

In vitro fermentation of commercial α -gluco-oligosaccharide by faecal microbiota from lean and obese human subjects

Abstract

The fermentation selectivity of a commercial source of α -gluco-oligosaccharides (BioEcolians; Solabia) was investigated in vitro. Fermentation by faecal bacteria from four lean and four obese healthy adults was determined in anaerobic, pH-controlled faecal batch cultures. Inulin was used as a positive prebiotic control. Samples were obtained at 0, 10, 24 and 36 h for bacterial enumeration by fluorescent in situ hybridisation and SCFA analyses. Gas production during fermentation was investigated in non-pH-controlled batch cultures. α -Gluco-oligosaccharides significantly increased the *Bifidobacterium* sp. population compared with the control. Other bacterial groups enumerated were unaffected with the exception of an increase in the *Bacteroides-Prevotella* group and a decrease in *Faecalibacterium prausnitzii* on both α -gluco-oligosaccharides and inulin compared with baseline. An increase in acetate and propionate was seen on both substrates. The fermentation of α -gluco-oligosaccharides produced less total gas at a more gradual rate of production than inulin. Generally, substrates fermented with the obese microbiota produced similar results to the lean fermentation regarding bacteriology and metabolic activity. No significant difference at baseline (0 h) was detected between the lean and obese individuals in any of the faecal bacterial groups studied.

Keyword: Gluco-oligosaccharides; Obese subjects; Prebiotics