Natural Vitamin K2
MK-7 with MenaQ7® + D_3

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INGREDIENTS

Natural Vitamin K2 – MenaQ7® contains pure MenaQ7®, the superior form of vitamin K for optimum bioavailability and delivery to the body. MenaQ7™ is purified from natto, a traditional Japanese breakfast food made of fermented soybeans that is naturally rich in vitamin K2 (known as MK-7). Vitamin K2, also known as "menaquinones" belongs to the family of Vitamin K (fat-soluble vitamins with similar structures, but different metabolic properties). Compared to vitamin K1 (another form of vitamin K with similar properties to K2), vitamin K2 is absorbed more completely, remains in the body longer and delivers more benefits for bones, blood vessels and other soft tissues.*[1,2]

Vitamin D, a fat-soluble vitamin naturally present in certain types of food and available as a dietary supplement, includes two type of molecules: Vitamin D2 (also known as ergocalcifrol) and vitamin D3 (also known as chlolecalciferol). Vitamin D is known to interact with over 200 different genes and thus plays a crucial regulatory role as a metabolic activator for a multitude of metabolic processes. Research shows that supplemental vitamin D3 is significantly more efficient at converting to active vitamin D in the body than vitamin D2.[3] This makes vitamin D3 the preferred supplemental form of this nutrient.

BENEFITS

Natural Vitamin K2 with MenaQ7® plus D3 helps:

- Improve artery elasticity*
- Support cardiovascular function*
- Support healthy arteries*
- Promote arterial flexibility*
- Control blood pressure*
- Manage excess serum calcium levels in the body*
- Promote bone health*

EXTENDED BENEFITS

The Importance of Vitamin K2 and Vitamin D3

Vitamin K, a fat-soluble vitamin group, is primarily known for its role in regulating blood coagulation. The daily intake of vitamin K recommended by the National Academy of Sciences is based on the amount needed for biosynthesis of these clotting factors in the liver.[4] For the past decades, vitamin K has also prompted an increasing interest for its effects in extra-hepatic tissues, in particular in the regulation of bone and vascular metabolism.[5,6,7] Vitamin K exists in two major forms: phylloquinone (known as K1) and the menaquinones (known as K2). Phylloquinone is the major dietary form in food and menaquinones are synthesized in the large intestine by gut bacteria, although how much this contributes to the body's vitamin K supply is somewhat uncertain.[8] Menaquinones are named MK-7, MK-8 and MK-9, according to the length of the side chains attached to the parent molecule. Fermented foods contain substantial amounts of K2, produced by bacteria that cause the fermentation. MK-7 is the primary menaquinones found in fermented foods such as natto. Because of its longer side chain, MK-7 is more stable in the bloodstream and therefore has a much longer half-life in human blood than any other forms of vitamin K.[9,10]

Vitamin D is a nutrient that is critical to many bodily functions. It is beneficial for supporting bone health, immune wellness, cardiovascular function, and cellular metabolism.* Vitamin D derived from the skin and diet. It is metabolized in the liver then in the kidneys to its active form, 1,25-dihydroxyvitamin D [1,25(OH)2D or calcitriol]. The renal production of 1,25(OH)2D is tightly regulated by plasma parathyroid hormone levels and serum calcium and phosphorus levels.[11] Researchers suggest that levels between 50 and 80 ng/mL are optimal for supporting health.[12] The FNB (Food and Nutrition Board) has also established an RDA (Recommended Dietary Allowance) for vitamin D, a daily intake that is sufficient to maintain bone health and normal calcium metabolism in healthy people. Recent studies have shown that RDAs levels are often inadequate for assuring optimal vitamin D status and for achieving the health benefits associated with adequate vitamin D levels. Some researchers suggest that a minimum daily intake of 1,000 IU is necessary to maintain barely adequate blood

Supplement Facts

Serving Size 1 Veggie Capsule
Servings Per Container 60

	Amount Per Serving	% Daily Value
Vitamin D3 (as Cholecalciferol)	25 mcg (1000 IU)	130%
Vitamin K2 (from MenaQ7® Menaquinone, MK-7)	180 mcg	150%

Other Ingredients: Microcrystalline cellulose, modified cellulose (vegetarian capsule), silicon dioxide, glycerol monostearate, ascorbyl palmitate, rosemary extract, sodium ascorbate, modified food starch, medium chain triglycerides, sucrose.

Suggested Adult Use: Take 1 capsule daily with food, or as recommended by a nutritionally-informed physician.

Caution: This product contains vitamin K. Consult your physician if using blood-thinning medications such as Warfarin.

Non-GMO / Gluten Free / Vegetarian / Soy Free

Store in a cool dry place.

* 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.

levels of vitamin D while others agree that significantly higher doses are needed to ensure optimal health.*[13,14]

Natural Vitamin K2 with MenaQ7® and Vitamin D3 improves soft tissue elasticity and supports cardiovascular function*

Vitamin K-dependent proteins are present in blood and in a wide variety of tissues throughout the body. They exert a broad range of functions, for example as blood coagulation factors in hemostasis. In recent years, one of these proteins has gained increasing attention: Osteocalcin also known as Matrix Gla Protein (MGP), a vitamin-K dependent protein, known for being a potent inhibitor of calcification present in cartilage and the vessel wall, helps keep calcium from accumulating in soft tissues where it doesn't belong, thereby supporting vascular health.*[15,16] Calcium will be removed in a coordinated system of activated MGP, soluble factors, cells and tissues, keeping the arteries healthy and flexible.[17] MGP must be carboxylated to be activated. A recent study found a strong connection between blood levels of active MGP and arterial health. Previous research discovered a link between vascular health and proper vitamin K nutrition.[18] Vitamin K deficiency results in undercarboxylation - or inadequate activation - of MGP and this greatly impairs normal function of this calcium removal process.[19]

Vitamin D also plays an important role in cardiovascular health.*[20] The active form of vitamin D3 binds to the vitamin D receptor (VDR). VDR is a nuclear steroid receptor expressed on at least 36 different tissues including cardiac muscle, vascular smooth muscle, and endothelium. Basic science investigation and many clinical trials over the past 20 years have showed the positive effect of vitamin D3 on cardiovascular health.*[21-25]

Natural Vitamin K2 with MenaQ7® and Vitamin D3 helps promote arterial flexibility*

Dietary calcium is linked to many benefits, particularly bone health but because some evidence points to health problems at elevated levels, some studies have led to the finding that vitamin K2 were to be added to a high-calcium regimen since vitamin K2 promotes arterial flexibility by preventing accumulation of arterial calcium.*[26-28]

Natural Vitamin K2 with MenaQ7® and vitamin D3 help control blood pressure*

Many observations were made regarding the effect of vitamin D metabolites on blood pressure and many clinical trials highlighted the positive effect of vitamin D3 on blood pressure.*[29-31] The mechanism underlying the inverse association of serum 25(OH)D with blood pressure seems to involve the regulation of the renin–angiotensin–aldosterone system (RAAS), system well known to be involved in the regulation of blood pressure, via the binding of 1,25(OH)2D to VDR.[32,33]

Natural Vitamin K2 with MenaQ7® and Vitamin D3 helps promote bone health*

Vitamin D is needed to maintain strong bones and helps promote bone health especially in elderly.*[34] Vitamin D3 has become the standard of vitamin D as it tends to be better absorbed than other forms of vitamin D and many clinical trials have used vitamin D3 with and without vitamin K to show the importance of vitamin D and vitamin K in bone health.*[35-37]

As for vitamin K, observational and clinical studies, started in Japan, showed that bone fracture frequency were inversely correlated with high consumption levels of natto (fermented soybean containing large amounts of MK-7). These studies suggested that daily intake of vitamin K may improve bone health*.[38-41] It was found that vitamin K2 is key in the activation of osteocalcin, a protein that integrates calcium into bone to ensure a healthy skeleton. Likewise, the role of vitamin K2 in promoting healthy bone has been highlighted in several clinical studies.[7,42,43]

CLINICAL STUDIES

A study demonstrated the efficacious effect of MenaQ7® on arterial stiffness. The participants of this double-blind study, 244 postmenopausal women, were treated with either placebo or MenaQ7® for a period of three years. The use of MenaQ7® significantly decreased arterial stiffness and improved vascular elasticity in the treatment group, whereas the placebo group saw an increase in arterial stiffness.*[44]

A large-scale study on vitamin K intakes among 5,000 Dutch persons suggests that vitamin K2 may help maintain healthy blood vessels.* The study participants were divided into four groups based on their daily vitamin K intake from food sources, as assessed from a food frequency questionnaire. Compared to those in the low vitamin K2/menaquinone group, subjects with the highest consumption level of K2 had substantially superior heart health.* Similar associations were not seen for vitamin K1.[45]

A study investigated the association of intake of phylloquinone and menaquinones with coronary calcification in a cross-sectional study among post-menopausal healthy women. This study shows that high intake of menaquinones (K2) is associated with reduced coronary calcification. Adequate intakes of menaquinones should therefore be important to prevent artery damage and support cardiovascular function.*[46]

Data from the Prospect EPIC cohort (16,057 women enrolled between 1993 and 1997, aged 49-70 years and with no history of cardiovascular problems at baseline) showed that high intake of natural vitamin K2 (i.e, not synthetic K2, and not of vitamin K1) was associated with protection against cardiovascular events. For every 10 mcg of dietary vitamin K2 consumed in the forms of menaquinone 7 (MK-7), menaquinone 8 (MK-8), and menaquinone 9 (MK-9), the risk of coronary heart disease was reduced by 9%.[47]

Studies in humans have confirmed the importance of vitamin D for heart function.* In a study consisting of 1,739 participants from the Framingham Offspring Study, those individuals with the highest levels of vitamin D had superior cardiac function in relation to those with low vitamin D levels.[48]

Results from a double-blind randomized clinical trial showed that menaQ7® (180 mcg daily for 3 years) supplementation improved some parameters of arterial stiffness in healthy post-menopausal women. The study concluded that MenaQ7® improved soft tissue elasticity and supports cardiovascular function.*[5]

A cross-sectional study was conducted of 2722 individuals and demonstrated increased rates of blood pressure in individuals who tested for lower levels of 25-hydroxyvitamin D starting at levels <40 ng/mL. This retrospective analysis suggested that supplementing to optimal vitamin D levels may help control blood pressure.*[49]

A study included 158 patients aged 35–65 years with no evidence of overt manifestation of cardiovascular disease or kidney disease, found that level of 25(OH)D3 was significantly lower in participants with high blood pressure compared to participants that had normal blood pressure. The study concluded that the influence of 25(OH)D3 on systolic blood pressure variation, mediated by its effect on endothelial dysfunction and subclinical organ damage, was modest but significant.[50]

A randomized, double-blind, placebo-controlled trial was conducted to evaluate the effect of oral vitamin D supplementation on blood pressure in participants uncontrolled blood pressure and vitamin D3 deficiency. Results showed that weekly administration of 50,000 IU of oral vitamin D3 for 8 weeks did decrease overall blood pressure and improve the status of vitamin D in the body. Based on the results, they concluded vitamin D3 supplementation may be an adjunct supplement very helpful in controlling blood pressure.*[51]

A study explored the relationship between phylloquinones (vitamin K1) and menaquinones (vitamin K2) intakes and the risk of cardiovascular problems in a prospective cohort with 36,629 participants. They concluded that high vitamin K2 intake was the best at reducing the risk of cardiovascular problems especially normalizing blood pressure.*[52]

A 12-month clinical intervention among healthy postmenopausal women was conducted to examine the effect of dairy products enriched with calcium (Ca), vitamin D3 (D3), and vitamin k1 (K1) or vitamin k2 (K2) on parameters of bone metabolism. Compared to the control group (group without any dietary intervention), all the other groups (CaD3, CaD3K1 and CaD3K2) showed significant increases in total-body bone mineral density (BMD) and the 2 groups that received K1 or K2 also showed significant increases in lumbar spine BMD. The study concluded that vitamin K1 and Vitamin K2 are two vitamin Ks with favorable effect in bone metabolism and bone mass.*[38]

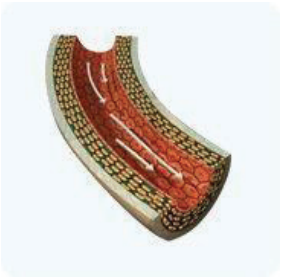
To investigate the effective minimum daily menaquinone-7 dose for improving osteocalcin γ-carboxylation, an index of bone health, a Japanese research team conducted couple of double-blind, randomized controlled trials. Results from the first study found that daily doses of either 100 mcg or 200 mcg MK-7 were efficient in increasing osteocalcin γ-carboxylation compared to the 0 mcg group. From the second study, osteocalcin γ-carboxylation improved significantly in the 100 µg MK-7 group compared to the placebo group. From all these results, it was concluded that daily MK-7 intake of 100 mcg or more was efficient to improve osteocalcin γ-carboxylation and therefore bone health.*[53]

A one-year double-blind, randomized control trial was conducted to assess the effect of a special formulation (of melatonin, strontium, vitamin D3, and vitamin K2-MSDK) on bone health among postmenopausal women. Compared to placebo, MSDK treatment increased bone mass density in certain area like the lumbar spine and left femoral neck. Compared to placebo, MSDK treatment reduced bone marker turnover by increasing certain bone formation markers and maintaining healthy bone turnover. The study concluded that the combination of melatonin, strontium, vitamin D3, and vitamin K2 could be an alternative option for improving bone health in postmenopausal women.*[54]

Caution: This product contains vitamin K. Consult your physician if using blood-thinning medications such as Warfarin.

Source: MenaQ7 Website

"Calcification increases vessels' stiffness and fragility, impeding healthy blood flow to and from the heart."



Healthy Arteries

Unhealthy (Stiff) Arteries

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