


สารที่มีฤทธิ์ทางชีวภาพจากฟองน้ำทะเลของไทย *Petrosia* sp.



นางสาวประไพ วงศ์สินคงมั่น

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาเภสัชศาสตรมหาบัณฑิต

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BIOACTIVE COMPOUNDS FROM A THAI MARINE SPONGE *PETROSIA* SP.



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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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การแยกสารจากสิ่งสกัดเมธานอล (90%) ของฟองน้ำทะเลของไทย *Petrosia* sp. โดยอาศัยผลการทดสอบฤทธิ์ทางชีวภาพต่อ brine shrimp ทำให้สามารถแยกสารที่มีฤทธิ์ทางชีวภาพในกลุ่ม brominated polyacetylenic acids ในรูปของเมริลเอเลเทอร์ได้อีกจำนวน 3 ชนิด การวิเคราะห์ข้อมูลทางสเปกตรัมของ uv, ir, ms, 1-D nmr, 2-D nmr พบว่าสูตรโครงสร้างของสาร 2 ชนิด เป็นเมริลเอเลเทอร์ของสาร brominated polyacetylenic acids ที่เคยมีรายงานมาก่อน ได้แก่ methyl 18-bromo-(13*E*, 17*E*)-octadeca-13,17-diene-5,7,15-triynoate (H-1A) และ methyl 18-bromo-(17*E*)-octadeca-17-ene-5,7,15-triynoate (H-2) และเป็นเมริลเอเลเทอร์ของสาร brominated polyacetylenic acid ชนิดใหม่ 1 ชนิด ได้แก่ methyl 18-bromo-(7*Z*, 17*E*)-octadeca-7,17-diene-5,13,15-triynoate (H-1B) ซึ่งเป็น isomer ที่แยกไม่ได้ของ H-1A สาร H-2 และสารผลผสมของ H-1A และ H-1B แสดงฤทธิ์ทางชีวภาพต่อ brine shrimp ที่  $LD_{50}$  0.5 และ 0.8  $\mu\text{g/ml}$  ตามลำดับ

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PRAPAI WONGSINKONGMAN : BIOACTIVE COMPOUNDS FROM A THAI MARINE SPONGE  
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Three bioactive brominated polyacetylenic acids were obtained as the methyl esters from the 90% methanolic extract of a Thai marine sponge, *Petrosia* sp., by means of brine shrimp bioassay-guided isolation. Spectral analyses of the uv, ir, ms, 1-D nmr, and 2-D nmr data of the methyl esters led to the structure elucidation of two methyl esters of known natural-occurring brominated polyacetylenic acids, methyl 18-bromo-(13*E*, 17*E*)-octadeca-13,17-diene-5,7,15-triynoate (H-1A), and methyl 18-bromo-(17*E*)-octadeca-17-ene-5,7,15-triynoate (H-2), and one methyl ester of new brominated polyacetylenic acid, methyl 18-bromo-(7*Z*, 17*E*)-octadeca-7,17-diene-5,13,15-triynoate (H-1B). H-1B was the inseparable isomer of H-1A. Compounds H-2 and the mixture of H-1A and H-1B showed activity against brine shrimp lethality bioassay at LD<sub>50</sub> 0.5 and 0.8 µg/ml, respectively.



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ปีการศึกษา 2536

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## CONTENTS

	Page
ABSTRACT(THAI).....	iv
ABSTRACT(ENGLISH).....	v
ACKNOWLEDGEMENTS.....	vi
CONTENTS.....	vii
LIST OF FIGURES.....	xii
LIST OF SCHEMES.....	xvi
LIST OF TABLES.....	xvii
ABBREVIATIONS.....	xviii
CHAPTER	
I INTRODUCTION.....	1
II HISTORICAL.....	4
1. The Investigation of Chemical Constituents in the <i>Petrosia</i> .....	4
- Sterols.....	4
- Fatty acids.....	16
- Aldehydes.....	19
- Alkaloids.....	19
- Acetylenic Compounds.....	20

2. The Distribution of Acetylenic Compounds in Marine Organisms.....	20
- Straight chain acetylenes.....	21
- Acetylenes with one or more tetrahydropyran rings.....	21
- Acetylenes with pyridine ring.....	23
- Acetylenic glyceryl ether.....	23
- Miscellaneous acetylene.....	24
3. Biological Activities of Acetylenic Compounds from Marine Organisms.....	24
<b>III EXPERIMENTAL</b> .....	55
1. Source of Marine Organism.....	55
2. General Techniques.....	55
- Analytical Thin-layer Chromatography (TLC).....	55
- Column Chromatography.....	56
- Semi-preparative High-performance Liquid Chromatography (HPLC).....	56
- Analytical High-performance Liquid Chromatography (HPLC).....	57
- Spectroscopy.....	57
- Ultraviolet (UV) Absorption Spectra.....	57
- Infrared (IR) Absorption Spectra.....	58
- Nuclear Magnetic Resonance (NMR) spectra.....	58



- Mass Spectra.....	58
- Solvents.....	58
- For Column Chromatography and Thin-layer Chromatography.....	58
- For High-performance Liquid Chromatography.....	58
- Biological Assay.....	58
- Cytotoxic Activity Test.....	58
- Target cells.....	58
- Method of Bioassay.....	59
- Brine Shrimp Lethality Bioassay.....	59
- Hatching the Shrimp.....	59
- Sample Preparation.....	60
- Bioassay.....	60
- LD <sub>50</sub> Determinations.....	60
- Microbiological Assay.....	60
- Test Microorganisms.....	60
- Media.....	61
- Sample Preparation.....	62
- Microbiological Assays.....	62
3. Extraction and Isolation.....	63
- Extraction.....	63

- Isolation.....	63
4. Esterification of Pool B-2.....	65
- Preparation of Nitrosomethylurea.....	66
- Preparation of Diazomethane in Ether Solution.....	66
- Esterification with Diazomethane.....	66
5. Biological Activity.....	67
- Cytotoxicity.....	67
- Brine Shrimp Lethality Bioassay.....	67
- Antimicrobial Activity.....	69
6. Characterization of the Isolated Compounds.....	69
- Characterization of H-1.....	69
- Characterization of H-1A.....	70
- Characterization of H-1B.....	70
- Characterization of H-2.....	70
<b>IV DISCUSSION.....</b>	<b>72</b>
1 Structure Elucidation of H-1A.....	75
2 Structure Elucidation of H-1B.....	80
3 Structure Elucidation of H-2.....	84
4. Biological Activity of the Isolated Compounds.....	87
<b>V CONCLUSION AND RECOMMENDATION.....</b>	<b>88</b>

REFERENCES.....	89
APPENDIX.....	97
VITA.....	139



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## LIST OF FIGURES

Figure		Page
1	The C-H correlations from HMBC spectrum of H-1A.....	77
2	The proposed fragmentation patterns of H-1A from the EI mass spectrum.....	79
3	The C-H correlations from HMBC spectrum of H-1B.....	81
4	The proposed fragmentation patterns of H-1B from the EI mass spectrum.....	82
5	The proposed fragmentation patterns of H-2 from the EI mass spectrum.....	86
6	A Thai marine sponge <i>Petrosia</i> sp.....	98
7	The infrared absorption spectrum of the pool B-2 .....	99
8	The HPLC chromatogram of the pool B-22.....	100
9	The HPLC chromatograms of compounds H-1, H-2, and H-3.....	101
10	The infrared absorption spectrum of H-1.....	102
11	The ultraviolet absorption spectrum of H-1 in chloroform.....	103
12	The EI mass spectrum of H-1A .....	104
13	The 500 MHz $^1\text{H}$ -NMR spectrum of H-1A in deuterated chloroform.....	105
14	The expansion of 500 MHz $^1\text{H}$ -NMR spectrum of H-1A in deuterated chloroform.....	106
15	The 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-1A in deuterated chloroform.....	107

Figure	Page
16	The expansion ( $\delta$ 2.1 to 6.3 ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of <b>H-1A</b> in deuterated chloroform ..... 108
17	The expansion ( $\delta$ 0.9 to 2.9ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of <b>H-1A</b> in deuterated chloroform .....109
18	The expansion ( $\delta$ 4.9 to 6.9ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of <b>H-1A</b> from in deuterated chloroform .....110
19	The 500 MHz $^1\text{H}$ -NMR partial spectra of <b>H-1A</b> : selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 6.17 ppm..... 111
20	The 500 MHz $^1\text{H}$ -NMR partial spectra of <b>H-1A</b> : selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 5.55 ppm..... 112
21	The 500 MHz $^1\text{H}$ -NMR partial spectra of <b>H-1A</b> : selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 2.26 ppm..... 113
22	The 500 MHz HMBC spectrum of <b>H-1A</b> in deuterated chloroform..... 114
23	The 500 MHz HMQC spectrum of <b>H-1A</b> in deuterated chloroform..... 115
24	The 125 MHz $^{13}\text{C}$ -NMR spectrum of <b>H-1A</b> in deuterated chloroform..... 116
25	The 500 MHz $^1\text{H}$ -NMR spectrum of <b>H-1B</b> in deuterated chloroform..... 117
26	The expansion of 500 MHz $^1\text{H}$ -NMR spectrum of <b>H-1B</b> in deuterated chloroform.....118
27	The 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of <b>H-1B</b> in deuterated chloroform ..... 119

Figure	Page
28	The expansion ( $\delta$ 2.1 to 6.3 ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-1B in deuterated chloroform ..... 120
29	The expansion ( $\delta$ 0.9 to 2.9 ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-1B in deuterated chloroform ..... 121
30	The expansion ( $\delta$ 4.9 to 6.9 ppm) of 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-1B in deuterated chloroform ..... 122
31	The 500 MHz $^1\text{H}$ -NMR partial spectra of H-1B: selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 6.17 ppm..... 123
32	The 500 MHz $^1\text{H}$ -NMR partial spectra of H-1B: selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 5.50 ppm..... 124
33	The 500 MHz $^1\text{H}$ -NMR partial spectra of H-1B: selective $^1\text{H}$ decoupling experiment, irradiation at $\delta$ 6.03 ppm..... 125
34	The 500 MHz HMBC spectrum of H-1B in deuterated chloroform..... 126
35	The 500 MHz HMQC spectrum of H-1B in deuterated chloroform..... 127
36	The 125 MHz $^{13}\text{C}$ -NMR spectrum of H-1B in deuterated chloroform..... 128
37	The infrared absorption spectrum of H-2 ..... 129
38	The ultraviolet absorption spectrum of H-2 in chloroform..... 130
39	The EI mass spectrum of H-2 ..... 131
40	The 500 MHz $^1\text{H}$ -NMR spectrum of H-2 in deuterated chloroform..... 132

Figure	Page
41	The expansion of 500 MHz $^1\text{H}$ -NMR spectrum of H-2 in deuterated chloroform..... 133
42	The 500 MHz $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-2 in deuterated chloroform..... 134
43	The 500 MHz long range $^1\text{H}$ - $^1\text{H}$ COSY spectrum of H-2 in deuterated chloroform..... 135
44	The 50 MHz $^{13}\text{C}$ -NMR spectrum of H-2 in deuterated chloroform..... 136
45	The 50 MHz DEPT $135^\circ$ spectrum of H-2 in deuterated chloroform ..... 137
46	The expansion ( $\delta$ 16 to 39 ppm) of 50 MHz DEPT $135^\circ$ spectrum of H-2 in deuterated chloroform ..... 138

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## LIST OF SCHEMES

Scheme	Page
1 The extraction scheme of a Thai marine sponge <i>Petrosia</i> sp.....	73
2 The isolation scheme of bioactive compounds from the 90% v/v methanol extract of the sponge <i>Petrosia</i> sp.....	74



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



## LIST OF TABLES

Table	Page
1 Sterols from <i>Petrosia</i> spp. ....	8
2 Fatty acids in <i>Petrosia</i> spp.....	16
3 Summary of straight chain acetylenes.....	25
4 Summary of biological activities of acetylenic compounds from marine organisms.....	53
5 Brine shrimp lethality bioassay-directed isolation.....	68
6 Brine shrimp lethality activity of the isolated compounds.....	68
7 Carbon and proton assignments of <b>H-1A</b> and long-range correlation between carbon and proton by HMBC.spectrum.....	78
8 Carbon and proton assignments of <b>H-1B</b> and long-range correlation between carbon and proton by HMBC.spectrum.....	83
9 Carbon and proton assignments of <b>H-2</b> and correlations between proton and proton in 2D $^1\text{H}$ - $^1\text{H}$ COSY spectrum .....	87

## LIST OF TABLES

Table	Page
1 Sterols from <i>Petrosia</i> spp. ....	8
2 Fatty acids in <i>Petrosia</i> spp.....	16
3 Summary of straight chain acetylenes.....	25
4 Summary of biological activities of acetylenic compounds from marine organisms.....	53
5 Brine shrimp lethality bioassay-directed isolation.....	68
6 Brine shrimp lethality activity of the isolated compounds.....	68
7 Carbon and proton assignments of H-1A and long-range correlation between carbon and proton by HMBC.spectrum.....	78
8 Carbon and proton assignments of H-1B and long-range correlation between carbon and proton by HMBC.spectrum.....	83
9 Carbon and proton assignments of H-2 and correlations between proton and proton in 2D $^1\text{H}$ - $^1\text{H}$ COSY spectrum .....	87

## ABBREVIATIONS

$\epsilon_{\max}$	= Molar absorptivity at maximum absorption
brt	= Broad triplet (for NMR spectra)
$^{\circ}\text{C}$	= Degree Celsius
$^{13}\text{C-NMR}$	= Carbon-13 nuclear magnetic resonance
cm	= Centimeter
2-D	= Two-dimensional
d	= Doublet (for NMR spectra)
dd	= Doublets of doublet (for NMR spectra)
DEPT	= Distortionless enhancement by polarization transfer
dq	= Doublets of quartet (for NMR spectra)
dqt	= Doublets of quintet (for NMR spectra)
dt	= Doublets of triplet (for NMR spectra)
$\delta$	= Chemical shift
$E$	= Entgegen; against
$\text{ED}_{50}$	= 50% Effective dose
EIMS	= Electron impact mass spectrum
eV	= Electron volt = 96.487 kJ/mol = 23.06 kcal/mol
FTIR	= Fourier transform infrared
g	= Gram

HIV-1	=	Human immunodeficiency virus type 1
HMBC	=	Proton detected heteronuclear multiple bond connectivity
HMQC	=	Proton detected heteronuclear multiple quantum coherence
HPLC	=	High-performance Liquid Chromatography
Hz	=	Hertz
ID <sub>50</sub>	=	50% Inhibition dose
IR	=	Infrared
J	=	Coupling constant
kg	=	Kilogram
$\lambda_{\max}$	=	Wavelength at maximum absorption
LD <sub>50</sub>	=	50% Lethal dose
l	=	Liter
M <sup>+</sup>	=	Molecular ion
MHz	=	Mega hertz
m	=	Meter
m	=	Multiplet (for NMR spectra)
mg	=	Milligram
$\mu\text{g}$	=	Microgram
ml	=	Milliliter

$\mu\text{l}$	=	Microliter
$\mu\text{M}$	=	Micromolar
ml/min	=	Milliliter per minute
mm	=	Millimeter
m/e	=	Mass to charge ratio
MS	=	Mass spectrum
NA	=	Nutrient agar
NMR	=	Nuclear magnetic resonance
No.	=	Number
nm	=	Nanometer
$\nu_{\text{max}}$	=	Wavenumber at maximum absorption
ODS	=	Octadecylsilane
ppm	=	Part per million
q	=	Quartet (for NMR spectra)
qd	=	Quartets of doublet (for NMR spectra)
qt	=	Quintet (for NMR spectra)
s	=	Singlet (for NMR spectra)
sp.	=	Specy
spp.	=	Species
SCUBA	=	Self-contained underwater breathing apparatus
SDA	=	Sabouraud dextrose agar

t	= Triplet (for NMR spectra)
td	= Triplet s of doublet (for NMR spectra)
TLC	= Thin-layer chromatography
TSA	= Trypticase soy agar
UV	= Ultraviolet
v/v	= Volume by volume
w/w	= Weight by weight
Z	= Zusammen; together



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