

## **PENGARUH PENAMBAHAN NANOFIBER SISAL (*Agave sisalana*) PADA DAYA ANTIBAKTERI KALSIUM HIDROKSIDA SEBAGAI BAHAN STERILISASI SALURAN AKAR TERHADAP *Enterococcus faecalis***

### **Intisari**

Kalsium hidroksida merupakan medikamen saluran akar yang berfungsi untuk sterilisasi bakteri dalam saluran akar. Kalsium hidroksida memiliki sifat antibakteri karena pH yang tinggi tetapi resisten terhadap *Enterococcus faecalis*. Sisal (*Agave sisalana*) adalah tumbuhan yang mengandung berbagai zat antibakteri seperti flavonoid, tanin, dan alkaloid. Tujuan penelitian ini adalah untuk mengetahui pengaruh penambahan nanofiber sisal pada daya antibakteri kalsium hidroksida sebagai bahan sterilisasi saluran akar terhadap *E. faecalis*.

Pengujian daya antibakteri dilakukan dengan metode difusi menggunakan media *Mueller Hinton Agar*. Cawan ditanami bakteri *E. faecalis* dengan kepadatan bakteri  $1,5 \times 10^8$  CFU/ml dan dibuat 3 sumuran berdiameter 6mm untuk 3 kelompok perlakuan. Sumuran kelompok I diisi kalsium hidroksida tanpa penambahan nanofiber sisal, kelompok II kalsium hidroksida dengan penambahan nanofiber sisal 0,5%, dan kelompok III kalsium hidroksida dengan penambahan nanofiber sisal 1%. Sampel diinkubasi selama 48jam pada suhu 37°C kemudian diukur zona hambat berupa area bening yang terbentuk di sekeliling sumuran menggunakan *sliding caliper*.

Hasil uji Anava menunjukkan nilai  $p < 0,05$  yang berarti terdapat pengaruh penambahan nanofiber sisal dalam kalsium hidroksida terhadap daya antibakteri *E. faecalis*. Uji LSD *post-hoc* menunjukkan nilai  $p < 0,05$  yang berarti terdapat perbedaan rerata yang signifikan antara kelompok 3 dan 1 ( $p = 0,001$ ) serta kelompok 3 dan 2 ( $p = 0,02$ ). Kesimpulan penelitian ini terdapat pengaruh penambahan nanofiber sisal pada daya antibakteri kalsium hidroksida sebagai bahan sterilisasi saluran akar terhadap bakteri *E. faecalis* dan kalsium hidroksida dengan nanofiber sisal 1% memiliki daya antibakteri yang lebih tinggi dibanding kalsium hidroksida dengan nanofiber sisal 0,5%.

Kata kunci: kalsium hidroksida, sterilisasi saluran akar, nanofiber sisal, *Agave sisalana*, *Enterococcus faecalis*

**EFFECT OF ADDING NANOFIBERS SISAL (*Agave sisalana*) TO  
ANTIBACTERIAL PROPERTIES OF CALCIUM HYDROXIDE  
AS INTRACANAL MEDICAMENT MATERIAL  
AGAINST *Enterococcus faecalis***

**Abstract**

Calcium hydroxide is an intracanal medicament that functions to sterilize bacteria due to its high pH but is resistant to *Enterococcus faecalis*. Sisal (*Agave sisalana*) is a plant that contains various antibacterial substances such as flavonoids, tannins, and alkaloids. This research aimed to determine the effect of adding sisal nanofiber on the antibacterial properties of calcium hydroxide as an intracanal medicament against *E. faecalis*.

Antibacterial properties testing was carried out using the diffusion method. The plates were planted with *E. faecalis* bacteria. In every plate, three wells were made for the 3 treatment groups. Group I was filled with calcium hydroxide without addition, group II with the addition of 0.5% sisal nanofibers, and group III with the addition of 1% sisal nanofibers. Samples were incubated for 48 hours at 37°C, then the inhibition zone was measured in the form of a clear area formed around the well using a sliding caliper.

The Anava test results showed  $p\text{-value} < 0.05$ , which means there is an influence of the addition of sisal nanofiber in calcium hydroxide on the antibacterial properties of *E. faecalis*. The post-hoc LSD test showed  $p\text{-value} < 0.05$ , which means there was a significant mean difference between group 3 and 1 and group 3 and 2. This research concludes that there is an effect of adding sisal nanofiber on the antibacterial properties of calcium hydroxide as an intracanal medicament against *E. faecalis* bacteria and calcium hydroxide with 1% sisal nanofiber has higher antibacterial properties than calcium hydroxide with 0.5% sisal nanofiber.

**Keywords:** calcium hydroxide, intracanal medicament, sisal nanofiber, *Agave sisalana*, *Enterococcus faecalis*