ABSTRAK

PENGARUH GEL EKSTRAK ETANOL KENCUR (*Kaempferia galanga L.*) TERHADAP JUMLAH SEL FIBROBLAS DAN KEPADATAN KOLAGEN PADA TIKUS MODEL PERIODONTITIS KRONIS

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Periodontitis kronis merupakan kondisi inflamasi yang merusak jaringan periodontal hingga memicu kehilangan gigi yang disebabkan bakteri *Porphyromonas gingivalis*. *Gold standard* perawatan periodontitis kronis adalah *scaling root planing* (SRP) dengan terapi penunjang berupa pemberian obat antibiotik dan antiinflamasi. Asam hialuronat umum digunakan sebagai antiinflamasi namun memiliki efek samping berupa rasa nyeri lokal, terbakar, dan kemerahan. Kandungan flavonoid, saponin, polifenol, terpenoid, alkaloid, tanin, dan minyak atsiri dalam rimpang kencur berpotensi sebagai antiinflamasi. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian gel ekstrak rimpang kencur terhadap jumlah fibroblas dan kepadatan kolagen pada tikus model periodontitis kronis. Jenis penelitian ini adalah eksperimental laboratoris *in vivo* dengan *posttest-only control group design.* Sampel sebanyak 60 tikus galur Wistar jantan dibagi menjadi 5 kelompok perlakuan dengan gel ekstrak rimpang kencur 1% (P1), 2% (P2), 4% (P3), kontrol positif asam hialuronat 0,2% (KP), dan kontrol negatif CMC-Na (KN). Sampel diamati pada hari 1, 3, dan 7 pasca perlakuan. Pengamatan fibroblas dan kepadatan kolagen dilakukan pada preparat histologi pewarnaan HE. Data fibroblas dianalisis dengan *Two-Way* ANOVA dan uji *Post Hoc* LSD, sedangkan kepadatan kolagen dianalisis dengan uji *Kruskal Wallis* dan uji *Post Hoc Mann-Whitney*. Hasil penelitian menunjukkan perbedaan signifikan jumlah fibroblas kelompok perlakuan (P1, P2, P3) dengan kontrol negatif (KN) pada seluruh hari pengamatan ($p \leq 0,05$) tetapi P3 tidak berbeda signifikan ($p > 0,05$) terhadap kelompok kontrol positif (KP). Analisis data kepadatan kolagen menunjukkan perbedaan signifikan antar kelompok ($p \leq 0,05$). Simpulan penelitian ini adalah terdapat pengaruh pemberian gel ekstrak rimpang kencur terhadap peningkatan jumlah sel fibroblas dan kepadatan kolagen pada tikus model periodontitis kronis.

Kata Kunci: Fibroblas, *Kaempferia galanga L.,* Kencur, Kepadatan kolagen, Periodontitis kronis.

ABSTRACT

THE EFFECT OF Kaempferia galanga L. RHIZOME ETHANOLIC EXTRACT GEL ON FIBROBLAST CELL NUMBER AND COLLAGEN DENSITY IN RATS WITH CHRONIC PERIODONTITIS MODEL

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Chronic periodontitis is an inflammatory condition that damages periodontal tissues, leading to tooth loss caused by bacteria Porphyromonas gingivalis. The gold standard treatment for chronic periodontitis is scaling root planing (SRP) with adjunctive therapy involving the administration of antibiotic and anti-inflammatory drugs. Hyaluronic acid is commonly used as an anti-inflammatory, but it has side effects such as local pain, burning sensation, and redness. The flavonoid, saponin, polyphenol, terpenoid, alkaloid, tannin, and essential oil contents in the Kaempferia galanga rhizome have the potential to act as anti-inflammatory agents. This study aimed to investigate the effect of Kaempferia galanga L. rhizome ethanolic extract gel on fibroblast cell number and collagen density in rats with chronic periodontitis model. This research was conducted by laboratory experimental in vivo using a posttest-only control group design. Sixty male Wistar rats were divided into 5 treatment groups: 1% Kaempferia galanga rhizome extract gel (P1), 2% (P2), 4% (P3), positive control with 0.2% hyaluronic acid (KP), and negative control with CMC-Na gel (KN). Samples were observed on days 1, 3, and 7 after application gel. Histological preparations stained with HE were used to assess the number of fibroblasts and collagen density. Fibroblast data were analyzed using Two-Way ANOVA and Post Hoc LSD tests, while collagen density was analyzed using the Kruskal Wallis test and Post Hoc Mann-Whitney test. Result shows that there are significant differences in the number of fibroblasts between the treatment groups (P1, P2, P3) and the negative control (KN) across all observation days ($p \leq 0.05$), but P3 does not show significant differences ($p > 0.05$) compared to the positive control (KP). Analysis of collagen density data shows significant differences between groups ($p \leq 0.05$). The conclusion of this study is that the administration of Kaempferia galanga rhizome extract gel has an effect on the number of fibroblast cells and collagen density in chronic periodontitis rat models.

Keywords: *Chronic periodontitis, Collagen density, Fibroblasts, Kaempferia galanga L.*