



Health & Happiness



Oils and fats are the most important ingredient in any food recipe as they provide taste texture and above all nutrition. Apart from enhancing the palatability of food it also plays a vital role in metabolic functions of the body. **Its major functions are:**

- It helps supply energy.
- It helps absorb fat – soluble vitamins (A, D, E, and K).
- Enables our body to metabolize proteins and carbohydrates more efficiently hence promoting digestion.
- It helps to give a satiety feel i.e. provide a sense of fullness.
- It acts as an insulator to maintain body temperature.

Despite the many benefits oils and fats have, too much in our diet can cause major health problems. Although all fats have the same amount of calories, some are more harmful than others. Intake of fats also affects the blood cholesterol levels which is directly linked to heart disease, the most common being the coronary heart disease or CHD in short.

Cholesterols are primarily of two types:

- LDL or Low density lipo - protein also known as **'The BAD Cholesterol'** as it builds up on walls of arteries.
- HDL or high density lipo - proteins also known as **'The GOOD Cholesterol'** as it helps remove cholesterol from the walls of arteries.

Oils and fats can be further divided into the following categories:

Saturated Fats

These fats are derived from animal products such as meat, dairy and eggs. But they are also found in some plant based sources such as coconut, palm and palm kernel oils. These fats are solid at room temperature. Solid fats clog our arteries and directly raise total LDL (bad) cholesterol levels.

Unsaturated Fats

Monounsaturated fats and polyunsaturated fats are two types of unsaturated fatty acids. They are derived from vegetables and plants.





Monounsaturated fats

Are liquid at room temperature but begin to solidify at cold temperatures. This type of fat is preferable to other types of fat and can be found in olive Oil, nuts, peanut oil, canola oil, and avocados. Some studies have shown that these kinds of fats can actually lower LDL (bad) cholesterol and maintain HDL (good) **cholesterol**.

Benefits of MUFA

- MUFA oils help reduce LDL or the bad cholesterol and do not affect the HDL or the good cholesterol. Hence improve the LDL/HDL ratio, thereby reducing the risk of heart disease.
- MUFA oils have higher oxidative stability as compared to PUFA oils and hence have a better shelf life.
- MUFA oils have a higher smoke point, hence are more stable and can be used for deep frying as they do not decompose easily.
- AHA now recommends edible oil which has the following proportion of fatty acids in the ratio of **SAFA: MUFA: PUFA 1: 1.5 : 1**.

Polyunsaturated fats

Are also liquid at room temperature. These are found in Safflower, sesame, corn, cottonseed and soyabean oils. This type of fats has also been shown to reduce levels of LDL cholesterol, but too much can also lower your HDL cholesterol.



Essential fatty acid

These fatty acids are "essential" because our body is not able to synthesize them. **These include omega-6 fatty and omega-3 fatty acids**, which are essential for regulating many of our metabolic activities. Common sources of essential fatty acids include vegetable oils, fish, grains, seeds, and green vegetables.

Omega -3 Fatty acids

Omega – 3 Fatty acid are long- chained, polyunsaturated fatty acids and are important building blocks of our cell membranes. They play a critical role in many functions in the body and are essential for good health. Omega – 3 fatty acids are found primarily in dark green leafy vegetables, flaxseed, and certain vegetable oils like canola, soyabean and also in fish oils.

Types of omega-3 fatty acids

The major omega-3 fatty acids are:

- ALA, (alpha) linolenic acid
- EPA, eicosapentaenoic acid.
- DHA, docosahexaenoic acid



Benefits of Omega-3

As per AHA, omega-3 fatty acids benefit the heart of healthy people, and those at high risk of or who have cardiovascular disease (CVD). The ways that omega-3 fatty acid reduce CVD risks are still being studied. However, research has shown that they

- Decrease triglyceride levels.
- Decrease growth rate of plaque.
- Lower blood pressure (slightly).

Other benefits of Omega-3:

- Allergies
- Circulatory problems
- Eczema
- Viral illness
- Weight management

Trans Fats

There are some fats that are formed due to modification of oils by process called Hydrogenation. These are known as **TRANS FATS**. Unlike other members of the fat family (saturated, polyunsaturated, and monounsaturated fats), trans fats are largely artificial fats. **Trans fats tends to increase the bad cholesterol (LDL) levels and thus increasing the risk of heart disease.**

Hydrogenation is a process in which a liquid vegetable oil (otherwise healthy unsaturated fat) is reacted with hydrogen gas and converted into a solid fat i.e. it increases the melting point.

Oil is hydrogenated to:

- To increase the shelf life of the product and lower rancidity.
- An ideal fat for the food industry to work with because of its high melting point, its creamy, smooth texture.
- Its reusability in deep – fat frying.
- It increases the palatability of final product

Health Hazards of Trans fats:

- Trans fats tends to raise total blood cholesterol levels.
- Consumption of trans fats can lead to diabetes, obesity, immune system dysfunction, and cancer over a long period.
- They carry no nutritional value.



Milk to be fortified with Heart healthy fish oil

Food science researchers have reeled milk into the omega -3 delivery system, showing that it is possible to incorporate fish oil into milk and dairy based beverages in amounts sufficient to **promote heart health without destroying the product's taste or limiting its lifespan.**



Even better, the milk by Virginia Tech researchers passes the sniff test. 25 volunteers evaluated one-ounce cups of standard 2% milk alongside sample of skim milk containing 78 parts butter oil to 22 parts fish oil in institutionally approved study conditions.

"We couldn't find any aroma differences," Susan E. Duncan from college of Agriculture and Life Sciences said. "We were concerned the fish oil would undergo a chemical process called oxidation, which would shorten the milk's shelf life, or the milk would acquire a cardboard or paint flavor by reacting with the fish oil. It appears we have a product that is stable, with no chemical taste or smell issues.

Research has shown omega-3 fatty acids are helpful for preventing coronary disease, reducing inflammation, assisting infant brain development, and maintaining brain function. But fish hasn't caught on with everyone, making room for new foods and beverages fortified with omega -3s in an expanding marketplace.

This would help people who love milk, yogurt, and dairy, which have intrinsic nutritional value, address an additional need in their diets, especially if they don't like to eat fish or can't afford it. **One of these dairy servings a day apparently is enough to sustain enough continuous omega-3 to benefit heart health.**

For a healthy tomorrow

Eating lesser fat and functional fat is going to be the need of the day. Oil containing 80 percent diacyl glycerols, which inhibit fat uptake in the body and oils with phytosterols/esters, medium chain triglyceride (MCT) known for its cholesterol reducing ability are some of the examples of functional oils.

Eating different types of oils ensures that we get a balance of fatty acids and micronutrients. The new food laws being drafted must take into account and encourage the development of such functional oils and make them available to the Indian consumers. Providing a blanket protection with antioxidant helps in obtaining the best from oils with high unsaturates. The use of silicone based anti-foaming agents also helps in reducing the oxidation of oil during frying. It also reduces the retention of oil in fried food. These are now finding applications in edible oils.

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