

Vegetable oils promote obesity

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Excessive dietary omega-6 may increase our appetite and promote weight gain.

A recent study suggests a close association between dietary omega-6 and the development of overweight and obesity. Omega-6 is a type of fat found in certain vegetable oils which is present in large amount in processed and junk food.

New results from experiments using animal models show that a high intake of omega-6 led to overproduction of signalling compounds that stimulate the appetite, with the result that the animals ate more and developed obesity.

“People in the Western world are eating less and less fat, but at the same time our body weight is increasing, so the type of fats we eat would seem to mean more for developing overweight and obesity than just how much fat we consume,” says NIFES scientist Anita Røyneberg Alvheim.

Increase in consumption of vegetable oils

In the course of the past few decades, the consumption of vegetable oils has increased dramatically, while our total consumption of fat has gone down. Meanwhile the number of overweight people has drastically risen.

“Our results suggest that there are good grounds for looking into whether the rise in use of omega-6-rich vegetable oils, such as soya, maize and sunflower oil, could be a contributory cause to the development of overweight and obesity ,” says Alvheim.

In the course of the cooperative research project, which is a collaborative effort with scientists in the USA, she used mice to study how different levels of polyunsaturated fat consumption affect appetite and fat storage.

In the study, two groups of mice were given different amounts of linoleic acid, a polyunsaturated omega-6 fatty acid that makes up a large percentage of soya oil, maiz oil and sunflower oil.

A third group was put on a diet with a high content of omega-6 that also contained a certain amount of marine omega-3.

The results showed that the group given the diet with the highest proportion of omega-6, in line with current human recommendations, ate more, and gained considerably more weight than the group on the low-omega-6 diet.

More weight, not more food

The fat-promoting effect of omega-6 was reduced when the feed was supplemented with marine omega-3.

In a parallel experiment, the scientists found that mice fed a diet with a high content of omega-6 put on much more weight than mice whose diet had a low level of omega-6, irrespective of how much they ate.

The body transforms omega-6 into what are known as endocannabinoids, which form part of the signalling system that controls appetite, the feeling of hunger, and energy and fat storage. When the body produces more of these signalling agents than we require, the feeling of hunger is not switched off when it ought to be, leading us to eat more than we need to. We also store more of the food we eat in form of fat.

Omega-6 competes with omega-3 for space in our cellular tissue, and a high intake of omega-6 replaces omega-3 in the cells. This can affect a number of illnesses, including cardiovascular disease, where omega-3 has been demonstrated to have a preventive effect, while the effects of omega-6 may be just the opposite.

“The body needs both omega-6 and omega-3, but a problem arises when there is an imbalance between the two, due to a high intake of omega-6 relative to omega-3,” emphasises Alvheim.

We eat more, but not omega-3

Changes in agriculture and aquaculture have led to the more widespread use of raw materials that contain omega-6, which means that the omega-6 content of meat, eggs, lactic products and fish has increased, while that of omega-3 has fallen.

We eat far more meat than we used to, while our consumption of seafood, the main source of omega-3, has not risen. All this leaves omega-6 and omega-3 even further out of balance.

According to the study, a better balance between omega-6 and omega-3 could be a key factor in reducing and preventing obesity and related conditions such as type 2 diabetes and cardiovascular disease.

The next step should involve studies to investigate whether high omega-6 levels have a similar impact on body weight in humans.

 [Soya oil, maiz oil and sunflower oil promotes weight gain. \(Photo: Colourbox\) \[7\]](#)

 [The fat-promoting effect of omega-6 was reduced when the feed was supplemented with marine omega-3. \(Photo: Colourbox\) \[8\]](#)

 [NIFES scientist Anita Røyneberg Alvheim. \(Photo: UiB\) \[9\]](#)

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Side story

Side story

Facts about omega-3 and omega-6

Omega-3 and omega-6 are fatty acids that our bodies need to develop and function normally. Certain vegetable oils such as soya, maize and sunflower oils contain particularly large amounts of omega-6, while fish and other types of seafood are good sources of omega-3. In the Western world, there has been a steady increase in our consumption of omega-6, which has contributed to an imbalance between omega-

6 and omega-3 in our diet.

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