

PLASMA B 6 VITAMERS IN HEMODIALYSIS SUBJECTS
TAKING PRESCRIPTION OR OVER-THE-COUNTER RENAL
MULTIVITAMIN SUPPLEMENTS

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Prescription and over-the-counter (OTC) multivitamin supplements are available for hemodialysis (HD) patients. The content of pyridoxine hydrochloride (PN-HCL) in these products ranges from 10 to 50 mg per tablet. Vitamin B-6 is an essential nutrient but it also has the potential at high doses to cause detrimental effects to the nervous system. The purpose of this study was to evaluate the B-6 vitamers in the plasma of hemodialysis subjects who had been taking either prescription or OTC vitamins, and to determine if subjects were experiencing any signs or symptoms associated with vitamin B-6 toxicity.

Subjects on HD were grouped by vitamin B-6 intake (n=12/group; 10 or 50 mg PN-HCL per day 5-7 days per week for 6+ months). Plasma B-6 vitamers were analyzed using HPLC. Subjects were questioned regarding signs and symptoms of vitamin B-6 toxicity. Cluster analysis was used to sort subjects into 3 groups by symptoms.

The mean \pm SD plasma B-6 vitamers (nmol/L) were as follows in the 10 and 50 mg PN-HCL groups respectively: pyridoxal- 5' -phosphate (PLP) 106 \pm 53 and 163 \pm 78 (significantly different $p < 0.04$); pyridoxal (PL) 507 \pm 396 and 683 \pm 306; pyridoxine (PN) 265 \pm 150 and 191 \pm 107; and 4-pyridoxic acid (4-PA) 433 \pm 264 and 994 \pm 1361. Mean serum zinc, phosphorus, and alkaline phosphatase values of the groups were not significantly different. The cluster group with a significantly lower mean PLP value of 72 \pm 25 nmol/L reported more tingling feet, muscle weakness and pain, balance problems, and itching than did the 2 groups with higher mean plasma PLP values (149 \pm 101 and 142 \pm 52 nmol/L). The cluster group with a significantly higher mean plasma PA value of 1678 \pm 1697 nmol/L reported more tingling hands, tachycardia, and diarrhea. In conclusion, plasma PLP levels in HD subjects are impacted by dose of PN-HCL in supplements, but a higher incidence of neurologically related symptoms are associated with lower plasma PLP or higher plasma PA levels.