NEWS

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Designer mice make heart-friendly nutrients

Michael Hopkin

Genetic advance could put healthier eggs and meat on supermarket shelves.

Fish oil capsules contain healthy omega-3 fatty acids.

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Geneticists have engineered a mouse strain to produce omega-3 fatty acids, compounds known to help prevent heart disease in humans. If the feat can be transferred to livestock animals, they could be made to produce healthier eggs, milk and meat.

The mice use a gene called *fat-1*, from the roundworm *Caenorhabditis elegans*, to convert omega-6 fatty acids into the healthier omega-3 version, explains Jing Kang of Harvard Medical School in Boston, who led the study[1]. Mammals can't ordinarily do this.

Nutritionists recommend a diet with plenty of omega-3 compounds. But Western diets contain about ten times more omega-6 fatty acids than omega-3 ones, says Philip Calder, who studies nutrition at the University of Southampton, UK.

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"Most experts agree the ratio should be less than this," he says.

A healthier diet can be achieved by cutting down on omega-6-rich margarine and cooking oil, and eating more flaxseed, soybeans or oily fish such as salmon. But this advice is often difficult to follow: many processed foods are loaded with omega-6 fats, and a recent cancer scare has made consumers wary of farmed salmon.

Another alternative is to take dietary supplements such as fish-oil capsules. "But not everyone wants to take supplements - they want to eat food," says Kang. If farm animals can make these compounds themselves, he suggests, it may offer a way of bumping up people's omega-3 intake without a lifestyle overhaul.

Many farmers already feed their chickens with ground-up fish to create omega-3-rich 'designer' eggs, but this is costly and time-consuming. Kang's transgenic method could offer a simpler route to the same goal, he suggests. "We are very confident we can do the same thing in livestock," he says. "I think it's an attractive idea."

Perverse approach

Not everyone agrees, however. "It's a perverse approach to the problem," says Sue Mayer of Genewatch, a UK group that campaigns against the spread of genetic engineering. She argues that the set-up costs to develop the project would be extremely expensive, and the process could be harmful to livestock. There is a high mortality rate for animals used by researchers to create transgenic breeds.

What's more, we don't understand the long-term effects of genetic engineering on animals, Mayer argues. But Kang's team insists that the transgenic mice are healthy.

> **"It's a perverse approach to the problem"**
>
> Sue Mayer
>
> Genewatch

Researchers should make sure the mice don't suffer long-term health problems before attempting to transfer the technology to any other species, says Donald Jump, a physiologist at Michigan State University in East Lansing. "We need to do an evaluation in mice before we march forward," he argues.

But the idea shows promise, Jump concedes. "In a perfect world, if you could get animals to make omega-3 fatty acids, it would be very beneficial."

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References

1. Kang, J. X., Wang, J., Wu, L. & Kang, Z. B. Fat-1 mice convert n-6 to n-3 fatty acids. *Nature*, **427,** 504, (2004). | Article | ChemPort |

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