

A tool for catching mice in wine: the detection of mousy off-flavour compounds in wine



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What does a mousy wine taste like?
Mousy off-flavour is a highly unpleasant character in wine that has been described as the smell of caged mice

Can everyone detect a mousy wine?
There is wide variation in the ability of individuals to perceive mousiness, ranging from insensitive to very sensitive

Mousy wine is sneaky!
The mousy character in wine is generally not perceptible as an aroma, but only becomes obvious after a wine is swallowed, sometimes minutes later

New method to measure mousy compounds in wine

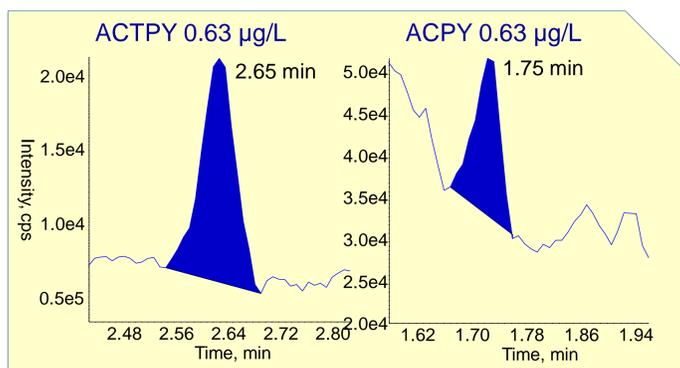
A simple sensitive method for the quantitation of the mousy compounds in wine has been developed and validated using HPLC-MS/MS



HPLC-MS/MS

Wine sample (1 mL)
↓ + internal standards
↓ Filtration
↓ Basification with NH₄OH
↓ HPLC-MS/MS analysis

ACTPY and ACPY can be measured at a wine concentration as low as 0.5 µg/L.



Do you taste me in your wine?



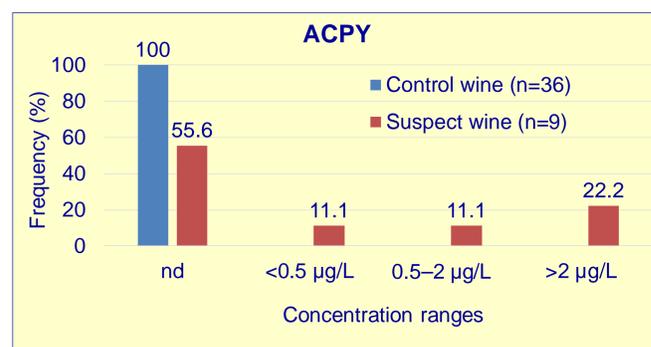
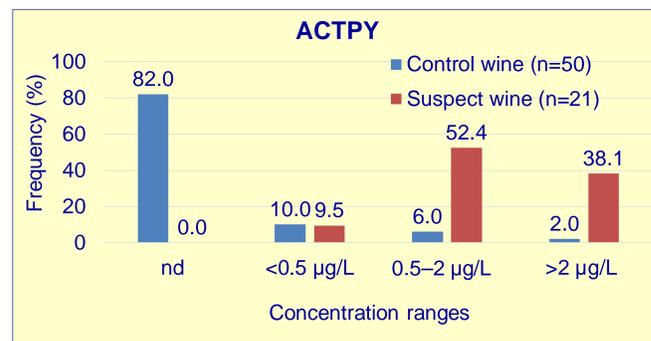
How common is mousy flavour?
Historically found in high pH and low SO₂ red wines but cases have been on the increase in white wines

Are mice added to wine?
No. Flavours that taste like mice have been reported to be produced by most strains of lactic acid bacteria (LAB) and the yeast *Dekkera/Brettanomyces*

Which flavour compounds make a wine mousy?
Major suspects are 2-acetyltetrahydropyridine (ACTPY), 2-ethyltetrahydropyridine (ETPY) and 2-acetylpyrroline (ACPY)

Testing ACTPY and ACPY concentrations in wines that tastes mousy and in control wines

- Suspected mousy wines obtained from the AWRI helpdesk noted as having a mousy aftertaste contained elevated levels of ACTPY and ACPY
- Control Australian bottled wines (no sensory assessment) generally did not contain ACPY but occasionally contained ACTPY



Next steps - what this method makes possible

- Determine if ACTPY is the ideal marker compound for mousy off-flavour and assess the contribution of other compounds.
- Determine the wine odour and taste thresholds and anosmia levels of ACTPY and ACPY in wine.
- Determine the natural levels of these compounds in different wine styles.
- Investigate how much winemaking techniques, such as high grape solids ferments, extended lees and oxidative ageing, higher pH with minimal SO₂ and minimal clarification or filtration, increase the risks of producing mousy wine.
- Explore how the occurrence of this fault in wine can be reduced.



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