

# The impact of galactooligosaccharides on the bioavailability of sterols: A randomized, crossover, double-blind clinical trial

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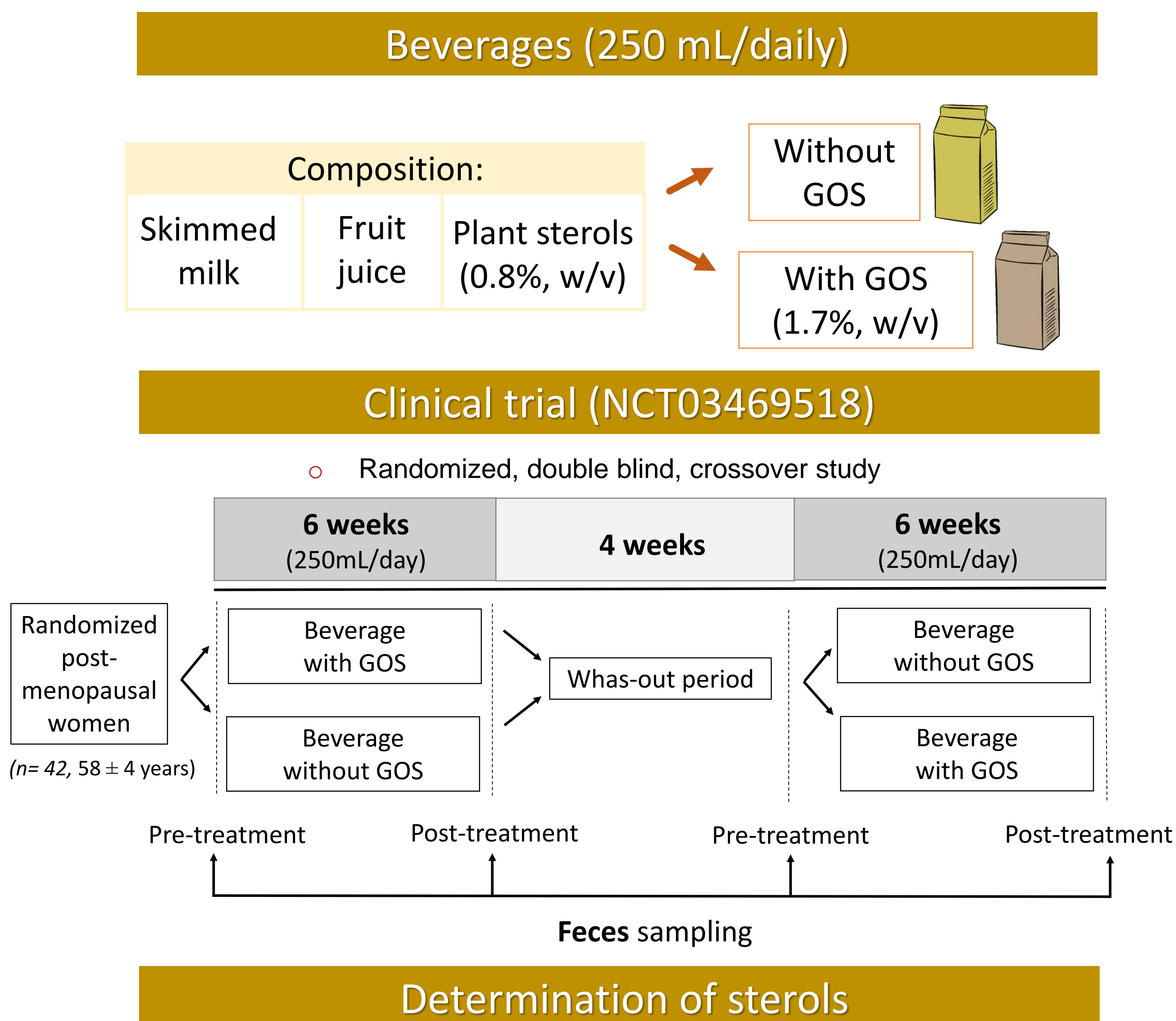
## Introduction

The hypocholesterolemic effect of milk-based fruit beverages enriched with plant sterols (PS) has previously been demonstrated, obtaining a beneficial effect on the serum inflammatory status as well [1]. Galactooligosaccharides (GOS) are added to food products due to their healthy benefit by selectively stimulating growth of specific members of the intestinal microbiota [2]. It has been confirmed in PS-enriched milk-based fruit beverages that the addition of GOS does not affect the bioaccessibility of total PS after a simulated gastrointestinal digestion [3], although it should be confirmed by *in vivo* studies in order to assure their functionality.

## Objective

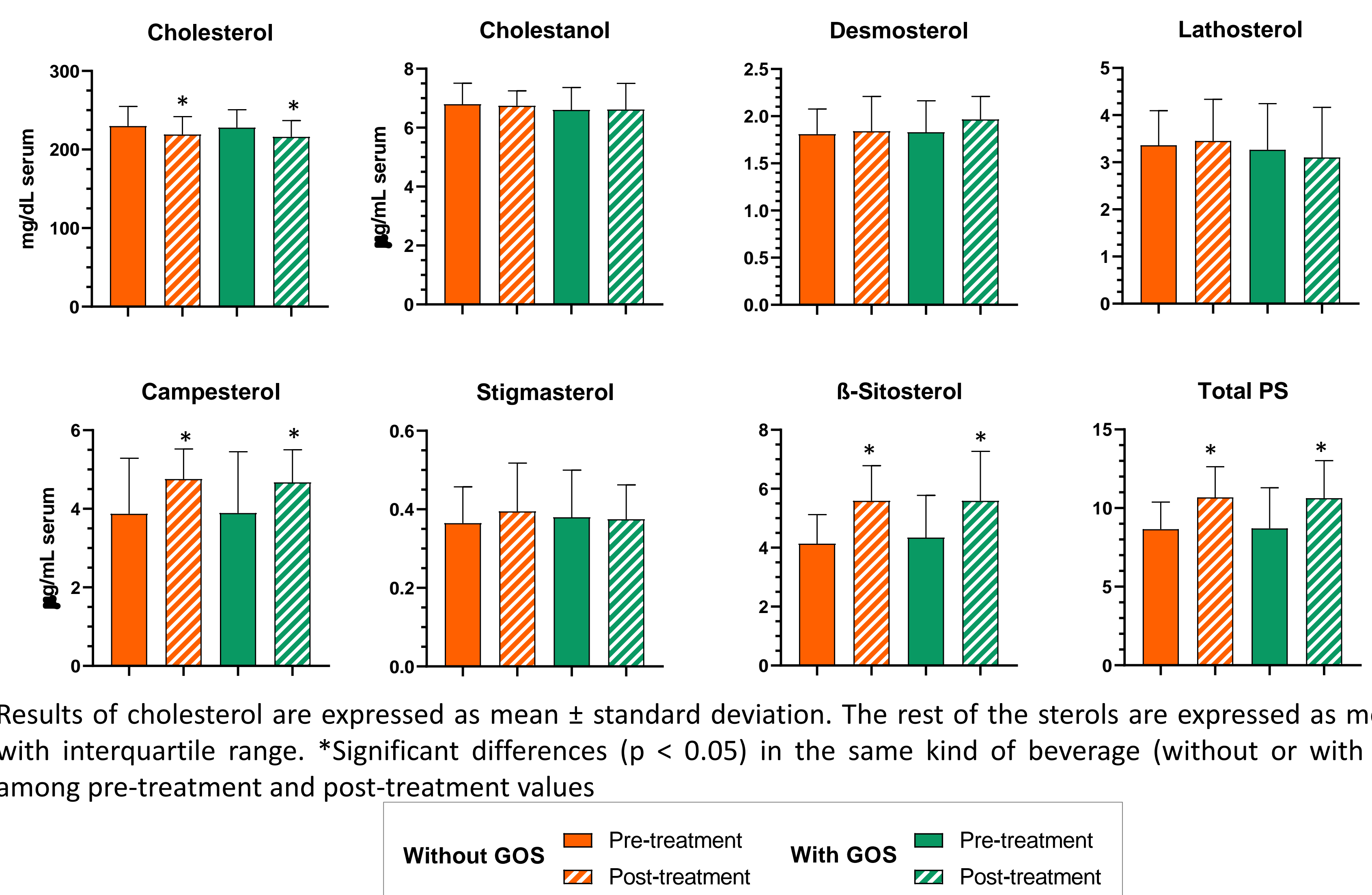
To evaluate the impact of the presence of GOS on the serum levels of cholesterol, its precursors and metabolites, and on the bioavailability of PS

## Methodology



## Results

### Sterol response in serum upon regular consumption of the beverages



The regular consumption of both beverages led to a statistically significant decrease in total cholesterol serum levels (4.7-5.1%), without significant differences between beverages. However, no significant differences for any cholesterol precursor or metabolite were observed between pre- and post-treatment or between beverages. Significant increases in serum concentrations of campesterol (13.6-23.5%) and β-sitosterol (35.7-38.8%) were determined, as markers of dietary PS intake.

The absence of significant differences between beverages suggests no effect of the presence of GOS on PS bioavailability or cholesterol metabolism.

## Conclusions

The results of the present *in vivo* study demonstrate that GOS addition to PS-enriched milk-based fruit beverages seems not to affect PS bioavailability nor cholesterol metabolism. Thus, the suitability of the simultaneous enrichment of the beverages with PS and GOS considering their potential functional effect is confirmed.

## Acknowledgements

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## References

[1] Alvarez-Sala et al. (2018), Food Funct., 91: 5209-5219; [2] Gibson et al. (2017), Nat. Rev. Gastroenterol. Hepatol., 14: 491-502; [3] Blanco-Morales et al. (2018), Food Funct., 9: 2080-2089; [4] Granado-Lorencio et al. (2014), Nutr., Metab. Cardiovasc. Dis., 24:1090-1096.