

CORRESPONDENCE

The Role of Vitamin D in Cancer Prevention: Does UV Protection Conflict With the Need to Raise Low Levels of Vitamin D?

by Prof. Dr. med. Hajo Zeeb, Dr. rer. nat. Rüdiger Greinert in volume 37/2010

Benefits Outweigh Risks

The recent review of vitamin D for cancer prevention (1) was based on the IARC review [Ref. 6 in (1)]. My critical review of the IARC review pointed out that the evidence for beneficial effects of solar UVB and vitamin D was much stronger than concluded in the review (2).

Ecological studies (epidemiological studies researching disease outcome and risk-modifying factors averaged by geographical region) are better for studying the effects of UVB and vitamin D in reducing the risk of cancer than observational studies and randomized controlled trials (RCTs) for several reasons:

- solar UVB is the primary source of vitamin D for most people
- there is a long lag time between cancer initiation and detection or death
- RCTs and observational studies often use too little vitamin D
- too short a time period, and too few people.

An ecological study for Spain illustrates this. The two factors used for vitamin D were nonmelanoma skin cancer (NMSC) mortality rate and latitude, for 48 provinces. NMSC was inversely correlated and/or latitude directly correlated with mortality rates for 15 types of cancer after adjustment for lung cancer mortality rates, included to account for the effect of smoking (3). Death rates were much higher for internal cancers than for NMSC.

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Conflict of interest statement

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Association Studies Often Lack Plausibility – Back to the Future of Mechanisms

Publications of various association studies with statistics for (relative) risk without a plausible mechanistic explanation or hypothesis for such associations/observations are a widespread problem these days. Regarding vitamin D this holds true not only for various cancers, as discussed by Zeeb and Greinert, but also for hypertension, metabolic syndrome, and others (1, 2). Rickets and osteomalacia were rampant before vitamin D fortification of foods in the 1930s in the United States, whereas obesity, colon, and breast cancer were less prevalent or underdiagnosed. Nowadays, obesity and vitamin D deficiency are epidemic in the U.S. and in developing countries. One has to consider that vitamin D is stored in fatty tissue with subsequently rather low measured serum vitamin D levels (3). Bone density of obese individuals is usually normal though. Data regarding vitamin D and its relationship to various cancers are scarce in developing countries. However, it is known that approximately 50% of all women with breast cancer in Arab countries are younger than age 50 years (3). In this regard, instead of vitamin D, other factors may play a causative role, for instance, endocrine disrupting chemicals (pollution) which occur in industrialized and in developing nations. Optimal vitamin D substitution is recommended while avoiding vitamin D toxicity which depends primarily on concomitant calcium intake and parathyroid hormone levels and is rare using ergo/cholecalciferol up to 10 000 IU (250 mcg) daily. The fight against the worldwide obesity and vitamin D problem starts in the head with the willingness to live a healthy lifestyle with both balanced food and physical activity, high goals in „sick“ (out of balance) societies who have lost common sense and often overemphasize the intake of pills (4).

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In Reply:

Dr Grant cites several reasons why so called ecological studies are better for studying the association between UV radiation, vitamin D, and the prevalence of cancer than other types of epidemiological studies. We do not share his view since ecological studies are very prone to biases. Even by controlling for other variables that may be available only at group level, such studies do not become much more meaningful. We mentioned the excellent method of boosting levels of vitamin D by means of brief UV exposure.

Professor Koch and Dr Ullah mention as yet unexplained associations between vitamin D deficiency and other chronic diseases and call for vitamin D substitution without specifying which groups of persons should be treated in this way. Our article was written from an epidemiological perspective and focused on the questions to what extent vitamin D has a proven carcinopreventive effect and whether the current state of knowledge justifies a change in the recommendations for UV protection and prevention of skin cancer. Our position is clear: on the basis of the latest knowledge, vitamin D seems to have preventive

potential but for a few types of cancer, but further studies are needed. Moderate sunlight exposure—while adhering to basic UV protection measures—is usually adequate in order to reach appropriate concentrations of vitamin D. In cases of seasonally deficient UV exposure, individual optimum concentrations of vitamin D can be ensured by ingesting appropriate foods (or food supplements).

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