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Vitamin D Myths Revealed

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Rebuttal by: (December 19, 2004)

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Unsubstantiated reports in the media extolling the health benefits of vitamin D from unprotected sun exposure can confuse the public. Darrell Rigel, MD, debunked the vitamin D myths in the June 2004 issue of *Dermatology Times*.

Dr. Rigel, a clinical professor at New York University Medical Center, New York, explained, "We know the cause of most skin cancers and the way to lower the risk of developing them. It's important we try to lower UV exposure, and that should lead to fewer people developing skin cancer." His message was to practice proper sun protection to prevent skin cancer.

While UV rays do trigger vitamin D synthesis in the skin, not much exposure is required to provide enough of this nutrient. Dr. Rigel described the five common myths promoted in recent reports:

* Myth #1. Regular sunscreen use blocks UV exposure, which leads to decreased vitamin D levels. In a 1997 study in the *Journal of the National Cancer Institute*, patients with xeroderma pigmentosa were followed for several years, and had normal vitamin D levels despite almost no UV exposure.

Rebuttal:

Sunscreen use has been found associated with reduced vitamin D production in solar UV radiation. Sunscreen blocks solar ultraviolet B (UVB) (290-315 nm) extremely well.

Matsuoka LY, Ide L, Wortsman J, MacLaughlin JA, Holick MF. Sunscreens suppress cutaneous vitamin D₃ synthesis. *J Clin Endocrinol Metab.* 1987;64:1165-8.

* Myth #2. A significant amount of UV exposure is needed to maintain normal levels of vitamin D. Dr. Rigel said it is easy to maintain, because sun exposure is inevitable in our daily activities and a normal diet.

Rebuttal:

Vitamin D has been shown in numerous studies since 1980 to be very important in reducing the risk of cancer. The list now includes over a dozen types including breast, colon, ovarian, prostate, and stomach. Studies also indicate that over 600 I.U. of vitamin

D per day affords reasonable protection, and it is likely that 1000 I.U./day would afford optimal protection. However, the average American consumes only about 260 I.U./day from diet and another 50-60 I.U./day from supplements, which is well short of optimal. Solar UVB is also a very important source of vitamin D through photoproduction in skin, but most Americans are not getting adequate UVB exposure. Those who live in urban settings spend most of their time indoors, and those living in the northeast cannot produce vitamin D for 4-5 months a year. One of the sad effects of dermatologists urging people to reduce their UV exposure is that they do not point out the importance of solar UVB in producing vitamin D and tell people that if they don't get vitamin D from the sun, they have to get it from diet or supplements. I checked the web sites for 14 major organizations urging reduced UV exposure and found very few recommendations regarding vitamin D.

Grant WB, Garland CF. A critical review of studies on vitamin D in relation to colorectal cancer. *Nutrition and Cancer*, 2004;48:115-23.

Grant WB. Insufficient sunlight may kill 45,000 Americans each year from internal cancer. *J Cos Dermatol*. 2004;3:176-8.

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Holick MF. Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease. *Am J Clin Nutr* 2004;80:1678S-1688S.

* Myth #3. Sunscreens block all UV rays, thus blocking vitamin D production. Because there is no such thing as a total UV block, adequate UV rays reach the skin allowing for enough vitamin D formation.

Rebuttal:

Sunscreen use has been found associated with reduced vitamin D production in solar UV radiation. Sunscreen blocks solar UVB extremely well. Australia, a country with very high UVB levels and plenty of sunscreen use, also has a high rate of people with vitamin D deficiency.

Matsuoka LY, Ide L, Wortsman J, MacLaughlin JA, Holick MF. Sunscreens suppress cutaneous vitamin D₃ synthesis. *J Clin Endocrinol Metab*. 1987;64:1165-8.

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Brock K, Wilkinson M, Cook R, Lee S, Birmingham M. Associations with Vitamin D deficiency in "at risk" Australians. *J Steroid Biochem Mol Biol*. 2004 May;89-90(1-5):581-8.

* Myth #4. Skin cancer isn't really dangerous, so sun protection is not important. In fact, one American dies every hour from melanoma.

Rebuttal:

Melanoma is important. However, the 8000 deaths per year from melanoma in the U.S. should be balanced by the 45,000 or more deaths from internal cancers that could likely be prevented with adequate UVB and vitamin D as well as the increased risk of multiple sclerosis, osteoporotic fractures, muscle pain, poorer prognosis for osteo- and rheumatoid arthritis, etc.

Grant WB. An estimate of premature cancer mortality in the United States due to inadequate doses of solar ultraviolet-B radiation. *Cancer*. 2002;94:1867-75.

Grant WB. Insufficient sunlight may kill 45,000 Americans each year from internal cancer. *J Cos Dermatol*. 2004;3:176-8.

Holick MF. Vitamin D: A millenium perspective. *J Cell Biochem* 2003;88:296-307.

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Plotnikoff GA, Quigley JM. Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. *Mayo Clin Proc*. 2003;78:1463-1470.

Holick MF. Vitamin D: importance in the prevention of cancers, type 1 diabetes, heart disease, and osteoporosis. *Am J Clin Nutr*. 2004;79:362-371. Erratum in: *Am J Clin Nutr*. 2004;79:890.

Hollis BW, Wagner CL. Assessment of dietary vitamin D requirements during pregnancy and lactation. *Am J Clin Nutr*. 2004;79:717-726.

Grant WB, Strange RC, Garland CF. Sunshine is good medicine: The health benefits of ultraviolet-B induced vitamin D production, *J Cos Dermatol*. 2003;2:86-98.

Vasquez A, Manso G, Cannell J. The clinical importance of vitamin D (cholecalciferol): a paradigm shift with implications for all healthcare providers. *Altern Ther Health Med*. 2004;10:28-36; quiz 37, 94.

* Myth # 5. Decreased vitamin D levels lead to increases in other cancers and diseases. This claim is based on a study showing overall cancer rates as higher in the northeast United States. Higher cancer rates were attributed to the region having lower sunlight levels. However, several other studies contradict this, showing that cancer rates are low in the northern Plains states, which have the lowest UV levels in the country.

Rebuttal:

Geographic variations of cancer mortality rates linked to solar UVB radiation have been reported in Canada, Finland, Norway, the U.S., and the USSR.

The reader is referred to the Atlas of Cancer Mortality Rates for the United States, 1950-94, PubMed (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>) and SUNARC

(www.sunarc.org) for the data and interpretations. We are unaware of the studies showing lower cancer rates in the northern Plains states.

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Concluding comments.

If UVB and vitamin D were not thought to be so important in reducing the risk of cancer, then over 200 people would not have turned up at the Cancer Chemoprevention & Cancer Treatment: Is there a role for vitamin D, 1 α ,25(OH)₂-vitamin D₃ or new analogs (deltanoids)? Natcher Auditorium, Bethesda, Maryland, Wednesday, November 17 – Friday, November 19, 2004, Co-sponsored by The National Cancer Institute, NIH and the Vitamin D Workshop, (<http://vitamind.ucr.edu/ScientificProgram.htm>).

Dermatologists should be put on notice that they are contributing to the increased risk of internal cancers through advocating reduced UV exposure without at the same time pointing out that UVB is the primary source of vitamin D for many Americans and that high levels of vitamin D are required for optimal health. They should also be concerned that by advocating use of sunscreen, which preferentially blocks UVB but not UVA (315-400 nm), they are also putting people at higher risk for melanoma and are likely responsible for the global increase in melanoma incidence and mortality rates.

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