

dietary fats

2. heart health

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Dietary fats are an essential macronutrient in our diets as they have several important functions, including provision of essential fatty acids that the body cannot produce itself, aiding absorption of fat-soluble vitamins (A, D, E & K) and providing an essential energy source, offering more energy per gram than the other macronutrients carbohydrates and protein.

Dietary fats and oils are a mixture of saturated and unsaturated fats, but we typically describe the fat according to which of these is present in the greatest abundance. Saturated and unsaturated fats are distinguished by the number of double bonds they contain (LINK: 'Dietary Fats – Structure & Digestion'), which determines the behaviour of the fat and impact on health.

blood lipids

'Blood lipids' refers to the different types of fat circulating in our bloodstream. Upon digestion, fatty acids are transported by

different 'lipoproteins' that are distinguished by their density. Blood tests to determine an individual's lipid profile will include various measures of blood lipids, such as LDL-cholesterol, that are important when it comes to health.

dietary fats & heart health

The effect of saturated fats on health was reviewed by the Scientific Advisory Committee on Nutrition in 2019 (1), who recommended a reduction of saturated fat consumption owing to the negative impact on cardiovascular health. This recommendation was consistent with previous advice from COMA (Committee on Medical Aspects of Food Policy, predecessor of SACN) since the body of evidence to support this had grown. SACN additionally recommended that saturated fats be replaced by unsaturated fats in the diet.

The body of evidence reviewed suggested that a reduction in saturated fat intake

reduced risk of cardiovascular events and blood lipids, specifically Total Cholesterol (TC), LDL and Triglycerides, although there was no evidence of an effect on mortality as a result of cardiovascular disease or coronary heart disease. Evidence also showed there's likely to be a differential effect on cardiovascular events dependent on what macronutrient displaced saturated fat, with PUFA shown to decrease risk of cardiovascular events by 27% (2). There was insufficient evidence to demonstrate the same effect if replacing with MUFA.

NICE guidelines on cardiovascular health advise a cardioprotective diet should include less than 30% total energy from fat, 7% or less from saturated fat and less than 300mg cholesterol per day. Furthermore, it advises that saturated fat be replaced with mono and polyunsaturated fats (3).

More recent findings also suggest that the length of the saturated fatty acid and source of saturated fat may be an important consideration when it comes to our health. For example, some evidence suggests that saturated fats found in certain dairy products may have a neutral or beneficial effect on cardiovascular markers (4–6) owing to the food matrix within which the saturated fats exist. However, more research is required in this area to understand whether this should impact dietary advice.

Trans fats are a type of unsaturated fat that were used heavily in the food manufacturing industry in the 1960s, when the implications of saturated fat consumption on cardiovascular health became evident and the unsaturated 'trans' fat appeared preferable. However, evidence revealing the adverse effect of trans fats on health has since grown (7) and the unique

ability of 'trans' fats to both increase LDL and decrease HDL (8) arguably makes trans fats more detrimental to health than saturated fats, which increase HDL along with LDL.

The realisation these behaved as a saturated fat, and are arguably worse for health than saturated fats, has resulted in trans fats predominantly being removed from food production and an EU regulation limiting their production came into effect in April 2019, with any products non-compliant having to be removed from shelves by April 2021 (9). As a result, a maximum of 2g of industrially produced trans fats are allowed per 100g of fat in the food. It is possible there is a differential effect on health of trans fats dependent on whether they derive from animal sources versus vegetable oils, with a more significant effect on Coronary Heart Disease suggested from vegetable oils, but more research is required (7).

essential fats; omega 3 & 6

Some fatty acids are essential, as we can't make them in the body, and these are omega 3 & 6 fatty acids. Humans are unable to synthesise the double bond structure these polyunsaturated fatty acids exhibit. Omega-6, linoleic acid (18:2n-6), and omega-3, alpha-linolenic acid (18:3n-3), whose names come from the placement of the first of their double bonds along the chain, have a number of important roles such as maintaining heart rhythm, preventing blood clots, supporting the immune and endocrine systems and, for infants, aiding the development of eyes and brain (10). Linoleic acid (omega 6) can be found in nuts, seeds and vegetable oils whilst alpha linolenic acid (omega 3) can be found in plant oils, such as rapeseed and

flaxseed oil.

Important long-chain omega 3 fatty acids are synthesised from alpha-linolenic acid by the body, these are Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA).

However, this synthesis is limited and preformed EPA and DHA are also ideally provided in the diet. EPA and DHA can be found in oily fish, such as salmon, mackerel and herring, and certain nuts & seeds (such as walnuts and chia seeds). Some everyday products are now being enriched with omega-3 by manufacturers, such as eggs.

recommended & average intakes

	recommended intake, as % of total energy (11)	average intake (12)
total fat	35	34.1
saturated fats	10	12.3
cis MUFA	12	12.6
cis PUFA	6 (mixture of Omega 3 & 6)	
n-3 PUFA	≥ 0.2	1
n-6 PUFA	≥ 1	5
trans fat	<2	0.5

Note: 'Total energy' includes that derived from alcohol. Recommended intake for those 5 years and older. Average intake of adults aged 19-64.

Using dietary reference values for energy, recommended daily intake of fats is approximately 70g and 90g for females and males, respectively. Saturated fats should account for no more than 20 & 30g of this, respectively, which current intakes exceed. One oily fish portion (140g) is recommended per week, but adults consume only 56g per week on average (12).

In the UK, it is legally required to include total and saturated fat content on nutrition

labels. Unsaturated fat content can be added voluntarily, as can traffic light labelling and health claims.

summary

Dietary fats play a number of important roles in the human body, but the type of fat consumed matters when it comes to health. Whilst recommendations on saturated fat intake reflect a body of evidence suggesting they are associated with negative health outcomes, it is possible future guidance could include the differential impact saturated fatty acids may have on health. In the UK, intakes of saturated fats remain above recommendations and omega 3 intake, particularly in the form of oily fish, is low.

References

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