

# High vitamin K(2) intake may protect against heart disease

## WHAT YOU NEED TO KNOW

Some proteins that need vitamin K to function have been shown to stop calcification of blood vessels. There isn't much data however on the effect of vitamin K consumption on coronary heart disease. This study investigates the relationship between intake of dietary vitamins K(1), K(2), and K(2) subtypes, and the incidence of coronary heart disease.

The researchers used data from the Prospect-EPIC cohort, a pan-European study consisting of 16,057 women enrolled between 1993 and 1997. The women were between ages 49-70 years and had no cardiovascular disease at the time of recruitment. Intake of vitamin K and other nutrients was estimated with a food frequency questionnaire.

After a follow-up of 8 years, researchers found 480 incidents of coronary heart disease. Mean vitamin K(1) (*phylloquinone*) intake was 212 microgram/day, and vitamin K(2) (*menaquinone*) was 29 microgram/day. After adjustment for known risk factors and dietary factors, researchers found that higher dietary intake of vitamin K(2) lowers the risk of coronary heart disease, mainly due to vitamin K(2) subtypes MK-7, MK-8, and MK-9. Vitamin K(2) intake of 10 microgram/day lowers the risk of coronary heart disease by 9%. Vitamin K(1) intake was not significantly related to coronary heart disease.

**Conclusion: A high intake of vitamin K(2) subtypes, especially MK-7, MK-8 and MK-9, could protect against coronary heart disease.** Further research is needed to determine the optimal amount of vitamin K intake for the prevention of coronary heart disease.

## Original Scientific Abstract

### A high menaquinone intake reduces the incidence of coronary heart disease.

Gast GC, de Roos NM, Sluijs I, Bots ML, Beulens JW, Geleijnse JM, Witteman JC, Grobbee DE, Peeters PH, van der Schouw YT, *Nutrition Metabolism & Cardiovascular Diseases*. Sep 2009; 19(7):504-10

**BACKGROUND AND AIM:** Vitamin K dependent proteins have been demonstrated to inhibit vascular calcification. Data on the effect of vitamin K intake on coronary heart disease (CHD) risk, however, are scarce. To examine the relationship between dietary vitamins K(1) and K(2) intake, and its subtypes, and the incidence of CHD.

**METHODS AND RESULTS:** We used data from the Prospect-EPIC cohort consisting of 16,057 women, enrolled between 1993 and 1997 and aged 49-70 years, who were free of cardiovascular diseases at baseline. Intake of vitamin K and other nutrients was estimated with a food frequency questionnaire. Multivariate Cox proportional hazards models were used to analyse the data. After a mean $\pm$ SD follow-up of 8.1 $\pm$ 1.6 years, we identified 480 incident cases of CHD. Mean vitamin K(1) intake was 211.7 $\pm$ 100.3 microg/d and vitamin K(2) intake was 29.1 $\pm$ 12.8 microg/d. After adjustment for traditional risk factors and dietary factors, we observed an inverse association between vitamin K(2) and risk of CHD with a Hazard Ratio (HR) of 0.91 [95% CI 0.85-1.00] per 10 microg/d vitamin K(2) intake. This association was mainly due to vitamin K(2) subtypes MK-7, MK-8 and MK-9. Vitamin K(1) intake was not significantly related to CHD.

**CONCLUSIONS:** A high intake of menaquinones, especially MK-7, MK-8 and MK-9, could protect against CHD. However, more research is necessary to define optimal intake levels of vitamin K intake for the prevention of CHD.