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BOOK OF ABSTRACTS

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I10. Industrial and Food Microbiology and Biotechnology

P345. Fermentability of fructo-oligosaccharides produced by *Aspergillus ibericus* by human gut microflora

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Fructo-oligosaccharides (FOS) are a well-known class of prebiotics which selectively stimulate the growth of bifidobacteria in the gut. Although FOS occurs naturally in many fruits and vegetables, its content is low and are season-limited. As an alternative, we have identified a new isolated strain of *Aspergillus ibericus* as a good FOS producer. To increase FOS content in the mixture and decrease the amount of non-prebiotic sugars released during fermentation, FOS were produced using an integrated fermentation strategy. A co-culture of *A. ibericus* with a *Saccharomyces cerevisiae* YIL162 W was used, for simultaneous FOS production and purification by each strain, respectively. In the present work, the functionality of the FOS produced by *A. ibericus* as a prebiotic was assessed. FOS prebiotic potential was evaluated in anaerobic batch cultures for 24 h. Human faeces from 5 healthy volunteer individuals were used. With the faecal inoculum, several carbon sources were tested, namely a commercial FOS sample derived from inulin - Raftilose® P95 from Beneo-Orafti, Belgium and the FOS samples produced by the aforementioned *A. ibericus*. The dynamic bacterial populations changes were assessed by PCR-real time, as well as the production of short chain fatty acids (SCFA) and lactate – quantified through analytical methods (HPLC). Both carbon sources were compared for their prebiotic potential. A bifidogenic effect was observed for both microbial and commercial FOS. The growth of lactobacilli probiotic strains was similar for both FOS substrates. Thus, the microbial FOS triggered a beneficial effect on gut microbiota composition. SCFA – including succinate, acetate, propionate and valerate - were produced by the five faecal inoculum tested, at high concentrations using both substrates. Lower amount of formate and butyrate were also produced. Despite similar trends between both FOS substrates, a tendency for an earlier increase on SCFA concentrations in the culture was found for the microbial FOS, potentially indicating a faster metabolization rate. Nonetheless, microbial FOS seems to have similar prebiotic potential when compared to commercial FOS samples, potentially indicating a feasible route for bio-based FOS production. In conclusion, microbial FOS exhibited promising potential as nutraceutical ingredients for gut microbiota modulation with likely prebiotic features.