

Analysis of fluoride released from GIC and RMGIC in saliva and dentino-enamel substance

Endang Suprastiwi, author

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Abstrak

Glass Ionomer Cement (GIC) and Resin Modified Glass Ionomer Cement (RMGIC) are two restorative materials in dentistry that have the capacity of releasing fluoride to saliva, dentino-enamel substance, and the ability to form fluoroapatite crystal. The aim of this study is to compare the amount of fluoride release in saliva and dentino-enamel substance. A total of 48 caries free premolar teeth were prepared to form a cavity with the dimension of 4 X 4 X 2 mm on the buccal surfaces. These teeth were then divided into 3 groups, each containing 16 samples. The first group was determined as the control group, and therefore no restorative material was applied to the teeth in this group; the teeth in the second group were filled with GIC, the third group was filled with RMGIC. These teeth were then soaked in artificial saliva without fluoride content and were incubated at room temperature (37 0Celcius). Each group was divided again into 4 sub groups, each consisting of 4 samples. Each of 4 subgroups received different periods of soaking, namely 1 day, 3 days, 10 days, and 20 days. The fluoride content of saliva was analyzed using ion chromatography, and fluoroapatite on dentino-enamel substance was analyzed using X-Ray Diffraction or XRD. Data obtained from the experiments were analyzed using ANOVA, and the level of significance was set at p 0,05. There was a significant difference in the analysis of fluoride release in saliva within the 3 groups: GIC, RMGIC, and the control group, and there was no significant difference in the analysis of fluoroapatite formation on dentino-enamel substance within 3 groups. The fluoride content in saliva showed a significant difference within the 3 groups of GIC, RMGIC, and control. No significant difference was found in the fluoroapatite content on dentino-enamel substance.