Effects of 6-mercaptopurine (6-MP) on histomorphometric parameters of the rat bones

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Abstract:
We examined the effect of 6-MP on the osseous system in rats after a 4-week period of its administration by analyzing histomorphometric parameters and bone mass, mineral and calcium content. We also tested the reversal of the above changes after the lapse of 4 week-period during which 6-MP was not administered. Male Wistar rats were divided into 6 groups, each group was composed of 8 animals. Treatment of 6-MP started on day 2 of the experiment, and the drug was administered for 28 days, i.e. between day 2 and 29 in all groups examined. Changes in the histomorphometric parameters were examined in 3 groups 4 weeks after the first 6-MP or 0.9% NaCl administration: I – control group (0.9% NaCl solution), II – 6MP group (6-MP at the dose of 2.5 mg/kg po), III – 6-MP group (6-MP at the dose of 5 mg/kg po). Reversal of the changes was examined 8 weeks after the first 6-MP or 0.9% NaCl administration in 3 groups: IV – control group (0.9% NaCl solution), V – 6-MP group (6-MP at the dose of 2.5 mg/kg po), VI – 6-MP group (6MP at the dose of 5 mg/kg po). We demonstrated that 6-MP administered orally at a dose of 2.5 mg/kg po or at a dose of 5 mg/kg po for the period of 4 weeks inhibited the synthesis and mineralization of the osseous tissue by causing a disorder in histomorphometric parameters, which were not totally reversed after 4 weeks. 6-MP administered at a dose of 5 mg/kg also caused a reduction of mineral and calcium content, mostly in the cancellous bone, which returned to normal after 4 weeks.

Key words:
6-mercaptopurine, histomorphometric parameters, bones, rats