

ABSTRACT

AIM : The aim of this study is to evaluate the fluoride releasing properties and compressive strength of Biodentine modified with 7 wt% sodium fluorosilicate and with 10 w/v % of 20 % hydrofluoric acid using Spadns spectrophotometer & Instron Universal Testing machine respectively.

MATERIALS AND METHODS: The study comprised of a total of 80 samples divided into 4 groups of 20 samples in each group. Out of the 20 samples, 10 samples were allocated for fluoride analysis and 10 samples were destined for compressive strength analysis. Group A -Biodentine powder only modified with 7wt% $\text{Na}_2[\text{SiF}_6]$, Group B -Biodentine liquid only modified with 10 w/v % of 20% HF, Group C - Biodentine powder modified with 7wt% $\text{Na}_2[\text{SiF}_6]$ & Biodentine liquid modified with 10 w/v % of 20% HF, Group D - Glass Ionomer cement type II (positive control). Fluoride release was assessed at 24 hr, 3rd day, 7th day and cumulatively thereafter on 2nd, 3rd & 4th weeks. The 24 hr compressive strength was assessed by Instron Universal Testing machine.

RESULTS: At 24 hour, the fluoride release of Group A was higher than Group D which was statistically significant. On 3rd day Group C showed higher fluoride release than Group D which was not statistically significant. On 7th, 14th & 21st days the Group C showed higher fluoride release than Group D. On 28th day Group A had higher fluoride release followed by Group C & Group D which was not statistically significant. The 24 hr compressive strength found to be highest for Group D followed by Group B, Group A and the least compressive strength was for Group C.

CONCLUSION: The powder only modified Biodentine showed appreciable fluoride release without much compromise in the compressive strength. Hence the powder only modified Biodentine can be used as dentin substitute in posterior restorations tapping the fluoride release properties successfully.

KEY WORDS : Biodentine., dentin substitute, fluoride release, sodium fluorosilicate