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PRODUCTION AND PURIFICATION OF POLYSACCHARIDE
FROM MARINE BACTERIUM ISOLATED FROM
MARINE SPONGE, *Xestospongia* sp.

By
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Research report submitted in partial fulfillment of the
requirement for the degree of Bachelor of Science (Marine Biology)

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JABATAN SAINS MARIN
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PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Production and purification of polysaccharide from marine bacterium isolated from marine sponge, *Xestospongia* sp. oleh Noma binti Yusof, No .Matrik UK10700 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Biologi Marin), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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TABLE OF CONTENTS

CONTENTS		PAGE
ACKNOWLEDGEMENT		ii
TABLE OF CONTENT		iii
LIST OF TABLE		vi
LIST OF FIGURE		vii
LIST OF ABBREVIATIONS		viii
LIST OF APPENDICES		x
ABSTRACT		xii
ABSTRAK		xiii
CHAPTER I	INTRODUCTION	1-3
CHAPTER II	LITERATURE REVIEW	4-9
2.1	Sponges	4-5
2.2	Sponges and Bacteria	6-7
2.3	Sponges, bacteria and polysaccharide	8-9
CHAPTER III	METHODOLOGY	10
3.1	Sampling	10
3.2	Bacteria Isolation and identification	10
3.2.1	Bacteria isolation	11
3.2.2	Gram staining	11

3.2.3	Cultural and physiological characteristics	12
3.2.4	Biochemical Test	13-16
3.2.5	REMEL identification kit	17
3.3	Isolation and purification of polysaccharide	18-19
3.4	Determination of chemical composition of bacterium polysaccharide	20
3.4.1	Paper chromatography	20
3.4.2	High Performance liquid chromatography	20
CHAPTER IV	RESULT	21-38
4.1	Bacteria isolation and identification	21-30
4.1.1	Bacteria isolation	21
4.1.2	Gram staining	22
4.1.3	Cultural and physiological characteristics	23-25
4.1.4	Biochemical test	26-27
4.1.5	REMEL identification kit	28-29
4.2	Isolation and purification of polysaccharide	30-32
4.3	Determination of chemical composition in the bacterium	33-38
CHAPTER V	DISCUSSION	39-50
5.1	Bacteria isolation and identification	39-47
5.1.1	Bacteria isolation	39

5.1.2	Gram Staining	40
5.1.3	Cultural and physiological characteristics	41
5.1.4	Biochemical Characteristics	42-46
5.1.5	REMEL identification kit	47
5.2	Isolation and purification of polysaccharide	48
5.3	Determination of chemical composition in the bacterium	49-50
CHAPTER VI	CONCLUSION	51-52
REFERENCES		53-56
APPENDICES		57-66
CURRICULUM VITAE		

LIST OF TABLES

Tables	Page
4.1 Morphological test of bacteria isolated on the Nutrient Agar 1.5 %	22
4.2 Growth of isolated bacterium in different media	24
4.3 Growth of bacterium in different % of seawater	25
4.4 Growth of bacterium in different temperature	26
4.5 Biochemical test results for bacterium	27
4.6 Result for sensitivity to antibacterial agent	28
4.7 Biochemical test for bacterium using the RapID™ ONE Plus System	29
4.8 Yield of polysaccharide extracted from bacteria <i>Enterobacter cloacae</i>	31
4.9 Yield of purified acidic polysaccharide by DEAE cellulose column chromatography	33
4.10 Sugar composition in polysaccharide with HCl analyses using PC	34
4.11 Sugar composition in polysaccharide with HCl analyses using HPLC	37

LIST OF FIGURES

Figure	Page
4.1 Morphological of isolated X4 after Gram stain using Light microscope under 100 x magnifications.	23
4.2 Elution profile of the acidic polysaccharide on DEAE-cellulose (diethyl aminoethyl cellulose) column of using a series of NaCl concentration (0.0-4.0 M) in 0.01 M phosphate buffer	32
4.3 Paper Chromatography of the hydrolyzate crude polysaccharide from <i>Enterobacter cloacae</i>	35
4.4 Paper Chromatography of the hydrolyzate acidic polysaccharide from <i>Enterobacter cloacae</i>	36
4.5 HPLC chromatogram of hydrolyzed crude polysaccharide with 2 M HCL.	38
4.6 HPLC chromatogram of hydrolyzed acidic polysaccharide with 2 M HCL.	39

LIST OF ABBREVIATIONS

SSW	Sucrose Sea Water
NaCl	Sodium Chloride
SIM	sulfide indole motility
MR	Methyl Red
VP	Voges-Proskauer
GF/F	Whatman glass microfiber filter
5B	Advantec filter paper
PC	paper chromatography
HPLC	high performance liquid chromatography
ELCD	evaporation light scattering detector
URE	Urea
ADH	Arginine
ODC	Ornithine
LDC	Lysine
TET	Aliphatic thiol
LIP	Fatty acid ester
KSF	Sugar aldehyde
SBL	Sorbitol
GUR	p-Nitrophenyl- β ,D-glucuronide

ONPG	o-Nitrophenyl- β galactoside
β GLU	p-Nitrophenyl- β ,D-glucoside
BXYL	p-Nitrophenyl- β ,D-xyloside
NAG	p-Nitrophenyl-N-acetyl- β ,D-glucosaminide
MAL	Malonate
PRO	Proline – β - naphthylamide
GGT	γ -Glutamyl β -naphthylamide
PYR	Pyrrolidonyl-b-naphthylamide
ADON	Adonitol
IND	Tryptophane
OXI	Oxidase
M	molar
μ L	microliter
nm	nanometer
glc	glucose

LIST OF APPENDICES

Appendix	Page	
1	Map of sampling site	57
2	Culture of samples from marine sponge	57
3	Sucrose Seawater Agar	58
4	Sucrose Seawater broth	58
5	Shaker	59
6	Autoclave	59
7	Centrifuge	60
8	Oven	60
9	Biohazard Laminar flow	61
10	Freeze dry	61
11	Fume Chamber	62
12	Rotary Evaporator	62
13	DEAE-cellulose column	63
14	Chromatography chamber	63
15	Auto Fraction Collector	64
16	Peristaltic pump	64
17	Thermocline bath	65
18	High Performance Liquid Chromatography	65
19	Acidic polysaccharide	66

20 Crude polysaccharide

66

ABSTRACT

The marine sponge, *Xestospongia* sp. was used in study of the production and purification of polysaccharides from marine bacterium isolated from it. The bacterium that isolated from the sponges had been carried out in the investigation of their culture, morphological then identify the bacterium. This study also identified the chemical composition of the polysaccharides that produced by isolated bacterium isolated from *Xestospongia* sp. RapID™ ONE Plus System (REMEL, USA)™ was used in identification of isolated bacterium then namely as *Enterobacter cloacae* after the biochemical test were carried out. The entire biochemical test characterized the characteristics of the bacterium. The average yield of the crude polysaccharide isolated from *Enterobacter cloacae* was 624.5 mg per 1 L of the medium and the average yield of acidic polysaccharide was 241.0 mg per 1 L medium. Elution profile of the acidic polysaccharide on DEAE-cellulose columns shows the highest peak occurred at 0.4 M NaCl while there are no peak occurs at 0 M NaCl. The determination of chemical composition in the bacterium was performed by using paper chromatography (PC) and High Performance Liquid Chromatography (HPLC). For PC same sugar composition whether in crude or acidic polysaccharide was presence which is arabinose, galactose and maltose Results for HPLC chromatogram of hydrolyzed acidic polysaccharide with 2 M HCl containing glucose, arabinose, galactose and maltose. However, the result for crude polysaccharide gave only glucose, arabinose and galactose.