

## INTISARI

Semen ionomer kaca (SIK) merupakan salah satu bahan restorasi kedokteran gigi yang menjadi pilihan karena mampu melepaskan fluor serta memiliki biokompatibilitas yang baik. Kekurangan SIK adalah sifat mekanis yang lemah. Penambahan penguat serat sisal mikro bertujuan agar sifat mekanis SIK semakin meningkat. Silanisasi dilakukan agar serat sisal mikro dapat berikatan dengan SIK. *Streptococcus mutans* merupakan bakteri kariogenik yang dapat melekat pada bahan tumpatan. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan serat sisal mikro tersilanisasi pada SIK tipe II terhadap perlekatan *Streptococcus mutans*.

Bahan penelitian yang digunakan adalah SIK tipe II (GC, Jepang) dan serat sisal (Balittas, Indonesia). *Silane* ditetaskan pada serat sisal mikro dan dibiarkan mengering lalu dicampurkan pada serbuk SIK (3% b/b). Sampel berbentuk cakram berukuran 5x2mm (n=8). Cakram direndam dalam 5mL saliva selama satu jam kemudian direndam dalam suspensi *S. mutans* 10<sup>8</sup> CFU/mL selama 24 jam pada suhu 37°C. Media cair selanjutnya diencerkan hingga 10<sup>-2</sup>. Larutan diambil sebanyak 0,1mL kemudian dibiakkan pada agar BHI dan diinkubasi selama 48 jam pada suhu 37°C. Jumlah koloni *S. mutans* yang tumbuh dihitung menggunakan *colony counter*. Data jumlah perlekatan koloni *S. mutans* dianalisis secara statistik menggunakan uji-t independen ( $\alpha=0,05$ ).

Hasil penelitian menunjukkan nilai rerata jumlah perlekatan koloni *Streptococcus mutans* kelompok perlakuan 59.500 ± 2.886,80 CFU/mL dan kelompok kontrol 52.500 ± 3.511,90 CFU/mL. Hasil uji-t independen menunjukkan terdapat perbedaan yang bermakna antara kelompok kontrol dan kelompok perlakuan. Kesimpulan penelitian ini adalah jumlah perlekatan koloni *Streptococcus mutans* kelompok perlakuan lebih banyak dibandingkan kelompok kontrol.

Kata kunci : Semen ionomer kaca, serat sisal mikro, *silane*, *Streptococcus mutans*.

## ABSTRACT

Glass ionomer cement (GIC) is one of the dental restorative materials of choice because it is able to release fluoride and has good biocompatibility. The disadvantage of GIC is its weak mechanical properties. The addition of micro sisal fiber reinforcement aims to improve the mechanical properties of GIC. Silanization is the treatment so that micro sisal fibers can bind to GIC. *Streptococcus mutans* is a cariogenic bacterium that can be attached to the restorative material. This study aims to be knowledgeable about the effect of adding silanization micro sisal fiber to type II glass ionomer cement to the attachment of *Streptococcus mutans*.

The research material used was type II glass ionomer cement (GC, Japan) and sisal fiber (Balittas, Indonesia). Silane was dripped to the micro sisal fibers evenly. After the sisal micro dry, it was added and mixed with glass ionomer cement powder (3% w/w). The shape of the samples were disc 5x2mm (n = 8). The samples were soaked into saliva for one hour then soaked in *S. mutans* suspension for 48 hours at 37°C. The serial dilutions method was used until 10<sup>-2</sup>. 0.1 mL solution from the dilution was dropped to BHI agar then incubated for 24 hours at 37°C. The number of growing *S. mutans* colonies was counted using a colony counter. The data were analyzed using independent t-test ( $\alpha = 0.05$ )

The study showed that the average value of attachment of *Streptococcus mutans* colonies in the treatment group was 59,500 ± 2,886.80 CFU/mL and the control group was 52,500 ± 3,511.90 CFU/mL. The independent t-test revealed that there were significant differences between the control group and the treatment group. The conclusion of this study is the amount of attachment of the *Streptococcus mutans* colonies in treatment group is considerably more than the control group.

Keywords: Glass ionomer cement, micro sisal fiber, silane, *Streptococcus mutans*.