Libyan International Medical University

Faculty of Pharmacy

Glycolipids & Sulpholipids

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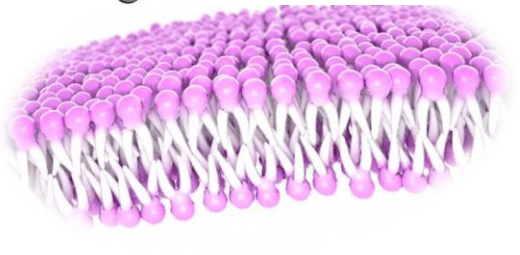


Glycolipids

Definition:

Glycolipids are a type of complex lipids comprising carbohydrate, fatty acids, sphingolipids or a glycerol group. The term glycolipids mainly describe any compound containing one or more monosaccharide residues bond by a glycosidic linkage. These molecules are widely distributed in tissue, brain and also in nerve cells.

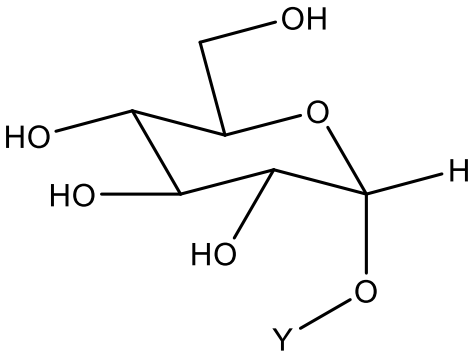
Type of glycolipids:

Glycolipids are divided into two main classes:

- **Glycosphingolipids**: a type of glycolipid containing sphingosine, fatty acids, and carbohydrates, including specific forms such as:
  - Sphingomyelin
  - Cerebrosides
- **Glycoglycerolipids**: a type of glycolipid containing glycerol, fatty acids, and carbohydrates, including specific forms such as:
  - Glycophospholipids
  - Sulfoglycoglyerolipids

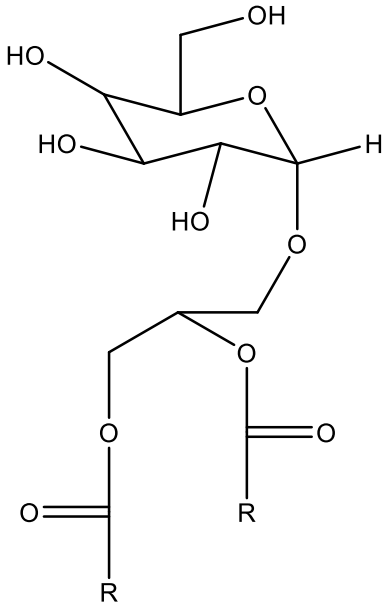
Structure of glycolipids

Glycolipids

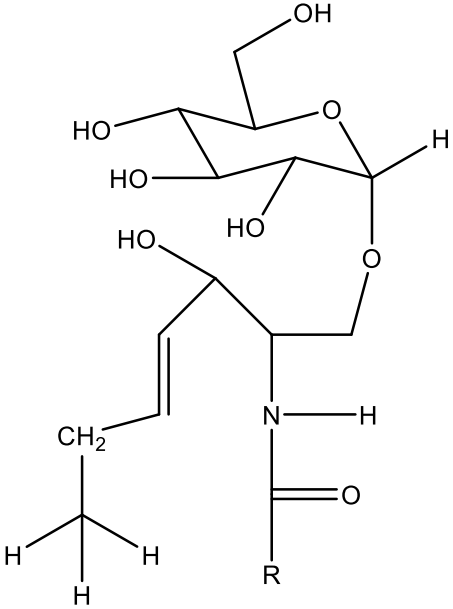


Y = Lipid

Glycero-Glycolipids



Sphingo-Glyolipids



The biological Importance of Glycolipids :

- It provides energy to the cells.
- It is an essential part of cell membranes.
- It helps in determining the blood group of an individual.
- It acts as receptors at the surface of the red blood cells.
- It also functions by assisting the immune system by destroying and eliminating the pathogen from the body.

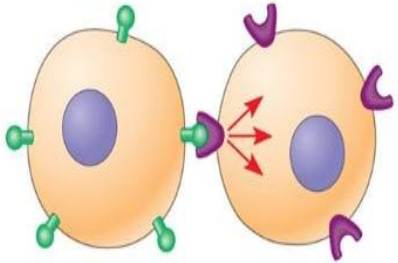
Glycolipid plays important role in the following:

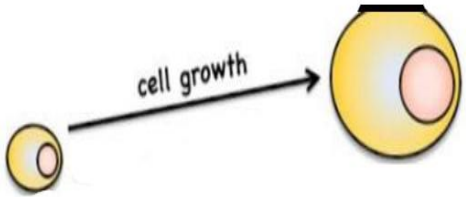
- Cell-cell interaction.
- Structure of cell membrane.
- Cell Growth.

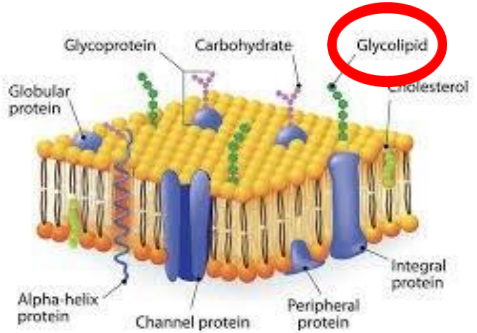
Part of nervous tissue.

Part of Muscle tissue.

Surface receptors .

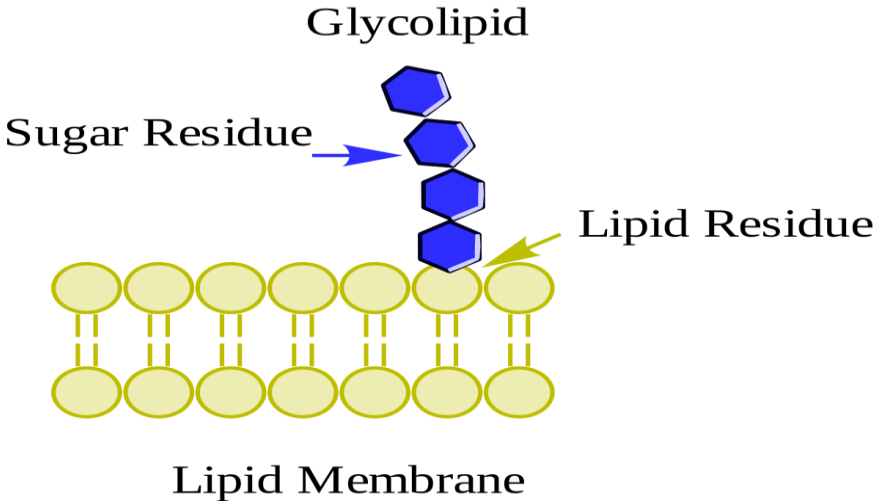






The function of glycolipids in cell membrane :

Glycolipids are essential constituents of cellular membranes with a high number of functions. They may act as receptors, be important for cell aggregation and dissociation, and may be responsible for specific cellular contact and for signal transduction.

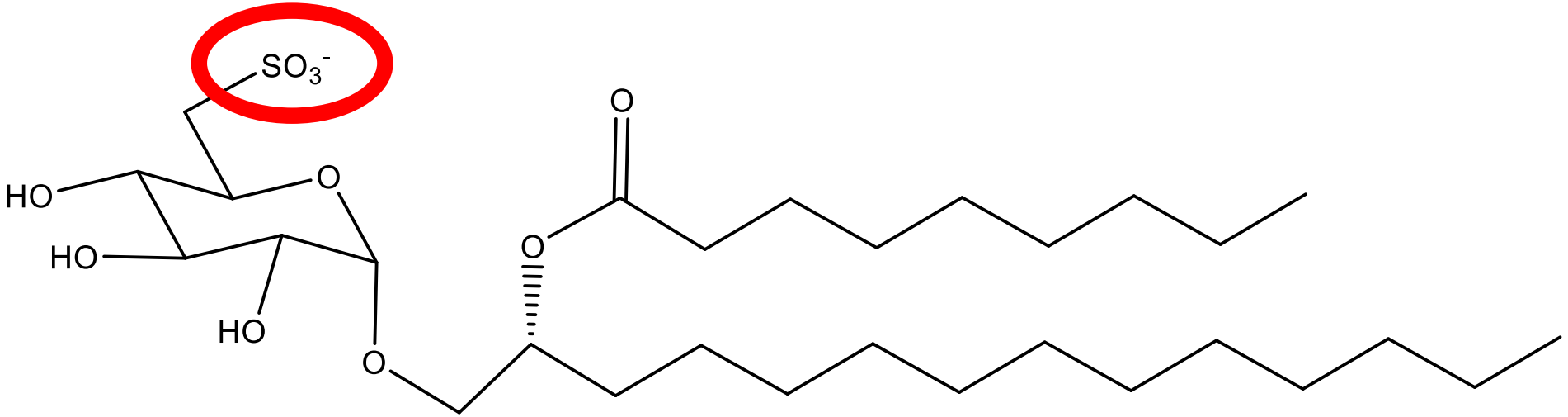


Sulfolipids

Definition:

Sulfolipids are a class of lipids which possess a sulfur-containing functional group. An abundant sulfolipid is sulfoquinovosyl diacylglycerol, which is composed of a glycoside of sulfoquinovose and diacylglycerol.

Structure of a Sulfolipids



Where do we find Sulfolipids ?

- The sulolipid is mostly present in chloroplasts, predominantly in the membranes of thylakoid.
- Plant membrane are also rich in sulpholipids.
- Present in low levels in liver, lung, kidney, spleen, skeletal muscle and heart

Summary :

- Glycolipids are molecules that contain both carbohydrate and lipid components.
- Types of glycolipids: Glycosphingolipids, Glycoglycerolipids
- The biological Importance of Glycolipids: Immune Responses, Blood types, Surface receptors.
- Glycolipids are essential part of cell membrane.
- Sulfolipids are a class of lipids have sulfur-containing functional group.
- Sulfolipids is mostly present in human body e.g.kidney,liver and present in chloroplasts in plant membrane.

Reference

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Thanks!