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May 02-04, 2016 Chicago, USA

A biochemical and histo-morphometric study of the potential anabolic and antiresorptive effects of Methionine amino acid on ovariectomy induced osteoporosis

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Osteoporosis is a growing public health problem in both developed and developing countries, particularly among postmenopausal osteoporosis pharmacological treatments are associated with risky side effects, for example ulcer and renal toxicity with bisphosphonates, and cardiovascular complications with hormone replacement therapy. Therefore, development of safer prophylactic and treatment strategies is needed. This study aims at assessing the effect of methionine on ovariectomized rat model of postmenopausal osteoporosis. Female albino rats were divided into four groups: (I) sham rats (normal control), (II) ovariectomized + alendronate 0.1 mg/kg orally daily for 8 weeks, (IV) ovariectomized + methionine 250 mg/kg orally daily for 8 weeks. Serum osteocalcin and tartrate-resistant acid phosphatase 5b (TRAP5b) were determined. Histomorphometric measurement of trabecular and cortical bone thickness was done and analyzed. Treatment of ovariectomized rats with methionine produced both anabolic and antiresorptive effects on bone. The anabolic effect wasevidenced by histological signs of bone formation and histomorphometric analysis revealing increased bone thickness compared to group II and III. The significantly lower serum TRAP5b compared to group II and histomorphometric analysis evidenced the antiresorptive effect. The results of our study suggested potential anabolic and antiresorptive effects of methionine in postmenopausal osteopororsis. However, further studies on the efficacy as well as safety of methionine treatment inpostmenopausal osteopororsis in human and comparing it with the only approved, until now, bone anabolic drug, teriparatide, is recommended.

Biography

Nagwa Mahmoud Nour Eldin has completed her PhD from Alexandria University. She works as Assistant Professor at the Clinical Pharmacology department in Alexandria Faculty of Medicine. She has published more than 23 papers in national and international journals. She is responsible for several pharmacology courses in the master and undergraduate programs. She is a member of The Egyptian Society of Pharmacology & Experimental Therapeutics and The Egyptian Association of Advancement of Medical Basic Sciences.

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