National News

The Fat From These Pigs May End Up Helping Your Heart

The genetically altered animals are rich in omega-3 fatty acids. But do they taste like pork?

By Denise Gellene, Times Staff Writer
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If a new kind of pork makes it to the dinner table, healthful eaters worried about fat and heart disease might finally be free to, well, pig out.

Scientists using genetic engineering techniques have produced pigs rich in omega-3 fatty acids — a kind of healthful fat abundant in fish but not naturally found in meat.

The omega-3 fatty acids are believed to offer some protection against heart attacks, and federal nutrition guidelines recommend adults include them in their daily diets.

But "some people are not going to eat fish no matter what," said Penny Kris-Etherton, a professor of nutrition at Pennsylvania State University, who was not involved in the research. "This is a way people who don't like fish can benefit."

There is one little question looming over the potential feast of greasy bacon, succulent chorizo and juicy Chinese pork stew. Because the research is in its early stages, no one has yet sampled the pigs to see if they taste like pork.

Harvard University's Jing Kang, one of the scientists involved in the experiment, is confident the levels of omega-3 fatty acids in the new pigs aren't high enough to ruin the flavor.

"There should be no difference," he said, adding that, as far as he could tell, the pigs "don't smell fishy."

The team of scientists from Harvard, the University of Missouri and the University of Pittsburgh

used a gene from an earthworm, which naturally produces omega-3 fatty acids, to genetically modify their pigs.

The researchers began by harvesting more than 1,600 eggs from female pigs. They removed the genetic material from the eggs and replaced it with new DNA that had the earthworm gene inserted.

The manipulated embryos were then implanted into 14 surrogate mothers. A total of 10 male piglets were born.

DNA analysis of the piglets showed that six had the earthworm gene, according to the study published online Sunday in the journal Nature Biotechnology.

Kang said the cloned pigs produced one-fifth the amount of omega-3 fatty acids found in salmon, considered the best source. But he said successive generations bred the old-fashioned way probably would produce higher amounts of omega-3.

Now, the pigs have one copy of the earthworm gene, but through selective breeding their progeny could acquire two.

"I am confident we can go much higher," said Kang, whose research was funded by the National Institutes of Health and the American Cancer Society.

The new pigs could help the nation's pork producers solve a tricky problem. Through breeding and diet changes, farmers have dramatically lowered the fat content of pork in the last 30 years. But leaner meat is drier and less flavorful.

To improve the taste and texture of pork, farmers are trying to increase the amount of fat in pigs without drastically raising saturated fat — unhealthful fat that can boost cholesterol, which in turn can lead to heart disease.

It's been a struggle. In one failed experiment, pigs were given feed enriched with omega-3 fatty acids. But the resulting meat was unappetizingly mushy and had yellowish fat.

Genetic engineering could offer a solution, said Mark Boggess, director of animal sciences at the National Pork Board.

But he cautioned against over-exuberance.

Higher omega-3 fatty acids "would probably have some bearing on the melting point and consistency of the fat and how firm it is at room temperature," he said. "It would definitely have to be evaluated very carefully."

Getting the pigs to market could also be a challenge. The Food and Drug Administration has not allowed any genetically altered animals to enter the food chain, despite scientific studies showing the animals are safe.

Before clearing the meat for consumption, the FDA requires detailed biological information, including controlled studies comparing modified animals with normal ones.

"They treat them like they are a new drug," said University of Illinois professor Matthew Wheeler, who has been working on genetically engineered animals for 13 years.

Given the obstacles, the immediate offspring of the new pigs will probably be used in academic research.

Randall Prather of the University of Missouri, who collaborated with Kang, said there was great demand for the pigs among scientists studying the cardiovascular effects of omega-3 fatty acids.

Kang, meanwhile, is looking at new culinary possibilities.

"Pig was the first," he said. "But transgenic chickens, cows and fish are on the way too."

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