18/MHS06/024

Med Lab Sci

BCH 204

Q1. What are coenzymes

A coenzyme is an organic non-protein compound that binds with an enzyme to catalyze a reaction. Coenzymes are often broadly called cofactors, but they are chemically different. A coenzyme cannot function alone, but can be reused several times when paired with an enzyme.

Q2. Differentiate between fat and water soluble vitamins

|  |  |
| --- | --- |
| Water soluble vitamins | Fat soluble vitamins |
| Soluble in water | Soluble in fat |
| Does not requires carrier protein | Requires carrier protein |
| Adsorption is simple | Adsorption along with other lipids |
| Excreted in the urine | Stored in the liver |
| Deficiency manifest rapidly as there is no storage | Deficiency manifest only when stores are depleted |

Q3. Describe niacin in relation to its coenzymic function

Niacin  is a coenzyme, like [thiamine](https://www.sciencedirect.com/topics/food-science/vitamin-b1) and [riboflavin](https://www.sciencedirect.com/topics/food-science/riboflavin), that is responsible for energy release from carbohydrates. A niacin deficiency can lead to pellagra, a disabling disease with symptoms that may be characterized by four “Ds”: depression, diarrhea, delirium and dementia.

Niacin is found in fortified breads and cereals. Protein foods, such as eggs, fish, meat, dairy milk and poultry, are naturally rich in niacin. They are also plentiful in the amino acid tryptophan which can be synthesized into niacin by the liver. Chicken breast, ground beef, halibut, tuna and turkey are particularly good sources of tryptophan. In the vegetable kingdom, asparagus, baked potatoes and cantaloupe have significant amounts of tryptophan.

Niacin has been used to lower LDL cholesterol and raise HDL cholesterol when administered as a drug under medical guidance. In heavy doses, niacin has been known to cause a niacin flush due to the capillaries increasing in size. This condition can lead to fatigue and even liver damage. Caution should be used if one is taking niacin or B-complex supplements.