

## INTISARI

Bahan cetak alginat merupakan material yang sering digunakan dalam praktik kedokteran gigi tetapi hasil cetakan alginat dapat terkontaminasi mikroorganisme, seperti *Streptococcus mutans* yang dikenal sebagai penyebab utama karies gigi dan berpotensi menimbulkan infeksi silang. Daun sirih hijau (*Piper betle L.*) mengandung berbagai senyawa aktif seperti flavonoid, tannin, saponin, fenol, serta minyak atsiri yang memiliki aktivitas antibakteri. Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi infusa daun sirih hijau sebagai *self-disinfectant* pada manipulasi material cetak alginat terhadap daya hambat pertumbuhan *S. mutans*.

Penelitian ini menggunakan bahan alginat yang dilarutkan dengan infusa daun sirih hijau dengan konsentrasi infusa 0%, 25%, dan 50% kemudian dibentuk cakram. Setelah terbentuk cakram, sampel diuji menggunakan metode difusi cakram pada media *Mueller-Hinton Agar* yang telah diinokulasi *S. mutans* ATCC 25923 kemudian diinkubasi selama 24 jam pada suhu 37°C. Setelah diinkubasi dilakukan pengukuran zona hambat menggunakan jangka sorong. Analisis data menggunakan uji ANAVA satu jalur dan uji *post hoc Games-Howell*.

Hasil penelitian menunjukkan rata-rata zona hambat pada konsentrasi 0% yaitu  $0,00 \pm 0,00$  mm, 25% yaitu  $1,8 \pm 0,64$ , dan 50% yaitu  $2,05 \pm 0,61$ . Hasil uji ANAVA satu jalur menunjukkan perbedaan bermakna antar kelompok ( $p < 0,05$ ) dan hasil uji *post hoc Games-Howell* menunjukkan perbedaan bermakna antara konsentrasi 0% dengan 25% dan 0% dengan 50% tetapi tidak berbeda bermakna antara 25% dan 50%. Kesimpulan penelitian ini adalah konsentrasi infusa daun sirih hijau sebagai *self-disinfectant* pada manipulasi material cetak alginat berpengaruh terhadap peningkatan daya hambat pertumbuhan *S. mutans*. Terdapat perbedaan bermakna antara konsentrasi 0% dengan 25% serta 0% dengan 50%, tetapi tidak terdapat perbedaan bermakna antara konsentrasi 25% dengan 50%.

**Kata kunci:** Infusa daun sirih hijau, alginat, konsentrasi, disinfektan mandiri, *Streptococcus mutans*.

## **ABSTRACT**

Alginate impression material is commonly used in dental practice, but alginate impressions can be contaminated with microorganisms, such as *Streptococcus mutans*, which is known to be the main cause of dental caries and has the potential to cause cross-infection. Green betel leaves (*Piper betle L.*) contain various active compounds such as flavonoids, tannins, saponins, phenols, and essential oils that have antibacterial activity. This study aims to determine the effect of green betel leaf infusion concentration as a self-disinfectant in alginate impression material manipulation in the growth inhibition of *S. mutans*.

This study used alginate material dissolved with green betel leaf infusion at concentrations of 0%, 25%, and 50%, which was then formed into discs. After the discs were formed, the samples were tested using the disc diffusion method on Mueller-Hinton Agar inoculated with *S. mutans* ATCC 25923 and then incubated for 24 hours at 37°C. After incubation, the inhibition zone was measured using a caliper. Data analysis was performed using a one-way ANOVA and Games-Howell post-hoc test.

The results showed that the average inhibition zone at a concentration of 0% was  $0.00 \pm 0.00$  mm, at 25% it was  $1.8 \pm 0.64$ , and at 50% was  $2.05 \pm 0.61$ . The one-way ANOVA test showed a significant difference between groups ( $p < 0.05$ ), and the Games-Howell post-hoc test showed a significant difference between concentrations of 0% and 25% and 0% and 50%, but no significant difference between 25% and 50%. The results of this study indicate that the concentration of green betel leaf infusion as a self-disinfectant in alginate mold material manipulation increases the growth inhibition of *S. mutans*. There were significant differences between the 0% and 25% concentrations and between the 0% and 50% concentrations, but there were no significant differences between the 25% and 50% concentrations.

**Keywords:** Green betel leaf infusion, alginate, concentration, self-disinfectant, *Streptococcus mutans*.