

**OPTIMIZATION OF PROTEIN ENZYMATIC HYDROLYSIS OF
BLOOD COCKLE (*Anadara granosa*)**

**By
Masitah Binti Muslim**

**Research Report submitted in partial fulfillment of
the requirement for the degree of
Bachelor of Food Science (Food Technology)**

**DEPARTMENT OF FOOD SCIENCE
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ENDORSEMENT

To project report entitled **Optimization of Protein Enzymatic Hydrolysis of Bood Cockle (*Anadara granosa*)** by **Masitah Binti Muslim, UK 17033** 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 Food Science (Food Technology), Faculty of Agrotechnology and Food Science, University Malaysia Terengganu.



ASSOC. PROF DR. AMIZA BINTI MAT AMIN

Main supervisor

-Stamp-

PROF. MADYA DR. AMIZA MAT AMIN

Timbangan Dekan (Dah) Ehsan, P. 1000

Fakulti Agroteknologi & Sains

Universiti Malaysia Terengganu

21090 Kuala Terengganu

Date : 8/2/12

DECLARATION

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

Signature : -----
Name : Masitah Binti Muslim
Matric No : UK17033
Date : 9/2/12-----

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TABLE OF CONTENT

ENDORSEMENT	i
DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
ABSTRAK	v
LIST OF TABLE	vii-ix
LIST OF FIGURE	x
LIST OF ABBREVIATIONS	xi
CHAPTER 1 INTRODUCTION	
1.1 Research Background	1
1.2 Problem statement	3
1.3 Significance of Study	3
1.4 Objectives	4
CHAPTER 2 LITERATURE REVIEW	
2.1 Blood Cockle (<i>Anadara granosa</i>)	5
2.1.2 Commercial use of blood cockle	6
2.2 Enzymatic Hydrolysis of Protein	7
2.2.1 Factors affecting enzymatic hydrolysis of protein	8
2.2.1.1 Type of Proteinase	9
2.2.1.2 pH	11
2.2.1.3 Temperature	11
2.2.1.4 Hydrolysis time	12
2.2.2 Degree of hydrolysis (DH)	12
2.2.3 Optimum condition for enzymatic hydrolysis based on previous study	14
2.3 Protein Hydrolysate (PH)	16
2.3.1 Preparation of PH	17
2.3.2 Application of PH	18
2.3.3 Previous study on seafood protein hydrolysate (SPH)	18
2.3.3.1 Proximate analysis of SPH based on previous study	19
2.4 Optimization Study	20
2.4.1 Introduction	20
2.4.2 Response Surface Methodology	21
2.4.2.1 Two-level Fractional Factorial Design	22
2.4.2.2 Central Composite Design	23
2.4.2.3 The sequential nature of RSM	25

CHAPTER 3	MATERIALS AND METHOD	
3.1	Materials	27
3.2	Methods	27
3.2.1	Preparation of raw materials	27
3.2.2	Experimental Design	28
3.2.3	Preparation of cockle hydrolysate powder	31
3.2.4	Determination of Degree of hydrolysis DH in protein hydrolysate	35
3.2.5	Determination of proximate analysis	35
3.2.5.1	Determination of moisture content	35
3.2.5.2	Determination of ash	36
3.2.5.3	Determination of fat	36
3.2.5.4	Determination of protein	37
3.2.5.5	Determination of carbohydrate	39
3.2.6	Recovery	39
3.2.7	Determination of Heavy metals composition by AAS	40
3.3	Statistical Analysis	40
CHAPTER 4	RESULT AND DISCUSSION	
4.1	Experimental data	41
4.2	Analysis for degree of hydrolysis	43
4.2.1	Model adequacy checking for degree of hydrolysis	43
4.2.2	Analysis of variance (ANOVA) for degree of hydrolysis	44
4.2.3	Coefficient variation for degree of hydrolysis	48
4.2.4	Diagnostic case statistics for degree of hydrolysis	49
4.2.5	Response surface plots and the effects of factors for degree of hydrolysis response	52
4.3	Optimization for degree of hydrolysis of blood cockle	53
4.3.1	Conditions for optimum response	53
4.3.2	Maximum degree of hydrolysis	54
4.4	Proximate compositions of cockle mixture and cockle hydrolysate powder	56
4.5	Heavy metals compositions from cockle and its hydrolysate powder	59
CHAPTER 5	CONCLUSION AND DISCUSSION	
5.1	Conclusion	61
5.2	Suggestion for further study	61
REFERENCES		63
APPENDICES		71
CURRICULUM VITAE		84

ABSTRACT

The objective of this study is to establish the optimum hydrolysis conditions for blood cockle cockles (*Anadara granosa*) using Alcalase® by employing response surface methodology (RSM). A three-level face-centered central composite design (CCD) was adapted in the study. The effects of temperature, enzyme to substrate level (E/S %) and hydrolysis time were studied in order to obtain the maximum degree hydrolysis (DH %). The optimal condition for protein enzymatic hydrolysis of cockle were found to be at 65°C for temperature, pH at 9.5 enzyme concentration at 2% and hydrolysis time of 180 minutes. The maximum DH obtained was 37.27%, meanwhile the predicted values for maximum DH was 34.04% for cockle hydrolysis. The enzymatic hydrolysis of cockles gave a quadratic fit with the experimental data. The proximate composition of the lyophilized cockle hydrolysate contained 8.59% moisture, 74.00% protein content, 5.80% fat, 10.22% ash and 1.39% carbohydrate.

ABSTRAK

Objektif kajian ini ialah untuk menentukan keadaan optimum untuk hidrolisis kerang darah (*Anadara granosa*) menggunakan Alcalase® dengan menggunakan *response surface methodology* (RSM). Rekabentuk *face-centered central composite design* (CCD) dengan tiga tahap bagi setiap faktor telah digunakan. Kesan suhu (T), kepekatan enzim (E/S %), pH dan masa untuk hidrolisis (t) telah dikaji untuk mendapatkan darjah hidrolisis yang optimum. Keadaan optimum untuk hidrolisis protein menggunakan enzim Alcalase® daripada kerang didapati berada pada suhu 65°C, pH pada 9.5, kepekatan enzim pada 2% dan 180 minit masa hidrolisis. Nilai maksimum untuk degree hidrolisis yang diperolehi adalah 37.27 %, manakala nilai ramalan untuk hasil maksimum adalah sebanyak 34.04%. Hidrolisis berenzim kerang memberikan padanan kuadratik dengan data eksperimen. Komposisi proksimat kerang hidrolisat kering sejukbeku terdiri daripada adalah 8.59% air, 74.00% protein, 5.80% lemak, 10.22% abu dan 1.39% karbohidrat.