Raloxifene similarly affects the skeletal system of male and ovariectomized female rats

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Abstract:
Raloxifene, a selective estrogen receptor modulator, is used for prevention and treatment of osteoporosis in postmenopausal women. Raloxifene use in male subjects is increasingly considered and a few clinical studies of its effect on bone turnover have already been performed. The aim of the present study was to investigate the effects of raloxifene on the skeletal system of healthy mature male rats. The experiments were performed on mature male Wistar rats, treated daily with raloxifene hydrochloride at a dose of 5 mg/kg po for 4 weeks. Bone mass, mineral content, macrometric and histomorphometric parameters, as well as mechanical properties were examined. For comparison, we also studied the effects of raloxifene on the skeletal system of mature ovariectomized female rats. Raloxifene administration to male rats caused statistically significant increases in the bone mass/body mass ratio, bone mineral content/body mass ratio and bone mineral content/bone mass ratio in comparison with those of the control rats. Bone mechanical properties and most of histomorphometric parameters remained unchanged. Also in ovariectomized female rats, raloxifene administration caused statistically significant increases in the bone mass/body mass ratio, bone mineral content/body mass ratio and bone mineral content/bone mass ratio in comparison with the results obtained in the ovariectomized control rats, to the level of sham-operated control rats. Moreover, raloxifene counteracted the development of changes in histomorphometric parameters caused by ovariectomy in female rats, but did not significantly affect bone mechanical properties. In conclusion, the changes induced by raloxifene in the skeletal system of male rats were similar to those induced by the drug in ovariectomized female rats.

Key words:
raloxifene, bone, male rats, ovariectomized rats