

**THE EXAMINATION OF THE QUALITY OF CHITOSAN FROM  
BAMBOO SHELL WASTE WITH VARIOUS CONCENTRATIONS OF  
NaOH IN THE DEACETYLATION PROCESS**

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**ABSTRACT**

Shellfish is a type of food that I like because it is easy to get, tastes good, and has good nutritional content, while the shells that are not used will be thrown away, causing environmental problems. Shellfish shells, such as blood clam shells, green clam shells, bamboo clam shells, and other types have many benefits, one of which is utilization as chitosan. This study aims to determine the quality of chitosan from bamboo shell waste with various NaOH concentrations of 60%, 65%, 70%, and 75%.

This type of research is a quasi(-*experimental design Quasi-Experimental Design*) with a research design *One Shot Case Study*, where the subject is given treatment, then the results of the treatment are observed. The variables that will be examined in this study are: yield, moisture content, ash content, FTIR spectro and the value of the degree of chitosan deacetylation. Analysis of the data in this study used a simple regression test.

The results of the examination of the quality of chitosan from bamboo shells showed that the average yield of chitosan with NaOH concentrations of 60%, 65%, 70%, 75%, respectively, was 76.885%, 77.325%, 74.514. %, 73.537% then for the water content are 0.85%, 0.88%, 0.75%, 0.76% while the ash content is 0.26%, 0.43%, 0.77%, 0.87% and the degree of deacetylation of 96.71%, 97.53%, 97.88%, 98.78%. Analysis of yield and degree of deacetylation obtained significance of  $p = 0.03$  and  $0.01$  ( $p < 0.05$ ) so that the hypothesis is accepted, while water content and ash content are significant  $p = 0.21$  and  $0.20$  ( $p > 0.05$ ) so the hypothesis is rejected.

The conclusion of this study, bamboo shell chitosan has met the quality standards of SNI 7949 in 2013. Suggestions for other researchers to add the tested variables and parameters, while for the industrial community to use chitosan as an absorbent of heavy metals, cosmetics, preservatives.

**Key words** : Bamboo shellfish, quality of chitosan, NaOH, concentration, deacetylation proces

# PEMERIKSAAN KUALITAS KITOSAN DARI LIMBAH CANGKANG KERANG DENGAN VARIASI KONSENTRASI NaOH PADA PROSES DEASETILASI

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## ABSTRAK

Kerang merupakan jenis makanan yang di gemari karena mudah di dapat, rasanya enak, serta memiliki kandungan gizi yang baik, sedangkan cangkangnya yang sudah tidak terpakai akan dibuang sehingga menimbulkan masalah lingkungan. Cangkang kerang, seperti : cangkang kerang darah, cangkang kerang hijau, cangkang kerang bambu, dan jenis lainnya memiliki banyak manfaat salah satunya adalah pemanfaatan sebagai kitosan. Penelitian ini bertujuan untuk mengetahui kualitas kitosan dari limbah cangkang kerang bambu dengan variasi konsentrasi NaOH sebesar 60%, 65%, 70%, dan 75%.

Jenis penelitian ini eksperimen semu (*Quasi-Experimental Design*) dengan rancangan penelitian *One Shot Case Study*, dimana subjek diberi treatment, kemudian hasil treatment diobservasi. Variabel yang akan diteliti pada penelitian ini yaitu : rendemen, kadar air, kadar abu, spektrum FTIR dan nilai derajat deasetilasi kitosan. Analisa data penelitian ini menggunakan uji regresi sederhana.

Hasil pemeriksaan kualitas kitosan cangkang kerang bambu menunjukkan rata-rata rendemen kitosan konsentrasi NaOH 60%, 65%, 70%, 75% berturut-turut adalah 76,885%, 77,325%, 74,514%, 73,537% kemudian untuk kadar air berturut-turut adalah 0,85%, 0,88%, 0,75%, 0,76% sedangkan kadar abu sebesar 0,26%, 0,43%, 0,77%, 0,87% serta derajat deasetilasi sebesar 96,71%, 97,53%, 97,88%, 98,78%. Analisis rendemen dan derajat deasetilasi diperoleh signifikansi  $p = 0,03$  dan  $0,01$  ( $p < 0,05$ ) sehingga hipotesis diterima, sedangkan kadar air dan kadar abu signifikansi  $p = 0,21$  dan  $0,20$  ( $p > 0,05$ ) sehingga hipotesis ditolak.

Kesimpulan dari penelitian ini yaitu, kitosan cangkang kerang bambu telah memenuhi syarat baku mutu SNI 7949 tahun 2013. Saran untuk peneliti lain agar menambah variabel dan parameter lain, sedangkan untuk industri memanfaatkan kitosan sebagai absorben logam berat, kosmetik, pangawet makanan.

Kata kunci : cangkang kerang bambu, kualitas kitosan, konsentrasi NaOH, proses deasetilasi