

SUN HEALTH TECHNOLOGIES

CORRELATION BETWEEN VITAMIN D AND PARKINSON'S DISEASE

Researchers are finding a strong association between vitamin D levels, brain function and Parkinson's disease.

Leading medical experts and institutions have acknowledged that maintaining appropriate levels of vitamin D may help prevent and mitigate the risks and symptoms of certain neurological conditions, including multiple sclerosis, Parkinson's disease, and Alzheimer disease. [1]

Vitamin D levels have been proven to be a factor in neurological deficiencies. A recent seven year study showed that low vitamin D levels correlate with an increased risk of cognitive decline between 41 to 60%; increase the risk of Alzheimer's dementia by 77%; and increase the risk of non-Alzheimer's dementia by 20 times. [2, 3]

According to experts, Vitamin D is especially powerful against the neurodegenerative disease of Parkinson's. [4, 5] Recently, studies have shown that higher vitamin D concentrations are correlated with lower severity in Parkinson's disease. [5] Additionally, increasing vitamin D levels reduces falls and improves balance. [6] Another comprehensive study showed vitamin D treatment prevented deterioration in Parkinson's disease patients over a 12-month period. [7] A remarkable study cited by the New England Journal of Medicine showed that people with the lowest levels of vitamin D were significantly more likely to develop Parkinson's disease over almost three decades of follow-up, compared to people with the highest blood levels of the vitamin. [8]

Specifically, the active form of vitamin D (1,25-dihydroxyvitamin D) operates via the VDR, the smallest member of the family of nuclear receptors. [9] The brain distributions of the VDR, and the key enzyme required for the conversion of the prohormone (1,25-hydroxyvitamin D) to 1,25-dihydroxyvitamin D, have been mapped. [10] Of particular relevance, VDR was most strongly expressed in dopamine-rich areas such as the substantia nigra. [11] It has also been recently confirmed that all large tyrosine hydroxylase-positive (dopaminergic) neurons in the human substantia nigra also express VDR. In addition, there is *in vitro* evidence that 1,25-dihydroxyvitamin D increases the expression of tyrosine hydroxylase. [12] However, there is convergent evidence that vitamin D may have "neuroprotective" properties. [13] For example, vitamin D has a direct neuroprotective action against excitotoxic insults by downregulating l-type calcium channels, and pretreatment with vitamin D attenuates the effects of various stressors of interest in Parkinson's disease, including 6-hydroxydopamine-induced neurotoxicity. [14]

Despite vitamin D's many proven benefits, vitamin D deficiency has become a world wide epidemic. According to recent statistics, over one billion people, one seventh of the population, are now suffering from vitamin D deficiency. [17] It is now one of the most common medical conditions. [18] In the U.S., it has been estimated that three out of four Americans are vitamin D-deficient. [19]

Recently, clinical studies have shown that phototherapy for the treatment of vitamin D deficiency may be three times more effective than controlled sun exposure [20] and eight times more effective than supplementation in the treatment of vitamin D deficiency. [21] In fact, MIT research has shown that only vitamin D produced through the skin by light can have the transformative benefits that minimize the risk of disease, increase neurological function, and improve the immune system. [22]

Sun Health Technologies, in conjunction with the engineers and scientists have developed a revolutionary, state of the art vitamin D light therapy —**Medi-Sun** — to naturally deliver the vitamin D your body needs, while avoiding the sun's harmful rays.

The device is engineered with innovative features that are the first of its kind. The device is equipped with advanced safety measures and sensors that ensure safe and effective treatment. Unlike current phototherapy technology, our state of the art technology reads in real time the actual dosage received by the patient. LCD screens provides doctors with the precise dosage measurements and quantity of vitamin D generated from each treatment. Patients' safety is safeguarded with our laser and ultrasound sensors, which guarantee proper positioning and preclude over exposure. In addition, patients' body temperature is monitored throughout the session to maximize safety and comfort.

Sun Health Technology is commencing clinical trials at the University of Illinois in the Fall with healthy individuals. In addition, we believe there is a need for large scale trials with diseased state individuals, and to advance such trials, Dr. Riskin is in contact with doctors at Northwestern University, University of Chicago, and University of California, Berkley. We are also seeking to work with the Weizmann Institute regarding research in the arena of vitamin D and immune function. Weizmann has already conducted over 117 studies involving vitamin D, and we are hoping to expand upon their research regarding the interaction between vitamin D and T-cells in autoimmune disorders using our device to increase vitamin D.

For further research see our website at www.Sunhealthtech.com

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