Human body can convert stearic acid to oleic acid by inserting a double bond but is incapable of inserting further double bond so that the oleic acid can not be converted either into linoleic or linolenic acid or arachidonic acid. For normal cell functioning any one of these acid is needed. Since they can not synthesized in the body they must be obtained from diet. So these 3 fatty acids are collectively called as essential fatty acids (EFA).

SPONIFICATION:- Heating with alcoholic KOH called Saponification liberates the potassium salt of fatty acids (soap)

$C_3H_5(O.CO.C_{17}H_{35})_3 + 3KOH \rightarrow 3C_{17}H_{35}COO.K + C_3H_5(OH)_3$

Tristearin — Potassium stearate glycerol

II) WAXES :-

These are esters of fatty acids with an alcohol of high molecular weight, instead of with glycerol.

Waxes are chemically inert as they have no double bonds in their hydrocarbon chains and are highly insoluble in water. They serves as protective coverings on leaf surface to protect plants from water loss and abrasion. Waxes are also secreted by some insects (Bee-wax).

(B) COMPOUND LIPIDS :-

These are esters of fatty acids and alcohol with additional compounds such as phosphoric acids, sugars, protein etc. These are classified as —

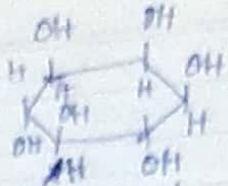
① Phospholipids :-

Lipids contain phosphorus are included in the general class of phospholipids. The different type of phospholipids are as follows :-

② Phosphatidic acid :- Although it is not found in any great quantity in tissue, the acid is important as an intermediate in the biosynthesis of triglycerol and other phospholipids. The common alcohol moieties of phosphoglycerides are choline, inositol

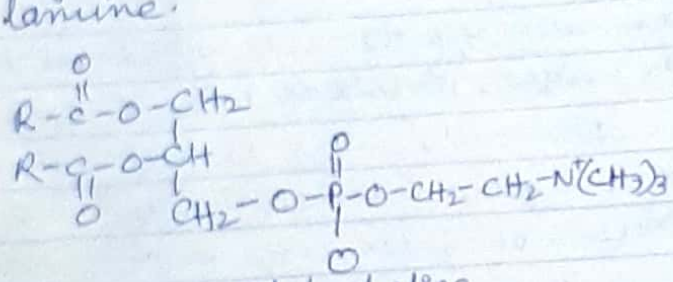
(6)

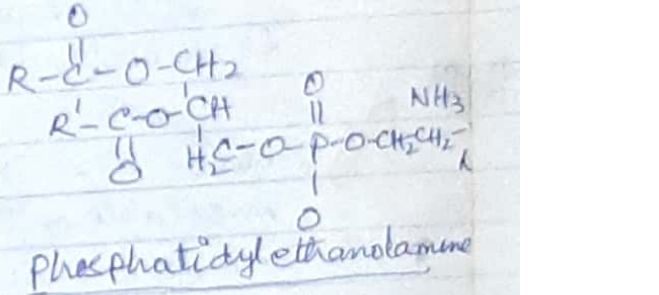
$HO-CH_2-CH_2-N^+(CH_3)_3$
Choline


Inositol

(4) Lecithin (Phosphotidyl choline) :- They are widely distributed in the animal cells, having both structural and metabolic functions. They are required for normal transport and utilization of other lipids, particularly in the liver.

(3) phosphoric acid
(2) Cephalin (Phosphatidyl ethanolamine) resembles lecithin in most properties but differs in containing, instead of choline, a substance ethanolamine.

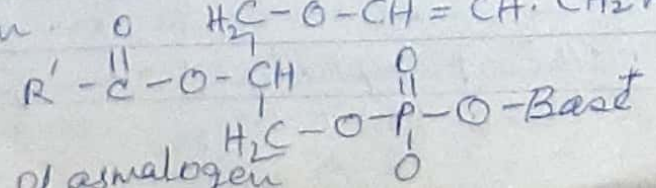

Phosphatidyl choline


Phosphatidyl ethanolamine

(4) Phosphatidyl serine is a cephalin-like phospholipid which contains the amino acids Serine rather than ethanolamine. It has been found in animal tissue

(5) Sphingomyelins :-
Sphingomyelins are found in large quantities in brain and nerve tissue, especially in the myelin sheath of the nerves. They are also found in the lipid of blood. On hydrolysis it yield fatty acids, phosphoric acid, choline and sphingosine.

(7) Plasmalogens - It constitutes about 10% of phospholipids of the brain and nerve myelin. It is also present in heart muscles, Skeletal muscle and semen.


Plasmalogen