Lipids

A human body derives its energy when the carbohydrates and fats are broken down through the process of oxidation. Fats in the body are energy reserves which keep the body warm. These fats are nothing but aggregation of lipids. What are lipids, will be your next question! Lipids are non soluble molecular organic compounds composed of carbon and hydrogen. They are an integral part of the organic compounds list. The major lipids function includes development of cell membrane and energy storage.

Lipids are found in both animals and plants. They have higher energy reserve than carbohydrates. One gram of lipid yields 9 kilocalories whereas, one gram of carbohydrates yields 4 kilocalories. Hence, lipid reserves containing 100,000 kilocalories of energy can sustain a human body for many days with sufficient water and little food. They constitute a weight of 24 pounds in a body weight of 154 pounds. Many migrating birds and hibernating animals survive tough conditions due to the energy derived from lipids.

**Structure and Function of Lipids**

All fats are lipids but not all lipids are fats. Here we will be discussing a few types of lipids, their structure and functions.
 **Triglycerides**
A triglyceride molecule comprises one molecule of glycerol and 3 molecules of fatty acids (saturated or unsaturated). This lipid is found as droplets in the cytoplasm of cells. As all lipids, this is also non polar and non-soluble. That is why triglycerides float in the cytoplasm of cell (as they are less dense than water). If the triglycerides solidify at 20ºC, then they are termed as fats. If they retain their liquid state, they are called oils. Higher the unsaturated fatty acid concentration in triglycerides, lower is the melting point. The main use of triglycerides in body is energy storage.

**Steroids**
Steroids are constituted of carbon molecules and have a four fused ring structure. They do not contain fatty acids. Examples of steroids are estrogen, vitamin D2, testosterone and cholesterol. They play an important role in constituting the plasma membrane structure, influencing its permeability.

**Phospholipids**
Phospholipids are complex lipids containing hydrophobic (water-repelling) and hydrophilic (water attracted) structured molecules. They are mostly constituted of phosphate groups and hence the name. When they come in contact with water, they immediately attain ordered molecular structure. They majorly constitute the cell membranes.

**Glycolipids**
These lipids are formed by short chains of sugar. They are prominently found in the exoplasmic surfaces of cellular membranes in our body. Glycolipids are primarily responsible for cell-to-cell recognition and in enhancing the immune system of the body.

**Lipoproteins**
A combination of lipids and proteins that is found in the membranes of cell is known as lipoprotein. The best examples of lipoproteins in our body are enzymes, antigens and structural proteins. Lipoproteins in our body are of two kinds: HDL (High Density Lipoprotein) and LDL (Low Density Lipoprotein) which enable fat content to travel in bloodstream.

Cholesterol, a kind of lipoprotein which is found in our body is also made of lipids. Even cholesterol is differentiated as HDL and LDL. Both these proteins at desirable levels indicate a healthy body (which is ideally 200mg for 1 deci liter of blood). However, high levels of HDL can pose high cholesterol risks and cardiovascular diseases. So it is always advisable to keep a check on cholesterol levels by going for tests once in 3-5 years. Unsaturated fats (like vegetables, grains and nuts) are better than saturated fats (meat and dairy products).

**Waxes**
Waxes contain fatty acids combined with long chain of alcohols. These lipids are found on leaves of plants, inside ears of human and on feathers of animals. Lipids function as a protective semipermeable layer to protect the cells of the body.

It is only because of lipids that our body is able to work and sustain itself even in hard conditions. In fact, when we tend to fall sick and are not able to consume much food, the lipids release the energy reserves to sustain the weak body. The main function of lipids is the membrane formation of body cells. Every cell that constitutes the plasma membrane is made of a semipermeable bilayer of lipids. Hence lipids are primarily responsible for keeping the cell intact and protecting the internal cell organelles.