

Vitamin K2 is an Essential Bone Builder... for Old and Young Alike

Evidence continues to accumulate confirming the important role Vitamin K2 plays in our bone health, as well as our need to address this aspect of health as early as possible.

Understanding Vitamin K2

Vitamin K2 is part of the Vitamin K family. Vitamin K1 is better known due to its essential role in blood clotting, an activity regulated by the liver. However, Vitamin K2, specifically as the menaquinone-7 (MK-7) form, contributes to blood clotting as well, but because it is the most bioavailable of the K vitamins¹, it is able to extend beyond the liver to activate K-dependent proteins in other systems, such as the bones and the vasculature.

In regards to bone health, Vitamin K2 activates a protein produced by osteocalcin (bone cells) that binds calcium ions to the bone mineral matrix, thus strengthening the skeleton. But without adequate K2, osteocalcin remains inactive and calcium is not directed to create stronger bones.

A three-year study of Vitamin K2 as MK-7 and 244 healthy postmenopausal women, published in *Osteoporosis International*, offered the clearest validation of Vitamin K2's impact on bone health, showing the first clinically statistically significant protection of the vertebrae and the hip (femoral neck) against bone loss. This was achieved with a nutritional dose of 180 mcg daily of K2. The Vitamin K2 supplemented group significantly increased the circulating active osteocalcin (cOC), while the inactive osteocalcin (ucOC) in the group decreased as compared to the placebo group. After three years of supplementation, maintenance in both bone mineral content and bone mineral density were statistically significant in the K2 group. Moreover, bone strength was statistically improved, demonstrating therapeutic benefits for the K2 group.²

In addition, a study published in 2015 in *The Journal of Nutritional Science*⁴ further highlighted MK-7's positive effect on both bone and cardiovascular health. Researchers examined a MK-7-fortified yogurt drink (28 mcg yogurt drink) for its effect on Vitamin K status as well as markers of vascular health. Healthy men (n†32) and postmenopausal women (n†28) with a mean age of 56 (SD 5) years received either basic or fortified yogurt drink twice per day for 12 weeks. MK-7 was efficiently absorbed from the fortified yogurt drink and K status was improved, as measured by significant decreases in inactive osteocalcin and matrix Gla protein (MGP), a K-dependent protein that is the strongest inhibitor of vascular calcification.



Addressing Bone Health Early

The probability of developing a bone disease later in life is closely related to the amount of bone mass one accumulates before age 30, so it is essential to adopt good bone-building habits early. Up to 90 percent of peak bone mass is acquired by age 18 in girls and by age 20 in boys. Just a 10 percent increase in bone mass is estimated to reduce the risk of osteoporotic fracture in adult life by 50 percent.⁵

Not only has it been revealed that 97% of Western populations are deficient⁶ in Vitamin K2, but a 2014 study published in *Food & Function* exposed that healthy children have the largest tissue-specific Vitamin K deficiency – eight to 10 times more inactive osteocalcin than adults.⁷ Further, a 2009 study published in the *British Journal of Nutrition* demonstrated in healthy pre-pubertal children that modest supplementation with Vitamin K2 as MK-7 (45 mcg/day for 8 weeks) increased osteocalcin activation, creating stronger, denser bones.⁸

In conclusion, we need sufficient Vitamin K2 to secure healthy skeletal foundation during childhood; we need K2 to support our bones during our adult life; and we need K2 to inhibit loss of bone mass and strength during our senior years. As most are deficient in this vital nutrient, supplementation presents a viable alternative, for young and old.

References:

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