

INTISARI

Streptococcus sanguinis merupakan bakteri *primary colonizers* yang dapat menyebabkan plak gigi dengan cara membantu perlekatan bakteri *secondary colonizers*. *Lactobacillus acidophilus* merupakan salah satu spesies *Lactobacillus* yang paling sering disarankan untuk digunakan sebagai probiotik. *Lactobacillus acidophilus* memiliki aktivitas antimikroba karena metabolit sekunder yang diproduksinya. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh metabolit *L. acidophilus* ATCC 4356 terhadap pembentukan biofilm *S. sanguinis* ATCC 10556.

Uji penghambatan biofilm dilakukan dengan mengkultur suspensi bakteri *S. sanguinis* dalam media BHI bersama-sama dengan metabolit *L. acidophilus* (6,25%, 12,5%, 25%) dan NaCl 0,9% (kontrol negatif) di 96 well microtiter plate. Microtiter plate kemudian diinkubasi selama 24 jam pada suhu 37°C. Setelah dilakukan inkubasi, biofilm diwarnai menggunakan kristal violet 0,1%. Optical density dibaca menggunakan microplate reader dengan panjang gelombang 540 nm. Data dari penelitian ini dianalisis dengan menggunakan uji *One-Way ANOVA* dan *Post-Hoc Least Significant Difference* dengan tingkat kepercayaan 95% ($\alpha=0,05$).

Hasil analisis statistik menunjukkan bahwa terdapat perbedaan yang bermakna ($p<0,05$) presentase penghambatan biofilm *S. sanguinis* antara metabolit konsentrasi 6,25% dengan metabolit konsentrasi 12,5% dan konsentrasi 25%. Metabolit konsentrasi 12,5% juga memiliki perbedaan bermakna dengan metabolit konsentrasi 25%. Kesimpulan dari penelitian ini adalah metabolit *L. acidophilus* ATCC 4356 dengan konsentrasi 6,25%, 12,5%, dan 25% mampu menghambat pembentukan biofilm bakteri *S. sanguinis* ATCC 10556.

Kata kunci: metabolit, *Lactobacillus acidophilus*, biofilm, *Streptococcus sanguinis*

ABSTRACT

Streptococcus sanguinis is a primary colonizer bacterium that leads to dental plaque formation by aiding the attachment of secondary colonizer bacteria. *Lactobacillus acidophilus* is one of the most commonly recommended *Lactobacillus* species for use as a probiotic. *Lactobacillus acidophilus* has antimicrobial activity due to its secondary metabolites. The purpose of this study was to determine the effect of *L. acidophilus* ATCC 4356 metabolites on the formation of *S. sanguinis* ATCC 10556 biofilm.

Biofilm inhibition assay was performed by culturing a suspension of *S. sanguinis* bacteria in BHI media together with *L. acidophilus* metabolites (6.25%, 12.5%, 25%) and 0.9% NaCl (negative control) in 96-well microtiter plate. The microtiter plate is then incubated for 24 hours at a temperature of 37°C. After incubation, the biofilm was stained using 0.1% crystal violet. The optical density was read using a microplate reader at a wavelength of 540 nm. Data from this study were analyzed using One-Way ANOVA and Post-Hoc Least Significant Difference tests with a confidence level of 95% ($\alpha=0.05$).

The results of statistical analysis showed that there was a significant difference ($p<0.05$) in the percentage of inhibition of *S. sanguinis* biofilm among groups. There were significant differences ($p<0.05$) between metabolites concentration of 6.25% with metabolites concentration of 12.5% and concentration of 25%. The metabolite concentration of 12.5% also has a significant difference with the metabolite concentration of 25%. This study concludes that *L. acidophilus* ATCC 4356 with concentrations of 6.25%, 12.5%, and 25% inhibits the formation of bacterial biofilms *S. sanguinis* ATCC 10556.

Keywords: metabolite, *Lactobacillus acidophilus*, biofilm, *Streptococcus sanguinis*