

องค์ประกอบทางเคมีของฟองน้ำทะเล *Ircinia* sp.

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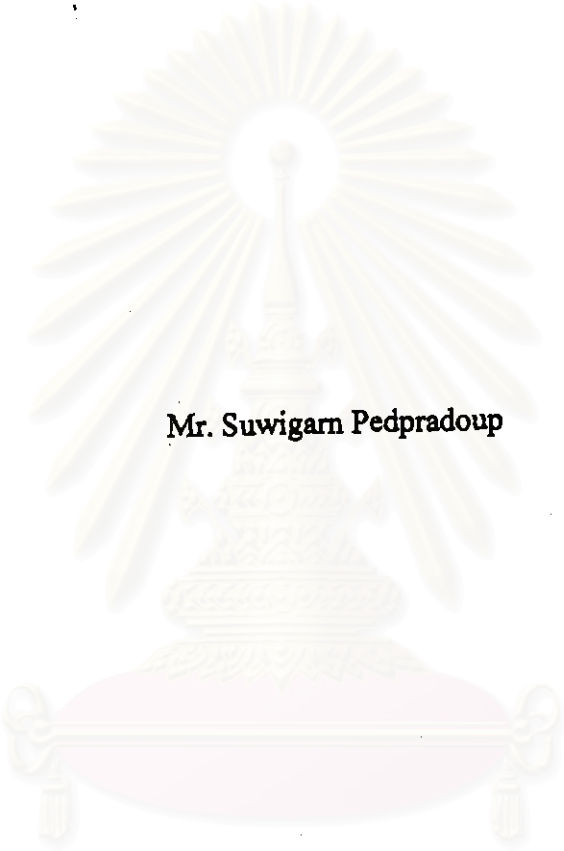
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**CHEMICAL CONSTITUENTS OF THE MARINE SPONGE, *IRCINIA* SP.**



**Mr. Suwigarn Pedpradoup**

**A Thesis Submitted in Partial Fulfillment of the Requirements  
for Degree of Master of Science Program in Marine Science  
Department of Marine Science**

**Graduate School**

**Chulalongkorn University**

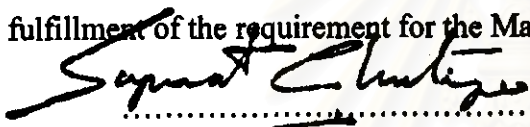
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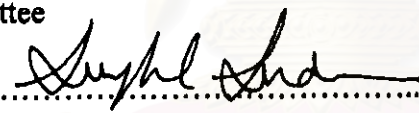
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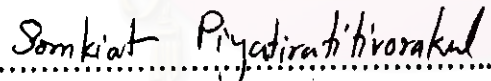
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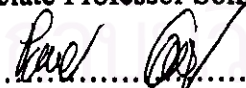
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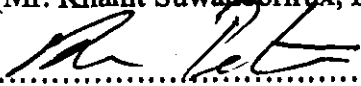
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วิทยานิพนธ์ฉบับขจัดต่อวิทยานิพนธ์ภายในกรอบนี้เขียนให้เพียงแผ่นเดียว

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จากการแยกสกัดสารควบคู่ไปกับการทดสอบฤทธิ์ในการฆ่าไวรัสของสิ่งสกัดในไดคลอโรมีเทนจาก ฟองน้ำทะเล *Ircinia* sp. สามารถแยกสารในกลุ่ม linear furanoterpenes ได้ 3 ชนิด คือ anhydrofurospingin-1, furodendin และ furospingolide รวมทั้งสารในกลุ่ม methyl scalaranes ได้ 1 ชนิด คือ 22-acetoxyl-16 $\beta$ -hydroxy-24-methyl-24-oxoscalarin-25,12 $\beta$ -olactone การพิสูจน์เอกลักษณ์และการหาสูตรโครงสร้างทางเคมีของ สารทั้ง 4 ชนิดนี้ ทำโดยการวิเคราะห์ข้อมูลจากสเปกตรัมของ ir, uv, ms, 1-D nmr และ 2-D nmr ร่วมกับการ เปรียบเทียบกับข้อมูลที่ตีพิมพ์แล้ว เมื่อทดสอบฤทธิ์ทางชีวภาพ พบว่าสาร anhydrofurospingin-1 มีฤทธิ์ฆ่าไวรัส เคมที่ค่า LD<sub>50</sub> 2.38 มก./มล. และมีฤทธิ์ปานกลางในการต้านเชื้อ HSV-1 ที่ความเข้มข้น 20 มก./มล ในขณะที่ สาร furospingolide มีฤทธิ์ต้านเชื้อ HSV-1 เช่นเดียวกับสาร anhydrofurospingin-1

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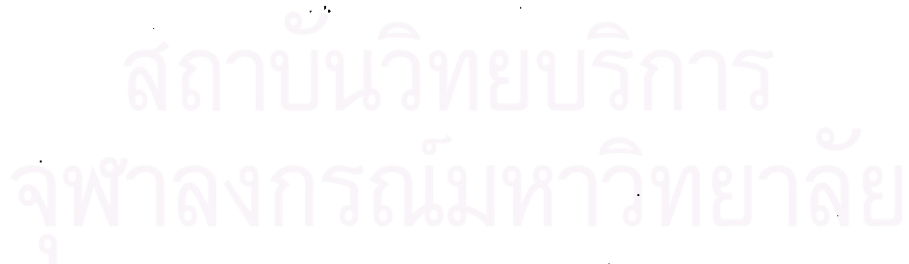
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SUWIGARN PEDPRADOUP : CHEMICAL CONSTITUENTS OF THE MARINE SPONGE, *Ircinia* sp. THESIS ADVISOR : ASSOC. PROF. SOMKIAT PIYATIRATITIVORAKUL, Ph. D., THESIS CO-ADVISORS : PRASAT KITTAKOOP, Ph.D., KHANIT SUWANBORIRUX, Ph.D. 158 pp. ISBN 974-638-263-2

The brine shrimp lethality assay-directed fractionation of the dichloromethane extract from a marine sponge *Ircinia* sp. led to the isolation of 3 linear furanoterpenes including, anhydrofurospingin-1, furodendin, and furospingolide, together with one methyl scalarane, 22-acetoxy-16 $\beta$ -hydroxy-24-methyl-24-oxoscalarane-25,12 $\beta$ -olactone. Structure elucidations of the isolated compounds were executed by extensive analysis of their ir, uv, ms, 1-D nmr and 2-D nmr spectral data, as well as comparison with the literatures. Anhydrofurospingin-1 showed activity in brine shrimp lethality assay at LD<sub>50</sub> 2.38  $\mu$ g/ml and also showed moderate anti HSV-1 activity at concentration 20  $\mu$ g/ml, while furospingolide showed only moderate anti HSV-1 activity at the same concentration.



ภาควิชา Marine Science

สาขาวิชา Marine Science

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# CONTENTS

	Page
ABSTRACT (THAI).....	iv
ABSTRACT (ENGLISH).....	v
ACKNOWLEDGEMENTS.....	vi
CONTENTS.....	vii
LIST OF FIGURES .....	x
LIST OF SCHEMES.....	xv
LIST OF TABLES.....	xvi
ABBREVIATION.....	xviii
CHAPTER	
I INTRODUCTION .....	1
II HISTORICAL .....	7
1 Biology of sponges.....	7
1.1 Taxa and description of a marine sponge, <i>Ircinia</i> sp .....	8
1.2 Biology of the genus <i>Ircinia</i> . .....	8
2 Chemical constituents of the genus <i>Ircinia</i> .....	9
3 The linear furanoterpenes .....	18
3.1 Naturally occurring of linear furanoterpenes .....	18
3.1.1 The C-21 furanoterpenes .....	18
3.1.2 The furanosesterterpenes .....	23

4	Bioactivities of linear furanoterpene .....	29
4.1	Bioactivities of linear furanoterpenes .....	29
4.2	Bioactivities of furanosesterterpenes .....	29
5	The scalarane sesterterpenes .....	30
5.1	Naturally occurring of scalarane sesterterpenes .....	31
5.2	Bioactivities of scalarane sesterterpenes from marine sponges.....	35
III	MATERIALS AND METHODS .....	36
1	Source of sample material .....	36
2	General techniques .....	38
3	Crystallization technique.....	42
4	Spectroscopy .....	42
5	Bioactivity determination.....	44
5.1	Brine shrimp lethality activity test.....	44
5.2	Anti hepes simplex virus assay (HSV-test) .....	47
IV	RESULTS AND DISCUSSION .....	48
1	Isolation of chemical constituents from <i>Ircinia</i> sp. ....	48
1.1	Isolation of compound PI .....	49
1.2	Isolation of compounds P44 and P45 .....	50
1.3	Isolation of compound KP9 .....	53
1.3.1	Acetylation reaction of KP9 .....	53
2	Spectral data of the isolated compounds.....	57



3	Structure elucidation of the isolated compounds.....	60
3.1	Compound P1 .....	60
3.2	Compound P45.....	67
3.3	Compound P44.....	73
3.4	Compound KP9 .....	78
4	Bioactivities of the isolated compounds .....	88
V	CONCLUSION.....	89
	REFERENCES .....	91
	APPENDIX .....	96
	VITA.....	158



สถาบันวิทยบริการ  
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## LIST OF FIGURES

Figure	Page
1. Chemical structures of the isolated compounds from genus <i>Ircinia</i> .....	14
2. Structures of C-21 furanoterpenes isolated from marine sponges .....	20
3. Structures furano sesterterpenes isolated from marine sponge.....	25
4. Structures of scalarane sesterterpenes isolated from marine sponges.....	33
5. Spicules of <i>Ircinia</i> sp.....	37
6. The electron impact mass spectrum of compound 1.....	97
7. The IR spectrum of compound P1 .....	98
8. The UV spectrum of compound P1 .....	99
9. The 300 MHz $^1\text{H}$ nmr spectrum of compound P1 (in $\text{CDCl}_3$ ) .....	100
10. The 300 MHz $^1\text{H}$ nmr spectrum of compound P1 (in $\text{CDCl}_3$ ) (expanded from 1.6-2.8 ppm).....	101
11. The 75 MHz $^{13}\text{C}$ nmr spectrum of compound P1 (in $\text{CDCl}_3$ ).....	102
12. The 75 MHz DEPT 135 spectrum of compound P1 (in $\text{CDCl}_3$ ).....	103
13. The 300 MHz HETCOR spectrum of compound P1 (in $\text{CDCl}_3$ ) .....	104
14. The 300 MHz HETCOR spectrum of compound P1 (in $\text{CDCl}_3$ ) (expanded from 10-40 ppm) .....	105
15. The 300 MHz COSY 45 spectrum of compound P1 (in $\text{CDCl}_3$ ) .....	106

16. The 300 MHz COSY 45 spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 0.5-2.5 ppm) .....	107
17. The 300 MHz COSY 45 spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 5.0-7.0 ppm). .....	108
18. The 300 MHz COLOC spectrum of compound P1 (in CDCl <sub>3</sub> ) .....	109
19. The 300 MHz COLOC spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 10-40 ppm). .....	110
20. The 300 MHz COLOC spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 110-150 ppm). .....	111
21. The 300 MHz COLOC spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 110-140 ppm).....	112
22. The 300 MHz COLOC spectrum of compound P1 (in CDCl <sub>3</sub> ) (expanded from 10-40 ppm).....	113
23. The electron impact mass spectrum of Compound P44 .....	114
24. The IR spectrum of compound P44 .....	115
25. The UV spectrum of compound P44 .....	116
26. The 300 MHz <sup>1</sup> H nmr spectrum of compound P44 (in CDCl <sub>3</sub> ).....	117
27. The 300 MHz <sup>1</sup> H nmr spectrum of compound P44 (in CDCl <sub>3</sub> ) (expanded from 1.2-2.5 and 4.6-5.2 ppm) .....	118
28. The 75 MHz <sup>13</sup> C nmr spectrum of compound P44 (in CDCl <sub>3</sub> ).....	119
29. The 75 MHz DEPT 135 spectrum of Compound P44 (in CDCl <sub>3</sub> ).....	120
30. The 300 MHz HETCOR spectrum of compound P44 (in CDCl <sub>3</sub> ).....	121

31. The 300 MHz HETCOR spectrum of compound P44 (in CDCl <sub>3</sub> ) (expanded from 14-42 ppm) .....	122
32. The 300 MHz COSY 45 spectrum of compound P44 (in CDCl <sub>3</sub> ) .....	123
33. The electron impact mass spectrum of compound P45 (in CDCl <sub>3</sub> ).....	124
34. The IR spectrum of compound P45 .....	125
35. The UV spectrum of compound P45 .....	126
36. The 300 MHz <sup>1</sup> H nmr spectrum of compound P45 (in CDCl <sub>3</sub> ) .....	127
37. The 300 MHz <sup>1</sup> H nmr spectrum of compound P45 (in CDCl <sub>3</sub> ) (expanded from 1.6-2.7 and 4.5-5.3 ppm) .....	128
38. The 75 MHz <sup>13</sup> C nmr spectrum of compound 45 (in CDCl <sub>3</sub> ) .....	129
39. The 75 MHz DEPT spectrum of compound P45 (in CDCl <sub>3</sub> ) .....	130
40. The 300 MHz HETCOR spectrum of compound P45 (in CDCl <sub>3</sub> ) .....	131
41. The 300 MHz HETCOR spectrum of compound P45 (in CDCl <sub>3</sub> ) (expanded from 10-45 ppm) .....	132
42. The 300 MHz COLOC spectrum of compound P45 (in CDCl <sub>3</sub> ) .....	133
43. The 300 MHz COLOC spectrum of compound P45 (in CDCl <sub>3</sub> ) (expanded from 5-50 ppm ) .....	134
44. The 300 MHz COLOC spectrum of compound P45 (in CDCl <sub>3</sub> ) (expanded from 160-185 ppm).....	135
45. The 300 MHz COSY 45 spectrum of compound P45 (in CDCl <sub>3</sub> ).....	136
46. The electron impact mass spectrum of compound KP9.....	137
47. The IR spectrum of compound KP9 .....	138
48. The UV spectrum of compound KP9 .....	139

49. The 300 MHz $^1\text{H}$ nmr spectrum of compound KP9 (in $\text{CDCl}_3$ ) .....	140
50. The 300 MHz $^1\text{H}$ nmr spectrum of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 2.8-4.7 ppm) .....	141
51. The 300 MHz $^1\text{H}$ nmr spectrum of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 0.7-2.5 ppm) .....	142
52. The 75 MHz $^{13}\text{C}$ nmr spectrum of compound KP9 (in $\text{CDCl}_3$ ) .....	143
53. The 75 MHz DEPT 135 spectrum of compound KP9 (in $\text{CDCl}_3$ ) .....	144
54. The 500 MHz HSQC spectrum of compound KP9 (in $\text{CDCl}_3$ ) .....	145
55. The 500 MHz HSQC spectrum of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 10-100 ppm) .....	146
56. The 500 MHz HSQC spectrum of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 10-70 ppm) .....	147
57. The 500 MHz HSQC spectrum of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 32-42 ppm) .....	148
58. The 500 MHz HMBC ( $J = 8$ Hz) of compound KP9 (in $\text{CDCl}_3$ ) .....	149
59. The 500 MHz HMBC ( $J = 8$ Hz) of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 15-45 ppm) .....	150
60. The 500 MHz HMBC ( $J = 8$ Hz) of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 20-90 ppm) .....	151
61. The 500 MHz HMBC ( $J = 8$ Hz) of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 30-90 ppm) .....	152
62. The 500 MHz HMBC ( $J = 8$ Hz) of compound KP9 (in $\text{CDCl}_3$ ) (expanded from 60-90 ppm) .....	153

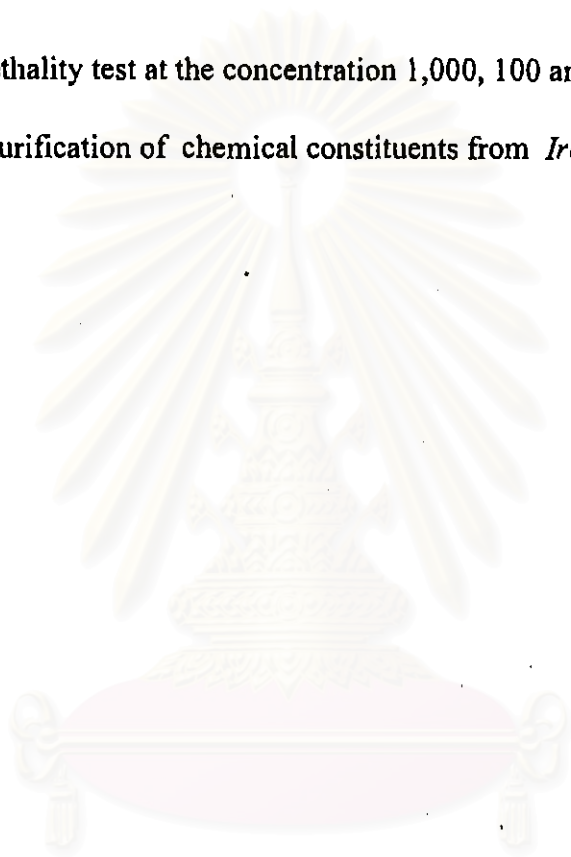
63. The 500 MHz HMBC ( $J = 8$  Hz) of compound KP9 (in  $\text{CDCl}_3$ )  
(expanded from expanded 170-210 ppm). .....154
64. The COSY 45 spectrum of compound KP9. ....155
65. The COSY 45 spectrum of compound KP9 (expanded from 1.2-2.7ppm) ..156
66. The 300 MHz  $^1\text{H}$  nmr spectrum of acetylation product of  
compound KP9 (in  $\text{CDCl}_3$ ) .....157



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## LIST OF SCHEMES

Scheme	Page
1. Brine shrimp lethality test at the concentration 1,000, 100 and 10 $\mu\text{g/ml}$ .....	46
2. Isolation and purification of chemical constituents from <i>Ircinia</i> sp. ....	55



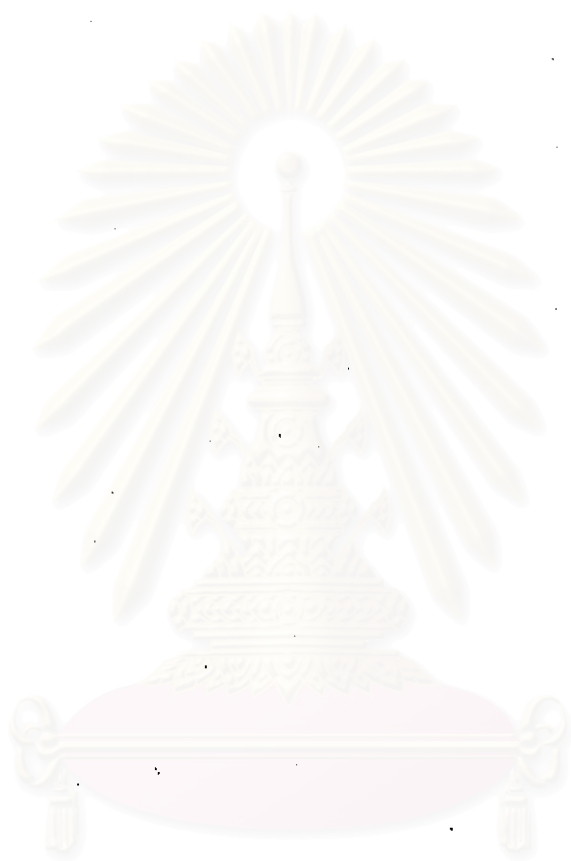
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## LIST OF TABLES

Table	Page
1 List of C-21 furanoterpenes from the marine sponges .....	19
2 List of furanosesterterpenes from marine sponge .....	24
3 List of scalarane sesterterpenes from marine sponges.....	32
4 Isolation of compound P1 and P4 .....	49
5 Purification of P2 with gel filtration on Sephadex LH-20.....	50
6 Purification of P16 with gel filtration on Sephadex LH-20.....	51
7 Purification of P34 by a silica gel flash column.....	52
8 $^1\text{H}$ -NMR, $^{13}\text{C}$ -NMR and C-H long range correlation data of compound P1.....	63
9 $^1\text{H}$ - $^1\text{H}$ COSY correlation of compound P1 .....	64
10 $^1\text{H}$ -NMR, $^{13}\text{C}$ -NMR with $^1\text{H}$ - $^1\text{H}$ COSY and COLOC correlations of atoms in a molecule of compound P45.....	71
11 The comparative of $^1\text{H}$ -NMR and $^{13}\text{C}$ -NMR between compound P45 and furospongolide.....	72
12 Chemical shift of $^1\text{H}$ , $^{13}\text{C}$ -NMR and $^1\text{H}$ - $^1\text{H}$ COSY of compound P44 .....	76
13 The comparison of $^{13}\text{C}$ and $^1\text{H}$ - NMR data between P44 and furodendin .....	77
14 Chemical shift of $^1\text{H}$ and $^{13}\text{C}$ -NMR of compoun KP9 .....	84
15 $^1\text{H}$ - $^1\text{H}$ correlation of compound KP9 .....	85



16	HMBC correlation of KP9 .....	86
17	Comparison of chemical shift of $^{13}\text{C}$ and $^1\text{H}$ -NMR data between compound KP9 known compound .....	87



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จุฬาลงกรณ์มหาวิทยาลัย

## ABBREVIATIONS

br	= broad
c	= concentration
°C	= degree celsius
<sup>13</sup> C	= carbon -13
CDCl <sub>3</sub>	= deuterated chloroform
CH <sub>2</sub> Cl <sub>2</sub>	= dichloromethane
CHCl <sub>3</sub>	= chloroform
cm	= centimeter
COLOC	= Correlation spectroscopy via Long- range Coupling.
COSY	= Correlation spectroscopy
δ	= chemical shift
dd	= doublet of doublets
d	= doublet
ε	= molar absorptivity
eV	= electron volt
g	= gram
HETCOR	= heteronuclear shift correlation spectroscopy.
<sup>1</sup> H nmr	= proton

HMBC	= proton detected heteronuclear multiple bond coherence
HSQC	= proton detected high sensitive quantum coherence
Hz	= hertz
ID <sub>50</sub>	= 50% inhibition dose
IR	= infrared
J	= coupling constant
kg	= kilogram
$\lambda_{\text{max}}$	= wavelength at maxima absorption
LD <sub>50</sub>	= 50% lethal dose
M <sup>+</sup>	= molecular ion
MeOH	= methanol
MHz	= megahertz
$\mu\text{g}$	= microgram
m	= multiplet
ml	= milliliter
mm	= millimeter
MS	= mass spectrum
$\bar{\nu}_{\text{max}}$	= wave number at maximum absorption
nmr	= nuclear magnetic resonance
p	= pentet
ppm	= part per million
q	= quartet
s	= singlet

sp.	= species
t	= triplet
TLC	= thin layer chromatography
uv	= ultraviolet



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