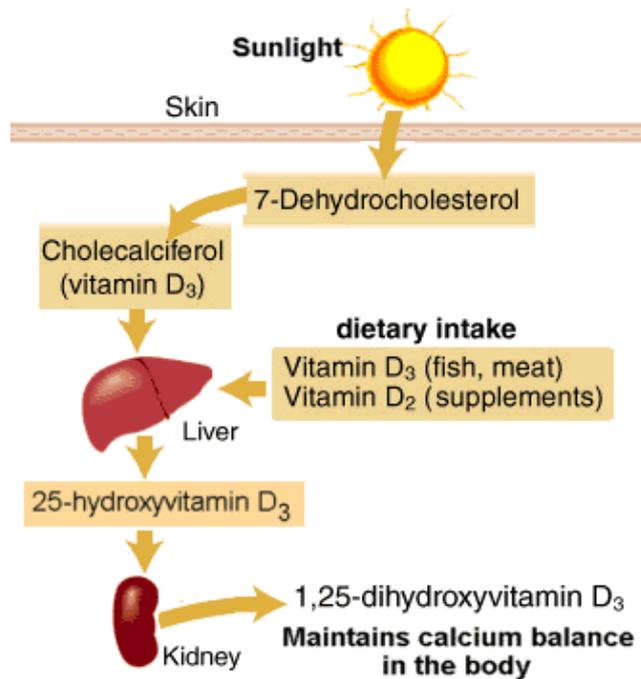


Vitamin D

- ▶ Also known as calciferol due to its role in calcium absorption
- ▶ Main role is to maintain calcium and potassium levels
 - ▶ Helps body to absorb and metabolize calcium and phosphorus
- ▶ It is the only fat soluble vitamin that we can make- in the presence of sunlight
- ▶ Made from a form of cholesterol when exposed to sunlight

Vitamin D

- It is not a hormone, but it functions similarly, it is necessary for the construction of bones and healthy aging.
- Solar ultraviolet rays are required for the construction of vitamin D.
- Vitamin D2 (ergocalciferol) is synthesized when ergosterol (phytosterol) is exposed to UV light in plants.
- Vitamin D3 (cholecalciferol) is synthesized when exposed to UV light from cholesterol in humans and animals.



- Exposure to sunlight for 10-15 min 2-3 times a week is sufficient for the body's vitamin D needs.
- However, due to environmental factors such as pigmentation, clothing, sunscreens, fog, smoke, etc., the intensity of sunlight due to seasonal and geographic conditions may not provide sufficient vitamin D synthesis.
- Age is also important. With aging, the ability to synthesize vitamin D is reduced.

Vitamin D

- ▶ Elderly people are at risk- because of not enough sunlight
- ▶ We get vitamin D from fortified milk and cereal.
- ▶ Toxicity is very dangerous:
 - ▶ Occurs only from excess supplementation,
 - ▶ Can lead to calcium deposits in kidneys, heart and blood vessels.

Vitamin D shows its effects by influencing the 3 target structures.

- increases Ca and Phosphate absorption in the intestine,
- increases Ca accumulation and mineralization in osteoid tissue.
- reduces Ca and phosphate excretion from the kidneys.

- It has been found to have a protective effect against prostate, colon and breast cancer. It is thought that vitamin D may show this effect due to its hormonal functions.

Food sources

- 1. Non dietary by conversion inside the body**
 - 2. Dietary Good food sources are milk properly fortified with vitamin D, fatty fish such as salmon and mackerel, cod liver oil, fish liver oil, some breads and cereals, and some egg yolks.**
- *Not affected by storage or preservation or cooking**

Deficiencies

- In humans, deficiency symptoms include rickets in children, osteomalacia in adults, muscle weakness, bone deformities, neuromuscular irritability causing muscle spasms of the larynx (laryngospasm) and hands (carpopedal spasm), generalized convulsions and tetany.

Rickets

- In the absence of vitamin D, Rickets disease is occurred. It is an uncommon disorder in developed countries. Vitamin D is prevented by intake.

Rickets can be caused by lack of sunlight, but also from insufficient calcium. Vitamin D linked to calcium absorption.

Osteomalacia, osteoporosis

- osteomalacia is a result of vitamin D deficiency and softening of the bones with excessive loss of calcium and phosphorus. At least 200 IU of vitamin D should be taken daily for prevention.
- vitamin D reduces the risk of fracture in people with osteoporosis.
- osteoporosis; It occurs with the loss of calcium and other minerals from the bones with age. It's very common around the World. Daily 400-800 IU vitamin D and 1200-1500 mg calcium are recommended..

- There was an increase in the risk of autoimmune disease such as Type I Diabetes, Multiple Sclerosis and Crohn's disease in vitamin D deficiency.
- Vitamin D deficiency was found to increase insulin resistance and decrease insulin production.

Diet recommendations

- Based on the available literature and assuming some exposure to sunlight
- Recommended average intake for ages 0 - 50 years as 200-400 IU (5-10 μg)/day.
- There was no compelling data to increase the vitamin D requirement either during pregnancy or lactation..

Contraindications

- long-term use of high doses occurs hypercalcemia,
 - The use of high doses of 1000 IU or higher for 6 months or longer causes a high concentration of calcium in the blood. Hypercalcemia causes calcium accumulation, especially in the soft tissues, heart, kidneys, lungs and blood vessels, which can be fatal.
- should not be used in people sensitive to vitamin D,
- the use of high doses during pregnancy may result in delayed mental development in the baby, narrowing of the aortic vessels and some other abnormalities.

- Drops or dusts are very sensitive to light, acid and oxidation. Must be stored well, opaque bottles should be used.
- It is more stable in tablet form.
- The form contained or added to the food is stable and does not decomposed by cooking.

Vitamin D3, D2

- ▶ Formation Vitamin D3 (cholecalciferol) and vitamin D2 (ergocalciferol) are stored in body fat.
- ▶ The vitamin D precursors produced in yeast and plants (ergosterol) and animals (7-dehydrocholesterol) are converted to vitamin D by exposure to ultraviolet light. Vitamin D (either vitamin D2 or vitamin D3) is metabolized in the liver to 25-hydroxyvitamin D and then to 1, 25-dihydroxyvitamin D in the kidney. 1, 25-Dihydroxyvitamin D is considered to be the biologically functioning form of vitamin D.

SUMMARY

Vitamin D

- oil-soluble vitamin
- need it for normal bone development
- precursors of vitamin D are located under skin
- related with hormone system,
- role in cell differentiation and cell division
- effects immun system as a regulator