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BASE SUPPLEMENTS MAY HELP FIGHT OSTEOPOROSIS

Potassium Citrate Increases Bone Density by Neutralizing Acidity of Modern Diet

Washington, DC (October 9, 2006) — Taking a potassium citrate supplement to counteract the high acidity of the modern diet can lead to increased bone density in older women, suggests a study in the November *Journal of the American Society of Nephrology*.

"Our results demonstrate for the first time that merely by partially reversing the acidity of the diet, bone mass increased rapidly and in amounts that are within the range of increases produced by common FDA-approved medicines," comments Dr. Reto Krapf of the University of Basel, Switzerland.

The study included 161 postmenopausal women, average age 59 years—all had low bone mass placing them at risk for fracture. One group was randomly assigned to take daily potassium citrate supplement as tablets, which provides a very small amount of base (alkali). The other group took a potassium chloride supplement, which provided the same amount of potassium but without base. Before and after 6 to 12 months of treatment, the women underwent measurement of bone mineral density (BMD) using dual-energy x-ray absorptiometry, a highly precise technique for diagnosis and monitoring of osteoporosis.

At the end of the study, women taking the base supplement had a significant, one percent increase in BMD in the vertebrae of the lower back (lumbar spine). For women taking the non-base potassium chloride supplement, lumbar spine BMD decreased significantly by approximately one percent.

Thus treatment with the base supplement made nearly a two percent difference in lumbar spine BMD—similar to the effect of some of the standard drug treatments for osteoporosis. Increases in bone mass also occurred in the hip. The spine and hip are critical regions where osteoporosis and low bone mass result in debilitating fractures.

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Women taking the base supplement had a decrease in the amount of calcium excreted in the urine. This, along with other tests, suggested that the base supplement increased the skeleton's retention of calcium, thereby reducing bone loss, on average, for the year of the study. Numerous studies with approved drugs have shown that reversing bone loss results in prevention of fractures.

The base supplement may work to increase BMD by neutralizing the high acidity of the modern Western diet. "In the modern diet, acid is generated from foods like dairy products, grains, and meats," Dr. Krapf explains. "Previous studies have found that the kidney does not quite keep up in removing this excess acid load, resulting in mildly elevated blood acidity. Taking a base supplement in this study resulted in sustained reduction of acidity of body fluids, assessed by urinary acid and citrate tests, such that in essence, the supplement modified the effects of the normal diet, making it mimic the low acid content of the ancestral diet of nearly all fruits and vegetables."

Osteoporosis is a major public health threat, affecting 55 percent of people aged 50 and older—mostly women after menopause. All of the approved medications for osteoporosis or low bone mass have serious side effects or safety warnings, highlighting the need for safer, effective treatments.

"While we took great pains with the methods of our study in the hope of ascertaining some small trend in bone mass from neutralizing dietary acid, we were very surprised with both the magnitude and robustness of the effect of base supplement on BMD," Dr. Krapf adds. It's too early to recommend widespread use of potassium citrate for prevention or treatment of osteoporosis—studies will first be needed to examine the effects on fracture rates. "However, given the safety and extremely low cost of this agent, these results should be very encouraging to government agencies regarding funding for future trials," Dr. Krapf concludes.

The study, entitled "Partial Neutralization of the Acidogenic Western Diet with K Citrate Increases Bone Mass in Postmenopausal Osteopenic Women" will be available online at www.jasn.org on October 11 and in print in the November issue of the *Journal of the American Society of Nephrology*.

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