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The Role of Vitamin-Like Substances and Their Importance in Rational Nutrition

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Vitamin-like substances perform several vital functions in the human body. Although their biological significance does not fully reach the level of true vitamins, a deficiency of these substances in the daily diet can lead to a number of adverse physiological changes. Therefore, it can be concluded that vitamin-like substances are among the essential components of human nutrition.

There are two main pathways for the intake of vitamin-like substances into the body: through food from the external environment and via endogenous synthesis. However, not all vitamin-like compounds can be synthesized within the human body, which makes their dietary intake necessary.

It is important to note that each vitamin-like compound has its own specific physiological function. A deficiency of any of these substances may lead to incomplete performance of the processes it regulates, resulting in metabolic disturbances. All the above-mentioned facts indicate that vitamin-like substances are among the nutrients that play a significant role in human nutrition [1–5]. Some examples of vitamin-like substances are described below.

Para-aminobenzoic acid (PABA or vitamin B10) is a water-soluble compound that can be conditionally classified as a prebiotic factor due to its importance in the formation of intestinal microflora. The physiological role of PABA is related to its participation in the composition of the complex vitamin folic acid. It improves metabolic processes in connective tissues and facilitates the absorption of B-group vitamins by the body. Moreover, PABA protects the skin from the harmful effects of sunlight.

Vitamin B15 (pangamic acid) is a physiologically active, water-soluble compound that serves as a donor of methyl groups essential for the biosynthesis of choline, methionine, adrenaline, creatine, steroid hormones, and other compounds. Pangamic acid prevents fatty degeneration of the liver, stimulates the activity of the pituitary and adrenal glands, and enhances the synthesis of acetylcholine [3]. It plays an important role in fat metabolism and liver function. This compound is widely distributed in food sources, particularly in pumpkin seeds, sunflower seeds, sesame seeds, nuts, almonds, pistachios, and liver products [4].

Carnitine (vitamin Bt) is synthesized in the liver, kidneys, and brain from the amino acid lysine in the presence of S-adenosylmethionine, ascorbic acid, vitamin B6, niacin (PP), and iron. Therefore, a deficiency of carnitine is unlikely if these nutrients are adequately supplied through diet.

Currently, carnitine is recognized as a key compound in weight reduction and the management of obesity. Obesity often results from excessive intake of carbohydrates and fats, leading to the accumulation of fat under the skin and around internal organs. Anti-obesity agents typically act by accelerating lipid breakdown, causing fatty acids and glycerol to enter the bloodstream. Consequently, the accumulation of fat in adipose tissues and visceral areas decreases significantly.

In addition, carnitine helps reduce cholesterol levels in the body and prevents the formation of atherosclerotic plaques. It enhances lecithin synthesis in the liver, thereby reducing the risk of hypercholesterolemia [5].

Conclusion

Although vitamin-like substances are not as vital as true vitamins, their deficiency can cause significant physiological disturbances in the human body. Therefore, they are collectively referred to as vitamin-like compounds — substances that are similar to vitamins in their biological effects, nutritional roles, and physiological significance.

References

1. Valikhanov M.N. *Biochemistry*. Tashkent: “University”, 2008. – 292 p.
2. Klyuchnikov S.O., Ilyashenko D.A., Klyuchnikov M.S. *Rationale for the use of L-carnitine and coenzyme Q10 in adolescents*. Questions of Modern Pediatrics, 2008, Vol. 7, No. 4, pp. 102–104.
3. *Nutrition – A Global Problem: International Conference on Nutrition*. Rome, December 5–11, 1992. – 33 p.
4. To‘raqulov Yo.Kh. *Biochemistry*. Tashkent: Uzbekistan, 1996. – 480 p.
5. Qurbonov Sh.Q. *Culture of Nutrition*. Tashkent: Ma’naviyat, 2005. – 209 p.