

THIRD CHAPTER: Structure and physicochemical properties of lipids

(Part 3)

• Properties of glycerophospholipids:

- Glycerophospholipids are amphiphilic molecules, they have two parts: one non-polar (FA), the other polar (phosphoric group, alcohol).
- Glycerophospholipids combine with other amphiphilic molecules to form the double layer of biological membranes.
- These lipids can be hydrolysed in the body by enzymes (Phospholipases), acid hydrolysis (hot acid treatment hydrolyzes the ester bonds and releases fatty acids and other constituents of phosphoglycerides) and alkaline hydrolysis (saponification).

V.2. Structure of glyceroglycolipids

As in glycerolipids, the C1 and C2 of glycerol are esterified by fatty acids, but on the C3 a sugar or an oligoside is fixed by its hemi-acetal carbon by a glycosidic bond. They constitute a group of membrane lipids predominant in plant cells.

Galactolipids are located in the inner membrane of chloroplasts; they constitute more than 70% of the membrane lipids of a vascular plant.

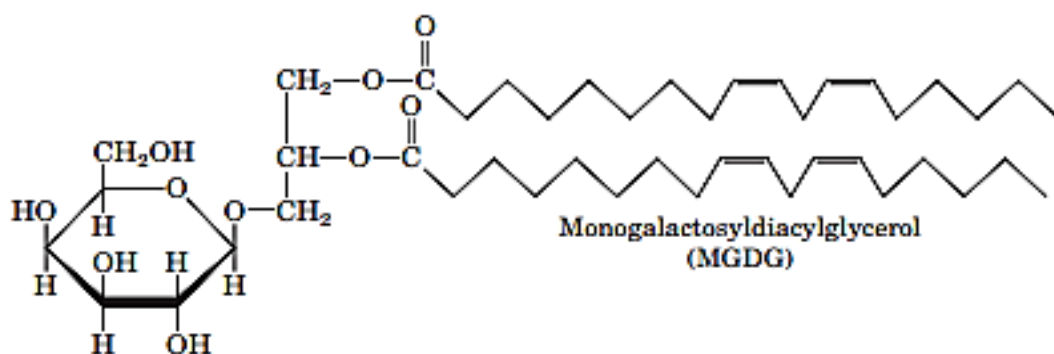


Figure 16. Structure of galactolipide.

V.3. Structure of sphingolipides

They are formed by bonding the carboxyl of FA to the -NH₂ of an alcohol amine which is sphingosine.

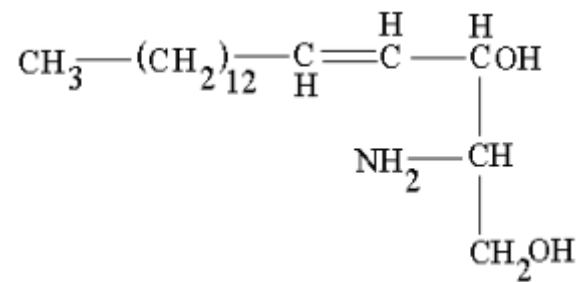


Figure 17. Structure of sphingosine.

The bond with the fatty acid occurs at the level of the amine function by an amide bond, a ceramide is then formed.

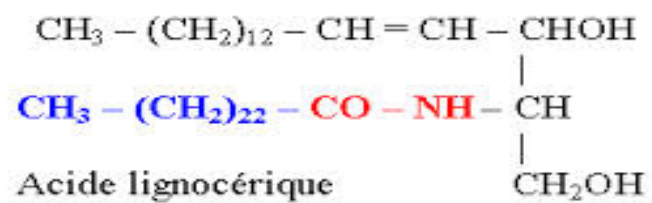


Figure 18. Exemple of ceramide [3].