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**EFFECTS OF ORTHODONTIC FORCE ON OSTEOBLASTS AND ALKALINE PHOSPHATASE**

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**ABSTRACT**

Acid and alkaline phosphatase changes have been demonstrated histo-chemically and biochemically during the early stages of an orthodontic tooth movement cycle. However, quantitative data on neither alveolar bone nor serum phosphatase changes over an entire tooth movement cycle have been reported. This study examined acid, tartrate-resistant acid (TRAP), and alkaline phosphatase changes in serum and alveolar bone during an orthodontic tooth movement cycle in 288 adult male Sprague-Dawley strain rats. The effect of differing initial force magnitudes on phosphatase changes was also examined. Phosphatase measures were obtained by colorimetric assays. Analysis of variance (ANOVA) procedures were performed to examine for differences within groups across time and among groups at each time Point. Data from treated animals were combined, adjusted for control values, and examined across time to permit comparisons with previously described histomorphometricchanges. Both the serum and the bone phosphatase data clearly support previous histomorphometric observations that bone turnover, characterized by periods of activation, resorption, and formation, occurs during orthodontic tooth movement; serum data suggested differing force magnitudes may alter the timing of these bone turnover events.

Keywords:Orthodontic Force, Tooth Movements, Periodontium, Alkaline Phosphatase, Osteoblasts.