

Dietary Fiber and Diabetes

What Is Dietary Fiber?

Dietary fiber is a type of carbohydrate and is found only in plant foods: fruits, vegetables, beans, grains and nuts and seeds. Humans are unable to digest dietary fiber because we do not have enzymes in our gastrointestinal tract that can break it down for absorption. Some bacteria present in our intestines may metabolize some fiber in the lower gut, but it has little or no effect on blood glucose. Therefore, we don't have to count the carbohydrate we get from fiber. There are two main types of fiber in foods: **soluble** and **insoluble**.

Soluble fibers are found in some *fruits, oats, barley, and legumes*. Pectin and gum are two types of water-soluble fibers. Soluble fibers attract water and form a gel, which slows down digestion. Soluble fibers slow the passage of food through the intestines but do nothing to increase the bulk of our stools. Sources of soluble fiber include: oatmeal, oat cereal, oat bran, lentils, apples, oranges, pears, berries, nuts, flaxseeds, dried beans and peas and psyllium.

Insoluble fiber, found in plant cell walls, gives structure to plants. Insoluble fiber does not dissolve in water. Types of insoluble fiber include cellulose, hemicellulose and lignin. Such fibers increase stool bulk and speed up the passage of food through the digestive tract. Wheat bran and whole grains contain the highest amounts of insoluble fiber, but vegetables and beans also are good sources. Other sources of insoluble fiber include: corn bran, seeds, nuts, barley, brown rice, bulgur, dark leafy vegetables, raisins, grapes, fruit, and root vegetable skins.

Benefits of Fiber

Insoluble fiber attracts and binds water as it passes through the digestive tract which makes our stools softer and bulkier. Therefore, insoluble fiber is helpful in the treatment and prevention of constipation, hemorrhoids and diverticulosis.

Dietary fiber may help reduce the risk of some cancers, especially colon cancer. This is based on the fact that **insoluble** fiber helps move wastes through the body. This means the body may have less exposure to toxic substances produced during digestion. Recent studies have not confirmed the protective effects of fiber in developing colon cancer.

Soluble fiber delays the emptying of your stomach and makes you feel full, which may help control weight. Fiber itself has no calories, yet provides a "full" feeling because of its water-absorbing ability. For example, an apple that contains fiber is more filling than a half cup of apple juice that contains about the same calories but no fiber. Foods high in fiber often require more chewing, thus it takes more time to eat, so a person is unable to eat a large number of calories in a short amount of time. Slower stomach emptying can affect blood sugar levels and have a beneficial effect on insulin sensitivity, which can help control diabetes.

Soluble fiber helps control cholesterol. Water-soluble fiber binds to bile acids in the intestine and passes them out of the body. The liver then removes cholesterol from the blood to make more bile acids which helps reduce the LDL, or bad cholesterol. Some types of fiber seem to have a greater effect than others. The fiber found in rolled oats is more effective in lowering blood cholesterol levels than the fiber found in wheat. Pectin has a similar effect in lowering the amount of cholesterol in the blood.

How Much Fiber?

The average American consumes around 14 grams of dietary fiber a day, which is much less than the recommended level. The recommendation is 14 grams of fiber per 1000 calories consumed. This is about 25 grams per day for women and about 38 grams per day for men.

Eat a healthy diet rich in fruits, vegetables, whole grains, legumes, nuts, and seeds to ensure you get enough fiber. The Dietary Guidelines for Americans and MyPlate recommend making half your plate fruits and vegetables and at least half your grains whole grains. This will provide a variety of soluble and insoluble fibers and all of the health benefits associated with a high fiber diet.

As you increase the fiber in your diet, you may experience more intestinal gas. Increasing fiber gradually will allow your body to adapt. Because some fibers absorb water, you should also drink more water as you increase fiber in your diet.