ABSTRAK

AKTIVITAS EKSTRAK ETANOL RIMPANG KENCUR (*Kaempferia galanga L.*) TERHADAP DEGRADASI BIOFILM *Fusobacterium nucleatum* PENYEBAB PERIODONTITIS KRONIS

Bella Amanda Nur Saputri

Fusobacterium nucleatum merupakan bakteri penting penyebab periodontitis kroni yang mampu membentuk biofilm penyebab periodontitis kronis. Ekstrak etanol rimpang kencur (EERK) mengandung senyawa aktif seperti flavonoid, saponin, terpenoid dan polifenol yang diduga memiliki aktivitas antibiofilm terhadap bakteri periodontopatogen. Tujuan penelitian ini untuk mengetahui kandungan senyawa aktif dan aktivitas EERK terhadap degradasi biofilm *F.nucleatum.* Jenis penelitian berupa *experimental laboratoris* dengan rancangan *post test only control group design* dan sampel penelitian bakteri *F.nucleatum* ATCC 25586. Terdapat 6 kelompok perlakuan yaitu EERK konsentrasi 1,56 mg/mL, 3,125 mg/mL, 6,25 mg/mL, 12,5 mg/mL, 25 mg/mL, 50 mg/mL dan 2 kelompok kontrol yaitu *chlorhexidine gluconate 0,2%* (kontrol positif) dan DMSO 1% (kontrol negatif) dengan pengulangan sebanyak 8 kali. Penapisan fitokimia EERK dilakukan dengan metode tabung. Aktivitas degradasi biofilm *F.nucleatum* diuji menggunakan *microtiter plate assay* dengan pewarnaan kristal violet 1% pada panjang gelombang 620 nm. Data dianalisis dengan *One way* ANOVA dan uji *Post Hoc LSD*. Hasil penelitian menunjukkan EERK mengandung senyawa flavonoid, saponin, fenol, terpenoid. Persentase degradasi biofilm *F.nucleatum* oleh EERK berturut-turut sebesar 36,90%, 47,97% 60,15%, 75,21%, 84,54% dan 68,80% ($p<0,05$). Konsentrasi 25 mg/mL merupakan konsentrasi paling efektif dan menunjukan tidak berbeda bermakna dengan kontrol positif ($p<0,05$). Simpulan dari penelitian ini adalah terdapat aktivitas EERK terhadap degradasi biofilm *F.nucleatum.*

Kata kunci: Biofilm, *Fusobacterium nucleatum, Kencur,* Periodontitis

ABSTRACT

ACTIVITIES OF Kaempferia galanga L. RHIZOME ETHANOLIC EXTRACT AGAINST DEGRADATION OF Fusobacterium nucleatum BIOFILM THAT CAUSE OF CHRONIC PERIODONTITIS

Bella Amanda Nur Saputri

Fusobacterium nucleatum is an important bacterium that cause chronic periodontitis capable forming biofilms. Kaempferia galanga L. rhizome ethanolic extract (KREE) had several active substances, such as flavonoids, saponins, terpenoids, and polyphenol, which had antibiofilm activity against periodontopathogenic bacteria. The purposed of this study was to determined the content of active compounds and the activity of KREE on the degradation of F.nucleatum biofilms. The type of research was an experimental laboratory with a post test only control group design and research samples of the bacteria F.nucleatum ATCC 25586. The samples were divided into 6 experimental groups, specifically in addition to KREE concentration of 1,56 mg/mL, 3,125 mg/mL, 6,25 mg/mL, 12,5 mg/mL, 25 mg/mL, 50 mg/mL and 2 control groups namely 0.2% chlorhexidine gluconate (positive control) and 1% DMSO (negative control) with 8 repetitions. Phytochemical screening of KREE was carried out using the tube method. F.nucleatum biofilm degradation activities tested exert microtiter plate assay through crystal violet 1% coloration and read the optical density (OD) at the wavelength 620 nm. The data were analyzed with One way ANOVA and Post Hoc LSD test. The results showed KREE contained flavonoids, saponins, polyphenols, and terpenoids. F.nucleatum biofilm degradation presentation by KREE showed significantly different activities that imply between groups, sequentially in the amount of 36.90%, 47.97%, 60.15%, 75.21%, 84.54% dan 68.80% ($p<0,05$). Concentration of 25 mg/mL is the most effective concentration and it showed no significant with positive control ($p<0,05$). The conclusion of this study was KREE had activity to degradation of F.nucleatum biofilm.

Keywords: *Biofilm, Fusobacterium nucleatum, Kaemferia galanga L., Periodontitis*