

Dietary Fiber And Reduced Risk Of Diabetes

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Over the past few years, several studies have indicated that people who eat fiber-rich diets reduce their risk of heart disease, stroke, high blood pressure, and colon cancer. Now two studies led by Harvard Heart Letter editorial board member Walter C. Willet have added diabetes to the list of illness that may be prevented by consuming high-fiber foods.

One way fiber-rich foods may reduce diabetes risk is by slowing the absorption of carbohydrates and preventing surges in levels of blood sugar and insulin. In fact, studies have shown that even people with diabetes can decrease the need for insulin by eating a high-fiber diet.

The first report comes from the Nurses' Health Study, an ongoing long-term study of 121,700 female U.S. registered nurses who were aged 30 to 55 at enrollment in 1976. The women provided detailed information on their diets in 1980 by completing a food-frequency questionnaire. The nurses are surveyed regularly to determine whether they have developed any of several diseases, including diabetes -- an illness that can lead to heart disease, stroke, blindness, kidney failure, and circulation problems.

This component of the Nurses' study focused on 65,173 women who were 40 to 65 in 1986, when all were free of diagnosed cardiovascular disease, diabetes, or cancer. During six years of follow-up, 915 of the women developed diabetes.

Little grain, high risk

According to the report, published in the February 12, 1997 issue of the Journal of the American Medical Association, the highest risk of diabetes was found among women who ate very little cereal fiber but regularly consumed foods that tend to raise blood sugar, such as sugar-sweetened cola beverages, white bread, white rice, french-fried potatoes, and cooked potatoes. The women who ate such foods had two and a half times the rate of diabetes compared to women whose diets contained less of these foods and who regularly ate grain fiber from breakfast cereal -- in particular, cereals made from minimally processed grains. In this study, fiber from fruits and vegetables was not related to either a decreased or increased risk of diabetes -- although earlier research has pointed to fruits and vegetables as an effective way to reduce heart-attack risk.

The second report, published in the April 1997 issue of Diabetes Care, is from the Health Professionals Follow-up Study, a similar long-term investigation involving 42,759 male dentists, veterinarians, pharmacists, optometrists, osteopaths, and podiatrists across the United States. The study subjects were between 40 and 75 years old and without diabetes or heart disease when they enrolled in 1986. During six years of follow-up, 523 of the men developed diabetes. As was the case with the nurses, the highest risk of diabetes was among the men who regularly consumed carbonated beverages, white bread, rice, and French fried potatoes. And again, as in the women, the lowest risk was among the men who ate cold breakfast cereal.

Researchers have long known that overeating is significant risk factor for diabetes because the disease is more likely to appear in obese people. But there has never before been evidence linking diabetes to specific types of foods -- not even sweets.

Slowing absorption

Why might certain forms of carbohydrates (white bread, potatoes, and white rice) raise the risk of diabetes, while other types (cereal fibers) seem to protect people from this disease? Diabetes is characterized by high levels of blood sugar (glucose) that are brought on a shortage of the hormone insulin or an inability to use the hormone properly to move glucose into the body's cells and control its levels in the blood.

The carbohydrates in white bread, white rice, and potatoes are quickly digested and absorbed, causing a big surge in blood sugar, which in triggers the pancreas to secrete high levels of insulin, the hormone that is supposed to tell our body how to use glucose properly. In some people high blood sugar and high insulin levels may make the body less sensitive to insulin over time, and greater and greater amounts of insulin are needed to metabolize glucose. Sometimes the pancreas is unable to keep up with the demand for insulin – and diabetes results, often requiring people to take additional insulin (which must be given as shots) or other medications.

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A high-fiber diet is just one part of diabetes prevention. Diabetes is more common in people who are overweight than in people of normal body weight, and sedentary individuals have roughly twice the risk of developing diabetes than those who exercise regularly. Therefore, preventing obesity by lowering total calorie intake and pursuing regular program of physical activity will go along way toward diabetes control.