EFFECT OF GINGER ON BONE OF STREPTOZOTOCIN INDUCED DIABETIC RATS

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Abstract:

Background: Diabetes has a deleterious effect on bone. Ginger has been used in a wide variety of diseases. This study was designed to clarify changes of the bone of streptozotocin induced diabetic adult male rats and the possible role of ginger in preventing these changes. Methods: Thirty adult male rats were used. They were divided into three groups: Group I: control group. Group II: Diabetic group, diabetes was induced in rats by single intraperitoneal injection of freshly streptozotocin 60 mg /kg body weight. Group III: diabetic rat treated with ginger (500 mg /kg) orally for 6 weeks. The serum levels of glucose, insulin, calcium, phosphorus, alkaline phosphatase and osteocalcin (OC) were measured. Both femora of each rat were processed for histological, immunohistochemical and morphometrical studies. Results: STZ-induced diabetes was characterized by significant increase in serum glucose and alkaline phosphatase levels and significant decrease in serum insulin, calcium, phosphorus and OC levels as well as significant decrease in number of osteoblasts and osteopontin (OPN) protein expression in the femur bone. Also, histological results showed degeneration of osteoblasts and osteocytes, multiple osteoporotic cavities, decreased collagen fibers and irregularity of bone surfaces Treatment of diabetic rats with ginger resulted in significant decrease in serum glucose and alkaline phosphatase levels and significant increase in serum insulin, calcium, phosphorus and OC levels as well as significant increase in number of osteoblasts and OPN protein expression in the femur bone and improvement of histological results. Conclusion: Diabetes could lead to increased incidence of bone loss. Ginger could ameliorate diabetic changes of bone and may represent a promising agent for treating of diabetic osteoporosis.

Keywords:

Diabetes mellitus, Ginger, Bone, Osteoblast, Osteocalcin, Osteopontin.

Published In:

The medical journal of Cairo University , Vol 84, No 2 , 395-403