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**Diabetics on high-fiber diets might need extra calcium,  
report UT Southwestern researchers**

DALLAS – March 24, 2009 – The amount of calcium your body absorbs might depend, in part, on the amount of dietary fiber you consume.

Researchers at UT Southwestern Medical Center report that patients with noninsulin-dependent diabetes (type 2) excreted less calcium through their urine when they consumed 50 grams of fiber a day than when they ate 24 grams a day. Excreting less calcium indicates that they absorbed less of the mineral.

“We already know that fiber helps improve your cholesterol and glucose control and improves your bowel regularity. Our new findings suggest that dietary fiber reduces the body’s capacity to absorb calcium,” said Dr. Abhimanyu Garg, professor of internal medicine and an investigator in the Center for Human Nutrition at UT Southwestern. He is senior author of a study appearing online in *Diabetes Care*. “Because more calcium equals better bone health, we recommend that people on high-fiber diets talk to their physician about increasing their dietary calcium as well, in order to get the most benefit from both.”

Dr. Garg said it’s important to speak with a physician or a registered dietitian before increasing your calcium intake because excessive levels may cause kidney stones.

The American Diabetes Association (ADA) recommends a daily intake of 24 grams of dietary fiber, but the average American consumes about 14 to 15 grams of fiber a day.

Sometimes called “roughage,” dietary fiber is the indigestible portion of plant foods that pushes food through the digestive system, absorbing water and easing defecation. Calcium is a nutrient found in food that is absorbed by the body and then excreted in urine, feces or sweat. It is the most abundant mineral in the human body.

Prior research at UT Southwestern has shown that a high intake of dietary fiber, mostly from fruits and vegetables, lowers blood glucose levels and leads to decreased insulin levels in the blood, as well as lowering blood lipid concentrations in patients with type 2 diabetes, the most prevalent type of diabetes.

For the current study, 13 patients with type 2 diabetes ate either a high-fiber diet (50 grams per day) or the moderate-fiber diet (24 grams per day) recommended by the ADA for six weeks, then

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## **Diabetic high-fiber dietary needs – 2**

switched to the other diet for six weeks. All participants stayed at UT Southwestern's Clinical and Translational Research Center (CTRC) for the final week of each six-week period.

CTRC staff prepared both diets so that they contained the same number and proportion of calories from carbohydrates, fats and proteins, as well as an equal amount of minerals such as calcium, phosphorous, magnesium, sodium and potassium. The high-fiber diet included numerous fiber-rich foods including cantaloupe, grapefruit, papaya, okra, winter and zucchini squash, granola and oatmeal. No supplements were used.

“The reduction of urinary calcium excretion on high-fiber diets tells us that the amount of dietary fiber has a direct impact on calcium absorption,” Dr. Garg said. “In other words, the participants excreted less calcium on the high-fiber diet because the additional fiber caused their bodies to absorb less calcium.”

Though most of the additional fiber in the high-fiber diet was soluble fiber, Dr. Garg said he cannot say for sure whether soluble or insoluble fiber affects calcium absorption.

“Generally, more fiber of either type is beneficial,” he said. “We should encourage people to try food sources rich in fiber and calcium such as spinach, broccoli, figs, papaya, artichoke, okra, beans, mustard and turnip greens, and cactus pads.”

Other UT Southwestern researchers involved in the study were Dr. Meena Shah, lead author and clinical associate professor of clinical nutrition; Dr. Manisha Chandalia, clinical associate professor of internal medicine with the Center for Human Nutrition; Beverley Adams-Huet, assistant professor of clinical sciences; Linda Brinkley, former research dietitian; Dr. Khashayar Sakhaee, chief of mineral metabolism; and Dr. Scott Grundy, director of the Center for Human Nutrition.

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