

Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women

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Abstract

Summary

We have investigated whether low-dose vitamin K₂ supplements (menaquinone-7, MK-7) could beneficially affect bone health. Next to an improved vitamin K status, MK-7 supplementation significantly decreased the age-related decline in bone mineral density and bone strength. Low-dose MK-7 supplements may therefore help postmenopausal women prevent bone loss.

Introduction

Despite contradictory data on vitamin K supplementation and bone health, the European Food Safety Authorities (EFSA) accepted the health claim on vitamin K's role in maintenance of normal bone. In line with EFSA's opinion, we showed that 3-year high-dose vitamin K1 (phylloquinone) and K2 (short-chain menaquinone-4) supplementation improved bone health after menopause. Because of the longer half-life and greater potency of the long-chain MK-7, we have extended these investigations by measuring the effect of low-dose MK-7 supplementation on bone health.

Methods

Healthy postmenopausal women ($n = 244$) received for 3 years placebo or MK-7 (180 μg MK-7/day) capsules. Bone mineral density of lumbar spine, total hip, and femoral neck was measured by DXA; bone strength indices of the femoral neck were calculated. Vertebral fracture assessment was performed by DXA and used as measure for vertebral fractures. Circulating uncarboxylated osteocalcin (ucOC) and carboxylated OC (cOC) were measured; the ucOC/cOC ratio served as marker of vitamin K status. Measurements occurred at baseline and after 1, 2, and 3 years of treatment.

Results

MK-7 intake significantly improved vitamin K status and decreased the age-related decline in BMC and BMD at the lumbar spine and femoral neck, but not at the total hip. Bone strength was also favorably affected by MK-7. MK-7 significantly decreased the loss in vertebral height of the lower thoracic region at the mid-site of the vertebrae.

Conclusions

MK-7 supplements may help postmenopausal women to prevent bone loss. Whether these results can be extrapolated to other populations, e.g., children and men, needs further investigation.

Keywords

Bone mineral density Bone strength Osteocalcin Postmenopausal Vertebral fracture Vitamin K

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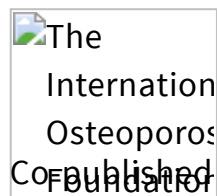
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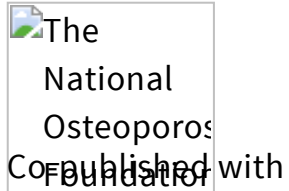
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