Beyond phenolic bitterness: tryptophol-bisulfites identified as a potential new class of bitter compounds in white wine

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Background and research question

- Bitterness is an unacceptable taste in white wine commonly attributed to phenolic compounds.
- The concentration of phenolic compounds only partly explains the bitterness of white wines.
- So, what non-phenolic compounds might contribute to bitterness in white wine?

Methods

- A two-stage sensory-directed approach was used to identify potentially bitter compounds in white wine (Figure 1).
  - The compound most strongly associated with bitterness intensity was synthesised.
  - The taste and mouth-feel of the compound was compared to bitter compounds and other sensory standards using perceptual mapping (‘napping’).

Results

- The compound most strongly associated with bitterness was found to be a sulfonated tryptophol.
  - Perceptual mapping showed that sulfonated tryptophol was perceived as more similar to known bitter compounds than to known astringent or acidic compounds.

Conclusion

- Sulfonated tryptophol is a potential contributor to bitterness in white wines.