

## ABSTRAK

# AKTIVITAS FRAKSI RESIDU EKSTRAK ETANOL RIMPANG KENCUR (*Kaempferia galanga* L.) TERHADAP DEGRADASI BIOFILM BAKTERI *Streptococcus sanguinis*

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*Streptococcus sanguinis* merupakan bakteri pelopor yang memiliki peran penting dalam pembentukan plak dan perkembangan karies gigi. Rimpang kencur (*Kaempferia galanga* L.) memiliki aktivitas antibakteri dan antibiofilm yang dapat dikembangkan sebagai alternatif obat kumur berbahan alami untuk pengendalian plak penyebab karies gigi. Tujuan penelitian ini adalah untuk mengetahui aktivitas fraksi residu ekstrak etanol rimpang kencur terhadap degradasi biofilm bakteri *S. sanguinis*. Jenis penelitian berupa eksperimental laboratoris secara *in vitro* menggunakan fraksi residu ekstrak etanol rimpang kencur konsentrasi 5 mg/mL, 10 mg/mL, 15 mg/mL, 20 mg/mL, dan 25 mg/mL. Kontrol positif yang digunakan berupa *chlorhexidine gluconate* 0,2% dan kontrol negatif yang digunakan berupa DMSO 1%. Degradasi biofilm diuji menggunakan metode *microtiter plate assay* dengan pewarnaan kristal violet 1% yang densitas optiknya dibaca pada panjang gelombang 595 nm. Analisis data menggunakan *One-way ANOVA* dan *Post hoc* LSD. Hasil uji fitokimia menunjukkan fraksi residu ekstrak etanol rimpang kencur mengandung senyawa flavonoid, saponin, dan fenol. Hasil persentase degradasi biofilm *S. sanguinis* setelah perlakuan fraksi residu ekstrak etanol rimpang kencur dari konsentrasi terendah hingga konsentrasi tertinggi yaitu 60,70%, 66,30%, 71,54%, 81,12%, dan 89,52%. Peningkatan persentase degradasi biofilm *S. sanguinis* berbanding lurus dengan peningkatan konsentrasi fraksi residu ekstrak etanol rimpang kencur. Konsentrasi efektif pada penelitian ini terdapat pada konsentrasi 25 mg/mL yang sudah mampu menyamai aktivitas *chlorhexidine gluconate* 0,2% ( $p > 0,05$ ). Simpulan penelitian ini adalah terdapat aktivitas degradasi biofilm *S. sanguinis* oleh fraksi residu ekstrak etanol rimpang kencur.

**Kata Kunci:** Degradasi biofilm, Fraksi residu, *Kaempferia galanga* L.,  
*Streptococcus sanguinis*

## ABSTRACT

### **ACTIVITIES OF AROMATIC GINGER (*Kaempferia galanga* L.) RESIDUE FRACTION OF ETHANOL EXTRACT AGAINST DEGRADATION OF BIOFILM BACTERIA *Streptococcus sanguinis***

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*Streptococcus sanguinis* is a pioneer bacteria that has an important role in plaque formation and the development of dental caries. Aromatic ginger (*Kaempferia galanga* L.) has antibacterial and antibiofilm activity which can be developed as an alternative to natural mouthwash to control plaque that causes dental caries. The aim of this research was to determine the activity of the residual fraction of aromatic ginger ethanol extract on the degradation of *S. sanguinis* bacterial biofilms. The type of research was in the form of in vitro laboratory experiments using the residual fraction of aromatic ginger ethanol extract concentrations 5 mg/mL, 10 mg/mL, 15 mg/mL, 20 mg/mL, and 25 mg/mL. The positive control used was 0.2% chlorhexidine gluconate and the negative control used was 1% DMSO. Biofilm degradation was tested using the microtiter plate assay method with 1% crystal violet staining that optical density was read at a wavelength of 595 nm. Data analysis used One-way ANOVA and Post hoc LSD. The results of phytochemical test showed that the residual fraction of aromatic ginger ethanol extract contains flavonoids, saponins, and phenols. The results showed that percentage of *S. sanguinis* biofilm degradation after treatment of the residual fraction of aromatic ginger ethanol extract from the lowest concentration to the highest concentration were 60.70%, 66.30%, 71.54%, 81.12%, and 89.52%. The increase in the percentage of *S. sanguinis* biofilm degradation was directly proportional to the increase in the concentration of the residual fraction of aromatic ginger ethanol extract. The effective concentration in this study was 25 mg/mL, which was able to match the activity of 0.2% chlorhexidine gluconate ( $p > 0.05$ ). The conclusion of this research is that the residual fraction of aromatic ginger ethanol extract has biofilm degradation activity to *S. sanguinis*.

**Keywords:** Biofilm degradation, residue fraction, *Kaempferia galanga* L., *Streptococcus sanguinis*