ABSTRACT

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

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Background: The aim of this study was to determine the effect of glutaraldehyde addition on Bovine Hydroxyapatite-gelatine alendronate bio screw by compressive strength testing.
Method: Compression strength was tested to 5 groups of bio screw formulas using the autograph instrument. Formula 1 (BHA-gel) only contains base, formula 2 (BHA-gel-alendronate) consists of a base that contains alendronate, formula 3 (BHA-gel-alendronate-GTA0,5%), formula 4 (BHA-gel-alendronate-GTA1,0%), formula 5 (BHA-gel-alendronate-GTA1,5%). There is an addition of glutaraldehyde as a cross-link agent in formula 3, formula 4, and formula 5 with different concentrations in each formula. Contentration of ale was made for 1%.
Results: compressive strength analysis from the five test groups did not show a significant effects on bio screw strength (P>0.05). The test showed that the compressive strength of formula 1 (BHA-gel) and formula 2 (BHA-gel-alendronate) have greater compressive strength than formula 3 (BHA-gel-alendronate-GTA0,5%), formula 4 (BHA-gel-alendronate-GTA1,0%), and formula 5 (BHA-gel-alendronate-GTA1,5%). The compressive strength decreased when concentration of glutaraldehyde was increased.
Conclusion: the addition of glutaraldehyde with 3 varians concentration (0.5%; 1%; 1.5%) did not affect the compressive strength of the bio screw which consists Bovine Hydroxyapatite (BHA)-gelatin-alendronate.

Keywords: bio screw, Bovine Hydroxyapatite (BHA), gelatin (GEL), alendronat (ALE), compressive strength, cross-link agent.