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DEPT- MEDICAL LAB SCIENCE

MAT N0- 18/MHS06/004

COURSE- BCH 204

1a. What are coenzymes

Coenzyme: A substance that enhances the action of an enzyme. (An enzyme is a protein that functions as a catalyst to mediate and speed a chemical reaction).

Coenzymes are small molecules. They cannot by themselves catalyze a reaction but they can help enzymes to do so. In technical terms, coenzymes are organic nonprotein molecules that bind with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme).

b. Differentiate between fat and water soluble vitamins

Fat soluble vitamins	Water soluble vitamins
These are soluble in fats	These are soluble in water
They are generally stored in liver	They are not stored in the body except vitamin B12
They do not act as coenzymes	They act as coenzymes
They are not excreted in urine	They have a threshold for urinary excretion

c. Describe niacin in relation to its coenzymic function

Niacin is a coenzyme, like thiamine and 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.