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Vitamin D again linked to lower colorectal cancer risk

By Stephen Daniells, 17-Jan-2012

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High blood levels of vitamin D may lower the risk of colorectal cancer by almost 40%, and the effects were influenced by certain genes, says a new study from Japan.

Dietary intakes of calcium were also linked to a reduction in colorectal cancer risk, with increased blood levels of the mineral also linked to reductions in the region of 30%, according to findings published in the *American Journal of Epidemiology*.

The influence of genes appeared limited to the sunshine vitamin however, with vitamin D levels found to interact with specific sections of the vitamin D receptor gene, with increased vitamin D levels linked to even greater risk reductions with some forms of the gene.

"These findings underline the importance of vitamin D in colorectal carcinogenesis, at least in its early stage," wrote researchers from the National Cancer Center in Tokyo.

Commenting independently on the results, Michael Holick PhD, MD, Professor of Medicine at Boston University Medical Center and a world-renowned expert in vitamin D told NutraIngredients-USA.com that the data *"confirm that maintaining optimal vitamin D status is important for reducing risk of colorectal cancer independent of the calcium effect"*.

D and the big C

Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. Both D3 and D2 precursors are transformed in the liver and kidneys into 25- hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D), the biologically active form that is tightly controlled by the body.

The link between vitamin D intake and protection from cancer dates from the 1940s when Frank Apperly demonstrated a link between latitude and deaths from cancer, and suggested that sunlight gave "a relative cancer immunity".

Since then there have been numerous studies suggesting associations between vitamin D and lower risks of certain cancers.

There is growing evidence that 1,25(OH)2D has anticancer effects, but the discovery that non-kidney cells can also hydroxylate 25(OH)D had profound implications, implying that higher 25(OH)D levels could protect against cancer in the local sites.

In 2011, scientists from the International Prevention Research Institute (IPRI) in Lyon, France conducted a meta-analysis of nine studies, and concluded that for every 10 nanograms per milliliter increase in levels of vitamin D (25-hydroxyvitamin D) the associated risk of colorectal cancer decreased by 15%.

On the other hand, no association was observed between vitamin D levels and the risk of breast or prostate cancer, they reported in the *International Journal of Cancer*.

New data

The Japanese researchers analyzed data from 737 people with colorectal cancer and 703 healthy, cancer-free individuals.

Results showed that people with the highest average levels of 25(OH)D (32 ng per mL) had a risk of colorectal cancer 36% lower than people with the lowest average levels (16 ng/mL).

High daily calcium intakes (590 mg per day) were also associated with a 37% lower cancer risk than people with the lowest average intakes (542 mg/day).

"We investigated effect modification by the [vitamin D receptor] VDR gene using 2 traditional SNPs, although the

gene spans approximately 100 kilobases and has numerous genetic polymorphisms," explained the researchers.

"Our findings, based on a limited number of SNPs in a single gene, provide at most an intriguing insight into the gene-environmental interaction in the vitamin D pathway."

Shining light on the sunshine vitamin

While our bodies do manufacture vitamin D on exposure to sunshine, the levels in some northern countries are so weak during the winter months that our body makes no vitamin D at all, meaning that dietary supplements and fortified foods are seen by many as the best way to boost intakes of vitamin D.

Vitamin D deficiency in adults is reported to precipitate or exacerbate osteopenia, osteoporosis, muscle weakness, fractures, common cancers, autoimmune diseases, infectious diseases and cardiovascular diseases. There is also some evidence that the vitamin may reduce the incidence of several types of cancer and type-1 and -2 diabetes.

Source: *American Journal of Epidemiology*
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"Association Between Plasma 25-Hydroxyvitamin D and Colorectal Adenoma According to Dietary Calcium Intake and Vitamin D Receptor Polymorphism"
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