

# Phenolic-free glycosides from grape marc can increase wine flavour



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**Introduction** Glycosides are important varietal flavour precursors, produced in grape berries as non-volatile, odourless compounds which can transfer into wine and break down during vinification to release free volatiles. White grape marc contains undesirable phenolics and is usually discarded after minimal contact with juice during white winemaking. Thousands of tonnes of grape marc are produced annually as a by-product of white winemaking. Currently marc is not highly valued, as only low-grade products like ethanol and tartaric acid are recovered. But white grape marc also contains glycosides that could be exploited as a source of varietal flavour.

**Aim** To extract glycosides from grape marc, remove bitter phenolics and add to wine to boost wine flavour



### Extraction

- 300 kg marc Gewürztraminer
- 1 tonne rotary fermenter
- 22 hours extraction with water
- Drained, filtered

Process uses common winery ingredients and equipment



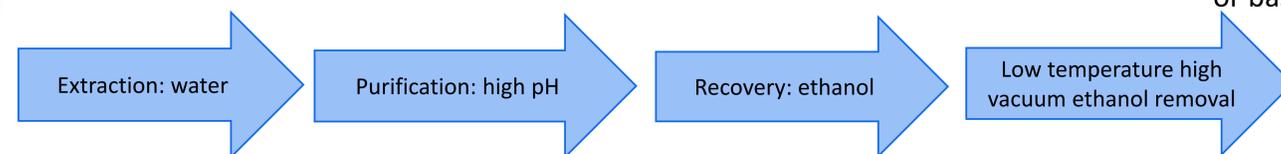
### Purification

- Re-usable polymeric resin
- Bitter phenolics removed with high pH wash
- Glycosides recovered with ethanol



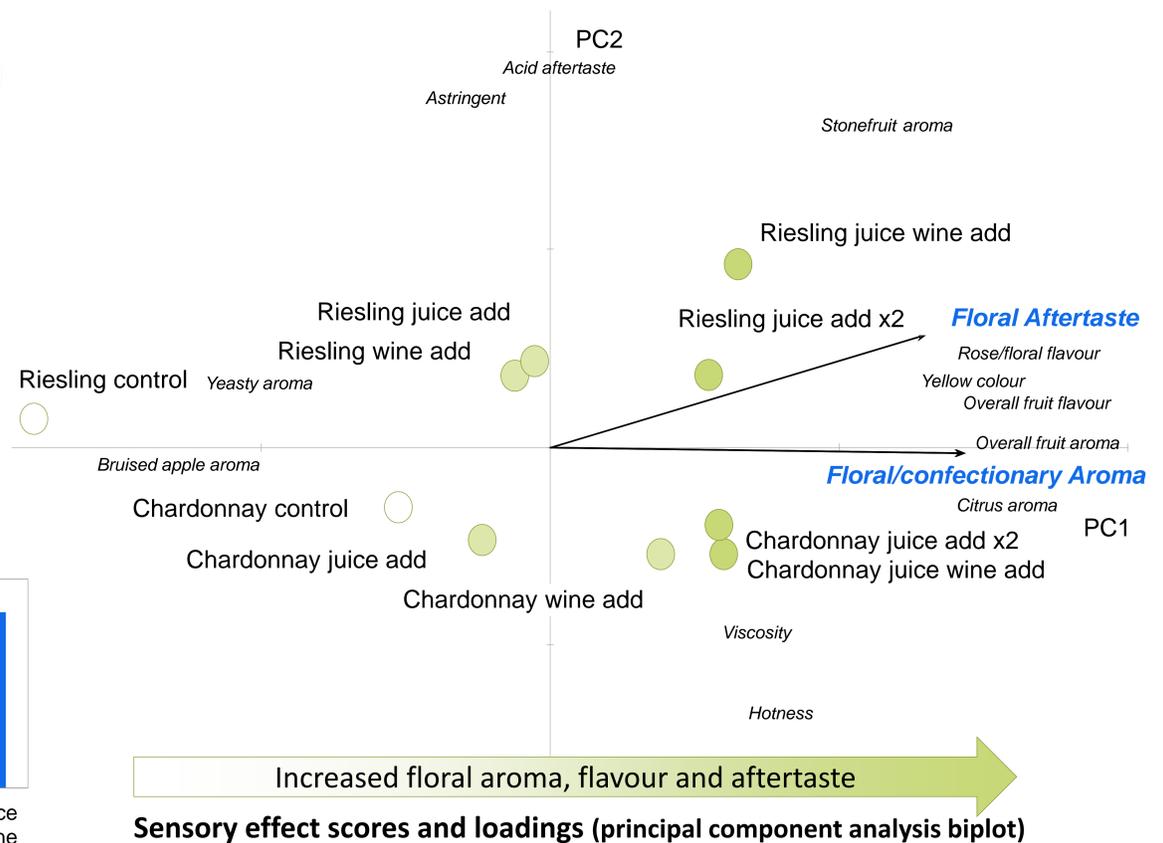
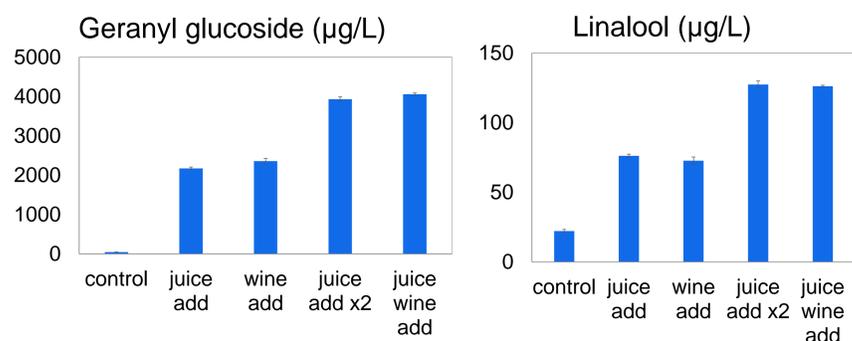
### Glycosides

- Added to Riesling and Chardonnay juices before fermentation, to wines at bottling and at both time points
- Addition equivalent to 24 hour skin contact and double that
- Analysed three months after bottling
- No effect on fermentation performance or basic wine chemistry



### Chemical analysis of wines

- Geranyl glucoside most abundant glycoside
- Geranyl glucoside breaks down to produce geraniol, linalool and other 'citrus'/'floral' monoterpenes
- Glycoside addition increased monoterpenes
- Timing of addition had only a minor effect
- Despite some hydrolysis, the majority of glycosides remained intact
- Phenolics concentration comparable to Muscat Gordo Blanco light pressings



**Conclusion** Glycosides recovered from grape marc boosted 'fruity' and 'floral' aroma, flavour and aftertaste, with no significant increase in bitterness. This opens up the potential use of flavour hidden within the thousands of tonnes of grape marc produced each year.

Parker, M., Barker, A., Black, C. A., Hixson, J., Williamson, P., Francis, I. L. 2019. Don't miss the marc: Phenolic-free glycosides from white grape marc increase flavour of wine. *Aust. J. Grape Wine Res.* 25: 212-223.

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