The Vitamin D Debate

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Recent media reports suggest that sun exposure is the best source of vitamin D. One study even reports that one minimal erythema dose of sunlight is equivalent to ingesting approximately 20,000 IU of vitamin D2.

The skin produces approximately 10,000 IU of vitamin D in response to 20-30 minutes of sun exposure in the summer – that’s more than 50 times the U.S. government’s daily recommendation, according to the Vitamin D Council, a nonprofit group whose mission is to promote the health benefits of vitamin D (N. Engl. J. Med. 2007;357:266-81).

The American Academy of Dermatology, however, does not recommend getting vitamin D from sun exposure, indoor tanning, or any source that emits ultraviolet radiation. We know that the maximum production of vitamin D occurs after brief exposure to UV radiation; however, the exact amount of time depends on location, time of day, time of year, and skin type.

For a fair-skinned person in the Northeast, that time is 2-5 minutes at noon during the month of June. However, each variable can alter the amount of vitamin D produced. Any additional vitamin D produced by the body is not stored for future use.

Alternatively, the AAD promotes getting vitamin D from the diet, rather than from sun exposure. The Academy also suggests that dietary sources of vitamin D neither prematurely age the skin nor increase risk of developing skin cancer or actinic keratoses. Sources rich in vitamin D include fortified milk, fortified cereal, salmon, mackerel, and cod liver oil. In addition, vitamin D supplements are well tolerated, safe, and effective. In addition, vitamin D is absorbed with calcium, which must be obtained from dietary sources — not the sun. Thus, a healthy diet rich in both calcium and vitamin D is the best way to ensure appropriate levels of both agents without any of the dangers of UV exposure.

The darker the skin and the farther from the equator an individual is, the greater one’s chances of developing...
a vitamin D deficiency if the diet is inadequate. African Americans, in particular, have lower vitamin D levels overall, compared with age-matched whites. Dr. Michael Holick from Boston University, who is the nation’s leading vitamin D researcher, said he believes that this exaggerated vitamin D deficiency is the reason there is a gap in the health of white vs. black Americans (J. Invest. Dermatol. 2010;130:546-53).

He believes that lower vitamin D levels are why African Americans develop more prostate, breast, and colon cancers. He believes this might also be the reason why the ethnic group may get more aggressive forms of those cancers (N. Engl. J. Med. 2007;357:266-81).

However, there is no good proof in any well-controlled studies to suggest this. None of the studies reflect reduced access to health care, barriers to healthful living, and differences in income and education. In contrast, some recent studies also indicate that the regulation of vitamin D production is independent of skin color (J. Invest. Dermatol. 2010;130:546-53).


Multivitamin supplements generally provide 400 IU (10 mcg) of vitamin D. Single ingredient vitamin D supplements may provide between 400 IUs and 2,000 IUs of vitamin D. Calcium supplements can also provide vitamin D.

The National Academy of Sciences Institute of Medicine (IOM) guidelines for vitamin D are a standard reference for advising patients on proper minimal intake levels.

The Department of Agriculture’s Dietary Guidelines recommend those at risk for vitamin D insufficiency to receive supplementation with a total daily dose of 1,000 IUs vitamin D.

In addition, the AAD recommends supplementation with 200 IUs vitamin D from birth to age 50 years for those who are not at increased risk for vitamin D insufficiency. However, the American Academy of Pediatrics recommends supplementation with 400 IU vitamin D/day for children younger than 18 years of age, including infants.

Because vitamin D can be toxic in high doses, the USDA’s Food and Nutrition Board has set an upper limit for safety for vitamin D intake of 2,000 IUs/day for individuals older than 12 months of age and 1,000 IUs/day for infants.

There is no real answer to the vitamin D debate at this time. Whether the differences in vitamin D levels are because of skin color or diet are still controversial.

We know that ultraviolet radiation can have harmful effects on the skin and that adequate intake can be achieved by diet or oral supplements. So why is there a debate on how much sun one needs to achieve a so-called “normal” vitamin D level? The answer is none. Everyone, regardless of skin color, should take a daily vitamin D supplement (J. Nutr. 2006;136:1126-9; Am. J. Clin. Nutr. 2004;80:1763S-6S).

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