

ABSTRAK

Produksi udang Vaname (*Litopenaeus vannamei*) di Indonesia menghasilkan limbah cangkang dalam jumlah besar yang belum dimanfaatkan secara optimal. Cangkang ini mengandung kitin yang dapat dikonversi menjadi kitosan, biopolimer serbaguna dengan berbagai aplikasi. Salah satu tahap penting dalam produksinya adalah demineralisasi, yang dipengaruhi oleh suhu dan waktu reaksi. Penelitian ini bertujuan mengoptimalkan demineralisasi untuk menghasilkan kitosan berkualitas tinggi. Metode yang digunakan meliputi variasi suhu (30, 60, 90°C) dan waktu (1, 2 jam) pada tahap demineralisasi, diikuti karakterisasi kitosan meliputi rendemen, viskositas, berat molekul, kadar abu, kadar air, kadar protein, derajat deasetilasi (DD), serta sifat fisik. Hasil menunjukkan bahwa perlakuan B1 (60°C, 1 jam) merupakan kondisi optimal dengan DD sebesar 87,48% (MO) dan 83,22% (Conway), rendemen 20,6%, viskositas 9,04 cP, berat molekul 439,88 kDa, kadar abu 0,61%, kadar air 6,27%, kadar protein 2,30%, serta warna putih, tidak berbau, dan berbentuk serbuk. Berdasarkan hasil tersebut, perlakuan B1 (60°C, 1 jam) dapat ditetapkan sebagai kondisi demineralisasi optimal yang menghasilkan kitosan berkualitas tinggi dengan kombinasi karakteristik fisikokimia terbaik serta memenuhi standar kualitas.

Kata kunci: Cangkang udang; Demineralisasi; Kitosan; Suhu; Waktu reaksi.



ABSTRACT

The production of vannamei shrimp (*Litopenaeus vannamei*) in Indonesia generates a large amount of shell waste that remains underutilized. These shells contain chitin, which can be converted into chitosan, a versatile biopolymer with various applications. One crucial stage is demineralization process, which is influenced by reaction temperature and time. This study aimed to optimize the demineralization process to produce high-quality chitosan. The method involved varying temperatures (30, 60, and 90°C) and reaction times (1 and 2 hours) during demineralization, followed by chitosan characterization, including yield, viscosity, molecular weight, ash content, moisture content, protein content, degree of deacetylation (DD), and physical properties. The results showed that treatment B1 (60°C, 1 hour) was the optimal condition, producing chitosan with a DD of 87.48% (MO) and 83.22% (Conway), yield of 20.6%, viscosity of 9.04 cP, molecular weight of 439.88 kDa, ash content of 0.61%, moisture content of 6.27%, protein content of 2.30%, and white colour, odorless, powder form. Based on these findings, treatment B1 (60°C, 1 hour) can be designated as the optimal demineralization condition for producing high-quality chitosan with the best combination of physicochemical characteristics and meeting quality standards.

Keywords: Chitosan; Demineralization; Reaction time; Shrimp shells; Temperature.

