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Gene-altered mouse produces fish oils

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NewScientist.com news service
Andy Coghlan

Fish oils known to help prevent heart attacks can now be made by land animals for themselves, thanks to work by genetic engineers.

The researchers inserted a gene from a nematode worm into mice which enables the mammals to make the omega-3 fatty acids. If the same feat can be achieved in farm animals, meat, milk and eggs could all be directly enriched with the oils.

This would not only benefit people, but could keep livestock healthier too. "It's a double bonus," says Jing Kang, whose team produced the altered mice at the Harvard Medical School in the US.

At present, meat and dairy produce from farm animals only contains the omega-3 oils if farmers feed them with fishmeal, which is costly and can waste scarce marine resources.

Improved circulation

Kang gave the mice a gene called *fat-1*, taken from the nematode *Caenorhabditis elegans*. The gene makes omega-3 fatty acid saturase, an enzyme which converts omega-6 fatty acids into their omega-3 counterparts, and humans and other animals already make the omega-6 oils

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As well as protecting hearts, omega-3 oils improve circulation, are thought to dampen inflammatory conditions and could even combat cancer. Fish such as mackerel, salmon and herring naturally contain omega-3 oils, but many people do not eat the recommended amount. Other foods and supplements containing the oils are available, but are expensive.

Engineering animals to make their own oils would be "a neat approach", says Liz Lund of the Institute of Food Research in Norwich, England. "But only if genetic modification of animals is more acceptable."

"The US market might be more tolerant, but the practicalities of getting people to eat GM farm animals are extremely problematic, especially in Europe," says Lund, who is investigating whether omega-3 oils can prevent colon cancer in rats.

But Kang says the project is moving forward: "We're first going to do it in chickens."

Journal reference: *Nature* (vol 427, p 504)

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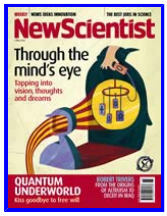

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