

## Facts about Trans Fats

### What are *trans* fats (*trans* fatty acids)?

*Trans* fats (or *trans* fatty acids) are unsaturated fatty acids with at least one double bond in the *trans* configuration. Unsaturated fatty acids have some of their carbon atoms joined by double bonds, and these can exist in two different geometric forms. In the case of *trans* fatty acids, the two hydrogen atoms are on *opposite* sides of the double bond.

### Which foods contain *trans* fatty acids?

*Trans* fatty acids occur naturally in small amounts in foods produced from ruminant animals, e.g. milk, beef and lamb. However, most of the *trans* fatty acids in the diet are produced during the process of partial hydrogenation (hardening) of vegetable oils into semi-solid fats. They are therefore found in hard margarines, partially hydrogenated oils, and in some bakery products, fried foods and other processed foods that are made using these (see below).

### What are the health effects of consuming *trans* fatty acids?

*Trans* fatty acids have an adverse effect on blood lipids and have been shown to increase the risk of heart disease. *Trans* fatty acids increase LDL-cholesterol (the 'bad cholesterol') and decrease HDL-cholesterol (the 'good cholesterol') and, in this way, increase the risk of cardiovascular disease if consumed in high amounts. They may also have adverse effects on cardiovascular disease risk that are independent of an effect on blood lipids (Mozaffarian *et al.* 2006).

In a recent review of prospective studies investigating the effects of *trans* fatty acids on cardiovascular disease risk, a 2% increase in energy intake from *trans* fatty acids was associated with a 23% increase in the incidence of coronary heart disease. The authors also reported that the adverse effects of *trans* fatty acids were observed even at very low intakes (3% of total daily energy intake, or about 2-7g per day). (Mozaffarian *et al.* 2006). However, in this recent review it is only *trans* fatty acids produced during the hardening of vegetable oils that are found to be harmful to health. The public health implications of consuming *trans* fatty acids from ruminant products are considered to be relatively limited.

### **What is the current intake in the UK?**

Over the past decade, population intakes of *trans* fatty acids have fallen and are now, on average, well below the recommended 2% of total energy set by the Department of Health in 1991, at 1.2% of energy (Henderson *et al.* 2003). This is not to say that intakes of *trans* fatty acids are not still a problem, and dietary advice states that those individuals who are in the top end of the distribution of intake should still make efforts to reduce their intakes.

### **Labelling of *trans* fatty acids**

Currently, *trans* fatty acids in foods are labelled in the USA, but not in the UK and Europe. The UK Food Standards Agency (FSA) is in favour of the revision of the European directive that governs the content and format of nutrition labels in the UK (and the rest of Europe), so that *trans* fatty acids are labelled. This should enable consumers to make healthier food choices with regard to heart health (Clarke & Lewington 2006).

### **Recent changes in food manufacturing**

Recognising the adverse health effects of *trans* fatty acids, many food manufacturers and retailers have been systematically removing them from their products in recent years. For example, they have been absent from major brands of fat spreads for some time, which are now manufactured using a different technique. Also, many companies now have guidelines in place that are resulting in reformulation and reduction or elimination of *trans* fatty acids in products where they have in the past been found, such as snack products, fried products and baked goods.

For example, we understand that the frying and coating oils used for manufacturing the vast majority of packeted savoury snacks in the UK do not contain partially hydrogenated oils. Similarly, changes are being made to the way bakery products are manufactured. For example, a leading European manufacturer of major brands of biscuits, cakes and snacks in the UK, has recently announced that these are now made without partially hydrogenated vegetable oils, a transition that began in 2004. Alongside these changes, content of saturates has also been reduced. A major technical challenge in achieving reformulation is to avoid simply exchanging *trans* fatty acids for saturated fatty acids, which also have adverse health effects.

### Limiting intake of *trans* fatty acids

Foods that are labelled as containing partially-hydrogenated oils or fats are a source of *trans* fatty acids (note that sometimes 'partially-hydrogenated' oils/fats are just labelled as 'hydrogenated' oils). These foods include hard margarines, some fried products and some manufactured bakery products e.g. biscuits, pastries and cakes (containing partially-hydrogenated oils).

A simple way to reduce *trans* intake is to follow general healthy eating advice - cut down on fried foods, high fat snacks and high fat baked goods. When buying fat-containing foods, look for ones labelled with a high content of monounsaturates and/or polyunsaturates.

The table below shows the foods that contributed to *trans* fatty acid intake in the UK in 2000/1, when the fieldwork for the most recent National Diet and Nutrition Survey (NDNS) was undertaken.

**Table showing the percentage contribution of the main sources of *trans* fatty acids in the UK diet (adults) in 2000/1\*.**

Food group	Examples of foods contributing to <i>trans</i> fatty acid intake (in 2000/1)	Percentage contribution to total <i>trans</i> intake in the UK (adults)
Cereal products	Biscuits (9%), buns, cakes and pastries (retail) (8%), made using partially hydrogenated fats and oils.	26
Meat and meat products	Burgers, kebabs, meat pies and pastries. Naturally present in beef and lamb at low levels.	21
Fat spreads	Butter, margarines and spreads made using partially hydrogenated oils	18
Milk and milk products	Naturally present in milk and milk products, at low levels.	16
Potatoes and savoury snacks	Chips (retail) (4%), some savoury snacks (1%).	6

Data from the National Diet and Nutrition Survey (NDNS) (Henderson *et al.* 2003)

\* Note: although these are the most recent national data, since they were collected there has been substantial reformulation.

However, it is important to note that these statistics may well have changed in the light of reformulation of foods that has taken place over the past 6 years in the UK,

as referred to earlier, and total *trans* intake may have continued to decline. Furthermore, the average intake of *trans* fatty acids is lower in the UK than in the USA (where legislation has now been introduced) and is well below the recommendation set by the Department of Health in 1991. However, this does not mean there is room for complacency as the intake in some sectors of the population (with high intakes of fried foods and some types of snacks and baked goods) is known to be higher than recommended and should be reduced.

## References

Clarke R & Lewington S (2006) Trans fatty acids and coronary heart disease (Editorial). *British Medical Journal* 333: 214. Available at: <http://press.psprings.co.uk/bmj/july/edit214.pdf>

Henderson L, Gregory J, Irving K *et al.* (2003c) *The National Diet and Nutrition Survey: Adults Aged 19-64 Years, Volume 2: Energy, protein, carbohydrate, fat and alcohol intake*. HMSO, London.

Mozaffarian D, Katan MB, Ascherio A, Stampfer MJ & Willett WC (2006) Trans fatty acids and cardiovascular disease. *New England Journal of Medicine* 354:1601-13.