

## INTISARI

Periodontitis dan diabetes melitus merupakan kondisi inflamasi kronis yang saling berhubungan dan dapat memengaruhi respons inflamasi lokal maupun sistemik. Penelitian ini bertujuan menganalisis pengaruh aplikasi gel *Etilingera elatior* pasca-*scaling* dan *root planing* (SRP) terhadap kadar interleukin-1 beta (IL-1 $\beta$ ) cairan sulkus gingiva serta jumlah sel beta pankreas pada tikus *Rattus norvegicus* dengan induksi periodontitis, diabetes melitus, dan periodontitis diabetika.

Penelitian eksperimental ini menggunakan 29 ekor tikus yang dibagi menjadi tujuh kelompok: Normal (N), periodontitis + gel *Etilingera elatior* (PE), periodontitis + plasebo (PP), diabetes + gel *Etilingera elatior* (DE), diabetes + plasebo (DP), periodontitis diabetika + gel *Etilingera elatior* (PDE), dan periodontitis diabetika + plasebo (PDP). Pemeriksaan IL-1 $\beta$  dilakukan pada hari ke-0, 7, 14, dan 21, sedangkan pemeriksaan histologi sel beta pankreas dilakukan pada hari ke-21 dan dibandingkan dengan *baseline* Normal hari ke-0.

Data IL-1 $\beta$  terdistribusi normal namun tidak homogen, sehingga dianalisis menggunakan Welch ANOVA dilanjutkan uji *post hoc* Games–Howell. Hasil menunjukkan perbedaan rerata IL-1 $\beta$  antar kelompok ( $p < 0,05$ ), dengan perbedaan yang paling banyak pada kelompok PDE. Analisis jumlah sel beta pankreas menggunakan *one-way ANOVA* dengan uji *post hoc* Tukey menunjukkan perbedaan tidak bermakna kelompok PDE dan Normal. Uji korelasi Spearman menunjukkan tidak terdapat hubungan linear bermakna antara kadar IL-1 $\beta$  dan jumlah sel beta pankreas ( $p > 0,05$ ).

Penelitian ini menunjukkan bahwa aplikasi gel *Etilingera elatior* pasca-SRP berpengaruh terhadap respons inflamasi periodontal yaitu kadar IL-1 $\beta$ , namun tidak berpengaruh terhadap perubahan jumlah sel beta pankreas dalam periode pengamatan.

**Kata kunci:** Beta pankreas, *Etilingera elatior*, Interleukin-1 $\beta$ , Periodontitis Diabetika

## **ABSTRACT**

*Periodontitis and diabetes mellitus are chronic inflammatory conditions that are closely interrelated and may influence both local and systemic inflammatory responses. This study aimed to analyze the effect of Etlingera elatior gel application after scaling and root planing (SRP) on interleukin-1 beta (IL-1 $\beta$ ) levels in gingival crevicular fluid and pancreatic beta cell counts in Rattus norvegicus with induced periodontitis, diabetes mellitus, and diabetic periodontitis.*

*This experimental study involved 29 rats divided into seven groups: Normal (N), periodontitis + Etlingera elatior gel (PE), periodontitis + placebo (PD), diabetes + Etlingera elatior gel (DE), diabetes + placebo (DP), diabetic periodontitis + Etlingera elatior gel (PDE), and diabetic periodontitis + placebo (PDP). IL-1 $\beta$  levels were measured on days 0, 7, 14, and 21, while histological assessment of pancreatic beta cells was performed on day 21 and compared with the Normal baseline at day 0.*

*IL-1 $\beta$  data were normally distributed but showed unequal variances; therefore, Welch ANOVA followed by Games–Howell post hoc test was applied. The results demonstrated significant differences in mean IL-1 $\beta$  levels among groups ( $p < 0.05$ ), with higher values observed in diabetic and diabetic periodontitis groups compared to the Normal group. Analysis of pancreatic beta cell count using one-way ANOVA with Tukey's post hoc test showed no significant difference in the PDE and Normal groups. Spearman correlation analysis indicated no significant linear correlation between IL-1 $\beta$  levels and pancreatic beta cell counts ( $p > 0.05$ ).*

*In conclusion, SRP combined with Etlingera elatior gel was associated with differences in periodontal inflammatory responses namely IL-1 $\beta$ , while pancreatic beta cell counts did not show significant changes within the observation period.*

**Key words:** *Diabetic Periodontitis, Etlingera elatior, Interleukin-1 $\beta$ , pancreatic beta cells*