

Abstract

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Vitamin B-6 intake is inversely related to, and the requirement is affected by, inflammation status.

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BACKGROUND: Low circulating pyridoxal 5'-phosphate (PLP) concentrations have been linked to inflammatory markers and the occurrence of inflammatory diseases. However, the implications of these findings are unclear.

METHODS: The measurement of PLP and C-reactive protein (CRP) in blood samples collected from participants in the 2003-2004 NHANES afforded us the opportunity to investigate this relationship in the general U.S. population. Dietary and laboratory data were available for 3864 of 5041 interviewed adults, 2686 of whom were eligible (i.e. provided reliable dietary data and were not diabetic, pregnant, lactating, or taking hormones or steroidal antiinflammatory drugs). Vitamin B-6 intake was assessed using 2 24-h diet recalls and supplement use data.

RESULTS: After multivariate adjustment for demographics, smoking, BMI, alcohol use, antioxidant vitamin status, intakes of protein and energy, and serum concentrations of creatinine and albumin, high vitamin B-6 intake was associated with protection against serum CRP concentrations >10 mg/L compared with < or =3 mg/L. However, plasma PLP > or =20 nmol/L compared with <20 nmol/L was inversely related to serum CRP independently of vitamin B-6 intake ($P < 0.001$). Among participants with vitamin B-6 intakes from 2 to 3 mg/d, the multivariate-adjusted prevalence of vitamin B-6 inadequacy was <10% in participants with serum CRP < or =3 mg/L but close to 50% in those with serum CRP > 10 mg/L ($P < 0.001$).

CONCLUSIONS: In conclusion, higher vitamin B-6 intakes were linked to protection against inflammation and the vitamin B-6 intake associated with maximum protection against vitamin B-6 inadequacy was increased in the presence compared to absence of inflammation.

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