Vitamin D3 SAP

Science-based vitamin D for optimal health

In recent years, the importance of vitamin D has been thoroughly researched, and it has been found to be a critical vitamin to overall human health. It was once thought that a deficiency would have its impact only on the skeletal system, manifesting as rickets or osteomalacia. However, it has come to light that a suboptimal level of serum hydroxyvitamin D, known as an insufficiency, may contribute to a host of disease processes, including cardiovascular disease, cancer, autoimmune diseases, and infections.[1]

ACTIVE INGREDIENTS

Vitamin D3 SAP is available in both capsule and liquid form and with 1000 IU and 2500 IU.

CAPSULES

Each vegetable capsule (1000 IU) contains:
Vitamin D (vitamin D_3/cholecalciferol) (1000 IU) . . . . . 25 mcg

Each vegetable capsule (2500 IU) contains:
Vitamin D (vitamin D_3/cholecalciferol) (2500 IU) . . . . . 62.5 mcg

Other ingredients: Organic sunflower oil, rosemary extract, and natural vitamin E (d-alphatocopherol, from non-GMO sunflower) in a softgel composed of glycerin, bovine gelatin, and purified water.

Contains no: Gluten, soy, wheat, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, or sugar.

LIQUID

Each drop (1000 IU) contains:
Vitamin D (vitamin D_3/cholecalciferol) (1000 IU) . . . . . 25 mcg

Each drop (2500 IU) contains:
Vitamin D (vitamin D_3/cholecalciferol) (2500 IU) . . . . . 62.5 mcg

Other ingredients: Medium-chain triglycerides.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

These products are non-GMO and vegetarian friendly.

Vitamin D3 SAP 1000 IU contain 180 capsules per bottle or approximately 450 drops (15 ml) or 900 drops (30 ml) per bottle. **Vitamin D3 SAP 2500 IU** contain 180 capsules per bottle or approximately 450 drops (15 ml) per bottle.

DIRECTIONS FOR USE

Adults: Take 1 drop or 1 capsule daily or as directed by your healthcare practitioner.

INDICATIONS

Vitamin D3 SAP:

- Can be used to prevent suboptimal levels of hydroxyvitamin D in the body.
- Is used to help promote healthy bone development and for the prevention of osteoporosis.
- Is used to support healthy immune function by stimulating the innate immune response.
- May help to prevent the development of several autoimmune diseases.
- May help prevent and treat various types of cancer, including colon, breast and prostate cancers.

SAFETY

Vitamin D is safe when taken by mouth in appropriate amounts. Most people do not experience side effects unless too much is taken, and these may include weakness, fatigue, headache, dry mouth, nausea, or vomiting.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Vitamin D3 SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.

Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

NFH®

351, Rue Joseph-Carrier, Vaudreuil-Dorion, Quebec, J7V 5V5
T 1 866 510 3123 • F 1 866 510 3130 • nfh.ca

BIOCHEMISTRY

Vitamin D has 2 forms: vitamin D_2, called ergocalciferol, and D_3, cholecalciferol. Cholecalciferol is produced in the skin after exposure to UVB sunlight and can also be found in the diet in foods including liver, fatty fish including salmon, sardine and cod, or in egg yolks. Since few foods have naturally high vitamin D content, the majority of dietary vitamin D is ingested through fortified foods or supplements.[1] Ergocalciferol is found in some plants in the diet and can also be produced commercially by irradiation of yeast.[1]

Vitamins D_2 and D_3 both undergo identical metabolism in the liver and are converted to 25-hydroxyvitamin D, the serum level of which is measured to determine overall vitamin D status. The 25-hydroxyvitamin D [25(OH)D] is then hydroxylated in the kidney to 1,25-dihydroxyvitamin D, which is the biologically active form.[1] The 1,25-dihydroxyvitamin D predominately acts in the duodenum and increases calcium absorption, as well as acts on bone cells to mobilize calcium stores.[1]

Serum levels of 25-hydroxyvitamin D	Status
< 10 ng/ml or 25 nmol/ml	Deficiency
11–20 ng/ml or 25.5–49.9 nmol/ml	Insufficiency
>20 ng/ml or 50 nmol/ml	Optimal

BONE HEALTH

The function of vitamin D is to maintain serum calcium and phosphorus concentrations through regulating calcium absorption from the intestine or calcium reabsorption from bone, making vitamin D necessary for maintenance of healthy bone. The role of vitamin D insufficiency in osteoporosis is strongly recognized. For men and women over 50 years of age, evidence suggests that the plasma level of 25(OH)D needed to minimize fracture risk is ≥ 50 nmol/L, with 75 nmol/L being a more optimal level, and that an intake of 800–2000 IU/day of vitamin D_3 is needed to bring the population average to this level.[2, 3]

IMMUNE FUNCTION

Influenza in North America and Europe reaches its highest levels between December and March, which coincides with when 25-hydroxyvitamin D levels are at their lowest. In a 3-year, 3-armed study performed in New York using postmenopausal women, researchers had one placebo group, one group taking 800 IU of vitamin D, and one group taking 2,000 IU of vitamin D daily.[4] In the placebo group, 26 women reported having suffered from influenza or the common cold at least once; 7 women in the 800 IU group reported having one of these illnesses; and only 1 woman in the 2000 IU group reported having suffered from either the common cold or influenza.[4] Vitamin D may contribute to the prevention and perhaps the treatment of both infections and autoimmune diseases. 1,25-Dihydroxyvitamin D [1,25(OH_2)D] has both immunoregulatory and anti-inflammatory properties. Immune cells, including macrophages, dendritic cells and B cells, have the ability to respond to and synthesize 1,25(OH_2) D, which results in the enhancement of innate immunity while simultaneously inhibiting the autoimmune response mediated by T helper cells (T_h1).[5, 6] Several observational studies also support the hypothesis that vitamin D insufficiency leads to an increased risk of various autoimmune diseases, such as type 1 diabetes mellitus, psoriasis, rheumatoid arthritis and multiple sclerosis.[5] However, few interventional studies exist thus far, so this is certainly an area where more research needs to be conducted.

CANCER

Vitamin D is known to promote cellular differentiation, arrest cell proliferation and decrease the growth of various tumours in laboratory animals.[1] A meta-analysis of case-controlled studies of patients with or without colon cancer demonstrated that for every 20 ng/ml increase in serum 25(OH)D levels, the chances of colon cancer were reduced by more than 40%.[1] Some other studies have found that dietary calcium intake is also associated with a decreased risk of colon cancer, and since the majority of vitamin D in the diet comes from fortified dairy products, it is difficult to separate the effect of vitamin D from calcium.[1] Similar to colon cancer, breast cancer has also been associated with a deficiency in vitamin D. A combination of seven observational studies reported a lower risk of breast cancer among women with the highest 25(OH)D levels compared to the women with the lowest readings.[1]

In a study performed on mice, one group was fed a vitamin D-deficient diet, the second group was a control group. All mice were then injected with prostate cancer cell lines, either into their bone marrow or into soft tissue. The vitamin D-deficient group had significantly accelerated bone turnover, and at the end of the study, the total tumour area and tumour mitotic activity were all significantly increased in vitamin D-deficient mice, compared to controls; in contrast, there was no difference in soft tissue tumour growth from one group to the other.[7]

CARDIOVASCULAR DISEASE

Hypertension is a major risk factor for cardiovascular disease. In a meta-analysis that compared the results of 18 studies, it was concluded that the serum levels of 25(OH)D were inversely associated with hypertension.[8] A reduction in overall cardiovascular mortality has been demonstrated in patients with 25(OH)D levels greater than 40 ng/ml compared with patients whose values were less than 10 ng/ml.[1] In another observational study, patients who had undergone angiography had 25(OH)D levels monitored for 8 years after the procedure, while the patients in the highest 25(OH)D quartile (median 28 ng/ml) possessed a lower mortality rate than the patients in the lowest quartile (median 8 ng/ml).[1] These observational studies do not conclusively prove that low 25(OH)D levels increase cardiovascular mortality; however, low levels are also associated with serum markers of inflammation, which are indicators of cardiovascular disease risk.[1]

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