DETERMINING THE CONTENT OF Ca AND Mg IN THE REGENERATED RESORBED ALVEOLAR BONE OF THE RATS

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Osteoporosis, as one of the most frequent diseases of the skeletal system, can cause reduction of the bone mass per volume unit of the normal bone, which directly leads to decreased hardness of bone tissue [1]. Osteoporosis-damaged bone has the same structure as healthy one, but there is a loss of organic matrix and bone’s mineral substances manifested by deteriorating of Ca, Mg and PO4^3- content [2]. In order to solve the problem of bone tissue deficit developed by alveolar bone absorption, the use of CP/PLGA (calcium-hydroxypatite/polyactid-co-glycolid) based synthetic bio-composites was introduced. Thanks to their osteoconductive effect, these synthetic materials make creation of the new bone easier and successfully replace bone marrow [3].

Experiments on white rats of the Sprague Dolly breed were performed where absorption of the jaw bone was artificially provoked. The regeneration process of the jaw bone tissue, after the implantation of the CP/PLGA bio-composite, was observed by determining the content of Ca, Mg and PO4^3-.

The experiments showed that the implanted bio-composite increases the mass of Ca, Mg and PO4^3-, in the alveolar bone as well as in the teeth. Content of Ca increased by approximately 10.70%, Mg by approx. 5.20% and PO4^3- by approx. 10% in the alveolar bone as opposed to the control group. The effect of the increase of Ca, Mg and PO4^3- content is noticeable in teeth as well, which indicates that they migrate from the place of implementation, i.e. alveolar bone, towards the teeth.

Based on these results, we can conclude that the implantation of the CP/PLGA composite leads to the increase in the content of Ca, Mg and PO4^3- in the absorbed alveolar bone and teeth, and therefore to compensation and regeneration of bone tissue defects.

References