

## CLINICAL, HISTOLOGICAL AND DENSITOMETRIC STUDY OF THE EFFECT OF A BISPHOSPHONATE (ETIDRONATE) ON BONE REPAIR IN DOGS

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### ABSTRACT :

The effect of Etidronate disodium, a bisphosphonate, on repair of osseous defects was evaluated clinically, histologically and radiographically. Eight adult dogs were used in this study: 4 constituted the experimental group, and 4 the control group. In all animals, mucoperiosteal flaps were elaborated and matched bilateral interproximal osseous defects were induced. Animals of the experimental group were injected subcutaneously with Etidronate sodium 3 days each week, while controls received 0.9% NaCl. The drug administration started immediately after surgery and for 8 weeks. Clinical measurements of plaque index, gingival index and attachment level were recorded at baseline, 1 and 2 months post-operatively. Periapical radiographs were taken at baseline and 2 months for densitometric analysis. The animals were sacrificed at 2 months post-surgically, and the mandibles were processed for histology. Etidronate-treated group revealed promotion of periodontal healing, when compared to controls, as evidenced clinically by improved attachment level, histologically by parameters of periodontal regeneration, and radiographically by reduced optical density.

### INTRODUCTION :

Alveolar bone is a very active organ, which is continuously renewed and capable of repair after injury in adults. Alteration in the normal balance between bone resorption and bone formation results in alveolar bone loss, which together with loss of connective tissue attachment, characterizes periodontitis.<sup>(1)</sup>

The osseous defect model developed by Melcher<sup>(2)</sup> and modified by Gould et al.<sup>(3)</sup> facilitates studies of periodontal regeneration and therapeutic regimens, because precise portions of

the alveolar bone and periodontal ligament can be reproducibly deleted.

Periodontitis is initiated by host inflammatory and immunologic reactions to one or more bacterial pathogens. For many years, the standard prevention of this disease was directed to reduce the bacterial challenge by mechanical debridement and antimicrobial therapy<sup>(4)</sup>.

It has also been shown that modulation of the host response may play a pivotal role in controlling the progression of periodontitis. This led to the concept that prevention of bone loss associated

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