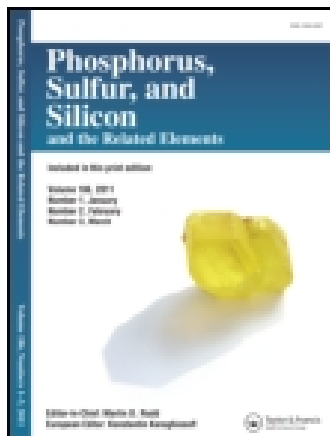


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## Phosphorus, Sulfur, and Silicon and the Related Elements

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## Effects of Dimephosphone on Mineral Metabolism of High Dose Prednisolone Treated Rats Compared to Etidronic Acid

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The aim of the study was to evaluate the effects of dimephosphone - dimethyl ether of 1,1-dimethyl-3-oxobutylphosphonic acid (monophosphonate) on mineral metabolism and to compare it to the effects of classical bisphosphonate - etidronic acid (Xydifonum as a medicinal preparation produced in Russia). Dimephosphone was synthesised according to Wiesel (Wiesel A.O. et al, 1998). The rat model of high dose prednisolone-induced mineral disturbance (50 mg/kg orally for 14 days) was used. Prednisolone increased urine calcium and phosphate level. The urine excretion of oxyproline - a marker of bone resorption was also significantly increased by prednisolone treatment. Prednisolone increased bone calcium level (atom-absorption spectrophotometry) and produced hyperplasia of adrenal glands. Dimephosphone effectively reduced urine phosphate and oxyproline excretion while xydiphonum had no effect on oxyproline excretion. Dimephosphone increased further bone and blood calcium level, while xydiphonum reduced it. Dimephosphone protected adrenal glands from hyperplasia, the effect of xydiphonum was less marked. The results suggest the possible use of dimephosphone in treatment of steroid-induced mineral metabolism disturbances including steroid osteoporosis.