
Prediagnostic Plasma Pyridoxal 5'-Phosphate (Vitamin B6) Levels and Invasive Breast Carcinoma Risk: The Multiethnic Cohort.


Authors’ Affiliations: University of Hawaii Cancer Center, Honolulu, Hawaii; Department of Health Studies, University of Chicago, Chicago, Illinois; and Department of Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angeles, California.

BACKGROUND: Evidence from experimental and epidemiologic studies suggests that vitamin B6 may reduce the risk of breast cancer.

METHODS: We examined the association of prediagnostic plasma concentrations of pyridoxal-5'-phosphate (PLP), an active form of vitamin B6, with postmenopausal breast cancer risk in a case-control study nested in the multiethnic cohort in Hawaii and Southern California, including 706 cases and 706 controls matched on date of birth, ethnicity, study site, date of blood draw, time of blood draw, hours of fasting before blood draw, and use of menopausal hormones. OR and 95% confidence intervals (CI) were calculated using conditional logistic regression models.

RESULTS: Women with plasma PLP concentrations in the highest quartile had a 30% reduced risk of invasive breast cancer (CI: 0.50-0.98) as compared with the women in the lowest PLP quartile (P for trend = 0.02). The association seemed to be limited in cases with hormone receptor-positive tumors (P for heterogeneity = 0.04); and remained unchanged in the analysis restricted to women with blood samples collected more than one year before cancer diagnosis (OR = 0.69; CI: 0.48-0.99; P for trend = 0.03).

CONCLUSIONS: These data suggest that higher circulating levels of vitamin B6 are associated with a reduced risk of invasive postmenopausal breast cancer. Impact: These results, in combination with information from two other prospective studies, suggest a role for vitamin B6 in the prevention of postmenopausal breast cancer. Additional studies are needed to further investigate potential heterogeneity of the vitamin B6 association with breast cancer risk by tumor hormone receptor status.

PMID: 22879204