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Research

Assessment of Bone Neoformation in Dental Alveolus with Platelet-Rich Plasma (PRP) in Rabbits (*Oryctolagus cuniculus*) Bone Neoformation with Platelet-Rich Plasma

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ABSTRACT

Objective: The purpose of this work was to assess the bone neoformation of a dental alveolus in PRP-grafted rabbits by means of a toluidine blue-stained experimental model using conventional light microscopy.

Material and Method: It was used thirty male rabbits of the New Zeland breed, divided into 5 control groups and 5 experimental groups. Each group was divided into subgroups to assess the postsurgery period after three, four, and eight weeks. Every rabbit was submitted to exodontia of the Right Lower Incisor (RLI) and its antagonist. Only the experimental group received PRP inside the RLI alveolus. The bone calcein-marker was ministered to every animal in the first and penultimate postsurgery week before sacrificing.

Results: Upon the analysis of the toluidine blue-stained blades, a cellular maturation was observed with intense osteogenic activity in the experimental group. When analyzing the fluorescence microscopy, it was verified that the bone neoformation presented a constant evolution in the 3, 4, and 8 week period in the control group. As to the experimental group, a quite significant peak was observed in the 4 week period compared to the control group $p<0.05$.

Conclusion: It was verified that the application of PRP propitiated a real acceleration of the bone neoformation.

Keywords: Growth factor; Bone neoformation; Platelets-rich plasma

INTRODUCTION

PRP is an organic atoxic non-immunoreactive matter which has been used to accelerate the paths towards cicatrization of surgical wounds both in soft and hard tissues [1,2]. Thus, PRP has been applied in several clinic situations, mainly in the othorhinolaryngology, neurosurgery, head and neck surgeries, and in the area of odontology [3], besides of plastic and reconstructive surgery, orthopedy, cardiovascular and pediatric surgery [4]. It is a product derived from the autogenous blood, rich in growth factors originated from the platelet-granules alpha [1], that allows a major concentration of a higher amount of platelets in small volume of plasma [2,5]. When PRP is added to a few white cells, it is granted a natural resistance to such product to infectious and/or allergic processes, improving the prognostic to the treatment [6,7]. There are several studies in the literature related to the attainment, benefits, and applicability of PRP, although very controversial that still must be duly analyzed and proved through experimental and clinical studies. The scope of this work was to assess the bone neoformation at the spot to the third medium of the dental alveolus in rabbits which received PRP graft, seeking to make quantitative and qualitative analysis under microscope of conventional and fluorescent light, occurred in different postsurgery periods.

MATERIALS AND METHODS

It was used 30 young male rabbits of the New Zeland breed of the species Oryctolagus cuniculus with weights between 3.000 g to 4.000 g, Rabbits were divided into two groups: Group I

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