

## Diet for SIBO

The dietary approach for small intestine bacterial overgrowth SIBO is to eat foods that are easily digested, so that most of the nutrients can be absorbed higher up in the intestine, away from bacteria. Foods that are not well absorbed should be minimized or eliminated from the diet, because they end up being a good fuel source for the bacteria residing near the end of the small intestine. High-fiber diets can make symptoms worse for some patients with SIBO. Fiber is composed of carbohydrates that humans poorly digest. Bacteria ferment it, producing gas and bloating. Certain complex sugars also are fermented by the bacteria.

There are fermentable foods that are likely to feed intestinal bacteria to produce intestinal gas and bloating. The acronym, FODMAP—Fermentable Oligo-, Di- and Monosaccharides and Polyols—was coined to describe a previously unrelated group of short-chain carbohydrates and sugar alcohols (polyols) which feed small intestinal bacteria and aggravate SIBO.<sup>1</sup>

The FODMAPs comprise fructose, lactose, fructo- and galactooligosaccharides (fructans, and galactans), and polyols (such as sorbitol, mannitol, xylitol and maltitol), all of which putatively have three common functional properties:

1. *Poorly absorbed in the small intestine due to:*
  - a) slow, low-capacity transport mechanisms across the epithelium (fructose)
  - b) reduced activity of brush border hydrolases (lactose)
  - c) lack of hydrolases (fructans, galactans)
  - d) molecules being too large for simple diffusion (polyols).
2. *Small and therefore osmotically-active molecules.* Lactulose is a synthetic FODMAP increases the liquidity of luminal contents and subsequently affecting gut motility
3. *Rapidly fermented by bacteria.* Fermentation by bacteria is dictated by the chain length of the carbohydrate; oligosaccharides and sugars are very rapidly fermented compared with polysaccharides such as soluble dietary fiber.

Examples of High FODMAP Foods include:

- Fruits
  - apples, pears, peaches, cherries, plums, prunes
- Grains
  - wheat, rye
- Legumes
  - lentils, beans
- Sweeteners
  - fructose products, sugar alcohols
- Dairy
- Vegetables
  - artichokes, asparagus
  - avocado, beets, broccoli
  - Brussels sprouts, cabbage
  - cauliflower, garlic (with large consumption)
  - fennel, leeks, mushrooms
  - okra, onions, peas
  - radicchio lettuce, scallions (white parts), shallots
  - sugar snap peas
  - snow peas

Examples of Lower FODMAP Foods include:

- Fruits
  - banana, blueberry, grapes, citrus fruits
- Grains
  - non-gluten grains
  - spelt
- Sweeteners
  - glucose, maple syrup, sugar (sucrose), stevia, artificial
- Lactose Alternatives
  - Butter, hard cheese, rice milk, gelato, sorbet
- Vegetables
  - bok choy
  - carrots
  - celery
  - corn

- eggplant
- green beans
- lettuce
- parsnip
- scallions (green parts only)
- tomato

FODMAPs have been thought to contribute toward digestive symptomatology in the irritable bowel syndrome, and even in inflammatory bowel disease.<sup>2-6</sup> Dietary manipulation of FODMAPs have produced improved symptomatology for both of these conditions.

**N.B.** Eating frequently causes problems because the cleansing waves of the small intestine get rid of food byproducts, waste, and bacteria, and this can only occur when you're not eating. The more meals that you have per day—and this includes snacks between meals—the less time your body has to produce appropriate cleansing waves, making it easier for the bacteria to remain in the small intestine. Adequate fluid intake throughout the day is also important. If your diet does not include enough water, it becomes more difficult for your body to have proper bowel motility.

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3. Gearry, R.B., et al. Reduction of dietary poorly absorbed short-chain carbohydrates (FODMAPs) improves abdominal symptoms in patients with inflammatory bowel disease—a pilot study. *J Crohns Colitis.* 2009. 3(1):8–14.
4. Gibson, P.R. Overview of inflammatory bowel disease in Australia in the last 50 years. *J Gastroenterol Hepatol.* 2009. 24 Suppl 3:S63–68.
5. Rangnekar, A.S. and W.D. Chey. The FODMAP diet for irritable bowel syndrome: food fad or roadmap to a new treatment paradigm? *Gastroenterology.* 2009. 137(1):383–386.
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