

## INTISARI

*Porphyromonas gingivalis* merupakan bakteri *red complex* pada plak gigi penyebab periodontitis. Plak yang berisi bakteri perlu dihilangkan melalui perawatan periodontal. Terapi *scaling root planing* kurang efektif dalam menghilangkan bakteri yang menginvasi hingga jaringan periodontal sehingga membutuhkan terapi adjuvan seperti *Aloe vera* sebagai antibakteri yang mampu penetrasi ke dalam jaringan. *Aloe vera* memerlukan probiotik *Lactobacillus casei* untuk menghambat rekolonisasi bakteri. Tujuan penelitian ini adalah mengetahui efektivitas penambahan probiotik *Lactobacillus casei* 5%, 10%, dan 15% pada *Aloe vera* 15% terhadap daya hambat pertumbuhan *Porphyromonas gingivalis*.

Metode penelitian uji daya hambat *Porphyromonas gingivalis* adalah difusi cakram pada *Trypticase Soy Agar*. Terdapat tiga kelompok perlakuan yaitu penambahan probiotik *Lactobacillus casei* 5%, 10%, dan 15% pada *Aloe vera* 15%, kelompok *baseline* (*Aloe vera* 15%), serta kontrol positif (klorheksidin glukonat 0,2%). Pengukuran diameter zona hambat dilakukan menggunakan *sliding caliper* kemudian data dianalisis menggunakan *One-Way ANOVA* dan *Post hoc LSD*.

Hasil penelitian menunjukkan adanya perbedaan yang signifikan ( $p < 0,05$ ) pada ketiga kelompok perlakuan. Terdapat peningkatan diameter zona hambat pada ketiga kelompok perlakuan seiring peningkatan konsentrasi *Lactobacillus casei* pada *Aloe vera* 15%. Diameter zona hambat ketiga kelompok perlakuan lebih besar dibandingkan *baseline* dan lebih kecil dibandingkan kontrol positif. Kesimpulan penelitian ini adalah penambahan *Lactobacillus casei* 15% pada *Aloe vera* 15% lebih efektif dibandingkan konsentrasi 10%, penambahan *Lactobacillus casei* 10% pada *Aloe vera* 15% lebih efektif dibandingkan konsentrasi 5%, penambahan *Lactobacillus casei* 5% pada *Aloe vera* 15% lebih efektif dibandingkan *Aloe vera* 15% terhadap daya hambat pertumbuhan *Porphyromonas gingivalis*.

Kata kunci: *Porphyromonas gingivalis*, antibakteri, daya hambat, *Lactobacillus casei*, *Aloe vera*

## **ABSTRACT**

*Porphyromonas gingivalis*, a red complex bacterium found in dental plaque, is a major causative agent of periodontitis. Bacterial plaque must be removed through periodontal treatment. Scaling root planing is less effective in eliminating bacteria that have invaded periodontal tissues, thus requiring adjunctive therapies such as *Aloe vera*, an antibacterial agent capable of penetrating tissues. *Aloe vera* requires the probiotic *Lactobacillus casei* to inhibit bacterial recolonization. This study aimed to determine the effectiveness of adding 5%, 10%, and 15% *Lactobacillus casei* to 15% *Aloe vera* in inhibiting the growth of *Porphyromonas gingivalis*.

The disk diffusion method on *Trypticase Soy Agar* was used to assess the inhibitory activity of *Porphyromonas gingivalis*. Three treatment groups were established: 5%, 10%, and 15% *Lactobacillus casei* added to 15% *Aloe vera*, a baseline group (15% *Aloe vera*), and a positive control (0.2% chlorhexidine gluconate). The diameter of the inhibition zone was measured using a sliding caliper, and data were analyzed using One-Way ANOVA and post hoc LSD.

Results showed a significant difference ( $p < 0.05$ ) among the three treatment groups. An increase in the diameter of the inhibition zone was observed in all treatment groups as the concentration of *Lactobacillus casei* in 15% *Aloe vera* increased. The diameter of the inhibition zone in all treatment groups was larger compared to the baseline group and smaller compared to the positive control. The conclusion of this study is that the addition of 15% *Lactobacillus casei* to 15% *Aloe vera* was more effective than 10%, the addition of 10% *Lactobacillus casei* to 15% *Aloe vera* was more effective than 5%, and the addition of 5% *Lactobacillus casei* to 15% *Aloe vera* was more effective than 15% *Aloe vera* alone in inhibiting the growth of *Porphyromonas gingivalis*.

**Keywords:** *Porphyromonas gingivalis*, antibacterial, inhibitory activity, *Lactobacillus casei*, *Aloe vera*.