

INTISARI

Fusobacterium nucleatum merupakan bakteri Gram-negatif tergolong *orange complex* yang berperan dalam patogenesis periodontitis. Terapi awal penyakit periodontal biasanya dilakukan dengan *scaling and root planing* (SRP). Efektivitas SRP masih terbatas pada area yang sulit dijangkau sehingga diperlukan terapi agen antibakteri bahan alami berupa *Aloe vera* serta penambahan probiotik *Lactobacillus casei* untuk menghambat rekolonisasi bakteri. *Aloe vera* menghasilkan antibakteri terbaik serta mendukung pertumbuhan *L. casei* pada konsentrasi 15%. *L. casei* juga memberikan efek maksimal pada konsentrasi 15%. Penggunaan rasio 3:1, 2:1, 1:3, 1:2, 1:1 merupakan faktor yang memengaruhi aktivitas zona hambat. Penelitian ini bertujuan untuk mengetahui pengaruh rasio campuran larutan *Aloe vera* 15% dan *L. casei* 15% terhadap daya hambat bakteri *Fusobacterium nucleatum*.

Metode penelitian uji daya hambat *F. nucleatum* menggunakan difusi cakram *Mueller hinton Agar*. Terdapat enam kelompok uji, yaitu kelompok perlakuan rasio campuran larutan *Aloe vera* 15% dan *L. casei* 15% 3:1, 2:1, 1:3, 1:2, 1:1, dan kontrol positif khlorheksidin glukonat 0,2%. Pengukuran diameter zona hambat dilakukan dengan jangka sorong pada zona bening yang terbentuk kemudian dianalisis menggunakan metode *One-way Anova* dan *Post Hoc LSD*.

Hasil penelitian menunjukkan adanya perbedaan yang signifikan ($p < 0,05$) pada enam kelompok uji. Rasio campuran larutan *Aloe vera* 15% dan *Lactobacillus casei* 15% berpengaruh terhadap daya hambat bakteri *Fusobacterium nucleatum*. Kelima kelompok perlakuan rasio campuran larutan *Aloe vera* 15% dan *L. casei* 15% menghasilkan diameter zona hambat yang tidak lebih besar daripada kontrol positif. Kesimpulan penelitian ini adalah rasio campuran larutan *Aloe vera* 15% dan probiotik *L. casei* 15% berpengaruh terhadap daya hambat bakteri *Fusobacterium nucleatum*. Rasio campuran larutan *Aloe vera* 15% dan probiotik *L. casei* 15% 3:1 menghasilkan zona hambat terbesar.

Kata kunci: *Fusobacterium nucleatum*, *Aloe vera*, *Lactobacillus casei*, Rasio, Daya hambat

ABSTRACT

Fusobacterium nucleatum is a Gram-negative bacterium belonging to the orange complex that plays an important role in the pathogenesis of periodontitis. The initial treatment for periodontal disease is commonly performed through scaling and root planing (SRP). However, the effectiveness of SRP remains limited, particularly in areas that are difficult to access. Therefore, additional therapy using natural antibacterial agents such as *Aloe vera*, combined with the probiotic *Lactobacillus casei*, is needed to inhibit bacterial recolonization. *Aloe vera* exhibits strong antibacterial activity and supports the growth of *L. casei* at a 15% concentration, while *L. casei* also shows optimal effects at the same concentration. The use of ratio 3:1, 2:1, 1:3, 1:2, and 1:1 serves as factor influencing the inhibitory zone activity. This study aimed to determine the effect of various mixture ratios of 15% *Aloe vera* and 15% *L. casei* solutions on the inhibition of *F. nucleatum*.

The antibacterial activity test against *F. nucleatum* was conducted using the Mueller Hinton Agar disk diffusion method. Six groups were tested, consisting of mixture ratios of *Aloe vera* 15% and *L. casei* 15% (3:1, 2:1, 1:3, 1:2, and 1:1) and a positive control group using 0.2% chlorhexidine gluconate. The diameters of inhibition zones were measured using a digital caliper and analyzed statistically with a One-way ANOVA followed by a Post Hoc LSD test.

The results showed significant differences ($p < 0.05$) among all groups. The mixture of 15% *Aloe vera* and 15% *L. casei* solutions affected the inhibition of *F. nucleatum*. The mixture ratio of *Aloe vera* 15% and *L. casei* 15% at 3:1 produced the largest inhibition zone.

Keywords: *Fusobacterium nucleatum*, *Aloe vera*, *Lactobacillus casei*, ratio, inhibition zone