phospholipases.

Enzymes that hydrolase - phospholipids.

Four major types.

- phospholipase A1
  A2
  C
  D.

phospholipases A2.

- they act on intact lecithin molecule and hydrolyse the fatty acid esterified to 2nd beta (carbon atom).
- The product are lysolecithin and fatty acid.

lecithin $\xrightarrow{PLA2}$ Lysolecithin + Fatty acid.

- lysolecithin is a detergent and hemolytic agent
- PL A2 is present in venom of viper snake.
- so viper poisoning leads to hemolysis and consequent renal failure.

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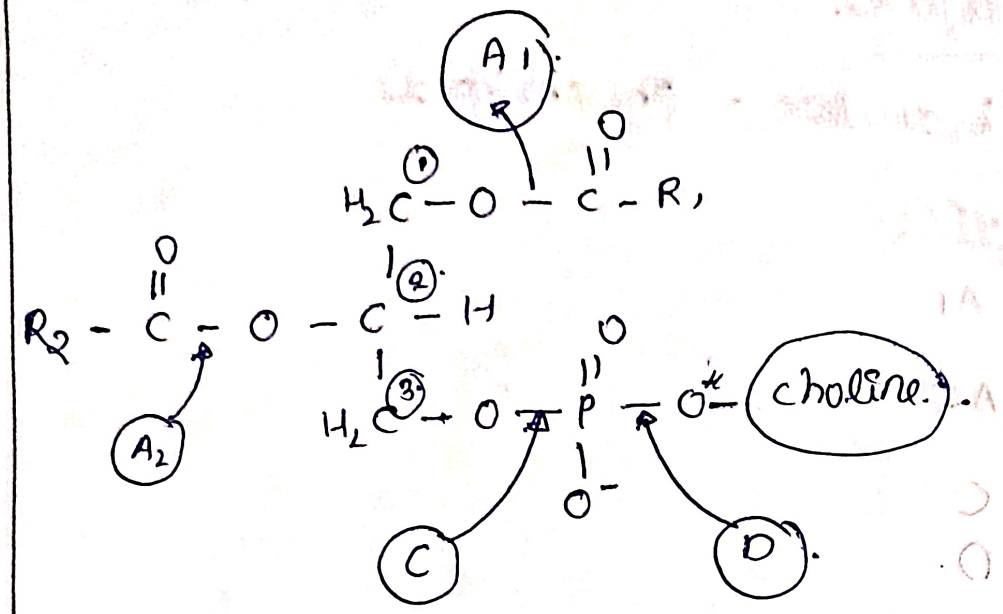


Action of other phospholipases.

- lecithin $\xrightarrow{PLA_1}$ acyl glycerophosphoryl choline + fatty acid.
- lecithin $\xrightarrow{PLC}$ 1,2-diacyl glycerol + phosphoryl choline.
- lecithin $\xrightarrow{PLD}$ phosphatidic acid + choline.
- lecithin $\xrightarrow{PLA_2}$

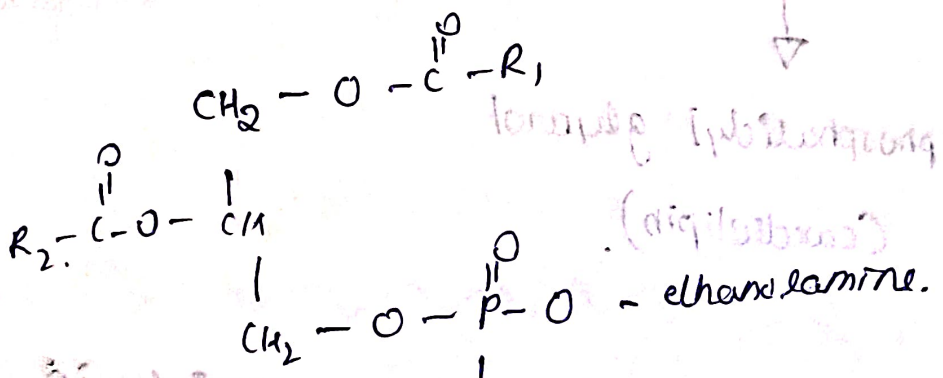
end of lecithin (4 marks)

Acyl CoA

~~Action of pl~~

phosphatidyl ethanolamine (cephalin).

- phosphatidic acid + ethanolamine (base)
- component of biomembrane.



phosphatidyl Inositol.

- phosphatidic acid + inositol.
- phosphatidyl inositol bis phosphate (PIP_2)
- act as a second messenger of hormones.

phosphatidyl glycerol.

- formed by esterification of phosphatidic acid to glycerol.

2 phosphatidic acid + Glycerol

↓

Diphosphatidyl glycerol (cardiolipin).

Found in mitochondrial membrane and mainly in myocardium.

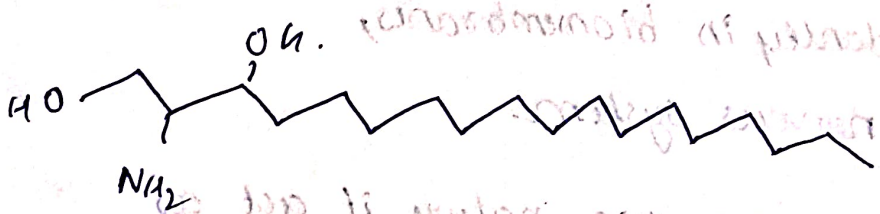
plasmalogens. (4 points).

- Contain aliphatic α, β unsaturated alcohol with C12 to C18 chain length.
- This aliphatic alcohol is linked to the first -OH group of glycerol.
- The 2nd OH group is esterified to a fatty acid.
- The phosphoric acid is attached to choline or ethanolamine.

Found in biomembranes in brain and muscle.

phosphosphingosides.

- contain phosphoric acid, fatty acid (chain length, C_{18} - C_{12}) and sphingosine.
- sphingosine is a long aliphatic amino alcohol.



- sphingosine is attached to fatty acid in amide linkage to form a ceramide.

Eg: of phosphosphingosides -
sphingomyelin.

- other sphingosine containing lipids (sphingolipids) are. glycosphinglipids & sulphatides.

sphingomyelin.

- only sphingolipid that contain phosphate and have no sugar moiety.
- contains choline.

Functions.

- Important constituent of myelin
- present abundantly in biomembranes, especially in nervous system.
- Due to it's amphipathic nature it act as an emulsifying agent & detergent.
- lecithin sphingomyelin ratio in biological fluids is an index of fetal lung maturity.

Ala Ile Val
Phe Try Leu
pro Met.
Ser Thr.
Gly Asp Asn.
Cyst
Tyr.

7/10/23.

Non-phosphorylated lipids.

Glyco sphingo lipids.

- this group donot contain phosphoric acid.
- But they carbohydrates & ceramide.

1) Cerebroside. {ceramide monohexoside}

Ceramide + Glucose → glucocerebroside

Ceramide + galactose → galactocerebroside.

2) Globoside {2 or more carbo}

- ceramide oligosaccharides.

ceramide + glucose + Galacto se

→ lactosyl ceramide.

- lactosyl ceramide is a component of RBC membrane.

Gangliocide.

- ceramide oligosaccharide + NANA. → accepted short form.
  {N-acetyl neuraminic acid}.

- ceramide - glucose - galactose - NANA.

Sulfatides {sulfolipids}.

ceramide + oligosaccharide + sulfate.

- important component of membranes of nervous tissue.