

MOUTHFEEL EFFECTS DUE TO OLIGOSACCHARIDES WITHIN A WINE MATRIX

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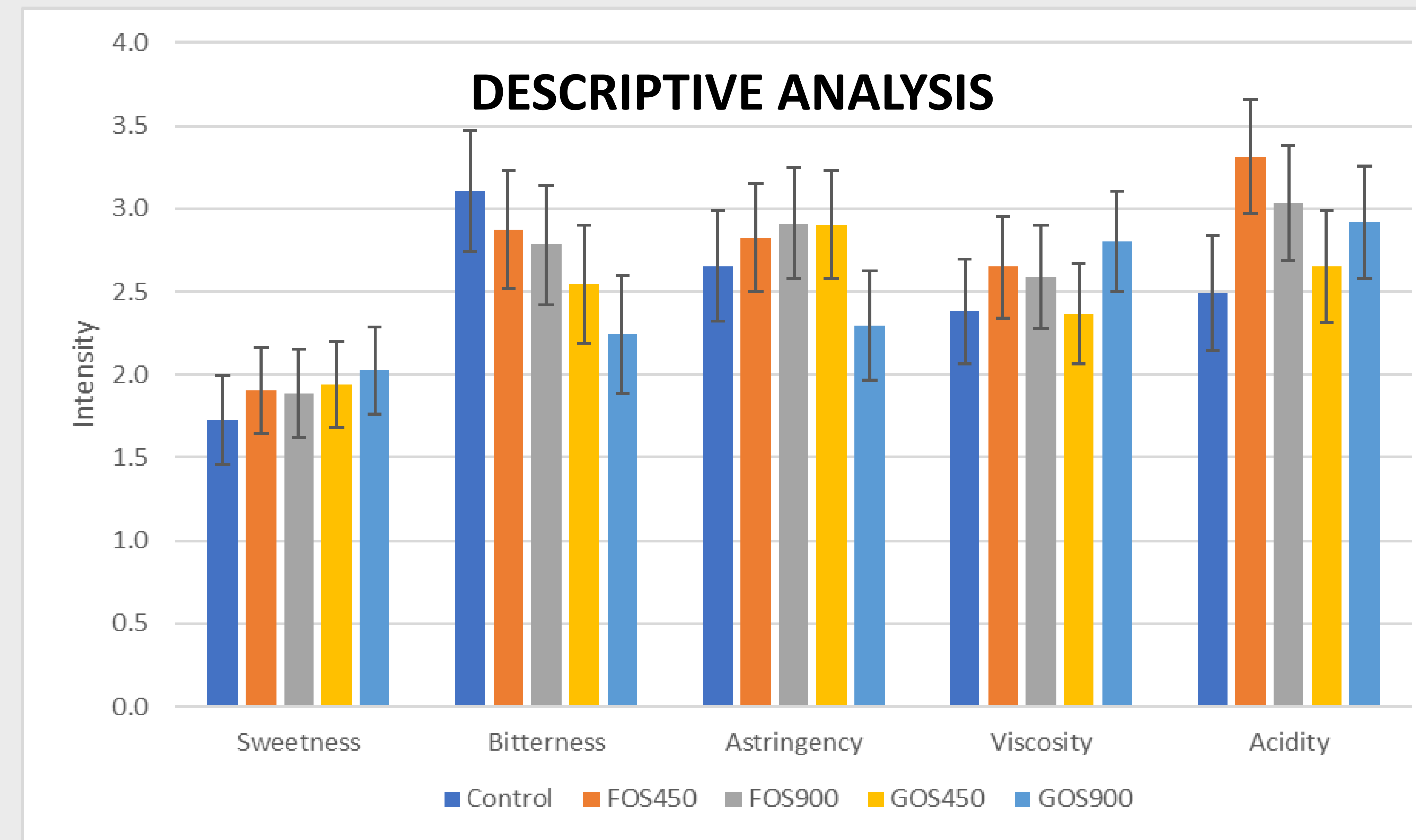
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INTRODUCTION

Wine is an inherently complex system comprised of many different constituents that influence its aroma, taste, and mouthfeel. Oligosaccharides are one class of compounds that has little known about its sensory affects on wine. Oligosaccharides are medium chain carbohydrate polymers linked via glycosidic bonds. Oligosaccharides typically have a mean degree of polymerization of 3 – 20 subunits. Oligosaccharides come from multiple sources within wine such as the grape cell wall, yeast, bacteria, and are present in many different forms, and concentrations. Given the wide variety of oligosaccharide forms, concentrations and sources an argument can be made that differing types and concentrations of oligosaccharides could influence the taste and mouthfeel properties of wine.

MATERIALS AND METHODS

- Fructo-oligosaccharides (FOS) and Galacto-oligosaccharides (GOS) were added to a model wine matrix (12% v/v EtOH, 4 g/L TA, pH 3.5) at a concentration of 450 ppm and 900 ppm.
- All treatments were subjected to triangle tests against an untreated control. One additional test between the high and low concentration for each oligosaccharide was also conducted.
- All Treatments underwent descriptive analysis using Magnitude Line Scaling for Sweetness, Bitterness, Astringency, Viscosity, and Acidity.



TRIANGLE TESTS

Comparison	Number of Participants	Number of Correct Responses	Z Score	p-value
Control v. FOS 450	90	36	1.23	0.109
Control v. FOS 900	90	29	-0.34	0.633
FOS 450 v. FOS 900	90	39	1.90	0.029*
Control v. GOS 450	90	28	-0.56	0.712
Control v. GOS 900	90	27	-0.78	0.782
GOS 450 v. GOS 900	90	35	1.01	0.156

*Indicates significance at $\alpha=0.05$



RESULTS

- Triangle tests showed that only FOS 450 and FOS 900 were found to be significantly different.
- A slight increase in sweetness perception was noticed for all treatment groups.
- A decrease in bitterness was noticed for all treatment groups.
- Astringency, Viscosity, and Acidity were also affected in various ways dependent upon oligosaccharide type and concentration.

CONCLUSIONS

Oligosaccharides appear to be influencing the taste and mouthfeel in multiple ways. Given that FOS450 and FOS900 were found to be significantly different from each other but not from the control we can see there is more complex mechanisms affecting the sensory results. Our initial descriptive analysis indicated trends for all five attributes dependent upon the type of oligosaccharide and the concentration.

FUTURE WORK

Future work will need to be conducted to explore the effects of additional oligosaccharide types and concentrations with more complex attribute. As well as exploring their effects within a more complex wine system.