EFFECT OF DEGREE OF HYDROLYSIS ON
PHYSICOCHEMICAL PROPERTIES OF BLOOD COCKLE
(*Anadara granosa*) HYDROLYSATE BY USING ENZYMATIC
HYDROLYSIS

[redacted]

FACULTY OF AGRO-TECHNOLOGY AND FOOD SCIENCE
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Effects of degree of hydrolysis on physicochemical properties of blood cockle (Anadara granosa) hydrolysate by using enzymatic hydrolysis / Wong Cien.

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Lihat Sebelah

EFFECT OF DEGREE OF HYDROLYSIS ON PHYSICOCHMICAL PROPERTIES OF BLOOD COCKLE (*Anadara granosa*) HYDROLYSATE BY USING ENZYMATIC HYDROLYSIS

By

Wong Cien

Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Food Science (Food Service and Nutrition)

DEPARTMENT OF FOOD SCIENCE
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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ENDORSEMENT

The project report entitled **Effect of Degree of Hydrolysis on Physicochemical Properties of Blood Cockle (*Anadara granosa*) Hydrolysate using Enzymatic Hydrolysis** by **Wong Cien**, Matric No. **UK 16616** has been received and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the degree of Bachelor of Food Science (Food Service and Nutrition), 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 quotation and summaries which have been duly acknowledged.

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ABSTRACT

This study was carried out to determine the effect of degree of hydrolysis (DH) on physicochemical properties of blood cockle *(Anadara granosa)* hydrolysate using enzymatic hydrolysis. Blood cockle hydrolysate was hydrolyzed using Alcalase® enzyme. Three level of degree of hydrolysis of blood cockle hydrolysate were obtained which were DH 14.48%, DH 22.73% and DH 36.12% by varying the time of hydrolysis, pH, enzyme concentration and temperature. After hydrolysis, the hydrolysates were centrifuged and the supernatant were spray dried. This study found that there was a significant difference on the proximate composition of blood cockle hydrolysates except for fat content. The protein content of blood cockle hydrolysate was found to be increasing while DH increased across DH 14.48% to DH 36.12%. Degree of hydrolysis had no effect on the physicochemical properties of water-holding capacity, oil-holding capacity and peptide solubility. The functional properties affected by degree of hydrolysis were foaming properties, emulsifying capacity and color. As degree of hydrolysis increased, the foaming properties and emulsifying capacity decreased significantly. L* values decreased with increase in degree of hydrolysis. DH14.48% sample gave the lightest color while DH22.73% sample gave the most yellowish colour. This study shows that blood cockle hydrolysate gave good emulsifying capacity, foaming capacity and color at low degree of hydrolysis.

ABSTRAK

Kajian ini telah dijalankan untuk menyelidik kesan darjah hidrolis (DH) ke atas ciri-ciri fiziko-kimia hidrolisat kerang darah (*Anadara granosa*) dengan hydrolisis menggunakan enzim. Kerang darah dihidrolisis dengan menggunakan enzim Alcalase ®. Hidrolisat kerang darah pada tiga darjah hidrolisis (DH) iaitu DH 14.48%, DH 22.73% dan DH 36.12% didapatkan dengan membuat perubahan pada masa hidrolisis, pH, kepekatan enzim dan suhu. Selepas proses hidrolisis, hidrolisat dikeringkan dengan menggunakan kaedah pengeringan semprot. Kajian ini menunjukkan bahawa terdapatnya perbezaan yang signifikan atas konposisi proximat hidrolisat kerang darah kecuali lemak. Kandungan protein hidrolisat kerang darah meningkat apabila darjah hidrolisis meningkat. Manakala, keupayaan memegang air, keupayaan memegang minyak dan kebolehlarutan peptida tidak dipengaruhi oleh darjah hidrolisis. Selain daripada ciri-ciri di atas, ciri-ciri yang lain iaitu kapasiti pembusaan, kapasiti mengemulsi dan warna dipengaruhi oleh darjah hidrolisis. Semakin tinggi darjah hidrolisis menyebabkan nilai kapasiti pembusaan dan kapasiti mengemulsi menurn dengan ketara. Nilai L* semakin menurun apabila darjah hidrolisis bertambah. Hidrolisat kerang darah pada DH 14.48% memberikan warna yang paling terang di antara sampel manakala hidrolisat pada DH 22.73% adalah yang paling kuning. Kajian ini menunjukkan bahawas hidrolisat kerang darah mempunyai kapasiti mengemulsi, kapasiti pembusaan dan warna yang baik pada darjah hidrolisis yang rendah.