

LIPIDS

- Lipids are naturally occurring hydrophobic molecules.
- They are heterogeneous group of compounds related to fatty acids.
- They include cooking oil, butter, ghee, waxes, cholesterol, rubber, etc. belong to this category.
- Lipids are widely present in plants and animals.
- Term lipid – **Bloor (1943)** – “**Lipids are naturally occurring compounds, which are insoluble in water and soluble in one or more org. solvents, such as benzene, chloroform. Ether, etc.**”
- Lipids contain fatty acids. Fatty acids are organic hydrocarbon chain ending in $-COOH$ group.



General characters of lipids:

- Lipids are insoluble in water and hence hydrophobic.
- They are soluble in non-polar solvents, such as benzene, chloroform, ether, etc.
- Lipids have high energy content and are metabolized to release calories.
- Fats are bad conductors of heat.
- They are hydrolyzed by the enzyme lipase to yield fatty acids and glycerol.
- The hydrolysis of fats by alkali is called as saponification. It results in the formation of glycerol and salts of fatty acids called soaps.
- Pure fats are colorless and extremely bland in taste.

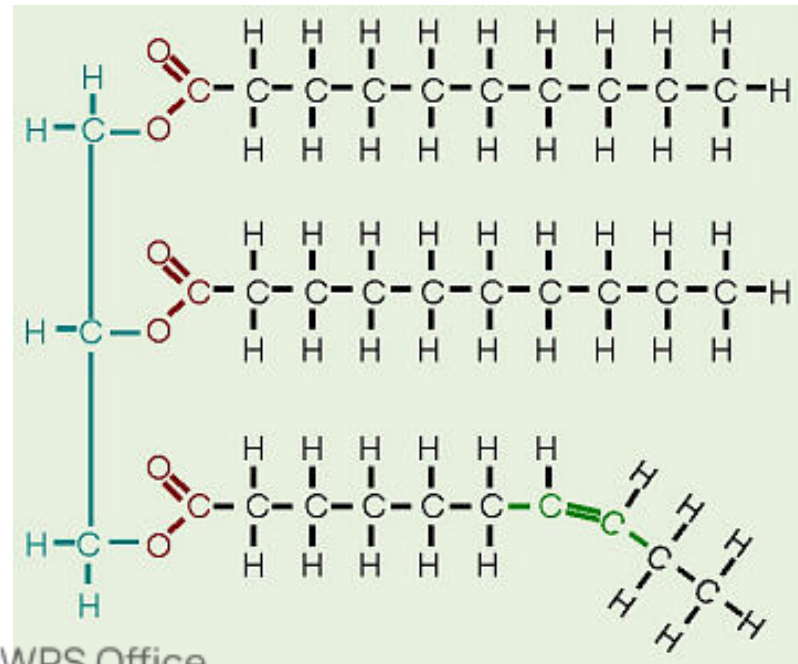
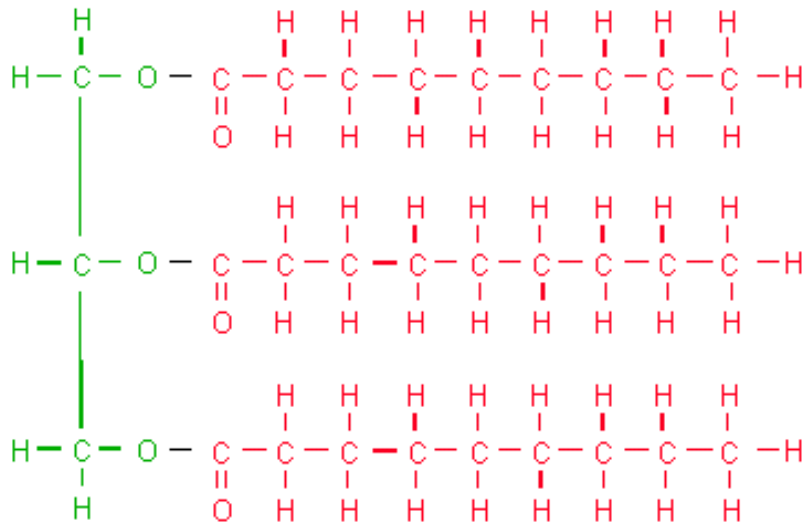


Structure of lipids:

- Lipid has no single common structure.
- The most commonly occurring lipids are triglycerides and phospholipids.

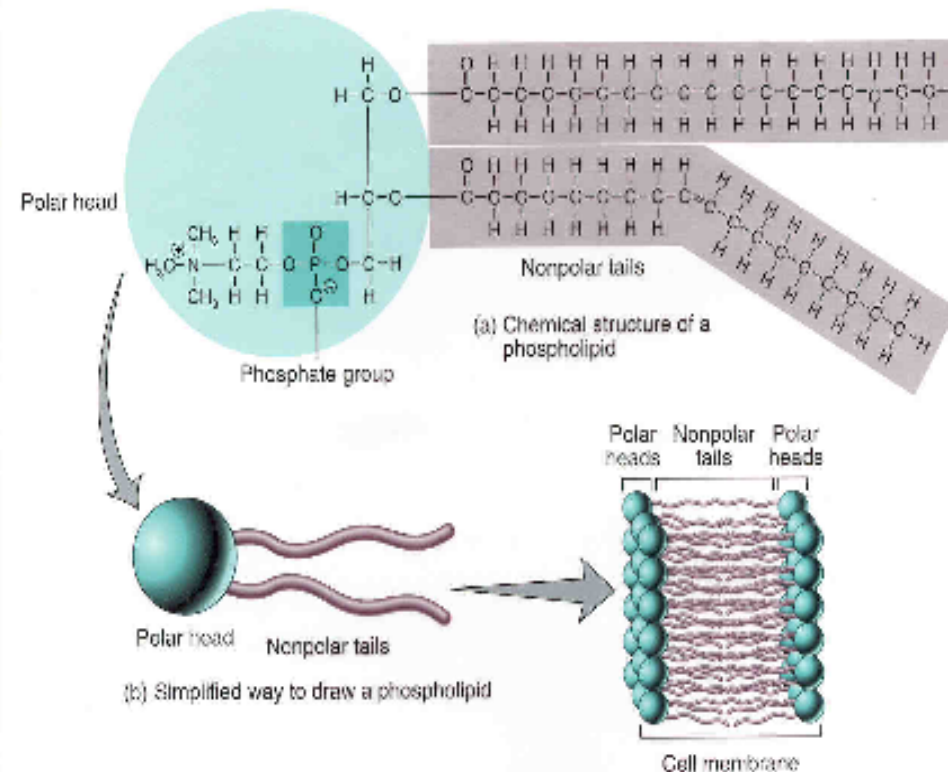
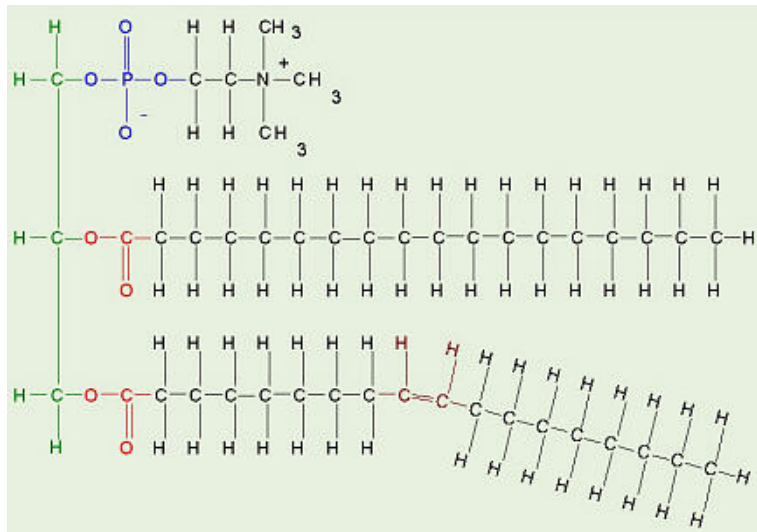
Triglycerides :

- These are fats and oils.
- They have glycerol bonded to 3 fatty acids.
- If fatty acids are similar – simple triglyceride.
- If fatty acids are dissimilar – mixed triglyceride.



Phospholipids:

- These are found in membranes of plant and animals.
- They are lecithins and cephalins.
- Phospholipids contain glycerol and fatty acid and also contain phosphoric acids and a low mol. wt. alcohol.



Functions of lipids:

- Lipids are more important source of energy and provide more energy than carbohydrates & proteins.
- Triglycerides serve as reserve energy of the body.
- Lipids are important component of cell-membrane structure in eukaryotes.
- Layers of fat in sub-cutaneous layer provides insulation & protection from external heat.
- Some lipids are important as vitamins.
- Lipids are components of some enzymes systems.
- Some hormones are lipids (eg: steroids).
- Some lipids like waxes give a protective covering on the surface of leaves, stems & fruits.

