Background and Aims

Ganoderma lucidum (GL), a traditional Asian medicinal mushroom, has been widely produced in various forms of products\(^1\) due to the reported positive health effects of its bioactive compounds\(^2\). However, there are few studies reporting the application of GL in fermented beverages as well as sensory characteristics or consumer preference of GL wine products.

This study aimed to

- Investigate novel Shiraz red wines for the Australian and Asian markets, made with GL extract at different stages of fermentation.
- Determine GL wine products’ sensory profiles in relation to basic chemical and volatile compound composition.
- Examine consumer acceptance of GL wines.

Materials and Methods

- An online survey was conducted to enhance our understanding of Australian, Chinese and Vietnamese consumers’ perceptions toward Australian wines enriched with GL.
- Wines were made from Shiraz grape juice with GL added before and after fermentation to determine the impact of GL on chemistry and sensory profiles of novel wines.
- Consumers’ preference was evaluated to determine the chemical and sensory drivers of consumers’ liking.

Fermentation design

- Pre-fermentation: GL added at 1 g/L
- Post-fermentation: GL added at 2 and 4 g/L

Sensory and consumers’ preference analysis

Survey

- Online survey
- Sensory lab (individual booths)

Methods

- Surveymonkey\(^\circ\) Rate-All-That-Apply (RATA)
- Questionnaire, 9-point hedonic scale

Results

- Study findings revealed that all participants across three groups (Australian, Chinese and Vietnamese) accepted the notion that GL wine products would be worth tasting. In addition, Vietnamese consumers were more interested in trying novel wines with GL compared other groups.

Impact of GL on sensory profile of wines from RATA analysis

Wines with 0 or 1 g/L additions were described as having more red fruit, floral and confectionary aromas and flavours, smooth mouthfeel, and sweet taste. Wines with 2 g/L additions were more herbaceous, with green capsicum, peppery, spicy and jammy notes, whereas wines made with pre- or post-fermentation addition of 4 g/L were dominated by savoury, woody, toast, tobacco and mushroom aromas and flavours, higher astrigency and roughness, and bitter taste.

Correlation between chemical and sensory data of GL extract in wines

![Chart showing correlation between chemical and sensory data of GL extract in wines.]

Conclusions

- The Vietnamese consumer group was more interested in new GL wine products compared to Australian and Chinese groups.
- New GL wine product sensory profiles were generated by different GL addition rates at different stages of wine production.
- Chemical and sensory characteristics clearly discriminated wines and specific volatiles correlated with relevant sensory attributes.

Acknowledgements: This work was supported by project funding from the School of Agriculture, Food and Wine, a joint The University of Adelaide-VIED PhD scholarship granted to student Anh N.H. Nguyen in 2015. The authors wish to thank the sensory panelists, consumers and the university colleagues for making our sensory sessions successful.

References: