Heart-Friendly Steaks And Eggs?

Feb. 4, 2004

QUOTE

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Bob Roberts, Penn State

(AP) Scientists say they have bioengineered a gene from a tiny worm that could lead to juicy sirloins and gooey omelets that protect your arteries, not clog them.

Mice bred with the worm gene produced "significant" amounts of a heart-friendly omega-3 fatty acid normally found in salmon and other fish that are staples of heart-healthy diets, researchers at Massachusetts General Hospital report in Thursday's issue of the journal Nature.

The researchers now are trying to breed transgenic chickens that would lay omega-3 eggs, but those results are not expected for several months. They said "the obvious followup" would be transferring the gene to livestock to see if they can produce meat and milk rich in omega-3.

"It would be little bit more difficult in a cow or pig," said the study's senior author, Jing X. Kang. "Overall, it would be quite similar and I think the outcome would be the same."

Researchers at several universities are experimenting with adding protective levels of omega-3s to foods ranging from ice cream to orange juice and salad dressing.

Breeding livestock that genetically express omega-3 would represent a radical change to America's meaty eating habits, and a potential bonanza to ranchers who have been riding a rollercoaster of high protein diets, mad cow disease and concerns about obesity.

But other scientists cautioned that promising results with mice not always are duplicated in experiments on larger and more complicated species.

And transgenic herds would face significant regulatory and consumer hurdles, including animal welfare and human safety, they warned.

The U.S. Food and Drug Administration treats transgenic animals as medicine and requires extensive clinical evaluations. So far, the agency has not approved any transgenic animals for human consumption, although last year it said cloned animals probably were safe.

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In October, the FDA cited the University of Illinois for selling the offspring of pigs used in a genetics experiment.

Transgenic meat also would likely generate protests over labeling and its potential sale in supermarkets alongside conventional meat. After years of fierce protests, the European Union now requires stringent labeling of foods made with genetically modified organisms.

"It's an interesting idea, a tremendous idea," said Bob Roberts, a food researcher at Penn State University who did not contribute to the mouse studies.

"My sense is that consumers would have issues with it," Roberts said. "They have issues with transgenic tomatoes."

For years, ranchers have been breeding leaner animals to capitalize on consumers' health concerns. Organic and natural producers offer meat from animals grazed on grass to reduce fat content. Some livestock even have been fed omega-3 supplements — with poor results.

In the late 1980s at the University of California-Davis, cattle and sheep were fed diets in which fats were made less digestible. The animals' meat was lower saturated fat. But flavors were less rich.

Butter and cheese made from the animals' milk had different textures, too.

Contributors to those trials said the experiments served as a reminder of the complex role that fat plays in food — and consumer satisfaction.

"The lamb tasted differently — less lamby" recalled Christine Bruhn, director of the university's center for consumer research. "I would expect if the transgenic animal was producing omega-3s there would be a different flavor in the meat."

In the Boston experiments, Kang's team extracted the fat-1 gene from the nematode, C. elegans.

The Fat-1 gene has been isolated in a few organisms, and the microscopic soil roundworm is the most complex creature on that short list. That made it the best candidate for success after being transferred to a mammal, Jang said.

They loaded the gene onto an adenovirus that would spread throughout the cells of the test animals.

Then the transgenic animals and mice with normal genomes were fed a diet low in omega-3s.

Mammal tissues typically contain very little omega-3s and higher levels of omega-6 fatty acids.

But tissues from transgenic mice were found to be high in omega-3s and lower in omega-6s.

When the transgenic mice were bred, their offspring continued to produce high levels of omega-3s for three generations, Kang reported.

By Joseph B. Verrengia

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