Effect of silicon supplement on osteopenia induced by ovariectomy in rats.

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Abstract

The effect of silicon (Si) supplement on preventing bone mass loss induced by ovariectomy (OVX) in rats was investigated. Three groups of 15, 100-day-old female Wistar rats each, with a mean initial weight of approximately 260 g per animal, were selected for the present study. One of the experimental group consisting of 15 OVX rats was fed a diet supplemented with 500 mg of Si per kg of feed (Si + OVX). The other two groups consisting of 15 OVX and 15 sham-OVX rats did not receive these supplements. Morphometric (weight and length) and densitometric studies with dual-energy X-ray absorptiometry were performed on the whole femur and 5th lumbar vertebra of each animal 30 days after the experiment. The Si + OVX rats did not show a loss of bone mass induced by OVX at axial level (5th lumbar vertebra) or periphery (femur). Nonetheless, a significant increase (ANOVA with Bonferroni/Dunn post hocs test) of longitudinal development of the femur ($P < 0.0001$) was patent. These results, obtained through the measurements of axial and peripheral bones, warrant closer scrutiny in connection with the Si inhibitory effect on bone mass loss as well as the stimulatory effect on bone formation. Both actions, namely, inhibition of resorption and stimulation of formation, infer that Si may have a potential therapeutic application in the treatment of involutive osteoporosis.