Fat information

During digestion, the three long hydrocarbon chains in each fat or oil molecule are broken away from the 'backbone' in an enzyme-catalysed reaction called *lipolysis*. The three long chain molecules are called *fatty acids* or *glycerides* (the backbone part is called *glycerol*). The fatty acids do not have to be the same – in olive oil, for example, there are at least four different fatty acids, meaning that not all olive oil molecules are identical. Olive oil contains the four different fatty acids in varying amounts. These are shown in the information table.

The letter C followed by a number shows how many carbon atoms are in the fatty acid chain. As the systematic names of fatty acids are very complicated, they are usually referred to by their common names, *eg* palmitic acid.

Adding iodine helps food chemists identify the fatty acids present. Those with the highest numbers of double bonds are the most unsaturated and react fastest with a fixed amount of iodine. The dark colour of the iodine disappears as the iodine atoms add across the >C=C< double bonds. Fats or oils with fatty acids containing fewer double bonds react much more slowly (or not at all) with iodine.

The *iodine number* is the amount of iodine that completely reacts with 100 g of the fat / oil. A polyunsaturated fat typically has an iodine number of 120-150.

Eating higher amounts of polyunsaturated fats is supposed to benefit health as these molecules are digested more easily. High amounts of saturated fats in the diet are linked with heart disease.

Fat or oil	Saturated fatty acids			Unsaturated fatty acids			
	Myristic acid C-14 / %	**Palmitic acid C-16 / %**	**Stearic acid C-18 / %**	**Oleic acid C-18 / %**	**Linoleic acid C-18 / %**	**Other polyunsaturated fatty acids C-18 and longer / %**	**Other polyunsaturated fatty acids C-14 and C-16 / %**
Beef fat - dripping	6	27	14	50	3	-	-
Cocoa butter - vegetable fat	-	24	35	38	2	-	-
Fish oil - sardine	5	15	3	-	-	50	27
Cod liver oil	6	8	1	29	-	35	20
Corn oil	1	10	3	50	-	34	2
Olive oil	-	7	3	85	5	-	-
Peanut oil	-	8	3	56	-	33	-
Soya oil	-	10	2	20	-	58	-
Sunflower oil	-	6	2	25		67	-