

Phospholipids

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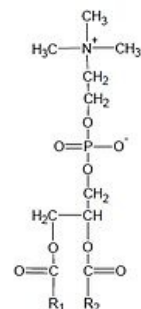
Phospholipids, or glycerol phospholipids, are derivatives of phosphatidic acid (glycerol-3-phosphoric acid). According to the type of substituent attached to phosphatidic acid, phospholipids are further divided into:

1. Phosphatidylcholines (lecithins)
2. Phosphatidylethanolamines (kephalins)
3. Phosphatidylserines
4. Plazmalogens
5. Phosphatidylinositols

Phosphatidylcholines (lecithins)

- They contain choline, a quaternary nitrogen base
- They are a part of the cell membrane
- A large part of the body's supply of choline (important for the transmission of nerve impulses)
- Waxy, colorless compounds with hydrophilic and hygroscopic features
- They form colloid solutions in the water, create internal salts, reduce surface tension, good emulsifying agents
- Easily hydrolyzed in the body due to the action of phospholipases
- Dipalmitoyllecithin – surfactant

 For more information see *Phosphatidylcholine*.



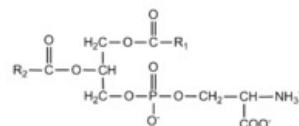
Phosphatidylcholine

Phosphatidylethanolamines (kephalins)

- They contain ethanolamine bound by an ester bond to the second acid group of phosphoric acid
- Similar character as phosphatidylcholines

Phosphatidylserine

- It contains serine amino acid
- It is found in most tissues



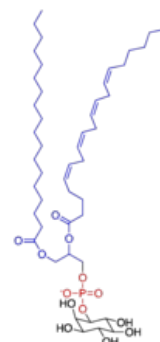
Phosphatidylserine

Plazmalogens

- The fatty acid is replaced at position 1 by an ether-linked higher unsaturated alcohol
- Similar to lecithins and kephalins
- Synthesized on peroxisomes by desaturation of 3-phosphoethanolamine derivatives (requires molecular oxygen, cytochrome b5, NADPH+ + H+ for the synthesis)
- There are 3 types of plasmalogens: choline, ethanolamine, serine
- Most of the phospholipids in mitochondria are plasmalogens
- Choline plasmalogen, the so-called platelet-activating factor (PAF), is a mediator of hypersensitivity, acute inflammatory reaction and anaphylactic shock. The IgE antigen stimulates its production. When PAF is released, platelet aggregation and serotonin secretion occur

Phosphatidylinositol

- They contain inositol, a sugar alcohol
- Part of cell membranes, where they significantly influence its permeability
- A source of arachidonic acid, which is the starting material for the formation of eicosanoids
- Important for the transport of fats by blood and lymph
- After stimulation by a certain hormone, phosphatidylinositol-4,5-bisphosphate is split into diacylglycerol and inositol triphosphate - these substances act as an internal signal or second messenger



Phosphatidylinositol

Links

Related articles

- Phosphatidylcholine
- Sphingolipids
- Lipids
- Mastné kyseliny (czech wikiskripta)

External links

- Lipids (english wikipedia) (<https://en.wikipedia.org/wiki/Lipid>)

Used literature

- MATOUŠ, Bohuslav. *Základy lékařské chemie a biochemie*. 2010. edition. Galen, 2010. 0 pp. ISBN 978-80-7262-702-8.
- MURRAY, Robert K. *Harperova biochemie*. 2. edition. H&H, 2002. 871 pp. ISBN 80-7319-013-3.