

## INTISARI

Penyakit periodontal merupakan peradangan pada jaringan periodontal yang diinisiasi oleh *Porphyromonas gingivalis*. Akumulasi *Porphyromonas gingivalis* akan memicu pembentukan poket periodontal yang memerlukan perawatan berupa *scaling* dan *root planing* dilanjutkan dengan terapi adjuvan, salah satunya dengan larutan irigasi. Kurkumin memiliki sifat antimikroba dan antiinflamasi. Probiotik *Lactobacillus brevis* mampu menghambat pertumbuhan patogen. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan probiotik *Lactobacillus brevis* pada larutan irigasi kurkumin dalam meningkatkan penghambatan pertumbuhan *Porphyromonas gingivalis*.

Metode yang digunakan untuk menguji penghambatan pertumbuhan *Porphyromonas gingivalis* yaitu metode difusi sumuran pada *Tryptic soy Agar*. Larutan uji yang digunakan yaitu larutan kurkumin 0,01%, kurkumin 0,1%, kurkumin 1%, kurkumin 0,01% yang diperkaya probiotik, kurkumin 0,1% yang diperkaya probiotik, kurkumin 1% yang diperkaya probiotik, *cell-free supernatant* probiotik, serta obat kumur ekstrak sirih sebagai kontrol positif dan akuades sebagai kontrol negatif. Setiap kelompok memiliki 3 sampel, pengukuran diameter zona hambat dilakukan dengan *sliding calliper*. Analisis data dilakukan menggunakan *One-way ANOVA*.

Hasil penelitian menunjukkan adanya perbedaan signifikan ( $p < 0,05$ ) diameter zona hambat pada larutan uji. Larutan irigasi kurkumin yang diperkaya probiotik memiliki diameter zona hambat yang lebih besar apabila dibandingkan dengan larutan kurkumin saja. Larutan uji yang memiliki respon daya hambat kuat yaitu larutan kurkumin 1% yang diperkaya probiotik. Meskipun demikian, respon daya hambat larutan tersebut masih berbeda signifikan ( $p > 0,05$ ) dengan kontrol positif. Kesimpulan penelitian ini adalah penambahan probiotik *Lactobacillus brevis* pada larutan irigasi kurkumin berpengaruh dalam meningkatkan penghambatan pertumbuhan *Porphyromonas gingivalis*.

**Kata kunci:** periodontopatogen, probiotik, *Lactobacillus brevis*, kurkumin, antibakteri

## ABSTRACT

Periodontal disease is an inflammation of the periodontal tissue initiated by *Porphyromonas gingivalis*. Accumulation of *Porphyromonas gingivalis* will form periodontal pockets which should be treated with scaling and root planing, followed by adjuvant therapy, one of which is using irrigation solution. Curcumin has antimicrobial and anti-inflammatory properties. *Lactobacillus brevis* probiotic can inhibit pathogen growth. The objective of this research is to determine the effect of the enrichment of *Lactobacillus brevis* probiotic in curcumin irrigation solution to increase the growth inhibition of *Porphyromonas gingivalis*.

A well-diffusion method to test the growth inhibition of *Porphyromonas gingivalis* on Tryptic soy Agar was conducted. The test groups were 0.01% curcumin, 0.1% curcumin, 1% curcumin, 0.01% curcumin enriched with probiotics, 0.1% curcumin enriched with probiotics, 1% curcumin enriched with probiotics, and probiotic cell-free supernatant. Positive control were betel extract mouthwash and negative control was distilled water. Each group had three samples; diameter of inhibition zone was measured using sliding calliper. Data analysis was performed using One-way ANOVA.

The results showed that there was a significant difference ( $p < 0.05$ ) in the diameter of the inhibition zone in the test groups. Curcumin irrigation solution enriched with probiotics had a larger diameter of inhibition zone compared to curcumin solution alone. A strong inhibitory response was shown by 1% curcumin solution enriched with probiotics. However, the inhibitory response of the solution was significantly different ( $p < 0.05$ ) with the positive control. This study concludes that enrichment of *Lactobacillus brevis* probiotic to the curcumin irrigation solution increases the growth inhibition of *Porphyromonas gingivalis*.

**Keywords:** periodontopathogen, probiotic, *Lactobacillus brevis*, curcumin, antibacterial