

**PELEPASAN ION FLUORIDA *RESIN MODIFIED GLASS IONOMER*
CEMENT DAN ENHANCED-*RESIN MODIFIED GLASS*
IONOMER CEMENT DALAM SALIVA pH ASAM
DENGAN LAMA PERENDAMAN
14, 21, 28 HARI**

INTISARI

Resin modified glass ionomer cement (RMGIC) dan *enhanced-resin modified glass ionomer cement* (E-RMGIC) merupakan bahan restorasi bioaktif yang mampu melepaskan ion fluorida untuk mencegah timbulnya karies sekunder. Penelitian ini bertujuan untuk mengetahui pengaruh jenis material RMGIC dan E-RMGIC serta lama perendaman 14, 21, 28 hari terhadap pelepasan ion fluorida dan mengetahui adanya interaksi antara jenis material dan lama perendaman.

Penelitian dilakukan secara eksperimental laboratoris dengan spesimen berbentuk diskus diameter 15 mm dan ketebalan 1 mm sesuai standar ISO. Sebanyak 48 spesimen terbagi dalam 6 kelompok perlakuan dengan jumlah delapan sampel setiap kelompok, yaitu RMGIC hari ke-14 (IA), 21 (IB), 28 (IC), E-RMGIC hari ke-14 (IIA), 21 (IIB), 28 (IIC). Pelepasan ion fluorida diukur menggunakan spektrofotometer *Uv-Vis* dengan panjang gelombang 570 nm. Uji normalitas (*Shapiro-Wilk*) dan homogenitas (*Levene's test*) menunjukkan bahwa data berdistribusi normal dan homogen sehingga digunakan analisis parametrik ANAVA dua jalur dilanjutkan *Post-hoc Tukey's HSD* melalui SPSS dengan tingkat signifikansi 95%.

Uji ANAVA dua jalur menunjukkan adanya pengaruh jenis material RMGIC dan E-RMGIC terhadap pelepasan ion fluorida ($p < 0,05$), terdapat pengaruh lama perendaman (14, 21, dan 28 hari) terhadap pelepasan ion fluorida ($p < 0,05$), dan terdapat interaksi antara jenis material dengan lama perendaman terhadap pelepasan ion fluorida dalam saliva pH asam ($p < 0,05$). Hasil uji *Post-hoc Tukey's HSD* menunjukkan adanya perbedaan signifikan antarkelompok. Jumlah pelepasan ion fluorida RMGIC dan E-RMGIC semakin meningkat seiring bertambahnya durasi perendaman. Jumlah pelepasan ion fluorida oleh E-RMGIC lebih tinggi dari RMGIC pada hari ke-21 dan ke-28 tetapi pada hari ke-14 pelepasan oleh RMGIC lebih tinggi dari E-RMGIC.

Kata kunci: ion fluorida, lama perendaman, resin modified glass ionomer cement (RMGIC), enhanced-resin modified glass ionomer cement (E-RMGIC), saliva pH asam

**FLUORIDE ION RELEASE OF RESIN MODIFIED GLASS IONOMER
CEMENT AND ENHANCED RESIN MODIFIED GLASS
IONOMER CEMENT IN ACIDIC pH SALIVA
WITH IMMERSION DURATION OF
14, 21, AND 28 DAYS**

ABSTRACT

Resin-modified glass ionomer cement (RMGIC) and enhanced-resin-modified glass ionomer cement (E-RMGIC) are bioactive restorative materials that release fluoride ions to prevent secondary caries. This study aimed to examine the effects of material types (RMGIC and E-RMGIC), immersion durations (14, 21, 28 days), and their interaction on fluoride ion release.

This experimental laboratory study used disc-shaped specimens with a diameter of 15 mm and a thickness of 1 mm according to ISO standards. A total of 48 specimens were divided into six treatment groups, each with eight samples: RMGIC at day 14 (IA), 21 (IB), 28 (IC), and E-RMGIC at day 14 (IIA), 21 (IIB), and 28 (IIC). Fluoride ion release was measured using a UV-Vis spectrophotometer at 570 nm. Normality (Shapiro–Wilk) and homogeneity (Levene’s) tests showed the data were normally distributed and homogeneous, and parametric analysis was performed using two-way ANOVA followed by Post-hoc Tukey’s HSD test in SPSS with a 95% significance level.

Two-way ANOVA test showed that there was an effect of material types on fluoride ion release ($p < 0.05$), there was an effect of immersion duration on fluoride ion release ($p < 0.05$), and there was an interaction between material types and immersion duration on fluoride ion release ($p < 0.05$). Post-hoc Tukey's HSD test showed a significant difference between groups. The amount of fluoride ion released in both RMGIC and E-RMGIC increased with longer immersion time. Fluoride ion release was higher in E-RMGIC than RMGIC on days 21 and 28 but higher in RMGIC on day 14.

Keywords: fluoride ions, immersion time, resin modified glass ionomer cement (RMGIC), enhanced-resin modified glass ionomer cement (E-RMGIC), saliva acidic pH