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Plasma vitamin C predicts incident heart failure in men and women in European Prospective Investigation into Cancer and Nutrition-Norfolk prospective study.

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Abstract

BACKGROUND: Fruit and vegetable intake has been associated with lower risk for cardiovascular risk factors and disease, but data on heart failure are sparse and inconsistent. The association of plasma vitamin C, a biomarker reflecting fruit and vegetable intake, with heart failure has not been studied.

METHODS: We examined the prospective association of plasma vitamin C concentrations with incident fatal and nonfatal heart failure events in apparently healthy 9,187 men and 11,112 women aged 39 to 79 years participating in the "European Prospective Investigation into Cancer and Nutrition" study in Norfolk.

RESULTS: The risk of heart failure decreased with increasing plasma vitamin C; the hazard ratios comparing each quartile with the lowest were 0.76 (95% CI 0.65-0.88), 0.70 (95% CI 0.60-0.81), and 0.62 (95% CI 0.53-0.74) in age- and sex-adjusted analyses (P for trend <.0001). Every 20 $\mu\text{mol/L}$ increase in plasma vitamin C concentration (1 SD) was associated with a 9% relative reduction in risk of heart failure after adjustment for age, sex, smoking, alcohol consumption, physical activity, occupational social class, educational level, systolic blood pressure, diabetes, cholesterol concentration, and body mass index, with similar result if adjusting for interim coronary heart disease.

CONCLUSIONS: Plasma vitamin C, a biomarker reflecting fruit and vegetable intake, was inversely associated with the risk of heart failure in this healthy population. This observation should be regarded as

hypothesis generating for further prospective trials aimed at examining the effect of a diet rich in fruit and vegetables for prevention of heart failure.

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