INTISARI

Streptococcus sanguinis dikenal sebagai bakteri pionir pembentuk plak gigi yang dapat menyebabkan karies dan penyakit periodontal. *Streptococcus sanguinis* memproduksi enzim glukosiltransferase yang mengubah sukrosa menjadi glukan, yang berperan sebagai media adhesi *S. sanguinis*. Kemangi (*Ocimum basilicum*) dapat menghasilkan minyak atsiri yang mengandung senyawa aktif seperti senyawa hidrokarbon, ester, fenol, dan eugenol yang mempunyai efek analgesik, antipiretik, antibakteri dan antijamur. Senyawa aktif minyak atsiri daun kemangi diduga dapat menghambat adhesi *S. sanguinis*. Tujuan penelitian ini adalah untuk mengetahui pengaruh minyak atsiri daun kemangi terhadap kemampuan adhesi bakteri *S. sanguinis* ATCC 10556 *in vitro.*

Kemampuan adhesi *S. sanguinis* diteliti menggunakan metode biofilm *microtiter plate assay.* Minyak atsiri daun kemangi 0,25%, 0,375%, 0,5%, 1% dan kontrol negatif (PEG 400) ditambahkan kedalam sumuran yang mengandung bakteri (1,5 x10^7 CFU) di dalam media BHI. Kultur diinkubasi pada suhu 37^{o}C selama 24 jam, kemudian dicuci dengan *phosphate buffer saline* dan diwarnai dengan kristal violet 0,1%. Densitas optik diukur menggunakan *microplate reader* pada 540 nm. Persentase penghambatan adhesi bakteri dihitung dari nilai densitas optik.

Hasil analisis *One Way ANOVA* menunjukkan bahwa minyak atsiri daun kemangi berpengaruh dalam menghambat adhesi *S. sanguinis.*Analisis LSD menunjukkan perbedaan yang signifikan antara konsentrasi 1% dengan 0,25%, 0,375%, 0,5%, dan kontrol negatif. Hasil analisis juga menunjukkan bahwa terdapat perbedaan yang tidak signifikan antara konsentrasi 0,25% dengan 0,5% dan antara konsentrasi 0,25% dengan 0,375%. Kesimpulan dari penelitian ini adalah minyak atsiri daun kemangi dapat menghambat adhesi *S. sanguinis* dan konsentrasi 1% memiliki efektivitas paling baik dibandingkan dengan 0,25%, 0,375%, dan 0,5%.

Kata kunci : Minyak atsiri daun kemangi, adhesi, *S. sangunis*.

ABSTRACT

Streptrococcus sanguinis is known as a pioneer bacteria of dental plaque formation that causes caries and periodontal disease. *Streptococcus sanguinis* produces glucosyltransferase enzymes that transforms sucrose to glucan which acts as *S. sanguinis* adhesion property. Basil (*Ocimum* basilicum) produces essential oil with active compounds such as hydrocarbon, ester, phenol and eugenol, which has an analgesic, antipyretic, antibacterial and antifungal properties. Essential oilsubstance is predicted to inhibit the adhesion of *S. sanguinis*. The aim of this study was to investigate the effect of basil leaves essential oils toward the adhesion ability of *S.sanguinis* ATCC 10556 *in vitro*.

The adhesion ability of *S. sanguinis* was analyzed by using biofilm microtiter plate assay. A 0.25%, 0.375%, 0.5%, 1% basil leaves essential oil and PEG 400 as negative control were added into wells that contain bacteria ($1.5x10^7$ CFU) in BHI media. The culture was incubated in 37ºC for 24 hours, washed with phosphate buffer saline and stained with crystal violet 0,1%. Optical density was measured by microplate reader at 540 nm. Percentage of bacterial adhesion inhibiton was calculated from the values of optical density.

The result of One Way ANOVA showed that basil leaves essential oil had an effect on inhibiting the adhesion of *S. sanguinis*. LSD analysis showed significant difference between the concentrations of 1% and 0.25%, 0.375%, 0.5% as well as the negative control. Furthermore, the analysis also showed that there is no significant difference between the concentrations of 0.375% and 0.5% as well as 0.25% and 0.375%. The conclusion of this research is the essential oil of basil leaves may inhibit the adhesion of *S. sanguinis* and concentration of 1% has the best effectiveness compared to 0.25%, 0.375%, and 0.5%.

Keywords : Basil leaves essential oil, adhesion, *S. sanguinis*