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Effects of local administration of osteocalcin on experimental tooth movement

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ABSTRACT

The purpose of this study was to evaluate the effects of local administration of osteocalcin, a major noncollagenous bone matrix protein, on experimental tooth movement in rats. An orthodontic elastic band was inserted between the upper first and second molars, and the first molar was moved mesially. Purified osteocalcin (0 to 10 µg) in 20 µl of phosphate-buffered saline was injected into the region of the root bifurcation of the first molar daily for 4 days. Tooth movement increased significantly following the injections. Histological studies revealed that the injections markedly stimulated the appearance of osteoclasts on the pressured side of the alveolar bone surface. The results suggest that osteocalcin has an additive effect on the rate of orthodontic tooth movement through the enhancement of osteoclastogenesis on the pressured side.

KEY WORDS: Osteocalcin, Tooth movement, Osteoclast recruitment.

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