

Abstract

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The effect of vitamin K supplementation on circulating osteocalcin (bone Gla protein) and urinary calcium excretion.

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STUDY OBJECTIVE: To determine whether vitamin K administration affects urinary calcium excretion in postmenopausal women.

DESIGN: Before- and after-trials with a 2-week treatment period.

SUBJECTS: Healthy postmenopausal women (55 to 75 years old) were recruited from the convents in and around Maastricht. Controls (25 to 40 years old) were healthy premenopausal volunteers.

INTERVENTION: Daily administration of 1 mg of vitamin K for 2 weeks.

MEASUREMENTS: Serum immunoreactive osteocalcin: hydroxylapatite binding (HAB) capacity of serum immunoreactive osteocalcin; excretion of calcium, hydroxyproline, and creatinine in the urine during the last 2 h of a 16-h fasting period.

RESULTS: In premenopausal women, no effect of vitamin K administration was seen. In the postmenopausal group, vitamin K induced increased serum immunoreactive osteocalcin concentration; normalization of the HAB capacity of serum immunoreactive osteocalcin (this marker was less than 50% that of the controls in the pretreatment samples); a decrease in urinary calcium excretion, notably in the "fast losers" of calcium; and a parallel decrease in urinary hydroxyproline excretion in the fast losers of calcium.

CONCLUSIONS: The serum immunoreactive osteocalcin level may vary with vitamin K status. This variance should be taken into consideration if osteocalcin is used as a marker for osteoblast activity. Vitamin K is one factor that may play a role in the loss of bone mass in postmenopausal osteoporosis.

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