Lipids Encyclopedia Article

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Lipids

Lipids are a group of **compounds** that are rich in carbon-hydrogen bonds and are generally insoluble in water. The main categories are glycerolipids, sterols, and waxes.

Glycerolipids have fatty acids attached to one or more of the three carbons of glycerol. If three fatty acids are attached, the molecule is triacylglycerol, which is a primary storage form of carbon and energy in plants. Triacylglycerol is concentrated in many seeds for use during germination, and so seeds are of commercial importance as sources of fats and oils for cooking and industry. Diacylglycerol (DAG), which has two fatty acids, plays a role in cell signaling. Glycerolipids without any attached charged groups are known as neutral lipids.

If a polar molecule is added as a headgroup to DAG, the complex becomes a polar glycerolipid. The most common are phospholipids, the primary lipid component of higher plant membranes outside the plastids. Phospholipids are named after the headgroup, so if choline is present along with phosphate, the lipid is phosphatidylcholine. Several other headgroups exist. Polar lipids without phosphate also are important membrane molecules; for example, digalactosyldiacylglycerol, with two sugars as a headgroup, is a major component of **chloroplast** membranes.

Sterols are complex ring structures that are also major components of membranes. Some, such as brassinosteroids, also serve hormonal functions.

Waxes are elongated and modified fatty acids. They are found on the surfaces of plants, are highly impervious to water, and play a protective role.

See Also

Anatomy of Plants; Hormones; Oils, Plant-Derived.