

# Leyla Weighs In: The truth about bone health (part two)



Emerging research reveals vitamin K, particularly K2 (menaquinone), is a key player in bone health. Vitamin K2 keeps calcium to where it belongs—in bones.

There are vitamin K-dependent proteins in bone, namely, osteocalcin, matrix GLA protein (MGP) and protein S. These help take calcium from blood circulation and bind it to the bone matrix. The mineral-binding capacity of osteocalcin requires vitamin K and the synthesis of osteocalcin by bone-forming cells (osteoblasts) is regulated by our very good friend, vitamin D.

Matrix GLA protein is a central calcification inhibitor produced by the cells of vascular smooth muscle and regulates the dangerous accumulation of calcium. Therefore a critical benefit of vitamin K2 is it inhibits the accumulation of calcium within blood vessel walls, reducing the likelihood of arterial calcification and stiffening.

But there's more. Calcium supplementation needs to be balanced with magnesium or kidney stones may develop. Magnesium keeps calcium dissolved in blood so it doesn't form stones. Magnesium and potassium are critical for bone mineral density. These electrolytes buffer acids in the body leaving the calcium in your bones alone.

Carolyn Dean MD, ND, in *The Magnesium Miracle*, states, "Magnesium is just as important as calcium to prevent and treat osteoporosis." Of the myriad functions magnesium aids in the body, it also converts vitamin D to its active form which helps calcium absorption.

Osteoporosis is an inflammatory disease. Putting out the fire of inflammation is critical. Essential fats such as omega-3s impact bone mineral density both by influencing bone formation and reducing activity of cells that break down bone, according to some animal studies.

Clearly these micronutrients work synergistically to maintain bone health. So don't worry too much about your calcium supplement. Instead, check out Dr. Hoffman's **Bone Health Protocol**.

To your health!  
Leyla Muedin, MS, RD, CDN