



VITAMINS

إعداد

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Vitamins

Vitamins are organic compounds required by the body in small amounts.

Important:

- 1- They generally act as catalysts, combining with proteins to create metabolically active enzymes so they are important for metabolism.
- 2- They protect health, and are important for proper growth in children.
- 3- Vitamins also assist in the formation of hormones, blood cells, nervous system chemicals, and genetic material (Vitamin B12 and Vitamin B9).

Classification of vitamins

1. Fat soluble vitamins:

- Vitamins A, D, E and K are fat soluble vitamins.
- Vitamins A, D and K are stored in the liver.
- Vitamin E is distributed throughout the body's fatty tissues.

2. Water soluble vitamins:

- Vitamin B complex and vitamin C are water soluble vitamins.
- They are not stored in the body therefore they required daily in small amount.

Fat soluble vitamins

1. Vitamin A (Retinol):

Sources:

- In animal form, it is found in milk, butter, cheese, egg yolk, liver, and fish-liver oil.
- In plant source it obtained from vegetables as carrots, broccoli, squash, spinach, kale, and sweet potatoes.

Physiological significances:

- Vitamin A is necessary for proper growth, vision, and maintenance of epithelial tissue.
- Vitamin A accelerates normal formation of bone and teeth.

Fat soluble vitamins

1. Vitamin A (Retinol):

Deficiency:

- Night blindness.
- Excessive skin dryness
- Lack of mucous membrane secretion, causing weakness to resist bacterial attack
- Dryness of the eyes.

Hypervitaminosis:

Interfere with growth, stop menstruation, damage red blood corpuscles, skin rashes, headaches, nausea, and jaundice.

Fat soluble vitamins

2. Vitamin D (Calciferol):

Sources:

- Egg yolk and liver oil of fishes.
- By our the body.

Physiological significances:

- It protects the teeth and bones against the effects of low calcium intake.
- It increases absorption of calcium in intestine.
- It stimulates the reabsorption of calcium and phosphorus from the renal tubules in the kidney.
- It helps treat multiple sclerosis تصليب متعدد

Fat soluble vitamins

2. Vitamin D (Calciferol):

Deficiency:

Vitamin D deficiency produces rickets كساح in children and osteomalacia لين العظام in adults.

Hypervitaminosis:

Excessive consumption of vitamin D causes poisoning, kidney damage, lethargy الخمول, and loss of appetite فقدان الشهية.

Fat soluble vitamins

3. Vitamin E (Tocopherol):

Sources:

- Vegetable oils, wheat germ, liver, and leafy green vegetables.
- Present in little amount in meat, milk and eggs.

Physiological significances:

- It acts as antioxidants.
- It plays a role in forming red blood cells, muscles and other tissues.
- It is associated with cell maturation and differentiation.
- It prevents the oxidation of vitamin A and fats.

Fat soluble vitamins

3. Vitamin E (Tocopherol):

Deficiency:

- Sterility in both males and females.
- Muscular dystrophy *ضمور العضلات* .
- In children it causes haemolysis and creatinuria.

Hypervitaminosis:

Vitamin E toxicity is rare, but occasionally high doses cause a risk of bleeding, as well as muscle weakness, fatigue, nausea, and diarrhea.

Fat soluble vitamins

4. Vitamin K

Vitamin K found in two forms vitamin K1 (Phylloquinone) and vitamin K2 (Menaquinone).

Sources:

- Fish livers, leafy green vegetables, egg yolks, soybean oil, and liver.
- It is also produced by bacteria in human intestine.

Physiological significances:

- Necessary for the coagulation of blood.
- It aids in forming prothrombin.
- Acts as an inducer for the synthesis of RNA.

Fat soluble vitamins

Deficiency:

Digestive disturbances may lead to defective absorption of vitamin K and hence to mild disorders in blood clotting.

Hypervitaminosis:

Administration of large doses of vitamin K produces haemolytic anemia due to breakdown of red blood cells.

Water soluble vitamins

1. Vitamin B complex: include vitamin B1 (Thiamine), vitamin B2 (Riboflavin), vitamin B3 (Niacin), vitamin B6 (Pyridoxine), vitamin B7 (Biotin), vitamin B9 (Folic Acid) and vitamin B12 (Cynocobalamin).

Vitamin B9 (Folic Acid):

Sources:

- Folic acid is found in yeast, liver and kidney.
- Fish meat and green leafy vegetables, milk and fruits also provide folic acid.

Water soluble vitamins

Physiological significances:

- Folic acid acts as a coenzyme and help in synthesis of purine and thymine during DNA synthesis.
- It helps in formation and maturation of red blood cells.

Deficiency:

Folic acid deficiency gives rise to megaloblastic anemia.

Water soluble vitamins

Vitamin B12 (Cynocobalamin):

Sources:

- It is obtained only from animal sources as liver, kidneys, meat, fish, eggs, and milk.

Physiological significances:

- Necessary in formation of nucleoproteins, proteins, and red blood cells.
- Necessary for the functioning of the nervous system.

Deficiency:

- Causes pernicious anemia
Decreases myelin synthesis.

Water soluble vitamins

2. Vitamin C (Ascorbic Acid):

Sources:

- Citrus fruits, fresh strawberries, cantaloupe, pineapple, and guava.
- Good vegetable sources are broccoli, tomatoes, spinach, green peppers, cabbage, and turnips.

Water soluble vitamins

Physiological significances:

- Formation and maintenance of collagen.
- Enhances the absorption of iron from foods of vegetable origin.
- Formation of bones and teeth.
- It play important role in wound repair.
- It protects body against stress.

Deficiency:

Its deficiency leads to a disease known as scurvy.



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