



The truth about trans fats

There has been considerable media attention on the health effects of trans fats in the diet over the past few years. But do they really pose a risk to our health?

What are trans fats?

Trans fats — more correctly called trans fatty acids — are found naturally in beef, lamb and some dairy foods at relatively low levels (ranging from around 1–8% of total fats). More insidiously, they are also a product of hydrogenation, a process used to convert liquid vegetable oils into solid and semi-solid fats.

Hydrogenation is widely used to improve the stability of vegetable oils and to convert liquid oils into the solid fats needed to get the right consistency in baked goods, such as cakes and pastries. These hardened fats may also be used in some margarines and spreads, and for deep-frying.

Because hydrogenation improves the shelf life, flavour and texture of certain foods, it is an attractive option for food manufacturers, restaurants and fast food outlets. What's more, oils with trans fats can be used many times over in commercial fryers.

Although trans fats are technically unsaturated fats, unlike the 'good' unsaturated fatty acids found in fish and vegetable oils, manufactured trans fats behave similarly to saturated fats in the body.

What effects do they have?

Consumption of trans fats increases the risk of cardiovascular disease significantly more than saturated fats. This is because trans fats not only raise low-density lipoprotein (LDL) cholesterol levels, they also deplete high-density lipoprotein (HDL) cholesterol levels. The result is an increased ratio of total cholesterol to HDL cholesterol, a powerful predictor of coronary heart disease (CHD) risk.

In addition, trans fats may increase triglyceride and Lp(a) lipoprotein (a subset of LDL that may have particular atherosclerotic and thrombotic properties) levels more than other fats, and reduce the particle size of LDL cholesterol. This further raises the risk of CHD. However, the magnitude of risk is greater than would be normally expected based on these changes to serum lipids, suggesting that trans fats may have other adverse effects in the body.

Studies indicate that trans fats may increase systemic inflammatory responses, an independent risk factor for cardiovascular disease and diabetes. People consuming higher than usual levels of trans fats can have increased tumour necrosis factor (TNF) activity and increased levels of interleukin-6 and C-reactive protein, all potent markers of inflammation.

It has also been shown in a number of studies that consumption of trans fats can have a negative impact on endothelial function. In one trial, consumption of trans fatty acids resulted in a 29% reduction in brachial artery flow-mediated vasodilation compared with intake of saturated fats.





How much is too much?

In a recent review of prospective studies investigating the effects of trans fatty acids on cardiovascular disease risk,¹ a 2% increase in energy intake from trans fatty acids was associated with a 23% increase in the incidence of CHD.

It is difficult to say definitively how much trans fat in the diet is too much. Clearly, even low levels confer a substantial risk, but it is difficult to know whether there is a 'safe' level. The US Dietary Guidelines Advisory Committee recommends that the consumption of trans fats be kept below 1% of total energy intake. This translates to about 2.1 g of trans fats per day in an average 2,000 kcal per day diet.

Given that, in the US, an average serve of french fries contains 4.7–6.1 g of trans fatty acids and an average serve of biscuits contains 1.7 g,¹ it is probably unrealistic to expect the average person to be able to consistently limit their trans fat intake to be within the US guidelines.

The good news is that trans fats can be replaced by unsaturated fats in the manufacturing or cooking process, without increasing the cost or reducing the quality or availability of foods. Some countries have sought to make this mandatory, with promising results (see the Danish case study below).

Other governments have mandated that the trans fatty acid content of foods be declared on labels, making it easier for consumers to make informed choices. In Singapore, for instance, clear guidelines for nutrition labelling have been proposed, although for the time being, nutrition labelling is still voluntary. And in Malaysia, if a claim is made regarding the amount and/or type of fatty acids in a food, the amounts of the different types of fatty acids present must be labelled separately.

