ABSTRAK

Kitosan merupakan biopolimer alami hasil deasetilasi kitin yang memiliki sifat biodegradabel, biokompatibel, dan aktivitas antibakteri, sehingga banyak dimanfaatkan dalam bidang farmasi. Limbah kulit udang windu (*Penaeus monodon*) berpotensi sebagai sumber kitin yang bernilai tambah. Proses deasetilasi menggunakan natrium hidroksida (NaOH) merupakan tahap penting yang memengaruhi karakteristik kitosan, khususnya derajat deasetilasi yang berhubungan dengan aktivitas antibakteri. Karakterisasi kitosan kulit udang meliputi analisis gugus fungsi menggunakan Fourier Transform Infrared Spectrophotometer (FTIR), menghitung nilai derajat deasetilasi, serta uji aktivitas antibakteri terhadap *Staphylococcus aureus* dan *Escherichia coli*. Hasil penelitian menunjukkan bahwa seluruh sampel memiliki gugus fungsi khas kitosan. Nilai DD meningkat seiring kenaikan konsentrasi NaOH, yaitu 62,32% (5%), 68,46% (10%), dan 78,24% (20%). Aktivitas antibakteri tertinggi diperoleh pada kitosan dengan NaOH 20%, dengan zona hambat sebesar 4,776 ± 1,077 mm terhadap *S. aureus* dan 6,893 ± 0,206 mm terhadap *E. coli* ($p < 0,05$).

Kata kunci: kitosan; deasetilasi; NaOH; antibakteri

ABSTRACT

Chitosan is a natural biopolymer produced by the deacetylation of chitin; it is biodegradable, biocompatible, and possesses antibacterial activity, making it widely used in the pharmaceutical industry. Waste from the shells of giant tiger prawns (Penaeus monodon) has the potential to serve as a source of chitin with added value. The deacetylation process using sodium hydroxide (NaOH) is a critical step that influences the characteristics of chitosan, particularly the degree of deacetylation, which is related to antibacterial activity. Characterization of shrimp shell chitosan includes functional group analysis using a Fourier Transform Infrared Spectrophotometer (FTIR), determination of the degree of deacetylation, and antibacterial activity testing against *Staphylococcus aureus* and *Escherichia coli*. The results of the study indicate that all samples possess characteristic chitosan functional groups. The degree of deacetylation (DD) increased with rising NaOH concentration, namely 62.32% (5%), 68.46% (10%), and 78.24% (20%). The highest antibacterial activity was obtained for chitosan treated with 20% NaOH, with inhibition zones of 4.776 ± 1.077 mm against *S. aureus* and 6.893 ± 0.206 mm against *E. coli* ($p < 0.05$).

Keywords: chitosan; deacetylation; NaOH; antibacterial