A COMPARATIVE STUDY ON SOLUBILITY OF ROOT END FILLING MATERIALS - AN INVITRO STUDY

By

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ABSTRACT

Aim: The aim of this in vitro study was to compare and evaluate the solubility of MTA, MTA Plus, chitosan and their conjugates in synthetic tissue fluid (STF).

Materials and methodology: 96 stainless steel ring moulds with an internal diameter of 10±1mm and a height of 2±0.1mm were selected. Materials used were MTA, MTA Plus, Chitosan and their Conjugates. The samples were divided into 4 groups and placed in synthetic tissue fluid (STF) for 7 and 28 days. Materials were mixed and inserted into the moulds. The samples weight was recorded before and after immersion in STF. The weight differences were calculated and the percentage of weight changes were recorded. One specimen from each experimental group was selected and examined for microstructure and elemental composition of the samples using a scanning electron microscope (SEM) connected to a secondary electron detector for energy dispersive X-ray analysis (EDX). Statistical analysis was done with two-way ANOVA and Tukey's multiple post hoc analysis.

Results: MTA showed less solubility at 7 and 28 days. The solubility of MTA Plus chitosan conjugate decreased after 28days of immersion in STF. According to SEM/EDX analysis, the conjugates of MTA and MTA Plus showed an increased number of calcium phosphate deposits on the surface compared to MTA and MTA Plus alone.

Conclusion: The conjugates of MTA and MTA Plus showed better surface deposits when examined under SEM/EDX. Hence chitosan can be a novel material in dentistry to increase the bioactivity of the materials.

Keywords: Chitosan, MTA, MTA Plus, Solubility