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APPENDICES

APPENDIX A

MEDIA

The media were prepared by sterilization in the autoclave at 121 °C for 15 minutes.

1. Malt extract agar (MEA)

Malt extracts	20.0	g
Peptone	1.0	g
Glucose	20.0	g
Distilled water	1000	ml
Agar	15.0	g

2. Yeast extract sucrose agar (YEA)

Yeast extracts	20.0	g
Sucrose	150.0	g
Agar	15.0	g
Distilled water	1000	ml

3. Nutrient agar (NA)

Peptone	5.0	g
Beef extract	3.0	g
Distilled water	1000	ml
Agar	15.0	g

4. Sabouraud's dextrose agar (SDA)

Peptone	10.0	g
Dextrose	40.0	g
Distilled water	1000	ml
Agar	15.0	g

5. Corn Meal Agar (CMA)

Corn meal	20.0	g
Peptone	20.0	g
Dextrose	20.0	g
Agar	15.0	g
Distilled water	1000	ml

6. Potato dextrose agar (PDA)

Potato, peeled and diced	200	g
Glucose	20.0	g
Agar	15.0	g
Distilled water	1000	ml

Boil 200 g of peels, dried potato for 1 hr in 1000 ml. of distilled water. Filter, and make up the filtrate to one liter. Add the glucose and agar and dissolve by streaming and sterilize by autoclaving at 121 °C for 15 minutes.

7. Yeast-malt extract agar (YMA)

Glucose	10.0	g
Peptone	5.0	g
Yeast extracts	3.0	g
Malt extracts	3.0	g
Agar	15.0	g
Distilled water	1000	ml

APPENDIX B

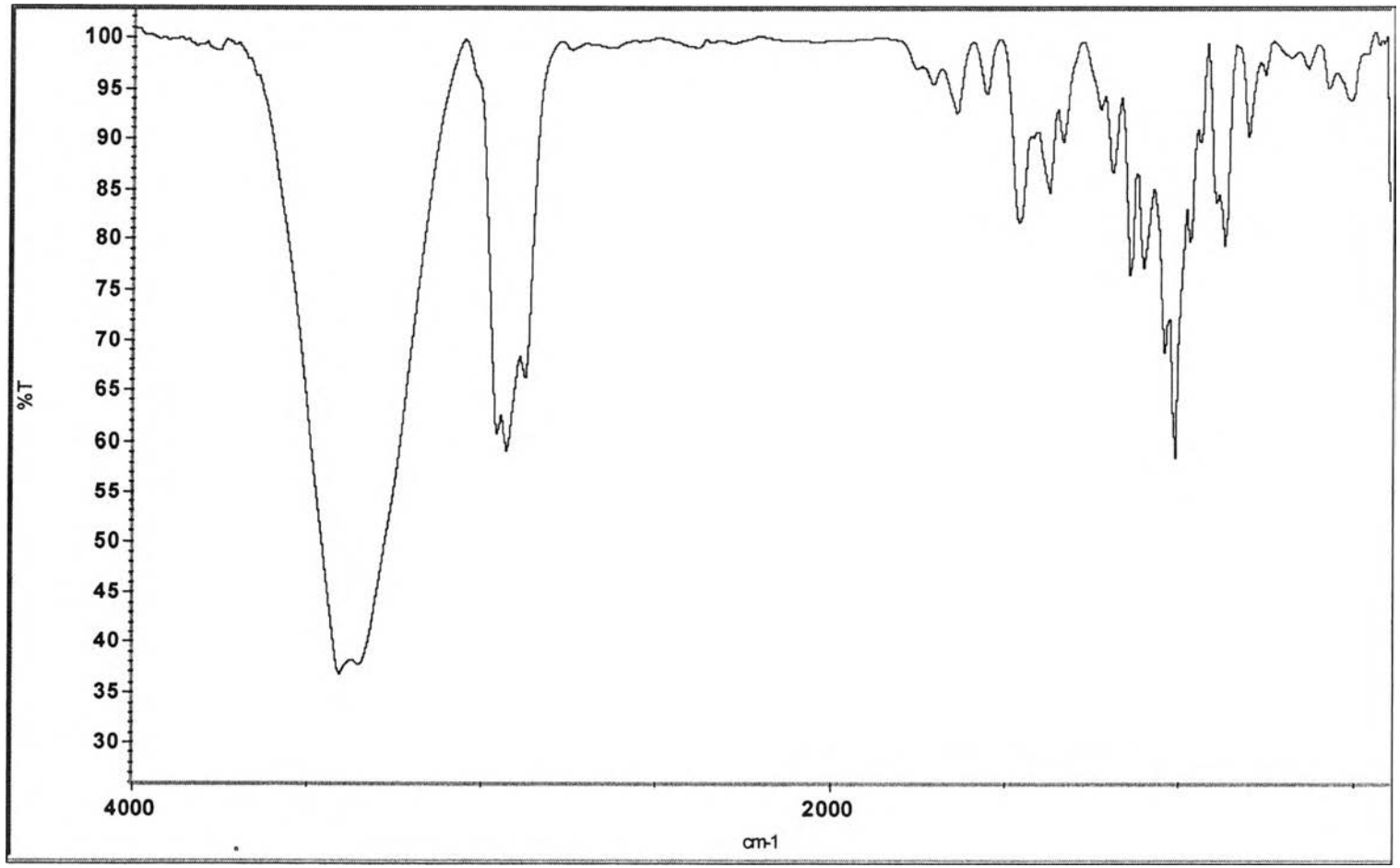


Figure B1 IR spectrum of compound **1**

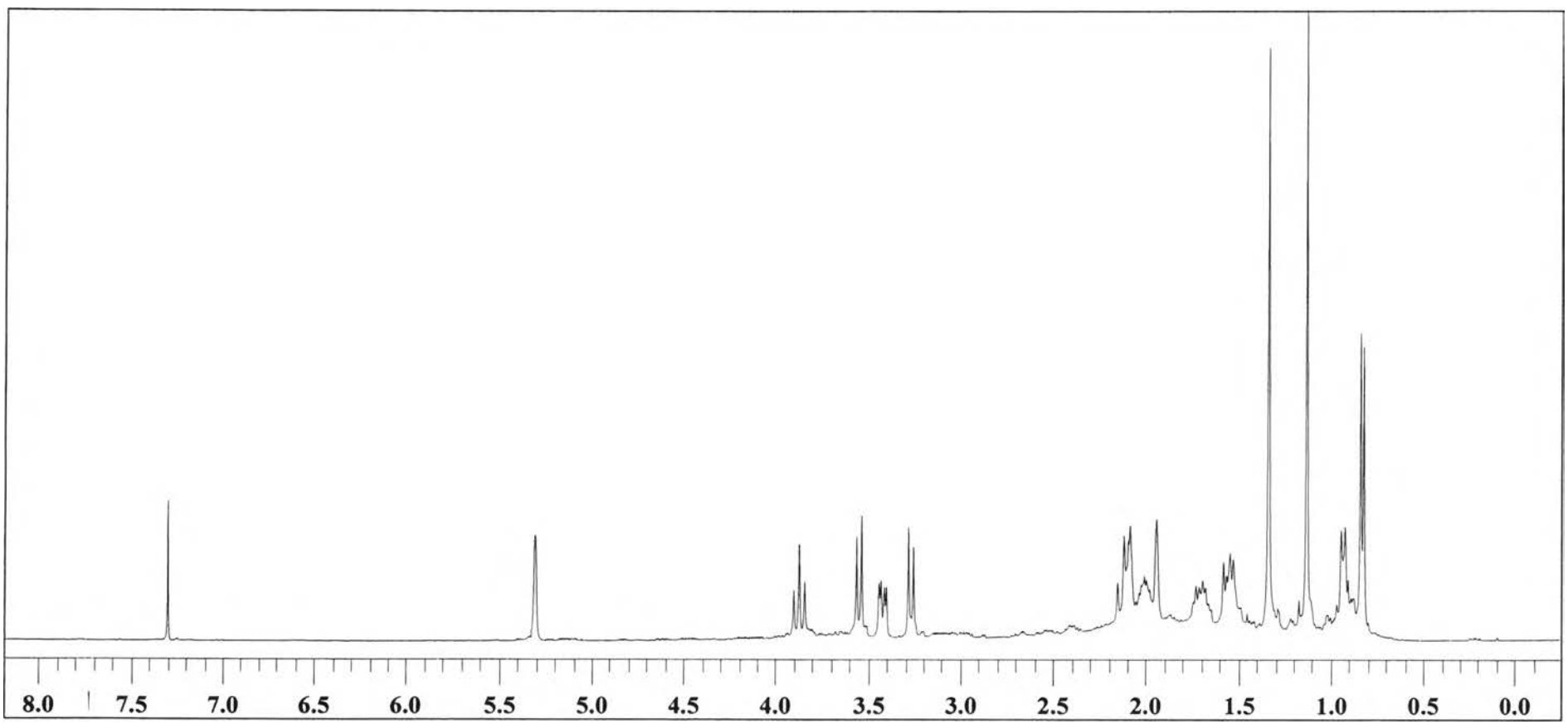


Figure B2 ^{1}H-NMR spectrum of compound **1**

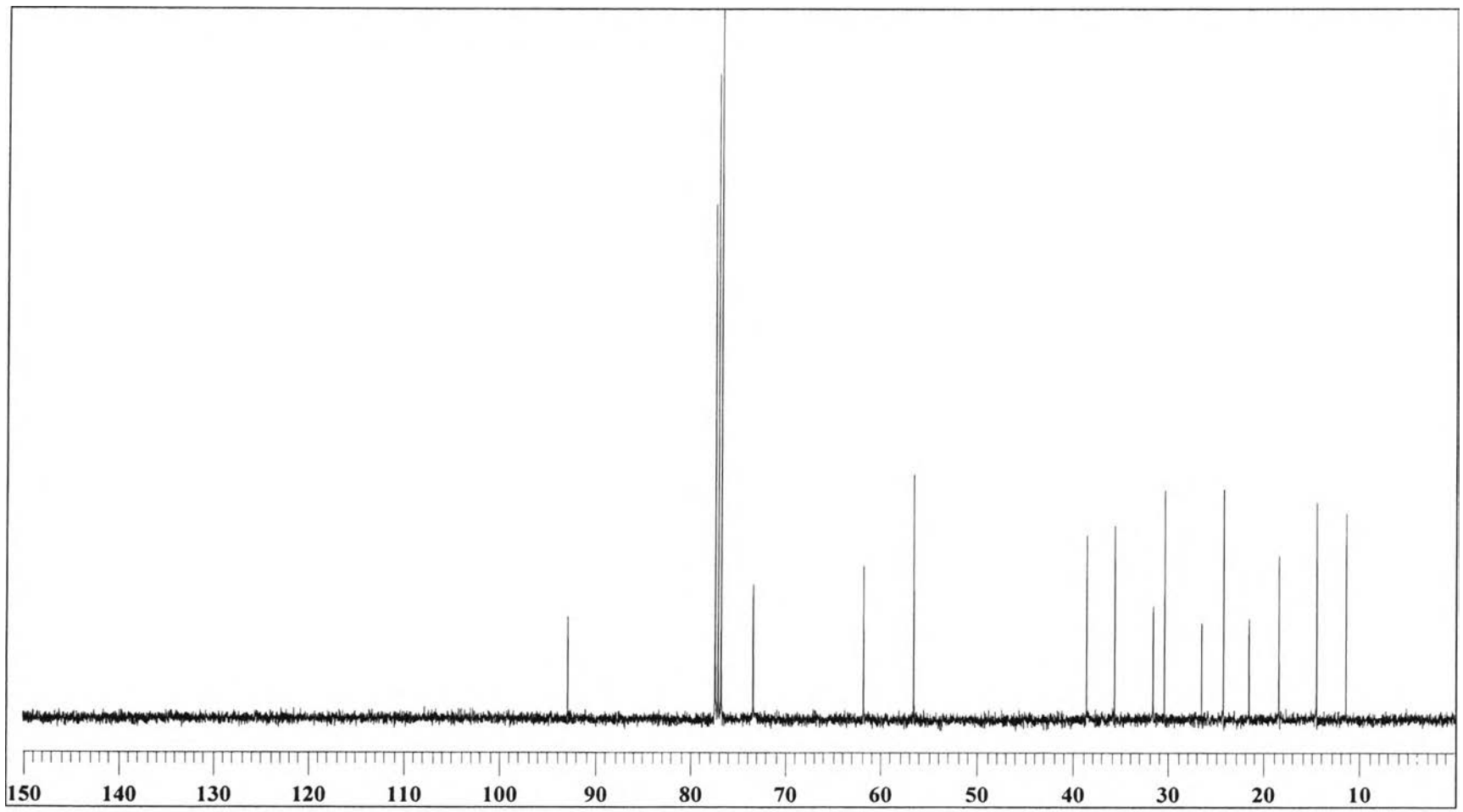


Figure B3 ^{13}C-NMR spectrum of compound **1**

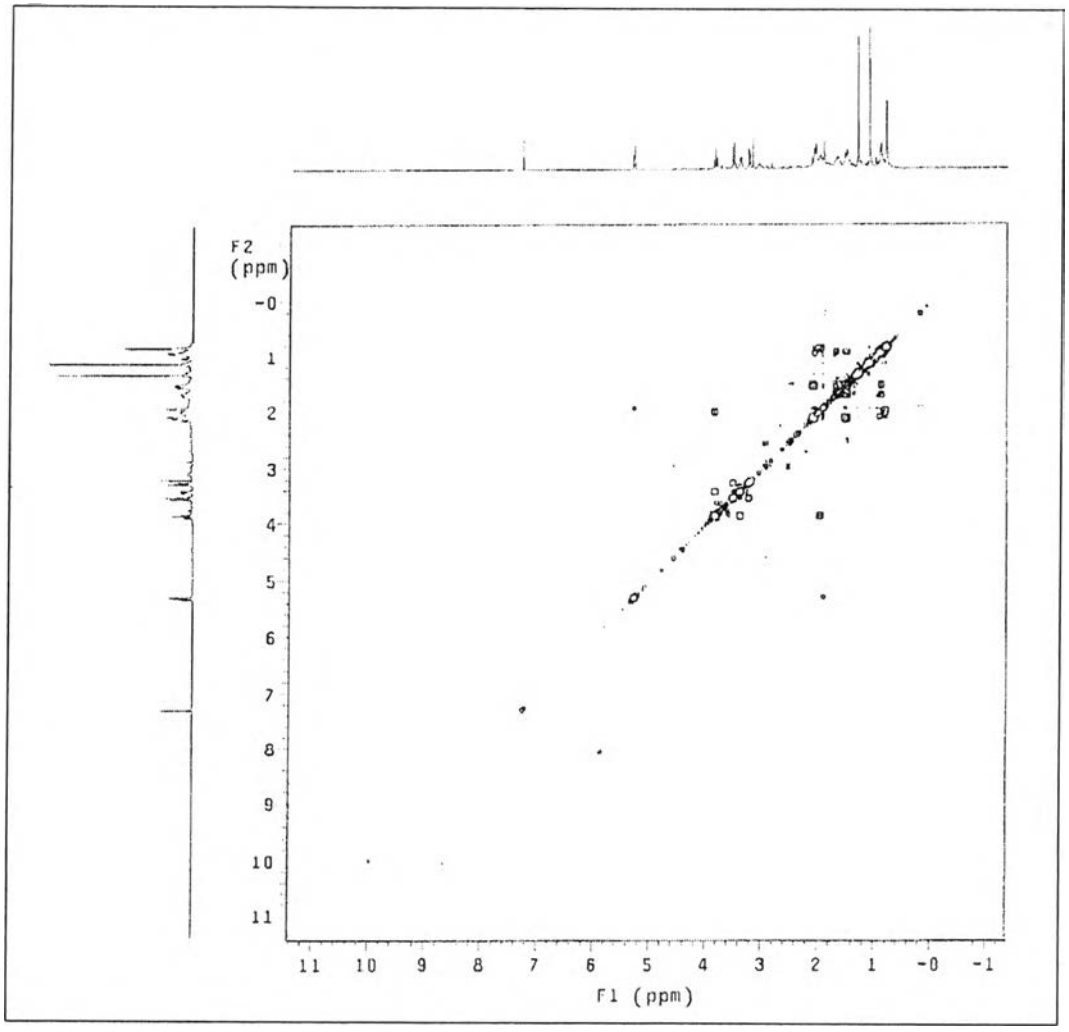


Figure B4 COSY spectrum of compound **1**

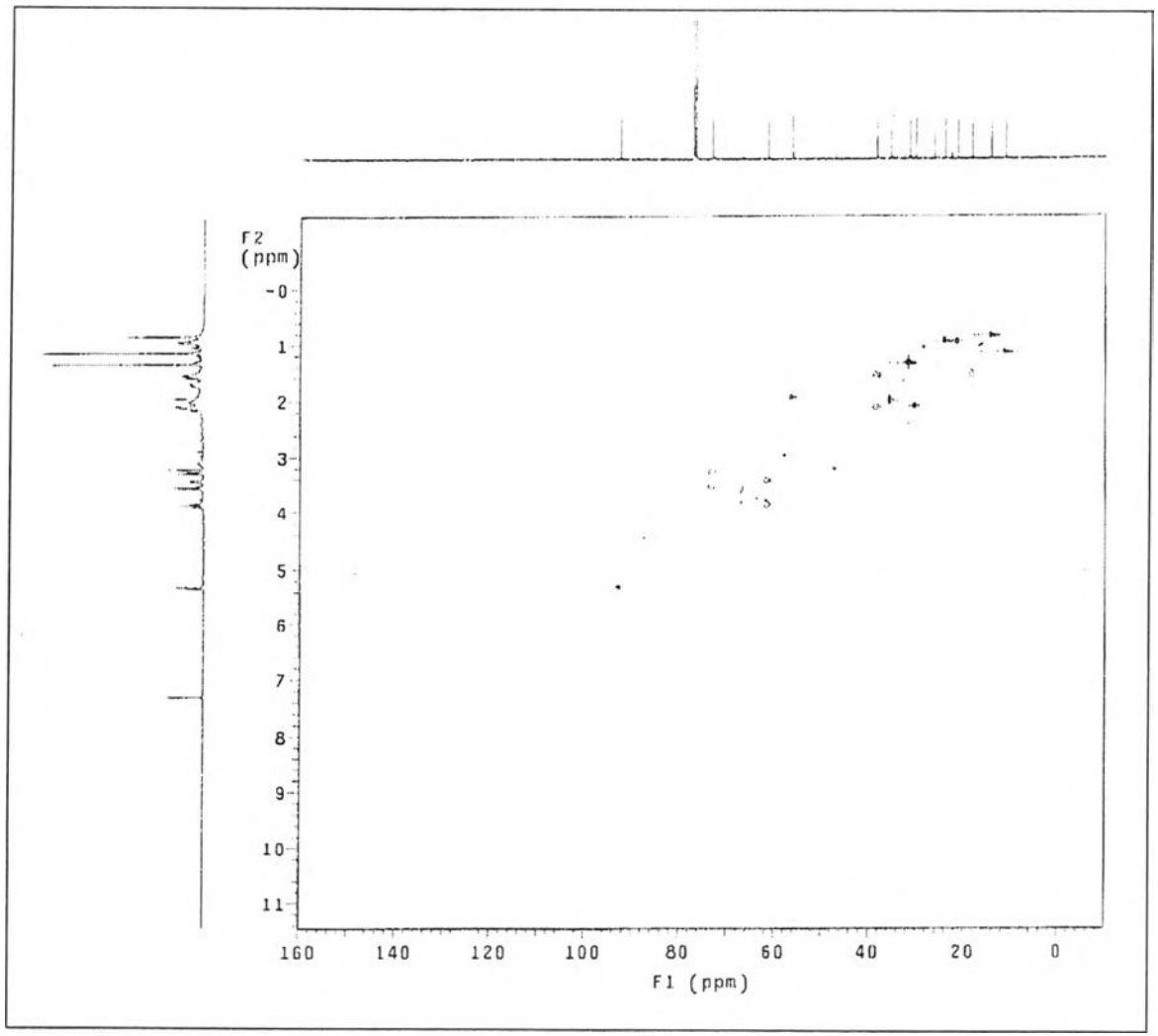


Figure B5 HSQC spectrum of compound **1**

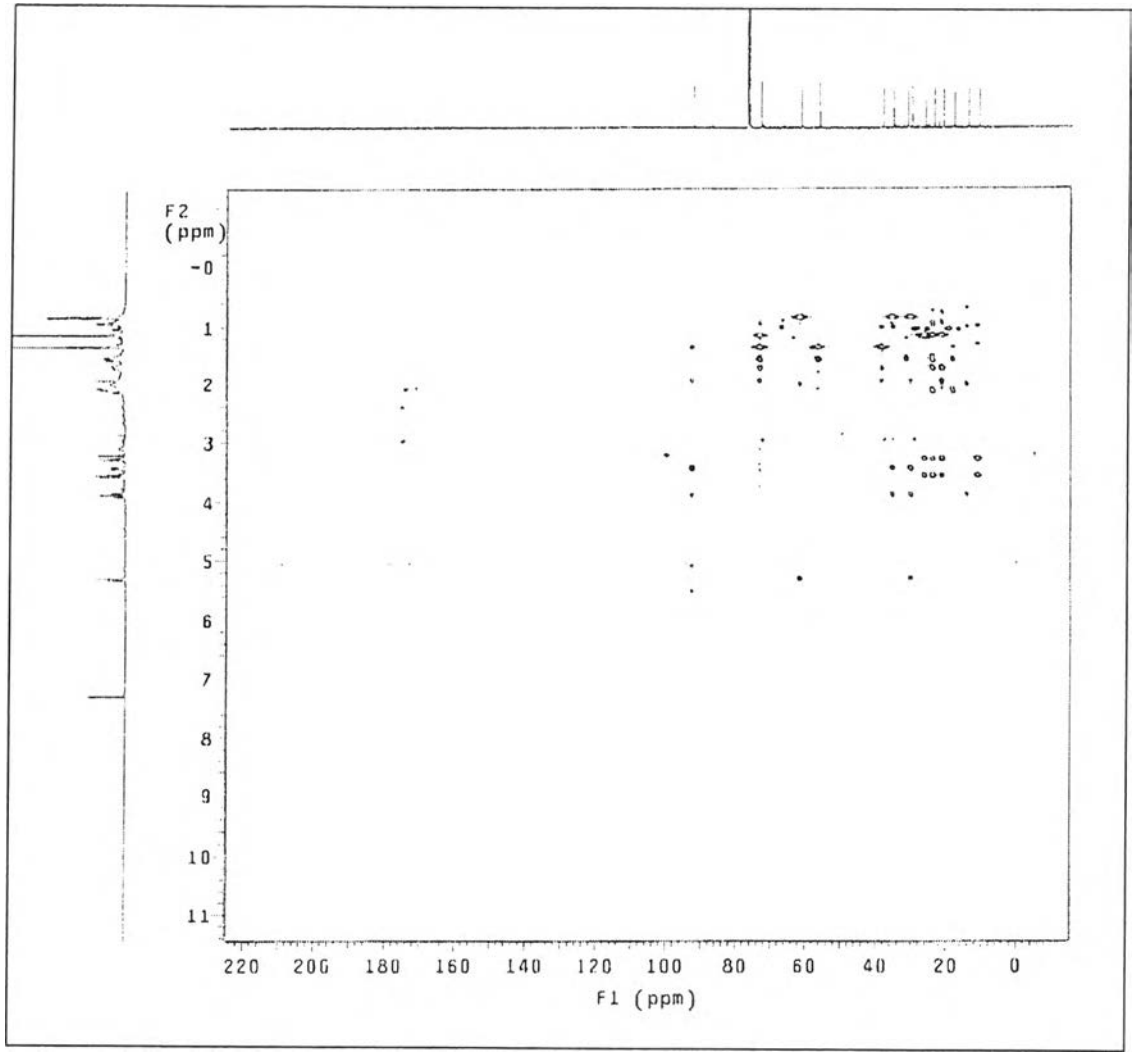


Figure B6 HMBC spectrum of compound **1**

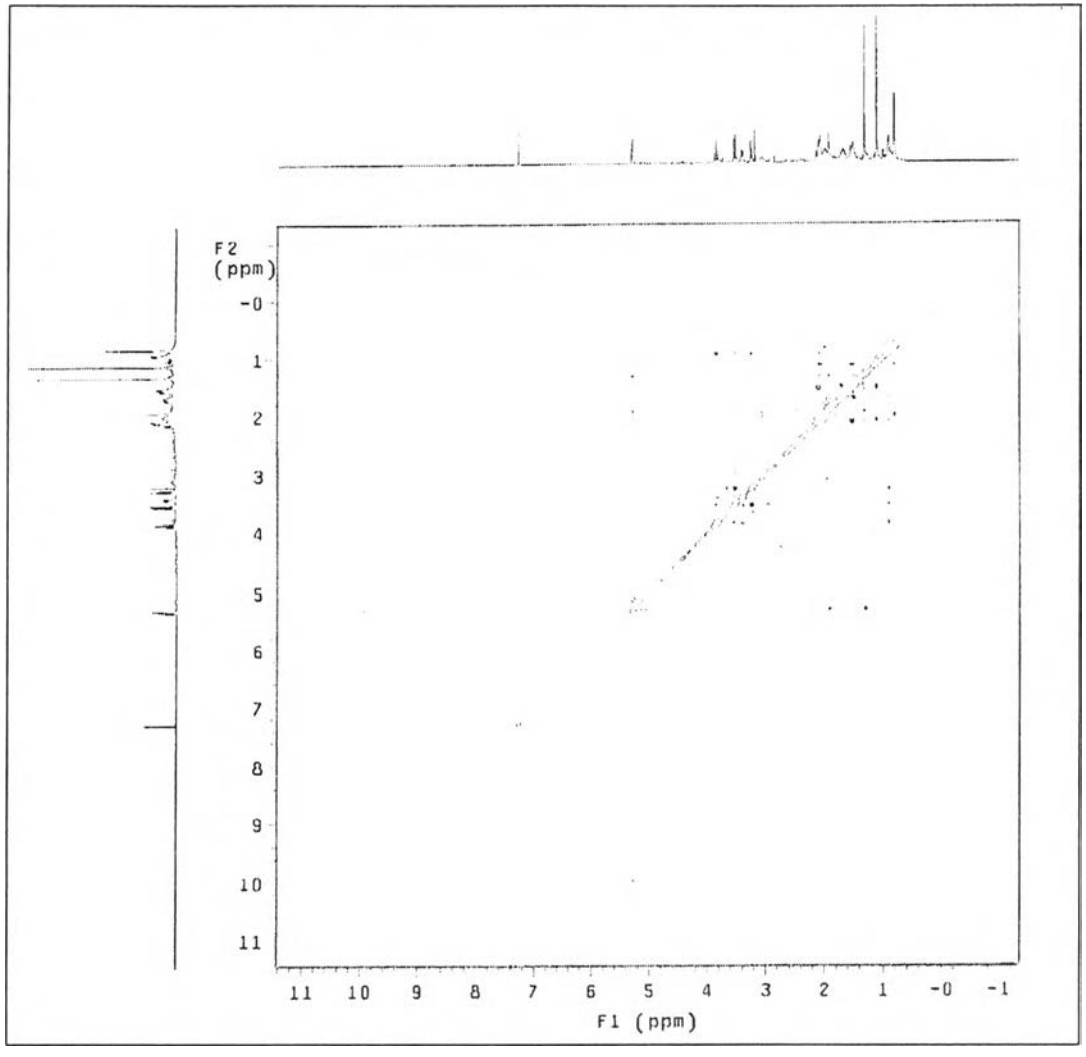


Figure B7 NOESY spectrum of compound **1**

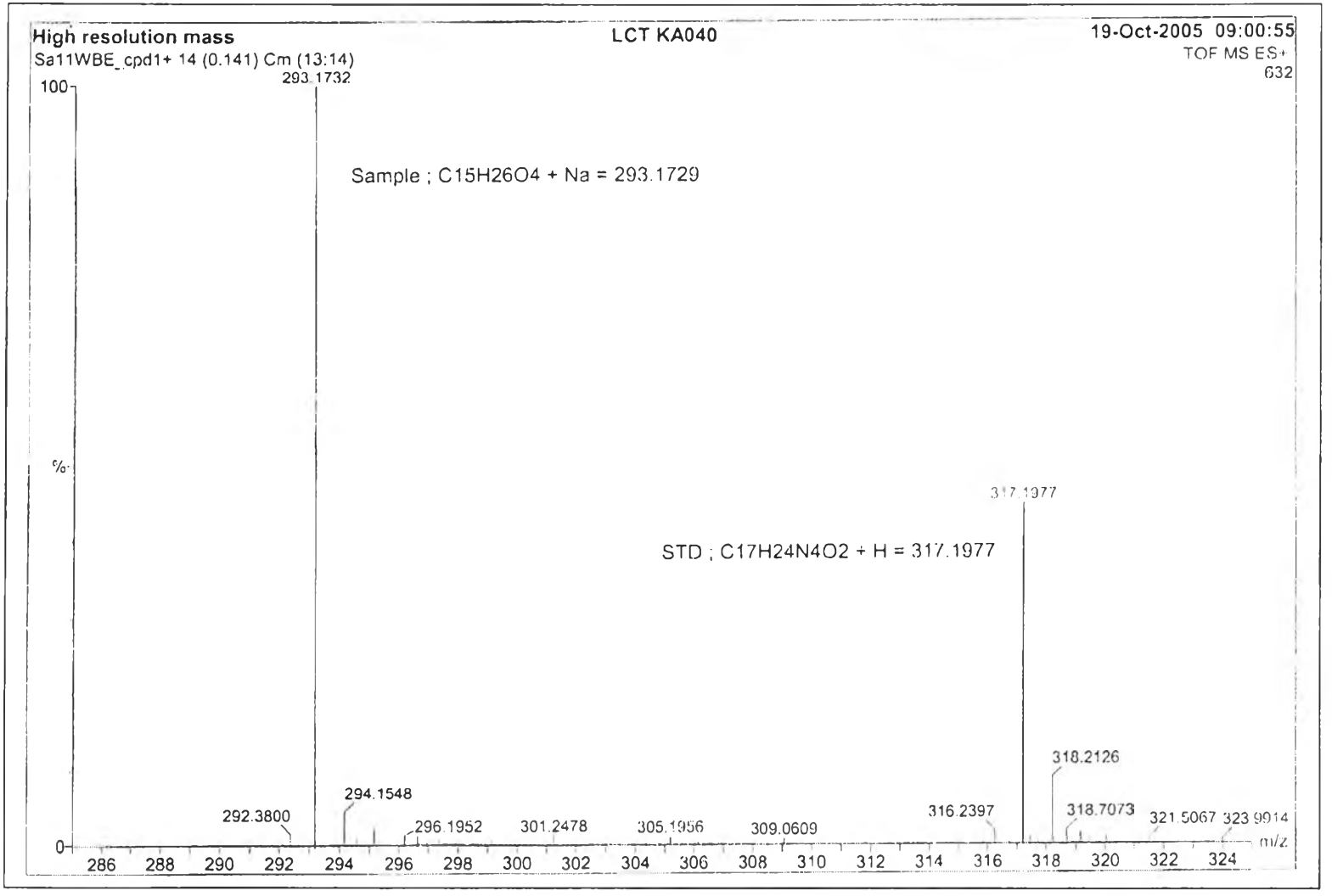


Figure B8 Mass spectrum of compound **1**

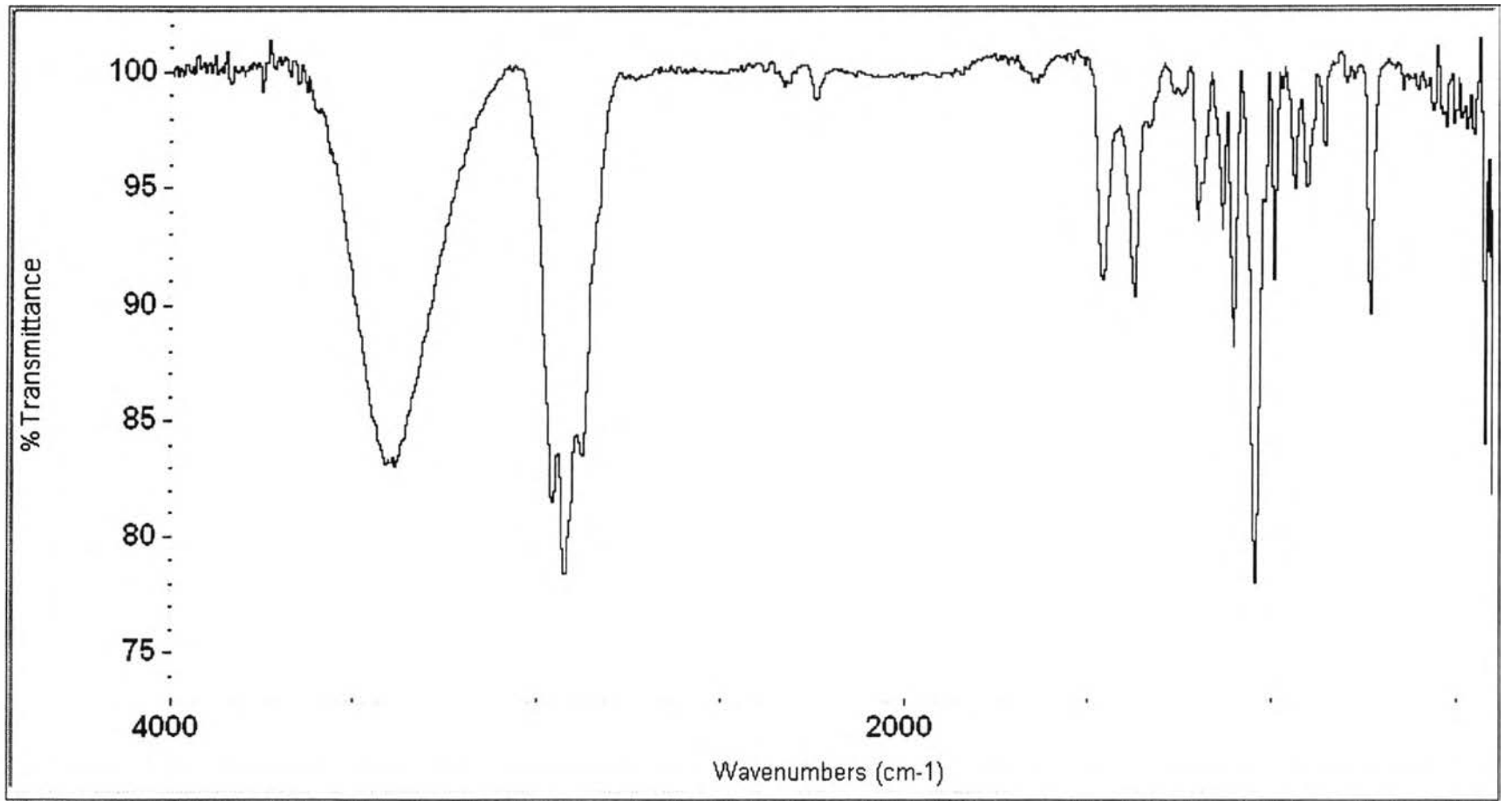


Figure B9 IR spectrum of mixture **2**

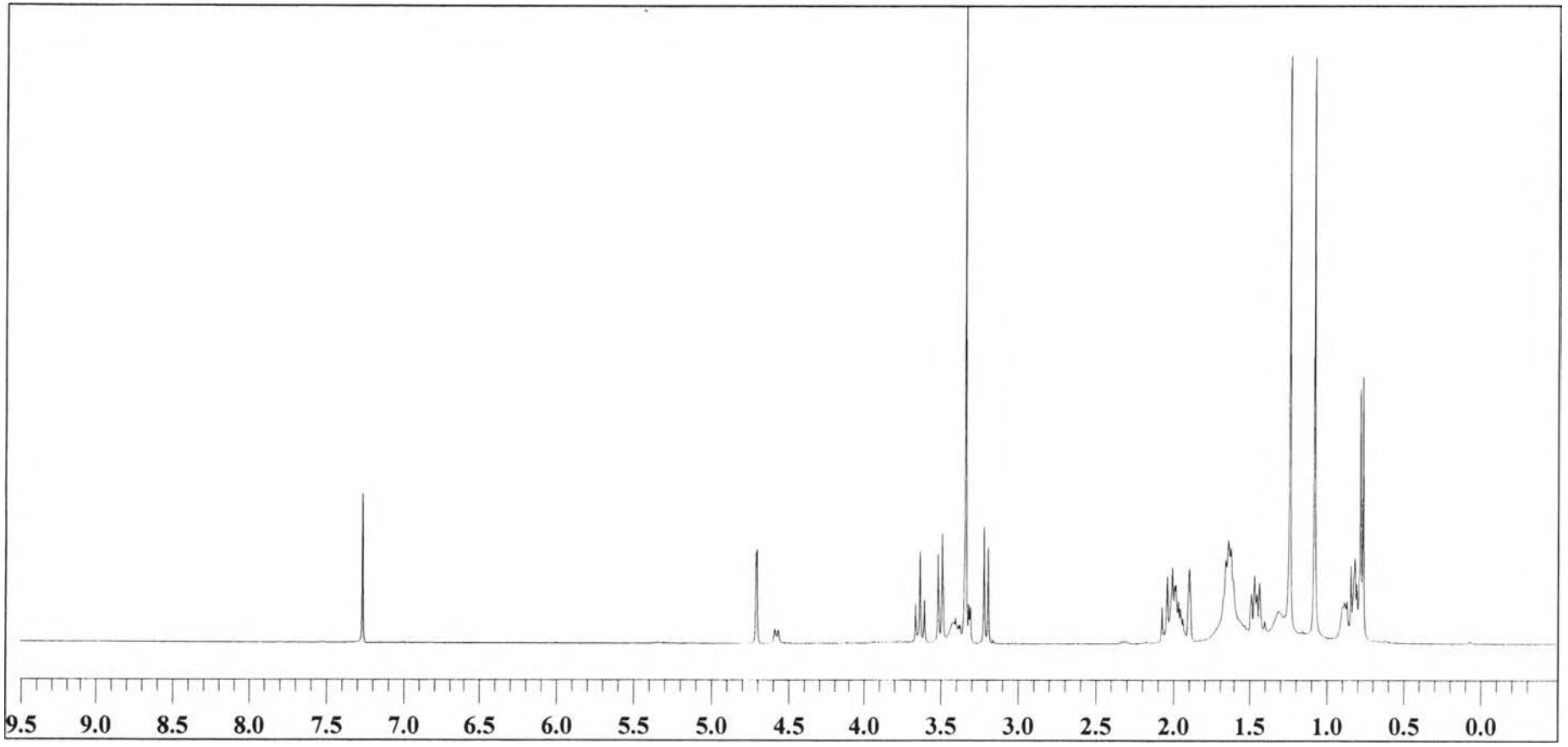


Figure B10 ^{1}H-NMR spectrum of compound **2**

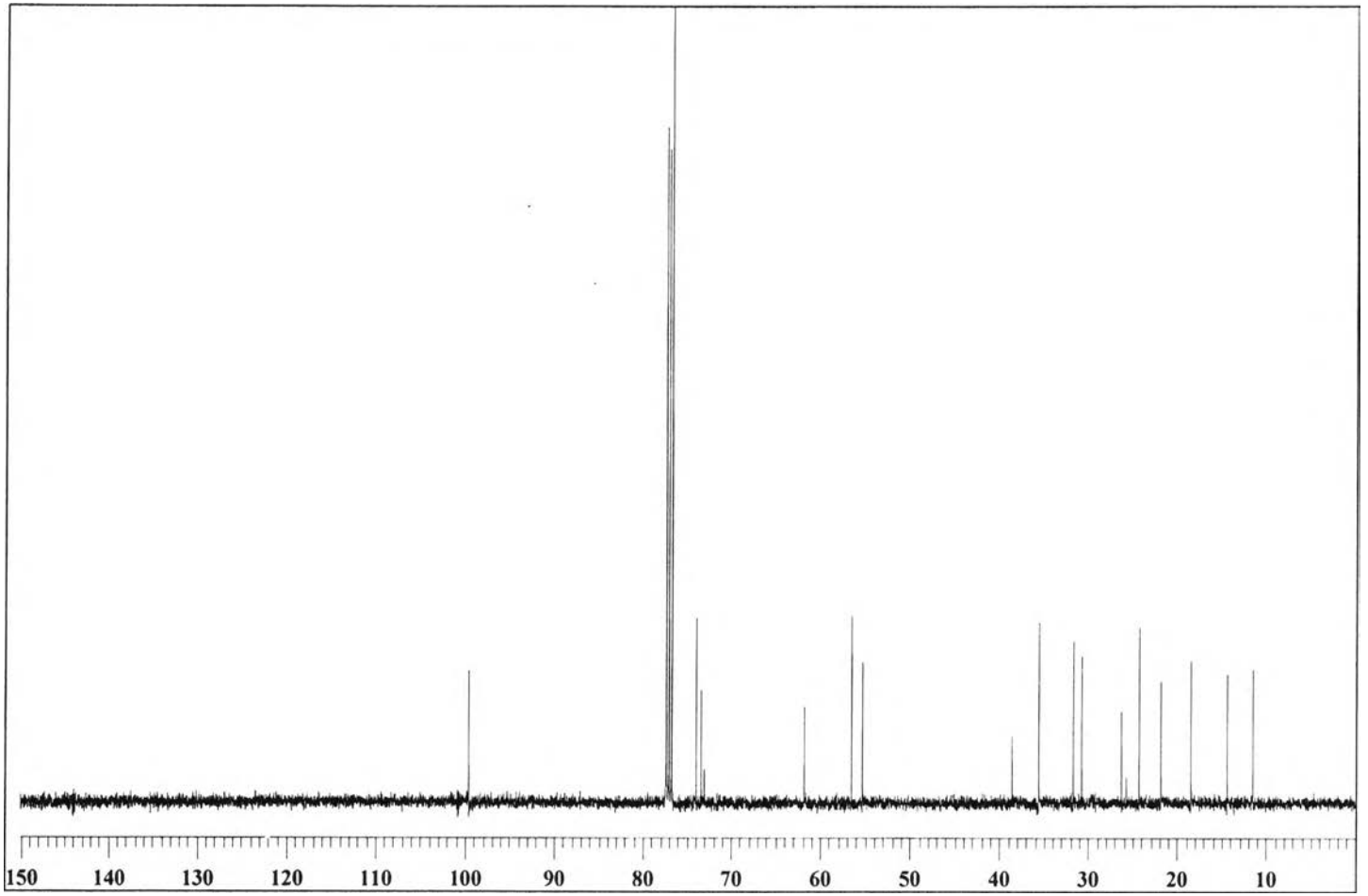


Figure B11 ^{13}C spectrum of compound **2**

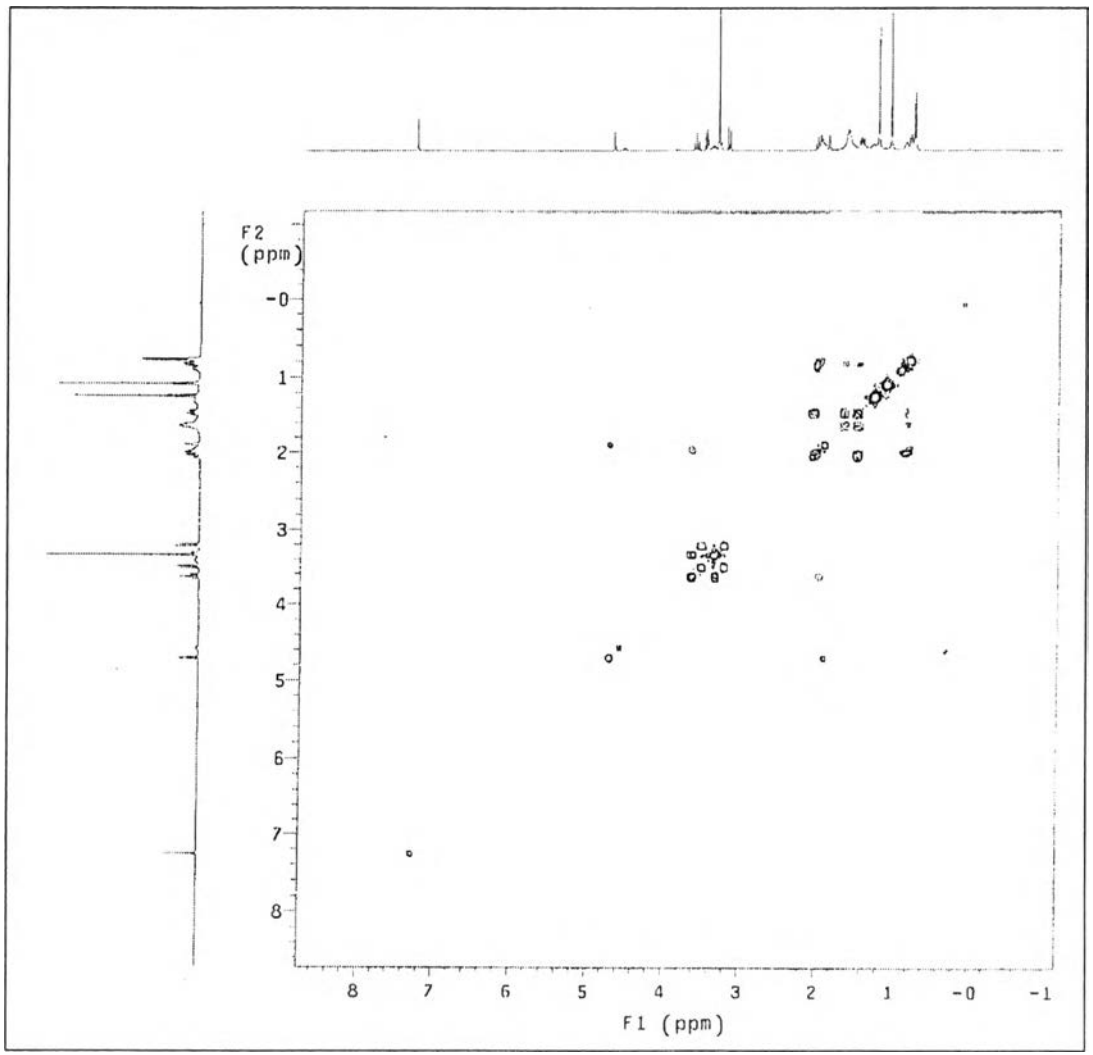


Figure B12 COSY spectrum of compound **2**

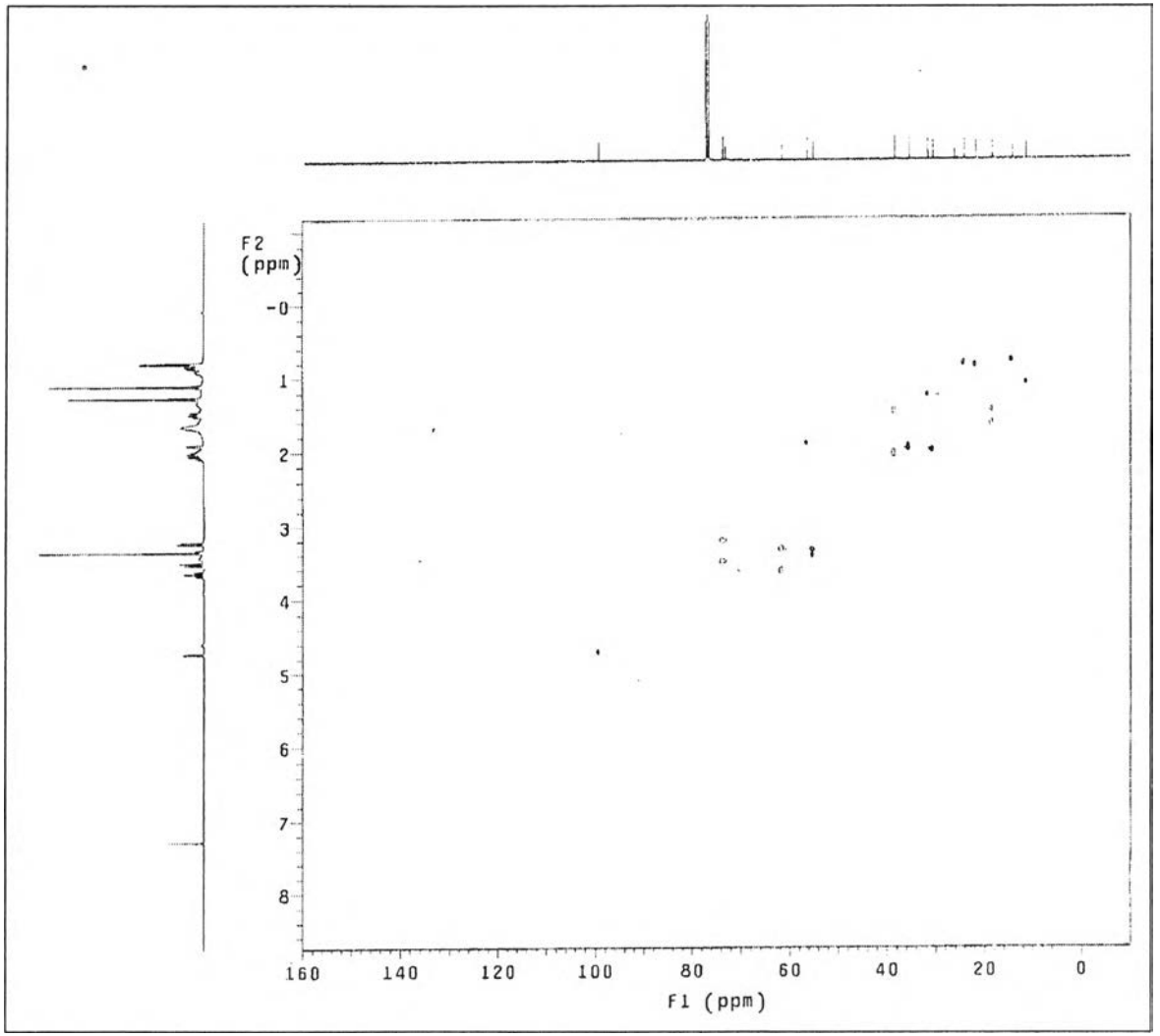


Figure B13 HSQC spectrum of compound **2**

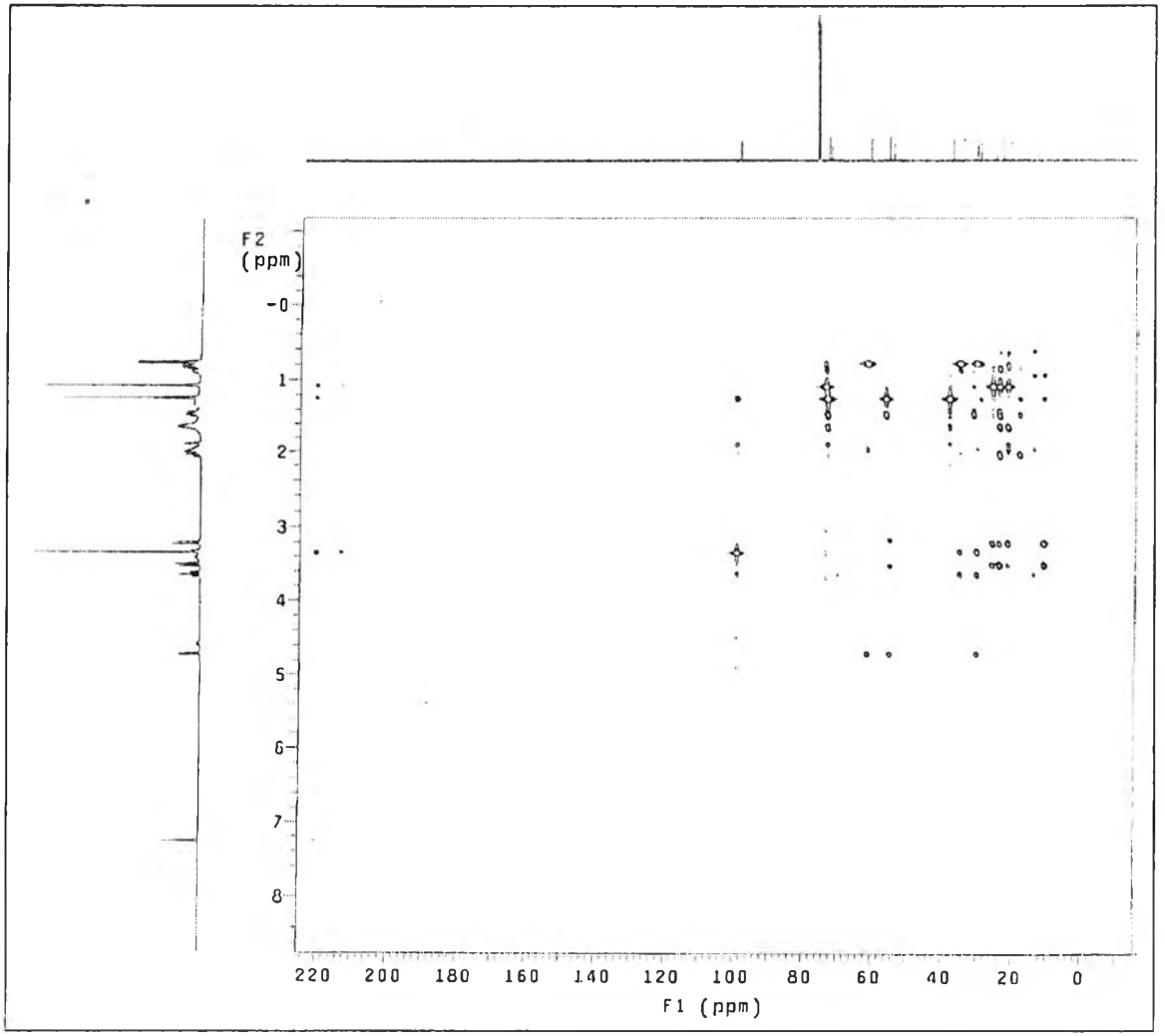


Figure B14 HMBC spectrum of compound **2**

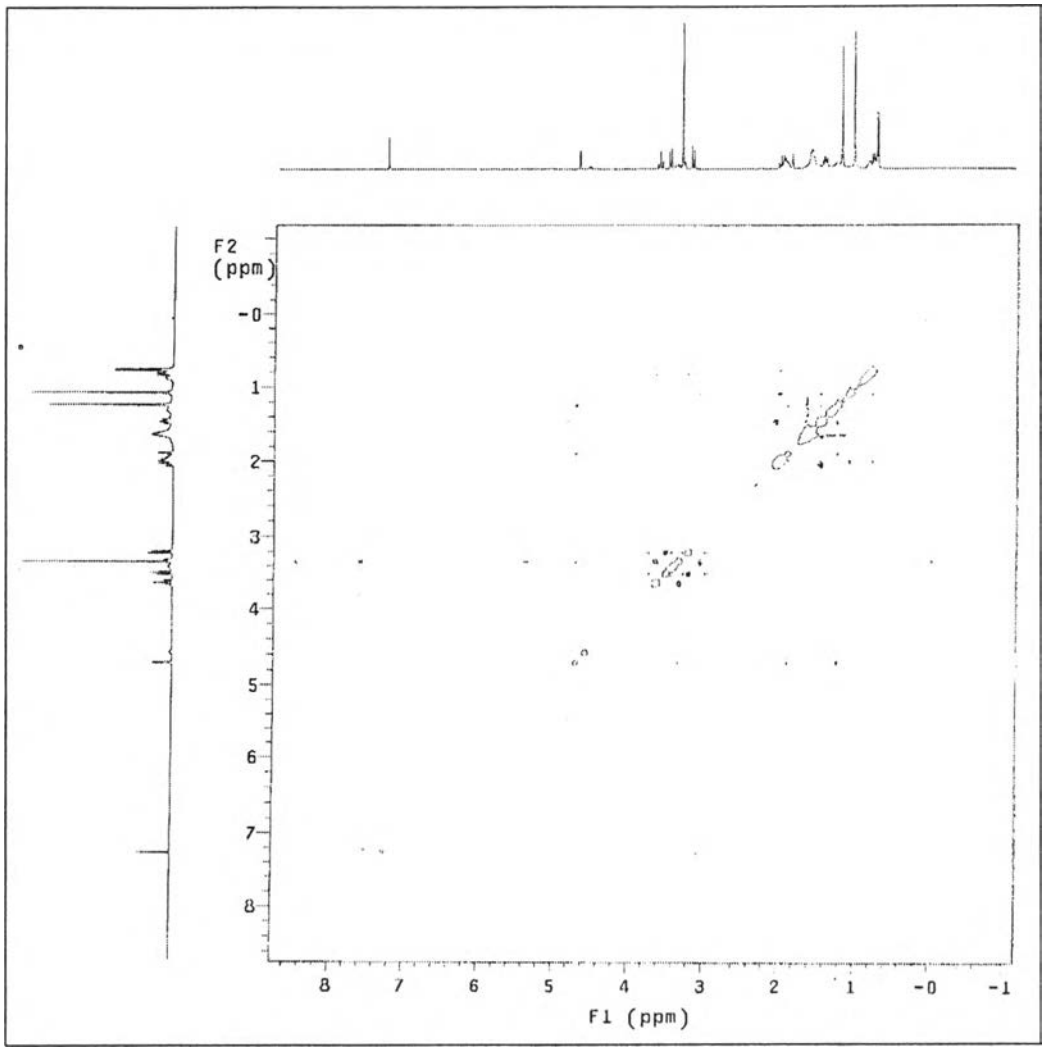


Figure B15 NOESY spectrum of compound **2**

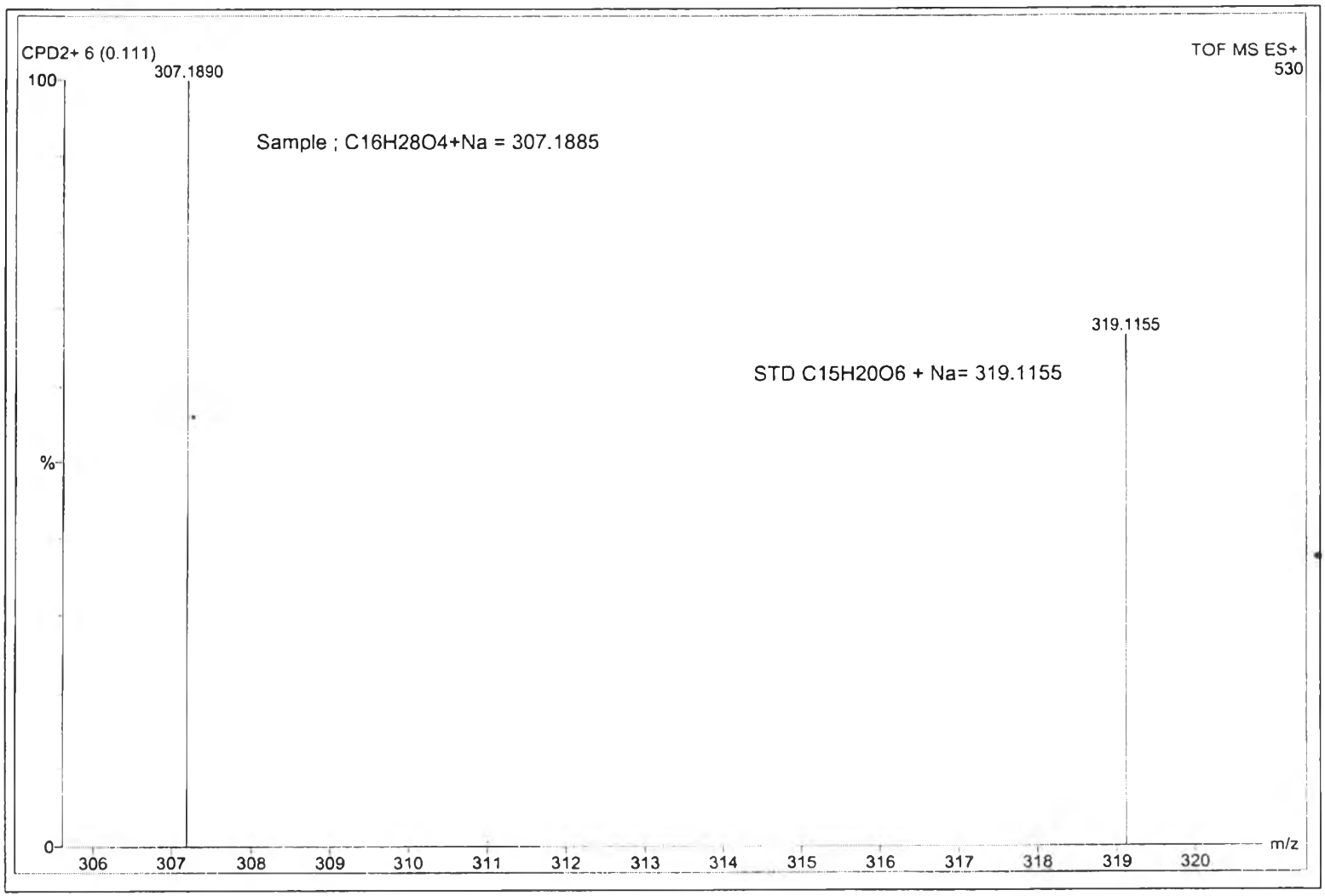


Figure B16 Mass spectrum of compound **2**

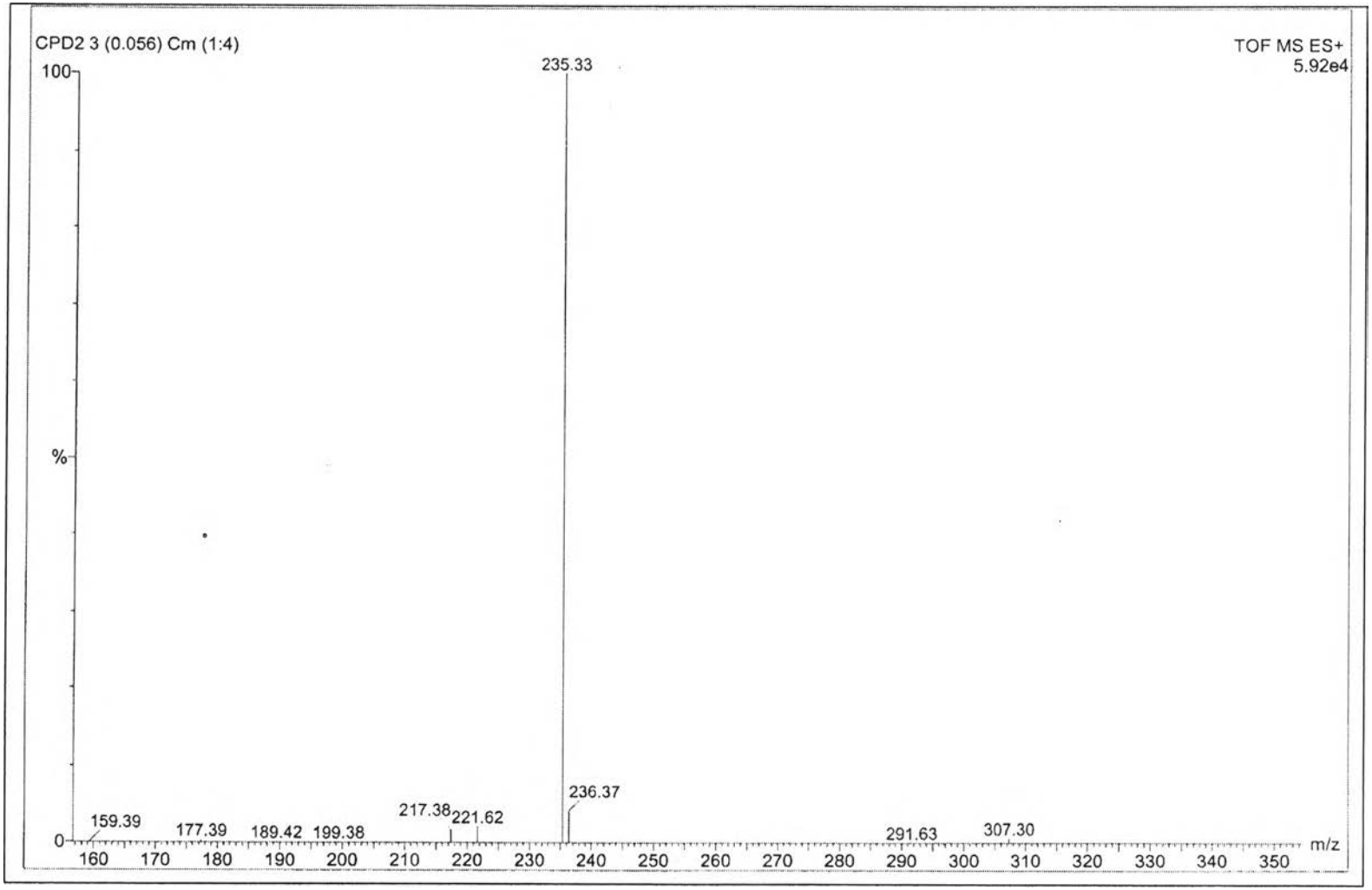


Figure B17 Mass spectrum of compound **3**

Table B1 Crystal data and structure refinement for compound **1**

Empirical formula	$C_{15}H_{26}O_4 \cdot H_2O$
Formula weight	288.37
Temperature (K)	293(2)
Wavelength (A°)	0.71073
Crystal system, space group	orthorhombic, $P2_12_12_1$
Unit cell dimensions	
a, b, c (A°)	6.43650(10), 13.76020(10), 17.9071(2)
alpha, beta, gamma (deg.)	90, 90, 90
Volume (A^3)	1585.99(3)
Z, Calculated density (mg/m^3)	4, 1.208
Absorption coefficient (mm^{-1})	0.089
Reflections collected / unique	11463 / 4579 [*R* (int) = 0.0182]
Refinement method	Full-matrix least-squares on F^2
Goodness-of-fit on F^2	0.834
Final *R* indices [*I*>2sigma (*I*)]	*R1* = 0.0359, *wR2* = 0.1071
R indices (all data)	*R1* = 0.0416, *wR2* = 0.1149
Absolute structure parameter	0.8 (7)

Table B2 Bond lengths [A°] and angles [deg.] for compound **1**

C (1)-C(2)	1.5289(16)
C(1)-C(5)	1.5438(14)
C(1)-C(10)	1.5517(16)
C(2)-O(2)	1.3984(16)
C(2)-O(1)	1.4337(18)
C(3)-O(1)	1.4396(19)
C(3)-C(4)	1.516(2)
C(4)-C(15)	1.526(2)
C(4)-C(5)	1.5434(16)

Table B2 (continued) Bond lengths [A°] and angles [deg.] for compound **1**

C(5)-C(6)	1.5172(14)
C(6)-C(7)	1.5036(16)
C(6)-C(11)	1.5216(15)
C(7)-C(8)	1.5070(18)
C(7)-C(11)	1.5175(16)
C(8)-C(9)	1.5299(18)
C(9)-C(10)	1.5313(16)
C(10)-O(3)	1.4609(14)
C(10)-C(14)	1.5295(16)
C(11)-C(12)	1.5127(17)
C(11)-C(13)	1.5143(19)
C(12)-O(4)	1.4289(17)
C(2)-C(1)-C(5)	111.82(9)
C(2)-C(1)-C(10)	115.41(9)
C(5)-C(1)-C(10)	116.35(9)
O(2)-C(2)-O(1)	112.16(11)
O(2)-C(2)-C(1)	111.35(9)
O(1)-C(2)-C(1)	109.93(10)
O(1)-C(3)-C(4)	111.51(11)
C(3)-C(4)-C(15)	111.87(13)
C(3)-C(4)-C(5)	109.19(11)
C(15)-C(4)-C(5)	112.95(11)
C(6)-C(5)-C(1)	115.54(9)
C(6)-C(5)-C(4)	110.80(9)
C(1)-C(5)-C(4)	105.77(9)
C(7)-C(6)-C(5)	122.52(10)
C(7)-C(6)-C(11)	60.21(8)
C(5)-C(6)-C(11)	124.42(10)

Table B2 (continued) Bond lengths [A°] and angles [deg.] for compound **1**

C(6)-C(7)-C(8)	119.07(9)
C(6)-C(7)-C(11)	60.49(8)
C(8)-C(7)-C(11)	124.05(11)

C(7)-C(8)-C(9)	112.19(11)
C(8)-C(9)-C(10)	117.75(10)
O(3)-C(10)-C(14)	107.24(9)
O(3)-C(10)-C(9)	106.10(10)
C(14)-C(10)-C(9)	108.36(10)
O(3)-C(10)-C(1)	106.12(9)
C(14)-C(10)-C(1)	110.51(10)
C(9)-C(10)-C(1)	117.93(9)
C(12)-C(11)-C(13)	113.61(11)
C(12)-C(11)-C(7)	117.36(11)
C(13)-C(11)-C(7)	120.79(12)
C(12)-C(11)-C(6)	112.61(11)
C(13)-C(11)-C(6)	122.77(11)
C(7)-C(11)-C(6)	59.30(7)
O(4)-C(12)-C(11)	113.94(13)
C(3)-O(1)-C(2)	116.28(9)

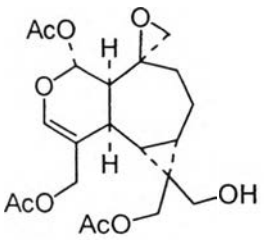
APPENDIX C

Table C1 The chemical compounds of secoaromadendrane, sources, biological activities and references

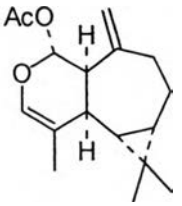
No.	Compounds	Plant materials	Biologiacl activities	References
1	Plagiochiline G	*Plagiochila ovalifolia*		Asakawa et al.,1980a
2	Plagiochiline H	*Plagiochila ovalifolia*		Asakawa et al.,1980a
3	Plagiochiline I	*Plagiochila ovalifolia*		Asakawa et al.,1980a
4	Plagiochiline A	*Plagiochila ovalifolia* Mitt.	Cytotoxic activity against P-388 murine leukemia tumer cells with IC_{50} 3.00 μg/ml	Toyota et al., 1998
		Plagiochiline yokogurensis	Inhibits the feeding of African army worm	AsaKawa et al., 1980b
5	Plagiochilide	*Plagiochiline yokogurensis*		AsaKawa et al., 1980b
6	Furano plagiochilal	*Plagiochiline yokogurensis*		AsaKawa et al., 1980b
7	Hanegokedial (Plagiochilal A)	*Plagiochila hattoriana*		AsaKawa et al., 1980b
8	9α-Acetoxyovalifoline	*Plagiochila semidecurrens*	Inhibits plant growth	Matsuo et al., 1981
9	Plagiochilal B	*Plagiochila fruticosa*	Accelerated morphologically neuritic sprouting and enhance choline acetyltransferase activity at 10^{-5} M on primary neuronal cell culture of fetal rat cerebral hemisphere	Fukuyama and Asakawa, 1991

Table C1 The chemical compounds of secoaromadendrane, sources, biological activities and references (continued)

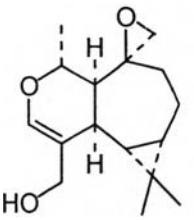
No.	Compounds	Plant materials	Biologiacl activities	References
10	Plagiochilines J	*Plagiochila fruticosa*		Fukuyama and Asakawa, 1991
11	Plagiochilines K	*Plagiochila fruticosa*		Fukuyama and Asakawa, 1991
12	Plagiochiline O	*Plagiochila cristata*		Valcic et al., 1997
13	Plagiochiline P	*Plagiochila cristata*		Valcic et al., 1997
14	Plagiochiline Q	*Plagiochila cristata*		Valcic et al., 1997
15	Plagiochiline C	*Plagiochila cristata*		Valcic et al., 1997
16	Plagiochiline R	*Plagiochila ericicola*		Valcic et al., 1997
17	Plagiochiline S	*Plagiochila adianthoides*		Valcic et al., 1997
18	14-hydroxyplagiochiline-A-15-yl 2E,4E-dodecadienoate	*Plagiochila ovalifolia*	Cytotoxic activity against P-388 murine leukemia tumer cells with IC_{50} 0.05 μg/ml	Toyota et al., 1998
19	Plagiochiline-A-15-yl octanoate	*Plagiochila ovalifolia*	Cytotoxic activity against P-388 murine leukemia tumer cells with IC_{50} 0.05 μg/ml	Toyota et al., 1998



Plagiochiline G



Plagiochiline H



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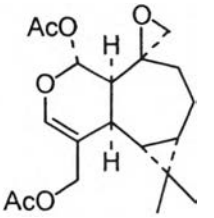

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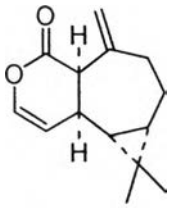

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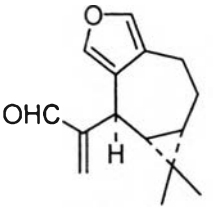
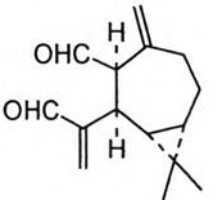
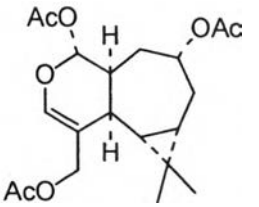


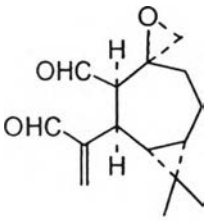
Furano plagiochilal



Hanegokedial
(Plagiochilal A)



9 -Acetoxyovalifoline



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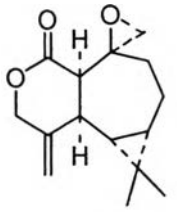

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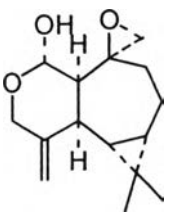

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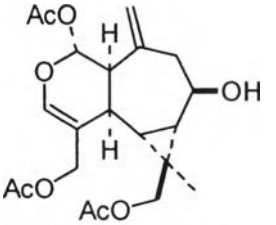

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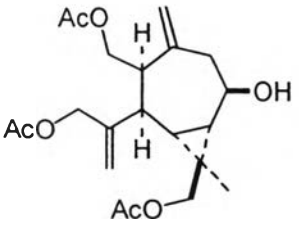
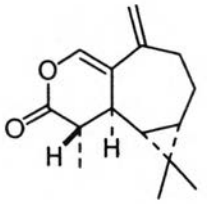


Plagiochiline P



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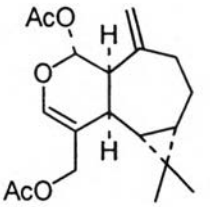
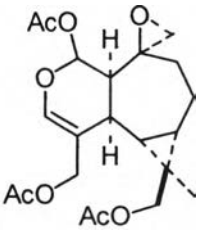
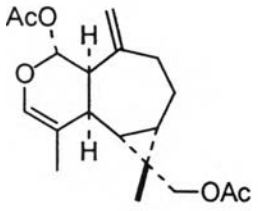


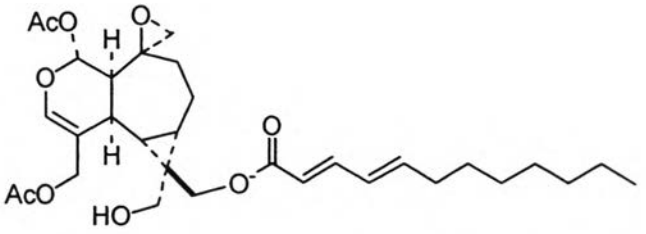
Plagiochiline C



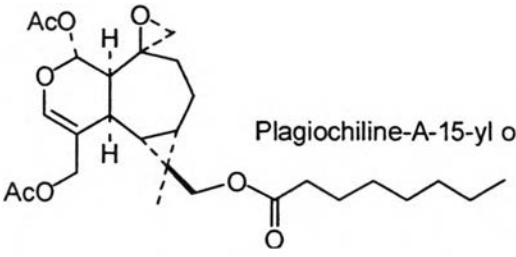
Plagiochiline R



Plagiochiline S



14-hydroxyplagiochiline-A-15-yl 2E,4E-dodecadienoate



Plagiochiline-A-15-yl octanoate

Figure C1 Chemical structures of secoaromadendrane

VITA

Miss Sunisa Suwancharoen was born on June 10, 1979 in Trat Province, Thailand. She graduated with a Bachelor Degree of Science in Chemistry from Burapha University in 2001. In later year she was graduated with Graduate Diploma in Teaching from Burapha University. Then she was admitted into a Master Degree program in organic chemistry at Department of Chemistry, Faculty of Science Chulalongkorn University in 2003.