

## Does Fibre-fix provided to people with irritable bowel syndrome who are consuming a low FODMAP diet improve their gut health, gut microbiome, sleep and mental health?

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A diet low in fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAP) has been identified to be highly effective in irritable bowel syndrome (IBS) symptom management, whereas research has suggested its negative impacts on gut health and gut microbiome.<sup>(1)</sup> This randomized double-blind placebo-control study aimed to examine whether Fibre-fix, a mix of dietary fibres, added to an existing low FODMAP diet can improve gut health, gut microbiota, sleep, mental health and quality of life in IBS patients without symptom exacerbation. Adult participants ( $n = 26$ , three males) were randomised into either the Fibre-fix ( $n = 13$ ) or placebo ( $n = 13$ ) group after completing a 1-week baseline, followed by a 3-week supplement with Fibre-fix/placebo with doses increased from 5 g/d to 40 g/d in both groups. Faecal samples were collected at baseline and at the end of intervention to assess changes in the gut microbiome and SCFA levels. No differences between groups were detected at baseline but at T2, the overall gut composition changed at both genus ( $p = 0.0023$ ) and amplicon sequence variant (ASV) level ( $p = 0.0018$ ), due to Fibre-fix. It beneficially altered the gut microbial composition by significantly changing the relative abundance of 10 genera and 35 ASV, including *Ruminococcus E* with a 5.5-fold change (fc) ( $p = 0.003$ ) and *Prevotella* (fc = 5.9,  $p < 0.05$ ). A wrist-based actigraphy, Readiband™, was used to record objective daily sleep, where validated questionnaires were completed at both timepoints, and sleep outcomes showed that Fibre-fix maintained participants' good baseline sleep patterns throughout the 4-week study. Validated questionnaires on mental health and quality of life trended positively in the Fibre-fix group, with significant improvement in IBS-specific anxiety. IBS symptom severity, reported from daily records and assessed by validated questionnaires at both timepoints, remained at a low level during the study for all participants. The intervention also changed the habitual dietary intake of participants. Compared with placebo, Fibre-fix supplements led to a lower energy intake ( $p = 0.033$ ), and part of this was due to an increase in fibre intake from  $20.2 \pm 2.5$  g/d to  $33.1 \pm 2.4$  g/d ( $p < 0.05$ ) reaching suggested dietary targets for females,<sup>(2)</sup> as reported via a 3-day weighed food diary. Despite this, participant overall dietary patterns maintained stable as energy proportion from macronutrients did not change. The study shows that with the correct mix of fibres, it is possible to alleviate the negative effects of a low FODMAP diet on gut health, improve gut microbiota, reduce IBS-specific anxiety, and maintain the sleep of patients with IBS and following a low FODMAP diet without exacerbation of symptoms.

### References

1. So, D, Loughman A & Staudacher HM (2022) *Am J Clin Nutr* **116**, 943–952.
2. National Health and Medical Research Council (2013) *Australian dietary guidelines*. Canberra: NHMRC. Available from: <http://www.nhmrc.gov.au/guidelines-publications/n55>