Emlah NATURALS

Liquid Vitamin D3K2

- Supports Healthy Blood Circulation
- Promotes Bone Health and Proper Calcium Storage
- Maintains Healthy Cardiometabolic Function and Supports Blood Sugar Balance Already Within Normal Levels
- Boosts Immune Function

What is Vitamin K2 with D3?

New research is focusing on the synergistic relationship between vitamin K2 and vitamin D3, for bone and cardiovascular health.[1] A group of naturally occurring and structurally similar, fat-soluble vitamins, vitamin K is essential for the proper utilization of calcium. Through its activation of the protein osteocalcin, vitamin K helps to bind newly absorbed calcium to the mineral matrix in bone. In addition, vitamin K has been found to help maintain bone mineral density by decreasing the activity of osteoclasts, a cell that breaks down the bone matrix.[2] Vitamin K also provides critical cardiovascular protection by helping to activate matrix Gla protein (MGP), an inhibitor of circulatory calcification.[3, 4] Thus, vitamin K and vitamin D not only share similar qualities but they also act synergistically with one another within the body.[5] Liquid Vitamin D3 with K2 utilizes a medium chain triglyceride (MCT) delivery system providing 10 mcg of MenaQ7® PRO, the most widely studied form of vitamin K2 as MK-7, and 1,000 IU of vitamin D3 per serving. Natural medium-chain triglycerides have unique physical properties that allow them to be readily absorbed without additional emulsifying agents. MCTs are a great way to deliver pure, tasteless and odorless liquid vitamin K2 and D3 that combine easily with any beverage.

Overview

While vitamin D has long been known to assist calcium absorption, it is vitamin K, through its carboxylation of osteocalcin, which guides this calcium to bones and prevents their absorption into organs, joint spaces and arteries. Vitamin K occurs in 2 main forms: K1 (phylloquinone), derived from foods such as green leafy vegetables and K2 (menaquinone), which is a group of related compounds differentiated by their side chains. Numerous studies have shown that vitamin K2 is the more bioavailable form of the nutrient[7], and more powerfully influences bone building than K1. In addition, though both reach the liver, most of the K1 is used for purposes of coagulation, with little left over to support the body's needs elsewhere.[8] The profoundly different degrees of bioavailability between K1 and K2 is due to their differences in structure; only 10-20% of vitamin K1 that is absorbed from food even reaches the circulation, while the long side-chain of vitamin K2 allows it to bind with fat particles in circulation and facilitate its arrival at soft tissue, bones and arteries. There are two forms of vitamin K2 commonly used in supplements: MK-4 and MK-7. The MK-7 form has been shown to have six times the activity of MK-4 in the blood. MK-7 has also been found to remain in the blood approximately nine times as long as the MK-4 (eight hours versus 72 hours), making it the optimal form of K2.[9]

The addition of MenaQ7® PRO to this formula is backed by extensive research. Dr. Leon Schurgers, world-renowned expert in vitamin K2 as MK-7 research for cardiovascular and bone health, and his team of research scientists have conducted over 15 clinical trials on MenaQ7® PRO through the University of Maastricht.

Vitamin K Depletion†

Although most people consume adequate dietary vitamin K to maintain sufficient blood clotting, most do *not* consume enough to meet cardiovascular and bone health needs. In fact, approximately 70% of the western population is deficient in vitamin K2. Compromised intestinal absorption can also lead to insufficient K2 levels leaving calcium available to be exported out of bone and into other tissues. Other medications such as antibiotics, cholesterol-lowering medications, and laxatives have also been found to contribute to a deficiency of vitamin K.[10]

Bone Health†

Building and maintaining healthy bones requires a number of key nutrients including vitamin K, for the proper binding of calcium to the bone matrix. A 2005 study from northern Finland found that those with greater levels of vitamin K-carboxylated

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

osteocalcin had stronger bones than those with lower levels of the protein. A Japanese study found superior bone health among women who were frequent MK-7-rich natto eaters than those who were not.[11] Another randomized study which split 172 women into a vitamin K2 group, a vitamin D3 group, a vitamin K2 and D3 group, and a placebo group for two years found that the combination of vitamin D3 and K2 had the most benefits for supporting bone health among the groups.[12]

Cardiovascular Health and Blood Sugar Balance†

Vitamin K plays a key role in supporting the cardiovascular system as well as blood sugar balance already within normal levels. In a large population study, researchers found that those who consumed high amounts of K2 had significantly better cardiovascular health markers compared to those given vitamin K1.[13] Studies have also shown vitamin K supports healthy blood sugar metabolism.[14, 15]

Immune Modulation†

New evidence also suggests vitamin K plays a central role in balancing immune health. Recent studies have shown that both vitamins D and K impart immune-modulating effects. In the Framingham Offspring Study, one of the longest standing studies on generational health, higher serum levels of vitamins D and K were associated with stronger immune function and a balanced inflammatory response. [16, 17] In a 2011 study, vitamin K was also found to suppress various markers of the immune system.[18]

Directions

1 or more drops per day or as recommended by your health care professional. Can be taken directly on the tongue or mixed with the beverage of your choice.

Does Not Contain

Wheat, gluten, dairy products, fish, shellfish, peanuts, tree nuts, egg, artificial colors, artificial sweeteners or preservatives.

Cautions

Do not consume this product if you are pregnant or nursing.

Supplement Facts V2

Serving Size 1 Drop (0.05 mL)
Servings Per Container About 590

1 drop contains	Amount Per Serving	% Daily Value
Vitamin D3 (as Cholecalciferol)	25 mcg (1,000 IU)	125%
Vitamin K2 (as Menaquinone-7 (MK-7))	10 mcg	8%

MenaQ7® PRO
Vitamin K2 as MK-7

MenaQ7® PRO is a registered trademark of NattoPharma, Norway.

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

References

1. Schurgers LJ, Spronk HM, Soute BA, Schiffers PM, DeMey JG, Vermeer C. Blood. Regression of warfarin-induced medial elastocalcinosis by high intake of vitamin K in rats 2007;109(7):2823-31.
2. Weber P. Management of osteoporosis: is there a role for vitamin K? *Int J Vitam Nutr Res* 1997;67(5):350-6.
3. Geleijnse JM, et al. Dietary intake of menaquinone is associated with a reduced risk of coronary heart disease: the Rotterdam Study. *J Nutr* 2004;134(11):3100-5.
4. Beulens JW, High dietary menaquinone intake is associated with reduced coronary calcification. *Atherosclerosis* 2009;203(2):489-93. Epub 2008 Jul 19.
5. Kidd PM. Vitamins D and K as pleiotropic nutrients: clinical importance to the skeletal and cardiovascular systems and preliminary evidence for synergy. *Altern Med Rev* 2010;15(3):199-222.
6. Plaza SM, Lamson DW. Vitamin K2 in bone metabolism and osteoporosis. *Altern Med Rev* 2005;10(1):24-35.
7. Schurgers LJ, Teunissen KJ, Hamulyák K, Knapen MH, Vik H, Vermeer C. Vitamin K-containing dietary supplements: comparison of synthetic vitamin K1 and natto-derived menaquinone. *Blood* 2007;109(8): 3279-83. Epub 2006 Dec 7. -7.
8. Shearer MJ. Vitamin K metabolism and nutriture. *Blood Rev* 1992;6(2):92-104.
9. Unpublished clinical studies, NattoPharma. On file
10. http://umm.edu/health/medical/altmed/supplement-depletion-links/drugs-that-deplete-vitamin-k
11. Kaneki M, Hodges SJ, Hosoi T, Fujiwara S, Lyons A, Crean SJ, Ishida N, Nakagawa M, Takechi M, Sano Y, Mizuno Y, Hoshino S, Miyao M, Inoue S, Horiki K, Shiraki M, Ouchi Y, Orimo H. Japanese fermented soybean food as the major determinant of the large geographic difference in circulating levels of vitamin K2: possible implications for hip-fracture risk. *Nutrition* 2001; 17(4):315-21.
12. Ushiroyama T, Ikeda A, Ueki M. Effect of continuous combined therapy with vitamin K(2) and vitamin D(3) on bone mineral density and coagulofibrinolysis function in postmenopausal women. *Maturitas* 2002; 41(3):211-21.
13. Geleijnse JM, Vermeer C, Grobbee DE, Schurgers LJ, Knapen MH, van der Meer IM, Hofman A, Witteman JC. Dietary intake of menaquinone is associated with a reduced risk of coronary heart disease: the Rotterdam Study. *J Nutr* 2004; 134(11):3100-5.
14. Beulens JW, van der A DL, Grobbee DE, Sluijs I, Spijkerman AM, van der Schouw YT. Dietary phylloquinone and menaquinones intakes and risk of type 2 diabetes. *Diabetes Care* 2010; 33(8):1699-705.
15. Choi HJ, Yu J, Choi H, An JH, Kim SW, Park KS, Jang HC, Kim SY, Shin CS. Vitamin K2 supplementation improves insulin sensitivity via osteocalcin metabolism: a placebo-controlled trial. *Diabetes Care* 2011; 34(9):e147.
16. Shea MK, Booth SL, Massaro JM, Jacques PF, D'Agostino RB Sr, Dawson-Hughes B, Ordovas JM, O'Donnell CJ, Kathiresan S, Keaney JF Jr, Vasan RS, Benjamin EJ. Vitamin K and vitamin D status: associations with inflammatory markers in the Framingham Offspring Study. *Am J Epidemiol* 2008; 167(3):313-20.
17. Iijima H, Shinzaki S, Takehara T. The importance of vitamins D and K for the bone health and immune function in inflammatory bowel disease. *Curr Opin Clin Nutr Metab Care* 2012; 15(6):635-40.
18. Checker R, Sharma D, Sandur SK, Khan NM, Patwardhan RS, Kohli V, Sainis KB. Vitamin K3 suppressed inflammatory and immune responses in a redox-dependent manner. *Free Radic Res* 2011; 45(8):975-85. Epub 2011 Jun 9.

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.