



Presents for your consideration:

Vitamin D

- ◆ **Vitamin D3 plays an integral role in calcium absorption and bone health**
 - ◆ **Immunomodulatory**
 - ◆ **Supports healthy immune function**
 - ◆ **Supports healthy skin**
 - ◆ **Cytokine modulator**
 - ◆ **Supports healthy cartilage and joints**
 - ◆ **Supports healthy vascular tone**
 - ◆ **Inhibits lipid peroxidation**
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For many people the principal source of vitamin D is through exposure of the skin to sunlight. Cholecalciferol, also known as vitamin D3, is formed from 7-dehydrocholesterol in the skin after exposure to UV light. Unfortunately, due to risk of skin cancer, many individuals are limiting sunlight exposure or using liberal amounts of sun protective factors (SPF) in sun tanning lotions, both of which limit vitamin D production in the skin. In the body cholecalciferol is hydroxylated to calcifediol in the liver and then to calcitriol in the kidneys, which are the active forms of vitamin D. The active forms of vitamin D work with parathyroid hormone and calcitonin to regulate serum calcium and phosphorus concentrations.

Vitamin D deficiency causes increased parathyroid hormone activity, which acts to maintain serum calcium and

phosphate concentrations, at the expense of skeletal calcium.

Bone Health Various studies have found an association between low serum levels of vitamin D and joint disorders as well as decreased bone density. In addition, risk for progression of these disorders increased substantially with both low Vitamin D intake and decreased serum level of vitamin D. Some of the best results obtained in studies on bone health have used 700 - 800 IU vitamin D per day, which is considerably higher than the recommended 400IU per day. The best results were obtained when vitamin D was given along with calcium.

Vitamin D	Amounts per serving
Serving size	1 capsule
Number of servings per container	90
Vitamin D3 (cholecalciferol)	1000 IU

Immune and Anti-inflammatory Support

One researcher described Vitamin D as a “flexible” bi-directional immuno-modulator. The cytokines interleukin 1 (IL-1) and interleukin 2 (IL-2) are regulated favorably under the influence of Vitamin D.

Healthy Skin Topical Vitamin D analogues have been shown to be effective in treatment of certain skin disorders. Vitamin D has anti-proliferative activity on keratinocytes and stimulated epidermal cell differentiation.

Cardiovascular Support

Epidemiological data indicates that a low vitamin D status is associated with vascular disorders. Clinical studies have demonstrated an inverse relationship between circulating vitamin D levels and plasma rennin activity. It should also be noted that Vitamin D has been shown to inhibit lipid peroxidation.

Contraindications

Vitamin D is contraindicated in those with hypercalcemia and in those with evidence of vitamin D toxicity.

Precautions

Pregnant women and nursing mothers should avoid vitamin D supplemental intakes greater than U.S. RDA amounts of the vitamin unless higher amounts are prescribed by their physicians. The current U.S. RDA for vitamin D is 400 IU or 10 mcg daily.

Interactions

Supplemental levels of vitamin D above the U.S. RDA should be used with caution in those on digoxin or any cardiac glycoside.

Hypercalcemia in those on digoxin may precipitate cardiac arrhythmias.

Use of thiazide and pharmacologic doses of vitamin D may cause hypercalcemia in some.

Toxicity

Dosage of vitamin D up to 60 mcg (2,400 IU)/day in healthy individuals rarely causes adverse reactions.

Chronic doses of 95 mcg (3,800 IU)/day or greater in healthy individuals may cause hypercalcemia.

Symptoms of hypercalcemia include: nausea, vomiting, weakness, headache, somnolence, dry mouth, constipation, metallic taste, muscle pain, and bone pain. Late symptoms include: polyuria, polydipsia, anorexia, weight loss, nocturia, conjunctivitis, pancreatitis, photophobia, rhinorrhea, pruritis, hyperthermia, decreased libido, elevated BUN, albuminuria, hypercholesterolemia, elevated ALT (SGPT), and AST (SGOT), ectopic calcification, nephrocalcinosis, hypertension and cardiac arrhythmias.

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