

INTISARI

Fiber Reinforced Composite (FRC) merupakan material restorasi komposit yang terdiri dari matriks, fiber dan *coupling agent*. Bahan FRC yang berada di rongga mulut akan berkontak dengan makanan dan minuman yang dikonsumsi seperti jus buah naga merah. Buah naga merah merupakan buah yang mengandung pigmen betasianin yang memberikan warna merah keunguan. Penelitian ini bertujuan untuk mengetahui pengaruh lama perendaman dalam jus buah naga merah (*Hylocereus polyrhizus*) terhadap perubahan warna *E-glass short fiber composite resin*.

Subjek dalam penelitian ini menggunakan 12 sampel *E-glass short fiber composite resin* (everX Posterior, GC Corporation, Tokyo, Japan) berbentuk silinder berukuran diameter 10 mm dan ketebalan 2 mm. Sampel diberi perlakuan perendaman dalam akuades selama 24 jam dalam suhu 37°C. Seluruh sampel dilakukan pengukuran warna awal menggunakan *digital image analysis techniques* dengan metode CIELAB. Sampel dibagi menjadi 3 perendaman dalam jus buah naga merah (24 jam, 48 jam, dan 72 jam). Pengukuran warna akhir dilakukan menggunakan metode yang sama dengan pengukuran warna awal. Data diuji menggunakan *One-way Analysis of Variance* (ANOVA) dan uji *Post Hoc* dengan uji *Least Significant Differences* (LSD).

Hasil penelitian menunjukkan rerata ΔE perendaman 24 jam, 48 jam, dan 72 jam sebesar $1,6225 \pm 0,1425$, $2,1250 \pm 0,5232$, dan $3,2025 \pm 0,5296$. Hasil uji *One-way ANOVA* menunjukkan bahwa lama perendaman jus buah naga merah berpengaruh terhadap perubahan warna (ΔE) bahan FRC ($p < 0,05$). Hasil uji LSD mendapatkan hasil perendaman 72 jam memiliki perbedaan yang signifikan dengan perendaman 24 jam dan 48 jam, akan tetapi tidak ada perbedaan yang signifikan antara perendaman 24 jam dan 48 jam. Kesimpulan penelitian yang dilakukan adalah lama perendaman *E-glass short fiber reinforced composite resin* (24 jam, 48 jam, dan 72 jam) dalam jus buah naga merah (*Hylocereus polyrhizus*) berpengaruh terhadap perubahan warna.

Kata Kunci: lama perendaman, jus buah naga merah, perubahan warna, *E-Glass Short Fiber reinforced composite*, FRC

ABSTRACT

Fiber Reinforced Composite (FRC) is a composite restoration material consist of the matrix, fibers and coupling agent. FRC material in the oral cavity will have contact with the food and drink that being consumed such as red dragon fruit juice. Red dragon fruit is a fruit that contains betacyanin pigment that gives a purplish red color. This study aims to determine the effect of soaking time in red dragon fruit juice (*Hylocereus polyrhizus*) on the change in color of E-glass short fiber composite resin.

The subjects in this research are 12 E-glass short fiber reinforced resin (everX Posterior, GC Corporation, Tokyo, Japan) samples in a cylindrical shape with a diameter of 10 mm and a thickness of 2 mm. Samples were given immersion treatment in distilled water for 24 hours at 37°C. All samples were taken to initial color measurements using the digital image analysis technique with the CIELAB method. Samples were divided into 3 groups treatment soaked in red dragon fruit juice (24 hours, 48 hours, and 72 hours). Final color measurements are measured using the same method for measuring initial color. The data were tested using One-way Analysis of Variance (ANOVA) and post hoc test with the Least Significant Differences (LSD) test.

The research result shows ΔE means for immersion of 24 hours, 48 hours, and 72 hours are 1.6225 ± 0.1425 , 2.1250 ± 0.5232 , and 3.2025 ± 0.5296 . One-way ANOVA test results showed the time of the samples soaked in red dragon fruit juice gives influence to the color change (ΔE) FRC material ($p < 0.05$). The LSD test get results that the immersion of 72 hours has a significant difference with the immersion of 24 hours and 48 hours, but there is no significant difference between the immersion of 24 hours and 48 hours. The conclusion of the study is that the immersion time of E-glass short fiber reinforced composite resin (24 hours, 48 hours, and 72 hours) in red dragon fruit juice (*Hylocereus polyrhizus*) affect the color change.

Keywords: time of immersion, red dragon fruit juice, color change, E-Glass Short Fiber reinforced composite, FRC