

Abstract

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Relationships between undercarboxylated osteocalcin and vitamin K intakes, bone turnover, and bone mineral density in healthy women.

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BACKGROUND & AIMS: Low vitamin K intakes and high levels of undercarboxylated osteocalcin (ucOC) are risk factors for hip fractures. However, the relationship between ucOC and vitamin K intakes, bone mineral density (BMD) and bone biochemical markers is not clarified.

METHODS: We enrolled 221 healthy women, and examined BMD, urinary type-I collagen cross-linked-N-telopeptide (uNTX), and nutrient intakes. BMD was measured at the lumbar spine and femoral neck.

RESULTS: Vitamin K intakes were significantly and negatively correlated with ucOC after adjustment for age, height, and body weight ($r=-0.305$, $p<0.0001$). ucOC was negatively associated with lumbar BMD ($r=-0.147$, $p<0.05$), but not femoral neck BMD ($r=-0.099$, $p=0.095$) after adjustment for age, height, and body weight. In multiple regression analysis, even after adjustment for age, height, body weight, and vitamin K intake, a significant and positive correlation remained between ucOC and urinary NTX ($r=0.493$, $p<0.0001$). Moreover, in postmenopausal women, ucOC levels were positively correlated with urinary NTX, but not BMD.

CONCLUSION: Dietary vitamin K intakes influence serum levels of ucOC in healthy women. Furthermore, ucOC may be linked to bone biochemical markers.

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