INTISARI

Fusobacterium nucleatum merupakan salah satu penyebab periodontitis. Alternatif senyawa antibakteri yang dapat digunakan sebagai medikasi periodontitis salah satunya berasal dari bahan alami seperti kitosan. Kitosan dapat ditemukan dalam cangkang rajungan (*Portunus pelagicus*) dan memiliki sifat antibakteri spektrum luas. Tujuan penelitian ini adalah untuk mengetahui apakah gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) berefek menghambat pertumbuhan bakteri *F. nucleatum*.

Bakteri *Fusobacterium nucleatum* dibiakkan dalam media *Mueller Hinton Agar* (MHA) kemudian dilakukan uji difusi sumuran. Terdapat lima kelompok, yaitu kelompok gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) 1%, 1,5%, 2%, kontrol positif (gel *metronidazole* 25%), dan kontrol negatif (CMC-Na 2%). Perlakuan pada tiap kelompok diulang sebanyak lima kali. Efek gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) terhadap pertumbuhan bakteri *F. nucleatum* diamati berdasarkan zona hambat yang terbentuk setelah inkubasi 48 jam. Diameter zona hambat diukur menggunakan jangka sorong ketelitian 0,02 mm. Data hasil penelitian dianalisis secara statistik menggunakan uji ANAVA satu jalur dan *Post Hoc* LSD.

Hasil penelitian menunjukkan perbedaan zona hambat yang signifikan ($p<0.05$) antara kelompok gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) 1,5%, 2%, dan kelompok kontrol positif (gel *metronidazole* 25%). Zona hambat tidak terbentuk pada kelompok gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) 1% dan kelompok kontrol negatif (CMC-Na 2%). Kesimpulan penelitian ini adalah gel kitosan ekstrak cangkang rajungan (*Portunus pelagicus*) berefek menghambat pertumbuhan bakteri *F. nucleatum* pada konsentrasi 1,5% dan 2%.

Kata kunci: gel kitosan, cangkang rajungan (*Portunus pelagicus*), *Fusobacterium nucleatum*, antibakteri, zona hambat

ABSTRACT

Fusobacterium nucleatum is one of bacteria that cause periodontitis. One of many alternative antibacterial substances that can be used for periodontitis medication comes from natural resources like chitosan. Chitosan can be found in flower crab (*Portunus pelagicus*) shell and has wide spectrum of antibacterial properties. The study aimed to determine whether chitosan gel that was extracted from flower crab (*Portunus pelagicus*) shell has inhibitory effect on the growth of *F. nucleatum.*

Fusobacterium nucleatum colony were cultured on Mueller Hinton Agar (MHA) then the agar well diffusion method were performed. There were five different groups, which were flower crab (*Portunus pelagicus*) shell extract chitosan gel with 1%, 1.5%, 2% concentration, positive control (25% metronidazole gel), and negative control (2% CMC-Na). Each group were replicated 5 times. The effect of flower crab (*Portunus pelagicus*) shell extract chitosan gel to the growth of *F. nucleatum* was determined by the formation of inhibitory zone after 48 hours. The inhibitory zone diameters were measured using vernier caliper with 0.02 mm precision. The result data was statistically analyzed using One-Way ANOVA and Post Hoc LSD test.

Result showed significant difference ($p<0.05$) of inhibitory zone between flower crab (*Portunus pelagicus*) shell extract chitosan gel with 1.5% and 2% concentration groups, also on positive control (25% metronidazole gel). Inhibitory zone was not formed on flower crab (*Portunus pelagicus*) shell extract chitosan gel with 1% concentration group, and negative control (2% CMC-Na) group. The conclusion of this study was flower crab (*Portunus pelagicus*) shell extract chitosan gel has inhibitory effect on the growth of *F. nucleatum* at 1.5% and 2% concentration.

Key words: chitosan gel, flower crab (*Portunus pelagicus*) shell, *Fusobacterium nucleatum*, antibacterial, inhibitory zone