

## INTISARI

*Treponema denticola* merupakan salah satu bakteri *red-complex* yang memiliki peran penting dalam patogenesis periodontitis. Penggunaan alternatif agen antibakteri dari alam mulai dikembangkan seperti penggunaan cangkang rajungan (*Portunus pelagicus*) yang mengandung komponen antibakteri yaitu kitosan. Penelitian ini bertujuan untuk mengetahui apakah gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) berefek menghambat pertumbuhan bakteri *Treponema denticola*.

Subjek penelitian yaitu bakteri *Treponema denticola* yang diencerkan sesuai dengan standard McFarland ( $10^8$  CFU/mL). Metode sumuran digunakan sebagai uji pertumbuhan bakteri. Sampel penelitian terdiri atas 5 kelompok, masing-masing kelompok terdiri dari 5 sampel yaitu gel ekstrak kitosan cangkang rajungan (*Portunus pelagicus*) konsentrasi 1%, 1,5%, 2%, kontrol positif (*Metronidazole* gel 25%) dan kontrol negatif (CMC-Na 2%). Pertumbuhan bakteri dapat diamati melalui pengukuran diameter zona hambat setelah inkubasi 2x24 jam menggunakan jangka sorong ketelitian 0,02 mm. Data hasil penelitian dianalisis menggunakan uji ANAVA satu jalur dan uji *Post Hoc* dengan *LSD*.

Hasil penelitian menunjukkan perbedaan yang signifikan ( $p < 0,05$ ) zona hambat antar kelompok kontrol positif, gel kitosan ekstrak cangkang rajungan konsentrasi 2% dan 1,5%, sedangkan pada kelompok kontrol negatif dan gel kitosan ekstrak cangkang rajungan konsentrasi 1% tidak terdapat zona hambat. Kesimpulan penelitian ini adalah gel ekstrak kitosan cangkang rajungan (*Portunus pelagicus*) berefek menghambat pertumbuhan bakteri *Treponema denticola* pada konsentrasi 1,5% dan 2%.

**Kata kunci :** gel kitosan, cangkang rajungan (*Portunus pelagicus*), *Treponema denticola*, antibakteri, zona hambat.

## ABSTRACT

*Treponema denticola* is one of the red-complex bacteria which has significant role on periodontitis pathogenesis. The use of natural antibacterial agent alternatives is being developed such as flower crab shell (*Portunus pelagicus*) that contain chitosan as antibacterial component. The study aimed to determine antibacterial effect of chitosan gel derived from flower crab shell (*Portunus pelagicus*) extract using agar diffusion test on *Treponema denticola*.

*Treponema denticola* colony was diluted to reach McFarland concentration ( $10^8$  CFU/mL). Agar diffusion method was used to evaluate *T. denticola*'s growth. The sample were divided to 5 groups, which are positive control (*Metronidazole gel* 25%), flower crab shell (*Portunus pelagicus*) extract chitosan gel with 1%, 1,5%, 2% concentration, and negative control (CMC-Na 2%), respectively. The diameter of inhibitory zone was determined after 48 hours using vernier caliper with 0,02 mm precision. The data was statistically analyzed using *One-way ANOVA* test and *Post Hoc LSD* test.

The result of the study showed significantly different inhibitory zone was formed around the positive control, flower crab shell (*Portunus pelagicus*) extract chitosan gel with 1,5%, and 2% concentration ( $p < 0,05$ ). Inhibitory zone was not visible around the negative control and flower crab shell (*Portunus pelagicus*) extract chitosan 1%. The study concluded that flower crab shell (*Portunus pelagicus*) extract chitosan gel had the effect of inhibiting *Treponema denticola*'s colony growth with 1,5% and 2% concentration.

**Keywords :** blue swimmer crab shell (*Portunus pelagicus*), chitosan gel, *Treponema denticola*, antibacterial, inhibitory zone.