

**THE EFFECT OF DIFFERENT CONCENTRATION OF SODIUM HYDROXIDE
IN DEACETYLATION ON THE PHYSICOCHEMICAL PROPERTIES OF
CHITOSAN EXTRACTED FROM MANTIS SHRIMP (*Harpiosquilla harpax*)**

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ENDORSEMENT

The project report entitled **The Effect of Different Concentration of Sodium Hydroxide in Deacetylation on the Physicochemical Properties of Chitosan Extracted from Mantis Shrimp (*Harpiosquilla harpax*)** by Nur Liyana Hazwani binti Che Ahmad, Matric No. UK16898 has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science in partial fulfilment of the requirement of the degree of Bachelor of Food Science (Food Technology), Faculty of Agrotechnology and Food Science, University Malaysia Terengganu.


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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

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ABSTRACT

Chitosan was prepared from mantis shrimp carapace species of *harpiosquilla harpax* by deacetylation process performed in 40% and 50% NaOH and both samples were maintained at 90 °C and for 5 hours. Chitosan obtained were analyzed for physicochemical properties to observe the effects of deacetylation using different concentration of sodium hydroxide (NaOH). Chitosan extracted from deacetylation by 50% NaOH (C50) showed higher degree of deacetylation than that of chitosan extracted from deacetylation by 40% NaOH (C40) which is 72.91% while the other one is 70.60%. The yield of chitosan extracted (C50 and C40) is (51.46% and 45.0%) due more to the source of chitin and not to the effectiveness of degree of deacetylation. The moisture content for C40 and C50 is 12.607% and 14.24%, for ash content analysis, the C40 showed 0.3316% while the ash content obtained from C50 is 0.3179%. The other physicochemical analysis are; water binding capacity (C40-754.0% and C50-718.7%), fat binding capacity (C40-344.29% and (C50-381.39%), apparent viscosity; (C40-1403.3 cP) and (C50-2023.3 cP). The colour of chitosan extracted is in yellowish-white, small crisp and glitter flakes form. The different concentration of NaOH affects the physicochemical properties of chitosan extracted by affecting the degree of deacetylation.

ABSTRAK

Kitosan telah dihasilkan daripada udang lipan, spesies *harpiosquilla harpax* melalui proses yang melibatkan deasetilasi pada kepekatan natrium hidroksida (NaOH) yang berbeza iaitu 40% dan 50%. Kedua-duanya disediakan pada suhu 90 °C selama 5 jam. Kitosan yang terhasil dianalisis dari segi fizikokimia kesan daripada deasetilasi pada kepekatan natrium hidroksida yang berbeza. Kitosan yang terhasil daripada deasetilasi dengan 50% NaOH (C50) menunjukkan kadar peratusan yang lebih tinggi iaitu 72.91% daripada kitosan yang terhasil daripada 40% NaOH deasetilasi (C40) iaitu 70.60%. %. Peratusan hasil dapatan untuk C50 dan C40 adalah (51.46% dan 45.0%) lebih kepada sebab penggunaan sumber kitosan iaitu jenis spesies bukan pada darjah deasetilasi. Kandungan lembapan untuk C40 dan C50 adalah 12.607% dan 14.24%, untuk peratus abu C40 mempunyai sebanyak 0.3316% sementara C50 mempunyai 0.3179%. Analisis fizikokimia yang lain; kapasiti ikatan air adalah (C40-754.0% dan C50-718.7%), kapasiti ikatan lemak (C40-344.29%) dan (C50-381.39%), kelikatan ketara; (C40-1403.3 cP) dan (C50-2023.3 cP). Warna pada kitosan yang terhasil adalah putih kekuningan dalam bentuk kepingan-kepingan kecil yang berkilat. Perbezaan pada kepekatan NaOH telah mempengaruhi fizikokimia kitosan apabila mempengaruhi darjah deasetilasi sampel.