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Vitamin K and bone health.

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Abstract

In the past decade it has become evident that vitamin K has a significant role to play in human health that is beyond its well-established function in blood clotting. There is a consistent line of evidence in human epidemiologic and intervention studies that clearly demonstrates that vitamin K can improve bone health. The human intervention studies have demonstrated that vitamin K can not only increase bone mineral density in osteoporotic people but also actually reduce fracture rates. Further, there is evidence in human intervention studies that vitamins K and D, a classic in bone metabolism, works synergistically on bone density. Most of these studies employed vitamin K(2) at rather high doses, a fact that has been criticized as a shortcoming of these studies. However, there is emerging evidence in human intervention studies that vitamin K(1) at a much lower dose may also benefit bone health, in particular when coadministered with vitamin D. Several mechanisms are suggested by which vitamin K can modulate bone metabolism. Besides the gamma-carboxylation of osteocalcin, a protein believed to be involved in bone mineralization, there is increasing evidence that vitamin K also positively affects calcium balance, a key mineral in bone metabolism. The Institute of Medicine recently has increased the dietary reference intakes of vitamin K to 90 microg/d for females and 120 microg/d for males, which is an increase of approximately 50% from previous recommendations.

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