

The impact of light on the oxidative and reductive aging of wine

Project ID: ICHDR8 (PhD)

Our work shows that the effectiveness of the universal preservative SO₂ is tempered by light and photoinitiators in wine (iron (III), organic acid complexes), which alters wine development during bottle aging. This project will investigate the impact of these factors on oxidative vs reductive development of wine, and their effect on consumption of SO₂ vs O₂, will be defined to identify better preservatives to protect wine and deliver better quality to consumers. The work has the potential to influence all wines bottled in clear glass (i.e. whites) or half of Australia's production.

We seek a highly motivated PhD candidate with a high level Honours or Masters qualification or equivalent in chemistry. The project will be based at the Wagga Wagga campus of Charles Sturt University. The candidate will develop skills/techniques in liquid chromatography, including LCMS (QQQ and QTOF), as well as gas chromatography, including GCMS (QQQ). The work may also utilise laser excitation experiments based at The University of Melbourne.

References

- > Grant-Preece *et al* (2017) Impact of fluorescent lighting on oxidation of model wine solutions containing organic acids and iron. *Journal of Agricultural and Food Chemistry* **65**:2383-2393.
- > Grant-Preece *et al* (2017) Light-induced changes in bottled white wine and underlying photochemical mechanisms. *Critical Reviews in Food Science and Nutrition* **57**:743-754.
- > Clark *et al* (2011) Iron(III) tartrate as a potential precursor of light-induced oxidative degradation of white wine: Studies in a model wine system. *Journal of Agricultural and Food Chemistry* **59**:3575-3581.

For additional information please contact:

Dr Andrew C Clark

Charles Sturt University

<https://www.csu.edu.au/nwgic/about-us/our-people/profiles/research-staff/andrew-clark>

Email: aclark@csu.edu.au

Ph: +61 (0)2 6933 4181