Effect of phylloquinone supplementation on biochemical markers of vitamin K status and bone turnover in postmenopausal women - DTU Orbit (10/12/2018)

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While current intakes of phylloquinone (vitamin K-1) in many populations are believed to be sufficient to maintain normal blood coagulation, these may be insufficient to cover the requirements for optimal bone metabolism. Therefore, the objective of the present study was to investigate the effect of increasing phylloquinone intakes above the usual dietary intake for 6 weeks on biochemical markers of vitamin K status and bone turnover in postmenopausal women. Thirty-one postmenopausal women completed this 3 X 6-week randomised cross-over study, in which volunteers were supplemented with 0 (placebo), 200, and 500 µg phylloquinone/d. In addition, the volunteers were given 10 µg vitamin D-3/d throughout the study period. With increasing phylloquinone intake, the concentration of serum gamma-carboxylated and under-gamma-carboxylated osteocalcin was significantly increased and decreased, respectively, in a dose-dependent manner (P <0.001). Mean serum phylloquinone concentration was significantly (P <0.001) higher with daily supplementation with 500 µg phylloquinone/d compared with that during either of the placebo or 200 µg phylloquinone/d supplementation periods, which did not differ (P=0. 15). Serum total osteocalcin was significantly (P <0.001) increased in response to daily supplementation with 500 (but not 200) µg phylloquinone compared with placebo. Serum bone-specific alkaline phosphatase as well as the urinary markers of bone resorption (N-telopeptide cross-links of collagen, pyridinoline and deoxypyridinoline) and urinary gamma-carboxyglutarnate were unaffected by phylloquinone supplementation. In conclusion, while daily supplementation with 200 and 500 µg phylloquinone/d for 6 weeks increased vitamin K status in postmenopausal women, it had no effect on bone turnover.

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