

Vitamin DIII to prevent diabetes, depression, dementia

Editorial

Vitamin D comes from three sources: the sun, food (e.g., fish, milk, salmon), and dietary supplements. It is a fat-soluble vitamin, meaning that it can accumulate in the body because it is stored in the liver and fat tissues for long periods of time. It improves the absorption of calcium, a mineral that helps build and maintain healthy bones. It also improves the absorption of phosphorus, a mineral that is important for the development of bones and teeth. There are two forms of vitamin D that are important to people: vitamin D2 (*ergocalciferol*) and vitamin D3 (*cholecalciferol*). Vitamin D2 comes from plants, while vitamin D3 is made in our skin when it is exposed to sunlight. Both forms of vitamin D can also be found in food. First, let us explore four reasons why vitamin D is so incredibly important, aside from its role in supporting our bones and skeletal system.

Vitamin D can help you live longer

Simply put, taking vitamin D III up to 5000IU/day help you defy death! Several studies have now alluded to vitamin Ds ability to reduce overall mortality, which simply means that individuals with higher blood levels of vitamin D tend to have a reduced risk of dying from any cause. One such study evaluated data from 60,000 individuals and found a 29% reduced risk of all-cause mortality for those people with the highest blood levels of vitamin D vs. those with the lowest. Another older study from 2007 also demonstrated that individuals taking even moderate daily doses of vitamin D (4000 IU-5000IU) had a 7% reduction in mortality from any cause compared to those not taking supplemental vitamin D. These results, in my opinion, are staggering when you consider that something so safe and inexpensive can have such a profound effect on human longevity. Vitamin D has shown impressive results when it comes to influencing cellular health. It plays an important role in promoting normal cellular growth and cellular longevity.

Vitamin D boosts immune function

For many years, it has been speculated that vitamin D plays an important role in immune function. This hypothesis first came to light when researches noted that people living in more Northern latitudes suffered higher rates of certain autoimmune diseases. In 2006, researchers confirmed some of these suspicions when they discovered that people with the highest blood levels of vitamin D were 62% less likely to develop autoimmune problems than those with the lowest levels. Although these types of studies do not directly prove that vitamin D prevents these conditions, the correlations are strong and suggest a strong immune-modulating effect.

Another widespread theory regarding vitamin D and immune function originated from the observation that bacterial and viral infection activity and rates are much higher in winter months. Because blood levels of vitamin D fall significantly in winter months due to less sun exposure and weaker rays from the sun, it seemed logical that these factors might be correlated. In 2006, a group of scientists researched this theory in more detail and found that the evidence in favor of a seasonal stimulus to increased infections was compelling.

Volume 5 Issue 2 - 2016

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Received: November 18, 2016 | **Published:** November 25, 2016

The online publication of the Harvard School of Public Health summarized the findings they cited to support their theory.

- i. Vitamin D levels are lowest in winter months.
- ii. The active form of vitamin D alters the response of several immune cells, including damping certain damaging inflammatory responses and increasing the production of microbe-fighting proteins.
- iii. Children with diagnosed vitamin D deficiency and the resulting condition rickets tend to have compromised immunity, while children who have more sun exposure tend to have stronger immune systems.
- iv. Adults who have low vitamin D levels are more likely to report having had a recent cough or other signs of compromised immunity.
- v. Other investigations into this issue have shown more of the same; higher blood levels of vitamin D support optimal immune health.

Vitamin D supports heart health

Vitamin D levels have been closely correlated to many aspects of cardiovascular health. Its role in the body seems to influence the control of blood pressure and the maintenance of healthy arteries. One very large study followed nearly 50,000 healthy men for 10years and found that those who were deficient in vitamin D were two times more likely to experience a cardiovascular event vs. men who had adequate levels. Other studies have correlated adequate vitamin D levels to many improved parameters of cardiovascular health.

Vitamin D Can Revolutionize Your Health...But It Can't Do It Alone No nutrient works alone in our bodies and vitamin D is no exception. Remember that the vitamin D we make from the sun and take in supplement form is a prohormone and needs to be converted by enzymes in the body in order to become a potent steroid hormone with powerful regulating effects on our DNA and genetic expression. It is also important to understand that ensuring a proper supply of companion nutrients that support vitamin D activity can enhance some of the beneficial roles of vitamin D in the body.

Let's review some of the key nutrients necessary to ensure you are getting the most from your sun exposure or vitamin D supplement.

Magnesium: According to some industry experts, magnesium is the most important vitamin D cofactor. This stems mainly from the fact that magnesium is the fourth most abundant mineral in the body and is responsible for over 300 essential metabolic reactions mainly related to its role in enzyme activation. All of the enzymes that metabolize vitamin D from its largely inactive prohormone form to its active steroid hormone form require magnesium as a co-factor. Combine that with the fact that magnesium deficiency is thought to be widespread among Americans, and it is easy to see why supplementing with this important mineral is a critical part of ensuring the beneficial action of vitamin D in the body.

Vitamin K2: If magnesium is the most important vitamin D cofactor, then vitamin K2 is a close runner-up. This important nutrient plays a critical role in regulating the increased blood levels of calcium that result from increased blood levels of vitamin D. When blood calcium levels are increased, it is critical that the body have the right tools to properly deposit that calcium in the correct place. In another amazing stroke of genius by our body, vitamin K2 activates protective proteins in the arterial wall that prevent calcium deposition and vascular calcification, as well as facilitate the deposition of calcium into the bone matrix where it has been shown to reduce bone loss and fracture risk. As you can see, this fat-soluble nutrient plays a critical role in ensuring calcium is deposited safely, but note: If you are taking blood thinning medications consult with your physician before taking any vitamin K supplements.

Zinc: Zinc is an essential trace mineral that plays key roles in many metabolic pathways in the body, mainly related to its ability to catalyze over 100 different metabolic reactions. One of its primary roles with regard to being a vitamin D cofactor is related to its important role in regulating gene expression in our cellular DNA.[26] The active hormonal form of vitamin D also exerts many of its beneficial effects by regulating and influencing gene expression. Zinc has been shown to influence the activity of vitamin D dependent genes in cells. In conjunction with vitamin D, zinc also plays an important role in immune health and calcium metabolism.

Boron: Boron is a trace mineral that supports vitamin D activity by influencing the activity of enzymes that metabolize vitamin D and related minerals including magnesium and calcium.

Antioxidants: Antioxidant compounds such as quercetin, grape seed extract and alpha lipoic acid help to support the profound beneficial effects of vitamin D on the cardiovascular system. They also help to prevent oxidative damage to our DNA and ensure proper functioning of receptor sites on our cell membrane.

Acknowledgements

None.

Conflict of interest

The author declares no conflict of interest.