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## **The Impacts of Teriparatide Treatment on Bone Alkaline Phosphatase, Calcium and Phosphate Serum Levels in Rats**

## **ABSTRACT**

Trauma, tooth loss, cancer surgery, congenital malformations, periodontal disease, and oral-maxillofacial surgery are all major causes of bone loss, deformity, or fracture. Bone healing is a physiologically complicated process that also incorporates mechanical factors. Too many doubts concerning bone regeneration and the conditions that promote it have persisted for far too long. To assess the impact of systemic teriparatide therapy on mandibular bone defects healing. Forty male albino rats were randomly divided into two groups: the control group and the treatment group, with 20 rats per group. All rats had the same surgical technique. A small hole was created in the mandible, measuring 3 mm in diameter and 3 mm in depth, and then left unoccupied. The treatment group received a daily subcutaneous injection of Teriparatide at a dose of 10 µg/kg. Animals were subjected to euthanasia at four distinct time intervals (7, 14, 21, and 28) days. Biochemical analyses were done. Teriparatide was shown to elevate serum levels of bone alkaline phosphatase (BALP), elevate serum calcium concentration levels, and lower serum phosphate. There were statistically significant differences in the levels of BALP between the control group and the treated group at 7, 14, and 21 days after the surgical procedure and there was a statistically significant difference in serum calcium levels between the treated group and the control group on day 14 of the experiment. The findings of this research suggest that the systemic administration of teriparatide resulted in an acceleration of bone healing. This was evidenced by a notable elevation in bone alkaline phosphatase levels as seen in the biochemical analysis. Teriparatide slightly elevated serum calcium levels and lowered serum phosphate levels because it is a synthetic parathyroid hormone.