

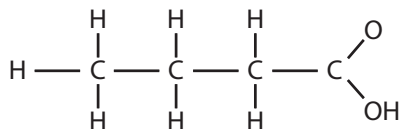
Macronutrients

Understanding fats

Your body needs an adequate supply of healthy fat each day to produce steroid hormones and Vitamin D, support brain and nerve function, maintain cell integrity, insure calcium absorption, and protect your liver, heart, lungs and kidneys. Fats provide a concentrated source of energy. Fats trigger satiety. While most of us know there are good fats and bad fats, advertising about which fats to eat confuses the majority of us. The three basic types of fats found in the diet and in our body are saturated fats, monounsaturated fats and polyunsaturated fats.

Saturated Fats

Saturated fats are chains of carbon, hydrogen and oxygen. They are held together by single bonds. Fat chains with single bonds are stable and do not easily go rancid when mixed with heat and oxygen. Foods that contain high amounts of these saturated and stable fats are butter, coconut oil, and the fat in meat. Saturated fats are usually solid at room temperature. Our body makes saturated fat out of the excess sugar and carbohydrate we eat.



Saturated Fatty Acid: The single bond between the carbon and hydrogen atoms in the chain make saturated fats stable.

The Role of Saturated Fats

Saturated fats play a variety of roles in our body. They act as anti-oxidants that protect against the formation of free radicals.

Saturated fats slow down the absorption of carbohydrates into the bloodstream, which helps to keep blood glucose levels within a normal healthy range.

Eating foods that contain a balance of high quality protein, carbohydrate and saturated fat allows the digestive system to work efficiently. Whole milk is an example of such a well-balanced food. It contains equal portions of high quality protein, carbohydrate and fat.

Fats are stored in our body to be used as back-up fuel. While glucose is our best fuel during the day, at night when we are not eating for seven to eight hours stored fats provide our back-up fuel. Fats require more energy to be converted to ATP (energy packets) than glucose. Short chain saturated fats enter the cells without the aid of the Carnitine Transport System. Bypassing this system requires less energy for ATP production and is the most efficient way to turn fat to energy. All saturated fats contain some short chain fatty acids.

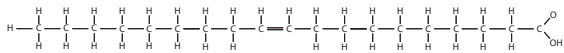


Pregnant women need more fat as fuel as they need to spare glucose for the baby to use as energy, so saturated fats are well by them.

Saturated fats make our foods taste good so that we enjoy what we are eating and feel full after eating. They also aid in the manufacture of digestive enzymes.

Monounsaturated Fats

Monounsaturated fats have one double bond between their carbon and hydrogen atoms. This means that two hydrogen atoms are missing from the carbon chain. Monounsaturated fats are liquid at temperatures higher than 55°F which makes them liquid at room temperature and solid in the refrigerator. These fats do not oxidize or become rancid easily and can be used for cooking. The oleic acid found in olive oil is the most common monounsaturated fat in our diet.



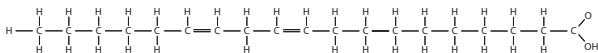
Monounsaturated Fatty Acid: The double bond between the carbon and hydrogen atoms in the chain reduces the stability of monounsaturated fats.

The Role Of Monounsaturated Fats

Monounsaturated fats may help to keep our heart healthy, lower cholesterol and may provide protection against some cancers. They help keep the skin and hair healthy. Foods high in monounsaturated fat are often a good source of vitamin E, phyto-chemicals and phenols that help boost immunity.

Polyunsaturated Fats (Pufas)

Two or more double bonds exist between the carbon and hydrogen chains of polyunsaturated fats. The most common polyunsaturated fats in our diet are Omega-6 and Omega-3 fatty acids. Carbon chains that have double bonds are highly unstable and easily damaged by heat, oxygen, water and light. Polyunsaturated fats are liquid at any temperature. Examples of oils containing high amounts of Omega-6 PUFAs are canola oil, corn oil, cottonseed oil, safflower oil, sesame oil, soy oil, and sunflower oil. Fish oil and flax oil contain Omega-3 fats.



Polyunsaturated Fatty Acid: This diagram of the Omega 6 fat found in vegetable oils shows two double bonds between carbon atoms in the chain. Double bonds represent the unpaired electrons that make these fats highly unstable.

Role Of Polyunsaturated Fats

All fats contain a combination of saturated, monounsaturated and polyunsaturated fats. Foods naturally high in polyunsaturated fats are seeds, nuts, grains and vegetables, as well as fish. The meat from grain fed cattle and poultry also contains PUFAS. All these foods are vulnerable to destruction and rancidity from heat and oxygen.

In nature, polyunsaturated fats serve several purposes. The open carbon chains in polyunsaturated fat make cells formed from them flexible and mobile. The high concentration of Omega-3 fatty acids found in fish allows the animal to swim and flex easily. Fish are not in danger of the harmful effects of PUFAs because their body temperatures are much lower than ours and these fats will not change and go rancid in their body.

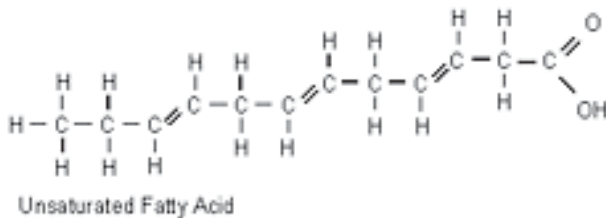
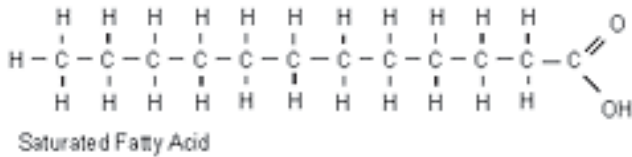
Seeds contain polyunsaturated fats as protection. Seeds need to survive until they sprout and become a plant. Most animals know that the seeds are poisonous and avoid eating them.

Whether we cook with polyunsaturated fats or eat them fresh, these fats are subjected to large amounts of heat and oxygen. The high heat and oxygen used in processing and frying foods causes vegetable oils to oxidize and create free radicals in our body. Our bodies are also full of heat and oxygen. Think of yourself on a day when the temperature is 98.6° degrees. It is hot. And consider the fact that we breathe oxygen twenty four/seven. Our bodies oxidize polyunsaturated fats very quickly. Free radical damage harms our enzymes, hormones, DNA and cells. Due to the damaging effects, it is best to limit our consumption of polyunsaturated fats.

Trans Fats

Trans fats are polyunsaturated fats that have hydrogen added to them in order to change the double bonds to single bonds. Most commercial hydrogenation is partial hydrogenation, which only adds hydrogen to some of the empty carbon bonds. Partial hydrogenation produces a soft fat that is solid at room temperature, like Crisco. These fats are called trans fats because the process of partial hydrogenation twists the fat molecule, placing the closed bonds on the opposite side of the chain from where they would naturally occur. While more stable than the vegetable oil they are made from they contain residual toxic chemicals and bleach after processing.

Trans fats are used in restaurants for frying foods and in processed foods and baked goods to extend the shelf life of the product. Trans fats have been associated with rising rates of coronary heart disease, as well as cancer, diabetes, obesity, liver disease and infertility. The use of trans fats is prohibited in some countries and must appear on food labels in the United States. New York City has banned the use of trans fats by restaurants.



This comparison of a saturated fatty acid and an unsaturated fatty acid illustrates how the double bonds in the carbon chain of the unsaturated fat creates a kinked shaped molecule, which is less stable than the straight shape of the of the saturated fat molecule.

Avoiding PUFAS

It is hard to overcome all the information on fats that we have been bombarded with for the past thirty years. The media constantly warns that saturated fats are bad for us and unsaturated fats are healthy. How can we close our ears when we read that scientists disapprove of movie theaters using coconut oil to pop popcorn and restaurants that use butter for baking?

The simplest approach is to do your own research. Read nutritional studies conducted by independently funded scientific sources with allegiance to no company. Be persistent in your questions.

Experiment on your own. For example, notice that after you have poured safflower oil out of the bottle a couple of times the rim of the bottle becomes sticky. This stickiness is the result of oxidation. Coconut oil and butter will not oxidize at room temperature so when you leave them out of the refrigerator they will not get sticky.

Every time you eat fats from vegetable and plant sources you are eating fats that will oxidize and harm your body.

Unfortunately, these fats are much cheaper to buy than animal fats because animals are more expensive to raise. Processed foods and restaurant foods are likely to contain low-cost vegetable oils. While it takes some sleuthing to avoid these fats, it could be the most important investigative work you will do in your life. Read food labels. At restaurants order grilled meat. Order simple foods like baked potatoes with butter and request olive oil and vinegar to dress your salad.

Most importantly, try eliminating PUFAS from your diet. Learn to avoid foods that contain any oils except coconut oil, olive oil and butter. Research how the animals that you eat have been raised and what they have eaten. There is no doubt that by eliminating PUFAS you will feel better, look younger, lose weight and appear firmer. Enjoy the process, have fun and be a maverick.

A Brief History of Fats

For the majority of time that man has lived on earth he has consumed saturated fats. Up until ten thousand years ago, man roamed the earth as hunters and gatherers. His diet consisted of grass fed animals whose meat contains saturated fats, as well as small amounts of fruits and herbs. Milking herd animals began 50,000 years ago. The fat in the milk of these animals was mostly saturated fat. Coconuts, a rich source of medium-chain saturated fatty acids were widely used in tropical climates. The only source of unsaturated fat in our diet was the tiny amount found in animals, fish, nut and seeds. Scientific studies done on the remains of hunter-gathers show that those who lived to an old age were free from the chronic diseases suffered by modern man.

Approximately 10,000 years ago, during the Agrarian Age, people settled onto small farms where they grew grains and vegetables. The consumption of unsaturated fats grew as people began to eat more grains. Monounsaturated were introduced into the diet with the cultivation of olive trees in the Mediterranean.

In the 19th century the Industrial Age brought with it new concepts in food transportation, farming and methods for raising cattle and dairy animals. In the late 1800s, the introduction of the seed oil expeller, used to make vegetable oils, heralded the age of unsaturated fats. Seed oils began to replace traditional saturated fats in the diet of many western nations. Ironically, when first introduced, the oils pressed from flax and other seeds

were used as the base of paints and varnishes. At the turn of the 20th century, the introduction of petroleum based paints lead the oil extraction industry to look for other places to sell their oils.

Products made from hydrogenated oils appeared on the market in 1911 when Crisco made its debut. Hydrogenation is the process of taking liquid oil, like corn oil and converting it through pressure, heat and hydrogen to a solid substance. Hydrogenation allowed consumers to use vegetable oils for baking and as a butter substitute. Hydrogenation also extends the shelf life of processed foods, making them more marketable.

Since hydrogenated or trans fats are much cheaper than butter and coconut oil the sale of these fats has skyrocketed. Over the course of this century, the consumption of seed oils, in all forms, has gone up 300% while the consumption of butter and lard has plummeted.

For the last seventy-five years, saturated fats have been maligned by Western science and medicine. They have become the scapegoat for a variety of modern degenerative diseases. It has been said that saturated fats cause arteriosclerosis, which leads to the number one killer in the United States, heart disease. Saturated fats have also been implicated as a cause of cancer, diabetes and obesity. Today, many people are afraid to eat saturated fats.

When we look at the important role saturated fats play in our body it is shocking that the reputation of these beneficial fats has been destroyed. Saturated fats are the basis for the steroid hormones and Vitamin D. Saturated fats also support brain and nerve function, maintain cell integrity, insure calcium absorption, and protect our organs. Saturated fats enhance digestion. It must also be recognized that we convert excess glucose to saturate and monounsaturated fats in our bodies. There is a message here. Why would our physiology convert glucose to a type of fat that is harmful to us? Our bodies know best.

