INTISARI

Semen ionomer kaca (SIK) merupakan bahan restorasi yang dipakai karena antikariogenik dan biokompatibel. Bahan *reinforcement* ditambahkan untuk meningkatkan kekuatan kompresi SIK. Serat sisal (*Agave sisalana*) adalah bahan r*einforcement* alami. C*oupling agent* silan digunakan untuk meningkatkan adesi serat dan SIK. Penelitian dilakukan untuk mengetahui kadar optimal penambahan sisal mikro tersilanisasi sebagai *reinforcement* terhadap kekuatan kompresi semen ionomer kaca.

Penelitian menggunakan serat sisal (Balittas, Indonesia) dan SIK (Fuji II GC, Jepang). Sisal mikro tersilanisasi dibuat melalui proses *scouring*, netralisasi, *bleaching*, hidrolisis, pengeringan dan silanisasi. Sisal mikro diamati menggunakan *scaning electron microscope* (SEM). Sampel penelitian berjumlah 4 kelompok (n=4). Kadar sisal mikro pada serbuk SIK (b/b) yaitu 0% (K), 1% (P1%), 3% (P3%), dan 5% (P5%). Serbuk dan cairan diaduk, dimasukkan kedalam cetakan silinder (diameter 6mm dan tinggi 12 mm) dan dibiarkan mengeras pada suhu ruang. Kekuatan kompresi SIK diuji menggunakan *universal testing machine*. Data dianalisis menggunakan uji *one-way ANOVA* dan *post hoc LSD*.

Hasil penelitian berupa rerata dan simpangan baku kekuatan kompresi SIK yaitu 56,97±0,55 MPa (K), 67,85±1,21 MPa (P1%), 55,91±2,18 MPa (P3%), dan 48,92±0,40 MPa (P5%). Hasil uji *one-way ANOVA* menunjukkan variasi kadar sisal mikro tersilanisai berpengaruh terhadap kekuatan kompresi semen ionomer kaca ($p<0,05$). Kesimpulan penelitian adalah variasi kadar penambahan sisal mikro tersilanisasi mempengaruhi besar kekuatan kompresi semen ionomer kaca konvensional dengan kadar optimal 1%.

Kata kunci: Semen ionomer kaca, *Agave sisalana*, silan, kekuatan kompresi

ABSTRACT

Glass ionomer cement (GIC) is the restorative material used because anticariogenic and biocompatible. Reinforcement materials are added to increase GIC compressive strength. Sisal fiber (*Agave sisalana*) is natural reinforcement material. Silane coupling agent is used to increases fiber adhesion and GIC. This study is conducted to determine the optimum concentration of addition silanized micro sisal as reinforcement to the glass ionomer cement compressive strength.

The materials used are sisal fiber (Balittas, Indonesia) and GIC (Fuji II GC, Japan). Step in making of silanized micro sisal were scouring, neutralizating, bleaching, hydrolyzing, drying and silanizating. Micro sisal size was observed by *scaning electron microscope* (SEM). The study sample amount of four groups (n=4). The concentration of micro sisal (w/w) are 0% (K), 1% (P1%), 3% (P3%), dan 5% (P5%) in the powder of GIC. Powder and liquid GIC are mixed, inserted into cylinder molds (6 mm diameter and 12 mm height), and solidified at room temperature. The compressive strength present is measured by a universal testing machine. Data are analyzed by using the one-way ANOVA test and post hoc LSD test.

The results are the mean and standard deviation of GIC compressive strength are 56.97±0.55 MPa (K), 67.85±1.21 MPa (P1%), 55.91±2.18 MPa (P3%), and 48.92±0.40 MPa (P5%). The results of the one-way ANOVA test show that variations concentration of silanized micro sisal affect the GIC compressive strength ($p<0,05$). The conclusion of the research that variations concentration of silanized micro sisal affect the GIC compressive strength and 1% w/w is the optimum concentration.

Keywords: Glass ionomer cement, Agave sisalana, silane, compressive strength