. Each graph represents a different wine, and the total phenol concentration prior to MLF is represented by the far-left bar. The total concentration after MLF with each individual culture is represented by the coloured bars, while a non-inoculated blank is also included.

Conclusions

- No significant increase in the sum concentration of seven unbound taint phenols was seen in any of the three wines, when put through MLF with each of the *Oenococcus oeni* cultures
- This adds to the body of knowledge around handling smoke-affected fruit and can aid decision making when vinifying the resultant wines
- Such knowledge can be allied to remedial techniques used to dimmish the effects of smoke-taint

References

[1]Kelly et al (2014), Winemaking practice affects the extraction of smoke-borne phenols from grapes into wines. Aus. Journal of Grape and Wine Res. 20, 386–393

[2]http://vinpro.co.za/wp-content/uploads/2016/01/Guidelines.compressed.pdf

[3]https://www.vintessential.com.au/store/smoke-taint-free-juice-and-wine