

Vitamin K for Cardiovascular Health

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Vitamin K dependent proteins have been found in virtually every tissue in the body. While historically vitamin K has been best known for its capacity to enhance blood clotting, emerging research indicates key roles for bone mineralization, cell function and cardiovascular health.*

Vitamin K is present in the body and in food in two major forms. Vitamin K₁ (also called phyloquinone) is found in plant foods such as leafy green vegetables, and to a lesser extent in some vegetable oils. Vitamin K₂ (also called menaquinone) is found in eggs, meat, cheese and natto (fermented soybeans). Vitamin K₂ is further classified according to the number of isoprenyl units on its side chain. Thus, vitamin K₂ with 4 isoprenyl units is called menaquinone-4 (MK-4), and vitamin K₂ with 7 units is called menaquinone-7 (MK-7).

Vitamin K is involved in the synthesis of a protein known as matrix Gla protein, which helps regulate calcium balance in vascular tissue. Vitamin K-dependent proteins also play a role in bone health, programmed cell death, immune function and regulation of cell growth. Studies have shown that the amount of vitamin K needed to optimize some of these functions is greater than the amount needed to promote normal blood clotting function.¹*

Research indicates that low vitamin K status can affect vascular calcium balance.² In a recent observational study of postmenopausal women, higher dietary intake of vitamin K₂ was associated with improved calcium balance in the walls of arteries.³ Intake of vitamin K₁ did not appear to affect arterial calcium balance. This difference may be due to the fact that vitamin K₂ has a higher affinity than vitamin K₁ for vascular tissue.*

Two forms of vitamin K₂ that are present in food are also commercially available as supplements. These are MK-4 and MK-7. MK-7, the form of vitamin K₂ found in natto, has been found to have greater biological activity and a longer half-life than MK-4. In one study, rats were fed a vitamin K-deficient diet until their prothrombin time became prolonged and they were then given a single dose of vitamin K₂, in the form of MK-4 or MK-7. Both types of vitamin K₂ shortened the prothrombin time, indicating they were both capable of supporting healthy vitamin K levels. However, the effect lasted only 24 hours in the animals given MK-4^{4,5}, as

compared with at least 72 hours in those given MK-7. Based on these findings, MK-7 may be the preferred form of vitamin K for promoting cardiovascular health.*

References:

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