

Title of the learning unit: Vitamins

Impact of the learning unit

The aim of the learning unit is to provide the general classification of vitamins, their function in the human body, manifestation of deficiency and the possibility of therapeutic use.

Description of the learning unit

Vitamins are low molecular weight compounds that contribute to the proper function of the organism. Vitamin deficiency (hypovitaminosis) leads to defined symptoms, which are reversible by vitamin supplementation. Long-term lack of multiple vitamins (avitaminosis) leads to a life-threatening condition. Conversely, overdose of some vitamins (hypervitaminosis) leads to toxicity. In addition to supplementation, some vitamins have therapeutic utility, e.g. in dermatology, to prevent methotrexate toxicity, as an antidote to warfarin, or to affect bone metabolism.

Relevant terms

water soluble vitamins

- B vitamins
 - vitamin B1 (thiamine)
 - vitamin B2 (riboflavin)
 - vitamin B3 (niacin)
 - vitamin B5 (pantothenic acid)
 - vitamin B6 (pyridoxine, pyridoxal, pyridoxamine)
 - vitamin B7 (biotin)
 - vitamin B9 (folic acid)
 - vitamin B12 (cobalamin)
- vitamin C (ascorbic acid)

fat soluble vitamins

- vitamin A (retinol)
- vitamin D
 - vitamin D2 (ergocalciferol)
 - vitamin D3 (cholecalciferol/ calcitriol)
- vitamin E (tocopherol)
- vitamin K (phylloquinone, menaquinone)

drugs derived from vitamins

- retinoids
 - tretinoin
 - adapalene
 - see learning unit Dermatology
- vitamin D derivatives
 - calcipotriol
 - tacalcitol
- leukovorin (folinic acid)
 - see learning unit Cytostatics
- pyritinol
 - see learning unit Nootropics

hypovitaminosis

hypervitaminosis

interaction of vitamins and drugs

Learning outcomes

Student is able to classify vitamins according to their solubility, knows their function in human body and manifestation of hypovitaminosis.

Student knows examples of therapeutic use of particular vitamins and drugs derived from vitamins.

Student knows the specific increased need for vitamins in individual population groups.

Study literature

Rang & Dale's Pharmacology, 9th edition, 2020

Study materials to subjects aVLFA0822c and aVLFA0822p.

Exam questions

Special pharmacology: 63. Vitamins AEDK, hydrophilic vitamins