

ABSTRACT

Effect of BHA-Gel-Ale scaffold on the Level of VEGF of Bone Defect Model

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Alendronate is a bisphosphonate containing nitrogen that has potency in the treatment of bone disease. The locally alendronate is absorbed by the bone at a rate 20%-30% on the site of administration, where it inhibits bone resorption. The purpose of this study was to determine the effect of scaffold on the defect model through analysis of level vascular endothelial growth factor (VEGF). In this study, 54 male Wistar rats. A defect was made at the lateral femur of the rat with a diameter 2,2 mm and was given a scaffold in the treatment group. The group were divided into three group: control group (defect) ,BHA-Gel group and BHA-Gel-Alendronate group.

The healing process was seen at the 2nd, 7th and 14th days after surgery. Radiology analysis focused on the closure of bone defect and immunohistochemistry analysis focused on bone growth marked with the level of VEGF

The result of radiology analysis showed that the defect in BHA-Gel-Ale group was still visible on the 14th day. Whereas, in BHA-Gel group the defect was not visible. The results of analysis level VEGF showed that the intensity and positive cell distribution in BHA-Gel-Ale group higher than BHA-Gel group in 2nd day but decreased in 7th and 14th days. Based on those two parameters, it shows that the BHA-Gel-Ale scaffold was not accelerate fracture healing and increased level of VEGF. So it was necessary to optimize the alendronate dose to find out the effective dose in fracture healing.

Keyword : Alendronate, bone defect, immunohistochemistry, radiology, Vascular Endothelial Growth Factor (VEGF).