

Evaluation of mannans from *Saccharomyces cerevisiae* as potential human microbiota modulators

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Introduction

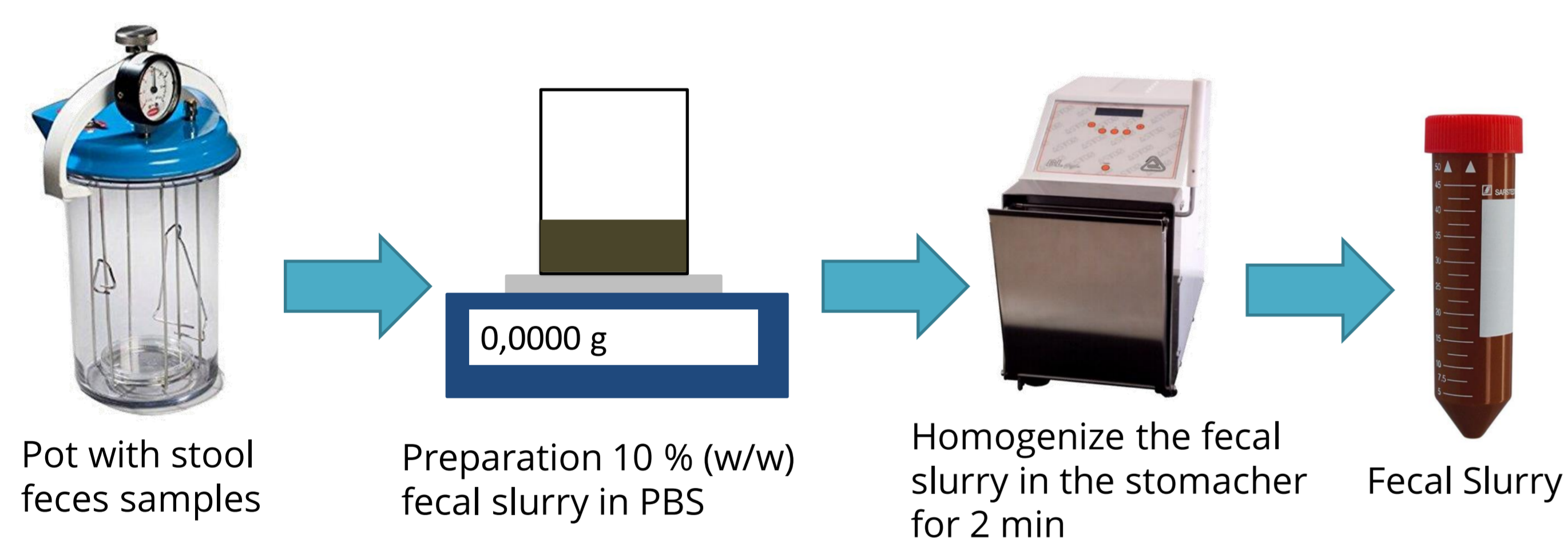
Mannans are polysaccharides mainly composed of mannose¹, which can be found in diverse sources (vegetables, microorganisms, and seeds), namely in the cell wall of *Saccharomyces cerevisiae*; their extraction and valorization targeting the development of functional compounds to incorporate in innovative products is an excellent circularity of the industry².

Objectives

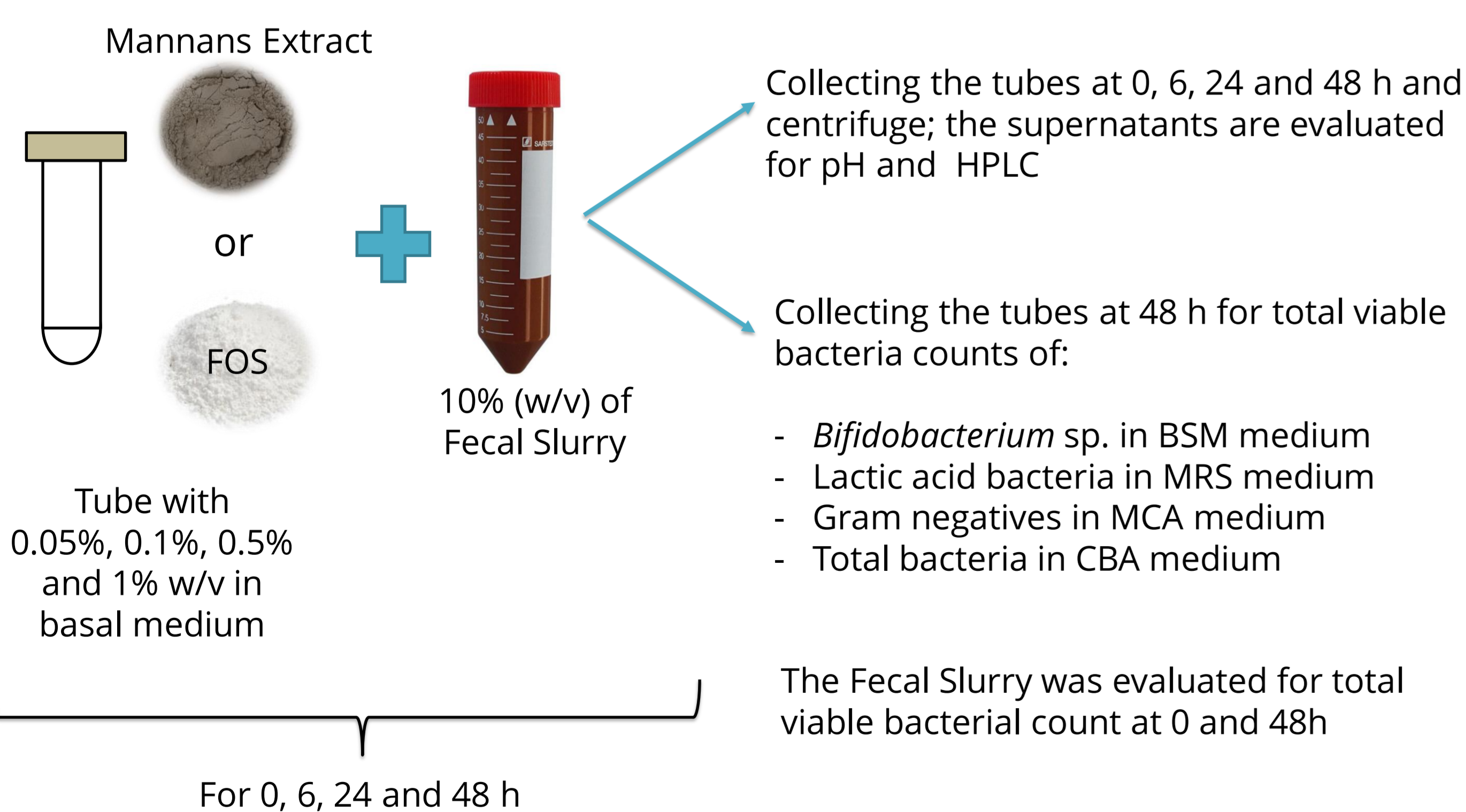
In this work we studied the potential of mannans extracted from *S. cerevisiae* to be fermented by human microbiota, as compared with Fructooligosaccharides (FOS).

Methods

Fecal Slurry preparation



Fecal Tube Fermentation



Results

Bacterial viable cell counts

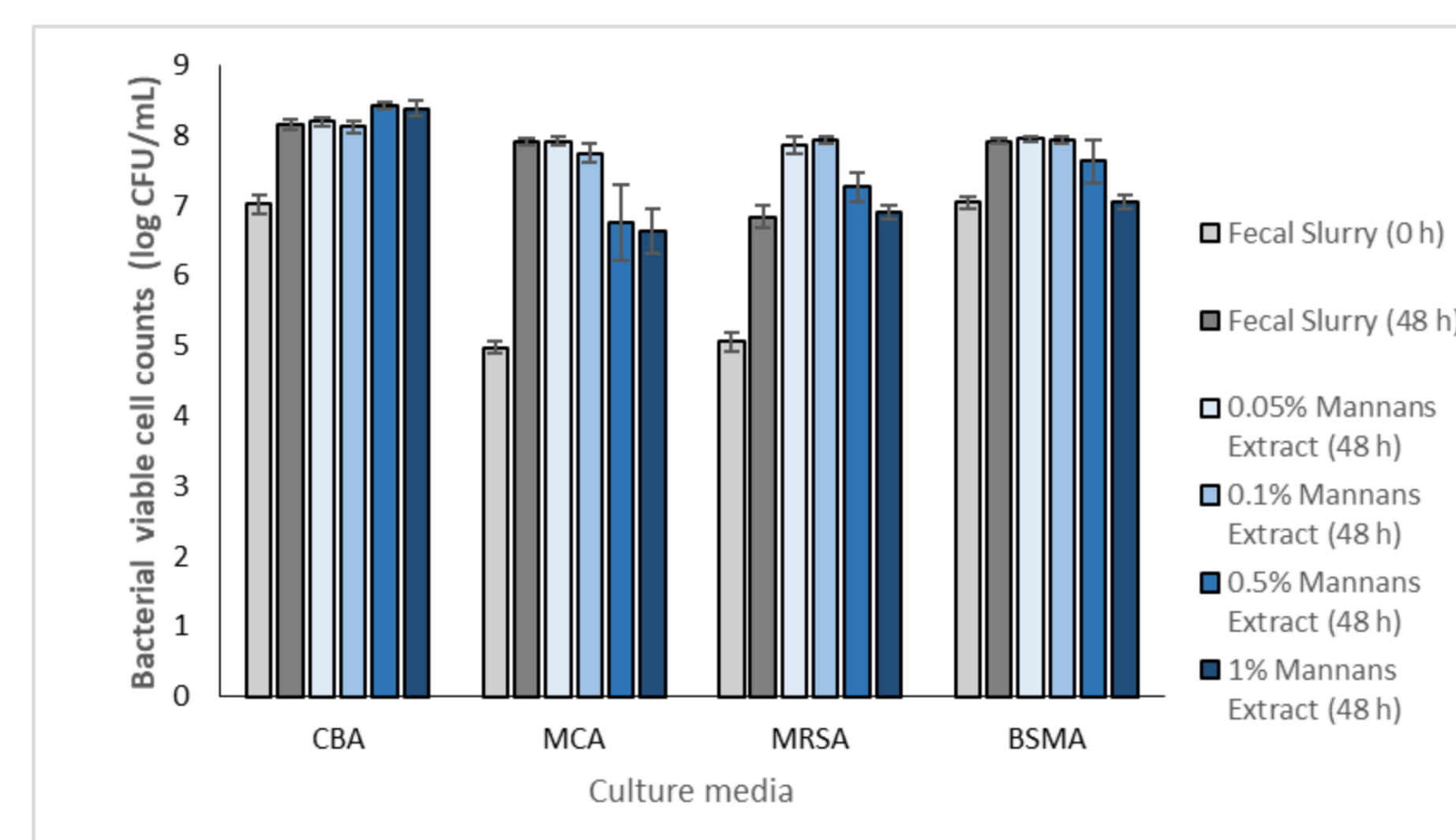
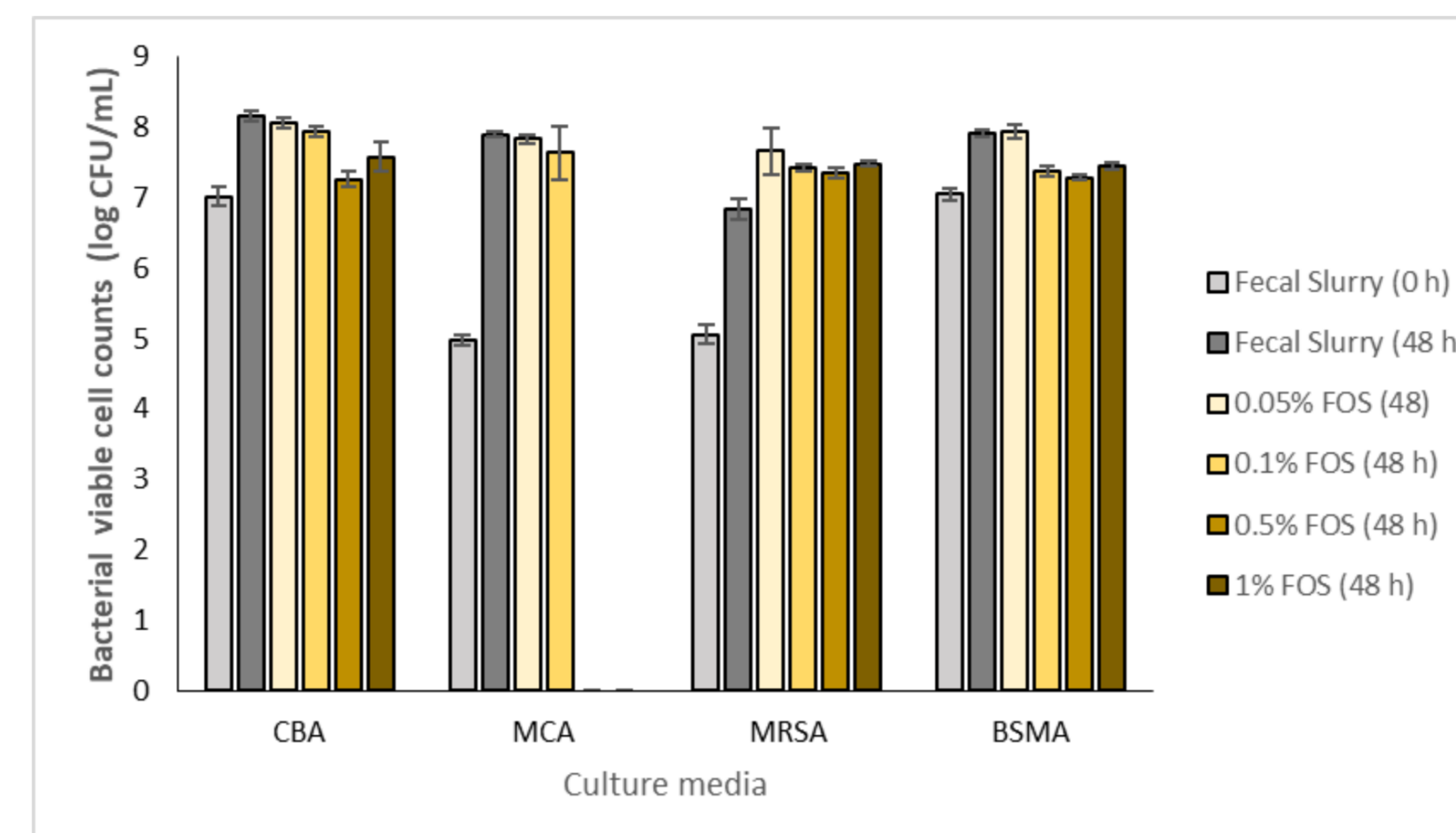


Figure 1 – Results of bacterial viable cell counts at 48 h for FOS and Mannans extract and fecal slurry at 0 and 48h

pH evaluation

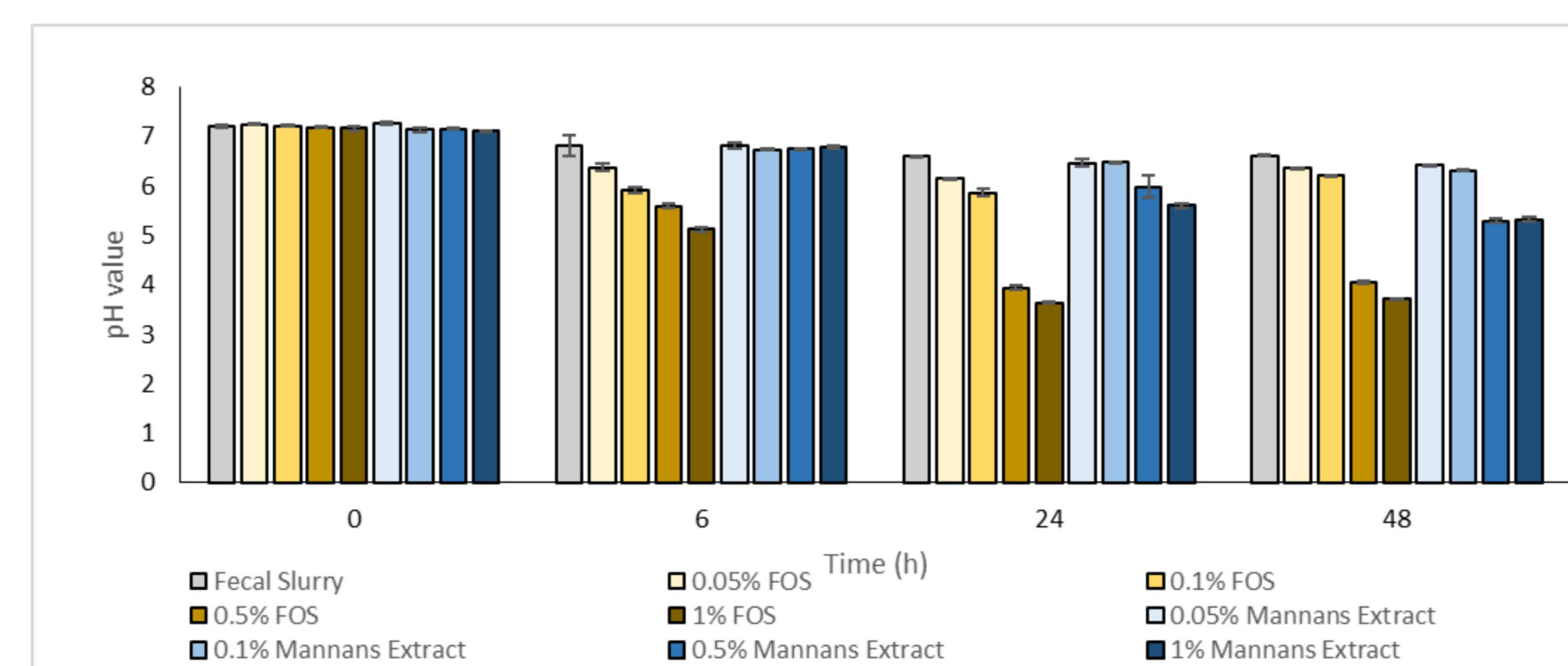


Figure 2 – Results of pH evaluation along microbial growth

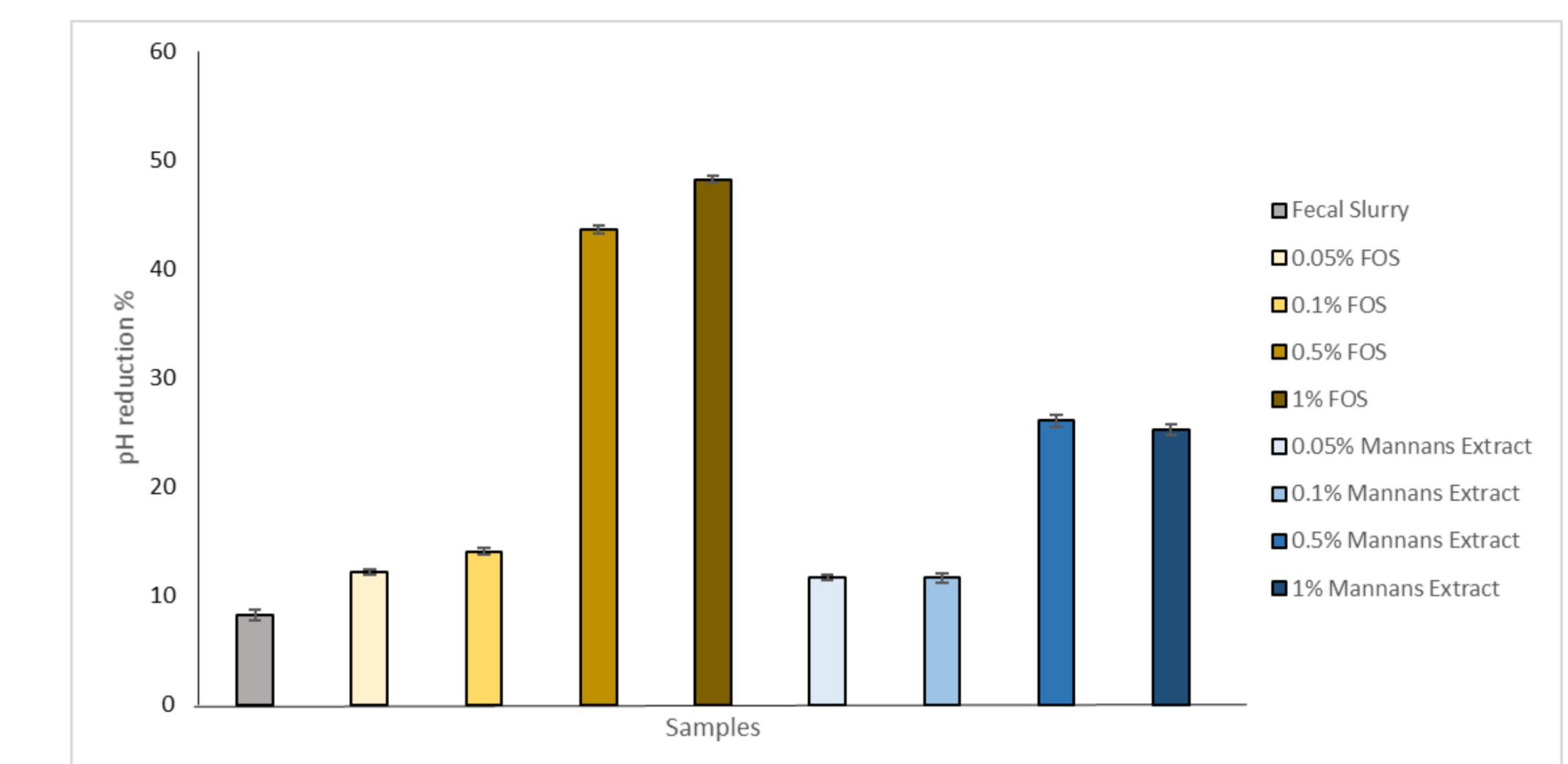


Figure 3 – Results of pH reduction %

Short Chain Fatty Acids (Organic Acids)

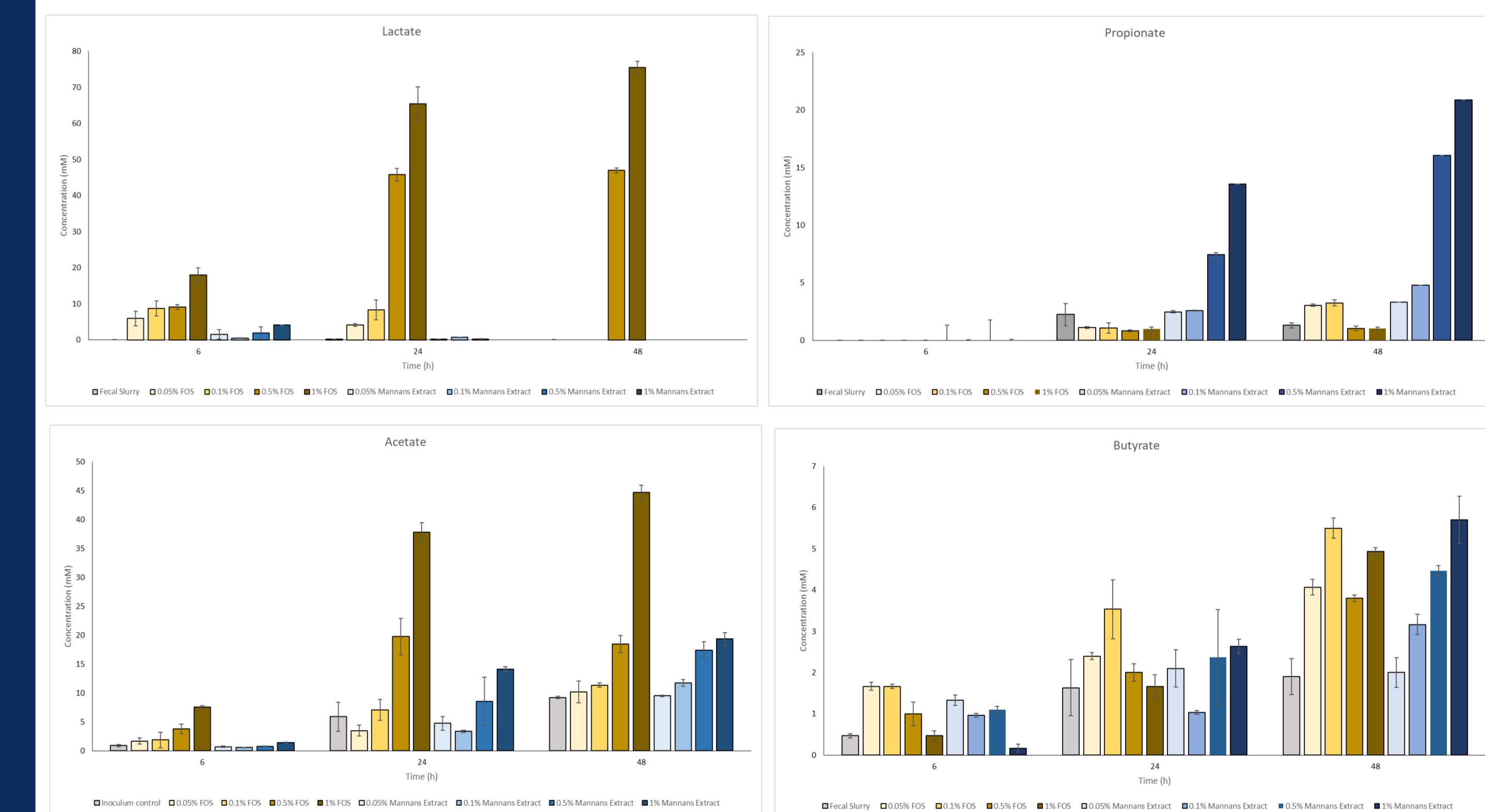


Figure 4 – Organic acids production

Conclusion

The results obtained showed that mannans extracts (0.5 and 1%) decrease the growth of Enterobacteria. Relativity to pH, it was not observed a significant decrease when comparative with the positive control (FOS). Unlike what occurred with FOS, the pH remained between 5-4 at the end of the fermentation within mannans extracts, probably due to the lactic acid consumption by other bacteria, which was used to produce acetate and butyrate as observed in Figure 4.

The results obtained showed that mannans extract is fermented, regulates the intestinal flora and reduces Enterobacteriaceae, thus potentiating its commercial application.

References

1. Tester, R. F. & Al-Ghazzawi, F. H. Mannans and health, with a special focus on glucomannans. *Food Res. Int.* 50, 384–391 (2013).
2. Faustino, M., Durão, J., Pereira, C. F., Pintado, M. E. & Carvalho, A. P. Mannans and mannan oligosaccharides (MOS) from *Saccharomyces cerevisiae* – A sustainable source of functional ingredients. *Carbohydr. Polym.* 272, 118467 (2021).

Acknowledgements

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