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Vitamin D and Your Health: Cancer

Vitamin D and Colon Cancer

Second Most Common Form of Cancer

Colorectal cancer is the second most common form of cancer in the western world. About 150,000 Americans will be told they have colon cancer this year and 50,000 will die. Your chance of developing colon cancer, sometime in your life, is about one in 15. African Americans are particularly affected by colorectal cancer, as well as other [cancers](#), with both a higher incidence and mortality from colon cancer than non-African Americans. We believe this is due to a widespread [vitamin D deficiency](#) within the black community.

Many factors contribute to causing colon cancer (it is multifactorial) but diet is probably the most important factor. Certain diets promote colon cancer, such as diets high in fat and red meat and other diets help prevent colon cancer, especially diets high in fiber, calcium, fruits and vegetables. Scientists first discovered the possible importance of vitamin D in preventing colon cancer more than 20 years ago.

If you have colon cancer, please remember that vitamin D is not a cure-all and should never be used as the main treatment for your cancer. Your oncologist will prescribe treatment that has proven efficacy and you should carefully follow his/her advice as the mainstay of treatment. At the same time, you should know that evidence suggests that the proper amount of vitamin D will help you in your fight against colon cancer.

Vitamin D In the Fight Against Colon Cancer

Let's review some selected studies from the scientific literature to see what clues exist about the role vitamin D may play in preventing, and treating, colon cancer.

Sunlight Exposure Lowers Cancer Risk

In 1980, Cedric and Frank Garland, while at Johns Hopkins University, reported that death from colon cancer was significantly less likely in those who lived in sunny areas. The Garland brothers believed vitamin D best

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explained this observation.

In 1985, scientists studied 2100 men for 19 years. They discovered that colon cancer was more than twice as likely in the men that consumed the least amount of vitamin D and calcium. As about 90% of the average persons vitamin D comes from the sun, it was comforting to know that even small amounts of vitamin D in the diet helped prevent colon cancer.

In 1989, the Garland brothers presented further evidence that vitamin D deficiency played a key role in colon cancer. They analyzed air pollution data from 20 Canadian cities finding that the cities where polluted air obscured vitamin D producing sunlight had higher death rates from both colon and breast cancer. Furthermore, they pointed out that colon cancer rates were 4–6 times higher in North America and Northern Europe when compared to the incidence of colon cancer in countries close to the equator.

Blood Calcidiol Level and Cancer Risk

Later that same year the Garlands presented even stronger evidence, this time in the prestigious British journal, *the Lancet*. For the first time, researchers linked blood vitamin D levels to risk of developing colon cancer. They found an amazingly strong correlation which revealed that a person was five times less likely to develop colon cancer if that person's **blood calcidiol level** was between 33–41 ng/mL. For the first time, a direct correlation was shown between vitamin D blood levels and the risk of getting colon cancer. As cancer is a dynamic process, with normal cells turning cancerous as time progresses, this study strongly suggested that vitamin D may have an important role in treating colon cancer.

In 1992, researchers at the University of Washington independently confirmed the Garland brothers work. They analyzed cancer registries in the United States and found people who live in cloudy northern areas, such as Michigan, Connecticut and western Washington were up to 80% more likely to develop colon cancer than those who lived in sunny areas such as Utah and New Mexico.

Vitamin D Obtained Through Diet Helpful

In 1993, researchers from the University of Minnesota, analyzing the data of more than 35,000 women from the Iowa Womens Health Study, found that vitamin D and calcium in the diet significantly reduced the risk of colon cancer. Women with the lowest vitamin D intake were twice as likely to develop colon cancer. Remember, diet supplies only 10% of the vitamin D as most people get almost all their vitamin D from sun exposure. Even so, this study confirmed earlier findings and showed that even small amounts of vitamin D in the diet were helpful.

Supplemental Vitamin D Even More Important

In 1996, researchers at Harvard confirmed that vitamin D taken in the diet or in supplements reduced the risk of colon cancer. Furthermore, they found supplemental vitamin D was more important than vitamin D from the diet. It is important to remember that little vitamin D is obtained from either diet or supplements, compared to the enormous quantities available from sunlight. Even so, the men with the highest total vitamin D intake were about one-half as likely to develop colon cancer compared to men with the lowest total intake.

Later in 1996, researchers at Harvard reported results for women. They followed 89,000 nurses over 12 years and found the nurse's risk of developing colon cancer was reduced by vitamin D, similar to men. In fact, they found the relative risk for women with the highest total vitamin D intake was 0.42, meaning those women with the lowest vitamin D intake were more than twice as likely to develop colon cancer.

In 1997, researchers in Finland confirmed the Garland brothers' original findings on vitamin D blood levels and colon cancer. Again, they found that the risk of colorectal cancer was highest in those with the lowest blood levels. Perhaps more ominous for the people of Finland (which is very far north and gets little sunlight) was the very low levels of vitamin D in the blood of Finns. The average person in Finland had blood levels of only 13 ng/mL, a level now known to be associated with numerous serious illnesses, not just cancer.

Calcitriol—Nature's "Defense Strategy" Against Cancer

Finally, in 1997, researchers at the University of Vienna first suggested that vitamin D may help treat colon cancer. They discovered that colon cancer cells, when grown in a test tube, retain the ability to make **calcitriol**, the active form of vitamin D that has multiple anticancer properties. They further proposed that calcitriol in the tissues may be nature's "defense strategy" to fight cancer.

In 1999, researchers in Israel, found that calcitriol levels were twice as high in patients with less aggressive colon cancer but were quite low in those with advanced metastatic disease. They concluded that higher calcitriol levels may prevent "further transformation of the cells or may induce cell differentiation, growth inhibition or apoptosis (normal cell death)." That is, they suggested that higher serum calcitriol levels prevented the cancer from progressing, implying it might be useful in treatment, especially in early stages. However, it is important to remember that, although tissue calcitriol levels are most important in fighting cancer, they can not be measured. Colon tissue can make large amounts of tissue calcitriol, if and only if, enough calcidiol is available in the blood. Blood calcidiol levels can easily be increased by taking the correct amount of

vitamin D3 supplements.

Colon Cancer Cells Activate Vitamin D

In 2001, researchers at Boston University found that colon cancer cells can activate vitamin D, turning calcidiol into calcitriol. Their findings clearly implied that patients with colon cancer might be helped by optimizing the amount of calcidiol in their blood. The authors even warned that "vitamin D deficiency could accelerate colon cancer growth." That is, the cancer cells themselves can make calcitriol, if enough calcidiol is available for them to do so. Remember, every molecule of calcitriol in your tissues comes from a molecule of calcidiol in your blood.

Later in 2001, researchers at the University of Vienna confirmed that colon cancer cells can make calcitriol but noted that ability may be lost as the cancer progresses or in highly aggressive, poorly differentiated tumors. Furthermore, they warned that one of the metabolites of calcitriol is increased in poorly differentiated tumors and that metabolite may be stimulating the tumors to grow.

First Study Performed Using Humans

In 2002, researchers at St. Luke's-Roosevelt Hospital in New York were the first to administer vitamin D to humans to see if it reduced precancerous cellular changes in the colon. Rectal biopsies were performed before and after the administration of vitamin D and calcium. One group got only calcium, the second group got calcium and vitamin D (only 800 units) and the third group took calcitriol twice a day. The researchers found no improvement between groups, but, much to their surprise, they found strong correlations between calcidiol blood levels and precancerous lesions. As blood calcidiol levels increased, precancerous cellular changes decreased, especially when combined with calcium. The fewest precancerous changes were in a patient with a calcidiol level of 60 ng/mL.

In 2002, researchers from the University of Helsinki showed that soy extracts significantly increase the production of calcitriol in mouse colon both by increasing its production and by decreasing its degradation. This discovery explained the well-known fact that populations that consume high amounts of soy products have lower cancer rates.

Later in 2002, researchers from the National Cancer Institute confirmed the Garland brothers finding from 20 years earlier. Sun exposure significantly reduced ones risk of dying from colon cancer.

Vitamin D and Calcium Work Together

In 2003, researchers at Dartmouth confirmed that deficiencies of both vitamin D and calcium were involved in the reoccurrence of colon polyps, a condition known to lead to colon cancer. It turns out both calcium and

vitamin D work together to prevent colon cancer.

More Vitamin D Benefits Still To Learn

Since then numerous studies on the protective effects of vitamin D in regards to several different cancers, including colon cancer, have been successful in demonstrating that vitamin D3 is indeed a viable weapon in the fight against cancer. There is still so much we have yet to discover about vitamin D. As the number of studies on vitamin D increases more and more with each day, we anticipate even more good news to come.

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