

ROUGHING IT



Decrease in cereal fiber intake is being linked to a long list of modern Western diseases

by Janet H. Weinberg

Food marketing has changed remarkably since 1900, from country stores and cracker barrels to computerized checkout. Changing even more dramatically, though, has been the typical diet in the Western industrialized nations. Advances in food production and processing have ushered in an era of fluffy white sugars and flours, delicatetasting oils and richly marbled meats. The average Western diet now contains 50 percent more refined sugar, 30 percent more fat and 90 percent less cereal fiber. (Vegetable and fruit fiber consumption has remained about the same.)

Changing concurrently has been the incidence of certain diseases: heart and circulatory diseases, alimentary tract diseases, obesity and diabetes. Physicians and scientists are increasingly suspicious of the modern Western diet and have been paying particular attention to the dramatic decrease in cereal fiber intake. Nondigestible plant fibers are being called the essential but forgotten nutrient.

British medical researchers have pioneered the study of dietary fibers. Kenneth W. Heaton of Bristol University forged the link between obesity and low fiber intake in his report in the Dec. 22, 1972 LANCET. If one considers obesity to mean 10 percent overweight, then 50 percent of the adult population of England is obese, Heaton says. This is due, in large part, he says, to the high energy availability of refined foods.

Sugar and white flour can be taken easily and quickly into the body in the form of soft drinks, candy, soft white bread and pastries. These foods are easy to chew and digest, so the body secretes less saliva and gastric juice than when roughage is eaten. These secretions are needed for digestion and also to distend the stomach and give the sense of satiation. More of the highly refined foods, therefore, must be eaten before one feels full, Heaton says.

Fibrous foods such as wholemeal breads and cereals, on the other hand, provide physiological barriers to energy intake. Undigestible plant material takes up space in the bowl and stomach. The same amount of sugar in a candy

bar is found naturally in three pounds of apples, but most persons would find it impossible to eat this natural equivalent at one sitting. Fibrous foods require more chewing than refined foods, induce more saliva and gastric juice secretion, and thus give a quicker sense of satiation. Fiber also reduces the absorptive efficiency of the small intestine, Heaton says, making only about 92 percent of the calories available, compared to 97 percent with refined foods.

The action of fibrous foods on the intestines has been the focus of another British researcher, Neil S. Painter of the Manor House Hospital in London. He writes in the Oct. 14 MODERN MEDICINE that a diet high in fibers, including bran, can be used to prevent and treat diverticular disease. One of five Western adults has this disease of the colon, Painter says, due apparently, to years of eating refined foods. A low fiber diet, he says, results in a small, viscous stool that requires forceful contractions and pressure to dispel. After years of this pressure, small outpockets can form in the colon wall, and these often get infected and require surgery. A bulky, fibrous diet is easier on the colon, increasing stool frequency and decreasing transit time.

The retention time may be an important factor in cancer of the colon, some think. James Scala, a research nutritionist for Thomas J. Lipton, Inc., reviewed this thinking at the American Chemical Society's September meeting in Atlantic City. Some researchers, he said, think viruses may be the cause of colon cancer. Others think the carcinogen may be a by-product of the action of intestinal bacteria on food, digestive or excretory material. Still others think colon cancer may be caused by carcinogenic chemicals which contaminate foods. Regardless of the cancer-causing agent, the consensus is that the longer it takes for foods to travel through the alimentary tract, the more exposure the colon will receive to the harmful agent.

Cancer of the colon is rare in rural African populations, and British physician Denis Burkitt thinks this may be due in part to their high fiber diets and

low transit time.

Several researchers have noted that a high incidence of colon cancer usually is found in the same nations with high incidences of heart and vascular diseases, and think that lack of dietary fiber may be a common, underlying cause.

Painter, Burkitt and British researcher Hugh C. Trowell have suggested that eating bran and other fibrous grains can cause a decrease in blood-serum lipids, a decrease in the production of cholesterol by the liver and less fat deposition in arteries. The link between fiber and fat is far from solid, however, and at least one nutrition researcher, David Kritchevsky of the Wistar Institute in Philadelphia, thinks such statements are premature.

"The first claims about a nutritional element are often elevated to the status of miracles," Kritchevsky says, "but the whole field of the role of fibers is still in its infancy." Many of these physicians have been "feeding fibers indiscriminately," he says, monitoring external changes and making broad statements without understanding the physiological mechanisms. In his research, Kritchevsky feeds laboratory animals various types of fibers in combination with fats and other nutrients. He and eight other team members report in the January AMERICAN JOURNAL OF CLINICAL NUTRITION that baboons fed a semi-purified diet had higher serum lipid levels and more fat build up in arteries than control animals on a bulky diet with the same nutrients. So he is seeing experimental results under controlled conditions that seem to confirm the fat-fiber statements. But Kritchevsky feels that two main questions have to be answered before any generalizations can be made: What elements in the fibers cause the observed physiological effects, and what are their mechanisms of action on the body.

Although he agrees that, for the average person, a bulky diet is probably healthier than a low-residue diet, he thinks that more work needs to be done before specific, meaningful diets can be recommended to the public. □