



Vitamin D and Cancer Prevention

What do breast, colon, and prostate cancer all have in common? Research says supplementation with vitamin D may lower their incidence.

We can get vitamin D through sunlight exposure as well through the diet, but very few foods naturally contain vitamin D and between long work hours that are primarily indoors and the use of sunscreens many people don't get adequate UV exposure to create sufficient vitamin D levels. Foods that are a good source of vitamin D include fatty fish, fish liver oil, and eggs. Most dietary vitamin D comes from fortified foods, such as milk, juices, yogurt, bread and breakfast cereals. Vitamin D can also be obtained through supplementation.

Unfortunately most people do not get adequate vitamin D from these sources and as a result, vitamin D insufficiency is literally an epidemic. Statistics extracted from the National Health and Nutrition Examination Survey (NHANES) found that more than 90% of the population with pigmented skin, and 75% of the white population, have insufficient levels of vitamin D.

Mechanisms by which vitamin D may modify cancer risk are not fully understood, but laboratory studies have shown that vitamin D promotes cellular differentiation, decreases cancer cell growth, hinders angiogenesis, and stimulates apoptosis.

Several observational studies, and a few prospectively randomized controlled trials, have demonstrated that adequate levels of vitamin D can decrease the risk and improve survival rates for several types of cancers including breast, rectum, ovary, prostate, stomach, bladder, esophagus, kidney, lung, pancreas, uterus, non-Hodgkin lymphoma, and multiple myeloma.

The effects of vitamin D serum levels on colorectal cancer were illustrated in the EPIC (European Prospective Investigation into Cancer and Nutrition) study, a large observational study of both men and women. The EPIC study enrolled more than half a million adults in 10 western European countries who were initially free of cancer; full intakes and lab work (including vitamin D levels) were performed on all participants. After several years of follow up, 1248 subjects developed colorectal cancer and these individuals were matched to 1248 study participants who did not develop colorectal cancer. The researchers report that people with the highest pre-cancer levels of vitamin D were about 40 percent less likely to develop colorectal cancer than those with the lowest levels.

It is estimated that 85,000 cases of breast cancer and 60,000 cases of colorectal cancer could be prevented in North America alone with sufficient vitamin D levels. A recent study compiled data on breast and colon cancer and vitamin D levels and found that dosages of 3500 IU/day would reduce breast cancer and 2000 IU/day would reduce colon cancer by 50%. The current median adult intake of vitamin D in the US is only 230 IU/day.

Other studies relating cancer to vitamin D have shown that people living at higher latitudes (and therefore have fewer days of the year with adequate sun exposure) are at increased risk for Hodgkin lymphoma as well as colon, pancreatic, prostate, ovarian, breast and other cancers. In addition, people living at higher latitudes are more likely to die from these cancers compared with those living at lower latitudes. Epidemiologic studies, both prospective and retrospective, have shown that

individuals who have serum 25(OH)D3 levels <20ng/mL have an associated 30% to 50% greater risk of colon, prostate, and breast cancer as well as a higher mortality from these cancers.

The current recommended daily allowance of vitamin D in the United States is 400 IU for children 0-12 months, 600 IU for children greater than 12 months old as well as adults up to age 70 and 800 IU for those >70 years old. However, the emerging evidence on the non-skeletal benefits of vitamin D has made these recommendations obsolete. Doses as high as 10,000 IU/day have been shown to be safely tolerated.

People are more likely to not get enough vitamin D than to get too much. However, excessive intake of any nutrient, including vitamin D, can cause problems. It is important to be evaluated before taking vitamin D. Excessive sun exposure does not cause vitamin D toxicity, however with supplementation monitoring therapy is important to ensure adequate, but not excessive, dosage.

Whether supplemented or manufactured in the skin, cholecalciferol (D3) is hydroxylated in the liver to form 25-hydroxycholecalciferol (25(OH)D3) and this is the major circulating form of the vitamin. Though it goes through an additional hydroxylation (primarily in the kidney) to form 1,25-dihydroxycholecalciferol before it is biologically active, the 25(OH)D3 form is the most stable form and thus considered the most accurate measure of the amount of vitamin D in the body.

We use Labrix Clinical Services vitamin D testing kit. This inexpensive, quick and easy to use test will enable us to assess and monitor vitamin D levels without the inconvenience of venipuncture.

Call us to schedule time for us to go over your health concerns and to discuss establishing a customized supplement program for you.

Resources

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4. Holt PR, Arber N, Halmos B, et al. "Colonic epithelial cell proliferation decreases with increasing levels of serum 25hydroxy vitamin D." *Cancer Epidemiology, Biomarkers, and Prevention* 2002; 11(1):113-119.)
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7. Moreno J, Krishnan AV, Feldman D. "Molecular mechanisms mediating the anti-proliferative effects of vitamin D in prostate cancer." *Journal of Steroid Biochemistry and Molecular Biology* 2005; 97(1-2):31-36
8. "Vitamin D and prevention of breast cancer: pooled analysis." *J Steroid Biochem Mol Biol*. 2007 Mar;102(3-5):708-11.
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