



# Food Structures, Digestion and Health 6th International Conference

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## Human gut microbiota fermentation of microbial-fructooligosaccharides

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### Introduction:

Prebiotics have been shown to significantly impact gut microbiota composition, viability and metabolic activity. The prebiotic potential of microbial-fructo-oligosaccharides (microbial-FOS) produced by a newly isolated strain of *Aspergillus ibericus* in co-culture with a *Saccharomyces cerevisiae* YIL162 W was herein evaluated.

### Methods:

Microbial-FOS were *in vitro* fermented by human faeces of five healthy volunteers in anaerobic batch cultures for 24 h. Fermentations were also run with a non-microbial commercial FOS sample – Raftilose<sup>®</sup> P95. During fermentation, the dynamic bacterial population changes were assessed by quantitative real-time PCR (qPCR), and the production of short chain fatty acids (SCFA) and sugar consumption by HPLC. Microbial-FOS chemical structure was characterized by gas chromatography quadrupole mass spectrometry (GC-qMS).

### Results and Discussion:

Microbial-FOS significantly stimulated the growth of Bifidobacteria probiotic strains, triggering a beneficial effect on gut microbiota composition. A great amount of total SCFA was produced by microbial-FOS fermentation as compared to the commercial-FOS, particularly propionate and butyrate. Inulin neoseris oligosaccharides (e.g., neokestose) were only identified in the microbial-FOS sample, which may explain their different functionalities.

### Conclusion:

FOS produced by *A. ibericus* exhibit promising potential as nutraceutical ingredients for gut microbiota modulation.

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