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COURSE CODE: BCH 202

COURSE TITLE: CLINICAL BIOCHEMISTRY AND XENOBIOTICS

ASSIGNMENT 3

ANSWERS

1. **Importance of Cholesterol**

a) Cholesterol is a major structural constituent of the cell membranes.

b) Cholesterol serves as the precursor for a variety of biologically important products like steroid hormones.

c) They also serve as precursors for bile acids and vitamin D.

d) Cholesterol is a structural constituent of plasma lipoproteins

1. **Differences between globosides and gangliosides**

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| Globosides | Gangliosides |
| 1) Globosides are composed of **Ceramide** and **Oligosaccharide** | 1)Gangliosides are composed of **Cerebroside**, **Oligosaccharides** and **N-acetylneuraminic acid, NANA**) |
| 2) They are found in the RBC membrane | 2) Gangliosides have been isolated from the brain and tissues while the simplest found in the tissues |

1. Methylated form of phosphatidyl ethanolamine is known as **Lipid methyl transferase.**
2. The B ring of cholesterol molecule at carbon atoms 5 and 6 contains a double bond.
3. **Properties of phosphoglycerides**

1) They are derived from the alcohol, **Glycerol**.

2) The hydroxyl groups at C1 and C2 of glycerol are esterified with two fatty acids while the C3 hydroxyl group of the glycerol is esterified to phosphoric acid and resulting compound called, phosphatidic acid.

3) The phosphate group of phosphatidic acid becomes esterified with the hydroxyl group of one of the several nitrogen base or other groups.

1. **Differences between triacylglycerol and phosphoglyceride**

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| Triacylglycerol | Phosphoglyceride |
|  Triacylglycerol are esters of fatty acids with glycerol consisting of **three fatty acids**.  | While Phosphoglycerides are phospholipids which consists of **two fatty acids**, **glycerol** as **alcohol, phosphoric acid** and **nitrogenous base.** |
| Triacylglycerol are nonpolar, hydrophobic and neutral molecules and are insoluble in water. | While Phosphoglycerides are amphipathicin nature as each has a hydrophilic or polar head(phosphate group) and a long hydrophobic tail(containing two fatty acid chains) |
| Triacylglycerol differ by the fatty acids present and the position: Triacylglycerols containing the same kind of fatty acid in all three positions are called **simple triacylglycerols**. While **Mixed triacylglycerols** contain two or more different fatty acids. | Examples of phosphoglyceride include:Phosphatidylcholine, Plasmalogen,phosphatidylinositol, Phosphatidylserine,Phosphatidylethanolanine, Lysophospholipids, Cardiolipin.  |

Structure of Triacylglycerol



Structure of Phosphoglycerides

1)  2) 

3)



4) 

5) 6) 

7) 