

Cancer prevention: Not all fiber helps

In the past, studies have linked diets high in fiber with a reduced risk of colon cancer — a cancer whose incidence in the United States trails only that of the lung and breast. But dietary fiber comes in many forms. While many breakfast-cereal makers have extolled the potential anti-cancer benefits their products' fiber may offer, a new study now suggests that it's fruits and vegetables — not grains — that offer the most beneficial fiber.

Researchers asked 231 colon-cancer patients and 391 other randomly selected individuals to recall the foods, portions and preparation methods typifying their diets. Both groups — comprising mostly Mormons — contained only white, Utah residents. Based on their responses, researchers used three different processes to measure fiber in foods mentioned by study participants — and thereby gauge their consumption of fiber.

The crude-fiber process yields mostly the insoluble cellulose and lignin. A detergent-processed fraction yields roughly the same cellulose and lignin, together with much of the soluble fiber. For the best estimate of "total fiber," an "imputed-fiber" measurement relies on computer analysis of sugars and starch in a sample.

In general, the study found a strong dose-response relationship between crude fiber and protection against colon cancer. In contrast, there was only a "weak, inconsistent" suggestion of a link between the detergent fraction and decreased cancer risk — and no link between risk and imputed dietary fiber.

While this trend held for both sexes, there was a difference in the apparent sites being protected. For women, crude fiber had a greater protective effect against cancer of the ascending (right) colon. That quarter of the study population consuming the lowest proportion of this fiber fraction were twice as likely as the top quarter of crude-fiber eaters to develop cancer of the descending (left) colon and 3.3 times as likely to develop right-colon cancers. In men, however, crude fiber was more protective of the left colon. And the detergent-separated fraction, strongly associated with protection against right-colon cancers in men, had no effect on women.

In terms of actual food, decreased colon-cancer risk was most strongly associated with men eating diets high in fruit, and with women eating many vegetables, according to a report of the study in the Nov. 16 *JOURNAL OF THE NATIONAL CANCER INSTITUTE*. Somewhat unexpectedly, notes epidemiologist Martha L. Slattery, who headed this study at the University of Utah School of Medicine in Salt Lake City, neither group experienced any ap-

parent protective effect from eating grains.

Due to this study's small size, its findings must be viewed more as trends than as strong, quantitative measures of a fiber fraction's protective role, says Elaine Lanza of the National Cancer Institute (NCI) in Bethesda, Md. And, she notes, its trends are very interesting. She points, for example, to the finding that while crude fiber, an indicator of insoluble fiber, was most associated with colon-cancer risk reduction, foods whose fiber was almost exclusively insoluble — grains — offer no similar risk reduction.

To Padmanabhan P. Nair, studying diets and cancer prevention at the Agriculture Department's Human Nutrition Research Center in Beltsville, Md., what really makes this a "very valuable paper," is the new direction it suggests for future researchers to follow. Lanza agrees. In fact, concern that some fiber fractions may be selectively protective led NCI this year to launch a three-year analysis of 400 foods for total fiber and soluble, insoluble, hemicellulose, cellulose and lignin fractions. Once these data are available, Lanza says, "We'll reanalyze a lot of these studies" in hopes of identifying more specific-fiber trends. — *J. Raloff*

Canadian quake hits East

When a magnitude 6.0 earthquake struck northeastern Canada last week, geoscientists collected important details about the underground fault producing the tremors, thanks to instruments set up in the area only hours before the main shock hit on Nov. 25.

Two days earlier, a magnitude 4.7 quake shook this region 150 kilometers north of Quebec, leading investigators from the Geological Survey of Canada (GSC) in Ottawa, Ontario to deploy instruments to monitor aftershocks there. Scientists rarely have such a chance to monitor eastern North American quakes so closely.

The instruments revealed the main quake resulted from a rupture along a fault 19.5 km below ground, and it occurred within several kilometers of the Nov. 23 foreshock. Such a strong earthquake surprised geologists who were not expecting anything larger than a magnitude 5 in this region, says Goetz Buchbinder of the GSC. A hundred kilometers to the south lies the Charlevoix seismic zone that has broken several times in the last few hundred years with earthquakes in the range of magnitude 7.

Last week's quake sent seismic waves rippling through the Earth's crust that set dinner tables swaying in Connecticut and caused noticeable shaking as far south as Washington, D.C. The older, less fractured crust in the eastern part of North America transmits seismic waves farther than does rock west of the Rockies. □

Asthmatics benefit from aerobic dance

Just the thought of a thirty-minute aerobic dance routine is enough to leave many asthma patients gasping for breath. An estimated 70 to 80 percent of asthmatics develop bronchospasm — an involuntary constriction of air passages — during or following exercise. Airway-opening, "bronchodilating" drugs that can prevent or alleviate attacks are available in easy-to-use, pocket-size inhaler devices. But the fear of bronchospasm leaves most asthmatic patients leading relatively inactive lives.

Now two physicians report that aerobic dance for asthmatics is not only possible, but can improve pulmonary function and quality of life for patients.

"People with asthma lead too sedentary a life," says Stanley I. Wolf of the George Washington University Medical School in Washington, D.C. "If we can get them to do some regular exercise, there is a definite feeling of well-being and there are physiological changes, including improved muscle stamina." With Kathy L. Lampl of the Johns Hopkins University School of Medicine in Baltimore, Md., Wolf describes in the November *ANNALS OF ALLERGY* preliminary results of an Aerobics for Asthmatics program they and others initiated two years ago.

Eighteen asthmatics, ranging in age from 17 to 68, participated in the program during the first year. Twice weekly for 45 minutes they engaged in a series of movements, performed to music, designed to strengthen muscles critical to breathing, including the diaphragm and muscles between the ribs. Although lung capacity remained unchanged, the researchers report maximum voluntary ventilation — a measure of the strength of voluntary chest muscles — improved significantly. "We have these people using muscles that they haven't used for a while, and in time, even with their limited lung capacity, they can do more," says Wolf, himself an asthmatic and a devoted runner. "After a while they build up their stamina and they find that the need for their inhaler is less."

Moreover, he says, as asthmatics realize they can do more, "There's a tremendous psychological benefit. They are willing to tackle things they hadn't thought about doing before. People are getting back to playing tennis again — maybe doubles instead of singles, but at least they're willing to try."

The research is consistent with earlier evidence that other forms of activity, most notably swimming, can benefit asthmatics, says William E. Pierson, chairman of the U.S. Olympic Committee's exercise-induced bronchospasm project. This year, 15 of 201 U.S. medalists were asthmatics, he notes. — *R. Weiss*