

## Prebiotic B-Galacto-oligosaccharide supplementation of the low FODMAP diet improves symptoms of irritable bowel syndrome but does not prevent diet induced decline in bifidobacteria: a randomised controlled trial

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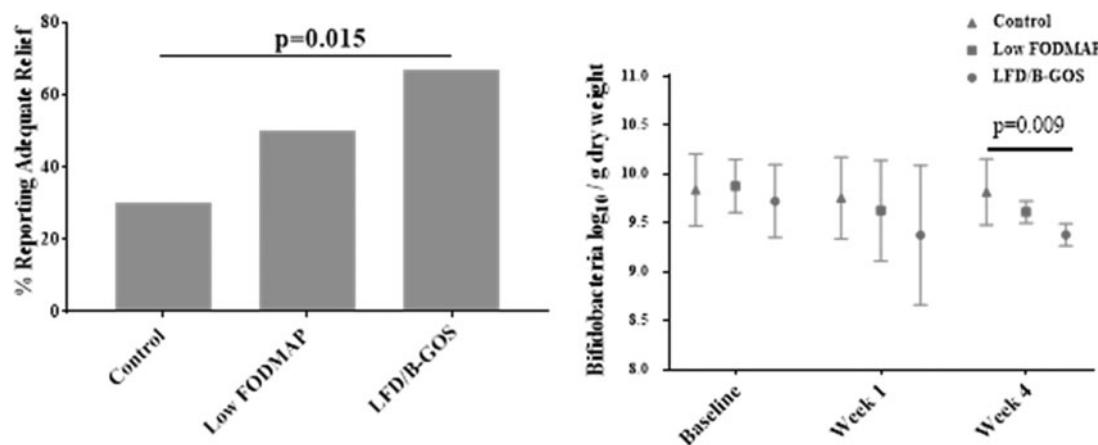
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Dietary restriction of fermentable oligo-, di-, mono -saccharides and polyols (low FODMAP diet, LFD) is widely used for the management of irritable bowel syndrome (IBS)<sup>(1)</sup>, however it reduces gastrointestinal (GI) bifidobacteria<sup>(2)</sup>. B-galacto-oligosaccharide (B-GOS; HOST-G904) are prebiotics that increase bifidobacteria in IBS<sup>(3)</sup>. The combination of the two therapies has not previously been investigated.

This randomised controlled trial aimed to investigate whether: 1) IBS symptoms improved on LFD supplemented with 1·4 g/d B-GOS compared to control; and 2) B-GOS supplementation (1·4 g/d) could prevent the reduction of GI bifidobacteria seen in patients following the LFD.

Adults fulfilling Rome criteria for IBS were screened for inclusion (n = 130). Sixty-nine patients were recruited to a 3-arm parallel RCT and were randomised to: control (sham diet/placebo), LFD only (LFD/placebo) or LFD plus B-GOS (LFD/B-GOS). Validated questionnaires were used to assess GI symptoms and stool output. Stool were analysed for bifidobacteria using fluorescent *in situ* hybridisation, and short-chain fatty acids (SCFA) and pH were measured using gas chromatography and pH probe respectively.



Adequate relief of IBS symptoms differed significantly between control (30.4 %), LFD (50 %) and LFD/B-GOS (66.7 %) ( $p = .046$ ), with differences specifically between control and LFD/B-GOS ( $p = .015$ ). Individual IBS symptoms were more markedly improved in the LFD/B-GOS group compared to control. Bifidobacteria ( $\log_{10}/\text{g dry weight}$ ) also differed across the groups (control 9.8, LFD 9.6, LFD/B-GOS 9.5;  $p = .009$ ), with the LFD/B-GOS significantly lower than control ( $P = .009$ ). In the intervention groups higher stool pH at seven days ( $p = 0.008$ ) and four weeks ( $p = 0.004$ ), and lower butyrate at seven days ( $p = 0.002$ ) and four weeks ( $p = 0.004$ ) was observed.

Symptoms of IBS markedly improved during LFD supplemented with B-GOS prebiotic, suggesting a synergy between the two therapies however addition of a low-dose prebiotic does not overcome the effect of diet on bifidobacteria. Luminal markers of bacterial metabolism reveal LFD significantly impacts the GI luminal environment within the first seven days and these changes persist with diet restriction.

1. Staudacher HM, Irving PM, Lomer MC *et al.* (2014) *Gastroenterol Hepatol*, **11**, 256–66.
2. Staudacher HM, Lomer MC, Anderson JL *et al.* (2012) *J Nutr* **142**, 1510–8.
3. Silk DBA, Davis A, Vulevic J *et al.* (2009) *Aliment Pharmacol Ther* **29**, 508–18.