EFFECT OF THE 0,2% HYALURONAN-CONTAINING GEL ON ALVEOLAR BONE REMODELING IN RATS WITH EXPERIMENTAL PERIODONTITIS

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Objectives: Hyaluronic acid (HA) is a naturally occurring linear polysaccharide of the extracellular matrix of connective tissue and other tissues. It has several physiological and structural functions, accelerating bone regeneration by means of chemotaxis, proliferation and successive differentiation of mesenchymal cells. The purpose of this study was to evaluate of a 0,2% hyaluronan-containing gel on bone remodeling in the mandible of rats.

Methods: Thirty-two white Wistar rats (weighing 350-450 g and aged 4 months) were divided into three groups: group 1 comprised intact rats (control); group 2 comprised rats with a «peroxide» model of periodontitis, reproduced by a 60-day diet of over-oxidised sunflower oil (model); and G3 comprised rats with peroxide-induced periodontitis that were given topical HA-gel on the gingiva daily for 14 days (treatment). Alveolar bone remodeling was evaluated by biochemical and histologic analysis and activity of alkaline phosphatase (ALP; an indicator of osteoblastic activity) and tartrate-resistant acid phosphatase (TRAP; a biomarker of osteoclasts) were measured in the alveolar bone.

Results: The enzyme activity in alveolar bone was significantly higher in the treatment group than the model group, with levels of 42,56 ± 3,96 mckat/kg and 79,94 ± 3,17 mckat/kg ($p \leq 0,001$) of ALP, and 3,38 ± 0,26 mckat/kg and 4,57 ± 0,30 mckat/kg ($p \leq 0,01$) for tartrate-resistant acid phosphatase (TRAP). This indicates activation of bone remodeling under the influence of the HA-gel. Sites of

new alveolar bone formation and many «active» osteoblasts was observed in tissues sections in the treatment group.

Conclusion: The results suggest that topical application of the 0,2% HA-containing gel applied of the gingiva in rats has an osteoinductive effect.