

## **Fats**



Fat is the substance in food that provides a rich texture and flavor. Animal products such as meat, dairy, and eggs contain the most fat. Nuts and seeds are also high in fat. Cooking fats include olive oil, lard, canola oil, walnut oil, butter, margarine and shortening.

Fat has a bad reputation in the diet world, although only a little bit of that reputation is deserved. While bad fats can contribute to poor health, some of them are needed for good health. Let me teach you which fats are good and which ones are bad.

Fats and oils are made up of individual molecules called fatty acids. They're chains of carbon and hydrogen atoms that have a carboxyl group at one end and a methyl group at the other. Carboxyl groups contain one carbon atom, one hydrogen atoms and two oxygen atoms, and methyl groups include one carbon atom and three hydrogen atoms. The carbon atoms in the fatty acid molecules are linked by single or double bonds.

Fatty acids vary in length. Short chain fatty acids have two to four carbon atoms, medium chain fatty acids have six to 12 carbons atoms, long fatty acids have 14 to 18 carbon atoms. A have more than 20 carbon atoms chains.

Fatty acids are either saturated or unsaturated. Saturated fatty acids have no double bonds between any of the carbon atoms in the chain. Unsaturated fatty acids have one or more double bonds in the carbon chain. Monounsaturated fatty acids have one double bond and polyunsaturated fatty acids have two or more double bonds. Unsaturated fatty acids are sometimes named by the position of the double bonds in the carbon chain. The names omega-3,-6 or -9 refer to the locations of the first double bond in the three different fatty acid molecules.

Unsaturated fatty acids can have two different configurations of the hydrogen atoms on either side of the double bonds. These are referred to as "cis" or "trans" configurations. Cis configurations have those hydrogen atoms both on the same side of the molecule. This causes the molecule to look like it is bent. Trans configurations have those hydrogen atoms

on opposite sides of the double bond. This gives the molecule a more linear appearance, like [saturated fats](#). Interestingly, it turns out that both saturated fats and [trans-fats](#) are bad for your health.

Most of the fats in the food you eat are called triglycerides. A triglyceride is made up of three fatty acid molecules attached to a [glycerol molecule](#). Your body will use triglycerides as a source of energy or store them as adipose tissue, better known as body fat. The types of fatty acids in the triglycerides have an important impact on the physical state of the fats you eat. Fats that are composed of triglycerides with saturated fatty acids, like meat, are solid at room temperature. Fats that are composed of triglycerides with unsaturated fatty acids, like vegetable oils, are liquid at room temperature.

The foods you eat may also include [cholesterol](#). Cholesterol does not produce any energy like triglycerides, but it is important for many biochemical processes and hormone production. Elevated cholesterol levels in your body have been associated with an increased risk of cardiovascular disease. The cholesterol in your body is mostly made in your liver and there are three different types: High Density Lipoproteins, Low Density Lipoproteins and Very Low Density Lipoproteins. Having higher [HDL cholesterol](#) levels can decrease your risk of cardiovascular disease, while elevated [LDL cholesterol](#) will increase that risk.

Fats and cholesterol have a number of important functions, which include:

- Lubrication of body surfaces
- Components of cell membrane structures
- Formation of steroid hormones
- Energy storage
- Insulation from cold
- Carrying fat soluble vitamins A, D, E, K

Saturated fats are made up of triglycerides that have saturated fatty acids. These fats are solid at room temperature. They come mostly from animal sources, although saturated fats are in coconut oil, palm oil and palm kernel oil. Saturated fats found in red meat, butter, milk, cheese and eggs will increase cholesterol levels in the body. In fact, saturated fat will raise your cholesterol much more than dietary cholesterol does.

Eating a diet rich in red meat has been linked to an increased risk of cardiovascular disease and some cancers. Since red meat has the highest concentration of saturated fats, many experts suggest that you limit your consumption of red meat to only two or three small servings per week.

Monounsaturated fats are made up of triglycerides that have monounsaturated fatty acids. They are liquid at room temperature but solid when refrigerated. Olive oil contains a well-known monounsaturated fatty acid called oleic acid. Canola oil, peanuts and avocados also contain some monounsaturated fats. Consumption of monounsaturated fatty acids has been shown to help keep LDL cholesterol levels low and HDL cholesterol high.

Polyunsaturated fats come mostly from plant sources like nuts, seeds and vegetable oils. Two well known polyunsaturated fats are the omega-3 and omega-6 fats. These fats are liquid at room temperature and often stay liquid when refrigerated. Fish is also good source of polyunsaturated omega-3 fats, especially cold water, oily ocean fish. This is why you should eat fish at least three times per week. While most red meat is low in polyunsaturated fats, animals raised on grass instead of corn-based feeds have meat that has more polyunsaturated fats and lower in fat in general.

The essential fatty acids are so named because you need to get them from your diet. Your body can make many of the fats it needs from other types of fatty acids, but the omega-6 and omega-3 polyunsaturated fatty acids must come from the diet.

[Omega-6 fatty acids](#) come from vegetable oils, nuts and seed oils. Most people get plenty of these fats from their diets -- usually more than enough.

While the omega-6 fatty acids are common in a typical Western diet, the [omega-3 fatty acids](#) are often deficient. Many experts believe that eating a diet with too many omega-6 fats and too few omega-3 fats increases your risk for inflammation and chronic disease.

Getting enough omega-3 fatty acids from your diet or as dietary supplements will help to reduce inflammation, regulate heart rhythm and keep your cholesterol levels normal. When you don't get enough of the essential fatty acids in your diet, you may have dry skin, dry hair and increased inflammation.

## **Trans-fats**

Most trans-fats are created artificially by a process called hydrogenation. It involves heating regular vegetable oil and forcing hydrogen atoms onto the polyunsaturated fatty acid molecules. This process turns the oil into a solid substance and improves the shelf life of the fat.

Fully hydrogenating a vegetable oil will make it firm and not create trans-fats. However, the firmness of the fat makes it difficult to use in cooking. Partially hydrogenating an oil makes for a softer product and is still widely used in baking and processing foods. Examples include stick margarine and partially hydrogenated frying oils. Trans-fats are commonly found in donuts, snack cakes, cookies and processed foods.

Artificially created trans-fats are the unhealthiest of fats, even worse than saturated fat. Eating too many trans-fats has been linked to increasing your risk of cardiovascular disease.

Not all trans-fats are created in the lab. Small amounts of natural trans-fats occur in milk and beef. Conjugated linoleic acid is a well-known natural trans-fat. The natural trans-fats do not appear to be as unhealthy as the artificial trans-fats.

