

US FDA says omega-3 oils from GM soya are safe to eat

16:37 27 October 2009 by [Andy Coghlan](#)

For similar stories, visit the [Food and Drink](#) and [GM Organisms](#) Topic Guides

Good news for fish stocks at last. A genetically modified soybean that produces oil containing omega-3 fatty acids – recommended for heart and brain health – could supplement fish as a source of these nutrients.

Last week, the US Food and Drug Administration made public its ruling that the oil produced by GM soybeans is safe to eat, meaning food companies can begin testing it in products such as margarine.

Developed by biotech giant Monsanto, the soybean is the first GM plant that has claimed health benefits for consumers, not just economic benefits to farmers. Two other companies, [BASF \(PDF\)](#) and [Du Pont](#), say they are not far behind.

BASF has developed GM canola plants that produce similar oils, while Du Pont makes them by fermenting micro-organisms, and says it plans to launch its first "omega-3" pill early next year.

Death watch

Omega-3 fatty acids have been estimated to reduce the risk of heart attack and stroke by up to 26 per cent, and of sudden cardiac death by 45 per cent. Earlier this year, a study by the Harvard School of Public Health concluded that a lack of omega-3 in the diet is the sixth leading cause of preventable deaths in the US (*PLoS Medicine*, DOI: [10.1371/journal.pmed.1000058](#)).

A review of 97 studies in 2005 concluded that omega-3s are as effective at reducing the risk of heart attacks and strokes as statins, the leading class of cholesterol-lowering drugs.

Some plants, such as linseed, naturally produce an omega-3 called alpha-linolenic acid (ALA), and one way to increase the amount of omega-3 in our diet is to eat these plants or margarines and other foodstuffs that contain added ALA.

However, only a tiny amount of ALA is converted by the body into a fatty acid it can use, [prompting some nutritionists to say the labelling on omega-3-enhanced margarines is misleading](#).

Fish oils are rich in two related omega-3s, docosahexaenoic acid (DHA), which is important for [nerves and the brain](#), and eicosapentaenoic acid (EPA), which is vital for cardiovascular health.

Gene tricks

BASF has inserted five genes from algae that naturally make EPA and DHA into the canola genome. Its product is still in development.

Monsanto has taken a different approach. It inserted two genes into the soybean genome, one from a plant related to primrose and one from a fungus. The modified soybean produces stearidonic acid, or



Omega-3 fatty acids can be obtained from GM soybeans (Image: Carroll & Carroll/Getty)

ADVERTISEMENT

Request
a demo
NOW



SDA. Like ALA, SDA is converted into EPA in the body, but in much higher proportions – about a third, Monsanto says.

"To get 1 gram of EPA, you'd have to eat about 3 to 4 grams of SDA, and about 14 to 20 grams of ALA," says David Stark of Monsanto. However, Stark acknowledges that hardly any of the SDA is converted into the DHA needed for brain health.

Good for fish

The modified plant oils could ease the pressure on fish stocks, currently the principal source of omega-3 fatty acids.

At present, there is no official recommended daily intake of omega-3s. According to GOED Omega-3, an umbrella group for manufacturers of omega-3-containing products, the optimal intake is only reached in fish-eating nations such as Japan and Iceland, with typical per-capita consumption in [western nations](#) a fifth of this level.

Monsanto claims that meeting GOED's recommended intake in western nations could require as little as 400,000 hectares of its soybean crops. Less than half a hectare, it says, would provide the same amount of EPA as 10,000 servings of salmon.

One worry is that farmers may clear tropical rainforests to grow the oil-producing plants. But Solae of St Louis, Missouri, which will be commercialising the GM soybean, says that the crops are more suited to the temperate climate of North America.

Jack Winkler, head of the Nutrition Policy Unit at London Metropolitan University, is enthusiastic about the prospect of plant-derived omega-3s. "There are not enough fish in the sea to provide people with the EPA and DHA that we need. [This] is a very positive way forward."

[Daniel Pauly](#), a fisheries specialist at the University of British Columbia in Vancouver, Canada, also welcomes the move. "Our stressed marine ecosystem would benefit from an alternative to fish oil as a source of omega-3s," he says.

However, in Europe at least, the new sources of omega-3s may encounter public resistance. Helen Wallace of GeneWatch UK, a lobby group in Buxton, Derbyshire, says: "It will be interesting to see if people in the US believe the benefits exist." Europeans have traditionally been wary of genetically modified crops and Wallace says they are also suspicious of medical claims about food. All this makes the future uncertain for the products in Europe.

If you would like **to reuse any content** from New Scientist, either in print or online, please [contact the syndication](#) department first for permission. New Scientist does not own rights to photos, but there are [a variety of licensing options](#) available for use of articles and graphics we own the copyright to.

[Back to article](#)



ADVERTISEMENT

