

ABSTRACT

Background: Disruption of alveolar ridge resorption due to extraction can cause failure in the insertion of dentures. Alveolar ridge resorption due to tooth extraction will result in reduced dimensions of alveolar bone. Nowadays the handling of alveolar ridge resorption can be done by socket preservation techniques. One material that can be used for preservation of alveolar ridge sockets is synthetic (bioceramic) or alloplast graft which can be synthesized from gypsum powder. In the area of Puger Jember there are very abundant gypsum ingredients. hence it is necessary to explore the hydroxyapatite gypsum puger scaffold material compared to the standard material Bovine hydroxyapatite scaffold as a socket preservation material and mechanism.

Purpose: Obtain scaffold base material and mechanism for accelerating bone density regeneration between gypsum hydroxyapatite puger and bovine hydroxyapatite as material for the development of preservation of alveolar ridge sockets

Method: This study is true experimental with the design of the Post Test Only Control Group Design. This study used 32 whistar rats divided into 8 groups, each group 4 tails namely normal control group day 7 (KN7), normal control group day 28 (KN28), negative control group day 7 (K (-) 7), negative control group day 28 (K (-) 28), HAGP+PEG7, HAGP + PEG28 group, HAB + PEG7 group, and HAB + PEG28 group. Dependent variables used were Runx2, Type 1 Collagen, ALP, Osteocalcin, Osterix and trabecular bone area.

Results: Runx2 expression is higher in the HAGP group compared to HAB group which can regulate the MSCs to differentiate towards osteoprogenitor and preosteoblast. The expression Collagen type 1 and ALP as the main protein of the higher bone matrix in the HAGP group compared to HAB. Lower osteocalcin expression in the HAGP group was compared to HAB but was not statistically significant. Osterix expression and higher trabecular bone area in HAGP compared with HAB, it can be said that the HAGP group has a different bone regeneration mechanism and has a faster bone growth process than the HAB group.

Conclusion: Scaffold HAGP material has a faster regeneration process than scaffold HAB and has a different mechanism process between HAGP and HAB. So that HAGP can be used as an alternative scaffold base material for preservation of alveolar ridge sockets.

Keywords: alloplast scaffold hydroxyapatite gypsum puger, hydroxyapatite bovine, socket preservation, alveolar ridge