

ADVANCES IN IBS

Current Developments in the Treatment of Irritable Bowel Syndrome

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An Overview of Fiber and Fiber Supplements for Irritable Bowel Syndrome



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G&H How is dietary fiber defined?

JM The definition of dietary fiber varies slightly from place to place. In general, dietary fiber is a type of carbohydrate found in edible plant foods that is resistant to digestion and absorption in the small intestine. The 2 main classes of carbohydrates are indigestible polysaccharides, which are long-chain carbohydrates and include nonstarch polysaccharides and resistant starch; and oligosaccharides, which are short-chain carbohydrates and include fructo-oligosaccharides (FOSs) and galacto-oligosaccharides (GOSs). Short-chain carbohydrates are part of the family of fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs).

G&H What is the mechanism of action of dietary fiber in the gastrointestinal tract?

JM Dietary fiber has a range of physiologic effects, from viscosity in the gastrointestinal tract to bulking-laxation effects to fermentation events in the colon. Viscosity is relevant for delaying absorption and modulating glycemic response. Bulking-laxation refers to the prevention of constipation and promotion of good transit time through the gut. Fermentation events are attracting more and more interest, as it is understood that the byproducts of fermentation are important for the gut and may even have benefits beyond the gut with evidence emerging for a role in chronic inflammatory diseases. Fermentation events

occur in the large bowel when undigested carbohydrates are fermented or metabolized by bacteria. The major end product of this process is a group of substances called short-chain fatty acids that include acetate, propionate, and butyrate. Butyrate is particularly important for the gut because it is the local source of energy for colonocytes. Certain fibers are also able to promote changes in the composition and activity of bacteria in the gut, known as prebiotic effects. This is another area that is gaining interest because gut bacteria have a role in numerous processes that are relevant to health.

G&H What are the effects of fiber on symptoms of irritable bowel syndrome?

JM Fiber supplementation can be considered in patients with constipation, which is a common problem affecting more than half of patients with irritable bowel syndrome (IBS). Although patients are encouraged to increase their fiber intake through diet (ideally from foods that are high in fiber but low in FODMAPs), some patients find a fiber supplement useful. If fiber supplements are to be used, then the fermentability profile of the fiber is particularly relevant to IBS because one of the triggers of IBS is gas production in the large intestine. Gas leads to bloating and distension, which result in pain and discomfort. Therefore, short-chain carbohydrates (fructans, FOSs, and GOSs) exacerbate symptoms in most patients with IBS due to the speed with which they ferment and

promote gas production. More complex, longer-chain fibers are better tolerated in IBS because they are fermented more slowly.

G&H What fiber supplements are currently commercially available?

JM Suitable fiber supplements include Citrucel (Glaxo-SmithKline), which has a methylcellulose base, and Metamucil (Procter & Gamble) and Naturlax (Naturlax), which are made from psyllium (also called ispaghula). Supplements made from partially hydrolyzed guar gum (PHGG; Sunfiber, Taiyo International) and karaya gum/sterculia (Normacol/Normafibe, Norgine) are also available. Fiber supplement choices that are high in FODMAP content but are less suitable for patients with IBS include wheat bran and FOS- and inulin-based products.

G&H How should a patient or clinician choose among the options for optimal symptom relief?

JM Fiber supplements all tend to fall into a number of categories. Fiber can be targeted to a particular condition if it is understood what the different fibers do and how

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they can trigger or not trigger symptoms in IBS patients. For example, patients should be aware of fiber supplements containing inulin, fructan, FOS, and GOS, which are commonly added to supplements and some processed foods but induce IBS symptoms.

G&H Have any adverse effects been associated with supplemental fiber intake?

JM Generally, fiber supplementation in IBS is considered safe, with few adverse events reported. However, supplementation with fiber is contraindicated in patients with fecal impaction, where laxatives should be used as first-line therapy followed by appropriate fiber

supplementation. Certain fibers are highly fermentable and can lead to excessive gas, bloating, diarrhea, and discomfort or pain. Individuals with and without IBS can be affected by these symptoms if the supplements contain too many of these fermentable carbohydrates and if high doses are consumed. In such instances, patients can either reduce their intake or choose a product without these fibers added.

G&H What is the recommended amount of daily dietary fiber intake, and how much of that can be provided by supplements?

JM The Academy of Nutrition and Dietetics recommends 25 g of fiber per day for women and 38 g per day for men, regardless of whether they have IBS. The majority of this intake should come from foods that contain fiber naturally, such as vegetables, fruits, whole grains, cereals, legumes, and seeds. However, patients should be mindful of the foods they choose. For example, adding wheat bran to cereal may be a good way to increase fiber intake for people who do not have IBS, but wheat bran contains fructans and could cause symptoms in patients with IBS. These patients would be better served by choosing a low-FODMAP product. For patients who struggle to meet their fiber intake requirement, dietary fiber supplements can help them reach their goal.

G&H What have studies shown regarding the use of dietary fiber supplements vs a low-FODMAP diet for the treatment of IBS?

JM Not many studies have been done comparing the low-FODMAP diet with fiber supplements. My colleagues and I are conducting a study that starts this month because we realized there was a knowledge gap on suitable dietary fiber supplements that could be used in conjunction with the low-FODMAP diet.

G&H Can fiber supplements be used long term?

JM This is another area lacking in research. We need to understand what the long-term use could be, but outcomes also depend on who is taking the supplement. Dietary fiber supplements have a role for elderly patients who are residents in a nursing home or an aged care facility, as the supplements are well tolerated and less severe than some of the pharmaceutical remedies for constipation (enemas, suppositories). The nursing staff and health professionals who are responsible for the care of patients in these facilities should help manage fiber intake because patients can switch from constipation

to diarrhea, in which case the use of fiber supplements should be reduced or stopped.

For younger patients as well as for the general population, diet should be the major source of fiber rather than long-term use of supplements. There are some situations in which meeting the adequate intake is challenging—for example, traveling or being in the hospital—and fiber supplements can be useful.

G&H Is the use of fiber supplements recommended in pediatric patients?

JM Pediatric patients can take fiber supplements, but the supplements need to be chosen carefully. Consultation with a pediatrician and a pediatric dietitian is important because fiber intake can be complicated in young children.

G&H Are there any patients who should not take fiber supplements?

JM Most patients can take fiber supplements as long as they are used appropriately. Patients who are malnourished, ill, very young, or very old should not take excessive amounts of fiber supplements. Individuals on a very high-fiber diet should avoid supplemental intake with fiber, as excessive intake can lead to diarrhea and, as a consequence, reduced absorption of minerals, vitamins, and energy. Patients with mixed IBS can take suitable supplements while following a balanced diet and reducing FODMAP intake to normalize their bowel habit. In general, patients should consult with their dietitian and doctor, and intake of fiber supplements should be monitored carefully.

G&H What research is needed in this area?

JM More research is needed on dietary fiber supplements in the context of a low-FODMAP diet. Following a low-FODMAP diet is becoming the first-line diet therapy for IBS, and often it can restrict fiber intake because a lot of the recommended grains and cereals are low in fiber.

It can be difficult for patients to find good high-fiber, low-FODMAP alternatives. It would also be beneficial to research fiber combinations that would allow for a more well-rounded fiber supplement. For example, combining a fiber type that is good at bulking with one that stimulates the growth of beneficial bacteria in the bowel could result in optimal gut functioning and gut health. Ranking and understanding the behavior of fiber when it is consumed (rapid vs slow fermentation) is an area that needs more research. More comparative trials are needed, as are data on long-term outcomes.

Dr Muir works in a department that financially benefits from the sales of a digital application, booklets, and a food certification program on the low-FODMAP diet. The Monash University Low FODMAP Certification Program for food has certified a PHGG product from Taiyo International. Funds raised from these activities contribute to research of the Department of Gastroenterology and to the University. Dr Muir receives no personal remuneration.

Suggested Reading

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