

CO₂ evolution in the wine glass: implications for winemakers and consumers

AWRI

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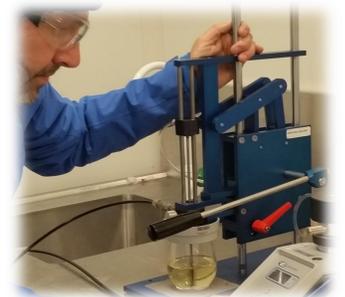
Background and research questions

Dissolved carbon dioxide (DCO₂) is an important bottling parameter, as wines low in DCO₂ can appear 'flabby' and lack freshness. However, questions about the effects of DCO₂ during wine consumption have not been investigated:

- 1) How much of the winemaker-intended bottled DCO₂ reaches the consumer during typical consumption?
- 2) What aspects of the wine matrix influence the loss of DCO₂ from the glass during consumption?

Methods

- A Chardonnay wine was adjusted in bottle with tartaric acid (H₂T), ethanol (EtOH) and fructose.
- 150 mL of cold wine (7°C) was poured into 'wide bowl restaurant style' wine glasses.
- The DCO₂ of wine in the glass was measured at pouring, and every five mins following two seconds of 'swirling' and removal of 10 mL of wine to mimic a consumer's experience. Measurements were taken using a Hach Orbisphere with a sampling port modified for in-glass measurement.



Results

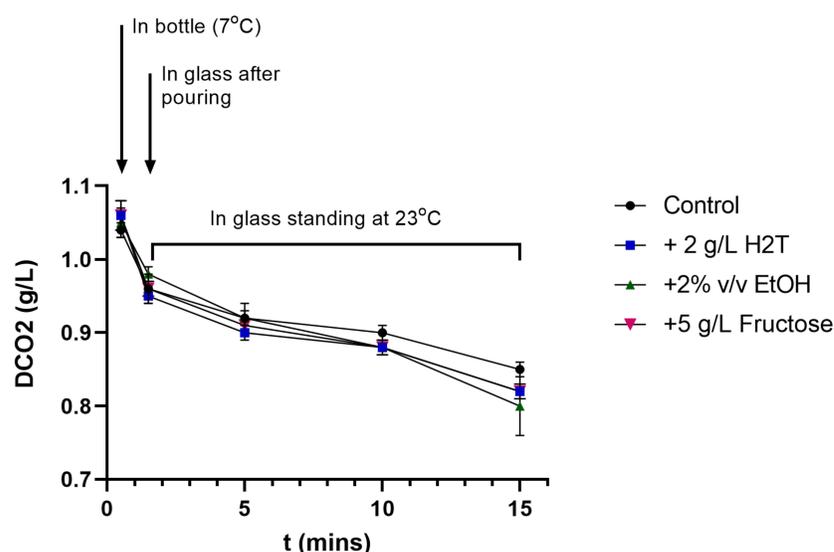


Figure 1. Effect of the wine matrix on DCO₂ concentration from pouring to 15 mins of simulated consumption (n=3).

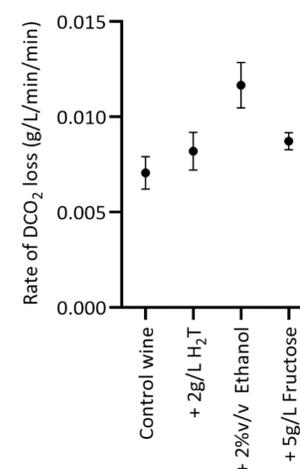


Figure 2. Effect of the wine matrix on the average rate of DCO₂ loss from pouring to 15 min of simulated consumption (n=3).

Summary

Based on the DCO₂ threshold of 0.26 g/L in water (Le Calve et al. 2010) and the effects of DCO₂ on the tastes of wine (Gawel et al. 2020), the losses in DCO₂ from the glass would only have been perceived 15 mins after pouring (Figure 1).

Dissolved CO₂ was better retained in the lower alcohol wines (Figure 2), which could have implications for bottling specifications for low-alcohol wines.

