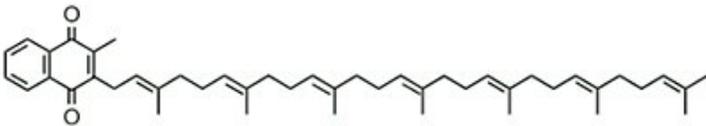


MK-7 Vitamin K₂

TECHNICAL SUMMARY

Vitamin K is well known for its role in blood clotting, but it has also been found to play an important role in normal bone formation and the preservation of bone strength.* Vitamin K₂ is more specifically a significant regulator of tissue calcification and is critical for the maintenance of arterial elasticity and cardiovascular health.* Vitamin K₂ includes two of the most studied subtypes, MK-7 (Menaquinone-7) and MK-4 (Menatetrenone). MK-7, the most readily absorbed and bioactive form of K₂, has no common dietary sources.* Unlike vitamin K₁, which is stored in the liver, MK-7 is transported directly to tissues and has a longer half-life than either K₁ or MK-4.*

Structure Formula:



Chemical Name: 2-methyl-3-farnesylgeranylgeranyl-1,4-naphthoquinone (menaquinone-7; MK-7)

Allergen and Additive Disclosure: Not manufactured with wheat, gluten, soy, milk, egg, fish, shellfish, or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Tablet

ROLE AS NUTRIENT/FUNCTION

Vitamin K₂ is a generic term for a group of molecules of different sizes. This product has menaquinone-7, a purified form of vitamin K₂ with unique biological properties. Vitamin K is essential for the proper function (gamma-carboxylation of glutamyl amino acid residues) of GLA proteins in the body, including proteins involved in extracellular matrix mineralization such as osteocalcin in bones, and other matrix GLA proteins (MGP) found in cartilage and artery walls.* Clinical data suggest, for example, that MK-7 supplementation is able to induce prolonged carboxylation of osteocalcin and MGP in the blood.*

NATUROKINETICS®

Liberation: Disintegration of the tablet is measured in water using a USP testing method with disintegration between zero to 60 minutes.

Absorption: Vitamin K₂ is a fat soluble vitamin. Following oral ingestion, MK-7 is rapidly and well absorbed in the intestine and enters blood circulation via the lymphatic system as part of the chylomicron fraction of plasma. Vitamin K₂ is most efficiently absorbed when consumed with foods containing fat. (Figure 1)

Distribution: MK-7 has a very long half-life. After oral ingestion it can be detected in the plasma for more than 48 hours and up to 92 hours. MK-7's distribution in tissues has not been yet fully elucidated; however, it is known to be present in the liver, pancreas, heart, and bone lipids.

Supplement Facts

Serving Size 1 Tablet

	Amount Per Serving	% Daily Value
Vitamin K ₂ (as Menaquinone-7) (MK-7) (MenaQ7®)	160 mcg	133%

Other ingredients: Microcrystalline Cellulose, Magnesium Oxide, Hydroxypropyl Cellulose, Stearic Acid (vegetable source), Silicon Dioxide, Magnesium Stearate (vegetable source) and Vegetarian Coating.

- Supports Bone Health*
- Supports Vascular Elasticity*

SUGGESTED USAGE: Take 1 tablet 1 to 2 times daily.

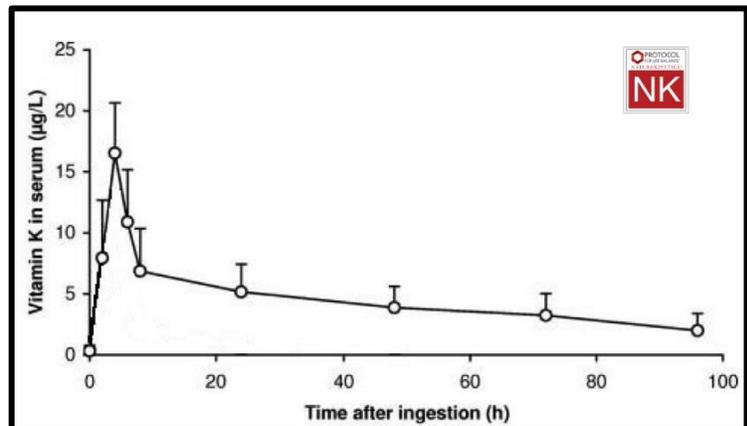


Figure 1: Circulating vitamin K concentrations following a single oral dose of 1 mg MK-7. Baseline level <0.05 mcg/L was subtracted from all values.

Metabolism: In the bloodstream, chylomicrons carrying vitamin K are metabolized into chylomicron remnants which are cleared by the liver. MK-7 metabolism in the liver is only partially known, it is most likely degraded through omega- and beta-oxidation and the obtained metabolites are then conjugated with glucuronic acid.

Elimination: The products of MK-7 metabolism are excreted in the bile and urine.

CLINICAL VALIDATION

- **Bone health support.*** In a prospective double-blind placebo-controlled clinical trial with 244 healthy postmenopausal women, MK-7 supplementation (180 mcg/d or placebo for 3 years) resulted in a significantly improved vitamin K status and it decreased the age-related decline bone mass density (BMD) and bone mineral content (BMC).* (figure 2)

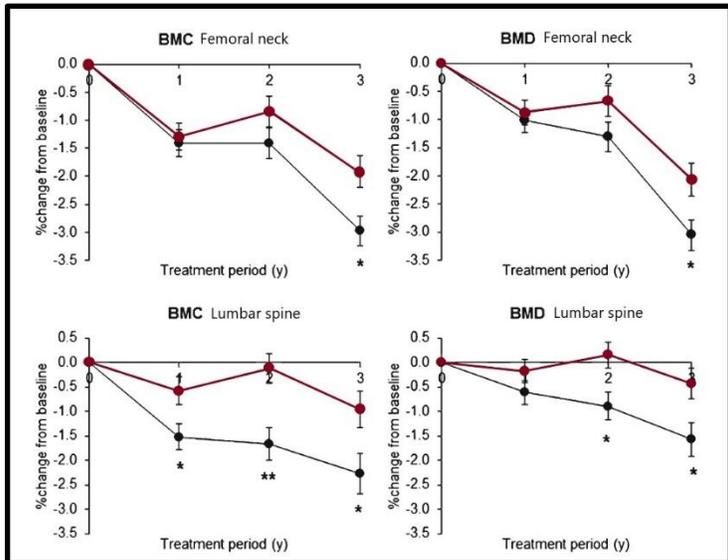


Figure 2: Effect of MK-7 (red line) on BMC and BMD of the femoral neck and lumbar spine over 3 years of supplementation in healthy postmenopausal women.

- Cardiovascular support.*** In a prospective double-blind placebo-controlled clinical trial with 244 healthy postmenopausal women, MK-7 supplementation (180 mcg/d or placebo for 3 years) resulted in a significant improvement in a marker of arterial stiffness.* (figure 3)

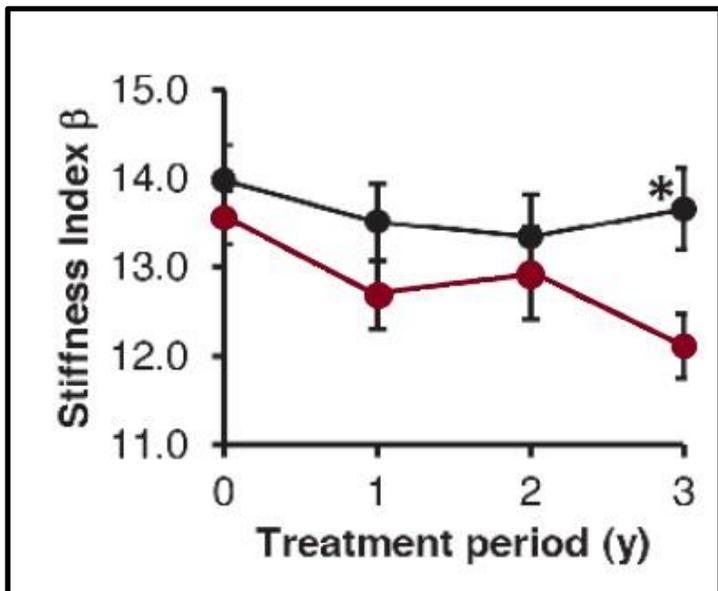


Figure 3: Effect of Mk-7 (red line) of artery stiffness index over 3 years of supplementation in healthy postmenopausal women.

SAFETY INFORMATION

Tolerability: MK-7 is well tolerated when used as directed. Occasional gastrointestinal complaints may occur.

Contraindications: Individuals receiving vitamin K antagonists (VKA).

INTERACTIONS

Drug Interactions: Possible interactions with cardiac glycosides, atorvastatin, thiazide diuretics, and anti-coagulant medication.

Supplement Interactions: CoQ10 and vitamin K2 have similar chemical structures, concomitant use may theoretically have an additive effect.

Interaction with Lab Tests: Osteocalcin blood levels can be increased by vitamin K2 supplementation.

STORAGE

Store in a cool, dry place in original sealed container.