

Vitamin K Associated with Bone Health.

By Bone

In 1935, a scientist in Copenhagen observed that newly hatched chickens receiving a diet containing all of the known essential nutrients were developing a hemorrhagic disease. The problem was believed to be related to a decrease in prothrombin, a substance necessary for normal clotting of blood. The Danish scientist named this newly discovered antihemorrhagic factor vitamin K or "Koagulationsvitamin." Vitamin K refers to a group of three vitamins called the quinones. The K vitamins have a central ring structure with their varying pharmacokinetics being determined by varying side chains. Phytonadione (K1) is the only K vitamin commercially available in the United States. It is available by prescription in either tablet form or injection.

Best sources of phylloquinone (vitamin K1) are spinach and salad greens which contain more than 300mcg per 100g. Broccoli, brussel sprouts and cabbage contain 100 to 200mcg of vitamin K1 per 100g. Menaquinone (vitamin K2) is synthesized in the digestive tract by intestinal bacteria and can also be found in some types of cheese. Most individuals can acquire the necessary amount of vitamin K from their diet. But, since vitamin K2 is also synthesized in the intestines, humans are not dependent upon food for this nutrient.

A recent study sought to investigate whether vitamin K intake is associated with bone health in elderly men and women. The cross-sectional analysis included 200 elderly people with an average age of 67 years. The participants completed a 137-item food frequency questionnaire and were followed for two years. Researchers analyzed bone health using quantitative ultrasound assessment. It was found that a higher vitamin K intake was associated with superior bone properties. The results also revealed that an increase in dietary vitamin K was significantly related to lower losses of bone mineral density and smaller increases in the porosity and elasticity attributed to aging, which helps to explain the protective effect of vitamin K intake against osteoporotic fractures. Since the participants in this analysis already ate a healthy diet that was rich in vitamin K, even more beneficial effects may be seen in populations with a lower intake of vitamin K or poor nutrition. These findings suggest that diets rich in vitamin K may help promote bone health in elderly adults.¹

¹Bullo M, Estruch R, Salas-Salvado J. Dietary vitamin K intake is associated with bone quantitative ultrasound measurements but not with bone peripheral biochemical markers in elderly men and women. *Bone*. Mar2011.