

عنوان مقاله:

The effect of caffeine-treated mesenchymal stem cells on serum zinc and magnesium concentrations in male rats

محل انتشار:

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خلاصه مقاله:

Background: Numerous studies have reported the use of stem cell types or their conditioned medium for treating diseases in animal models. Conditioned medium includes culture medium containing growth and repair factors which are secreted from treated cells. The aim of the present study was to investigate the effect of secreted materials from stem cells treated with caffeine, on serum zinc and magnesium concentrations. Materials and Methods: In this study, 20 male rats weighing 190-200 g were used. Two rats were used to extract mesenchymal stem cells from bone marrow. Eighteen rats were divided into three selected groups: saline, conditioned medium (MSC-CM), conditioned medium treated with caffeine 0.5 M (MSC-CCM) (n = 6). The solutions were injected intraperitoneally three times during the treatment period (42 days) in the amount of 0.1 ml. Serum zinc and magnesium concentrations were measured 14 days after the last injection. Results: Administration of MSC-CM or MSC-CCM did not make a significant difference in magnesium concentration ($P > 0.05$). While MSC-CM significantly increases the zinc concentration ($P < 0.05$) in comparison to saline group. Administering MSC-CCM, decreased zinc concentration ($P < 0.05$), in comparison to both MSC-CM and saline groups. Conclusion: The conditioned medium of mesenchymal stem cells increases zinc concentration without altering magnesium concentration in serum. The conditioned medium treated with caffeine, reduces zinc concentration without affecting magnesium. Caffeine treatment is likely to secrete substances from cells that are effective on intervention mechanisms of zinc absorption and excretion.

کلمات کلیدی:

stem cells, caffeine, conditioned medium, magnesium, zinc

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