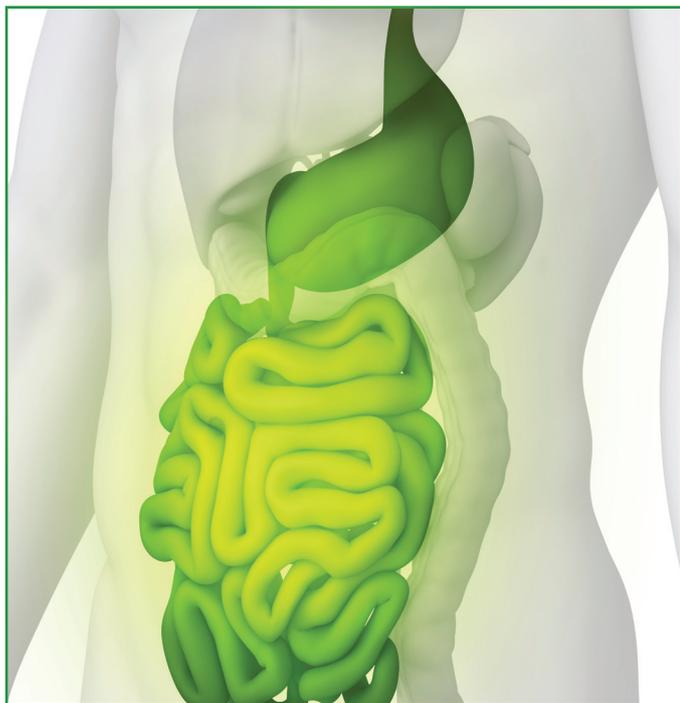




## The low-FODMAP diet alters the colonic microbiota: implications for the long-term application of the diet in patients with IBS.



There is no doubt that dietary interventions in the management of IBS are rapidly gaining traction as studies proving their efficacy start to emerge. In fact many practitioners are now using dietary modification as first-line therapy for IBS, and patients themselves are commonly self-initiating diets sourced from the internet.

One of the most successful, and hence commonly used dietary therapies, is the **low FODMAP** diet, which was introduced by Professor Peter Gibson and his team at Monash University several years ago. FODMAPs (Fermentable Oligosaccharides,

Disaccharides, Monosaccharides And Polyols) are poorly absorbed, rapidly fermented short-chain carbohydrates. Restriction of FODMAPs has resulted, in a blinded placebo controlled cross-over study, in significant symptom improvement in around 75% of patients with IBS (Halmos et al Gastroenterology 2014). Given the success of the diet and the chronic nature of IBS, many patients adhere to such a diet for many months to years.

FODMAPs are natural prebiotics, compounds that pass undigested through the upper gastrointestinal tract to the colon, and stimulate the growth and general health of beneficial colonic bacteria such as bifidobacteria and lactic acid bacteria. Such bacteria have benefits to the host in terms of enhanced absorption and immune regulation. Further, bacterial fermentation of FODMAPs produces short-chain fatty acids (SCFAs), including butyrate, which acts a major energy source for colonic epithelial cells. SCFAs are also thought to play a role in enhanced water resorption in the colon, as well as having potential anti-carcinogenic and anti-inflammatory properties. (Sengupta et al J Gastroenterol Hepatol 2006). Longterm restriction of FODMAPs may therefore, in theory, disturb the homeostasis of the colonic microbiota and potentially reduce the health benefits usually derived from these colonic bacteria.

This concept was explored in a recent publication, again arising from Monash University, where the effects of the both a low FODMAP diet and a "typical Australian diet" (high FODMAP) on biomarkers of colonic health were compared in a single-blinded, randomised, crossover trial. This study was published in Gut in July of this year (Halmos et al Gut July 2014). Twenty-seven IBS and 6 healthy subjects were randomly allocated one of the two diets for a 21-day period, and then crossed over to the other diet with a 21-day "wash-out" period between the two diets. The diets differed only in terms of the FODMAP content. Stool was collected during the study period and the pH, SCFA concentration and the bacterial abundance and diversity were assessed.



This study demonstrated marked differences in bacterial abundance and diversity between a high- and low-FODMAP diet, but changes in SCFA concentration and bowel transit time were not observed. The low FODMAP diet was associated with lower absolute levels of colonic bacteria, but specifically lower levels of butyrate-producing bacteria and prebiotic bacteria. In contrast the higher FODMAP diet was associated with specific stimulation of the growth of bacterial groups with putative health benefits.

Summarised from: *Halmos et al. Diets that differ in their FODMAP content alter the colonic luminal microenvironment. Gut July 2014*

**Comments:**

Whilst the longer-term implications of this from a functional or health perspective are not known, the following conclusions can be drawn:

- A low FODMAP diet should not be recommended in asymptomatic patients;
- Patients should probably avoid following the low-FODMAP diet long-term;
- Ideally the least restrictive diet should be implemented;
- Patients should probably be "re-challenged" to allow the minimal amount of restriction that maintains an acceptable symptom response.

With this regard, it would therefore make sense to try to limit the intake of only those FODMAPs that are likely to be contributing to the patient's symptoms rather than empirically restricting all of the FODMAPs. **Hydrogen/methane breath testing** is a readily accessible and accurate, non-invasive test that can be useful in identifying poorly absorbed food sugars such as lactose and fructose. Based upon these tests practitioners can tailor an individual diet either including or excluding these sugars based upon the patient's individual results, allowing the patient to have the least restrictive diet, which would limit any potential deleterious effects of a low-FODMAP diet. This diet would be best supervised by a dietician or nutritionist with expertise in IBS.



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