



Soluble & Insoluble Fiber: What is the Difference?

QUESTION:

What's the difference between soluble and insoluble fiber? Are they both good for you, and how can I include them in my diet?

ANSWER:

We all know the benefits of fiber! Fiber not only promotes health, it also helps reduce the risk for some chronic diseases. For instance, fiber prevents constipation, hemorrhoids and diverticulosis. Fiber is also linked to prevent some cancers especially colon and breast cancer. In addition, fiber may help lower the LDL cholesterol (the Bad cholesterol) and the total cholesterol therefore reducing the risk of heart disease. Furthermore, fiber can help lower blood sugar therefore help better manage diabetes.

Dietary fiber, the edible portions of plant cell walls that are resistant to digestion, is an extremely beneficial component of our diets. Not only does it help ward off many diseases, it has been shown to aid in weight loss by reducing food intake at meals. This is because fiber-rich foods take longer to digest and thus result in an increased feeling of fullness and satiety. In addition, the more gradual absorption slows the entrance of glucose into the blood stream, thereby preventing large blood glucose and insulin spikes.

The recommended fiber intake is 20 - 35 grams per day for adults, or 10 - 13 grams for every 1,000 calories in the diet. This recommended amount should come from a combination of soluble and insoluble fiber, since each type provides different benefits. While it's not necessary to track, a 3:1 ratio of insoluble to soluble fiber is typical. Although neither type is absorbed by the body, they have different properties when mixed with water, hence the designation between the two. However, due to overlap in function between the two types and disparities in measurements of each depending on the method used, the National Academy of Sciences has recommended that these terms "gradually be eliminated and replaced by specific beneficial physiological effects of a fiber". Thus you may hear less about "soluble vs. insoluble fiber" in the future.

Both soluble and insoluble fibers are undigested. They are therefore not absorbed into the bloodstream. Instead of being used for energy, fiber is excreted from our bodies. Soluble fiber forms a gel when mixed with liquid, while insoluble fiber does not. Insoluble fiber passes through our intestines largely intact.

Soluble fiber is "soluble" in water. When mixed with water it forms a gel-like substance and swells. Soluble fiber has many benefits, including moderating blood glucose levels (for people with diabetes), bind with fatty acids, prolong stomach emptying time so that sugar is released and absorbed more slowly and lowering total cholesterol (include LDL cholesterol -the Bad cholesterol). The scientific names for soluble fibers include pectins,

gums, mucilages, and some hemicelluloses. Good sources of soluble fiber include oats and oatmeal, legumes (peas, beans, lentils), barley, fruits and vegetables (especially oranges, apples and carrots).

Food Sources of Insoluble Fiber are:

- Oat/Oat bran
- Dried beans and peas
- Nuts
- Barley
- Flax seed
- Fruits such as oranges and apples
- Vegetables such as carrots
- Psyllium husk

Insoluble fiber does not absorb or dissolve in water. It passes through our digestive system in close to its original form. Insoluble fiber offers many benefits to intestinal health, including a reduction in the risk and occurrence of colorectal cancer, hemorrhoids, move bulk through the intestines in less time, control and balance the pH (acidity) in the intestines to prevent microbes from producing cancerous substances and constipation. The scientific names for insoluble fibers include cellulose, lignins, and also some other hemicelluloses. Most of insoluble fibers come from the bran layers of cereal grains.

Since dietary fiber is found only in plant products (i.e., nuts, whole grains, legumes, fruits and vegetables), these are essential to a healthy diet. The average American significantly falls short of the recommended amount of fiber, consuming on average only 12 - 17 grams per day. Ways to increase dietary fiber in your diet are:

- Choose whole fruits and vegetables (with peels/skins when possible) instead of juices.
- Choose whole grain bread, cereals and pasta in place of their overly processed, refined counterparts.
- Replace white flour (or at least a portion of it) with whole wheat flour in baked goods.
- Replace white rice with brown rice.
- Replace meat with beans, seeds, nuts or other legumes in meals.

Try experimenting with the above tips. Slowly modify recipes until you attain a balance that is appetizing and tasteful to your taste buds. If you are not accustomed to a high-fiber diet, increasing fiber intake slowly will minimize any gas or bloating.

Food Sources Of Fiber

Food	Serving size	Total fiber (grams)	Soluble fiber (grams)	Insoluble fiber (grams)
English muffin	1	2.0	0.5	1.5
Spaghetti, cooked	1 cup	2.0	0.5	1.5
Whole-wheat bread	1 slice	2.5	0.5	2.0
White rice, cooked	1/2 cup	0.5	0	0.5
Bran flake cereal	3/4 cup	5.5	0.5	5.0
Corn flake cereal	1 cup	1.0	0	1.0
Oatmeal, cooked	3/4 cup	3.0	1.0	2.0
Banana	1 medium	2.0	0.5	1.5
Apple, with skin	1 medium	3.0	0.5	2.5
Orange	1 medium	2.0	0.5	1.5
Pear, with skin	1 medium	4.5	0.5	4.0
Strawberries	1/2 cup	1.0	0	1.0
Broccoli	1/2 cup	2.0	0	2.0
Corn	1/2 cup	1.5	0	1.5
Potato, baked with skin	1 medium	4.0	1.0	3.0
Spinach	1/2 cup	2.0	0.5	1.5
Kidney beans	1/2 cup	4.5	1.0	3.5
Popcorn	1 cup	1.0	0	1.0
Peanut butter, chunky	2 tablespoons	1.5	0	1.5