

Marzorati M, Verhelst A, Luta G *et al.*: *In vitro* modulation of the human gastrointestinal microbial community by plant-derived polysaccharide-rich dietary supplements. *Int J Food Microbiol* (2010), doi:10.1016/j.ijfoodmicro.2010.02.030.

ABSTRACT

The use of prebiotics is a possible strategy to manage and steer the complex gut microbial community towards a health-promoting composition (Gastrointestinal Resource Management). In this study, the Simulator of the Human Intestinal Microbial Ecosystem was used to investigate the effects of two commercially-available plant polysaccharide supplements on the structure, composition and metabolism of an *in vitro* cultured colon microbial community.

Microbial analyses showed both a bifidogenic (up to +1.3 log cfu/mL) and a lactobacillogenic (up to +0.9 log cfu/mL) effect during treatment with the dietary supplements. Quantitative PCR confirmed that the

increase of *Bifidobacteria* spp. was statistically significant ($P < 0.05$) in all of the colon compartments and showed a significant increase of the bacteroides–prevotella group concentration (+0.6 log cells/ml) in the compartment simulating the proximal colon. Denaturant gradient gel electrophoresis analyses and a relative ecological interpretation, in combination with sugar and short-chain fatty acids quantification, provided evidence of a positive effect of both the tested products. Overall, the treatment period was associated with (i) good and selective fermentability of the polysaccharide supplements along the entire colon; (ii) positive and selective bifidogenic effect; (iii) the possibility of enhancing species belonging to Bacteroidetes, a phylum recently associated with body weight management.