**Dietary modification of the gastrointestinal microbiota in health and disease**

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Considerable research has been undertaken relating to the microbiota and its dietary modification in gastrointestinal disorders. Marked alterations in the gastrointestinal microbiota have been found in enteral nutrition-related diarrhoea, irritable bowel syndrome and inflammatory bowel disease. For some, there are key pathways linking these alterations to disease pathogenesis. For example, alterations in the numbers of some species (e.g. *Faecalibacterium prausnitzii*) might impact on disease pathogenesis *in vivo*, including short-chain fatty acid production in enteral nutrition and intestinal dendritic cell function in Crohn’s disease. Probiotics and prebiotics can be used to modify the microbiota, however, the vast majority of studies are in healthy humans. Some clinical trials of probiotics and prebiotics have been undertaken in patients with gastrointestinal disease, but whilst probiotics have shown considerable promise, the findings for prebiotics are less convincing at this stage. For example, additional prebiotic supplementation has actually been shown to lower *F. prausnitzii* in patients receiving enteral nutrition. Meanwhile, in the largest trial of its kind, prebiotics did not impact on disease activity, worsened functional symptoms and failed to impact on luminal microbiology in patients with active Crohn’s disease. Indeed, our trials of low prebiotic diets (the ‘low FODMAP diet’) have resulted in improved symptoms in irritable bowel syndrome, despite lowering luminal microbiota. Probiotics and prebiotics can be used to modify the microbiota in health, but their impact on disease requires greater examination.