

INTISARI

Streptococcus mutans merupakan salah satu bakteri penyebab karies yang mampu melekat pada permukaan gigi dan membentuk biofilm. Kitosan ekstrak kulit udang galah memiliki potensi antibakteri dengan mencegah adsorpsi bakteri ke permukaan gigi, menurunkan hidrofobisitas dinding sel bakteri, dan mengurangi produksi glukukan. Penelitian ini bertujuan untuk mengetahui efek kitosan ekstrak kulit udang galah terhadap perlekatan bakteri *S. mutans*.

Streptococcus mutans ATCC 25175 dikultur pada *microplate* 96-well dalam media BHI kaldu dengan suplemen sukrosa 5%. Ekstrak kitosan 0,3%, 0,15%, dan 0,075% dipaparkan pada kultur selama 24 jam pada suhu 37°C. Kelompok kontrol negatif diberi akuades, sedangkan kelompok kontrol positif diberi klorheksidin 0,02%. Keduanya tanpa penambahan kitosan. Metode pewarnaan kristal violet 1% digunakan untuk uji perlekatan bakteri. Nilai absorbansi tiap sampel diukur menggunakan *microplate reader* pada $\lambda=540$ nm. Data berupa persen penghambatan perlekatan bakteri tiap kelompok perlakuan.

Uji statistik *One Way ANOVA* dan *Brown-Forsythe* menunjukkan perbedaan bermakna persentase penghambatan perlekatan *S. mutans* pada semua kelompok perlakuan ($p \leq 0,05$). Uji *Post Hoc Games-Howell* menunjukkan perbedaan signifikan antar perlakuan ($p \leq 0,05$). Kesimpulan dari penelitian ini adalah kitosan mampu menghambat perlekatan bakteri *S. mutans* ATCC 25175 namun tidak seefektif klorheksidin.

Kata kunci : kitosan, perlekatan bakteri, *Streptococcus mutans*

ABSTRACT

Streptococcus mutans is one of caries bacteria which can adhere onto tooth surface and build biofilm. Chitosan possessed antibacterial activities such as preventing bacterial adherence into tooth surface, reducing hydrophobicity of bacterial cell wall, and decreasing glucan production. The aim of this research was to determine the effect of giant shrimp shell chitosan on the adherence of *S. mutans*.

Streptococcus mutans ATCC 25175 was cultured in the microplate 96-well using BHI broth with sucrose 5%. Chitosan 0,3%, 0,15%, and 0,075% were added into these culture for 24 hours at 37°C. Aquades and chlorhexidine was added into the bacterial solution, respectively, without the addition of chitosan. crystal violet 1% staining method was used to observe the anti adherence effects. Absorbances of each sample was measured using microplate reader at 540 nm. The data was as percent inhibition of bacterial adhesions in each treatment group.

One Way ANOVA and Brown-Forsythe test showed that there were significant differences of anti-adherence effect in each group ($p \leq 0,05$). Games-Howell post hoc test showed that there was significant differences between all of the groups ($p \leq 0,05$). In conclusion, chitosan possessed anti-adherence effect against *S. mutans* ATCC 25175 but not as effective as chlorhexidine.

Keywords: chitosan, bacterial adherence, *Streptococcus mutans*

