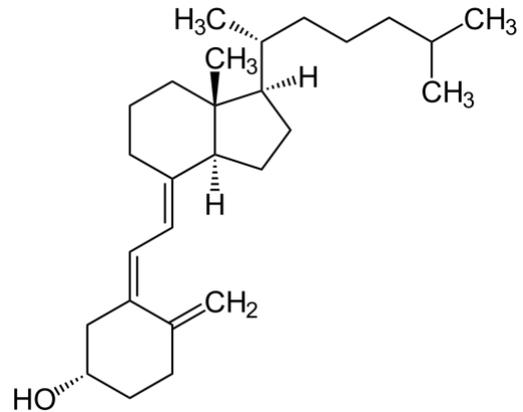


Factsheet vitamin D (cholecalciferol)

Functions

With the help of sunlight, the human body can synthesize vitamin D from a precursor of cholesterol. Therefore, vitamin D is not an essential micronutrient, provided sufficient time is spent in the sun during the right season. The active form of vitamin D is actually a hormone with functions in various organs – especially the intestines, kidneys and bones. Vitamin D is involved in the absorption of calcium and phosphorus in the intestine. In bones, vitamin D supports the absorption of calcium and phosphorus and therefore helps bones to grow denser and stronger as they absorb and store these minerals.



Structure of cholecalciferol (vitamin D3)

Sources of vitamin D

Sunlight – exposure to ultraviolet-B (UV-B) rays is necessary for the body to synthesize vitamin D from the precursor in the skin.

A few foods such as oily fish, egg yolk, veal, beef and mushrooms are natural sources of vitamin D.

Intake recommendations (D-A-CH)

Intake recommendations for vitamin D in the absence of endogenous synthesis.

	Unit	µg*/day
Infants	0 to under 12 months	10
Children	1 to under 15 years	20
Adolescents and adults	15 to under 65 years	20
Adults	65 years and older	20
Pregnant women		20
Lactating women		20

*1 µg = 40 International Units (IU); 1 IU = 0,025 µg

Bioavailability

There is limited information on the bioavailability of vitamin D. It is assumed that the food matrix has little effect on absorption. Furthermore, bioavailability varies between individuals and depends on the amount of circulating vitamin D binding protein.

Risk groups

Insufficient exposure to sunlight is the primary risk factor for a low vitamin D status. The use of sunscreen, higher skin melanin levels in dark skin types, skin coverings like clothes and veils as well as time of day are factors that reduce exposure to UV-B rays. Another factor influencing the exposure to UV-B is the distance from the equator; people living in latitudes above or below 40 degrees from the equator are unable to synthesize vitamin D from the precursor in the skin during the winter months.

Breast milk is a poor source of vitamin D. Infants and children who are exclusively breastfed and are exposed to little or no sunlight need to take vitamin D supplements to meet their requirements.

One of the main roles of vitamin D is to facilitate the absorption of calcium and phosphorus. As a consequence, vitamin D deficiency causes calcium deficiency with significant consequences to bone health. In children and adolescents this can cause rickets and adversely affect the peak bone mass. In adults, vitamin D deficiency increases the risk of osteomalacia and osteoporosis.

Tolerable Upper Intake Level (UL)

The European Food Safety Authority (EFSA) defined the following Tolerable Upper Intake Levels (UL) for vitamin D: For children aged 0 to 1 year, an UL of 25 µg vitamin D/day applies. For infants aged 1 to 10, the UL is 50 µg vitamin D/day. For both adolescents aged 11 to 17 years and adults aged 18 and older, the UL is 100 µg vitamin D/day.

References and further information

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