

D-Evail™ Suite

Highly Bioavailable Vitamin D3 with K1, K2, and GG*



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D-Evail™ is a highly bioavailable form of vitamin D3 alongside vitamins K1 and K2, and geranylgeraniol (GG) to support bone, immune, and cardiovascular health.* The D-Evail™ suite has three products with varying doses of vitamin D, depending on the clinical need:

- **D-Evail™ Synergy** contains 2,000 IU (50 mcg) of vitamin D3 as a dosage option for maintaining optimal vitamin D status
- **D-Evail™ Supreme** contains 5,000 IU (125 mcg) of vitamin D3 where higher doses are required for vitamin D deficiency or insufficiency
- **D-Evail™ 10K** contains 10,000 IU (250 mcg) of vitamin D3 for short-term supplementation in situations where more aggressive vitamin D repletion is recommended

Benefits:

- Supports bone health*
- Helps promote a healthy immune response*
- Supports cardiovascular health*

D-Evail™ Synergy

Supplement Facts

Serving Size 1 softgel

Amount Per Serving		% Daily Value
Vitamin D (as Cholecalciferol)	50 mcg (2000 IU)	250%
Vitamin K (as Vitamin K1 Phytonadione 1000 mcg; Vitamin K2 MK-4 50 mcg)	1050 mcg	875%

Trans-Geranylgeraniol (as GG-Gold®) 5 mg *

*Daily Value not established.

Other Ingredients: Bovine gelatin, purified water, glycerine, medium chain triglycerides, annatto (color), DeltaGold® tocotrienols, beeswax, quillaja extract.

D-Evail™ Supreme

Supplement Facts

Serving Size 1 softgel

Amount Per Serving		% Daily Value
Vitamin D (as Cholecalciferol)	125 mcg (5000 IU)	625%
Vitamin K (as Vitamin K1 Phytonadione 1000 mcg; Vitamin K2 MK-4 50 mcg)	1050 mcg	875%

Trans-Geranylgeraniol (as GG-Gold®) 5 mg *

*Daily Value not established.

Other Ingredients: Bovine gelatin, purified water, glycerine, medium chain triglycerides, annatto (color), DeltaGold® tocotrienols, beeswax, quillaja extract.

D-Evail™ 10k

Supplement Facts

Serving Size 1 softgel

Amount Per Serving		% Daily Value
Vitamin D (as Cholecalciferol)	250 mcg (10,000 IU)	1250%
Vitamin K (as Vitamin K1 Phytonadione 1000 mcg; Vitamin K2 MK-4 50 mcg)	1050 mcg	875%

Trans-Geranylgeraniol (as GG-Gold®) 5 mg *

*Daily Value not established.

Other Ingredients: Bovine gelatin, purified water, glycerine, medium chain triglycerides, annatto (color), DeltaGold® tocotrienols, beeswax, quillaja extract.

Each product in the D-Evail™ suite contains 1,050 mcg of vitamin K (1,000 mcg of vitamin K1 as phytonadione and 50 mcg of vitamin K2 as MK-4) and 5 mg of GG-Gold®, a patented form of GG, per serving to support bone health.* Designs for Health's proprietary Evail™ emulsification technology is designed to enhance the bioavailability and absorption of bioactive ingredients. The Evail™ process uses quillaja extract, along with delta- and gamma-tocotrienols and medium-chain triglycerides (MCTs) to support absorption.

Vitamin D is a fat-soluble vitamin that is well-known to support bone health through the regulation of calcium-phosphorus homeostasis and its role in bone turnover. Low vitamin D levels have been shown to decrease bone density and increase fracture risk.¹ Although vitamin D is classified as a vitamin, it more closely resembles and functions like a steroid hormone with broad influences on physiology.¹ Vitamin D receptors (VDRs) are found throughout the body and have been shown to influence the expression of thousands of genes.^{2,3} A number of cells involved in the immune system express VDRs and vitamin D-activating enzyme 1-alpha-hydroxylase (CYP27B1), which suggests that vitamin D in its active form plays a role in the immune system.¹

In addition to its well-known support of bone health and the immune system, vitamin D may also support cardiovascular health. A systematic review and meta-analysis of randomized control trials published in 2019 showed that vitamin D supplementation, which included D3 and D2, was not statistically significant in lowering mortality. Yet, when D3 was studied as a subgroup, all-cause mortality was significantly lower than in trials with D2.⁴ Vitamin D also plays a role in the brain, influencing brain development in early life and brain function in adults, and vitamin D deficiency can be associated with depressed moods and impaired cognition.⁵⁻⁹

Vitamin D deficiency or insufficiency is common, and epidemiological findings indicate that almost 30% of the U.S. adult population is deficient in this vitamin with another 40% who are insufficient.¹⁰ Vitamin D deficiency has been shown to play a role in autoimmune diseases, heart disease, and certain types of cancer.^{4,11,12} Evidence indicates that D3 is far more effective in raising and maintaining serum 25(OH)D concentration, and D2 should not be considered an equivalent.^{13,14} These factors highlight the clinical utility and value of supplementation with vitamin D across a broad patient population and variety of clinical presentations.

Ingredient Highlights

Vitamin K

Each product in the D-Evail™ suite contains 1,050 mcg of vitamin K (1,000 mcg of vitamin K1 as phytonadione and 50 mcg of vitamin K2 as MK-4 per serving). Vitamin K is also a fat-soluble vitamin like vitamin D, and vitamin K supports calcium metabolism. Current research suggests that the combined supplementation of both vitamins D and K can be more effective than either vitamin alone for both bone health and cardiovascular health.

In animal studies, vitamin K was given to prevent osteoporosis in rats. However, the prevention of bone loss only occurred in those rats fed a diet containing vitamin D or those that received vitamin D supplementation.¹⁵

Vitamin K exists in two main forms: vitamin K1 as phyloquinone, which is found in leafy green vegetables and is transported to the liver to support the production of coagulation factors, and vitamin K2 as menaquinone, which is found in certain animal products and fermented dairy, and it is also produced by gut microbiota.

Vitamin K2 is transported to the tissues, bones, and vascular wall, where it plays a key role in regulating the activity of matrix Gla protein and osteocalcin (bone Gla) protein through carboxylation.¹⁶ Vitamin K2, or menaquinone, has several forms, depending on the length of its side chain, which is delineated with MKn, where n can be from 1 to 14. MK-4 represents 90% of the total vitamin K stored in the human body. Animal studies have shown that long-chain forms of K2 convert into MK-4 in all tissues, except the liver.¹⁶

Studies have shown that supplementation with MK-4 has been shown to be the most efficient form of vitamin K2 at raising bone content. The efficacy of MK-4 is believed to be due to its feedback-inhibition impact on the mevalonate pathway through molecular mimicry of one of its downstream metabolites, geranylgeranyl pyrophosphate. This mimicry is believed to be unique to MK-4 due to the composition of its side chain and thus one reason why MK-4 has distinct effects compared with other forms of vitamins K2 or K1. MK-4 has been shown in studies to increase osteoblast production of osteocalcin and collagen type II. Additionally, MK-4 has been shown to reduce osteoblast apoptosis, demonstrating its unique ability to support bone strength.¹⁶ Therefore, MK-4 is the preferred clinical source of vitamin K2 in dietary supplementation due to its unique structure, effects on bone health, and predominance in the body.

Geranylgeraniol

Geranylgeraniol (GG) occurs naturally in annatto, flaxseed, sunflower oil, olive oil, tomatoes, and select medicinal herbs.¹⁷ GG is synthesized endogenously in humans, but endogenous production may not always be adequate to support the body's needs. Synthesis of GG declines naturally during aging, and it is inhibited when using certain pharmaceutical drugs, potentially resulting in the need for supplementation. GG plays a pivotal role in protein synthesis, CoQ10 production, and as a structural component of vitamin K2, further emphasizing its biological importance.

GG has been shown in laboratory studies to inhibit osteoclast formation in pathways independent from those of MK4. GG was shown to inhibit osteoclast formation through suppression of the receptor activator of NF-κB ligand (RANKL) expression, and there was no competitive action among GG and MK4 molecules.¹⁸

Recommended Use: Take 1 softgel daily with a meal or as directed by your health-care practitioner.

Warning: Due to the inclusion of vitamin K in this product, use caution when prescribing D-Evail™ products for patients who are taking Coumadin, warfarin, or other anticoagulant medications.

For a list of references cited in this document, please visit:

<http://www.designsforhealth.com/techsheet-references/d-evail-suite-references.pdf>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health-care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities. Individual monitoring, including liver function tests, may be appropriate.

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**These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.*

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