

Figuring Out Fiber

Intact vs. Isolated Dietary Fiber

Understanding where the fiber in your food *really* comes from

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For years, any student of nutrition or weight-loss aficionado could easily tell you the best sources of dietary fiber: whole grains, legumes, fruits and vegetables. But in today's food environment, things have changed. Manufacturers have inundated our grocery store shelves with traditionally low-fiber foods that are now packed with fiber. But where does this fiber come from? And do these "new fiber" foods yield the same health benefits as their traditional high-fiber food counterparts?

Marketplace Innovation

Just when you think you've seen it all, another seemingly impossible high-fiber food appears: we now have high-fiber yogurt, cottage cheese with fiber, fiber-fortified ice cream sandwiches, and even artificial sweeteners with added fiber! You can't open a magazine or cruise your supermarket without getting a whiff of the high-fiber frenzy.

The general public is, no doubt, interested in fiber, and well aware of its health benefits. Foods that are high in fiber help lower cholesterol, regulate blood sugar, improve bowel health and promote



satiety (the feeling of fullness). In a world of "don't eat this" and "don't eat that," fiber seems to be the one thing we could all stand to eat more of. This, in turn, presents a golden opportunity for food companies looking to sell you on new, packaged and processed, high-fiber food items.

Defining Fiber

Dietary Fiber—also called roughage—is defined by the Institute of Medicine as the edible, nondigestible component of carbohydrate and lignin found naturally in plant food. Fiber is not digested or absorbed in the small intestine, and it does not contribute calories; rather, bacteria in the gut metabolize the fibrous parts of food. When you eat a food that contains a natural source of dietary fiber, you are said to be eating **intact fiber**.

Added Fiber—consists of isolated, nondigestible carbohydrates that have beneficial physiological effects in humans. These fibers can be synthetically manufactured or derived from other plant or animal fiber sources. An example of an added fiber is pectin extracted from citrus peel and used as a gel in making jam or jelly. Generally, added fiber is referred to as **isolated** or **functional fiber**.

Total Fiber—is the sum of Dietary (or Intact) Fiber plus Added (or Isolated or Functional) Fiber. Things get confusing on the Nutrition Facts panel of food packaging because “Dietary Fiber” includes *all* sources of fiber in that food, whether they are from intact or isolated sources. This is why you can see upwards of 10 grams of dietary fiber listed for a fiber-fortified flour tortilla that traditionally would have only one or two grams of fiber.

How Healthy Is Isolated (Functional) Fiber?

The health benefits of intact fiber are widely accepted among health professionals. There are two main components to intact fiber: soluble and insoluble.

Soluble fiber acts like a sponge. It soaks up water and turns to gel during digestion. Soluble fiber is responsible for the cholesterol-lowering and glucose absorption delay properties attributed to increased dietary fiber intake.

Good sources of soluble fiber include oats, dried beans, lentils and barley.

Insoluble fiber speeds up the passage of food through the gut and adds bulk to the stool, reducing the likelihood of constipation and hemorrhoids while improving overall bowel regularity. Insoluble fiber is found primarily in vegetables, wheat bran and whole grains.

Researchers who study the effects of soluble and insoluble fiber on health have done so largely by analyzing the dietary fiber that occurs naturally in high-fiber foods. But do the health benefits of dietary fiber extend to synthetically manufactured or extracted fibers added to traditionally low-fiber foods? The



American Dietetic Association (ADA) maintains that, “Whether isolated, functional fibers provide protection against cardiovascular disease remains controversial.” The ADA’s position paper on dietary fiber goes on to say, “longer-term studies of fiber intake which examine the effects of both intrinsic [intact] and functional [isolated] fibers...are required.”

It seems safe to say that because we do not know to what degree the health benefits of dietary fiber are attributable to intact fibers, the additional nutrients in those high-fiber foods, or perhaps even the healthier habits of high-fiber-diet-eating people, most dietitians and nutrition professionals are recommending that consumers focus on eating foods that are naturally high in fiber. Whole foods such as whole grains, legumes, fruits and vegetables are not only high in fiber, but they are naturally low in salt, devoid of added sugars, and tend to be lower in calories than are processed and packaged foods. Many of the isolated fiber foods on the market are highly processed and are high in salt, added sugars and extra calories. Much like the notion that “organic junk food is still junk food,” keep in mind that a “high-fiber cookie is still a cookie!”

Side of Package Sleuthing

To determine whether the fiber in a food product comes from an intact or isolated source, you should search the ingredients list, which is located immediately below the “Nutrition Facts” panel on food packaging.

The most common isolated fibers that manufacturers use to bulk-up traditionally low-fiber foods are:

- Maltodextrin
- Inulin (chicory root)
- Polydextrose
- Oat fiber
- Resistant starch
- Pectin
- Gum

Keep in mind that rapidly increasing the amount of fiber in your diet can lead to gas, bloating and other gastrointestinal discomfort. This is due to the rapidly increasing amount and activity of intestinal bacteria needed to ferment the fiber in your gut. Drinking more water alongside increasing fiber intake, and slowly increasing fiber intake by a few grams per day can help alleviate gastrointestinal symptoms.

The Institute of Medicine recommends that females aged 50 and younger eat 25 grams of fiber per day. Women aged 51 and older should aim for 21

grams per day. For males, those 50 and under need 38 grams per day, and men aged 51 and older should eat 30 grams of fiber per day.

By increasing the amount of whole grains and legumes in your diet, and making sure to eat five to seven servings of fruits and vegetables per day, it is quite possible to meet your dietary fiber needs without eating fiber-fortified or isolated fiber foods. Eating whole foods that are naturally high in fiber are often-



times more satiating—and cheaper—than foods that contain functional fiber or are fiber-fortified. Fiber can be an important tool in weight loss, diabetes management, and reducing the risk for other chronic diseases. When selecting high-fiber foods, look for whole fiber foods over fake fiber foods to maximize your health potential.

1. Dietary Reference Intakes: *Proposed Definition of Dietary Fiber*; National Academy of Sciences, Institute of Medicine; Food and Nutrition Board, 2001.

2. American Dietetic Association's Position Paper: *Dietary Fiber*; J Am Diet Assoc., 2008;108:1716-1731.

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