

Multiple health concerns surface as winter, vitamin D deficiencies arrive

November 23 2009

A string of recent discoveries about the multiple health benefits of vitamin D has renewed interest in this multi-purpose nutrient, increased awareness of the huge numbers of people who are deficient in it, spurred research and even led to an appreciation of it as "nature's antibiotic."

On issues ranging from the health of your immune system to prevention of heart disease and even vulnerability to influenza, [vitamin D](#) is now seen as one of the most critical nutrients for overall health. But it's also one of those most likely to be deficient - especially during winter when production of the "sunshine vitamin" almost grinds to a halt for millions of people in the United States, Europe and other northern temperate zones.

Analogs of the vitamin are even being considered for use as new therapies against tuberculosis, AIDS, and other concerns. And federal experts are considering an increase in the recommended daily intake of the vitamin as more evidence of its value emerges, especially for the elderly.

"About 70 percent of the population of the United States has insufficient levels of vitamin D," said Adrian Gombart, a principal investigator with the Linus Pauling Institute at Oregon State University. "This is a critical issue as we learn more about the many roles it may play in fighting infection, balancing your immune response, helping to address autoimmune problems, and even preventing heart disease."

Those issues were just outlined in a new publication in *Future Microbiology*, a professional journal, on the latest findings on vitamin D research, at OSU and in many other programs around the world.

Of particular interest are findings made recently by OSU scientists that vitamin D induces the "expression" of cathelicidin, an [antimicrobial peptide](#) gene. This explains in part how it helps serve as the first line of defense in your immune response against minor wounds, cuts, and both bacterial and viral infections. Experts believe advances in the use of cathelicidin may form the basis for new therapies.

Once believed to be related primarily to bone health and rickets - a disease caused by chronic deficiency of vitamin D - it's now understood that optimal levels of this nutrient influence much more than that.

"Vitamin D insufficiency and deficiency is a world-wide, public health problem in both developed and developing nations," the new report concluded. "Nearly one billion people world-wide are deficient."

Vitamin D can be obtained from the diet, often through supplemented foods such as milk, but those sources are rarely adequate, experts say. Most people get the bulk of this fat-soluble vitamin from the UV-B radiation in sun exposure, which naturally causes the skin to produce it. However, people with dark skin, infants and almost anyone living north of about 40 degrees latitude - which is a huge portion of the U.S. population and most of Europe- are often deficient after months of inadequate winter sunshine.

Among the values and observations about vitamin D that are outlined in the new report:

- Low levels of circulating vitamin D are associated with increased

risk and mortality from cancer.

- Vitamin D plays an important role in activating the immune system, fostering the "innate" immune response and controlling over-reaction of adaptive immunity, and as such may help control autoimmune diseases such as multiple sclerosis, psoriasis and rheumatoid arthritis.
- Cathelicidin can profoundly boost the innate immune system, and could form the basis for new therapies to combat pathogenic infections.
- The regulation of cathelicidin by vitamin D, a unique biological pathway for the function of vitamin D that could help explain its multiple roles in proper immune function, is so important that it's only known to exist in two groups of animals - humans and non-human primates - and has been conserved in them through millions of years of evolution.
- Vitamin D deficiency is a risk factor for tuberculosis, was historically used to treat it, and analogs of it may provide the basis for new therapeutic approaches not only to that disease but also HIV infection.
- Epidemiological studies show a link between vitamin D deficiency and increased rates of respiratory infection and influenza, and it has been hypothesized that flu epidemics may be the result of vitamin D deficiency.
- Higher levels of a protein linked to vitamin D have been associated with reduced infections and longer survival of dialysis patients.

- Vitamin D has important roles in reducing inflammation, blood pressure and helping to protect against heart disease.

There is still much to explore about the mechanisms of action of vitamin D, the potential use of synthetic analogs of it in new therapies, and its role in fighting infection, Gombart said. Since only primates and humans have the same biological pathways for use of vitamin D to regulate cathelicidin, studies have been constrained by the lack of appropriate animal models for research, he said. OSU scientists hope to address that by creation of a line of genetically modified mice that have some of these characteristics.

One compelling new study just done by researchers at the Intermountain Medical Center in Utah, and presented at a meeting of the American Heart Association, followed for more than a year nearly 28,000 patients ages 50 or older with no prior history of cardiovascular disease. It found that in patients with very low levels of vitamin D - compared to those with normal levels - 77 percent were more likely to die, 45 percent were more likely to develop coronary artery disease, and 78 percent were more likely to have a stroke.

Source: Oregon State University ([news](#) : [web](#))

Citation: Multiple health concerns surface as winter, vitamin D deficiencies arrive (2009, November 23) retrieved 25 April 2024 from <https://medicalxpress.com/news/2009-11-multiple-health-surface-winter-vitamin.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.