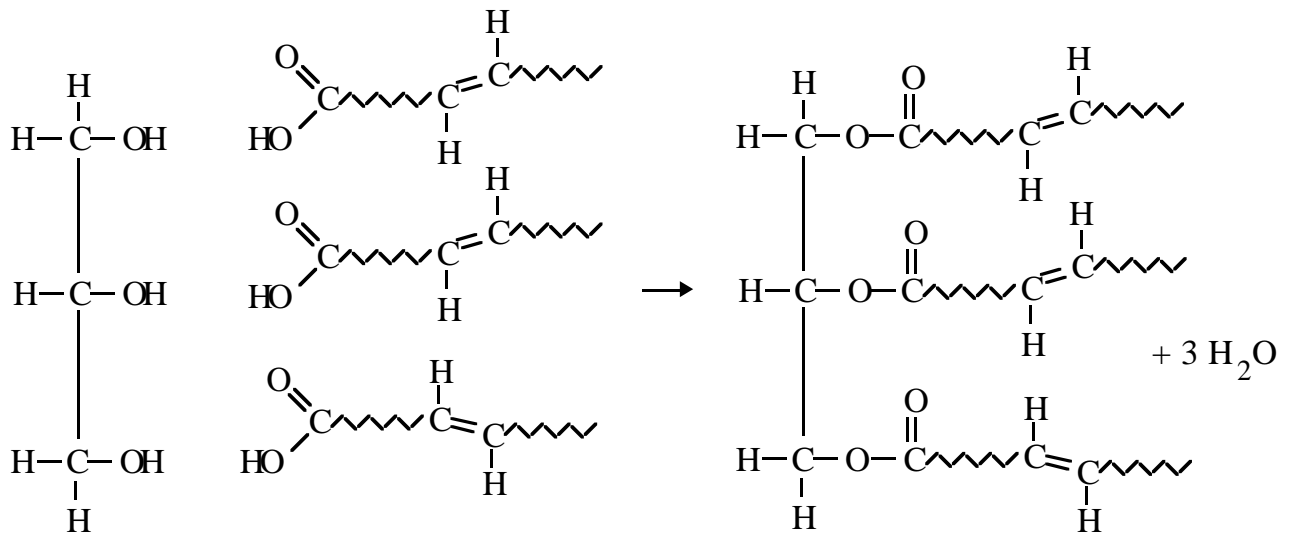




The fatty acid molecules combined with each molecule of Glycerol need not be identical.

If any of the fatty acids are unsaturated, the resulting fat is unsaturated :



The distortion in shape produced by the double bonds makes close packing more difficult and reduces the strength of the van der Waals bonds between the molecules; unsaturated fats thus have lower melting points than saturated fats and are usually liquids (oils) at room temperature.

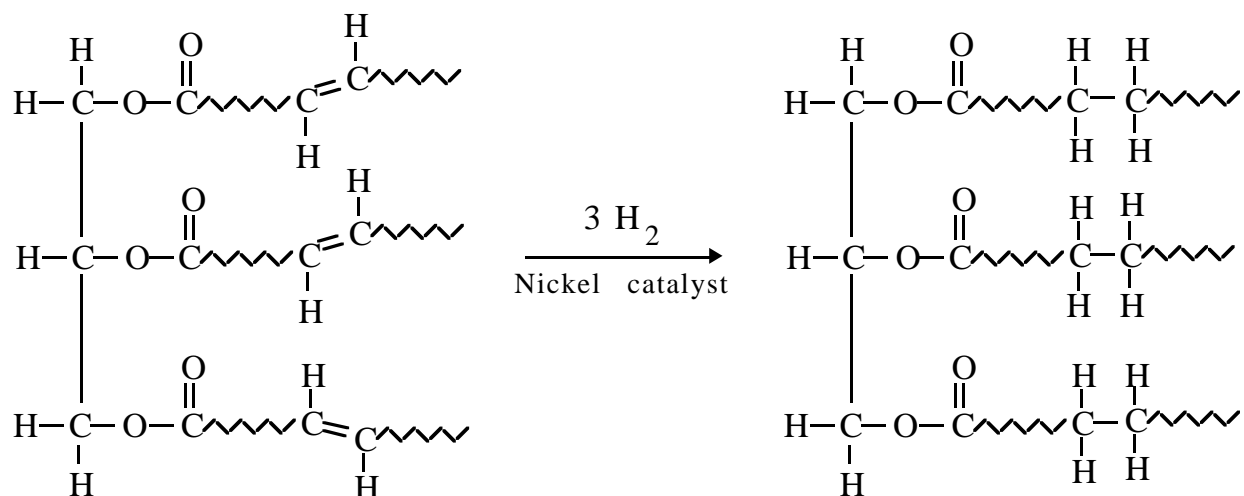
Fats and oils in the diet supply the body with energy and are a more concentrated source of energy than carbohydrates.

Most animal fats are saturated.

There is a link between saturated fat in the diet and heart disease. Fish oils (halibut, cod liver etc) and vegetable oils (olive, castor etc) are unsaturated and less likely to cause heart disease.

### Manufacture of Margarine

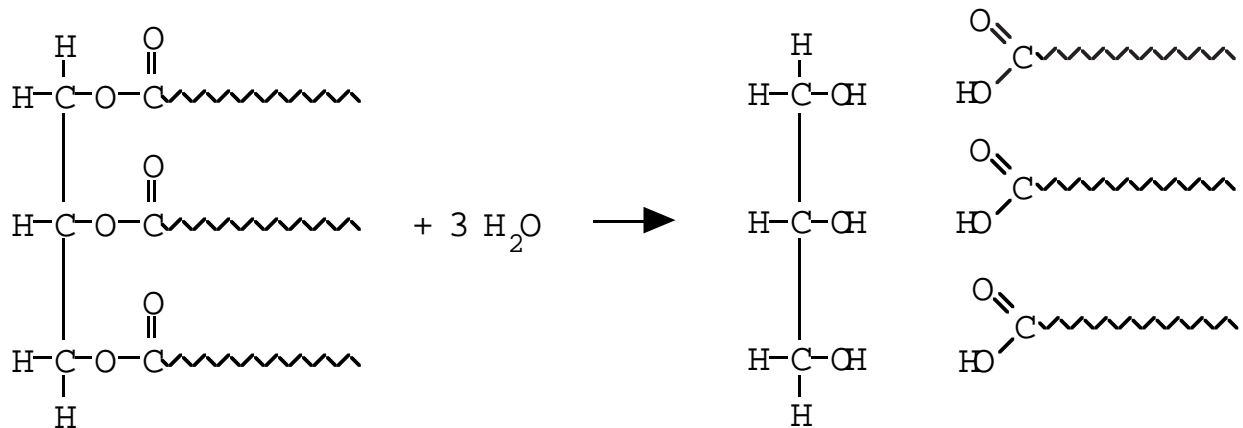
Margarine is produced by reaction of vegetable oils with Hydrogen to partially remove some of the unsaturation :



Thus liquid oils are converted into solids more suitable for spreading.

## Digestion of Fats

Fats are hydrolysed to fatty acids and Glycerol in the small intestine using an enzyme called Lipase :



The fats can be reconstituted, stored in the body and used as an energy reserve. Fats are a more concentrated source of energy than carbohydrates.

## Manufacture of Soap

If the hydrolysis of fats is carried out in the presence of Sodium hydroxide the fatty acid formed reacts with the Sodium hydroxide to form the Sodium salt - SOAP.

e.g. Stearic acid reacts as follows:

