Fiber: What Is It and What Does It Do?

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Your Life Your Health

The Examiner

May 5, 2005

I don't know about you, but fiber has always been a mystery to me. "Soluble fiber, "insoluble fiber"? How would your recognize it if you saw it? What does it taste like? Why is it important? While questions are being raised as to whether a high fiber diet really is protective against colon cancer, there are no questions about the value of fiber in the diet.

Basics of Dietary Fiber

Dietary fiber can be divided into two basic groups, soluble and insoluble. Soluble fiber dissolves in water, and insoluble fiber does not. Both soluble and insoluble fiber provide bulk in the large intestine and encourage bowel regularity. However, there are important differences between the two.

Soluble Fiber:

The job of soluble fiber is to absorb water in the intestinal tract and slow down the amount of time needed to empty the intestine. Eating these fibers makes you feel full and may help in weight loss. These are also the fibers which are credited with helping to lower bad cholesterol levels in the blood. Examples of foods that contain soluble fibers include:

- Dried beans and peas.
- Lentils.
- Oats.
- Barley.
- Psyllium laxatives
- Sesame seed
- Fruit, especially bananas, apple pulp, citrus, grapes, apricots, cherries
- Vegetables, especially potatoes, cabbage, carrots

Remember that fruits and oats are primary sources of soluble fibers. Psyllium (Metamucil) is the most convenient and readily available form of soluble fiber supplementation.

Insoluble Fiber:

Insoluble fibers draw water into the intestinal tract, but rather than slowing down digestion, they actually speed it up and increase the amount and frequency of bowel movements. Examples of foods that contain insoluble fibers:

- Wheat bran
- Apple and pear skins
- Peas and carrots
- Bran cereals
- Whole-grain breads
- Vegetables.
- Pears
- Toasted whole-grain breads
- Browned potatoes

Remember that vegetables and wheat bran are the primary sources of insoluble fiber.

Another way of looking at Fiber

Insoluble Fiber

1. Passes through body more quickly than soluble fiber, preventing or relieving constipation.
2. May prevent colon cancer by moving cancer-causing substances through digestive tract more quickly.
3. Too much may decrease body's absorption of vitamins and minerals because of decreased absorption time in the intestine.

Soluble Fiber

1. Acts like a sponge, absorbing fluid as it moves through system. This results in softer, bigger stools (fewer hemorrhoids).
2. Slows release of sugar to the bloodstream (hypoglycemia, diabetes).
3. Prevents hunger by filling the stomach and regulating blood sugar.
4. Lowers cholesterol soluble fiber form gel captures bile acids and cholesterol in diet. If bile acids are not reabsorbed, body has to use cholesterol in the blood to make more. 8-10 grams soluble fiber a day are necessary to lower cholesterol.
5. Helps with weight loss (regulates blood sugar, makes you feel full).
6. High fiber diet cause you to excrete more calories

Fiber - Which Kind Do You Need?

In order to achieve the maximum amount of benefit from fiber, you should try to get both types into your diet. Plant foods all contain both types of fiber - although some are particularly rich in one or the other. Think of vegetables and wheat bran as the primary

sources of providing insoluble fibers. Think of fruits, oats, and psyllium laxatives as sources of soluble fibers. Following the Mediterranean diet will give you both.

What are the health benefits of soluble fiber?

The US Food and Drug Administration has approved food manufacturer use of the following information on product labels:

- Diets low in saturated fat and cholesterol that include fruits, vegetables, and grain products, which also contain fiber (particularly **soluble fiber**), may reduce the risk of coronary heart disease.
- Diets low in saturated fat and cholesterol that include 3g of **soluble fiber** from whole oats per day may reduce the risk of heart disease.
- A low-fat diet rich in fruits, vegetables, and whole grains containing fiber, particularly **soluble fiber**, may lower blood cholesterol levels, reduce the risk of heart diseases, and possibly prevent some types of cancer.
- Diets low in saturated fat and cholesterol that include a daily intake of **soluble fiber** from whole oats or psyllium seed may reduce the risk of heart disease.

The American Dietetic Association recommends that people consume 20 to 35 grams of fiber per day, of which 5 to 10 grams should be soluble fiber. However, Americans typically average only about 12 to 17 grams of total fiber and only 3 to 4 grams of soluble fiber a day - about half the recommended amount.

How does soluble fiber work?

Soluble fiber is the only known food component that will lower blood cholesterol when you add more to your diet. Foods high in soluble fiber help prevent sugar from rising too high after meals by keeping food in the stomach longer. Sugar is absorbed more slowly, preventing free fatty acids and triglycerides from rising too high after meals. Free fatty acids bind to insulin receptors and prevent insulin from doing its job of driving sugar from the bloodstream into cells. In addition, soluble fiber does the following:

- It binds to fat in the intestines, preventing some fat absorption.
- It dissolves fluids in the large intestine and forms a gel that binds with bile acids in the intestines. As a result, the liver converts more cholesterol to bile acids, and blood cholesterol levels are reduced.
- It slows digestion and the absorption of nutrients, resulting in a slow and steady release of glucose from accompanying carbohydrates.
- It soaks up excess bile acids found in the intestinal tract - the same acids that are converted into blood cholesterol.
- It delays stomach emptying, triggering satiety (a feeling of fullness) that can be helpful in people with type 2 diabetes trying to achieve weight loss goals.

Soluble Fiber Intake & Type 2 Diabetes Mellitus: The Research

- “Research proves that the higher the viscosity of soluble fiber, the better the control of blood sugar level in patients with Type 2 diabetes.”
- "A high intake of dietary fiber, particularly of the soluble type, above the level recommended by the ADA, improves glycemic (blood sugar) control, decreases hyperinsulinemia (elevated insulin levels in blood), and lowers plasma lipid concentrations (Cholesterol in blood) in patients with type 2 diabetes"
- "Water-soluble fiber appears to have a greater potential to reduce postprandial blood glucose (blood glucose after eating), insulin, and serum lipid levels than insoluble fiber. Viscosity of the dietary fiber is important; the greater the viscosity, the greater the effect.”

Are there natural food sources of soluble fiber?

Soluble fiber is found in oats, oatmeal, oat bran, beans, legumes, barley, citrus fruits, and psyllium. It can also be found in gums, including; Konjac gum, vegetable gum, pectin, guar gum and gum Arabic. But generally, most have only a small percentage soluble fiber. Oat bran contains the highest level of soluble fiber, about 14%. All other grains contain much less. In comparison, fresh Konjac contains an average of 13% dry matter, of which 64% is glucomannan, making glucomannan the richest soluble fiber resource in nature.

Psyllium As the Source of Soluble Fiber

Psyllium (Metamucil), a natural, water-soluble, gel-reducing fiber, which is extracted from the husks of blond psyllium seeds (plantago ovata), is a member of a class of soluble fibers referred to as mucilages.

Psyllium's total dietary content - 86 percent - is made up of 71 percent soluble fiber and 15 percent insoluble fiber. This compares to 15 percent total fiber and only five percent soluble fiber for oat bran. The soluble fiber in one tablespoon of psyllium is equal to 14 tablespoons of oat bran, another soluble fiber. For this reason, in contrast to oats, psyllium is added in relatively small quantities to other cereal grains to make food products.

Psyllium and Cholesterol

Through the years, researchers have found that patients with mild to moderately elevated cholesterol levels can achieve a sustained reduction of about 10% in cholesterol level by consuming psyllium twice a day and adhering to the American Heart Association's (AHA) Diet.

Should You Take Fiber Supplements?

The average American diet is low in fiber (5-15 grams). For optimal anti-aging purposes, 25-30 grams of fiber is needed. This can be achieved by taking in half a cup of bran, one cup of legume, 2 cups of vegetables, 3 fruits, whole grain bread and cereal on a daily

basis. If you are not, consider fiber supplementation together with digestive enzymes and higher intake of water to enhance gastrointestinal health. All fiber supplements are best taken one hour before a meal so as not to interfere with absorption of nutrients.

If you are currently on soluble fiber for cholesterol control, there is no reason to stop, for the simple reason that soluble fiber does lowers cholesterol. If your primary objective is to prevent colon cancer, then it is wise in view of the last 3 major studies to take additional vegetables and whole grain products such as wheat bran, which will provide you with insoluble fiber, instead of taking fiber supplements such as Psyllium as a way to prevent cancer.

Regardless of whether you are taking soluble or insoluble fiber, do remember to make sure your water intake is at least 8-10 glasses a day, especially if you are on any fiber supplement program.

If you have high cholesterol and want to totally stay away from Psyllium as a way to reduce cholesterol level, some natural alternatives to consider include garlic, niacin (in therapeutic dosages), and statin drugs (prescription required).

The take home lesson is simple: take insoluble fibers, which come from whole foods such as vegetables, wheat, and grain products, for cancer prevention. For cholesterol control, take soluble fibers, which are abundant in fruits, oat bran, legumes, apple pectin, and guar gum. Take Psyllium as a supplement for cholesterol control and not for cancer prevention. For those who are using Psyllium to enhance bowl motility, you may want to reduce Psyllium intake but increase intake in digestive enzymes while maintaining a high water intake of 8-10 glasses a day.

If you can get all the fibers from diet alone, that is the best. The Mediterranean diet (with a heavy focus on dense vegetables) provides both soluble and insoluble fibers from whole food, not to mention antioxidants and other nutrients that have benefits of which are still undiscovered.

Remember, it is your life and it is y our health.