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Vitamin D Research Goes Beyond Bones to Show Autoimmune & Inflammation Connection

WASHINGTON, D.C. – Many know that vitamin D is important for bone health because it aids the absorption, restoration, and maintenance of calcium. Less well known is that it also supports other functions, including brain cell activity, the immune system and energy levels. There are also studies that suggest vitamin D helps the body fight infections.

Margherita Cantorna, PhD, distinguished professor of molecular immunology at Penn State University in University Park, Pennsylvania, will discuss recent findings about vitamin D and its surprising connection to inflammation and autoimmune conditions on Nov. 18 at [ACR Convergence 2024](#), the American College of Rheumatology's annual meeting.

Vitamin D is hard to get from food alone. It is found naturally in small amounts in irradiated mushrooms and oily fish, and it is also often added to dairy products, orange juice and breakfast cereals. Additionally, concerns about skin cancer and aging have led people to avoid the sun, probably the most important source of the vitamin. People with darker skin, older adults, and those living in cold, cloudy climates can have an especially hard time getting enough sunlight to make adequate amounts of vitamin D. As a result, it is estimated that as many as 35% of adults in the U.S. and one billion worldwide may be vitamin D deficient.

This is a public health problem that far exceeds bone health because vitamin D also plays a crucial role in regulating the immune system, inflammation and gut function, and in preventing autoimmune disease. Cantorna explains it this way: "Cells of the immune system require vitamin D to control the amount of inflammation. Without vitamin D, inflammation is increased and contributes to autoimmunity."

She says vitamin D plays a similar role after an infection. Vitamin D is important to turn off inflammation to prevent damage to healthy tissue.

It is common for both organ-specific and systemic autoimmune disorders to be triggered or worsen after a viral infection. [Rheumatoid arthritis](#) (RA), for example, may develop or flare after infection with certain viruses.

Yet, knowing that vitamin D is essential for health is not the same as knowing how much is needed.

“The experts can’t agree about what is optimal [level of vitamin D], which is frustrating,” Cantorna says. “In my opinion, serum levels over 50 nmol/L or 20 ng/mL are optimal. As far as testing vitamin D levels routinely, it would only be useful to identify and correct vitamin D deficiency. Since the experts can’t agree on what is optimal, there would be no agreed-upon target.”

Cantorna says vitamin D supplements can help raise low vitamin D levels. “I would suggest most people, especially in winter, take a vitamin D supplement. I would suggest only taking 600 IU a day for people ages 13 to 70 years and 800 IU a day for adults over 70, which is the recommendation of the National Academy of Medicine.”

Some experts think these recommendations are too low, especially for people who are overweight, have poor absorption for a variety of reasons or take certain medications, including corticosteroids like [prednisone](#), which is a common treatment used to control inflammation in the joints and organs.

At the same time, she cautions that while vitamin D is generally safe, high doses of supplements can be toxic. “There are no added benefits [to] taking high doses of vitamin D for prolonged periods of time, and there are risks.”

Going forward, she hopes the “vitamin D community can come together and make concrete and easy-to-follow recommendations and increase understanding of the vitamin D requirements for diverse populations.”

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About ACR Convergence

ACR Convergence, the annual meeting of the American College of Rheumatology, is where rheumatology meets to collaborate, celebrate, congregate, and learn. With hundreds of sessions and thousands of abstracts, it offers a superior combination of basic science, clinical science, business education and interactive discussions to improve patient care. For more information about the meeting, visit the [ACR Convergence page](#), or join the conversation on X by following the official hashtag (#ACR24).

About the American College of Rheumatology

Founded in 1934, the American College of Rheumatology (ACR) is a not-for-profit, professional association committed to advancing the specialty of rheumatology that serves nearly 9,600 physicians, health professionals, researchers and scientists worldwide. In doing so, the ACR offers education, research, advocacy and practice management support to help its members continue their innovative work and provide quality patient care. Rheumatology professionals are experts in the diagnosis, management and treatment of more than 100 different types of arthritis and rheumatic diseases. For more information, visit rheumatology.org.

