

INTISARI

FU, ACC., 2021, ISOLASI KITOSAN DARI CANGKANG BEKICOT (*Achatina fulica*) DAN UJI AKTIVITASNYA TERHADAP BAKTERI *Shigella dysenteriae* ATCC 9361 DENGAN METODE DIFUSI SERTA KAJIAN PUSTAKA TENTANG AKTIVITAS KITOSAN TERHADAP BAKTERI GRAM NEGATIF, SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Cangkang bekicot (*Achatina fulica*) dipercaya mengandung senyawa kitosan yang merupakan turunan senyawa kitin dan dapat diperoleh setelah melalui proses isolasi. Tujuan penelitian ini adalah untuk mengetahui kandungan kitosan isolat kitin cangkang bekicot dengan FTIR, potensi antibakteri dan konsentrasi efektif terhadap bakteri *Shigella dysenteriae* serta potensi antibakteri kitosan isolat bahan alam terhadap bakteri Gram negatif *Shigella dysenteriae*, *Escherichia coli*, dan *Pseudomonas aeruginosa*.

Penelitian ini dilakukan dengan mengisolasi kitosan pada cangkang bekicot melalui tahap deproteinasi menggunakan NaOH 3% perbandingan 1:10, demineralisasi HCl 1 N pada perbandingan 1:12, dan deasetilasi NaOH 60% pada perbandingan 1:15. Kitosan isolat kitin cangkang bekicot hasil isolasi dilanjutkan dengan analisis kualitatif secara FTIR. Kitosan isolat kitin cangkang bekicot kemudian diuji aktivitas antibakteri dengan metode difusi sumuran terhadap bakteri *Shigella dysenteriae* pada konsentrasi 10000 ppm, 5000 ppm, dan 2500 ppm. Studi pustaka terhadap bakteri Gram negatif dilakukan untuk mendukung hasil aktivitas antibakteri kitosan terhadap bakteri *Shigella dysenteriae*.

Hasil penelitian menunjukkan bahwa gugus senyawa kitosan terkandung pada isolat kitin cangkang bekicot setelah dideterminasi secara FTIR dengan gugus utama NH tekuk yang dimiliki amina pada bilangan gelombang $1643,4\text{ cm}^{-1}$. Kitosan isolat kitin cangkang bekicot memiliki aktivitas antibakteri dengan konsentrasi paling efektif pada 10000 ppm terhadap bakteri *Shigella dysenteriae*. Kitosan isolat bahan alam memiliki aktivitas antibakteri terhadap bakteri Gram negatif *Shigella dysenteriae*, *Escherichia coli*, dan *Pseudomonas aeruginosa*.

Kata Kunci : Kitosan, isolasi, *Shigella dysenteriae*, Gram negatif.

ABSTRACT

FU, ACC., 2021, ISOLATION OF CHITOSAN FROM SHELL OF SNAIL (*Achatina fulica*) AND ITS ACTIVITY TEST AGAINST THE BACTERIA *Shigella dysenteriae* ATCC 9361 USING DIFFUSION METHOD AND LITERATURE REVIEW ON CHITOSAN ACTIVITY AGAINST GRAM NEGATIVE BACTERIA, THESIS, FACULTY OF PHARMACY, UNIVERSITY OF SETIA BUDI, SURAKARTA.

Snail shells (*Achatina fulica*) are believed to contain chitosan compounds which are derivatives of chitin compounds and can be obtained after going through the isolation process. The purpose of this study was to determine the chitosan content of chitosan isolates from snail shells with FTIR, antibacterial potential and effective concentration against *Shigella dysenteriae* bacteria and the antibacterial potential of chitosan isolates from natural ingredients against Gram negative bacteria *Shigella dysenteriae*, *Escherichia coli*, and *Pseudomonas aeruginosa*.

This research was conducted by isolating chitosan in snail shells through the deproteination stage using 3% NaOH at a ratio of 1:10, demineralization of 1 N HCl at a ratio of 1:12, and deacetylation of 60% NaOH at a ratio of 1:15. Chitosan isolated from snail shell chitin was continued with qualitative analysis by FTIR. Chitosan isolated from snail shell chitin was then tested for antibacterial activity by well diffusion method against *Shigella dysenteriae* bacteria at concentrations of 10000 ppm, 5000 ppm, and 2500 ppm. Literature study on Gram negative bacteria was carried out to support the results of the antibacterial activity of chitosan against *Shigella dysenteriae* bacteria.

The results showed that the chitosan compound group contained in the snail shell chitin isolate after being determined by FTIR with the main group bending NH possessed by the amine at a wave number of 1643.4 cm⁻¹. Chitosan isolated from snail shell chitin has antibacterial activity with the most effective concentration at 10000 ppm against *Shigella dysenteriae* bacteria. Chitosan isolated from natural ingredients has antibacterial activity against Gram negative bacteria *Shigella dysenteriae*, *Escherichia coli*, and *Pseudomonas aeruginosa*.

Keywords : Chitosan, isolation, *Shigella dysenteriae*, Gram negative.