



PENGARUH PENAMBAHAN NANOFIBER SISAL (*Agave Sisalana*) BERBAGAI KONSENTRASI PADA SILER RESIN EPOKSI TERHADAP DAYA PEMBASAHAN DAN DAYA ANTIBAKTERI TERHADAP *Streptococcus Mutans*

INTISARI

Penambahan suatu filler ke siler resin epoksi dapat meningkatkan sifat fisik dan sifat antibakterinya. Tujuan penelitian ini untuk mengetahui pengaruh penambahan *nanofiber* sisal berbagai konsentrasi pada siler resin epoksi terhadap daya pembasahan dan daya antibakteri terhadap *Streptococcus mutans*.

Siler nanofiber sisal tiap kelompok konsentrasi 0%, 0,25%, 0,5%, 0,75%, 1% dan 1,25% dilakukan pengujian daya pembasahan dengan mengukur sudut kontak pada menit ke 3, hasil uji ditransfer ke *image J* modifikasi *contact angle*. Pengujian daya antibakteri siler *nanofiber* sisal dilakukan dengan metode difusi dan diinkubasi selama 48 jam pada suhu 37°, dan dihitung zona hambatnya. Hasil perhitungan dari uji daya pembasahan dan antibakteri dianalisis dengan Anava satu jalur.

Hasil analisis Anava satu jalur menunjukkan sudut kontak $<90^\circ$ pada semua kelompok dan tidak terdapat perbedaan signifikan secara statistik ($p>0,005$) dan terdapat perbedaan yang signifikan secara statistik ($p<0,005$) pada uji antibakteri terhadap *Streptococcus mutans*. Kelompok *nanofiber* sisal 1% memiliki zona hambat paling tinggi, kedua adalah kelompok 0,5%, 0,75%, 1,25% yang memiliki daya hambat yang sama, ketiga kelompok 0,25% dan terendah kelompok 0%

Kesimpulan penelitian ini adalah tidak terdapat pengaruh penambahan *nanofiber* sisal berbagai konsentrasi pada siler resin epoksi terhadap daya pembasahan dan terdapat pengaruh terhadap daya antibakteri bakteri *Streptococcus mutans*.

Kata kunci: *nanofiber* sisal, siler resin epoksi, daya pembasahan, *Streptococcus mutans*.

THE EFFECT OF ADDING SISAL (*Agave Sisalana*) NANOFIBER OF VARIOUS CONCENTRATIONS TO RESIN EPOXY SEALER ON WETTABILITY AND ANTIBACTERIAL AGAINTS *Streptococcus Mutans*

ABSTRACT

The addition of a filler to the epoxy resin sealer can improve its physical properties and antibacterial properties. The purpose of this study was to determine the effect of adding sisal nanofibers of various concentrations to the epoxy resin sealer on the wettability and antibacterial properties of *Streptococcus mutans*.

Sisal nanofiber sealers for each concentration group of 0%, 0.25%, 0.5%, 0.75%, 1% and 1.25% were tested for wettability by measuring the contact angle at 3 minutes. The antibacterial activity of the sisal nanofiber sealer was tested by diffusion method, and incubated for 48 hours at 37°, then the zone of inhibition was calculated. The calculation results from the wetting and antibacterial tests were analyzed with one-way Anova.

The results of one-way ANOVA analysis showed a contact angle of $<90^\circ$ in all groups and there was no statistically significant difference ($p>0.005$) and there was a statistically significant difference ($p<0.005$) in the antibacterial test against *Streptococcus mutans*. Concentration of 1% had the highest inhibition zone, the second was 0.5%, 0.75%, 1.25% which had the same inhibitory power, and then 0.25% and 0% group was the lowest.

The conclusion of this study is that there is no effect of adding sisal nanofibers of various concentrations to the epoxy resin sealer on the wettability and that there is an effect on the antibacterial properties of *Streptococcus mutans* bacteria.

Keywords: sisal nanofiber, epoxy resin sealer, wetting capacity, *Streptococcus mutans*.