Vitamin K

Cat. No.:	HY-B2172
CAS No.:	12001-79-5
Target:	Endogenous Metabolite
Pathway:	Metabolic Enzyme/Protease
Storage:	Pure form -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month

SOLVENT & SOLUBILITY

In Vitro	DMSO : 100 mg/mL (Need ultrasonic)
In Vivo	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (Infinity mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Vitamin K, the blood-clotting vitamin, is important for the function of numerous proteins within the body, such as the coagulation factors, osteocalcin and matrix-Gla protein.
IC_{50} & Target	Microbial Metabolite
In Vitro	Phylloquinone (vitamin K1) and Menaquinones (vitamin K2) are the two naturally occurring forms of vitamin K. Phylloquionone is the major dietary source of vitamin K and is found at highest concentrations in green leafy vegetables[1]. Vitamin K2 (menaquinone) is found in small amounts in chicken, butter, egg yolks, cheese and fermented soyabeans. Vitamin K1 and vitamin K2 are required for the γ-glutamyl carboxylation of all vitamin K-dependent proteins[2]. Vitamin K has important actions in the nervous system. Vitamin K contributes to the biological activation of proteins Gas6 and protein S, ligands for the receptor tyrosine kinases of the TAM family (Tyro3, Axl, and Mer). In brain, vitamin K also participates in the synthesis of sphingolipids, an important class of lipids present in high concentrations in brain cell membranes[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Vitamin K is well-known for its function in blood coagulation. Several human studies report the beneficial role of vitamin K supplementation in improving insulin sensitivity and glucose tolerance, preventing insulin resistance, and reducing the risk of type 2 diabetes[1]. The adequate intake for vitamin K has been proposed to be 90 μg/day for women and 120 μg/day for men[2]. Vitamin K deficiency results in an increase in undercarboxylated osteocalcin, a protein with low biological activity. Several studies have demonstrated that low dietary vitamin K intake is associated with low bone mineral density or increased fractures. Additionally, vitamin K supplementation has been shown to reduce undercarboxylated osteocalcin and improve the bone turnover profile[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Manna P, et al. Beneficial role of vitamin K supplementation on insulin sensitivity, glucose metabolism, and the reduced risk of type 2 diabetes: A review. Nutrition. 2016 Jul-Aug;32(7-8):732-9.

[2]. DiNicolantonio JJ, et al. The health benefits of vitamin K. Open Heart. 2015 Oct 6;2(1):e000300.

[3]. Ferland G, et al. Vitamin K, an emerging nutrient in brain function. Biofactors. 2012 Mar-Apr;38(2):151-7.

[4]. Bügel S, et al. Vitamin K and bone health. Proc Nutr Soc. 2003 Nov;62(4):839-43.

Caution: Product has not been fully validated for medical applications. For research use only.

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