

Magnesium & Vitamin D, Better Together

Oftentimes, we focus on a single nutrient and how it impacts our physiology. However, one study recently highlighted the importance of remembering the synergy between nutrients. Magnesium and vitamin D, for example, are two such nutrients that prove to be better off together than alone. In a recent review published in the Journal of the American Osteopathic Association, magnesium was found to assist in the activation of vitamin D₃.

Magnesium is the fourth most abundant mineral in the human body after calcium, potassium, and sodium, and functions to trigger more than 600 enzymes. In addition, it influences extracellular calcium levels, is essential for the stability of cell function, RNA and DNA synthesis, cell repair, helps maintain the antioxidant status of the cell, and is an important cofactor for the activation of a wide range of transporters and enzymes. Add to this list that magnesium is also required for vitamin D activation.

In order for vitamin D to become biologically active, it must be converted from its inactive form (25[OH] D) to its active form (1,25[OH]2D). However, the “various stages of vitamin D conversions are actively dependent on the bioavailability of magnesium,”^[1]^[2] and, alternatively, “1,25(OH)₂D can stimulate intestinal magnesium absorption.”^[3] It has been noted that “a significant increase in serum levels of magnesium was realized following the consumption of vitamin D₃ supplements (2000 IU/d) for 6 months.”^[4]

The recommended daily allowance (RDA) of magnesium for adults is 310 to 420 mg/d, and approximately 75% of the total population is estimated to be consuming a magnesium-deficient diet.^[5] ^[6] Complicating this matter is the fact that the magnesium content in many foods is declining by an estimated 25% to 80%, compared with the levels before 1950.^[7] Because the bioactivity of vitamin D is a magnesium-dependent process, this collective magnesium deficiency, no doubt, affects vitamin D levels. The study concluded that because magnesium is an essential cofactor for vitamin D synthesis and activation, and vitamin D can, in turn, increase the intestinal absorption of magnesium, a dysregulation of either of these nutrients can be problematic for both.

Ref: Uwitonze AM, Razzaque MS. Role of Magnesium in Vitamin D Activation and Function. REVIEW. *J Am Osteopath Assoc*. 2018 118(3):181-189. doi:10.7556/jaoa.2018.037. Downloaded From: <http://jaoa.org/> on 02/27/2018

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