

The beneficial effect of oligosaccharides on the lipid profile of type 1 diabetic rats

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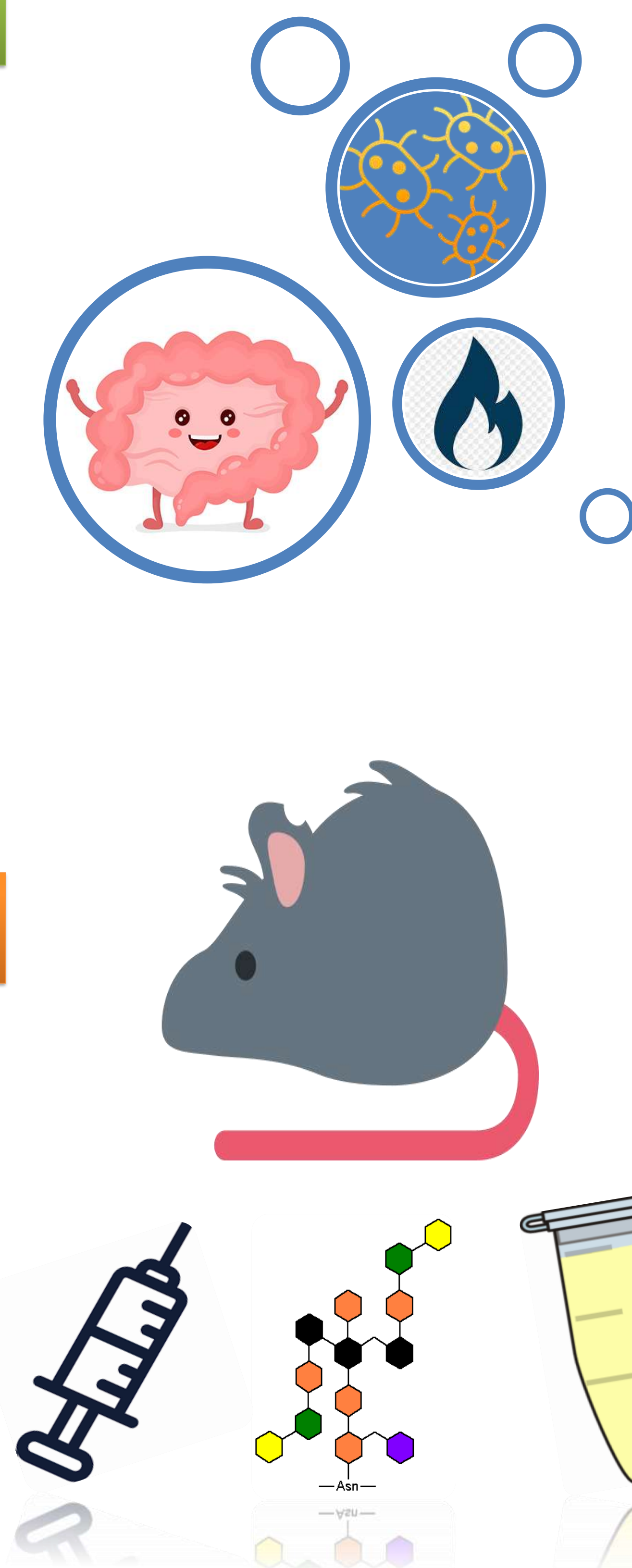
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Oligosaccharides as prebiotics

Oligosaccharides are potential prebiotics promoting the growth and activity of beneficial gut bacteria. These carbohydrates are resistant to digestion and their fermentation by the intestinal bacteria leads to the production of short-chain fatty acids (SCFA), that act as ligands to several receptors and exert a number of positive effects on human health. This has contributed to their wide use in the treatment of many chronic diseases including diabetes.

Materials & Methods

- Week 1**
 - 21 male Wistar rats, 8-weeks old
 - Type 1 diabetes induction – 60 mg/kg STZ
- Week 2**
 - XOS and GOS supplementation
- Week 10**
 - Decapitation and serum collection
 - Total cholesterol and TAG measurement



Discussion

XOS and GOS managed to reduce the serum total cholesterol concentration in the diabetic rats. A proposed mechanism for this effect includes reduced cholesterol absorption and increased excretion in the feces. Although the difference is not statistically significant ($p > 0.05$) XOS and GOS supplementation also managed to slightly decrease the serum triacylglycerol (TAG) levels. This effect might be due to increased production of SCFA that bind to several G-protein coupled receptors and lead to a release of anorectic peptides such as protein YY.

Conclusions

In summary, the obtained results show that both oligosaccharides exert a beneficial effect on the serum concentration of total cholesterol and TAG and could be used in the complex therapy of diabetic patients as well as for prevention of cardiovascular complications that are typical of diabetes.

Results

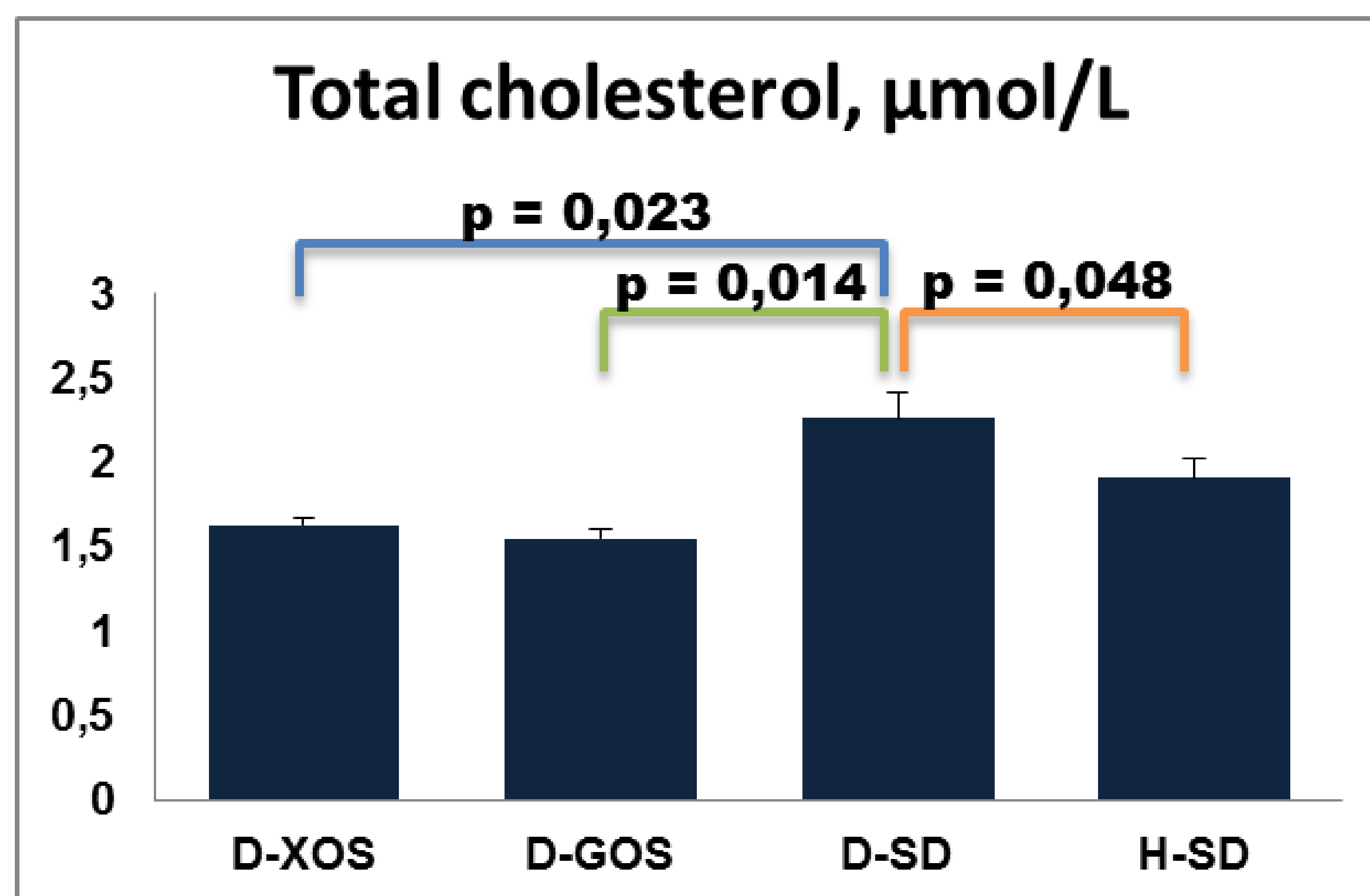


Fig. 1 Effect of XOS and GOS on the serum concentration of total cholesterol

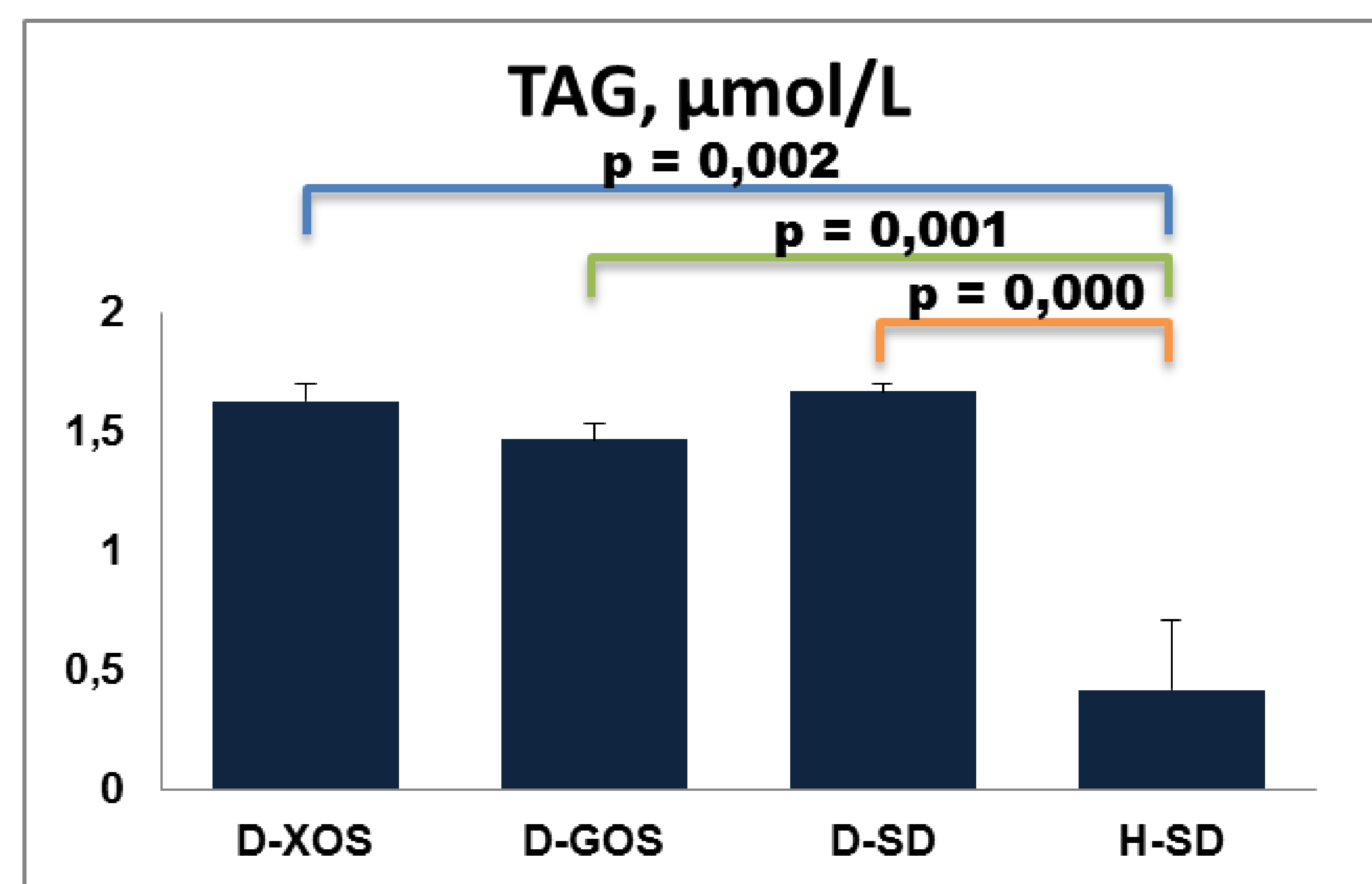


Fig. 1 Effect of XOS and GOS on the serum concentration of TAG