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18/mhs06/058
BCH 202

Question

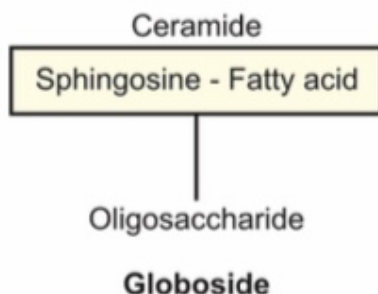
1. State 4 importance of cholesterol.
2. Differentiate between globosides and gangliosides.
3. Methylated form of phosphatidyl ethanol amin is known as _____.
4. Which ring of cholesterol molecule contains a double bond?
5. State 3 properties of phosphoglycerides.
6. In a tabular form, differentiate between triacylglycerol and phosphoglyceride. State examples and with schematic structures.

Answer

1. The Importance of cholesterol includes:
 - build the structure of cell membranes
 - make hormones like oestrogen, testosterone and adrenal hormones
 - help metabolism work efficiently, for example, cholesterol is essential for the body to produce vitamin D
 - produce bile acids, which help the body digest fat and absorb important nutrients.
2. Differences between globosides and gangliosides:

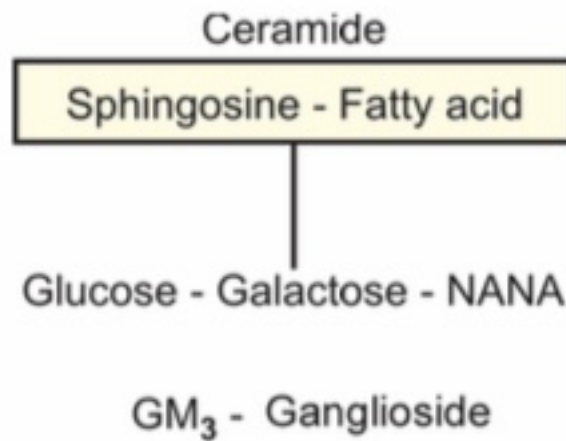
Globosides contain two or more sugar molecules attached to ceramide.

- These glycolipids are important constituents of the RBC-membrane and are the determinants of the A,B,O blood group system



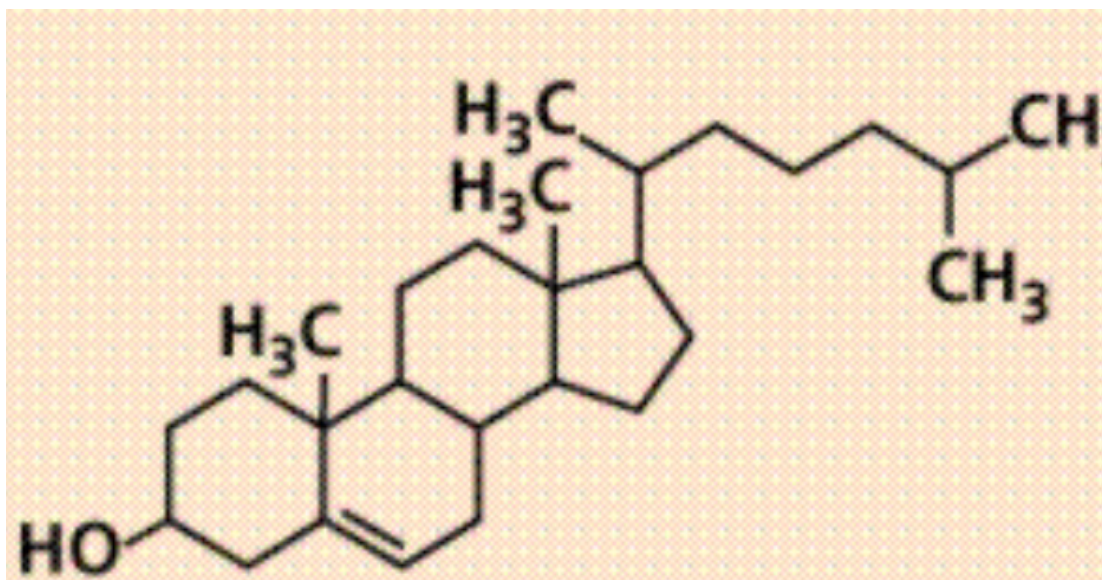
Gangliosides: (Cerebroside + Oligosaccharides + N-acetylneuraminic acid, NANA)

- Gangliosides are complex glycolipids, derived from glucocerebroside.
- Ganglioside contains oligosaccharides and one or more molecules of sialic acid, which is usually N-acetylneuraminic acid (NANA) attached to ceramide.
- Several types of gangliosides such as GM1, GM2, GM3, etc. have been isolated from brain and other tissues. The simplest ganglioside found in tissues is GM3. G represents Ganglioside, M represents mono which indicate presence of one residue of NANA and subscript number assigned on the basis of chromatographic migration of ganglioside.



3. Methylated form of phosphatidyl ethanol amin is known as phosphatidylethanolamine N-methyltransferase

4. The ring of cholesterol molecule that contains a double bond is ring number two.

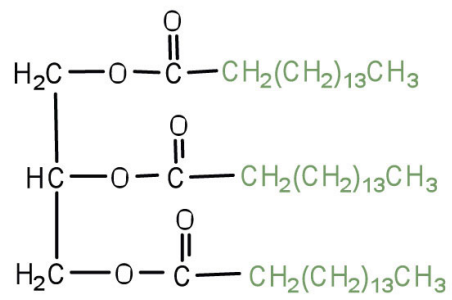


5. Properties of phosphoglycerides:

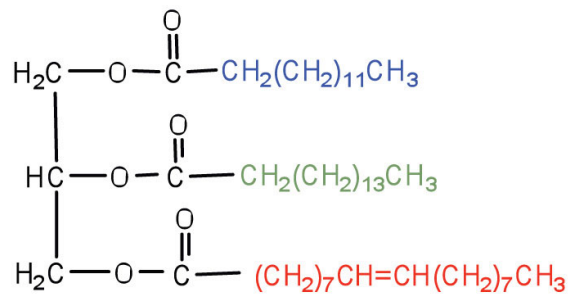
- In glycerophospholipid, the hydroxyl groups at C1 and C2 of glycerol are esterified with two fatty acids. The C3 hydroxyl group of the glycerol is esterified to phosphoric acid and resulting compound called, phosphatidic acid
- Phosphatidic acid is a key intermediate in the bio- synthesis of other glycerophospholipids.
- In glycerophospholipid, phosphate group of phosphatidic acid becomes esterified with the hydroxyl group of one of the several nitrogen base or other groups.

6. Differences between triacylglycerol and phosphoglyceride:

Triacylglycerols	Phosphoglycerides
No phosphate group	Presence of a phosphate group substituting one of the three carbons of glycerol in the triglyceride structure.
They are not component of membrane bilayers	They are the main constituents of membrane bilayers
They are the major class of naturally occurring neutral lipids	They're not neutral lipids
Examples are; tristearic acid(tristearin), tripalmitin, dioleopalmitin etc..	Examples are; lecithins, plasmalogens, glycolipids, Phosphatidylethanoamines etc...



Tristearin
a simple triglyceride



a mixed triglyceride

A triacylglycerol.

A glycerophospholipid

