INTISARI

Fiber-reinforced composite (FRC) adalah salah satu bahan restorasi gigi yang terbukti klinis dapat digunakan dalam lingkungan rongga mulut. *Fiber-reinforced composite* memiliki sifat mekanis, estetis yang baik seperti resisten terhadap tekanan mekanik dan bahan kimia. Penampilan dan estetika senyum seseorang dipengaruhi oleh warna gigi. Perawatan gigi yang mengalami perubahan warna dapat dilakukan dengan perawatan *bleaching.* Bahan *bleaching* salah satunya adalah *carbamide peroxide* yang lebih sering digunakan dalam teknik *home-bleaching.* Tujuan penelitian ini untuk mengetahui efek konsentrasi bahan *bleaching carbamide peroxide* terhadap kekerasan *short E-glass fiber-reinforced composite*.

Penelitian ini menggunakan *short E-glass fiber-reinforced composite* (everXPosterior, GC Tokyo Japan) dan *carbamide peroxide* (Opalescence PF Gels, USA). Sampel dibuat sebanyak 20 sampel berbentuk silindris dengan diameter 4mm dan tinggi 2mm. Sampel dibagi menjadi 5 kelompok perlakuan. Kelompok pertama sebagai kontrol disimpan dalam *distilled water*, kelompok kedua diberikan aplikasi *carbamide peroxide* 10% 8 jam per hari, kelompok ketiga diberikan aplikasi *carbamide peroxide* 15% 3 jam per hari, kelompok keempat diberikan aplikasi *carbamide peroxide* 20% 3 jam per hari, dan kelompok kelima diberikan aplikasi *carbamide peroxide* 35% setengah jam per hari. Seluruh kelompok diberi perlakuan selama 14 hari. Nilai kekerasan diukur dengan *Vickers hardness tester*. Data yang diperoleh dianalisis menggunakan uji *One-Way ANOVA.*

Hasil penelitian menunjukan nilai rerata kekerasan untuk kelompok kontrol, 10%, 15%, 20%, dan 35% secara berurutan 54,83 ± 1,85; 48,25 ± 2,91; 47,43 ± 2,41; 47,38 ± 0,46; 44,33 ± 3,20 VHN. Hasil uji *One-Way ANOVA* menunjukkan adanya perbedaan yang bermakna dari konsentrasi bahan *bleaching carbamide peroxide* terhadap kekerasan *short E-glass fiber-reinforced composite* ($p < 0,05$). Kesimpulan penelitian ini adalah konsentrasi bahan *bleaching carbamide peroxide* berpengaruh menurunkan kekerasan *short E-glass fiber-reinforced composite*.

Kata kunci : kekerasan, *fiber-reinforced composite* (FRC), *short e-glass fiber reinforced composite*, konsentrasi, bahan *bleaching*, *carbamide peroxide*, *home bleaching*

ABSTRACT

Fiber-reinforced composite (FRC) is a dental restoration material that has been clinically proven to be used in the oral environment. Fiber-reinforced composites have good mechanical, aesthetic properties such as resistance to mechanical stress and chemicals. The appearance and aesthetics of a person's smile are influenced by the color of the teeth. Dental treatment that has discolored can be done with the bleaching treatment. One of the bleaching ingredients is carbamide peroxide, which is more often used in home-bleaching techniques. The purpose of this study was to determine the effect of the concentration of bleaching carbamide peroxide on the hardness of the short E-glass fiber-reinforced composite.

This study uses a short E-glass fiber-reinforced composite (everXPosterior, GC Tokyo Japan) and carbamide peroxide (Opalescence PF Gels, USA). Samples were made of 20 cylindrical samples with a diameter of 4mm and a height of 2mm. The sample was divided into 5 treatment groups. The first group as control was stored in distilled water, the second group was given the application of carbamide peroxide 10% 8 hours per day, the third group was given the application of carbamide peroxide 15% 3 hours per day, the fourth group was given the application of carbamide peroxide 20% 3 hours per day, and the group the fifth application is given carbamide peroxide 35% half an hour per day. All groups were treated for 14 days. The microhardness value is measured by Vickers hardness tester. The data obtained were analyzed using the One-Way ANOVA test.

The results showed the mean value of microhardness for the control group, 10%, 15%, 20%, and 35% respectively 54.83 ± 1.85; 48.25 ± 2.91; 47.43 ± 2.41; 47.38 ± 0.46; 44.33 ± 3.20 VHN. One-Way ANOVA test results showed a significant difference from the concentration of bleaching carbamide peroxide material to the microhardness of the short E-glass fiber-reinforced composite ($p < 0.05$). This study concludes that the concentration of bleaching carbamide peroxide has the effect of reducing the hardness of the short E-glass fiber-reinforced composite.

Keywords: microhardness, fiber-reinforced composite (FRC), short e-glass fiber reinforced composite, concentration, bleaching material, carbamide peroxide, home bleaching.