

# High-glycemic index carbohydrates associated with risk for developing type 2 diabetes in women

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Eating foods high on the glycemic index, which measures the effect of carbohydrates on blood glucose levels, may be associated with the risk for developing type 2 diabetes in Chinese women and in African-American women, according to two studies in the November 26 issue of *Archives of Internal Medicine*, one of the JAMA/Archives journals. However, eating more cereal fiber may be associated with a reduced risk for type 2 diabetes in African-American women.

Researchers remain uncertain regarding exactly how diet, including carbohydrate intake, affects the development of type 2 diabetes, according to background information in the articles. Studies have revealed that the body absorbs carbohydrates from different foods at different rates. This leads to varying effects on levels of blood glucose and the hormone insulin, which converts glucose into energy. Foods high on the glycemic index, such as rice and other simple carbohydrates, cause a rapid spike and then a drop in blood glucose, whereas high-fiber foods tend to be lower on the glycemic index and have a more gradual effect. Some evidence has linked high-glycemic index foods with the risk of developing type 2 diabetes.

In one study, Supriya Krishnan, D.Sc., of Boston University School of Public Health, and colleagues examined data from 40,078 U.S. black women who filled out a food questionnaire in 1995. The glycemic index and glycemic load—a measure of the amount of carbohydrates from glucose—were calculated. Every two years through 2003, the women answered follow-up questionnaires about their weight, health and other factors.

During eight years of follow-up, 1,938 participants developed type 2 diabetes. Women who ate high-glycemic index foods or a diet with a high

glycemic load had a higher risk for diabetes. However, women who ate more fiber from grains (cereal fiber) had a reduced risk; for women with a body mass index (BMI) of less than 25, women who ate about 1.5 grams of fiber per day were 59 percent less likely to develop diabetes than women who ate about 8.3 grams per day.

Because high-glycemic index foods increase blood glucose levels significantly, they increase the body's demand for insulin, the authors note. This can contribute to problems with the pancreas (which produces insulin) that may eventually lead to diabetes. In addition, high-glycemic index foods can directly decrease the body's response to insulin by increasing the production of fatty acids after meals.

“Our results indicate that black women can reduce their risk of diabetes by eating a diet that is high in cereal fiber,” the authors write. “Incorporating fiber sources into the diet is relatively easy: a simple change from white bread (two slices provides 1.2 grams of fiber) to whole wheat bread (two slices provides 3.8 grams of fiber) or substituting a cup of raisin bran (5 to 8 grams of fiber) or oatmeal (4 grams of fiber) for a cup of corn chex (0.5 grams of fiber) or rice chex (0.3 grams of fiber) will move a person from a low fiber intake category to a moderate intake category, with a corresponding 10 percent reduction in risk.”

In another study, Raquel Villegas, Ph.D., of Vanderbilt University Medical Center, Nashville, Tenn., and colleagues followed a group of 64,227 Chinese women for an average of five years. During in-person interviews conducted every two years between 2000 and 2004, the researchers collected data on dietary habits, physical activity and other health-related information.

During the study, 1,608 of the women developed diabetes. Women who consumed more carbohydrates overall were more likely to develop diabetes—when they were split into five groups based on carbohydrate intake, those in the group consuming the most (about 337.6 grams per day) had a 28 percent higher risk than those in the group consuming the least (about 263.5 grams per day). Women who ate diets with a higher glycemic index and who ate more staples such as bread, noodles and rice specifically also had an increased risk. Women who ate 300 grams or more of rice per day were 78 percent more likely to develop diabetes than those who ate less than 200 grams per day.

Source: JAMA and Archives Journals

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