

Clear associations between low Vitamin D levels and cancers, heart disease, autoimmunity, infectious diseases and other conditions suggest that many of us have too little of it to protect our health. Fifteen minutes of sunlight per day may be enough to fix the problem.

Prior to modern antibiotics and nutritional medicine we recognised that sunlight was effective therapy for tuberculosis and rickets. In 1922 the active ingredient was identified as Vitamin D. For the next 50 years we studied its role in bone formation. The last two decades demonstrate that widespread Vitamin D deficiency contributes to serious illnesses:

1. Poor bone formation (rickets)
2. Cancer (breast, colon, ovary, bladder & rectum)
3. Infection (influenza, TB & other infections)
4. Inflammation (type 1 diabetes, multiple sclerosis and inflammatory bowel)
5. Coronary Heart Disease death rates

Basic Science

Vitamin D3 (1,25-dihydroxyvitamin D or 1,25D) is the active ingredient. Our primary source is sunlight but small amounts can be obtained through cod-liver oil, tuna, sardines, mackerel, salmon, egg yolk and fortified dairy. Ultraviolet B light converts 7-dehydrocholesterol into Vitamin D3 in the skin. The process continues in the liver and is completed in cells of the kidney, immune system and skin. By attaching to the Vitamin D receptor (VDR), 1,25D turns genes on or off in every tissue of the human body.

Technically since 1,25D activity is active in almost all parts of the body it is a hormone. At least 1000 genes are regulated by 1,25D. They regulate cellular defence, inflammation, bone formation and cancer cell suppression (reducing tumour growth by 80% in one study).

Widespread deficiency

Extensive epidemiologic (patterns in populations) evidence shows the correlation between low Vitamin D levels and disease. There is consensus that we have widespread Vitamin D deficiency in temperate climates and amongst dark skinned people.

In northern Europe a recent study showed that 92% of adolescent girls and 37% of adult women are deficient at levels to cause rickets and increase colon cancer risk.

African-Americans have levels of Vitamin D3 half those of whites and 42% of African American women were seriously deficient.

Misplaced enthusiasm for sun protection is an additional factor. Sunscreen reduces skin production of Vitamin D by 98%. In addition, modern city life with pollution, tall buildings and indoor activity contribute to reduced sun exposure. This is clearly evident in winter months when vitamin D levels are well below what is required for optimal health.

New Zealand and the main Australian cities are in the regions with insufficient UV B radiation for at least a month per year. Many of us experience Seasonal Affective Disorder (SAD) as a consequence of reduced sunlight exposure during winter months and will have no doubt about the debilitating, depression-like state caused by long, grey winter months.

Understanding the Risks

Consider the following examples of how the evidence demonstrates a link between diseases and low levels of Vitamin D or reduced sun exposure (Scientific American, November 2007):

1. 30% to 50% higher risk for breast, prostate and colon cancers at blood levels below 20ng/ml.
2. Five times higher risk of ovarian cancer between northern Europe and equatorial

regions.

1. 77% lower risk for all cancers amongst Nebraska women over 55 who took 1,100IU of D3 for three years compared to a placebo group.
2. 62% lower risk for multiple sclerosis at Vitamin D3 levels of 40ng/ml compared to 25ng/ml or less.
3. 80% lower lifetime risk of Type 1 diabetes in Finnish children given 2,000IU of D3 daily during first year of life.

Optimal levels in the blood are thought to be 30 to 60ng/ml. At levels of 20 to 29ng/ml bone density is impaired and at less than 20ng/ml rickets, cancer, inflammation and infection risks increase. In addition it is thought that the long term effects of even slight deficiency may be significant and manifest later in life as bone fractures, vulnerability to infection, autoimmune disease and cancer.

For many of us the good feeling in anticipation, during and after sun exposure is enough to encourage us to get outside. Please think through what this research means for children locked to screens and smothered in sunscreen!

Practical Solutions

The research shows that we need:

1. Greater public awareness of Vitamin D benefits
2. Medical consensus on sensible sun exposure
3. Clear recommendations for daily dietary intake

Sunshine is cheap, pleasant and very effective. For fair/medium skinned people, 15 to 20 minutes of full-body exposure at midday in summer provides 10,000 IU of Vitamin D3.

It is important to recognise the risks of excessive skin burning so it makes sense to enjoy morning and afternoon sun without sunscreen.

My provisional recommendation:

- Take 20 to 60 minutes of sunlight exposure before 11am and after 2pm. The more skin you can expose the better. No sunscreen!

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Darker skinned people will need more sun and can probably tolerate more midday sun. Sunshine-induced toxicity is unknown.

In temperate regions – particularly during winter this is impossible. While cod-liver oil, fish and egg provide some Vitamin D, current expert opinion now suggests between 1,000 and 4,000 IU per day supplementation. Toxicity is rare but possible at 40,000 IU or more per day over extended periods.

P.S. Don't wait for the doctors to agree. Check the research, book a holiday and go get some Vitamin D.

References

Vitamin D Deficiency, New England Journal of Medicine, (2007) Vol. 357, No 3; July 19.

Scientific American, Vol. 297, No 5; November 2007.

American Journal of Clinical Nutrition, Vol. 85, No.3; March 2007.

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