Determinants and Correlates of Serum Undercarboxylated Osteocalcin

Abstract:
Background/Aims: To assess dietary and nondietary determinants of serum undercarboxylated osteocalcin (ucOC) as a measure of vitamin K status. Methods: UcOC and total intact osteocalcin (iOC) concentrations were determined by specific ELISA tests in serum samples of 231 male and 320 female participants (18–81 years) of the representative, cross-sectional Bavarian Food Consumption Survey II. Determinants of ucOC were investigated by analysis of variance, Spearman's rank correlation coefficients and logistic regression models. Results: Mean ucOC serum concentration was 2.46 ng/ml in men and 2.34 ng/ml in women. Corresponding means of the ratio of ucOC to iOC (ucOC/iOC) were 0.28 and 0.29. Concentrations of ucOC and iOC, as well as the ratio of ucOC/iOC, strongly depended on the participant's age. UcOC was influenced by smoking status, sports activity, and the season when blood was collected. Dietary intake of the dominant vitamin K sources, green leafy vegetables and dairy products, as well as the plasma concentration of the carotenoid lutein were inversely associated with serum ucOC values. Conclusions: In studies using serum ucOC as a measure of vitamin K supply, determinants, especially age, need to be taken into account.
Undercarboxylated osteocalcin; Vitamin K; Biomarker; Life-style factors; Tocopherol; Carotenoids; Bavarian Food Consumption Survey II

Zeitschriftentitel: Annals of Nutrition and Metabolism
Jahr: 2007
Band: 51
Heft / Issue: 6
Seiten: 563--570
Volltext / DOI: http://doi.org/10.1159/000114211
Verlag / Institution: S. Karger AG
Verlagsort: Basel, Switzerland
Print-ISSN: 1421-9697
E-ISSN: 1421-9697
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- Kollektionen > Open Access Publikationen > Verlage > Karger
- Kollektionen > Open Access Publikationen > 2007

entries: