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Association between antioxidant vitamin intake and the risk of hypercholesterolemia

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The prevalence of hypercholesterolemia in Korean adults has more than doubled over the past decade[(1)]. Intake of antioxidant vitamins has been reported to reduce oxidative stress, which is associated with hypercholesterolemia development. However, studies on the association between dietary antioxidant vitamins and hypercholesterolemia among Koreans are limited. Therefore, this study aimed to examine the effect of antioxidant vitamin intake on the risk of incident hypercholesterolemia among Korean adults. Data were obtained from the Korean Genome and Epidemiology Study (KoGES), a community-based prospective cohort study. A total of 6,412 adults (3,145 men and 3,267 women) aged 40–69 years without hypercholesterolemia, hypertension, type 2 diabetes, cardiovascular diseases, or cancer at baseline were analyzed. Hypercholesterolemia was defined as total cholesterol ≥ 240 mg/dL. Intakes of antioxidant vitamins (vitamin A, vitamin C, and vitamin E) were estimated by combining semi-quantitative food frequency questionnaire data with an antioxidant vitamin database for common Korean foods [(2,3)]. Subjects were classified into quintiles according to the antioxidant vitamin intake. Cox proportional hazard model was used to analyze relative risks (RR) and 95% confidence intervals (95% CI) for incident hypercholesterolemia according to antioxidant vitamin intake. During a mean follow-up of 9.6 years, 1,235 participants developed hypercholesterolemia. After adjusting confounders, subjects with the highest quintile of antioxidant vitamin A intake showed a significantly lower risk of hypercholesterolemia than those with the lowest intake (RR = 0.73, 95% CI = 0.61–0.89, P for trend = 0.0165). Intake of vitamin C and vitamin E also had a significant inverse association with hypercholesterolemia development (Vitamin C: highest vs. lowest quintile RR = 0.77, 95% CI = 0.64–0.92, P for trend = 0.0313; Vitamin E: highest vs. lowest quintile RR = 0.67, 95% CI = 0.55–0.83, P for trend = 0.0008). Our findings suggest that a higher intake of antioxidant vitamins might be associated with a decreased risk of hypercholesterolemia in middle- aged Korean adults.

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