

A New Whey to Prevent Cancer?

Researchers are only beginning to discover the links between dietary choices and health consequences.

Now they've taken a major step toward understanding one of these links.

A team of ARS-funded investigators—Reza Hakkak, Martin J.J. Ronis, and J. Craig Rowlands—led by neuroendocrinologist and nutritionist Thomas M. Badger, has found that a modified whey protein, which Badger developed, prevents breast cancer in some laboratory rats.

It's an important medical discovery, considering that 180,000 U.S. women develop breast cancer each

year—and 1 in 8 women will develop breast cancer over her lifetime. Breast cancer is a disease where a mutant cell in the breast forms a tumor. More than 60 percent of breast cancers are detected in women age 50 and over.

The researchers studied an animal model of breast cancer. Over 3 years, female

Sprague Dawley rats were fed one of two diets—one containing casein, the major protein found in milk, the other containing processed whey protein, which is found in the watery liquid that separates from milk during cheese making. The researchers have filed for a patent on the modified whey protein.

“One hundred percent of the rats fed the casein diet developed mammary tumors, but only about 50 percent of the whey-fed rats developed tumors,” says Badger, who is based at the Arkansas Children's Nutrition Center in Little Rock. “In addition, it took longer for the mammary tumors to develop in the

PEGGY GREB (K9093-1)



A diet rich in soy and whey protein, found in products such as soy milk and low-fat yogurt, has been shown to reduce breast cancer incidence in rats.

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—Thomas Badger



whey-fed rats, and they had fewer tumors.”

“This data is extremely important,” he says, “because it demonstrates that in the animal model most used to study human breast cancer, a common dietary factor reduces the incidence of developing such tumors.”

Asian women, who eat a lot of soy, have five to eight times less breast cancer than American women, who eat little soy.



Badger stresses that the research is preliminary and that researchers would need to study thousands of women for years to determine the benefits of a particular dietary factor on breast cancer prevention.

“Breast cancer is an extremely difficult disease to study, because we never know who will develop it or when it will occur,” says Badger. “Fortunately, we have an animal model of human breast cancer that provides important insights into breast cancer development and helps us research new treatments and prevention strategies.”

Other research in Badger’s laboratory has demonstrated that diets containing soy protein isolate—the same protein used in soy infant formulas—reduces the incidence of mammary tumors by about 25 percent in this same animal model.

Asian women, who eat a lot of soy, have five to eight times less breast cancer than American women, who eat little soy. Among American women, white women have the highest incidence of breast cancer and black women have the highest death rate from it.

“It’s too early to make specific dietary recommendations about the proteins, since we’ve only studied them in rats,” says Badger. “But a diet containing a wide variety of fruits, vegetables, grains,

and animal products in the proportions recommended by the USDA Food Guide Pyramid is healthy. That diet could include soy foods and dairy products rich in whey protein.”

Badger says the center where he works “is devoted to understanding the role of diet and nutrition in human development, particularly from conception to adolescence. We believe



that early dietary intervention can have positive health consequences during early development and later in life.”—By **Tara Weaver-Missick, ARS.**

This research is part of Human Nutrition, an ARS National Program (#107) described on the World Wide Web at <http://www.nps.ars.usda.gov/programs/appvs.htm>.

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