

**FAT - SOLUBLE VITAMINS:
VITAMIN D**

Patient Resource

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Other names for vitamin D

Calciferol (D)
Ergocalciferol(D2)
Cholecalciferol (D3)

How stable is vitamin D?

Vitamin is considered to be very stable. It is not destroyed by being heated or stored for long periods of time.

NOTE:

Vitamin D is best absorbed when eaten with healthy fats.

Visit

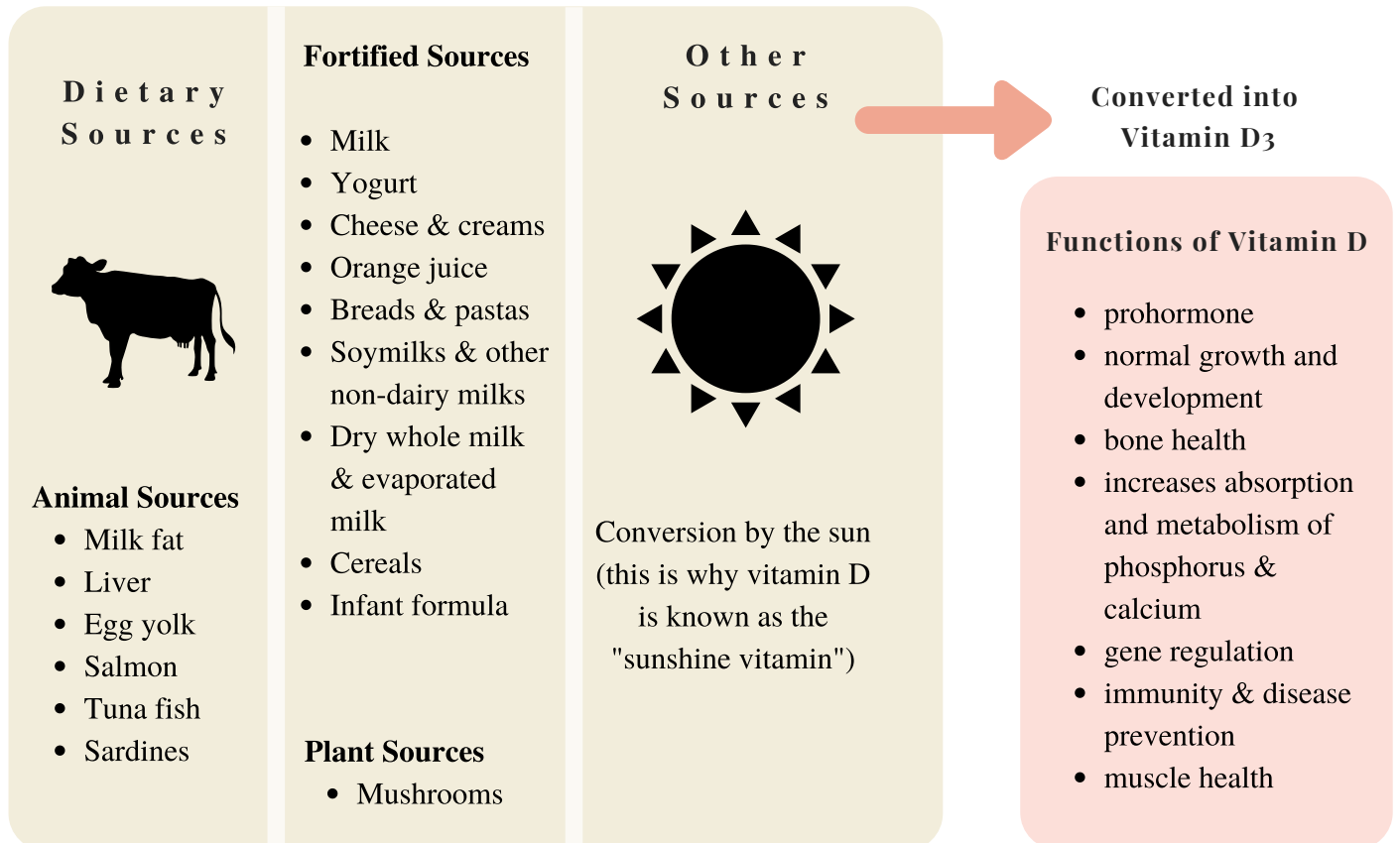
<https://www.anniweeks.com/product-page/healthy-fat-foods-reference-card>

for a Healthy Fat Foods reference card



Sources of Vitamin D

A note on fortified sources: Be sure to check the labels on these products to ensure 1) they are fortified and 2) at what amount they are fortified. This is important for you and your healthcare team to assess the level of vitamin D you are getting through the diet.



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Dietary Reference Intakes

The DRIs for vitamin D are a mix of both the Recommended Daily Allowance (RDA) and Adequate Intake (AI). When assessing intake with your healthcare team, it is important to be mindful of all the sources you are taking, including fortified foods and supplements.

Recommended Dietary Amounts of Vitamin D (in IU/day) <i>5-15 minutes in the sun at midday a few times per week is recommended</i>	
RDA/AI for Infants	
0-12 months	400 (10 mcg)
RDA for children, adults under the age of 70, and pregnant or lactating women	
Ages 1-70	600 (15 mcg)
RDA for men and women	
71 years of age and older	800 (20 mcg)

Helpful Terms to Know

Adequate Intake (AI):

recommended daily intake of a nutrient; established by Institute of Medicine (IOM) to meet or to exceed the needed amount to maintain adequate nutrition for most people in a particular stage of life or gender group; established when not enough evidence is available to determine the RDA

Recommended Dietary Allowance (RDA):

covers the needs of 97-98% of individuals in a group; the average amount of a nutrient a healthy person should consume daily; varies by gender, age, and whether a woman is pregnant or breastfeeding; developed by the Food and Nutrition Board at the IOM of the National Academies

Deficiency



Children with vitamin D deficiency develop a disease known as rickets. In rickets, growing bone development is impaired and this results in abnormal bone structure, such as the "bowed" legs pictured above.

Symptoms of Rickets

- Bone pain
- Muscular tenderness
- Bowed legs and other abnormal bone structure

Adults with vitamin D deficiency can experience fractures or osteoporosis that is exacerbated by the lack of the nutrient. Osteomalacia, not to be confused with osteoporosis, is the softening of bone and a reduction of its density. The main difference between osteomalacia and osteoporosis is their microscopic appearance. In osteomalacia, small cracks in the bone can be seen under a microscope.

Symptoms of Osteomalacia

- Bone pain
- Greater risk of fractures
- Muscular weakness

Risk Factors

- common cancers
- autoimmune disorders
- hypertension
- infectious diseases
- surgical removal of parts the intestine



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Toxicity

Improper supplementation is generally the cause of vitamin D toxicity. For this reason, it is important that supplementation and ingestion of fortified products is considered when assessing vitamin D intake. Infants and small children are the most susceptible to toxicly high levels of vitamin D. Toxicity is not caused by overexposure to the sun

Helpful Terms to Know

Upper Limit (UL): also known as the Tolerable upper intake level; largest daily intake of a nutrient that is considered safe for most people; exceeding this limit is not recommended and may cause harm to the body; Set by the Food and Nutrition Board at the National Academies of Sciences, Engineering, and Medicine.

Supplementation & Treatment

Supplementing with vitamin D in the form of D2 is less potent at high doses than supplementing with vitamin D3. It is recommended to supplement with a high quality vitamin D3 capsule when possible.

Upper Limits (UL) of Vitamin D	
Infants	
0-6 months	25 mcg/day (1000 IU/day)
6-12 months	38 mcg/day (1500 IU/day)
Children	
1-3 years	63 mcg/day (2500 IU/day)
4-8 years	75 mcg/day (3000 IU/day)
Children 9 years and older, Adults under 70 years of age, pregnant or lactating women	
Ages 9-70 years	100 mcg/day

Symptoms of Toxicity

General

- Excessive calcification of bone
- Kidney stones
- Metastatic calcification of soft tissues (kidney, heart, lung, blood vessels)
- Hypercalcemia
- Headache
- Weakness
- Hypertension (high blood pressure)
- Nausea and vomiting
- Constipation
- Polyuria (frequent urination)
- Polydipsia (abnormal increase in thirst)

Infants

- Anorexia
- Nausea and vomiting
- Hypertension
- Kidney damage
- Failure to thrive (FTT)



Appropriate for individuals who are

- Housebound
- Live in northern latitudes or areas of high atmospheric pollution
- Routinely wearing clothing that covers the body
- Working at night & sleeping/indoors during the day

Factors affecting sunlight exposure

- amount of skin melanin
- clothing
- window glass
- sunscreen

