

Fats & Oils for Good Health



Greencuisine Trust

The importance of fats in the diet

Eating the right fat is critical in keeping your body healthy and strong. Everything from metabolism to immunity is influenced by the fats you eat. It is essential for the cell membrane covering each and every one of our 30 trillion cells.

Fat serves as an important source of energy.

Because it is digested slowly, it provides long lasting energy, helping us stay satiated.

Fat insulates the body and regulates temperature.

Fat helps cushion and protect organs.

Fat is needed to absorb fat-soluble vitamins (A, D, E, K).

The body uses fat for building hormones like estrogen & testosterone.

Regulatory molecules such as prostaglandins, leukotrienes and thromboxanes are fat based.

Fat slows down digestion and absorption of sugars, helping with blood sugar management.

Fat also contributes to the flavour and satisfaction of food.



FATS & OILS

Eating naturally occurring whole foods was fundamental in our evolutionary history. Today our diets are full of processed foods most of which harbour altered fats, something our bodies have not eaten in the past and do not recognise.

Before agriculture humans would have obtained different fats from plants and animals found in their environment. Consumed as whole foods these fats, long before nutritional science named them, would have provided saturated, monounsaturated and polyunsaturated fatty acids.

Fatty acid classification.

A molecule of any solid or liquid fat is made up of fatty acids. All fatty acids are made up of a carbon chain to which hydrogen is attached. Different combinations of fatty acids are found in each kind of fat or oil.

There are two main fat classifications

Saturated fats

So called because the carbon atoms in the chain carry the maximum number of hydrogen atoms that is possible and are thus saturated with them. They are found in the fat cells of meat products and dairy as well as tropical fats like coconut.

Unsaturated fats subdivided into:

Monounsaturated fats

A monounsaturated fat has one double bond in the carbon chain and is found in avocados, olives and nuts. The most important monounsaturated fat in human nutrition is oleic acid, found in olive oil, historically one of the oldest consumed oils.

Polyunsaturated fats

These fats have more than one double bond in the carbon chain which makes them the least stable fats. Polyunsaturated fats include omega-3, found in walnuts, hemp and flax and omega-6 found in sunflower seeds, corn and soybean oil. As the body cannot make omega 3 & 6 they are considered essential and you must obtain them from food.

Trans fat is a further classification.

Artificial trans fats are created by adding hydrogen to liquid vegetable oils to make them more solid. They are known to be detrimental to human health and banned in many countries but not the UK. A small amount of naturally-occurring trans fats are found in some milk and meat products such as beef and lamb. It is unclear how these trans fats affect health.

The body can, if necessary, synthesise most of the fats it needs from carbon groups in carbohydrates and proteins. There are two polyunsaturated fatty acids (PUFA's) the body is unable to synthesise - omega 3, alpha linolenic acid (ALA) and omega 6, linoleic acid (LA). It is important to include foods containing these PUFA's in the diet. Omega 3 converts into the very long chain fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) and omega 6 converts into the longer chain arachidonic acid (AA) .

Essential fatty acids are involved in many physiological processes such as blood clotting, wound healing and inflammation. The brain is composed primarily of fat with a unique fatty acid composition high in DHA. Both EPA & DHA are essential for neurological development. ① The lipids of the retina also contain very high concentrations of DHA. ②

Although the body is able to convert LA and ALA into the longer chain fatty acids, this conversion appears to be limited. The longer chain fatty acids EPA and DHA are said to be “conditionally essential” and it is recommended to consume direct sources of these particular long chain fatty acids. The best preformed sources of EPA and DHA are oily fish and marine algae.

Omega 3 derivatives EPA and DHA & omega 6 derivative AA are precursors of prostaglandins. Prostaglandins are short lived, hormone-like chemicals that regulate a whole range of cellular activities. One of the many roles of prostaglandins is controlling inflammation. Prostaglandins formed from omega 3's are anti inflammatory but the ones formed from omega 6 are inflammatory.

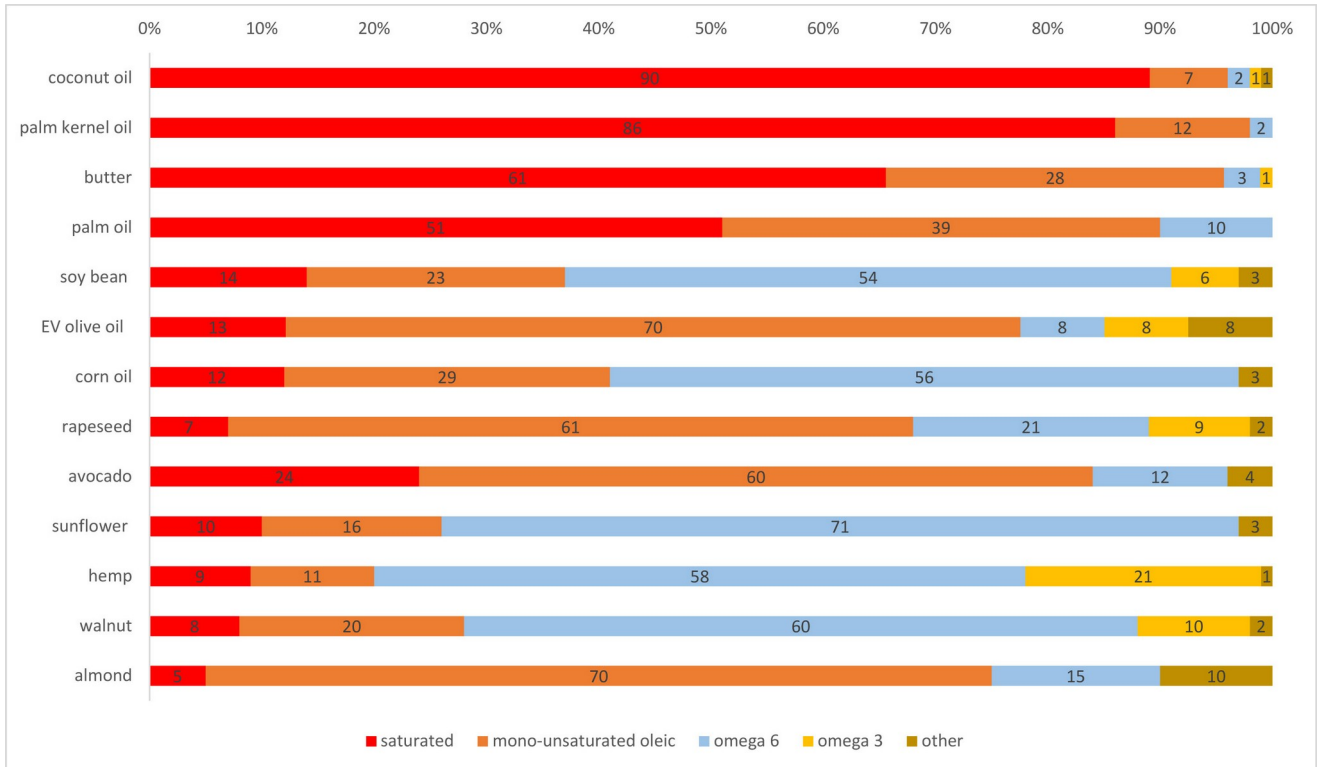
Omega-3 and omega-6 are both required for the body to function but due to the opposing effects of omega-3 and omega-6 fatty acids the right ratio in the diet is critical. Too much omega-6 and too little omega-3 are among the causes for many diseases in modern society.

Human beings evolved eating a diet with an omega-6:omega-3 ratio of about 1:1. Modern western diets have excessive amounts of omega-6 fatty acids compared with the diet on which human beings evolved and their genetic patterns were established. Today we are seeing ratios ranging between 15:1 & 20:1 ③ It is generally agreed that an omega 6:3 ratio between 1:1 & 1:3 is ideal. The lower ratio is more desirable in reducing the risk of many chronic diseases ④

Over the last 100 years the industrial advent of mechanically driven steel expellers and chemical extraction processes has dramatically increased consumption of oils with a high level of omega 6. With the introduction of the hydrogenation process vegetable oils were solidified and we began to use these high omega 6 spreads as a substitute for butter. Hydrogenated fats are a major source of harmful trans fatty acids.

Diets high in trans fats increase low density lipoprotein (LDL) cholesterol. Numerous studies have shown that higher levels of LDL cholesterol are associated with a higher risk of having a heart attack. Cholesterol is crucial for health and the liver makes most of what is required. The liver compensates and makes less when cholesterol is in the food you eat. We are all different and not everyone makes or removes cholesterol with the same efficiency. Minimising saturated fat, for many people, is a good idea. Other dietary factors that negatively affect cholesterol are high sugar consumption, refined carbohydrates and refined seed oils. Once again the overall message is a healthy eating plan of lots of vegetables, fruits, pulses and whole grains.

The following chart gives the variable amounts of fatty acids in commonly used fats & oil. It represents an average as the cultivar, the way it is grown and processed will all make a difference. As an example a high oleic acid sunflower oil seed has been introduced which lessens the content of omega 6.



Nutrients do not work in isolation but synergistically, so the health benefit of an avocado, sunflower seed, hemp seed, walnut or almond is greater when eating the wholefood. If you do use any of them as oils, with the exception of avocado, they are not suitable to heat.

As with all foods it is not just what we eat but how it is produced. Regenerative farming practices like organic and biodynamic do not use chemicals. Pesticides and herbicides harm human health and wildlife, contaminate water and negatively affect the wider ecosystem.

As much as possible, try to buy oils (all foods) that have a positive impact on the environment. Ask questions and learn about the environmental issues behind the brands you buy.

Olive oil

Olive processing waste due to its chemical composition can cause serious environmental problems. Mishandled it can contaminate ground water and over enrich lakes, rivers and canals causing the death of aquatic life. New innovative approaches, depending on the method of extraction used, include extracting the phenols from olive waste water ⑤ to use as an anti-oxidant food additive and using the solid fraction as a biomass fuel or as a fertiliser. Also olive stone ash, ground olive stones, and sludge from pomace oil extraction can be used in the making of clay bricks and cement paste. ⑥

Coconut

Growing coconuts as a monoculture has a negative impact on tropical diversity but does not require pesticides or herbicides. Per volume of oil produced, coconut production affects more species than any other oil crop, including oil palm. According to the International Union for the Conservation of Nature coconut threatens some 20.2 species per million metric tonnes of oil produced, followed by olive with 4.1 species, oil palm with 3.8 and soybean, 1.3 ⑦

Rapeseed

Rapeseed is extremely vulnerable to a large number of pests and diseases which in non-organic systems are treated with a range of pesticides and fungicides. In addition high applications of nitrogen fertiliser are used which can be detrimental to water systems. After oil production the remaining rapeseed meal is a high protein food for livestock and chickens.

After harvesting there are processing considerations. For example the vast majority of vegetable oils are made by chemical or solvent extraction. The solvent commonly used is hexane, a by-product of petroleum. Once extracted most oils then undergo some form of refining, bleaching and deodorising leaving a product devoid of any of the original beneficial compounds.

Cold pressed vegetable oils only account for a small proportion of oils on the market. They are made using methods that press and grind the seed or fruit to extract the oil. The nutrient content is retained in these oils and are the ones most beneficial to health.

Oils called 'vegetable oil' - are likely to be heavily processed and are best to avoid. They are made mostly with rapeseed oil, (invariably imported) potentially with soy bean or corn.

In addition try to buy from companies that address workers' rights and fair pay. Indonesia and the Philippines are the world's leading producers of coconuts primarily made up of small scale farmers. Many of these farmers live in poverty earning a little over a dollar a day. If for example you buy Fairtrade, producers receive a fair price for their product. Finally, in Thailand, the third largest exporter of coconuts, monkeys are used to harvest the fruits. They are kept chained seven days a week.

Suggested brands

Olive oil

Organico olive oil

www.organicorealfoods.com

Zaytoun Palestinian extra virgin olive oil

<https://zaytoun.uk>

Essential Spanish Fairtrade olive oil

www.essential-trading.coop/products/essential-spanish-olive-oil-extra-virgin-cold-pressed-500ml-organic-o031p/

Coconut oil

Lucy Bee extra virgin raw coconut oil

www.lucybee.com/products/organic-coconut-oil-500ml

Tiana Fair Trade Organics extra virgin raw coconut oil

www.tiana-organics.com/base/coconut-oils/tiana-fairtrade-organics-raw-extra-virgin-coconut-oil-500ml.html

Biona raw virgin coconut oil

www.planetorganic.com/products/biona-organic-raw-virgin-coconut-oil-800g

Rapeseed oil

Stringers organic UK rapeseed oil

www.yorkshirerapeseedoil.co.uk/stringers-organics

Hillfarm oils cold pressed rapeseed oil

www.hillfarmoils.com

Organico rapeseed oil

www.organicorealfoods.com/products/organico-rapeseed-oil

Home cooking

Heating an oil increases oxidation i.e. the rate at which it reacts with oxygen and breaks down.

The better an oil can resist oxidation the better it is for cooking. The more saturated fat and monounsaturated fat in an oil, the better its oxidative stability.

The best saturated fats to cook with are coconut or ghee. Potentially if you are a meat eater you could use lard. Saturated fats are no longer thought to be the main drivers of cardiovascular disease but they are best eaten in moderation. The focus of CVD prevention has fallen on reducing blood glucose peaks through eating a wholefood diet rich in fibre and low in simple sugars.

The best monounsaturated fat to use in cooking is extra-virgin olive oil. EVOO has the lowest oxidation rate of any oil. When you heat olive oil you lose some of the healthy bioactive compounds such as polyphenols but you do not create harmful compounds. A spoonful of cold EVOO poured over a plate of colourful vegetables is a great way to get the polyphenols and the fat soluble nutrients in the vegetables.

Whilst multiple nutritional factors along with environmental considerations and genetic susceptibility underlie the etiology of non-communicable diseases in the western world, the oils and fats we choose to eat are one very important factor.

10 key diet considerations

Eat a wholefood diet and obtain beneficial fats from whole nuts, seeds and pastured eggs.

Eat a portion of small oily fish each week.

If you have to choose between butter and margarine, choose butter or go without.

If you avoid foods of animal origin take a supplement of DHA and EPA extracted from algae.

Minimise high heat cooking, if you pan fry or roast use a little ghee or extra virgin olive oil.

Do not cook with polyunsaturated fats.

Never reuse cooking oil.

Purchase the best good quality cold pressed oils you can afford.

Do not buy foods with 'hydrogenated' or 'partially hydrogenated' on the label.

Palm oil is little used in the UK as a cooking oil but is found in many products check labels on any processed food.



1 Omega-3 Fatty Acids EPA and DHA: Health Benefits throughout Life.

Swanson, D. (2012) *Advanced Nutrition*, 3, 1-7.

<http://dx.doi.org/10.3945/an.111.000893>

2 Docosahexaenoic Acid (DHA): An Ancient Nutrient for the Modern Human Brain

www.ncbi.nlm.nih.gov/pmc/articles/PMC3257695/

3 The importance of the ratio of omega-6/omega-3 essential fatty acids

[A P Simopoulos](#)

<https://pubmed.ncbi.nlm.nih.gov/12442909/>

4 Importance of maintaining a low omega-6/omega-3 ratio for reducing inflammation

[James J DiNicolantonio](#) & [James H O'Keefe](#)

www.ncbi.nlm.nih.gov/pmc/articles/PMC6269634/

5 www.researchgate.net/publication/360963064 The Potential use of Phenolic Compounds Recovered from Olive Mill Wastewater in Food Model System

6 www.oliveoiltimes.com/world/olive-waste-can-used-make-effective-building-materials/

7 Coconut oil, conservation and the conscientious consumer

[Erik Meijaard et al](#)

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)30746-6](https://www.cell.com/current-biology/fulltext/S0960-9822(20)30746-6)



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