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Press release
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**New method for measuring vitamin D developed:
From a universally valid threshold value to personalized analysis**

Graz, 4 Decemer 2023: When the cold, dark winter months are upon us, the topic of vitamin D, which is often referred to as the sunshine vitamin, moves back into the foreground. The collective term "vitamin D" actually refers to a large group of chemically related substances (calciferols) that regulate a variety of metabolic processes in the human body. This substance is particularly known for its central role in bone mineralization. In a study by Med Uni Graz researchers, a new method has been developed that is capable of better assessing a person's vitamin D balance.

When a deficiency is not a deficiency

When the currently recommended criterion for diagnosis of vitamin D deficiency is applied, 40 to 50% of the population at our latitude are affected. A widely known example of what deficiency in vitamin D can trigger is rickets, a childhood disease characterized by soft and brittle bones. While there is no question of the efficiency of administering vitamin D to treat rickets, there has been an ongoing increase in the number of scientific studies that question how useful it is for basically healthy people to take vitamin D supplements (for example in the form of drops). Even with regard to bones, there is hardly any proof of positive effects. This leads to the question of how accurate the current recommendations for establishing a vitamin D deficiency are. In a study, Med Uni Graz researchers have developed a new method that considers functional aspects of vitamin D metabolism and allows a personalized assessment of vitamin D balance.

From fuel to exhaust

Normally a vitamin D test only measures 25-hydroxy vitamin D (25[OH]D) in the blood and applies a universally valid threshold value to assess the result. Markus Herrmann from the Med Uni Graz Clinical Institute of Medical and Chemical Laboratory Diagnostics explains that such a procedure is problematic for many reasons since the 25(OH)D only represents an inactive precursor to vitamin D. Its measurement provides information on the amount of available vitamin D but says nothing about how it is used by the body: "To use a car as a comparison: The 25(OH)D level only shows us how much fuel is in the tank. With our new method, we measure the inactive waste product 24,25-dihydroxyvitamin D (24,25[OH]₂D) and also calculate how much exhaust is coming out of the tailpipe. We can draw better conclusions about processes in the body and achieve a personalized assessment." The researchers were able to show that people with a functional vitamin D deficiency have a highly increased mortality rate, and independent of the 25(OH)D value. Bone metabolism was also clearly activated, which is known to be a risk factor for developing osteoporosis.

Two large and independent study cohorts

Data from two very large cohort studies was analyzed. One is composed of 2,010 Austrian blood donors while the other includes 3,316 patients subject to cardiac catheterization. For these patients, there was also a 10-year follow-up including information about deaths.

The road to personalized medicine

The results from the Graz study are an important milestone along the road to a personalized assessment of vitamin D balance. In the future, it should be easier to determine which patients actually have a functionally relevant vitamin D insufficiency and may potentially benefit from supplementation. In the investigated cohorts, the number of patients with vitamin D deficiency went down by about 20%, which could significantly decrease the needless administration of vitamin D. Further studies will indicate the effects of a functional vitamin D deficiency on bone density and the risk for fractures.

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Link to the publication:

<https://pubmed.ncbi.nlm.nih.gov/37798100/>

Profile: Markus Herrmann

Since August 2017 Markus Herrmann has been a professor at the Medical University of Graz, where he directs the Clinical Institute of Medical and Chemical Laboratory Diagnostics, the largest provider of lab services at University Hospital Graz. He completed his medical studies at the universities of Regensburg and Wuerzburg. He spent his practice year at hospitals in Switzerland and Italy. After a brief foray into dermatology, he began his residency in laboratory medicine at Saarland University in 2001, which he completed in 2007. At the same time, he acquired an additional sports medicine qualification there. Shortly afterwards, he completed his habilitation in the field of laboratory medicine and received a postdoc scholarship, on which he went to the University of Sydney in Australia. There he also worked as a specialist in laboratory medicine and was appointed Associate Professor in 2010. In 2012 Herrmann went to Italy, where he took over the direction of the central lab in the hospital in Bolzano. Five years later he was offered a position at the Medical University of Graz, where he has established an international research group that deals with bone metabolism as well as other biochemical aspects of aging.