

## INTISARI

Hasil perawatan dari terapi periodontal nonbedah dapat ditingkatkan menggunakan agen adjuvan. Gel kombinasi propolis 10%, aloe vera 2%, dan asam hialuronat 0,2% diharapkan dapat meningkatkan parameter klinis dan biomolekuler. Penelitian ini bertujuan untuk membandingkan perbedaan kedalaman *probing*, *relative attachment level* (RAL), dan ekspresi *matrix metalloproteinase-8* (MMP-8) pasca aplikasi gel propolis-aloe vera-asam hialuronat dan gel asam hialuronat.

Subjek penelitian dibagi dalam tiga kelompok: gel propolis-aloe vera-asam hialuronat, gel asam hialuronat, dan aquades. Kedalaman *probing* dan RAL diukur menggunakan probe UNC-15 dan *stent* akrilik pada hari ke-0 dan 30, sedangkan ekspresi MMP-8 dikuantifikasi menggunakan Human MMP-8 ELISA Kit. Data dianalisis menggunakan *General Linear Model Repeated Measures* dan dilanjutkan uji *post hoc Bonferroni*.

Hasil penelitian menunjukkan kedua gel adjuvan menurunkan kedalaman *probing* lebih besar dibandingkan akuades ( $p < 0,05$ ), dengan tidak ada perbedaan signifikan diantara keduanya ( $p > 0,05$ ). Perubahan RAL antarkelompok tidak signifikan ( $p > 0,05$ ). Gel propolis-aloe vera-asam hialuronat menunjukkan ekspresi MMP-8 yang lebih rendah dibandingkan akuades pada hari ke-7 dan 30 ( $p < 0,05$ ), namun tidak ada perbedaan signifikan antara gel asam hialuronat dengan akuades ( $p > 0,05$ ). Hasil tersebut menunjukkan bahwa gel propolis-aloe vera-asam hialuronat mempercepat resolusi inflamasi dan dapat menjadi alternatif adjuvan pada perawatan periodontal. Kesimpulan dari penelitian ini adalah tidak ada perbedaan kedalaman *probing*, RAL, dan ekspresi MMP-8 pasca aplikasi gel propolis-aloe vera-asam hialuronat dan gel asam hialuronat.

Kata kunci: kedalaman *probing*, *relative attachment level*, *matrix metalloproteinase-8*, propolis, aloe vera, asam hialuronat

## ABSTRACT

Non-surgical periodontal therapy may be enhanced through the use of adjuvant agents aimed at improving clinical results. A formulation combining 10% propolis, 2% aloe vera, and 0.2% hyaluronic acid gel was developed to improve material quality and promote favorable clinical and biomolecular effects. This study assessed probing depth, relative attachment level (RAL), matrix metalloproteinase-8 (MMP-8) expression following the application of the propolis-aloe vera-hyaluronic acid in comparison with hyaluronic acid gel.

Subjects were allocated into three groups: propolis-aloe vera-hyaluronic acid gel, hyaluronic acid gel, and aquadest. Probing depth and RAL were measured using a UNC-15 probe with an acrylic stent at days 0 and 30. MMP-8 levels were quantified with a Human MMP-8 ELISA Kit at days 0, 7, and 30. Data were analyzed with the General Linear Model Repeated Measures followed by Bonferroni post hoc.

At day 30, both adjuvants demonstrated greater reductions in probing depth compared with aquadest ( $p < 0.05$ ), with no significant difference between the two ( $p > 0.05$ ), and no significant difference in RAL among groups ( $p > 0.05$ ). The propolis-aloe vera-hyaluronic acid gel exhibited significantly lower MMP-8 expression than the aquadest group at days 7 and 30 ( $p > 0.05$ ), while hyaluronic acid gel did not ( $p > 0.05$ ), indicating that the propolis-aloe vera-hyaluronic acid provided a more rapid resolution of inflammation and may serve as an alternative adjunct in periodontal therapy. In conclusion, there was no significant difference on probing depth, RAL, and MMP-8 after the application of propolis-aloe vera-hyaluronic acid gel compared to hyaluronic acid gel.

**Keywords:** probing depth, relative attachment level, matrix metalloproteinase-8, propolis, aloe vera, hyaluronic acid