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Effects of potassium citrate supplementation on bone metabolism.

[Marangella M](#), [Di Stefano M](#), [Casalis S](#), [Berutti S](#), [D'Amelio P](#), [Isaia GC](#).

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Western diets rich in animal protein result in long-term acid loading that, despite corresponding increases in net renal acid excretion, may induce a chronic state of acidemia. This may have deleterious effects on both the kidney and bone, by increasing the risk of calcium stone in the former and leading to chemical dissolution of mineral alkaline salts in the latter. Whereas supplementation with alkaline citrate has been shown to reduce stone recurrences, its effect on bone turnover has received less attention. The aim of the present study was to evaluate whether potassium citrate favorably affects bone turnover markers in postmenopausal females with low bone density. Thirty women, aged 58 +/- 8.1 years, were enrolled and studied on basal conditions and after a 3-month course of potassium citrate supplementation (0.08-0.1 g/kg b.w. daily). Twenty-two women concluded the study while 8 withdrew. Twenty-four age-matched healthy women were taken as control cases. All were evaluated for electrolyte and acid-base balance-related parameters, bone turnover, markers and renal function. A significant decrease in net acid excretion was observed upon citrate supplementation, and this was paralleled by a significant decrease of urinary deoxypyridinolines, hydroxyproline-to-creatinine ratios, and, to a lesser extent, serum osteocalcin. Percent variations of urine citrate were inversely related to those of deoxypyridinolines and hydroxyproline. No change in these chemistries occurred in the control group. Our results suggest that treatment with an alkaline salt, such as potassium citrate, can reduce bone resorption thereby contrasting the potential adverse effects caused by chronic acidemia of protein-rich diets.

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