

**SYNTHESIS OF CHITIN VIA BIOLOGICAL  
DEPROTEINATION OF PRAWN SHELL**

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DEPROTEINATION OF PRAWN SHELL**

By

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## ABSTRACT

Chitin is the second most abundant natural polymer after cellulose and has linear chain of  $\beta$  (1-4)-(N-acetyl-D-glucoamine). Chitin and chitosan have many benefits because of their biodegradability. Chitin extraction consists of two steps such as deproteination to remove protein and demineralization to remove calcium carbonate. These steps can be performed by chemical method and biological method. As chemical method results in poor quality chitin and not environmental-friendly, biological method is an alternative method. However, the existing biological method is too complicated to be carried at household setting, thus, autochthonous fermentation was proposed in this study. Prawn shell was used as raw material and sugarcane molasses was utilized as carbon sources for fermentation process. Various salt concentrations which controlled the microorganisms during fermentation were varied at 2.5% w/v, 5% w/v and 7.5% w/v for 14 and 28 days fermentation process. The extracted chitins were characterized using Fourier Transform Infrared Spectroscopy (FTIR), X-Ray diffraction (XRD) and Elemental Analyzer. The yield of the samples was calculated by measuring the dried weight using analytical balance. The properties of the samples then were compared to the commercial chitin. The highest yield obtained from crude chitin of 2.5% w/v salt for 28 days fermentation at 18.88%. The FTIR and XRD results showed the extracted chitin has high degree of deacetylation more than 70% and high crystallinity more than 80%, respectively. The carbon/nitrogen ratio showed the result at the range of 6 to 9. In addition, different salt concentration indicated different quality crude chitin where the analysis showed different result for every salt concentration.