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MATRIC NUMBER: 18/MHS06/053

DEPARTMENT: MEDICAL LABORATORY SCIENCE

LEVEL: 200

COURSE: BCH 202

1. Is Vitamin C a coenzyme? Justify your answer
2. Describe the chemistry of phospholipids
3. Differentiate between phospholipids and glycolipids

**ANSWER**

1. Vitamin C is not a coenzyme but rather they are precursors to coenzymes and as a cofactor. Ascorbic acid is a strong reducing agent and acts as an antioxidant. It also facilitates the absorption of iron from intestine by reducing it to the ferrous state. Its antioxidant property is also associated with prevention of cancer by inhibiting nitrosamine formation from naturally occurring nitrates during digestion.
2. Phospholipids are a class of lipids that are a major cell component of all cell membrane. They can form lipid bilayers because of their amphiphilic characteristics. The structure of phospholipid molecule consists of two hydrophobic fatty acid tail and a hydrophilic head consisting of a phosphate group. The two components are usually joined together by a glycerol molecule. The phosphate group can be modified with simple organic molecules such as choline, or serine. The phosphate group is the negatively-charged polar head, which is hydrophilic. The fatty acid chains are the uncharged, nonpolar tails, which are hydrophobic. Since the tails are hydrophobic, they face inside away from the water and meet in the inner region of the membrane. Since the heads are hydrophobic, they face outward and are attracted to the intracellular and extracellular fluid. If phospholipids are placed in water, they form into micelles which are lipid molecule that arrange themselves in a spherical form of aqueous solution.

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| PHOSPHOLIPIDS | GLYCOLIPIDS |
| these are lipids containing phosphate group | Glycolipids are lipids containing carbohydrates |
| Lipid residue and phosphate group | Lipid residue and carbohydrate moiety |
| Are built up from glycerol or sphingosine | Are derived from sphingosine |
| Hydrophilic head and two hydrophobic tail | Hydrophilic head and hydrophobic tail |