

# WHAT DO YOU KNOW ABOUT FATS AND OILS?

by John Appleton

Most of us know that there are good fats and bad fats and most of us if asked would pin the bad guy label firmly on saturated fats (from animal sources e.g. butter) when it comes to heart disease and obesity. Some of us will have heard of trans fats and have read how dangerous these can be. We have heard that Olive oil is good for us and that vegetable oils are also healthy alternatives to saturated fats. Regrettably what we have been led to believe is not necessarily the truth.



Let's look at a bit of the chemistry. Most of the fats in the human body are triglycerides which are the chemical form in which most fat exists in food as well as in the body. Fats (also known as lipids) are composed of fatty acids. Imagine a chain of carbon atoms joined together with either a single link or a double link and with hydrogen atoms attached to the carbon atoms. At the end of the chain there is a glycerol molecule.

Fatty acids are generally categorized as saturated monounsaturated or polyunsaturated.

Saturated fats have their carbon atoms joined together by single bonds and because all of the positions on the carbon atoms are occupied by hydrogen atoms the carbons could be said to be saturated with hydrogen atoms. Saturated fats are mostly found in animal products e.g. meat and butter and also in tropical oils such as coconut oil. Saturated fats are very stable they don't oxidize easily or go rancid. As such they are ideal for cooking.

Monounsaturated fatty acids differ in that they have one double bond between carbon atoms in the chain and thus hydrogen atoms do not occupy all the positions on the carbon atoms at the double bond. The most well known monounsaturated fat is oleic acid found in olive oil. Monounsaturated fatty acids are quite stable and do not go rancid or oxidize easily. Good quality cold pressed Olive oil is therefore suitable for cooking although minimum temps are recommended.

Polyunsaturated fatty acids are so called because they have two or more double bonds between the carbons in the chain and thus many hydrogen atoms may be missing. Polyunsaturated fatty acids are very unstable and oxidize very easily thus they are not suitable for cooking. You may be surprised to hear this because most of the cooking oils found on supermarket shelves are polyunsaturated 'vegetable' oils e.g. sunflower, safflower, corn oil etc. These oils are the most processed on the planet and are extracted using high heat and chemical solvents.

The process can involve the use of Sodium Hydroxide (caustic soda) to remove alkali soluble ingredients that may limit the shelf life of the oil. Acid soluble ingredients are removed for the same reason this time using Phosphoric Acid. Next the oil is bleached because if it were too dark, it would absorb more light and thus spoil more quickly.

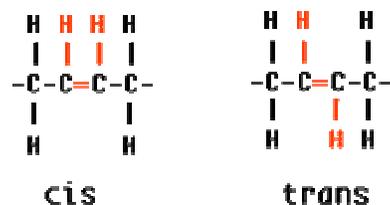
This process can make the oil rancid with an unpleasant odour and flavour. To resolve this problem a process of deodorization is the final insult and this involves heating to nearly 250 degrees centigrade rendering the oil colourless, odourless and all but tasteless. When you cook with these oils at high temperatures, you are further denaturing them. Any product that has vegetable oil listed on the label is almost certainly made with polyunsaturated oils. And then there are the so called healthy spreads containing plant sterols that inhibit cholesterol absorption.

Do you think the manufacturers are using premium cold pressed oils – I don't think so, and what sort of processing does it take to make it solid in the container? For me Butter wins out hands down. It's very stable, it's made with minimum processing and it tastes great too. The ingredients in Butter are cream and salt (that itself says a lot).

We have all heard of Omega 3 (alpha-linolenic acid) and Omega 6 fatty acids (linoleic acid) which are also polyunsaturated fatty acids which are often referred to as essential fatty acids. Omega 6 fatty acids are found in vegetable oils and evening primrose oil and Omega 3 fatty acids in flaxseed oil, fish oil and canola oil. Omega 6 gets its name because on the chain of carbon atoms the first double bond is at the 6<sup>th</sup> carbon atom. With Omega 3 fatty acids the first double bond on the chain of carbons is at the third carbon atom.

In the western diet we have created a huge problem with these two essential fatty acids. The ratio of Omega 6 to Omega 3 is way out of balance with up to 20 times more Omega 6 fatty acids being consumed than Omega 3 fatty acids. The problem is that Omega 6 fatty acids are metabolized into pro-inflammatory substances, not good news because even the most committed critic of nutritional medicine understands that inflammation plays a huge role in heart disease. Omega 3 fatty acids are metabolized as anti-inflammatory substances and thus have a vital role in offsetting inflammatory conditions. Anyone interested in cardiovascular health should be looking at this very closely.

An article on fats and oils would not be complete without an expose on the really bad guys – TRANS FATS. The most abundant (and least expensive) form of fat is from plant oils and most food processing companies opt for the cheapest. The problem is that solid fat is required in many instances (baking etc). So how does one turn a cheap vegetable oil (which has already gone through the 'ringer') into something that can be used for baking. They try to make it into a form which is solid at room temperature (remember saturated fats are solid at room temperature) using a process called hydrogenation in which the plant oils are exposed to hydrogen at very high temperatures. In a naturally occurring fat the hydrogen atoms generally form a CIS configuration (cis means the same side) but the hydrogenation process causes the formation of an unnatural TRANS (meaning across or on the other side) configuration. They stop the hydrogenation process when they achieve the right consistency.



Trans fats are deadly. Harvard University researchers have reported that people who ate partially hydrogenated oils, which are high in trans fats, had nearly twice the risk of heart attacks compared with those who did not consume hydrogenated oils. Thus for the sake of cost and convenience, food processing companies (who actively promote their products to you and your children) are willing to compromise your health.

I saw a snack bar recently which was making all manner of health claims on the front of the wrapper. A quick glance at the ingredients revealed partially hydrogenated oils. Look on food labels for the total fat and the amount of saturated fat. If there is a difference between the two amounts it could be trans fat.

Be very vigilant. Question the establishment view on this subject – you need to know the facts. I have some wonderful articles on fats and oils that I will be pleased to share with anyone interested.

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