

## ABSTRAK

### **AKTIVITAS FRAKSI RESIDU EKSTRAK ETANOL RIMPANG KENCUR (*Kaempferia galanga* L.) TERHADAP DEGRADASI BIOFILM BAKTERI *Lactobacillus acidophilus* PENYEBAB KARIES GIGI**

Dinanty Syifa Nareswari

Karies gigi merupakan penyakit gigi dan mulut yang banyak diderita masyarakat di dunia. Karies gigi terjadi karena adanya demineralisasi gigi akibat aktivitas fermentasi bakteri dalam biofilm, salah satu bakteri dominan adalah *Lactobacillus acidophilus*. Rimpang kencur (*Kaempferia galanga* L.) terbukti memiliki efek antibakteri dan antibiofilm sehingga dapat dijadikan salah satu alternatif pengobatan herbal pencegah karies gigi. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh fraksi residu ekstrak etanol rimpang kencur (FRRK) terhadap degradasi biofilm bakteri *L. acidophilus*. Jenis penelitian berupa eksperimental laboratoris secara *in vitro* menggunakan 5 konsentrasi yaitu 5 mg/mL, 10 mg/mL, 15 mg/mL, 20 mg/mL dan 25 mg/mL, kontrol positif *Chlorhexidine Gluconate* (CHG) 0,2% serta kontrol negatif DMSO 1% dengan pengulangan 8 kali. Degradasi biofilm diuji menggunakan *microtiter plate assay* dengan pewarnaan kristal violet 1% dan dibaca pada panjang gelombang 595 nm. Data dianalisis menggunakan *one way ANOVA* dan *Post Hoc LSD*. Hasil persentase degradasi biofilm bakteri *L. acidophilus* oleh FRRK berturut-turut adalah 65,00%, 69,70%, 76,07%, 84,11% dan 89,13%. Hasil analisis statistik menunjukkan adanya perbedaan yang bermakna ( $p < 0,05$ ) antara kelompok perlakuan FRRK, CHG 0,2% dan DMSO 1%, kecuali pada FRRK dengan konsentrasi 25mg/mL dengan CHG 0,2% ( $p > 0,05$ ). Simpulan pada penelitian ini adalah terdapat aktivitas FRRK terhadap degradasi biofilm *L. acidophilus* dengan konsentrasi 25 mg/ mL menunjukkan aktifitas degradasi yang paling efektif.

**Kata kunci:** Degradasi biofilm, Fraksi residu, Karies gigi, *Lactobacillus acidophilus*, Rimpang kencur.

## ABSTRACT

### **ACTIVITY OF ETHANOL EXTRACT RESIDUE FRACTIONS OF KENCUR RHIZOME (*Kaempferia galanga* L.) ON BIOFILM DEGRADATION OF *Lactobacillus acidophilus* THE CAUSE OF DENTAL CARIES.**

Dinanty Syifa Nareswari

*Dental caries is a prevalent dental and oral disease worldwide. It occurs due to the demineralization of teeth caused by bacterial fermentation activity within the biofilm, with *Lactobacillus acidophilus* being one of the dominant bacteria. The rhizome of kencur (*Kaempferia galanga* L.) has been proven to possess antibacterial and antibiofilm effects, making it a potential herbal alternative for preventing dental caries. The aim of this study was to investigate the effect of the ethanol extract residue fraction of kencur rhizome (FRRK) on the degradation of *L. acidophilus* biofilm. This experimental in vitro laboratory study utilized five concentrations: 5 mg/mL, 10 mg/mL, 15 mg/mL, 20 mg/mL, and 25 mg/mL, with 0.2% Chlorhexidine Gluconate (CHG) as the positive control and 1% DMSO as the negative control, each with eight repetitions. Biofilm degradation was tested using a microtiter plate assay with 1% crystal violet staining and read at a wavelength of 595 nm. Data were analyzed using one-way ANOVA and Post Hoc LSD. The results showed the percentages of *L. acidophilus* biofilm degradation by FRRK were 65.00%, 69.70%, 76.07%, 84.11%, and 89.13%, respectively. Statistical analysis indicated significant differences ( $p < 0.05$ ) between the FRRK treatment groups, 0.2% CHG, and 1% DMSO, except for FRRK at 25 mg/mL and 0.2% CHG ( $p > 0.05$ ). The conclusion of this study is that FRRK exhibits activity against *L. acidophilus* biofilm degradation, with the 25 mg/mL concentration showing the most effective degradation activity.*

**Keywords:** Biofilm degradation, Residual fraction, Dental caries, *Lactobacillus acidophilus*, Galangal rhizome.