



# vitamin-d

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Cruising Review

Vitamin-D: Publications and Research from SwissMixIt



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Vitamin D, first identified as a vitamin early in the 20th century, is now recognized as a prohormone. A unique aspect of vitamin D as a nutrient is that it can be synthesized by the human body through the action of sunlight. These dual sources of vitamin D make it challenging to develop dietary reference intake values.

PDF Version of the webpage (first pages)

<https://cruisingreview.com/smx/vitamin-d.html>

## Vitamin D Botanical Information

Vitamin D, first identified as a vitamin early in the 20th century, is now recognized as a prohormone. A unique aspect of vitamin D as a nutrient is that it can be synthesized by the human body through the action of sunlight. These dual sources of vitamin D make it challenging to develop dietary reference intake values. vit D, D3, 1 alpha 25(OH)2D, vitamin D deficiency, vitamin D epimers, cytochrome P450, 1,25-MARRS, stomach, covid, prevention, anti cancer, non-phosphocalcic action, cellular functions, immune regulation, clinical effect, Cancer, fat soluble vitamin, hypertension, obesity, vitamin D analogs, COVID-19, SARS-CoV2, Vitamin D, Cholecalciferol, Calcitriol, COVID-19, SARS-CoV-2, Vitamin D, Vitamin D3 or cholecalciferol, Calcifediol or 25-hydroxyvitamin D3, 1a, 25(OH)2D or 1a, 25-dihydroxyvitamin D or calcitriol, Acute respiratory distress syndrome (ARDS), Cytokine/Chemokine storm, Renin-angiotensin system, Hypercoagulability, Hydroxychloroquine, Chloroquine, Covidiol, Neutrophil activity, Vitamin D endocrine system, Cuboidal alveolar coating cells type II, Cathelicidin peptide, Defensins, TLR co-receptor CD14, Vitamin D receptor

Keywords: vit D, D3, 1 alpha 25(OH)2D, vitamin D deficiency, vitamin D epimers, cytochrome P450, 1,25-MARRS, stomach, covid, prevention, anti cancer, non-phosphocalcic action, cellular functions, immune regulation, clinical effect, Cancer, fat soluble vitamin, hypertension, obesity, vitamin D analogs, COVID-19, SARS-CoV2, Vitamin D, Cholecalciferol, Calcitriol, COVID-19, SARS-CoV-2, Vitamin D, Vitamin D3 or cholecalciferol, Calcifediol or 25-hydroxyvitamin D3, 1a, 25(OH)2D or 1a, 25-dihydroxyvitamin D or calcitriol, Acute respiratory distress syndrome (ARDS), Cytokine/Chemokine storm, Renin-angiotensin system, Hypercoagulability, Hydroxychloroquine, Chloroquine, Covidiol, Neutrophil activity, Vitamin D endocrine system, Cuboidal alveolar coating cells type II, Cathelicidin peptide, Defensins, TLR co-receptor CD14, Vitamin D receptor

Description and Research Abstract: Vitamin D, first identified as a vitamin early in the 20th century, is now recognized as a prohormone. A unique aspect of vitamin D as a nutrient is that it can be synthesized by the human body through the action of sunlight. These dual sources of vitamin D make it challenging to develop dietary reference intake values.

Vitamin D, also known as calciferol, comprises a group of fat-soluble seco-sterols. The two major forms are vitamin D2 and vitamin D3. Vitamin D2 (ergocalciferol) is largely human-made and added to foods, whereas vitamin D3 (cholecalciferol) is synthesized in the skin of humans from 7-dehydrocholesterol and is also consumed in the diet via the intake of animal-based foods. Both vitamin D3 and vitamin D2 are synthesized commercially and found in dietary supplements or fortified foods. The D2 and D3 forms differ only in their side chain structure. The differences do not affect metabolism (i. e., activation), and both forms function as prohormones.

Virgin olive oil fortified with vitamin D3 prevented such changes in terms of both bone remodeling and bone mineral density. The expression of inflammation and oxidative stress mRNA was also lower in this group. Overall, our data suggest a protective impact of virgin olive oil as a source of polyphenols in addition to vitamin D3 on bone metabolism through improvement of oxidative stress and inflammation.

Topical Solutions: Transdermal delivery of VD using aromatic oils and aloe vera gel as permeation enhancers, this prospective RCT was conducted. This randomized control study shows that vitamin D3 can safely be delivered through the dermal route. This route could be exploited in treating vitamin D deficiency.

The skin is the only tissue in the human body that represents both a target tissue for biologically active vitamin D compounds including 1,25-dihydroxyvitamin D [1,25(OH)2D] and has the capacity for the synthesis of 1,25(OH)2D from 7-dehydrocholesterol (7-DHC). Recent findings indicate that the vitamin D endocrine system (VDES), besides multiple other important functions, regulates aging in many tissues, including skin. Consequently, it has been hypothesized that thus, both hypo- and hypervitaminosis D may enhance aging. Aging seems to show a U-shaped response curve to vitamin D status, and, therefore normovitaminosis D seems to be important for preventing premature aging.

Vitamin D3 is an effective skin protective substance to prevent photoaging. Liposomes were used as a carrier to deliver vitamin D3 to improve the stability and to enhance the treatment effect of vitamin D3. The stability of vitamin D3 liposomes, average cumulative penetration, and retention of vitamin D3 in the skin were then evaluated and compared with free vitamin D3.

Vitamin D is a major steroid hormone that is gaining attention as a therapeutic molecule. Due to the general awareness of its importance for the overall well-being, vitamin D deficiency (VDD) is now recognized as a major health issue. The main reason for VDD is minimal exposure to sunlight. The vitamin D receptor (VDR) is a member of the steroid hormone receptors that induces a cascade of cell signaling to maintain healthy Ca<sup>2+</sup> levels that serve to regulate several biological functions. Currently, there is a need to increase the vitamin D status in individuals worldwide as it has been shown to improve musculoskeletal health and reduce the risk of chronic illnesses, including some cancers, autoimmune and infectious diseases, type 2 diabetes mellitus, neurocognitive disorders, and general mortality.

It is suggested that vitamin D deficiency is associated with cardiovascular disease (CVD) via its effect on lipid profiles. The objective of this study was to determine the association between fasting serum levels of 25(OH) D and lipid profiles in patients with type 2 diabetes.

The classical function of Vitamin D, which involves mineral balance and skeletal maintenance, has been known for many years. With the discovery of vitamin D receptors in various tissues, several other biological functions of vitamin D are increasingly recognized and its role in many human diseases like cancer, diabetes, hypertension, cardiovascular, and autoimmune and dermatological diseases is being extensively explored. The non-classical function of vitamin D involves regulation of cellular proliferation, differentiation, apoptosis, and innate and adaptive immunity.

A low vitamin D status, measured as the plasma level of the transport form of vitamin D, 25(OH)D, is widespread worldwide and is mainly found in regions of northern latitudes, but also in southern countries. In Europe, vitamin D deficiency is widely prevalent during the winter months and affects mainly elderly people and migrants.

Vitamin D is a pluripotent hormone that modulates the innate and adaptive immune response. Vitamin D influences several immune pathways, with the net effect of boosting mucosal defenses while simultaneously dampening excessive inflammation. Vitamin D deficiency is a risk factor for and/or a driver of the exaggerated and persistent inflammation that is a hallmark of acute respiratory distress syndrome (ARDS). Vitamin D deficiency has been associated with an increased risk of respiratory infections such as respiratory syncytial virus infection, tuberculosis and influenza. The winter incidence of influenza closely correlates with seasonal serum vitamin D levels. In a meta-analysis of randomized controlled clinical trial, Bergman and colleagues demonstrated that prophylactic vitamin D reduced the risk of developing respiratory tract infections (OR, 0.64; 95% CI, 0.49 to 0.84). In this study, the optimal dose was between 1000 IU to 4000 IU/day and the benefit was greatest in those living at latitudes greater than 40 degrees. Vitamin D deficiency likely adversely affects the outcome of viral infections. Grant and Giovannucci reported a strong inverse correlation between UVB dose and the case fatality during the 1918–1919 influenza pandemic. As vitamin D deficiency enhances the cytokine storm, it may be particularly lethal in patients with SARS-CoV-2 infection.

Vitamin D is an immunomodulator hormone with an anti-inflammatory and antimicrobial effect with a high safety profile. A lot of COVID-19 infected patients develop acute respiratory distress syndrome (ARDS), which may lead to multiple organ damage. These symptoms are associated with a cytokine storm syndrome. The aim of this letter is to note the 5 crucial points that vitamin D could have protective and therapeutic effects against COVID-19. For that reason, COVID-19 infection-induced multiple organ damage might be prevented by vitamin D.

Important scientific link between Vitamin D levels and susceptibility to COVID-19 in patients.

Vitamin D insufficiency affects almost 50 percent of the population worldwide. An estimated 1 billion people worldwide, across all ethnicities and age groups, have a vitamin D deficiency (VDD). This pandemic of hypovitaminosis D can mainly be attributed to lifestyle (for example, reduced outdoor activities) and environmental (for example, air pollution) factors that reduce exposure to sunlight, which is required for ultraviolet-B (UVB)-induced vitamin D production in the skin. High prevalence of vitamin D insufficiency is a particularly important public health issue because hypovitaminosis D is an independent risk factor for total mortality in the general population.

Clinical Study Covid-19 and Vit D: The vitamin D endocrine system may have a variety of actions on cells and tissues involved in COVID-19 progression especially by decreasing the Acute Respiratory Distress Syndrome. Calcifediol can rapidly increase serum 25OHD concentration. We therefore evaluated the effect of calcifediol treatment, on Intensive Care Unit Admission and Mortality rate among Spanish patients hospitalized for COVID-19. Of the patients treated with calcifediol, none died, and all were discharged, without complications. The 13 patients not treated with calcifediol, who were not admitted to the ICU, were discharged. Of the 13 patients admitted to the ICU, two died and the remaining 11 were discharged. Our pilot study demonstrated that administration of a high dose of Calcifediol or 25-hydroxyvitamin D, a main metabolite of vitamin D endocrine system, significantly reduced the need for ICU treatment of patients requiring hospitalization due to proven COVID-19. Calcifediol seems to be able to reduce severity of the disease.

T-Cells: The vitamin D receptor (VDR) is a nuclear, ligand-dependent transcription factor that in complex with hormonally active vitamin D, 1,25(OH)2D3, regulates the expression of more than 900 genes involved in a wide array of physiological functions. The impact of 1,25(OH)2D3-VDR signaling on immune function has been the focus of many recent studies as a link between 1,25(OH)2D3 and susceptibility to various infections and to development of a variety of inflammatory diseases has been suggested. As T cells are of great importance for both protective immunity and development of

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