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The Effect of Xylitol on Osteoclastogenesis in Experimentally Induced Bone Defect in Rabbits

ABSTRACT

This study aimed to investigate the effect of topical and systemic xylitol on osteoblast and osteoclast in the femoral bone of rabbits. Twenty-four healthy white male New Zealand rabbits were used in this study. The groove of 2mm diameter will be made on proximal to the femur bone was drilled by the heavy-duty dental engine. The rabbits were divided into three groups based on how the xylitol substance was applied; each group was then subdivided into two experimental periods (14,28 days), with four rabbits in each subgroup. Control groups received no xylitol therapy; locally treated groups received xylitol powder that was well condensed in the hole. Systemically treated groups received 1mg/kg of xylitol orally. After 14 days and 28 days, a histological investigation was performed to identify the number of osteoblasts and osteoclasts at the defect bone. Statistical analysis showed significant differences between all groups (control and treated). Histological analysis for osteoblast and osteoclast showed a significant increase in osteoblast and osteoclast in the treated groups compared to the control group. The systemically treated group shows better results than the local treated and control group. This study concluded that xylitol improved bone healing when used topically and systemically, evidenced by an increase in the number of osteoblast and osteoclast at the site of the femoral bone defect.