

PELEPASAN ION FOSFAT *RESIN MODIFIED GLASS IONOMER* DAN *ENHANCED RESIN MODIFIED GLASS IONOMER* DALAM SALIVA pH ASAM DENGAN LAMA PERENDAMAN BERBEDA

INTISARI

Resin Modified Glass Ionomer Cement (RMGIC) dan *Enhanced Resin Modified Glass Ionomer Cement* (ERMGIC) merupakan bahan restorasi yang dapat melepaskan ion fluorida, kalsium, dan fosfat yang ketika dipengaruhi lingkungan rongga mulut, seperti saliva pH asam, memicu remineralisasi sehingga mencegah karies sekunder. Penelitian ini bertujuan mengetahui jumlah pelepasan ion fosfat pada RMGIC dan ERMGIC yang dilakukan perendaman selama 1, 7, dan 14 hari dalam saliva pH asam.

Spesimen penelitian dibagi 2 kelompok berdasarkan bahan restorasi (I = RMGIC; II = ERMGIC) dan dibagi kembali berdasarkan lama perendaman (A = 1 hari; B = 7 hari; C = 14 hari). Setiap kelompok berisi 8 spesimen silinder berdiameter 15 mm dan tinggi 1 mm yang dilakukan perendaman dalam saliva buatan pH 4,5 sebanyak 10 mL. Jumlah pelepasan ion fosfat diukur menggunakan spektrofotometer UV-Vis dengan panjang gelombang 836 nm. Uji normalitas *Shapiro-Wilk* menunjukkan data berdistribusi normal sehingga dilanjutkan dengan uji parametrik Anava 2 jalur dan uji *post hoc Tukey HSD* dengan tingkat kepercayaan 95%.

Hasil Anava 2 jalur menunjukkan perbedaan bermakna ($p < 0,05$) antara jenis bahan restorasi serta lama perendaman dengan pelepasan ion fosfat secara independen, sedangkan tidak terdapat interaksi bermakna ($p > 0,05$) antara bahan restorasi dan lama perendaman dalam mempengaruhi pelepasan ion fosfat. Uji *post hoc Tukey HSD* menunjukkan perbedaan bermakna antara lama perendaman 1 hari dengan 7 hari dan 14 hari ($p < 0,05$) namun tidak terdapat perbedaan bermakna antara lama perendaman selama 7 hari dengan 14 hari ($p > 0,05$). Penelitian juga menunjukkan pelepasan ion fosfat pada RMGIC lebih tinggi dibandingkan ERMGIC.

Kata kunci: *enhanced resin modified glass ionomer cement*, ion fosfat, lama perendaman, *resin modified glass ionomer cement*, saliva pH asam

PHOSPHATE ION RELEASE OF RESIN MODIFIED GLASS IONOMER CEMENT AND ENHANCED RESIN MODIFIED GLASS IONOMER CEMENT IN ACIDIC SALIVARY pH WITH DIFFERENT IMMERSION TIME

ABSTRACT

Resin Modified Glass Ionomer Cement (RMGIC) and Enhanced Resin Modified Glass Ionomer Cement (ERMGIC) are restorative materials that can release fluoride, calcium, and phosphate ions that when influenced by the oral environment, such as acidic pH saliva, trigger remineralization so as to prevent secondary caries. This study aims to determine the amount of phosphate ion release in RMGIC and ERMGIC immersed for 1, 7, and 14 days in acidic pH saliva.

The study specimens were divided into 2 groups based on the restoration material (I = RMGIC; II = ERMGIC) and subdivided based on the length of immersion (A = 1 day; B = 7 days; C = 14 days). Each group contained 8 cylindrical specimens of 15 mm diameter and 1 mm height that were immersed in 10 mL of artificial saliva pH 4.5. The amount of phosphate ion release was measured using a UV-Vis spectrophotometer with a wavelength of 836 nm. The Shapiro-Wilk normality test showed that the data were normally distributed, so it was continued with the 2-way ANOVA parametric test and Tukey HSD post hoc test with a 95% confidence level.

The results of the 2-way ANOVA showed significant differences ($p < 0.05$) between the type of restoration material and the length of soaking with the release of phosphate ions independently, while there was no significant interaction ($p > 0.05$) between the restoration material and the length of soaking in influencing the release of phosphate ions. Tukey HSD post hoc test showed a significant difference between soaking time of 1 day with 7 days and 14 days ($p < 0.05$) but there was no significant difference between soaking time for 7 days and 14 days ($p > 0.05$). The study also showed the release of phosphate ions in RMGIC was higher than ERMGIC.

Keywords: enhanced resin modified glass ionomer cement, phosphate ions, immersion duration, resin modified glass ionomer cement, acidic pH saliva