Thermal and Morphological Characteristics of Chitosan Isolated from Banana Shrimp Shells (*Penaeus merguiensis de Man*)

Ridho NAHROWI[1], Andi SETIAWAN[2], Aspita LAILA[2], Widyastuti[1], Fendi SETIAWAN[2], Nafila Khansa SALSABILA[2], and John HENDRI[2,*]

[1]Department of Doctor of Science, Faculty of Mathematics and Natural Science, University of Lampung, Jalan Sumantri Brojonegoro, Gedung Meneng, Kota Bandar Lampung 35141

[2] Department of Chemistry, Faculty of Mathematics and Natural Science, University of Lampung, Jalan Sumantri Brojonegoro, Gedung Meneng, Kota Bandar Lampung 35141

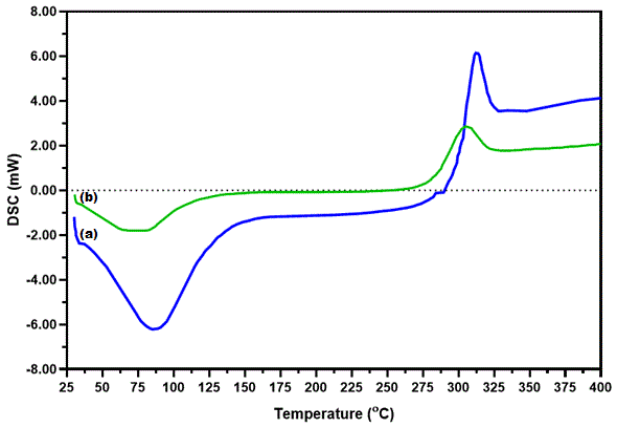
*john.hendri@fmipa.unila.ac.id

Abstract

The isolation chitosan generates the different characteristics of the product, depending on the raw material and isolation method. The focus of this research is to study the thermal and morphological characteristics of chitosan isolated from banana shrimp shells (*Penaeus merguiensis de Man*). The production of chitosan was started by the isolation of chitin from shrimp shells via deproteinization, demineralization, and decolorization processes. Chitin was converted to chitosan by the deacetylation process. The characteristics of isolated chitosan were compared to the standard chitosan. Both of those chitosans were characterized by using Fourier Transform Infrared (FTIR) Differential Scanning Calorimeter (DSC), and Scanning Electron Microscopy (SEM). The yields of chitin and chitosan obtained were 19.80 and 72.72%, respectively. The degree of deacetylation of chitosan was determined by using FTIR spectroscopy. The degrees of deacetylation of isolated and standard chitosan were 55.34 and 59.22%, respectively. The exothermic temperature peak of isolated chitosan was higher than standard chitosan. The isolation and standard of chitosan respectively had temperature peak values of 307.65 and 295.50°C. Based on SEM images, a smooth and homogeneous structure was found on the surface of the isolated chitosan and the amorphous sphere structure was observed in the standard chitosan. For biomedical purposes, the chitosan isolated from banana shrimp shells could be used as a material for nano chitosan synthesis.

Keywords: Banana Shrimp Shell, Chitosan, DSC, FTIR, SEM.

(if any) Figure 1. The DSC curves of (a) isolated chitosan and (b) standard chitosan



References/Background Review Article

1. Said Al Hoqani, H.A., AL-Shaqsi, N., Hossain, M.A., Al Sibani, M.A., 2020 Isolation and optimization of the method for industrial production of chitin and chitosan from Omani shrimp shell. *Carbohydrate Research*, 492 108001.

Presenting author details

Full name and title: Ridho Nahrowi, M.Si
Contact number and/or Whatsapp number : 081279297542

The 2nd International Conference on Chemistry, Pharmacy, and Medical Sciences (ICCPM 2021)
Bengkulu, November 24-25, 2021

September 1, 2021

The Announcement of Abstract Acceptance
File No: 10/iccpm2021/AI/KIM-UNIB/2021

Dear Mr. Ridho Nahrowi
ID Registration No. 54
University of Lampung

We are pleased to inform you that your abstract entitled **"Thermal and Morphological Characteristics of Chitosan Isolated from Banana Shrimp Shells (Penaeus merguiensis de Man)"** has been accepted for **ORAL presentation** by the scientific committee of **the 2nd International Conference on Chemistry, Pharmacy, and Medical Sciences (ICCPM 2021)**. Please note that the conference web site is: http://icppm.fmipa.unib.ac.id/2nd which is being updated regularly and provides information on the program and schedules. The detailed program for the conference will be posted on the website around mid-November 2021.

We also would like to inform you that ICCPM 2021 is collaborating with **Indonesian Journal of Chemistry (Scopus Q3), Science and Technology Indonesia (Scopus), Jurnal Kimia Sains dan Aplikasi (Sinta 2), Bencoolen Journal of Pharmacy, and Rafflesia Journal of Natural and Applied Sciences** for an opportunity to publish the selected papers. We request the additional fee for the selected papers according to the publication fee of each journal (adjust to journal publication fees).

You are kindly requested to make payment amount **IDR 100.000 for presenter non proceeding** and **IDR 350.000 for presenter with proceeding** no later than November 1st, 2021. The payment should be transferred to Bank : **MANDIRI**; Account Name : **Ria Nurwidiyani**; Account Number : **179-00-0240884-2**; Branch : **Bengkulu**; Swift Code : **BMRIIDJA107.**

Please follow this link to join our WhatsApp group: https://chat.whatsapp.com/GbTjHdgPCZC8QTxLGO5VqE. If you have any questions feel free to contact the conference secretariat at iccpm2021@unib.ac.id. We look forward to seeing you virtually in Bengkulu.

Yours sincerely,

UNIVERSITAS BENGKULU

Dr. Charles Banon, M.Si.

Conference General Chair