

# MOUTHFEEL EFFECTS OF OLIGOSACCHARIDES WITHIN A MODEL WINE SYSTEM

Authors: Hoffman S., Phan Q., and Tomasino, E\*.

Oregon State University, Corvallis, OR 97331 \*Elizabeth.Tomasino@oregonstate.edu

## INTRODUCTION

Wine is a very complex system with many different compounds affecting its aroma, taste, and mouthfeel. One class of compounds whose effect on wine organoleptic properties is relatively unknown, are oligosaccharides. Oligosaccharides are carbohydrate polymers linked by glycosidic bonds with a mean degree of polymerization of 3 – 20 subunits. Oligosaccharides are present in many different forms, and concentrations within finished wine. Oligosaccharides come from multiple sources within the wine system, i.e. grape cell walls, yeast, and bacteria. Given the wide range of forms, concentrations and sources of oligosaccharides it stands to reason that differing types and concentrations of oligosaccharides may affect the taste and mouthfeel properties of wine.

## MATERIALS AND METHODS

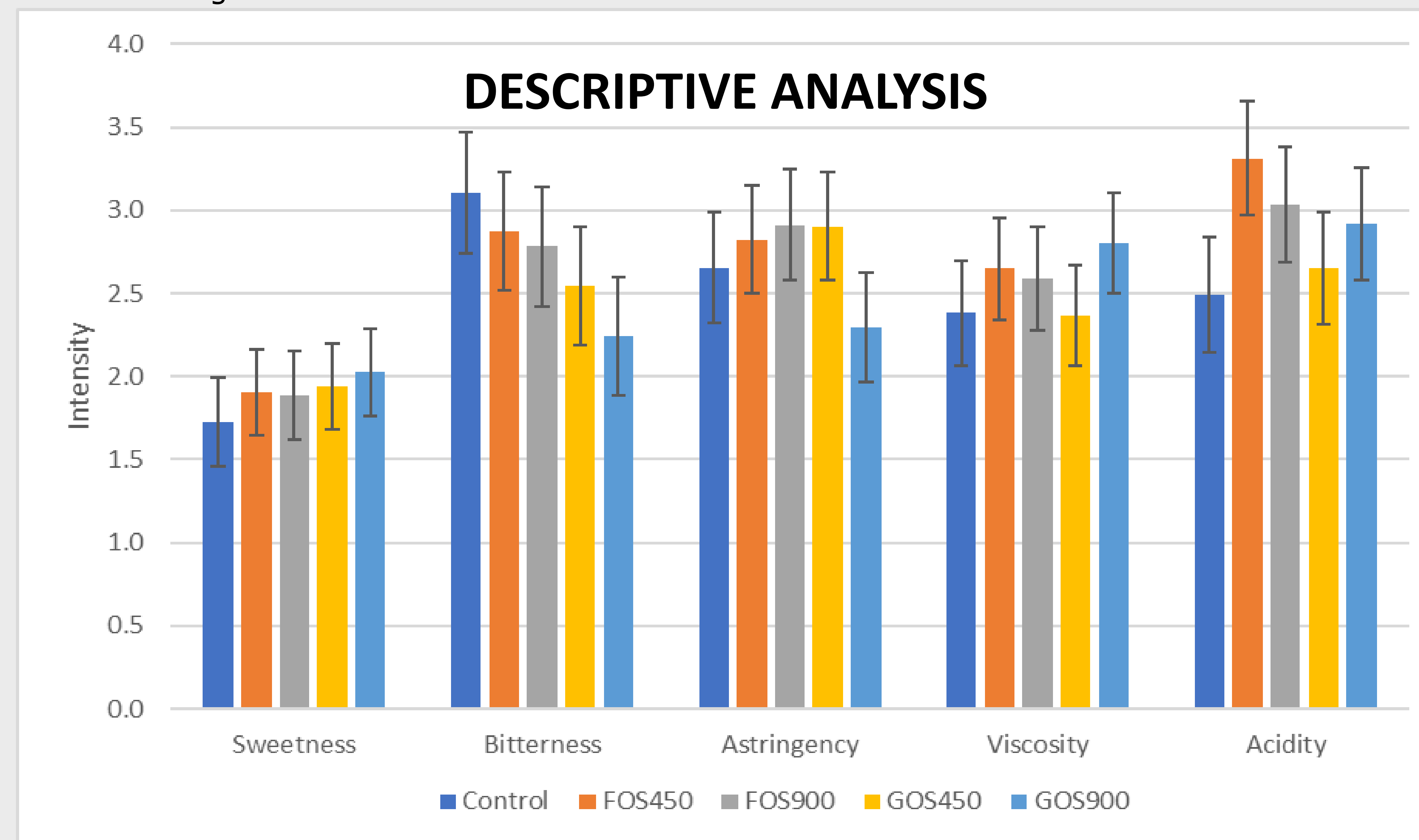
- Fructo-oligosaccharides (FOS) and Galacto-oligosaccharides (GOS) were added to a model wine solution (12% v/v EtOH, 4 g/L TA, pH 3.5) at a concentration of 450 ppm and 900 ppm.
- All treatment groups underwent triangle tests against an untreated control and between the high and low concentration for each oligosaccharide.
- Treatments and control 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

- FOS 450 and FOS 900 were found to be significantly different from each other.
- All treatments showed a slight increasing trend in sweetness perception.
- All treatments showed a trend of decreased bitterness perception.
- Treatments affected Astringency, Viscosity, and Acidity in various ways, dependent upon concentration and oligosaccharide type.

## CONCLUSIONS

Oligosaccharides appear to be having a multifaceted influence on the taste and mouthfeel of wine. Given that significant differences were found between FOS450 and FOS900 and not the control we can see there is more complex mechanisms at work. Our initial descriptive analysis shows trends for all five attributes dependent upon the concentration and type of oligosaccharide.

## FUTURE WORK

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