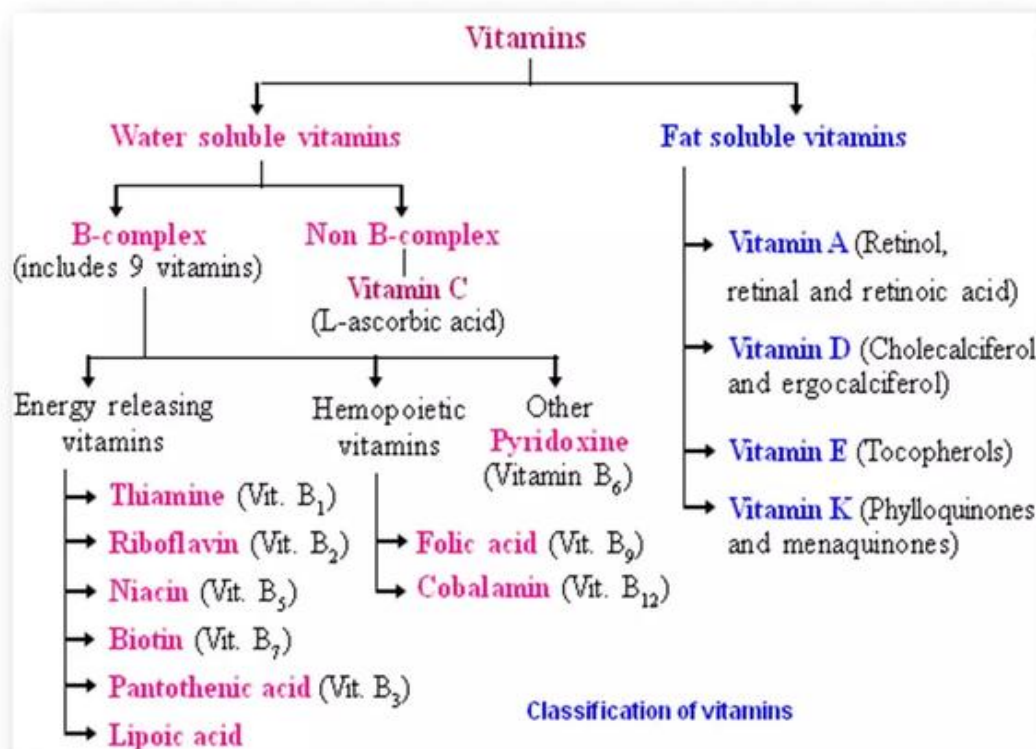


Vitamins

Vitamins are chemically unrelated organic compounds that cannot be synthesized in adequate quantities by humans and, therefore, must be supplied by the diet. **Nine vitamins** (folic acid, cobalamin, ascorbic acid, pyridoxine, thiamine, niacin, riboflavin, biotin, and pantothenic acid) are classified as water soluble. Because they are readily excreted in the urine, toxicity is rare. However, deficiencies can occur quickly. **Four vitamins** (A, D, K, and E) are termed fat soluble. They are released, absorbed, and transported (in chylomicrons) with dietary fat. They are not readily excreted, and significant quantities are stored in the liver and adipose tissue. Vitamins are required to perform specific cellular functions. For example, many of the water-soluble vitamins are precursors of coenzymes for the enzymes of intermediary metabolism. In contrast to the water soluble vitamins, only one fat-soluble vitamin (vitamin K) has a coenzyme function.



Water-soluble vitamins

1. vitamin B1 (Thiamine)

a. Food Sources

Pork, wholemeal grains, brown rice, vegetables, potatoes, liver, eggs

b. Daily Requirements

1.2mg/1.1 mg (male / female)

c. Function

Needed for energy metabolism; important to nerve function

d. Deficiency disease(s)

Beriberi.

2. vitamin B2 (Riboflavin)

a. Food Sources

Milk and milk products; leafy green vegetables; whole grain foods, breads and cereals.

b. Daily Requirements

1.3mg/1.1 mg (male / female)

c. Function

Needed for energy metabolism; important for normal vision and skin health.

d. Deficiency disease(s)

Glossitis, angular stomatitis

3. vitamin B3 (Niacin, Niacinamide, Nicotinamide riboside)**a. Food Sources**

Meat, poultry, fish, whole grain foods, enriched breads and cereals, vegetables (especially mushrooms, asparagus, and leafy green vegetables), peanut butter

b. Daily Requirements

16 mg/14 mg (male / female)

c. Function

Needed for energy metabolism; important for nervous system, digestive system, and skin health

d. Deficiency disease(s)

Pellagra.

4. vitamin B5 (Pantothenic acid)**a. Food Sources**

Meat, broccoli, avocados

b. Daily Requirements

5 mg/5 mg (male / female)

c. Function

Needed for energy metabolism.

d. Deficiency disease(s)

Paresthesia.

5. vitamin B6 (Pyridoxine, Pyridoxamine, Pyridoxal)**a. Food Sources**

Meat, vegetables, tree nuts, bananas

b. Daily Requirements

1.3–1.7 mg/1.2–1.5 mg (male / female)

c. Function

Needed for protein metabolism; helps make red blood cells.

d. Deficiency disease(s)

Anemia, Peripheral neuropathy.

6. vitamin B7 (Biotin)

a. Food Sources

Widespread in foods; also produced in intestinal tract by bacteria

b. Daily Requirements

30 µg/30 µg (male / female)

c. Function

Needed for energy metabolism.

d. Deficiency disease(s)

Dermatitis, enteritis.

7. vitamin B9 (Folates, Folic acid)

a. Food Sources

Leafy vegetables, pasta, bread, cereal, liver

b. Daily Requirements

400 µg/400 µg (male / female)

c. Function

Needed for making DNA and new cells, especially red blood cells.

d. Deficiency disease(s)

Megaloblastic anemia and deficiency during pregnancy is associated with birth defects, such as neural tube defects.

8. vitamin B12 (Cyanocobalamin, Hydroxocobalamin, Methylcobalamin, Adenosylcobalamin)

a. Food Sources

Meat, poultry, fish, seafood, eggs, milk and milk products; not found in plant foods

b. Daily Requirements

2.4 µg/2.4 µg (male / female)

c. Function

Needed for making new cells; important to nerve function.

d. Deficiency disease(s)

Anemia

9. vitamin C (Ascorbic acid)

a. Food Sources

Found only in fruits and vegetables

b. Daily Requirements

90 mg/75 mg (male / female)

c. Function

Antioxidant; part of an enzyme needed for protein metabolism; important for immune system health; aids in iron absorption

d. Deficiency disease(s)

Scurvy