

Fatty acids from GM oilseed crops could replace fish oil

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Oil from genetically modified (GM) oil seed crops could replace fish oil as a primary source of the beneficial Omega 3 fatty acid EPA - according to new research from the University of East Anglia (UEA).

Researchers studied the effect in mice of consuming feed enriched with oil from glasshouse-grown [genetically engineered](#) *Camelina sativa*, developed at the agricultural science centre Rothamsted Research.

The goal of the research was to discover whether mammals (using mice as a model) can absorb and accumulate EPA from this novel source of omega-3s.

The team examined levels of EPA in various organs in the body such as the liver, as well as its effect on the expression of genes key for regulating the way the body processes fats. The results show that the benefits were similar to those derived from fish oils.

Lead researcher Prof Anne-Marie Minihane, from UEA's Norwich Medical School, said: "The long chain omega-3 polyunsaturated fatty acid EPA is beneficial for cardiovascular and cognitive health, as well as for foetal development in pregnancy.

"The recommended minimum dietary intake can be achieved by eating one to two portions of oily fish per week.

"But for everyone in the world to achieve their minimum dietary intake,

you would need around 1.3 million metric tonnes of EPA per year. Fish currently provide around 40 per cent of the required amount - so there is a large deficit between supply and demand.

"There is a great need to identify alternative and sustainable sources of these beneficial fatty acids.

"We wanted to test whether oil from genetically modified plants could be used as a substitute. This first study indicates that mammals can efficiently accumulate the key health-beneficial [omega-3 fatty acid](#) EPA."

The research team studied mice which had been fed with EPA oil from genetically engineered *Camelina sativa*, commonly known as false flax, but actually a member of the Brassicaceae family. Crops were grown in glasshouses at the primarily publically-funded Rothamsted Research.

The researchers looked to see whether consuming oil from the engineered plants was as beneficial as EPA rich - fish oil. They did this by testing tissue concentrations of [fatty acids](#) in liver, muscle and brain tissue, along with the expression of genes involved in regulating EPA status and its physiological benefits.

Prof Minihane said: "The mice were fed with a control diet similar to a Westernised human diet, along with supplements of EPA from genetically engineered *Camelina sativa* or [fish oil](#), for ten weeks - enough time for any beneficial results to be seen.

"We found that the genetically engineered [oil](#) is a bioavailable source of EPA, with comparable benefits for the liver to eating [oily fish](#)."

More information: 'Oil from transgenic *Camelina sativa* effectively replaces fish oil as a dietary source of EPA in mice' is published in the

The Journal of Nutrition on January 20, 2016.

Provided by University of East Anglia

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