

Eating to Avoid Cancer Gets More Complicated

Effects of Fat, Fiber Muddled by New Research

By Margie Patlak
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Research tying eating habits to risk of heart disease or cancer has provided Americans with a generous list of dietary do's and don'ts for maintaining good health. But the scientific ground on which these recommendations stand is shifting as more research findings surface.

Several popular notions on diet and cancer were recently refined or reworked in a conference on calories and energy expenditure in carcinogenesis sponsored by the Nutrition Foundation, a food industry organization, and held at the Capital Hilton.

"The questions we need to explore are no longer simple ones dealing with single foods or nutrients, but rather how foods interact and are influenced by other aspects of human nutrition such as exercise," said Saxon Graham, professor of social and preventive medicine at the State University of New York at Buffalo.

Although a number of animal studies link a diet high in fat to a greater risk of cancer, for example, the type of fat, the total number of calories the animal consumes, and the animal's body weight and metabolism can all inflate or shrink cancer risks, recent research has shown.

"Different fats have very different physiological effects," said Rashida A. Karmali, associate professor of nutrition at Rutgers University in New Jersey. In her studies on rodents, fish oil in the diet protected animals from developing breast and prostate cancers and stunted the growth of developing tumors.

Her findings are supported by a recent study of men with prostate cancer. Of the dietary habits that made the men prone to prostate cancer, a lack of seafood ranked the highest and was substantially higher than a lack of green vegetables, which are rich in both fiber and vitamins thought to prevent cancer.

While fish fats may be protective, vegetable fats promote breast cancer in mice. This finding poses a quandary for public health officials who currently advise people to choose polyunsaturated vegetable fats in their diets over saturated animal fats to lower their chances of developing heart disease.

"The dietary recommendations for cancer may not be appropriate for other diseases," said Samuel B. Tove, professor of biochemistry at North Carolina State University in Raleigh.

A diet rich in animal fats poses no breast cancer risks in animal studies, although human studies link an increased ingestion of animal fats to a greater risk of breast and colon cancers, among others. Several of the epidemiology findings on dietary fat and cancer are fraught with contradictions, however, presumably because of the difficulties in quantifying a person's diet over a long span of time.

"The study of fats in cancer epidemiology is relatively new," said Graham. "I suspect that in 10 years we will look back on this period as being

one where we have hardly begun to scratch the surface."

Studies presented at the conference suggest that current dietary recommendations on fat intake be refined to include the effects of different types of fats. The National Research Council recommends that Americans lower the fat in their diet from an average of about 40 percent to 30 percent of total calories without any consideration of the type of fat consumed.

In a recently published study, rats that became big and fat while being fed a high-fat, high-calorie diet had a greater incidence of induced breast cancer than small and fat rats consuming the same amount of fat but on a lower-calorie diet. The findings indicate that cancer development does not depend on the percent of fat in the diet alone, nor on the amount consumed, but rather on a complex interaction involving energy intake as food, energy retention as body fat, and body size, according to Michael W. Pariza, professor of food microbiology and toxicology at the University of Wisconsin in Madison.

In women, obesity increases the risk of uterine, cervical and certain breast cancers by about 20 percent—the same increased risk that cigarette smokers have of developing lung cancer. The reason for this risk appears to lie in the recently discovered ability of fat tissue to generate estrogen hormones.

"Fat tissue is an endocrine organ," says Dr. Artemis P. Simopoulos, chairman of the nutrition coordinating committee of the National Institutes of Health. Research has shown that fat tissue converts harmless estrogen precursor molecules circulating in the blood to active estrogens. These estrogens travel to the uterus, cervix and breasts, where they can prompt the development of cancerous tumors.

Obesity further intensifies estrogen production research shows, by boosting the production of estrogen precursors and by lowering the blood level of certain carrier proteins, which latch on to estrogens, preventing their action at sensitive sites.

Postmenopausal women lack the ovarian hormone progesterone, which counterbalances the actions of estrogens. Obese postmenopausal women are therefore especially susceptible to reproductive system and breast cancers enhanced by estrogens.

These findings point to a needed refinement of the 1984 National Institutes of Health consensus conference recommendation that postmenopausal women be given supplemental estrogen to prevent osteoporosis, a crippling bone deterioration that frequently afflicts older white women. "Physicians may need to consider estrogen therapy only for nonobese postmenopausal women," said Dr. Paul C. MacDonald, professor of obstetrics and gynecology and biochemistry of the University of Texas Health Science Center in Dallas.

Exercise is another complicating factor that influences dietary effects on cancer. Exercise increases a person's total calorie intake without causing the cancerous effects associated with increased food consumption that are seen in animal studies in which exercise is not considered. Sev-

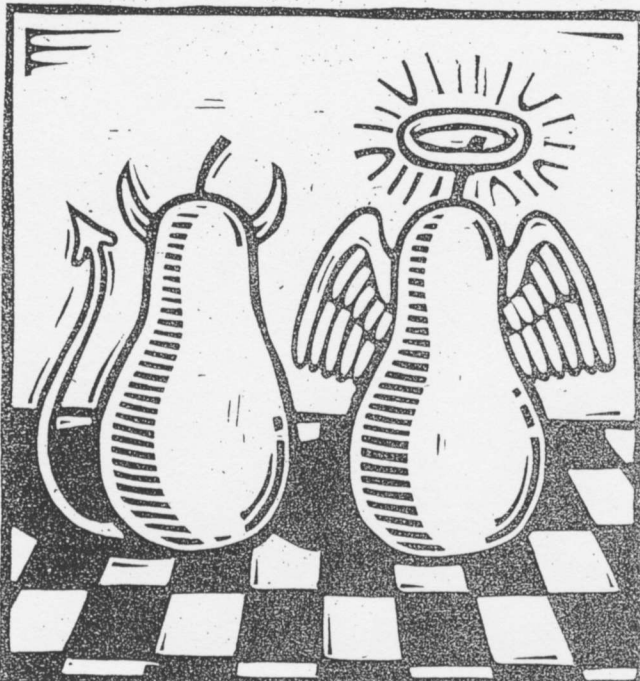


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eral researchers cited human studies tying exercise on a regular basis to a lower risk of developing certain cancers such as colon and breast.

Like the findings on fat and cancer, recent research on fiber and tumor development paints a much more complex picture than originally imagined. Studies by Dr. Lucien R. Jacobs, associate professor of medicine at the University of California School of Medicine in Davis, reveal that rats fed diets high in pectin, oat or corn bran, carageenan, Metamucil or agar fibers had a higher frequency of colon cancer than controls. Rats fed a diet high in wheat bran or the plant fibers cellulose and lignin, in contrast, had a lower frequency of colon cancer.

Jacobs' studies on fiber and colon cancer show that the fibers that promote tumor development in rats are highly fermentable. Their fermentation creates acid conditions in the colon, which prompt cells lining the colon to multiply. Excessive multiplication of any cells previously damaged by a carcinogen can promote the development of a malignant tumor, Jacobs said.

Although dietary fiber is generally assumed to decrease the risk of certain cancers, especially those of the colon, Jacobs' findings are supported by a recent epidemiological study that showed colon cancer patients had a higher fiber intake than controls.

"We need better human studies and less popular notions on fiber and cancer," Jacobs says. "We can no longer lump fibers together when considering their effects on cancer development."

Fat and fiber interactions also have to be considered. One study showed that neither a high-fat diet nor a low-fiber diet alone increased a person's risk of cancer, but when

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the two were combined, the cancer risk doubled.

The general consensus at the conference was that much more research is needed before conclusions can be drawn on diet and human cancer.

"We seem to think that nutrition is a panacea that's going to solve all our health problems," said Alfred E. Harper, professor of nutritional science and biochemistry at the University of Wisconsin in Madison. "We need to find the limits of nutrition."

But for the average person confused about what he or she should eat, Graham had this advice: "Even though all the data isn't in yet on cancer and diet, I still think it's legitimate to recommend that people cut down on fats, increase the amount of fruit and vegetables they eat, get regular exercise, and not get fat. These recommendations will probably help in the case of heart disease and diabetes, and may help and cannot hurt in the case of cancer."

Margie Patlak is a science writer living in Silver Spring.