ABSTRACT

BACKGROUND: Bony defects caused by periodontitis are often treated by regenerative therapy using autograft and allografts. Recently, interest in chitosan has increased due to its excellent biological properties such as biocompatibility, antibacterial effect, and rapid healing capacity. On the other hand, hydroxyapatite is used as bone substitute in the fields of orthopedics and dentistry. The hydroxyapatite-chitosan (HA-CS) complex containing hydroxyapatite nanoparticle was synergy of both biomaterial. The purpose of this study was to evaluate the effect of hydroxyapatite (HA) chitosan (CS) graft with osteoblast cell on bone regeneration in tibia rat.

METHODS: Twenty-four rat divided into four groups. 1) six rats was given by HA and sacrificed in 7 days, 2) six rats was given by HA-CS and sacrificed in 7 days, 3) six rats was given by HA and sacrificed in 14 days, 4) six rats was given by HA-CS and sacrificed in 14 days. Make defects in tibia rats with bur, and graft were placed into 10 mm tibia depth defect. The bone formation parameter was osteoblasts were evaluated histologically with microscope and measured by graticule.

RESULTS: New Bone formation with many osteoblasts cells used HA-CS in 14 days. Comparison between HA-CS and HA there was significant differences in 14 days.

CONCLUSION: There was significant differences rate of osteoblasts cell in 14 days between HA-CS and HA. HA-CS composite has good biocompatibility and osteoconduction. It is a potential repairing material for clinical application.

KEY WORDS: hydroxyapatite, chitosan, bone regeneration