

INTI SARI

Periodontitis adalah inflamasi kronis pada jaringan periodontal yang diawali oleh akumulasi plak gigi. *Fusobacterium nucleatum* dalam plak gigi berperan dalam menjembatani interaksi koloni antar bakteri periodontopatogen. Perawatan *scaling root planing* kurang efektif untuk menghilangkan patogen yang telah menginvasi jaringan, sehingga diperlukan terapi adjuvan berupa gel Aloe vera dengan sifat antibakteri dan mampu berpenetrasi pada jaringan, serta tambahan *Lactobacillus casei* untuk menghambat rekolonisasi patogen di poket periodontal. Tujuan penelitian adalah mengetahui pengaruh penambahan probiotik *Lactobacillus casei* pada gel Aloe vera berbagai konsentrasi terhadap daya hambat pertumbuhan *Fusobacterium nucleatum*.

Jenis penelitian adalah eksperimental in vitro, yaitu pengujian daya hambat *Fusobacterium nucleatum* dengan difusi cakram. Kelompok perlakuan pada penelitian berupa gel Aloe vera berbagai konsentrasi (5, 10, dan 15%) yang diperkaya *Lactobacillus casei*, disertai empat kelompok kontrol, yakni kontrol positif (klorheksidin glukonat 0,2%), kontrol *Minimum Inhibitory Concentration* (gel Aloe vera 10%), kontrol probiotik (*Lactobacillus casei* + pelarut salin), dan kontrol negatif (pelarut salin). Diameter zona hambat bakteri diukur menggunakan jangka sorong dengan empat kali pengulangan dan dianalisis secara parametrik menggunakan *One-way ANOVA* dan *Post Hoc LSD*.

Hasil penelitian memperlihatkan perbedaan bermakna diameter zona hambat ketiga kelompok perlakuan, yaitu semakin tinggi konsentrasi gel Aloe vera diperkaya *L. casei* yang digunakan maka semakin besar zona hambat yang terbentuk. Namun, diameter zona hambat kelompok perlakuan lebih kecil dari kontrol MIC, dan kontrol positif. Dapat disimpulkan bahwa penambahan probiotik *Lactobacillus casei* pada gel Aloe vera berbagai konsentrasi berpengaruh dalam meningkatkan daya hambat pertumbuhan *Fusobacterium nucleatum*.

Kata kunci: *Fusobacterium nucleatum*, gel aloe vera, probiotik, *lactobacillus casei*, antibakteri

ABSTRACT

Periodontitis is a chronic inflammation of periodontal tissue that begins with the accumulation of dental plaque. *Fusobacterium nucleatum* in dental plaque plays a role in bridging colony interactions between periodontopathogenic bacteria. Scaling root planing treatment is less effective in eliminating pathogens that have invaded tissue, so adjuvant therapy is needed in the form of *Aloe vera* gel with antibacterial properties and is able to penetrate tissue, as well as additional *Lactobacillus casei* to inhibit recolonization of pathogens in periodontal pockets. The aim of the research was to determine the effect of adding the probiotic *Lactobacillus casei* to various concentrations of *Aloe vera* gel on the growth inhibition of *Fusobacterium nucleatum*.

The type of research was in vitro experimental, namely testing the inhibitory power of *Fusobacterium nucleatum* with a diffusion disc. The treatment groups in the study were various concentrations of *Aloe vera* gel (5, 10, and 15%) enriched with *Lactobacillus casei*, accompanied by four control groups, namely the positive control (0,2% chlorhexidine gluconate), the Minimum Inhibitory Concentration control (10% *Aloe vera* gel), the probiotic control (*Lactobacillus casei* + saline solvent), and the negative control (saline solvent). The diameter of the bacterial inhibition zone was measured using a caliper with four repetitions and analyzed parametrically using eOne-way ANOVA and *Post Hoc* LSD.

The results of the study showed significant differences in the diameter of the inhibition zone between the three treatment groups, namely that the higher the concentration of *Aloe vera* gel enriched with *L. casei* used, the larger the inhibition zone formed. However, the diameter of the inhibition zone of the treatment group was smaller than that of the MIC control, and the positive control. It can be concluded that the addition of the probiotic *Lactobacillus casei* at various concentrations of *Aloe vera* gel has an effect in increasing the growth inhibition of *Fusobacterium nucleatum*.

Key words: *Fusobacterium nucleatum*, *aloe vera* gel, probiotic, *Lactobacillus casei*, antibacterial