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# Influences of Traditional and Novel Winemaking Practices on Foaming Properties of Sparkling Wine

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## Introduction

- Sparkling wine produced by the classic *Méthode Traditionnelle* relies on yeast autolysis to produce characteristic aroma and flavour profiles and bubble formation
- Slow, enzymatic self-degradation of yeast cells commences after secondary fermentation releasing components influencing the sensory properties of the wine with ageing
- Visual properties of sparkling wine, including foam and bubble characteristics, are an indicator of sparkling wine quality
- Wine polysaccharides can influence perception of body, mouth-feel, viscosity and foaming

## Aims

- Investigate effects of technologies that may accelerate yeast lysis and contribute to development of desirable autolytic character in Chardonnay and Pinot noir sparkling wine
- Characterise foam parameters of Chardonnay and Pinot noir sparkling wines produced by addition of microwave-, ultrasound- or enzyme-treated lees at tirage in wine stored secondary fermentation, compared to standard tirage wines stored at 15°C and 25°C, respectively
- Assess the relationship between novel treatments, foam properties and polysaccharides with ageing on lees

## Results

- Of all the treatments, storage of sparkling wine at 25°C showed the largest increase in autolytic character, relative to storage at 15°C, in sensory assessment of sparkling Chardonnay and Pinot noir wines (Figure 1A, 1B)
- Total polysaccharide contents varied between treatments and over time but were not correlated with evaluated sensory characteristics (Figure 1C, 1D)
- Enhanced foam stability was observed at 18 months in Chardonnay sparkling wines with microwave or ultrasound treated yeast additions (Figure 1E)
- Foam volume was highly variable across treatments but generally decreased with time (Figure 1G, 1H)

## Conclusions

- Application of novel technologies show treatments effects which have impact on sensory autolytic character
- Increases in autolytic character are unrelated to polysaccharide content
- The presence of compounds in the foam, like proteins, may be responsible for foam volume variation

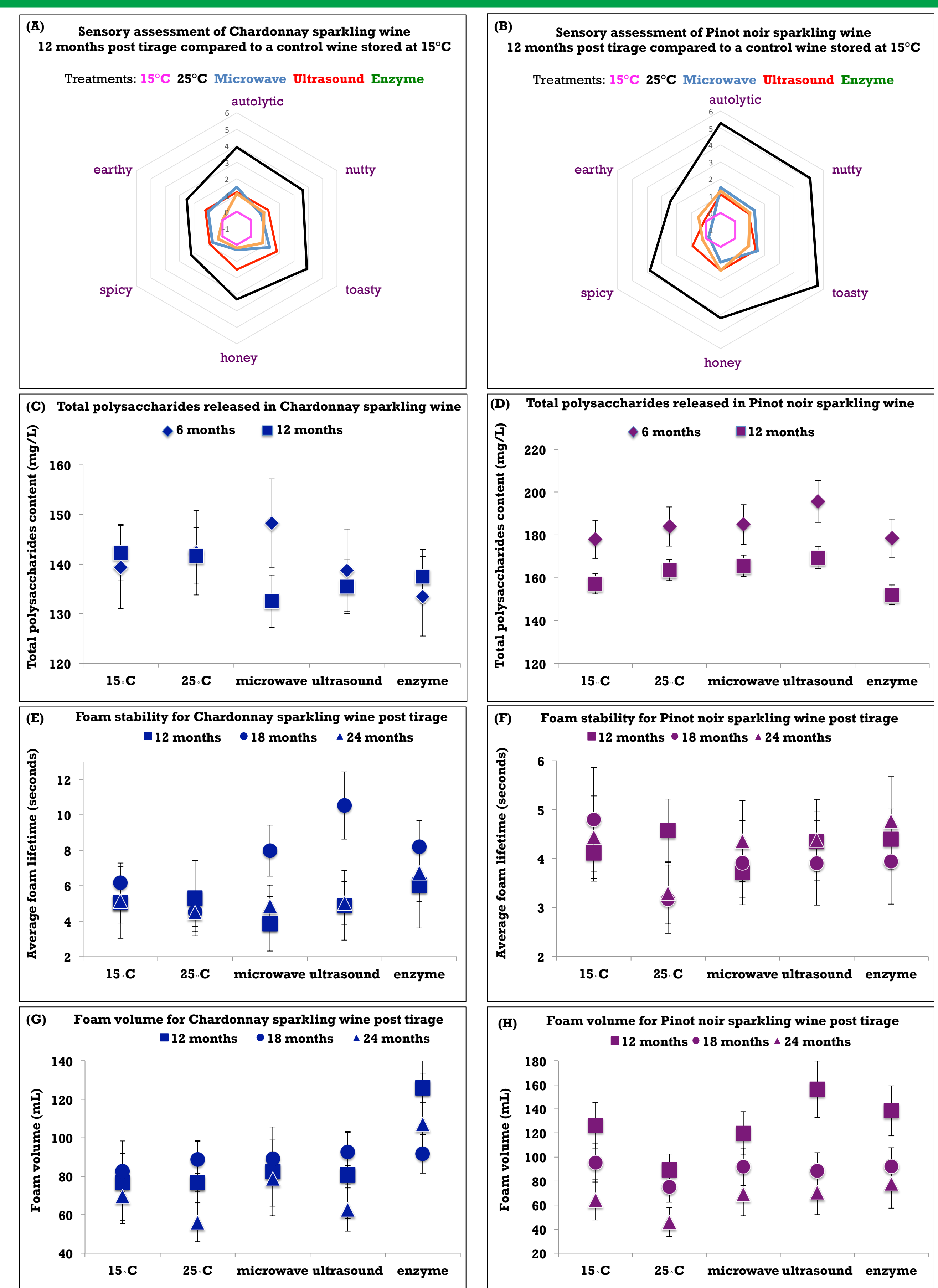


Figure 1A-H. Sensory assessment, polysaccharide contents and foam parameters for novel Chardonnay and Pinot noir sparkling wines compared to standard tirage at two storage temperatures (15°C and 25°C)

**Autolysis treatments have impact on sparkling wine sensory properties. Further study is required to identify compounds promoting foamability**