

ABSTRAK

Resin komposit merupakan bahan tumpatan yang sering digunakan dalam bidang kedokteran gigi karena memiliki estetik yang baik, Penggunaan fiber sebagai penguat resin komposit(FRC) kini mulai dikembangkan karena memiliki beberapa fungsi, diantaranya meningkatkan kekuatan, kekakuan, dan stabilitas dari resin komposit, dan menurunkan *shrinkage*. Fiber resin komposit bersifat sintetik sehingga membutuhkan proses kimiawi dan harganya mahal. Oleh karena itu, dikembangkan fiber alami dari serat alam yang mudah didapat dan murah sebagai alternatif pengganti fiber sintetik, salah satunya yaitu fiber sisal. Penelitian ini bertujuan untuk mengetahui pengaruh alkalisasi (NaOH) serat sisal (*Agave Sisalana*) terhadap kekuatan impak resin komposit.

Penelitian eksperimental laboratoris dengan rancangan *post test only control group design*. Sebanyak 32 spesimen resin komposit *nanofiller* dibagi dua kelompok, 16 buah cetakan resin komposit penambahan serat sisal dengan alkalisasi NaOH 6% dan 16 lainnya tanpa alkalisasi. Kekuatan impak diukur dengan *Universal Testing Machine* untuk selanjutnya dianalisis dengan *Independent sample T-test* pada kemaknaan $p < 0,05$.

Hasil penelitian menunjukkan kekuatan impak resin komposit dengan serat sisal yang dialkalisasi sebesar $0,039 \pm 0,008$ (J/mm^2), sedangkan pada resin komposit dengan serat sisal yang tidak dialkalisasi sebesar $0,031 \pm 0,008$ (J/mm^2). Independent sampel t-test diperoleh nilai p sebesar 0,006 ($p < 0,05$), terdapat perbedaan kekuatan impak pada kedua kelompok perlakuan.

Kesimpulan dari penelitian ini adalah alkalisasi serat sisal (*Agave Sisalana*) berpengaruh terhadap kekuatan impak resin komposit.

Kata kunci : Alkalisasi, serat sisal (*Agave Sisalana*), Kekuatan impak

ABSTRACT

Composite resin is a material that is often used in the field of dentistry because it has a good aesthetic, The use of fiber as a composite resin reinforcement (FRC) is now being developed because it has several functions, including increasing the strength, stiffness and stability of the composite resin, and also reducing shrinkage. Composite resin fibers are synthetic so they require chemical processes and expensive. Therefore, natural fibers are developed from natural fibers that are easily available and inexpensive as an alternative to synthetic fibers, one of which is sisal fiber. This study aimed to determine the effect of sisal fiber (NaOH) alkalization (Agave Sisalana) on the impact strength of composite resin.

This was an experimental laboratory research with post test only control group design. 32 nanofiller composite resin specimens were divided into two groups, 16 composite resin molds added with sisal fiber with 6% NaOH alkalization and 16 others without alkalization. Impact strength was measured by Universal Testing Machine for further analysis with Independent sample T-test at the significance of $p < 0.05$.

The results showed that the impact strength of composite resin with calculated sisal fibers was 0.039 ± 0.008 (J / mm²) while the composite resin with calculated sisal fibers was 0.031 ± 0.008 (J / mm²). Independent sample t-test obtained p value of 0.006 ($p < 0.05$), there were differences in impact strength between two treatment groups.

The conclusion of this study is the alkalization of sisal fibers (Agave Sisalana) influences the impact strength of composite resin.

Keywords: Alkalization, sisal fiber (Agave Sisalana), impact strength