

NAME-AFABOR MARIAN OGHENERUME

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QUESTION

1. 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).

A number of the water-soluble vitamins such as vitamins B1, B2 and B6 serve as coenzymes.

2. DIFFERENTIATE BETWEEN FAT AND WATER SOLUBLE VITAMIN

FAT SOLUBLE VITAMINS	WATER
1. They are soluble in fat	They are insoluble in fat
2. They are not soluble in water	They are soluble in water
3. Absorption of fat soluble vitamins occurs along with lipids and it requires bile salt	Absorption is simple
4. Carrier Protein are present	No Carrier Protein is required
5. fat soluble vitamins are stored majorly in the liver	They have no storage
6. Deficiency manifest only when stores are depleted	Deficiency manifests rapidly as there is no storage.
7. They is possibility of toxicity	Toxicity is unlikely since excess is pass out
8. The treatment of deficiency involve single-large doses to prevent the deficiency.	Regular dietary supply is required

3. DESCRIBE NIACIN IN RELATION TO ITS COENZYMIC FUNCTION

Vitamin B3, generally referred to as niacin, is a water-soluble vitamin. This vitamin can generally be found in two distinctive forms, namely nicotinic acid and nicotinamide. These substances are used by the body to form the coenzymes NAD and NADP. Niacin coenzymes degrade carbohydrates, fats, proteins and alcohols and synthesize fatty acids and cholesterol. They play a role in cell signaling.

Functions Vitamin B3

Niacin assists functions of the nervous and digestive system. It plays a role in food metabolism and in the formation of red blood cells and skin. NAD and NADP are coenzymes that are part of the energy production system of the body. This system works by means of oxidation and reduction (redox) reactions. Niacin deficiency occurrence causes many symptoms, such as fatigue, headaches, dry skin, and loss of appetite, ulcers and emotional instability. On rare occasions (mainly in developing countries) people may experience severe deficiency, which leads to a condition known as pellagra. This condition is commonly characterized by the 4 D's: dermatitis, diarrhea, dementia and death. Pellagra literally means raw skin. The condition was named this because the skin of a patient develops a dark pigmented rash on areas exposed to bright sunlight.

Vitamin B3 as a supplement

Niacin is recommended for dizziness, Post Menstrual Syndrome (PMS) and arthritis. It is a useful preparation for burn treatment. Niacin can also be useful for alcohol addicts and people with high cholesterol, mental problems, and severe stress problems or hyperthyroid, for athletes and for elderly people. Niacin is suspected to decrease the possibility of introduction of certain types of cancer such as leukemia, as a result of increased levels of DNA-repairing coenzymes (NAD). People suffering from HIV may be given extra niacin to postpone symptoms and elongate their life.

Vitamin B3 in food

Niacin is part of a range of foods, for example meat, fish, bread, yeast, nuts, seeds, soy beans, potatoes, dried fruit, tomatoes and peas. Milk, green-leaved vegetables and coffee and tea also provide some niacin. Cereals may be fortified with niacin. Some foods, such as corn, may release niacin upon cooking. Before cooking corn only contains bound, unavailable niacin.