

INTISARI

Resin akrilik *unfilled* apabila digunakan sebagai material restorasi mempunyai kekurangan dalam sifat mekanis. Dental resin akrilik diberi *reinforcement*, yang umumnya berasal dari material sumber daya alam yang tidak dapat diperbarui, untuk mengatasi kekurangan tersebut. Serat alami, terutama serat sisal (*Agave sisalana*), pada umumnya bersifat hidrofilik, tetapi dapat dirubah menjadi hidrofobik dengan cara alkalisasi sehingga dapat dimanfaatkan sebagai material alternatif pengganti pengisi pada dental resin akrilik. Penelitian ini dilakukan dengan tujuan untuk mengetahui pengaruh pemberian bahan *reinforcement* berupa partikel sisal mikro terhadap *flexural strength base plate* resin akrilik.

Reinforcement sisal mikro dipersiapkan melalui tahapan *scouring* (NaOH 6%), netralisasi fiber (CH₃COOH 2%), *bleaching* (H₂O₂ 3%), hidrolisis (H₂SO₄), dan pengeringan. Ukuran partikel *reinforcement* sisal mikro dipastikan dengan melakukan uji SEM. Sampel berukuran 60x10x4 mm sebanyak 8 buah yang sudah dibuat diuji *flexural strength* menggunakan *Universal Testing Machine*. Data diuji dengan menggunakan *independent t-test*.

Hasil penelitian menunjukkan sisal mikro dengan ukuran 0,075-100µm. Rerata *flexural strength* resin akrilik *unfilled* 109,20 ± 3,12 MPa, resin akrilik dengan *reinforcement* sisal mikro 94,42 ± 9,35 MPa. Hasil uji *independent t-test* menunjukkan perbedaan yang signifikan (p<0,05). Kesimpulan pemberian *reinforcement* sisal mikro menurunkan *flexural strength* resin akrilik.

Kata kunci : sisal-mikro, resin akrilik, *scouring*, *bleaching*, hidrolisis, *flexural strength*

ABSTRACT

*Unfilled acrylic resin if used as restorative materials had some drawbacks of it mechanical characteristic. Reinforcement has been used in dental acrylic resin to overcome the drawbacks, it was usually come from nonrenewable natural resources. Natural fiber, mainly sisal fiber (*Agave sisalana*), generally was hydrophilic, but it could be changed to hydrophobic with alkalization, so it could used as alternative filler materials for dental acrylic resin. This research was do to know the influence of the adduction reinforcement micro sisal towards the flexural strength of acrylic resin base plate.*

Reinforcement micro sisal was prepared trough scouring (NaOH 6%), neutralization fiber (CH_3COOH 2%), bleaching (H_2O_2 3%), hydrolysis (H_2SO_4), and drying. Micro sisal size ascertained by tested it with SEM. Eight samples sized 60x10x4 mm tested using Universal Testing Machine for flexural strength. Data tested with independent t-test.

The research resulted micro sisal in 0,075-100 μm size. The mean of unfilled acrylic resin was $109,20 \pm 3,12$ MPa and $94,42 \pm 9,35$ MPa for mean of micro sisal reinforced acrylic resin. Independent t-test result showed significant difference ($p < 0,05$). The conclusion was the adduction of micro sisal reinforcement reduced the flexural strength of acrylic resin.

Keyword : micro-sisal, acrylic resin, scouring, bleaching, hidrolisis, flexural strength