

Treatment with Potassium Bicarbonate Lowers Calcium Excretion and Bone Resorption in Older Men and Women

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Context: Bicarbonate has been implicated in bone health in older subjects on acid-producing diets in short-term studies.

Objective: The objective of this study was to determine the effects of **potassium bicarbonate** and its components on changes in bone resorption and calcium excretion over 3 months in older men and women.

Design, Participants, and Intervention: In this double-blind, controlled trial, 171 men and women age 50 and older were randomized to receive placebo or 67.5 mmol/d of **potassium bicarbonate**, sodium bicarbonate, or **potassium chloride** for 3 months. All subjects received calcium (600 mg of calcium as triphosphate) and 525 IU of vitamin D₃ daily.

Main Outcome Measures: Twenty-four-hour urinary N-telopeptide and calcium were measured at entry and after 3 months. Changes in these measures were compared across treatment groups in the 162 participants included in the analyses.

Results: **Bicarbonate** affected the study outcomes, whereas **potassium** did not; the two bicarbonate groups and the two no bicarbonate groups were therefore combined. Subjects taking bicarbonate had significant reductions in urinary N-telopeptide and calcium excretion, when compared with subjects taking no bicarbonate (both before and after adjustment for baseline laboratory value, sex, and changes in urinary sodium and **potassium**; $P = 0.001$ for both, adjusted). **Potassium** supplementation did not significantly affect N-telopeptide or calcium excretion.

Conclusions: **Bicarbonate**, but not **potassium**, had a favorable effect on bone resorption and calcium excretion. This suggests that increasing the alkali content of the diet may attenuate bone loss in healthy older adults.