

ABSTRACT

EFFECT OF SCAFFOLD BOVINE HYDROXYAPATITE-GELATIN-ALENDRONAT ON NUMBER OF BONE CELLS IN BONE DEFECT

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Alendronate is a bisphosphonate drug used to reduce the risk of fractures. Alendronate can induce bone morphogenetic protein -2 (BMP-2) which can increase osteogenesis by increasing the proliferation, differentiation, and mineralization of osteoblasts. The use of oral alendronate has poor absorption so that its bioavailability is low, and it has side effects such as gastric irritation and osteonecrosis of the jaw. The purpose of this study was to examine the effect of BHA-gelatin-alendronate scaffold on bone damage. In this study, 36 male Wistar rats were divided into 3 groups: positive control, BHA-Gel, BHA-Gel-Ale. Drilling was performed on the femur of 2 mm and was given care in each group. Animals are killed 7 and 14 days after surgery. The parameters used are looking at bone defects, namely radiology and cell growth histologically by staining hematoxylin-eosin (HE) by counting the number of osteoclasts, osteoblasts, and osteocytes. In radiological observations defects were still seen in each grup on days 7 and 14. Histological observations on day 7 there was no significant difference in the number of osteoclasts, osteoblasts, and osteocytes in each group. On day 14 there was a significant increase in the number of osteoblasts in the BHA-Gel

group ($p < 0.05$) and the BHA-Gel-Ale group ($p < 0.05$) compared to the positive control group. Based on research results obtained from the BHA-Gel-Ale scaffold, did not improve bone defects and bone cell formation.

Keywords: Fracture, Alendronate, Bovine hydroxyapatite, Gelatin