

Study Shines More Light on Benefit of Vitamin D in Fighting Cancer

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600,000 cases a year of breast and colorectal cancer could be prevented each year by adequate intake of vitamin D, according to research.

A new study looking at the relationship between vitamin D serum levels and the risk of colon and breast cancer across the globe has estimated the number of cases of cancer that could be prevented each year if vitamin D₃ levels met the target proposed by researchers.

Cedric F. Garland, Dr.P.H., cancer prevention specialist at the Moores Cancer Center at the University of California, San Diego (UCSD) and colleagues estimate that 250,000 cases of colorectal cancer and 350,000 cases of breast cancer could be prevented worldwide by increasing intake of vitamin D₃, particularly in countries north of the equator. Vitamin D₃ is available through diet, supplements and exposure of the skin to sunlight.

“For the first time, we are saying that 600,000 cases of breast and colorectal cancer could be prevented each year worldwide, including nearly 150,000 in the United States alone,” said study co-author Garland. The paper, which looks at the dose-response relationship between vitamin D and cancer, will be published in the August edition of the journal *Nutrition Reviews*.

The study combined data from surveys of serum vitamin D levels during winter from 15 countries. It is the first such study to look at satellite measurements of sunshine and cloud cover in countries where actual blood serum levels of vitamin D₃ had also been determined. The data were then applied to 177 countries to estimate the average serum level of a vitamin D metabolite of people living there.

The data revealed an inverse association of serum vitamin D with risk of colorectal and breast cancer. The protective effect began at levels ranging from 24 to 32 nanograms per milliliter of 25-hydroxyvitamin D concentration in the serum. The 25-hydroxyvitamin D level is the main indicator of vitamin D status. The late winter average 25-hydroxyvitamin D in the US is about 15-18 ng/ml. The researchers maintain that increasing vitamin D levels in populations, particularly those in

northern climates, has the potential to both prevent and possibly serve as an adjunct to existing treatments for cancer.

The work builds on previous studies by Garland and colleagues (*Journal of Steroid Biochemistry and Molecular, February 2007*) which found that raising the serum 25(OH)D levels to 55 ng/mL was optimal for cancer prevention. This is the first study to recommend optimal vitamin D serum levels which, Garland said, are high enough to provide the needed benefit but which have been found by other scientists to be low enough to avoid health risks.

“This could be best achieved with a combination of diet, supplements and short intervals – 10 or 15 minutes a day – in the sun,” said Garland. It could be less for very fair-skinned individuals. He went on to say that “the appropriate dose of vitamin D in order to reach this level, could be very little in a lifeguard in Southern California... or quite a lot for someone in Northern Europe who tends to remain indoors most of the year.”

The serum level recommended by the study would correspond to intake of 2000 International Units per day of vitamin D₃ for a meaningful reduction in colorectal cancer. The researchers recommend 2000 IU/day, plus, when weather allows, a few minutes in the sun with at least 40% of the skin exposed, for a meaningful reduction in breast cancer incidence, unless the individual has a history of skin cancer or a photosensitivity disease.

Garland also recommends moderate sun exposure and use of clothing and a hat when in the sun longer than 15 minutes.

This paper used worldwide data only recently available through a new tool called GLOBOCAN, developed by the World Health Organization’s International Agency for Research on Cancer. GLOBOCAN is a database of cancer incidence, mortality and prevalence for 177 countries. Previous studies from this core group have shown an association between higher levels of vitamin D₃ or markers of vitamin D status and lower risk of cancers of the breast, colon, ovary and kidney. The researchers underscore their call for prompt public health action to increase intake of vitamin D₃ as an inexpensive tool for prevention of diseases that claim nearly one million lives each year world wide.

“The message is, depending on where you live, you may need to consider taking in considerably higher levels of vitamin D₃ than those currently recommended,” said Garland. “I’d recommend discussing vitamin D needs with a health care professional, who may order and interpret a simple blood test for a vitamin D metabolite [25(OH)D], and provide a dosage recommendation that’s appropriate for the individual’s needs.”

The study was co-authored by Cedric F. Garland, Dr. P.H., Sharif B. Mohr, M.P.H., Edward D. Gorham, M.P.H., Ph.D., and Frank C. Garland, Ph.D., of the Division of Epidemiology at the UCSD Department of Family and Preventive Medicine and Moores UCSD Cancer Center; and William B. Grant, Ph.D., of the Sunlight, Nutrition and Health Research Center, San Francisco.

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