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Lecture title: Lipids

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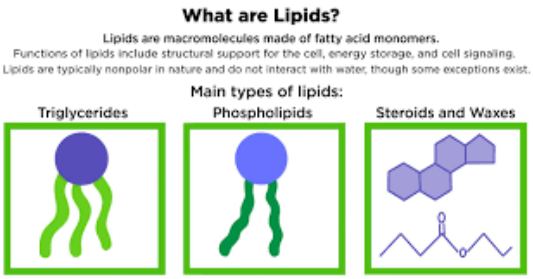
Summary: Lipids are a major source of energy for the body besides their various other biochemical function and their role in cellular structure. Lipids are a heterogenous group of water insoluble (hydrophobic) organic molecules. Lipids include fats, oils, steroids, waxes and related compounds

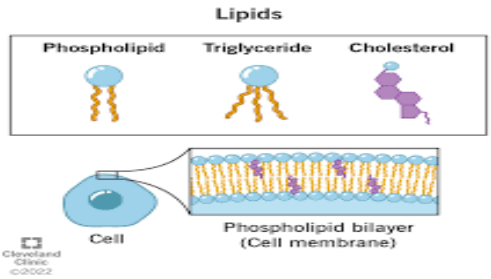
Lipids are water insoluble components of cells.

- Some lipids serve as structural component of membrane and others as storage form of fuel.
- Triacylglycerols contain three fatty acid molecules esterified to the three hydroxyl groups of the glycerol and are storage fats.
- The polar lipids (phospholipids, glycolipids and cholesterol), which have polar heads and nonpolar tails, are amphipathic and major components of membranes..

What are Lipids?

Lipids are a major source of energy for the body , besides their various other biochemical function and their role in cellular structure. Lipids are a heterogenous group of water insoluble (hydrophobic) organic molecules. Lipids include fats, oils, steroids, waxes and related compounds.





Definition of Lipids

Lipids may be defined as organic substances insoluble in water but soluble in organic solvents like chloroform, ether and benzene.

Classification of Lipids

The most commonly classification of lipids is:

1. Simple lipids

2. Complex or compound lipids

3. Derived lipids

Simple Lipids: These are esters of fatty acids with various alcohols.

Depending on the type of alcohols, these are sub classified as:

1. Neutral fats or triacylglycerol or triglycerides.

2. Waxes.

Neutral fats or triacylglycerol or triglycerides: These are esters of fatty acids with alcohol **glycerol** (fig.1) . Because they are **uncharged**, they are termed as **neutral fat**.

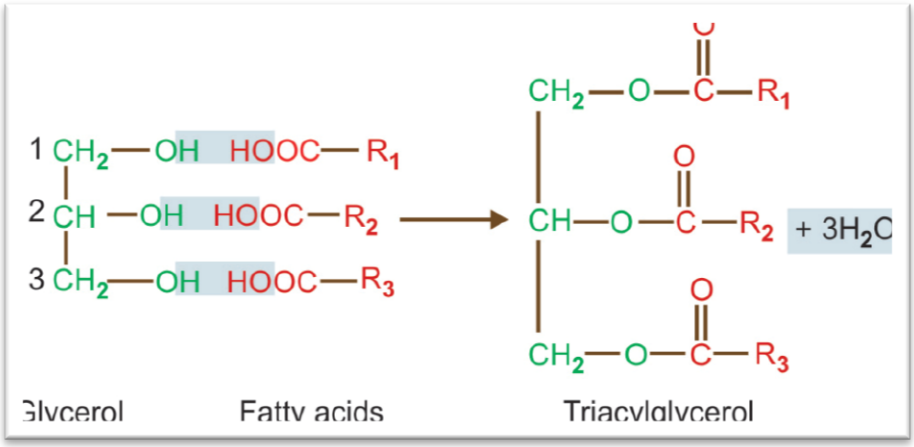


Fig.1: Glycerol and triacylglycerol

A fat in **liquid state** is called an **oil**, e.g. vegetable oils like groundnut oil, mustard oil, corn oil, etc.

Waxes: These are esters of fatty acids with **higher molecular** weight monohydric long chain alcohols. For example: Bees-wax

These are widely used in pharmaceutical, cosmetic and other industries in the manufacture of lotions, ointments and polishes.