



Vitamin K and bone mineral density in older men and women

Shea, M. K., Dallal, G. E., Dawson-Hughes, B., Ordovas, J. M., O'Donnell, C. J., Gundberg, C. M., & Booth, S. L. (2008). Vitamin K, circulating cytokines, and bone mineral density in older men and women. *American Journal of Clinical Nutrition*, 88(2), 356-363.

Background

It has been suggested that vitamin K plays various roles in maintaining good bone mineral density. This study set out to examine the impact of vitamin K supplementation (through multi-vitamins) on the concentration of cytokines associated with bone turnover. The study also looked at the impact of the type of vitamin K supplemented. Finally, the study aimed to look at how a change in circulating cytokine concentrations impacted bone mineral density.

What Was Done?

A group of men and women, with a mean age of 68 years, participated in a double-blind trial. This trial focused on the impact of vitamin K supplementation on cytokines in the body and its effect on bone mineral density. Participants were randomly divided into a participant and a placebo group. The participant group was given a multi-vitamin which contained 500 micrograms of phylloquinone, the main dietary form of vitamin K, along with a second tablet that contained calcium and vitamin D. The placebo group took a similar supplement, with the exception of phylloquinone. Both supplements were taken once daily. Blood samples were drawn at the beginning and end of the three-year experiment to measure cytokine concentration as well as vitamin K serum levels. Bone mineral density was determined with dual-energy X-ray absorptiometry. Other health related information such as new medications, smoking status, and dietary intake were collected from participants every six months.

What Was Found?

Over the three-year period, associations between vitamin K status and the carboxylation reactions and cytokine concentrations confirmed previous research. However, there was no general association between vitamin K status and improved bone mineral density.

Importance of this Research

It was previously thought that there was an indirect connection between vitamin K status and improved bone mineral density. The results of this study did not support this idea. Randomized trials are important to determine cause and effect and ensure that relationships between diet and body functions have an impact on primary outcomes such as bone density. The authors suggest that the negative results may have been due to poor nutrition and health status over all.

Written by Megan Kraus, 2010