Vitamine D en kanker

Ann Epidemiol. 2009 Jul;19(7):446-54. doi: 10.1016/j.annepidem.2008.12.014. Epub 2009 Mar 9.

Ecological studies of ultraviolet B, vitamin D and cancer since 2000.

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Source

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Abstract

PURPOSE:

The purpose of this review is to summarize ecological studies of solar ultraviolet B (UVB), vitamin D and cancer since 2000.

METHODS:

The journal literature is surveyed and summarized.

RESULTS:

The ecological approach has been the primary tool used during the past two decades to extend the applicability of the UVB-vitamin D-cancer theory to include at least 18 types of cancer. Many of these studies were conducted in the United States, which has the advantages of availability of reliable age-standardized cancer incidence and mortality rate data for geographic areas at various spatial resolutions, and an asymmetric solar UVB dose pattern, with higher UVB irradiance in the west and lower in the east, at any particular latitude. In addition, indices for other cancer risk-modifying factors are readily available including those for smoking, alcohol consumption, ethnic background, urban/rural residence, socioeconomic status, air pollution, and in limited fashion, diet. The ecological approach has also been used to identify latitudinal variations in cancer mortality rates in Australia, China, Japan, and Spain, and in multicountry studies. It has been used to investigate the relative roles of solar UVB and dietary factors on a global scale. The ecological approach has also been applied to cancer survival. Studies in Norway and England found that individuals diagnosed with cancer in summer or fall, when serum 25-hydroxyvitamin D levels are highest, had a milder clinical course and longer survival than those diagnosed in winter or spring.

CONCLUSION:

These findings provide **strong evidence that vitamin D status plays an important role in controlling the outcome of cancer. Support for the UVB-vitamin D-cancer theory is now scientifically strong enough to warrant use of vitamin D in cancer prevention**, and as a component of treatment. More research studies would help. to explore whether there are benefits beyond the substantial effects that have been observed.

Reprod Sci. 2009 Jan;16(1):7-19.

Review article: vitamin D acquisition and breast cancer risk.

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OBJECTIVE: The aim of the study was to focus on the association of vitamin D and breast cancer. METHODS: The study of evidence concerning vitamin D's influence on the origin and development of breast cancer from a PubMed and individual searches. RESULTS: Body sunlight exposure may reduce the prevalence of breast cancer. However, these studies correspond to global populations of different countries and regions without considering other geographic factors and individual, ethnic, and cultural factors that may affect sunlight exposure. **Epidemiological analyses show that low vitamin D ingestion is associated with increased risk of breast cancer.** Studies measuring serum vitamin D metabolites in women who were followed many years suggest that low circulating 25-hydroxyvitamin D3 levels are associated with increased breast cancer risk. CONCLUSIONS: Although there are controversial results, it seems plausible that **sufficient endogenous vitamin D levels may have a protective function on mammary cells, reducing breast cancer risk.**

Weinig Vitamine D : dan heb je meer kans op borstkanker

Ugeskr Laeger. 2007 Apr 2;169(14):1299-302.

[Vitamin D and breast cancer]

[Article in Danish]

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Active vitamin D increases the differentiation and exerts antiproliferative effects in cancer cells. Recent data suggest that vitamin D is **activated locally in cancer cells**. Ecologic studies have shown an ***inverse correlation*** between breast cancer mortality and sun exposure and **dietary vitamin D intake**. In clinical studies an *impaired* vitamin D status is associated with a **20-30% increased breast cancer** incidence and 10-20% increased mortality. **As vitamin D insufficiency is common**, it is important to clarify whether vitamin D status affects the risk and prognosis of breast cancer.

20-30 % meer borstkanker als je niet genoeg vit D hebt

Clin J Am Soc Nephrol. 2008 Sep;3(5):1548-54. Epub 2008 Jun 11.

Vitamin D and sunlight: strategies for cancer prevention and other health benefits.

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Vitamin D deficiency is a worldwide health problem. The major source of vitamin D for most humans is sensible sun exposure. Factors that influence cutaneous vitamin D production include sunscreen use, skin pigmentation, **time of day, season of the year,** **latitude**, and aging. Serum 25-hydroxyvitamin D [25(OH)D] is the measure for vitamin D status. A total of 100 IU of vitamin D raises blood level of 25(OH)D by 1 ng/ml. Thus, **children and adults who do not receive adequate vitamin D from sun exposure need at least 1000 IU/d vitamin D**. (25 mcg) Lack of sun exposure **and vitamin D deficiency have been linked to** many serious chronic diseases, including autoimmune diseases, infectious diseases, cardiovascular disease, and **deadly cancers**. It is estimated that there is **a 30 to 50% reduction** in risk for developing colorectal, **breast,** and prostate cancer by either increasing **vitamin D intake to at least 1000 IU/d vitamin D *(25 mcg*)** or increasing sun exposure to raise blood levels of 25(OH)D >30 ng/ml. Most tissues in the body have a vitamin D receptor. The active form of vitamin D, 1,25-dihydroxyvitamin D, is made in many different tissues, including colon, prostate, and breast. It is believed that the local production of 1,25(OH)(2)D may be responsible for the anticancer benefit of vitamin D. Recent studies suggested that women who are vitamin D deficient have a 253% increased risk for developing *colorectal cancer*, and women who ingested 1500 mg/d calcium and 1100 IU/d vitamin D(3) for 4 yr reduced risk for developing cancer by >60%.

30-50 % Meer kanker van allerlei types als je niet tenminste 25 mcg Vit D neemt

Best Pract Res Clin Endocrinol Metab. 2008 Aug;22(4):587-99.

Vitamin D and breast cancer risk.

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In addition to its important role in the maintenance of the skeleton, there is **mounting evidence** that vitamin D has effects on other body systems, and that **adequate supplies of vitamin D** are likely to be required for optimal health. Vitamin D is obtained both from dietary sources and from cutaneous synthesis with exposure to sunlight. Some epidemiological studies have indicated that vitamin D deficiency and decreased exposure to solar UVB radiation increase the risk of some cancers, including **breast cancer**. The active metabolite of vitamin D, 1,25-dihydroxy-vitamin D(3), is synthesized primarily in the kidney, and has been shown in laboratory studies to have **potent anti-proliferative** effects on breast cancer cells. Normal **and neoplastic breast tissues contain the vitamin D receptor**, and gene ablation studies have implicated the receptor in normal breast development. Several polymorphisms have been identified in the vitamin D receptor gene, and these have been associated with risk of breast cancer in some studies. Local synthesis of 1,25-dihydroxyvitamin D(3) in breast tissue may contribute to maintenance of normal cell function, which could be impaired in vitamin D deficiency.

Opstapelend bewijs dat je met extra vitamin D kwaadaardig weefsel kunt voorkomen , maar ook dat je van al ontstaan borstkankerweefsel de groei kunt beinvloeden (Lees remmen), omdat het nog steeds vitamine D receptor bevat. Vast niet voldoende, maar valt wel onder de categorie alle beetjes helpen.

Prog Biophys Mol Biol. 2006 Sep;92(1):49-59. Epub 2006 Mar 10.

Vitamin D: its role in cancer prevention and treatment.

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Vitamin D, the sunshine vitamin, has been recognized for almost 100 years as being essential for bone health. Vitamin D provides an adequate amount of calcium and phosphorus for the normal development and mineralization of a healthy skeleton. **Vitamin D made in the skin** or ingested in the diet, however, is biologically inactive and **requires obligate** hydroxylations first in the liver to 25-hydroxyvitamin D, **and then in the kidney to 1,25-dihydroxyvitamin D.** 25-Hydroxyvitamin D is the major circulating form of vitamin D that is the best indicator of vitamin D status. 1,25-dihydroxyvitamin D is the biologically active form of vitamin D. This lipid-soluble hormone interacts with its specific nuclear receptor in the intestine and bone to regulate calcium metabolism. It is now recognized that the vitamin D receptor is also present in most tissues and cells in the body. 1,25-dihydroxyvitamin D, by interacting with its receptor in non-calcemic tissues, is able to elicit a wide variety of biologic responses. 1,25-dihydroxyvitamin D regulates cellular growth and influences the modulation of the immune system. There is compelling epidemiologic observations that suggest that living at higher latitudes is associated with increased risk of many common deadly cancers. Both prospective and retrospective studies help support the concept that it is vitamin D deficiency that is the driving force for increased risk of common cancers in people living at higher latitudes. Most tissues and cells not only have a vitamin D receptor, but also have the ability to make 1,25-dihydroxyvitamin D. It has been suggested that increasing vitamin D intake or sun exposure increases circulating concentrations of 25-hydroxyvitamin D, which in turn, is metabolized to 1,25-dihydroxyvitamin D(3) in prostate, colon, breast, etc. The local cellular production of 1,25-dihydroxyvitamin D acts in an autocrine fashion to regulate cell growth and decrease the risk of the cells becoming malignant. Therefore, measurement of 25-hydroxyvitamin D is important not only to monitor vitamin D status for bone health, but also for cancer prevention.

De omzetting van vitamine D in zijn actieve vorm 1,25 is wezenlijk. Zie hiervoor het stukje in het Duitse *boek "Ortholemekular Medizin" van Uwe Gröber (Pag 269: de omzetting tot actieve Vit D vindt plaats indien er genoeg Magnesium aanwezig is .....*

Endocrinol Metab Clin North Am. 2010 Jun;39(2):287-301, table of contents.

Low vitamin D status: definition, prevalence, consequences, and correction.

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Abstract

Vitamin D is obtained from cutaneous production when 7-dehydrocholesterol is converted to vitamin D(3) (cholecalciferol) by ultraviolet B radiation or by oral intake of vitamin D(2) (ergocalciferol) and D(3). An individual's vitamin D status is best evaluated by measuring the circulating 25-hydroxyvitamin D (25(OH)D) concentration. Although controversy surrounds the definition of low vitamin D status, there is increasing agreement that the optimal circulating 25(OH)D level should be approximately 30 to 32 ng/mL or above. Using this definition, it has been estimated that approximately three-quarters of all adults in the United States have low levels. Low vitamin D status classically has skeletal consequences such as osteomalacia/rickets. More recently, associations between low vitamin D status and increased risk for various nonskeletal morbidities have been recognized; whether all of these associations are causally related to low vitamin D status remains to be determined. To achieve optimal vitamin D status, daily intakes of **at least 1000 IU** or more of vitamin D are required. The risk of toxicity with "high" amounts of vitamin D intake is low. Substantial between-individual variability exists in response to the same administered vitamin D dose. When to monitor 25(OH)D levels has received little attention. Supplementation with vitamin D(3) may be preferable to vitamin D(2).

Nederlandse (staats) Gezondheidsraad (2008 Rapport Advies Vit D) (Pag. 57-60)

"Er zijn aanwijzingen dat een bloedspiegel van 82-120 nmol een verlaagd risico voor bepaalde kankers met zich meebrengt, echter nog geen hard bewijs"

Inmiddels is - jaren later - duidelijk dat er wel bewijs is .

*Ook interessant in verband met **darmkanker** : : Vit B6*

JAMA. 2010 Mar 17;303(11):1077-83.

Vitamin B6 and risk of colorectal cancer: a meta-analysis of prospective studies.

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Abstract

CONTEXT: Mounting evidence indicates that vitamin B(6), a coenzyme involved in nearly 100 enzymatic reactions, may reduce the risk of colorectal cancer.

OBJECTIVE: To conduct a systematic review with meta-analysis of prospective studies assessing the association of vitamin B(6) intake or blood levels of pyridoxal 5'-phosphate (PLP; the active form of vitamin B(6)) with risk of colorectal cancer.

DATA SOURCES: Relevant studies were identified by a search of MEDLINE and EMBASE databases to February 2010, with no restrictions. We also reviewed reference lists from retrieved articles.

STUDY SELECTION: We included prospective studies that reported relative risk (RR) estimates with 95% confidence intervals (CIs) for the association between vitamin B(6) intake or blood PLP levels and the risk of colorectal, colon, or rectal cancer.

DATA EXTRACTION: Two authors independently extracted data and assessed study quality. Study-specific RRs were pooled using a random-effects model.

DATA SYNTHESIS: Nine studies on vitamin B(6) intake and 4 studies on blood PLP levels were included in the meta-analysis. The pooled RRs of colorectal cancer for the highest vs lowest category of vitamin B(6) intake and blood PLP levels were 0.90 (95% CI, 0.75-1.07) and 0.52 (95% CI, 0.38-0.71), respectively. There was heterogeneity among studies of vitamin B(6) intake (P = .01) but not among studies of blood PLP levels (P = .95). Omitting 1 study that contributed substantially to the heterogeneity among studies of vitamin B(6) intake yielded a pooled RR of 0.80 (95% CI, 0.69-0.92). The risk of colorectal cancer decreased by 49% for every 100-pmol/mL increase (approximately 2 SDs) in blood PLP levels (RR, 0.51; 95% CI, 0.38-0.69).

CONCLUSION: Vitamin B(6) intake and blood PLP levels were inversely associated with the risk of colorectal cancer in this meta-analysis. J Steroid Biochem Mol Biol. 2010 Jul;121(1-2):349-54. Epub 2010 Apr 14.

Epidemiology of vitamin D and colorectal cancer: casual or causal link?

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Abstract

INTRODUCTION: Since Garland and Garland hypothesized that better vitamin D status lowered risk of colorectal cancer in 1980, the relation between vitamin D status and colorectal cancer risk has been investigated in epidemiologic studies. These studies are reviewed.

MATERIALS AND METHODS: Various approaches have been used to estimate vitamin D status, including direct measures of circulating 25(OH)vitamin D levels, surrogates or determinants of vitamin D (including region of residence, intake, and sun exposure estimates, or a combination of these). These measures of vitamin D status have been studied in relation to colorectal adenoma, cancer incidence and mortality.

RESULTS: In general, all lines of inquiry from observational studies indicate that an association between better vitamin D status and lower colorectal cancer risk exists. While most of the studies have examined vitamin D status in relation to risk of cancer, some evidence suggests that vitamin D may be additionally important for colorectal cancer progression and mortality.

DISCUSSION: Although confounding factors cannot be entirely excluded, the consistency of the association using various approaches to measure vitamin D, for diverse endpoints and in diverse populations shows **high consistency and is suggestive of a causal association**. Thus, improving vitamin D status could be potentially beneficial against colorectal cancer incidence and mortality.

Vertaling HET IS NU WEL DUIDELIJK DAT

een vitamine D tekort overduidelijk samenhangt met meer kans op kanker

Clin Ther. 2010 May;32(5):789-803.

Supplemental calcium in the chemoprevention of colorectal cancer: a systematic review and meta-analysis.

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Abstract

OBJECTIVE: The aim of the review was to assess the evidence for the effectiveness of calcium in reducing the recurrence of adenomas and the occurrence of colorectal cancer among populations at high, intermediate, and low risk of the disease.

METHODS: A systematic review of randomized controlled trials (RCTs) was performed to compare calcium alone, and with other agents, versus placebo. Nine databases (Cochrane Library, MEDLINE, PreMEDLINE, CINAHL, EMBASE, Web of Science, Biological Abstracts, the National Research Register, and Current Controlled Trials) were searched for published and unpublished trials. Searches were not restricted by either language or date of publication. All searches were completed in January 2010. Database thesaurus and free text terms for calcium and adenomas or colorectal cancer were used to search for trial reports; additional terms were used to search for other agents of interest, such as NSAIDs and folic acid. Search terms consisted of a combination of terms for colorectal cancer (eg, colon or colorectal and neoplasm or cancer or adenoma) and terms for calcium and RCTs. The initial searches were conducted in June 2008, with update searches in January 2010 to identify more recent studies. The reference lists of relevant studies were also searched for additional papers not identified by the search of electronic databases. Studies had to satisfy the following criteria to be included: RCTs about calcium, with or without other chemopreventive agents, in adults with familial adenomatous polyposis (FAP), hereditary nonpolyposis colorectal cancer, or a history of colorectal adenomas, or with no increased baseline risk of colorectal cancer. Meta-analysis was performed. For discrete and numerical outcomes, relative risks (RRs) and risk differences were reported with 95% CIs. The random-effects model was used to account for clinical and methodologic variations between trials.

RESULTS: The original and update searches of electronic databases produced 3835 citations, of which 6 studies (8 papers) met the inclusion criteria. Supplemental calcium had no effect on the number of adenomas in 1 small trial of patients with FAP. Meta-analysis of 3 trials in individuals with a history of adenomas showed a statistically significant reduction in the RR for adenoma recurrence (RR = 0.80 [95% CI, 0.69-0.94], P = 0.006) for those receiving calcium 1200 to 2000 mg/d, but no effect was seen in advanced adenoma (RR = 0.77 [95% CI, 0.501.17], P = NS). Meta-analysis of 2 trials in populations with no increased baseline risk for colorectal cancer suggested that calcium, with or without vitamin D, had no effect on the RR for colorectal cancer (RR = 0.62 [95% CI, 0.11-3.40], P = NS).

CONCLUSION: Published reports indicated that supplemental calcium was effective for the prevention of adenoma recurrence in populations with a history of adenomas, but **no similar effect was apparent in populations at higher or lower risk.**