

The role of lactones and monoterpenes in the flavour of sweet white dessert wines

AWRI

Sheridan Barter¹, Flynn Watson¹, Lisa Pisaniello¹, Robin Stegmann², Leigh Francis¹, Tracey Siebert¹

¹ The Australian Wine Research Institute, PO Box 197, Glen Osmond (Adelaide) SA 5064, Australia, ² Technische Universität Dresden, Dresden 01062, Germany

Corresponding author's email: sheridan.barter@awri.com.au

Background

- Sweet white wines, such as botrytised Semillon or Eiswein, are often characterised by a rich, syrupy 'apricot' flavour as well as other more 'floral' and 'tropical' aromas.
- Historically, 'stone fruit' aromas have been attributed to γ -lactones, but recent research has highlighted the importance of other compounds such as monoterpenes in Viognier and esters in Chardonnay.
- Existing analysis methods for γ -lactones and monoterpenes were tedious and time-consuming and needed to be redeveloped.

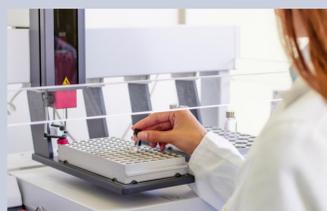
Simplified methods

γ -Lactone analysis



Directly into a vial:

- 10 mL wine
- 9 mL water
- internal standard



Run on GCMS-
QQQ

Monoterpene and norisoprenoid analysis



Directly into a vial:

- 15 mL wine
- internal standard
- Membrane-Assisted Solvent Extraction (MASE) assembly

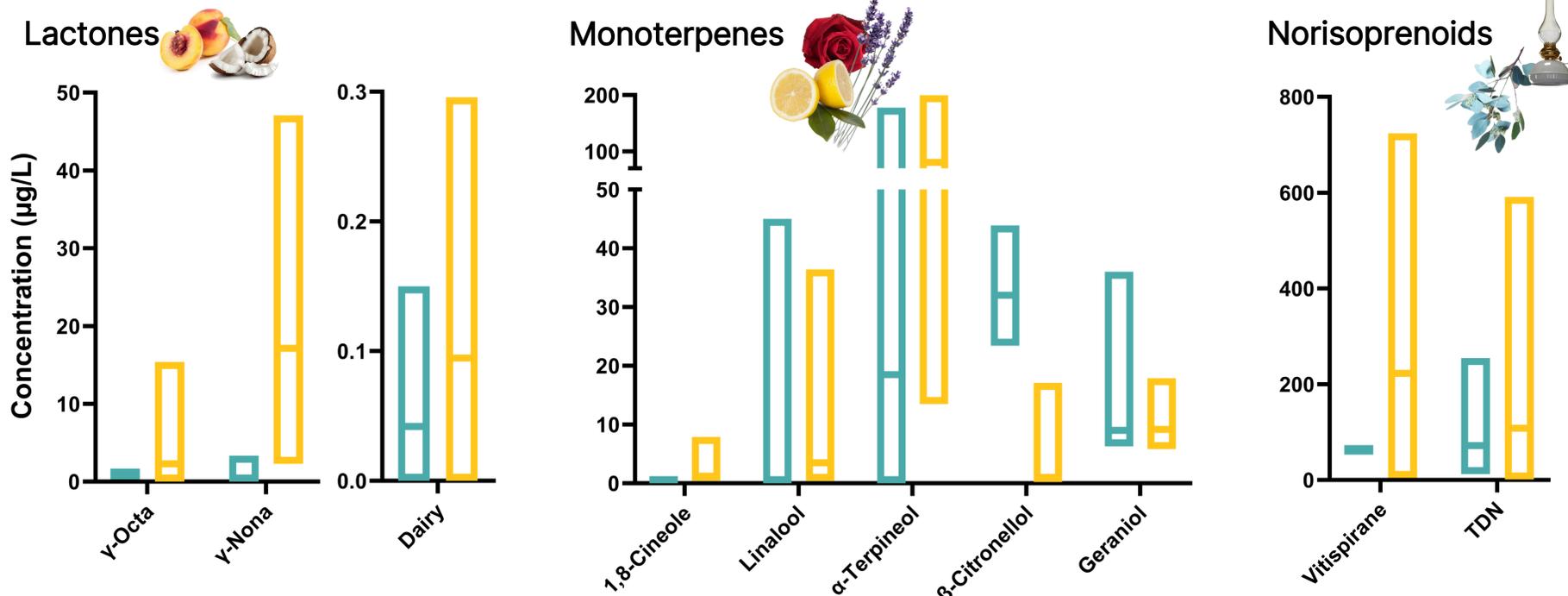


Autosampler performs liquid-liquid extraction immediately prior to injection into GCMS

- Applied to the analysis of 39 sweet white dessert wines across a range of varieties, production methods and countries, with results compared to dry wines of the same varieties.

Results

Dry Riesling vs botrytised Riesling: a selection of compounds compared



Highlights

- Botrytised Riesling wines were often high in α -terpineol, TDN and vitispiranes.
- Elevated concentrations of γ -nonalactone and the less well known dairy lactone ((*Z*)-6-dodeceno- γ -lactone) were present in many of the sweet wines compared to dry white wines, but interestingly not for all varieties such as Viognier.
- Concentrations of the other γ -lactones and monoterpenes measured were comparable to those found in dry wines of the same variety.

