ABSTRACT

THE EFFECTS OF GLUTARALDEHYDE CONCENTRATION ON BOVINE HYDROXYAPATITE-GELATIN-ALENDRONATE BIO SCREW TORQUE STRENGTH

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Bio screw made from Bovine ydroxyapatite (BHA) and gelatine (gel) is similiar to bone, because bone also contains this ingredients with highest percentage. But, gelatine are easily dissolved on aqueous solution. So, cross-link agent was added to prevent it. Glutaraldehyde were used in this study as a cross link agent with 0.5 %, 1 % and 1.5 % concentration to increase gelatine stability on aqueous solution by create a Schiff's bases compound that have covalent bond between gelatine molecule, either intramolecular or intermolecular. Alendronate (ale) was added on bioscrew component to reinforce the matrix and reduce peri-prosthetic evidence.The aims of this study was to compare the effect of different glutaraldehyde concentration on torque strength in Bovine hydroxyapatite-alendronate bioscrew. Torque strength test on this study was done by inserting the screw on the media (femur bone of cow) and rotate the screw clockwise.

The result of this study, showed that the addition of glutaraldehyde in BHA-gel bio screw give significant effect on bio screw strength. This result indicated by the reduction n torque strength from formulas that do not have glutaraldehyde with formulas that have glutaraldehyde.

Keywords : glutaraldehyde, torque strength, bio screw, Bovine Hydroxyapatite, gelatine, alendronate.