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Effects of soy protein on bone marks and hormones in growing male rats.

Choi, Mi-Ja. Department of Food and Nutrition, Keimyung University, Taegu 704-701, Korea

Soybeans are a rich source of the isoflavones genistein and daidzein. Soy isoflavones have both weak estrogenic and antiestrogenic effects and are structurally similar to tamoxifen, an agent that acts similarly to estrogen on bone in reducing postmenopausal bone loss. The purpose of this study was to determine which differences in the source of protein (soy vs casein) and isoflavones in soy protein are responsible for differential effects of bone marks and hormones in growing male rats. Thirty 21-d-old Sprague-Dawley young rats were divided into 3 groups: the control group was fed a casein-based diet, the soy concentrate group was fed soy protein with totally reduced isoflavones content (isoflavone 0.07mg/g protein), and the soy isolate group was fed soy protein with a higher isoflavone content (isoflavone 3.4mg/g protein) than normal. Bone formation was measured by serum osteocalcin and alkaline phosphatase (ALP) concentrations. And bone resorption rate was measured by crosslinks immunoassay and corrected for creatinine.

The soy concentrate and soy isolate groups had significantly higher ALP concentration than the casein group. The soy concentrate and soy isolate groups had a lower crosslinks value than the casein group. While, the soy isolate group had significantly higher growth hormone than casein group. The findings of this study suggest that soy protein and isoflavones in soy protein are beneficial for bone-formation effects in growing male rats. Therefore exposure to these soy protein and isoflavones early in life may have long-term health benefits for bone diseases such as osteoporosis. Further studies to evaluate the mechanism of action of isoflavones on bones are warranted.