

INTISARI

Glass fiber merupakan jenis *fiber* yang sering digunakan sebagai penguat untuk matriks komposit. *Glass fiber* mempunyai beberapa kelebihan yaitu estetis baik, mudah dimanipulasi, mudah diadaptasi dengan bentuk dan panjang yang diinginkan. Meskipun demikian, *glass fiber* masih memiliki keterbatasan yaitu harga relatif mahal dan sulit didapatkan. Di pasaran tersedia *glass fiber non dental* yang mempunyai komposisi mirip dengan *glass fiber dental* di kedokteran gigi. *Glass fiber non dental* ini dijual dengan harga terjangkau dan digunakan di dunia teknik dan otomotif. Penggunaan *fiber reinforced composite* dalam mulut akan berkontak dengan saliva. Lama perendaman dalam saliva meningkatkan penyerapan air oleh material, salah satunya adalah material FRC. Bakteri *Streptococcus mutans* mempunyai kemampuan menempel pada seluruh permukaan dalam mulut termasuk material gigi. Tujuan penelitian ini adalah untuk mengetahui pengaruh mengetahui pengaruh komposisi dan lama perendaman *glass fiber non dental* pada FRC terhadap perlekatan bakteri *S. mutans*.

Bahan yang digunakan dalam penelitian ini adalah *E-glass fiber dental* (Fiber-splint, Polydentia SA, Switzerland), dan *glass fiber non dental* A (LT, China), B (CMAX, China), C (HJ, China. Subjek dibagi dalam 10 kelompok, terdiri atas 5 kelompok uji dengan lama perendaman 7 hari dan 5 kelompok dengan lama perendaman 14 hari dalam saliva buatan. Sampel direndam dalam media BHI yang terdapat bakteri *S. mutans*. Jumlah bakteri dihitung menggunakan *plate count*. Hasil yang diperoleh dianalisis menggunakan Anava dua jalur.

Hasil penelitian menunjukkan komposisi dan lama perendaman mempunyai pengaruh bermakna terhadap perlekatan bakteri *S. mutans* dengan rerata perlekatan bakteri dengan nilai terendah pada kelompok *glass fiber non dental* A 7 hari ($756,8 \pm 10,35$ CFU/ml), nilai tertinggi pada *E-glass fiber dental* 14 hari ($1464,2 \pm 7,75$ CFU/ml), dan *glass fiber non dental* B 14 hari ($1464,2 \pm 6,37$ CFU/ml). Hasil analisis statistik menunjukkan variabel komposisi dan lama perendaman *fiber* memberikan pengaruh yang signifikan ($p < 0,05$). Kesimpulan penelitian ini bahwa komposisi dan lama perendaman berpengaruh terhadap perlekatan bakteri. Semakin rendah kandungan logam alkali pada *glass fiber* dapat meningkatkan jumlah perlekatan bakteri *S. mutans*. Semakin lama perendaman bakteri yang melekat semakin banyak.

Kata kunci : *glass fiber non dental*, komposisi *fiber*, lama perendaman, bakteri *S. mutans*

ABSTRACT

Glass fiber is a type of fiber that is often used for composite matrix reinforcement. Glass fiber has the following advantages: good aesthetically, easily manipulated, easily adapted to the desired shape and length. However, glass fiber still has limitations that prices are relatively expensive and difficult to obtain. Commercially, there is glass fiber non-dental that has similar composition to the glass fiber in the dental dentistry. Glass fiber non-dental is sold at affordable prices and used in the world of engineering and automotive. The use of fiber reinforced composite in the mouth will be contacted with saliva. Long immersion in saliva increases the absorption of water by the material, one of which is the FRC material. *Streptococcus mutans* bacteria have the ability to stick to the whole surface of the mouth, including dental materials. The purpose of this study was to determine the effect of composition and immersion duration of glass fiber non-dental in FRC to the adherence of bacteria *S. mutans*.

Materials used in this study were E-glass fiber dental (Fiber-splint, Polydentia SA, Switzerland), and glass fiber non-dental A (LT, China), B (CMAX, China), C (HJ, China). Subjects were divided in 10 groups, consisting of 5 groups with 7 days immersion duration and 5 groups with 14 days immersion duration in artificial saliva. The sample was immersed in BHI media contained *S. mutans* bacteria. The amount of bacteria were calculated using the plate count. The results were analyzed using two way Anava.

The results showed the composition and immersion duration had meaningful effect to the adherence of bacteria *S. mutans* with the lowest value of average adherence on bacteria was obtained on group of glass fiber non-dental A 7 days (756.8 ± 10.35 CFU/ml), the highest value in the E-glass fiber dental 14 days (1464.2 ± 7.75 CFU/ml) and glass fiber non-dental B 14 days (1464.2 ± 6.37 CFU/ml). Statistical analysis showed a variable composition and fiber immersion duration have a significant effect ($p < 0.05$). The conclusion of this study that effect of composition and immersion duration of glass fiber non-dental in FRC to the adherence of bacteria *S. mutans*. The lower the alkali metal content on the glass fiber can increase the adherence of bacteria *S. mutans*. The longer immersion duration, the more bacteria attached.

Key word: glass fiber non dental, fiber composition, immersion duration, *S. mutans* bacteria