

## INTERESTING FACTS ABOUT VITAMIN D

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Vitamin D has emerged as one of the most talked about nutrients in the last several years. Despite this increase in media attention, many people still do not know what exact health benefits vitamin D has to offer. Learn more about the significance vitamin D plays in the overall health of humans, along with some other important and interesting facts.



Vitamin D is a fat-soluble vitamin, which means that excessive amounts can be stored in the body for use at a later time. Vitamin D is essential for helping bones absorb calcium, keeping them strong and preventing osteoporosis. It is important for the development of teeth in children. It is also protects against muscle weakness and is involved in the regulation of heartbeat.

Severe vitamin D deficiency can cause rickets in children and osteomalacia, a similar disorder in adults. This deficiency affects the body's ability to absorb calcium. Obvious signs of severe deficiency may include painful muscle spasms, leg cramps, numbness in the extremities, bony malformations from bone softening, decaying teeth, irritability, restlessness, and profuse sweating. The recommended daily intake (RDI) of 400 IU is the minimum required to prevent the manifestations of severe vitamin D deficiency.

The recent media buzz surrounding vitamin D has been attributed to promising research suggesting this nutrient may offer protection against certain types of cancers (colorectal, breast, and prostate) and against inflammatory autoimmune diseases such as multiple sclerosis, diabetes, and psoriasis. This protection appears to come from doses much higher than previously thought. Vitamin D receptors have been found in virtually every part of the human body, with researchers suggesting the nutrient plays a crucial role in immune system function and regulation of cell growth.

There are several forms of vitamin D, including vitamin D2 (*ergocalciferol*), which comes from food sources; vitamin D3 (*cholecalciferol*), which is made in the skin in response to exposure to the sun's ultraviolet (UV) rays; and a synthetic form identified as vitamin D5. Of these three, vitamin D3 is considered the natural form of vitamin D and is more active and potent than the D2 version. A chemical conversion in the liver and kidneys is required to activate vitamin D into a useable form in the human body.

Vitamin D2 is found in food sources such as salmon, mackerel, halibut, tuna fish, sardines, fish liver oils, egg yolks, alfalfa, nettle, parsley, and foods such as milk, yogurt, and cheese, which have been fortified with the vitamin. Sun exposure is an important natural source of vitamin D. When the skin is exposed to the sun's UV rays, a cholesterol compound in the skin is transformed into a precursor of vitamin D. There are many other factors that need to be considered when determining safe and adequate sun exposure. For example, in Canada, sunlight exposure from November through February is insufficient to produce significant vitamin D synthesis in the skin. Other factors such as cloud cover, shade, smog, early morning or late afternoon exposure will reduce the energy from UV rays and decrease the amount of vitamin D synthesis. Individuals with

darker skin will require longer exposure times than those with fair skin. There is no absolute agreement amongst the experts as to how much sun exposure is safe. A general rule of thumb is 5 to 15 minutes of sun exposure, 2-3 times per week to the face, arms, hands, or back without sunscreen is usually sufficient to provide adequate vitamin D levels in adults. It is still advised that individuals protect themselves from the negative consequences of excessive sun exposure.

In Canada, where sunlight can be especially scarce during the winter months, government health officials recommend that all adults take a vitamin D supplement of 400 IU per day. Because vitamin D is fat soluble, excess amounts are stored in the body. Therefore, there have always been concerns about vitamin D toxicity (too much vitamin D) when recommending daily doses. Contemporary opinion among specialists suggests that daily vitamin D intake of 1,000 IU is optimal for most adults, and that 2,000-10,000 IU is safe and may offer the additional anti-cancer and anti-inflammatory benefits cited in new research. It should be noted that most of these recommendations have not been applied to school-aged children.



Sensible and safe exposure to sunlight is the easiest way of obtaining adequate amounts of vitamin D. There is no risk of toxicity because the body has a built in mechanism to avoid toxicity. With longer exposure to UV rays, a balance is achieved in the skin, and the vitamin simply degrades as fast as it is generated. Dietary vitamin D is also unlikely to cause toxicity, unless large amounts of cod liver oil are consumed. Vitamin toxicity is much more likely to occur from high intakes of vitamin D in supplements. Symptoms of toxicity include nausea, vomiting, poor appetite, constipation, confusion, weakness, weight loss, high blood calcium and heart rhythm abnormalities.

Vitamin D is an essential nutrient that our bodies need for good health. Recent scientific breakthroughs in understanding the role of Vitamin D in the body have offered an expanded list of potential health benefits. So in the meantime, continue to enjoy the summer season and Mother Nature's free vitamin D!

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