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Intake of vitamin K and risk of coronary heart disease in middle-age adults. The Hordaland Health Study (HUSK).

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Introduction: Vitamin K is a fat-soluble vitamin that occurs naturally in two forms. Vitamin K1 (phyloquinone) from plants and vitamin K2 (menaquinones) primarily from bacteria. A role of vitamin K in the regulation of vascular calcification is known, however, the association of dietary vitamin K1 and vitamin K2 with coronary heart disease remain unclear.

Purpose: To study the prospective association of intake of vitamin K1 and vitamin K2 with coronary heart disease (CHD) in a population with community-living middle-aged adults.

Methods: We followed participants in the community-based Hordaland Health Study, Norway (N=2987, age 46-49 years) from 1997-99 through 2009. Baseline diet was assessed by a past-year food frequency questionnaire. The associations between energy adjusted residuals of vitamin K1 and vitamin K2 intake and CHD were evaluated, using the lowest quartile (Q1) as the reference. Information on incident (first) CHD, defined as fatal or non-fatal CHD (ICD10 codes I20-I25) was obtained from the Cardiovascular Disease in Norway (CVDNOR) database. Multivariable Cox regression estimated hazard ratios (HRs) and 95% confidence intervals (CIs). To test for linear trends across quartiles, median within each quartile group was used as the independent variable in the analyses. Analyses were adjusted for age, sex, total energy intake, physical activity, smoking, hypertension, glucose intolerance, total cholesterol and nutrient intake.

Results: During a median follow-up of 10.9 years, we documented 112 incident CHD cases. In a model adjusted for age, sex, total energy intake, physical activity, smoking, hypertension, glucose intolerance, total cholesterol and intake of carbohydrates, folate and fiber, there was no association between intake of vitamin K1 and CHD [HR Q4 vs Q1 = 0.82 (95% CI:0.44-1.50), p-trend = 0.888]. After adjusting for age, sex, total energy intake, physical activity, smoking, hypertension, glucose intolerance, total cholesterol and intake of saturated fat and calcium, there was a decreased risk of CHD with a higher intake of vitamin K2 [HR Q4 vs Q1 = 0.47 (95% CI: 0.23-0.97), p-trend = 0.047].

Conclusion: In this Norwegian population we observed that intake of vitamin K2 was associated with decreased risk of CHD, while there was no association between intake of vitamin K1 and CHD.