Supporting information

First Total Synthesis of Nhatrangin A

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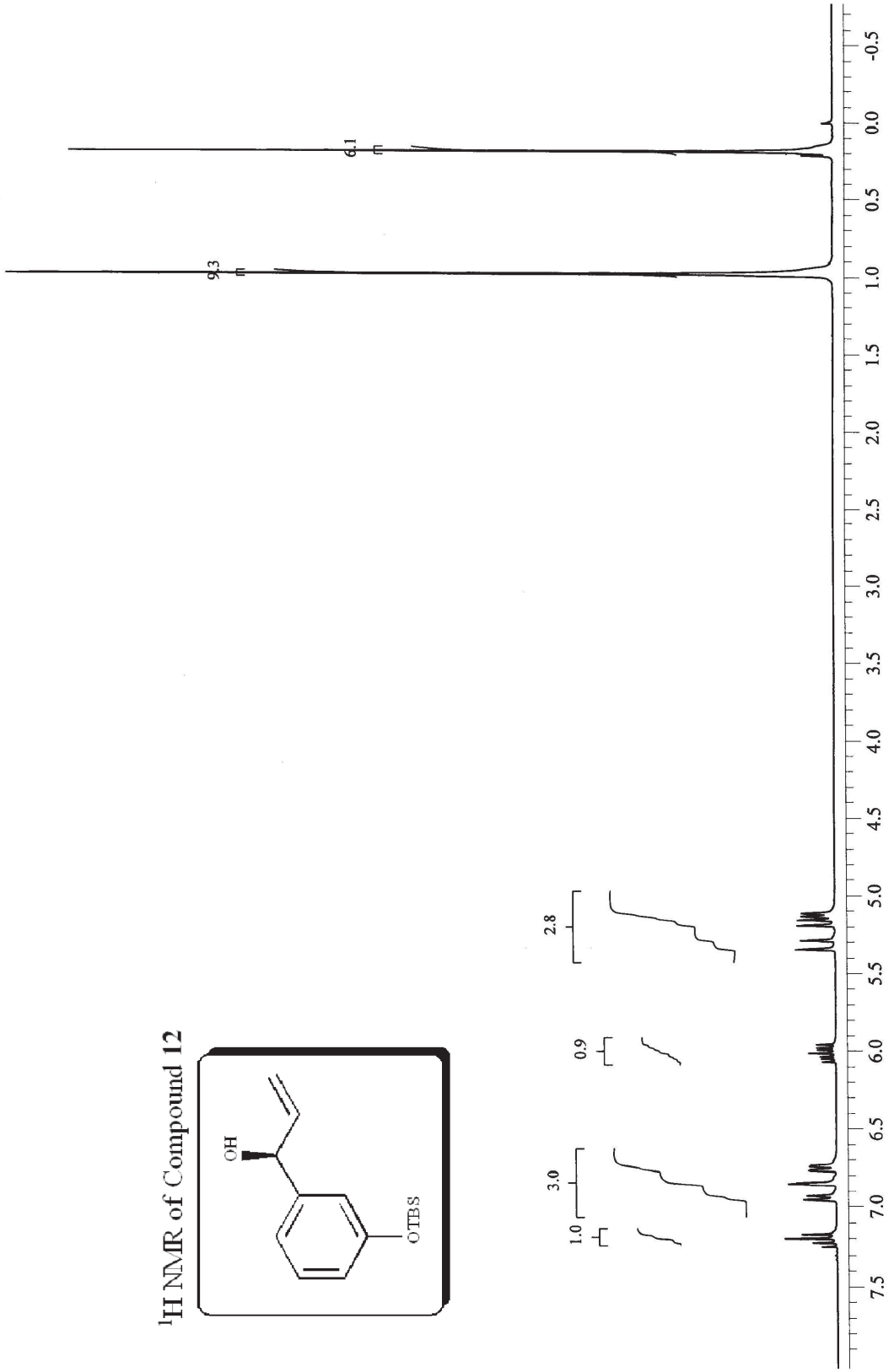
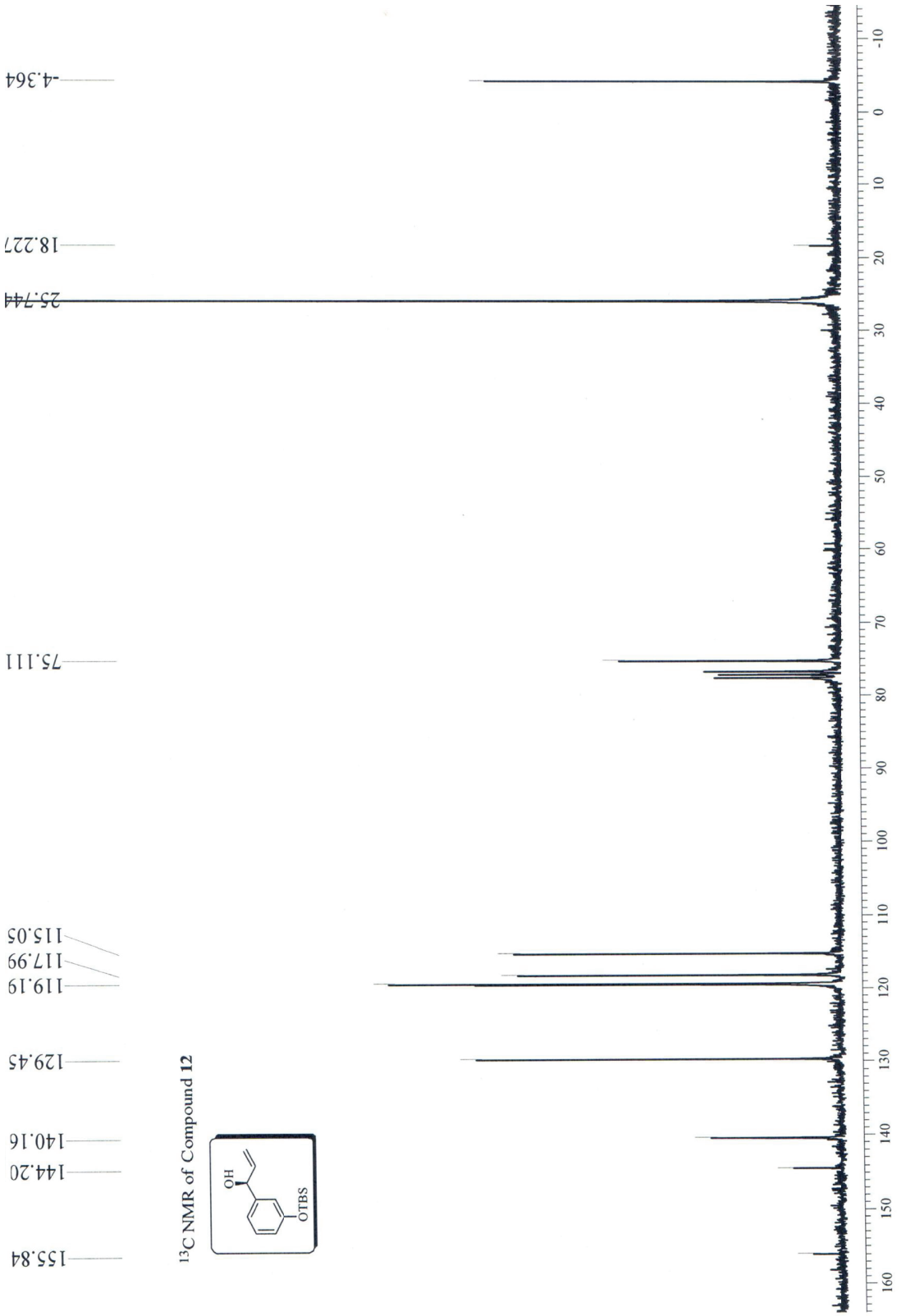
^{1}H NMR of Compound 12





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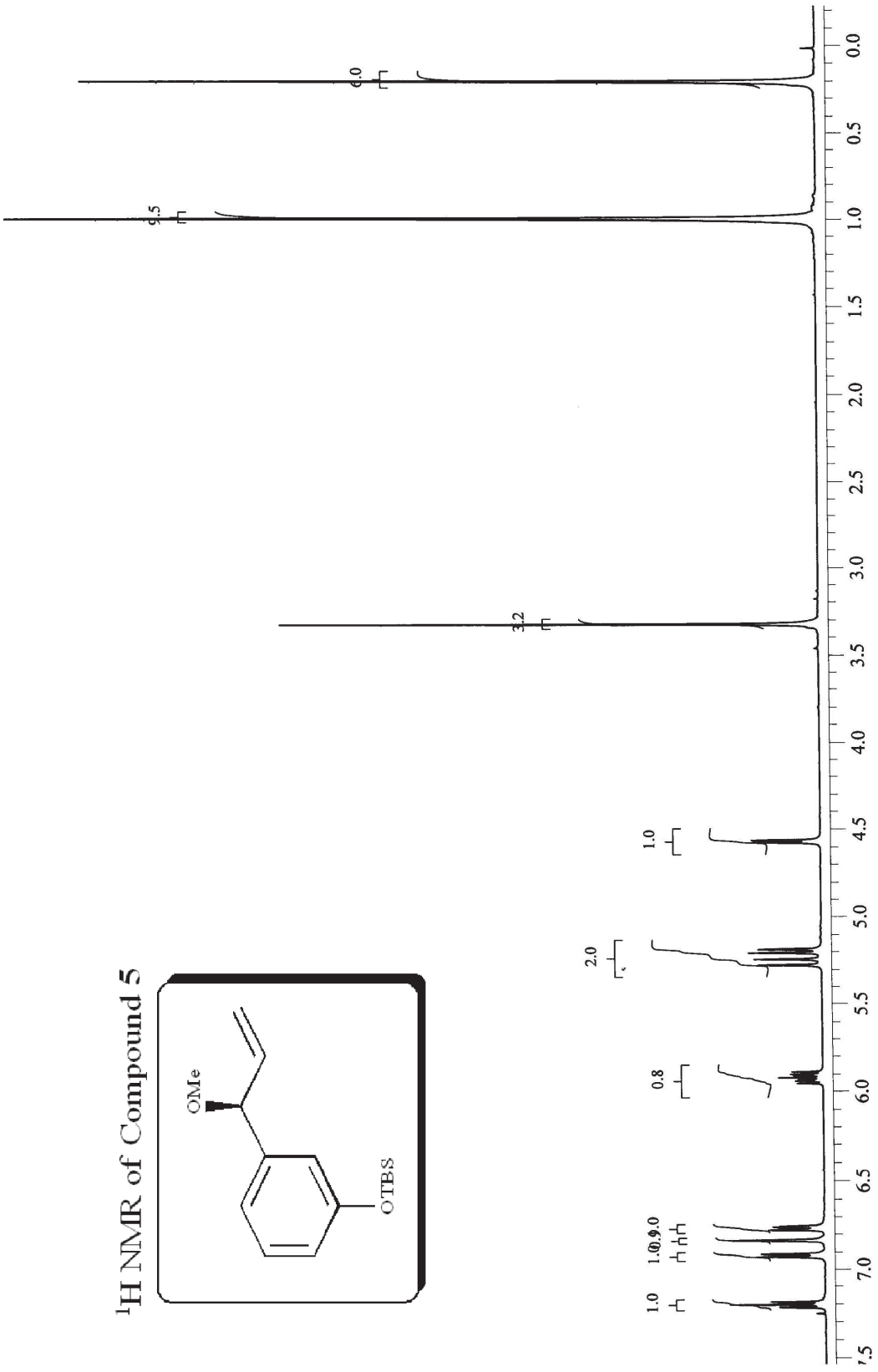
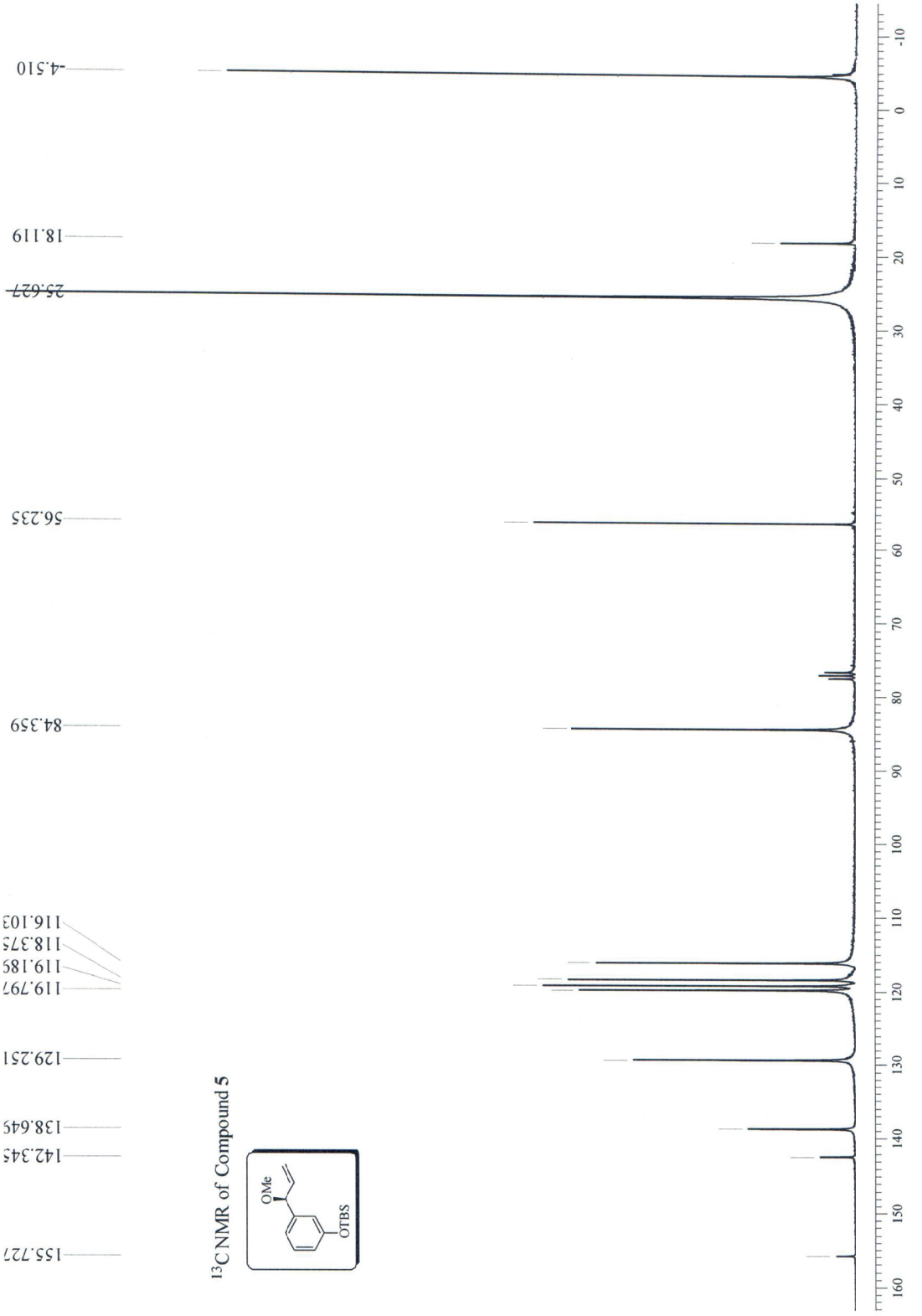
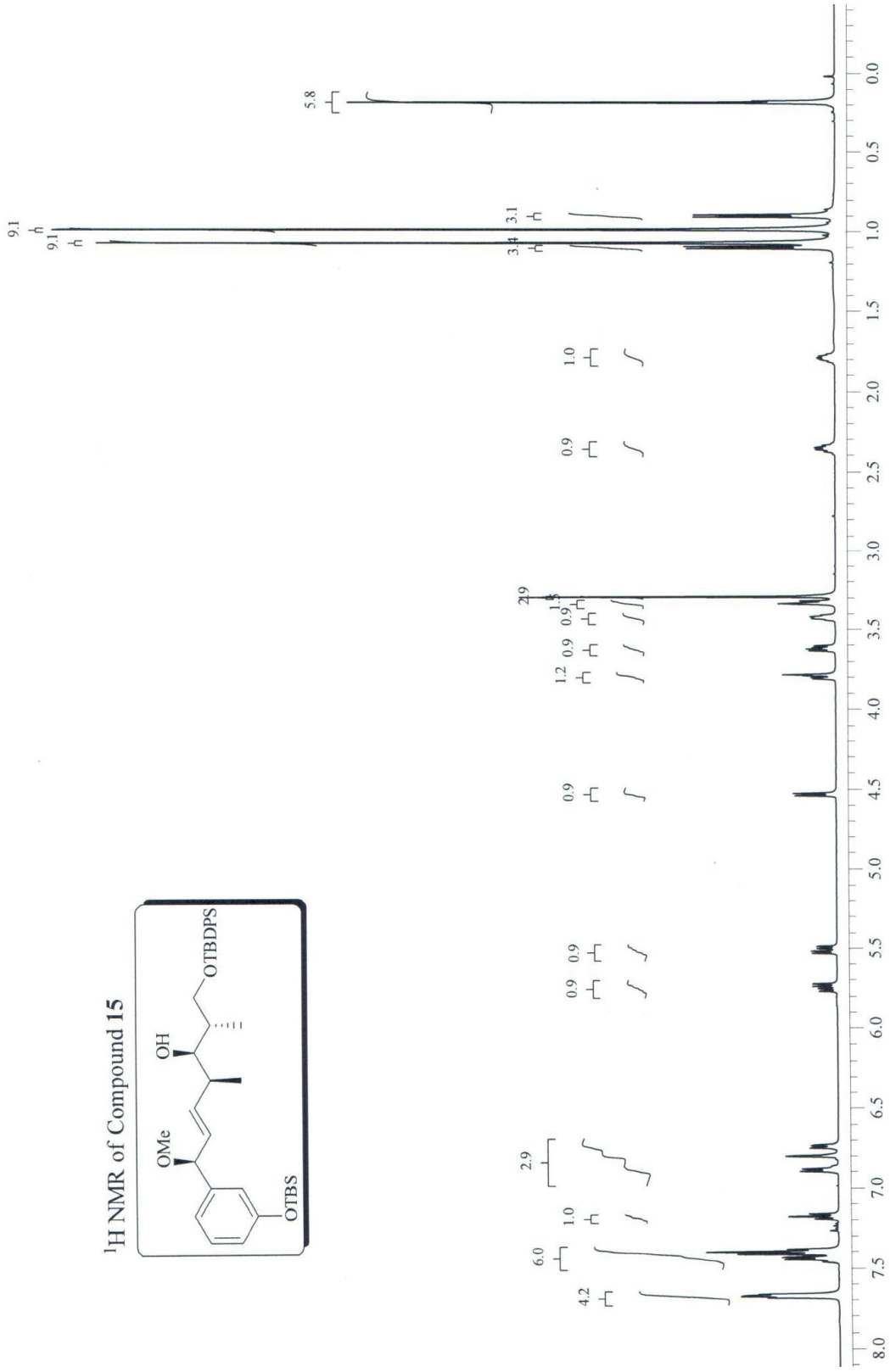
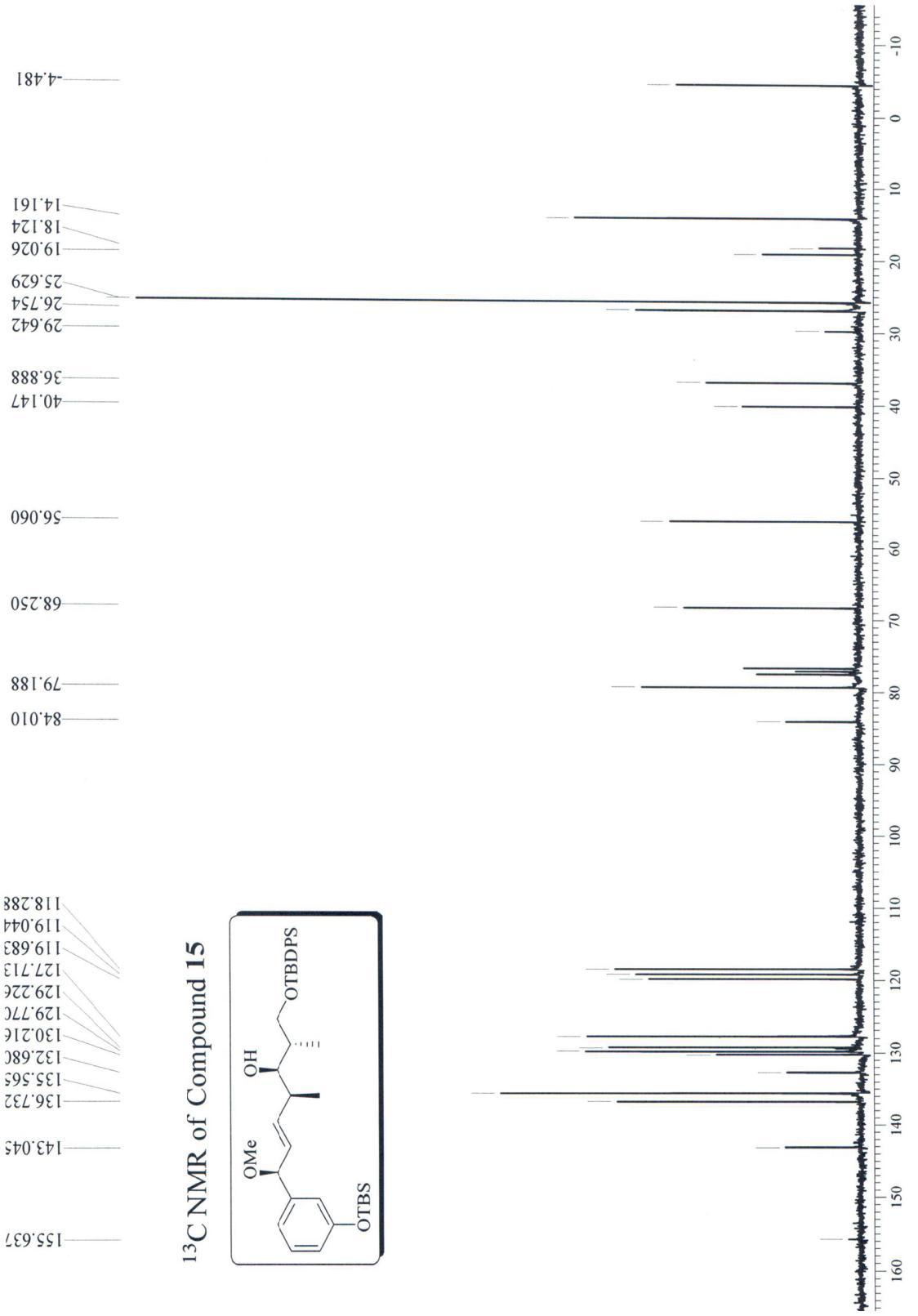




^{13}C NMR of Compound **5**

^{1}H NMR of Compound **15**





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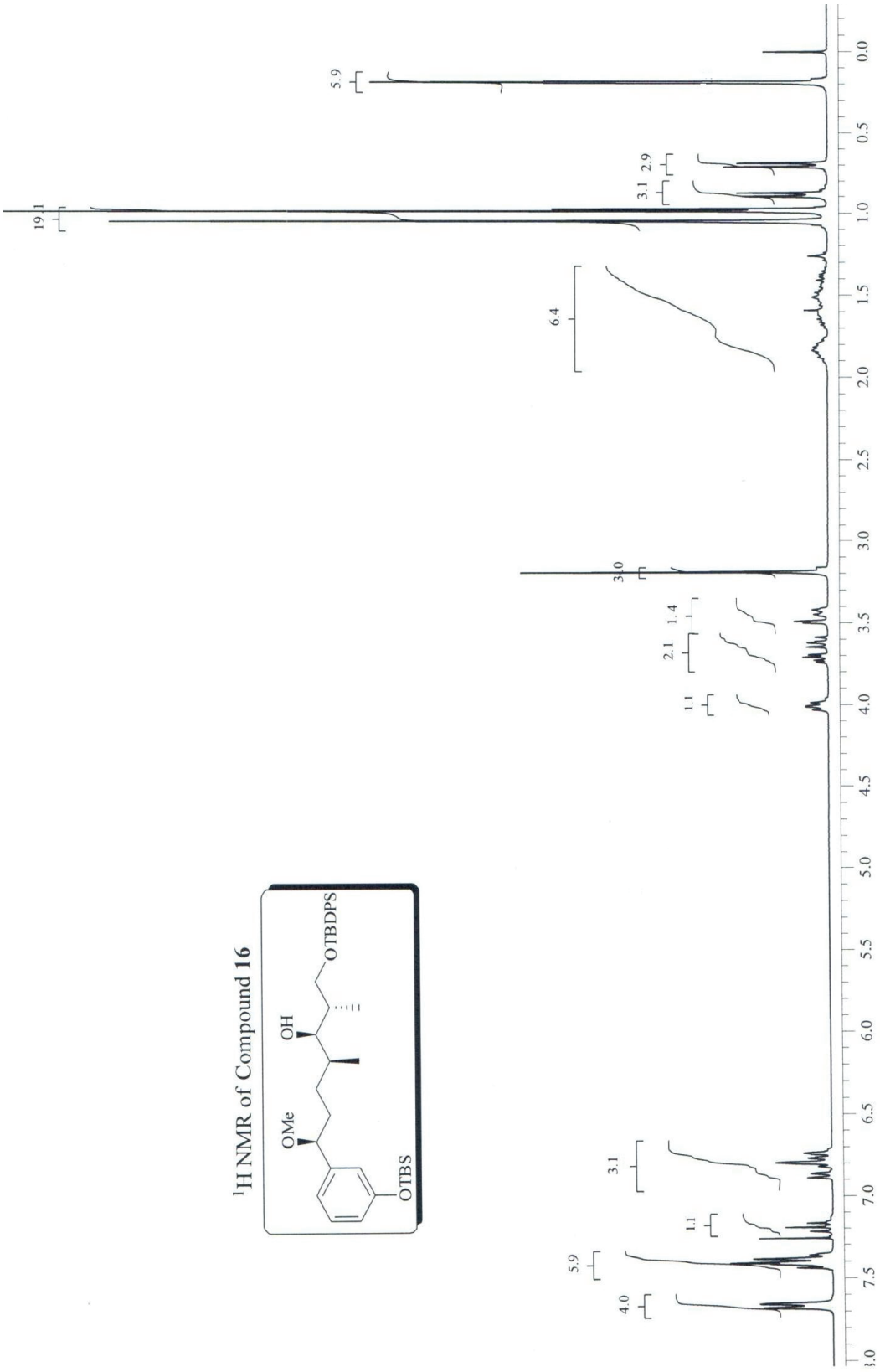
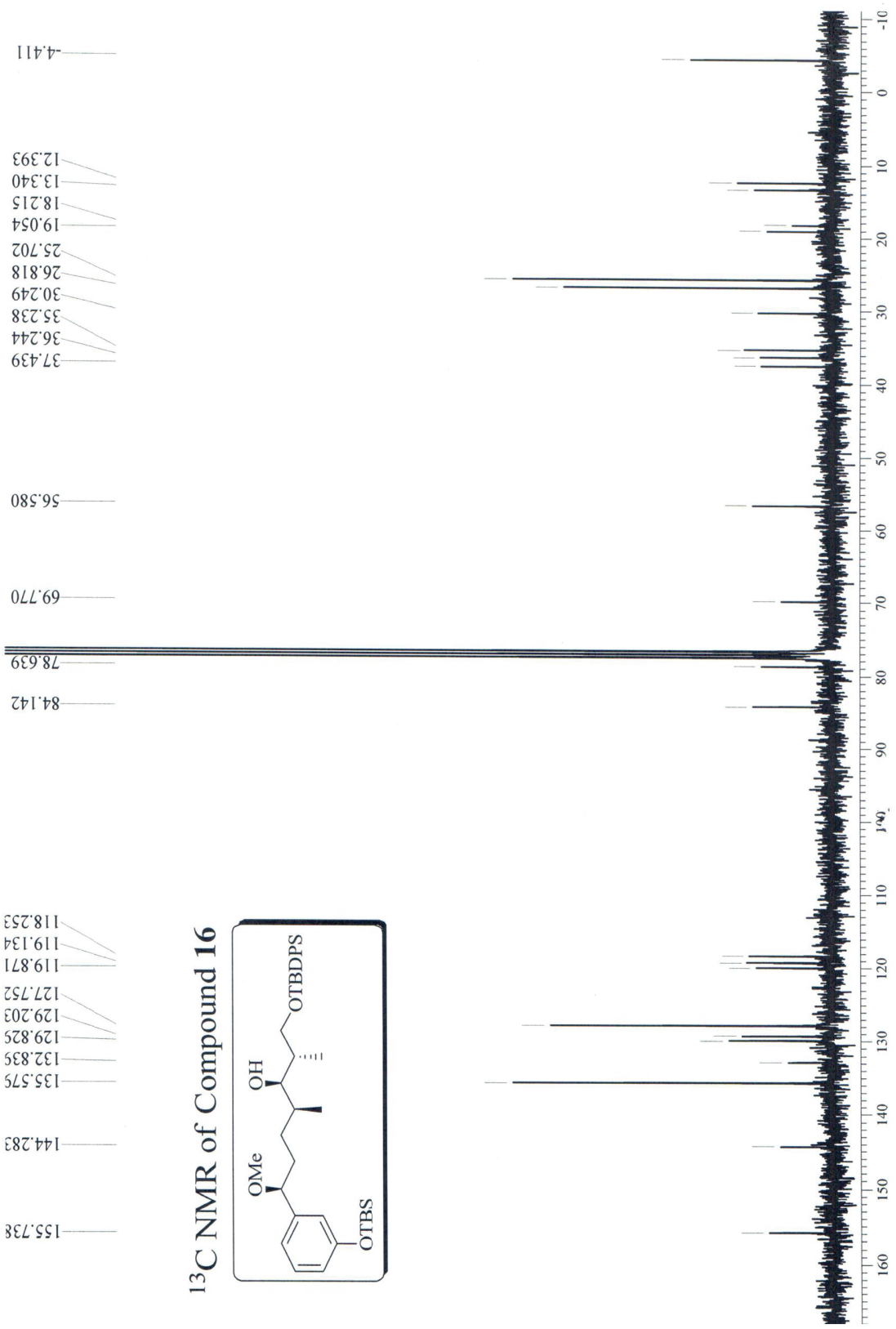
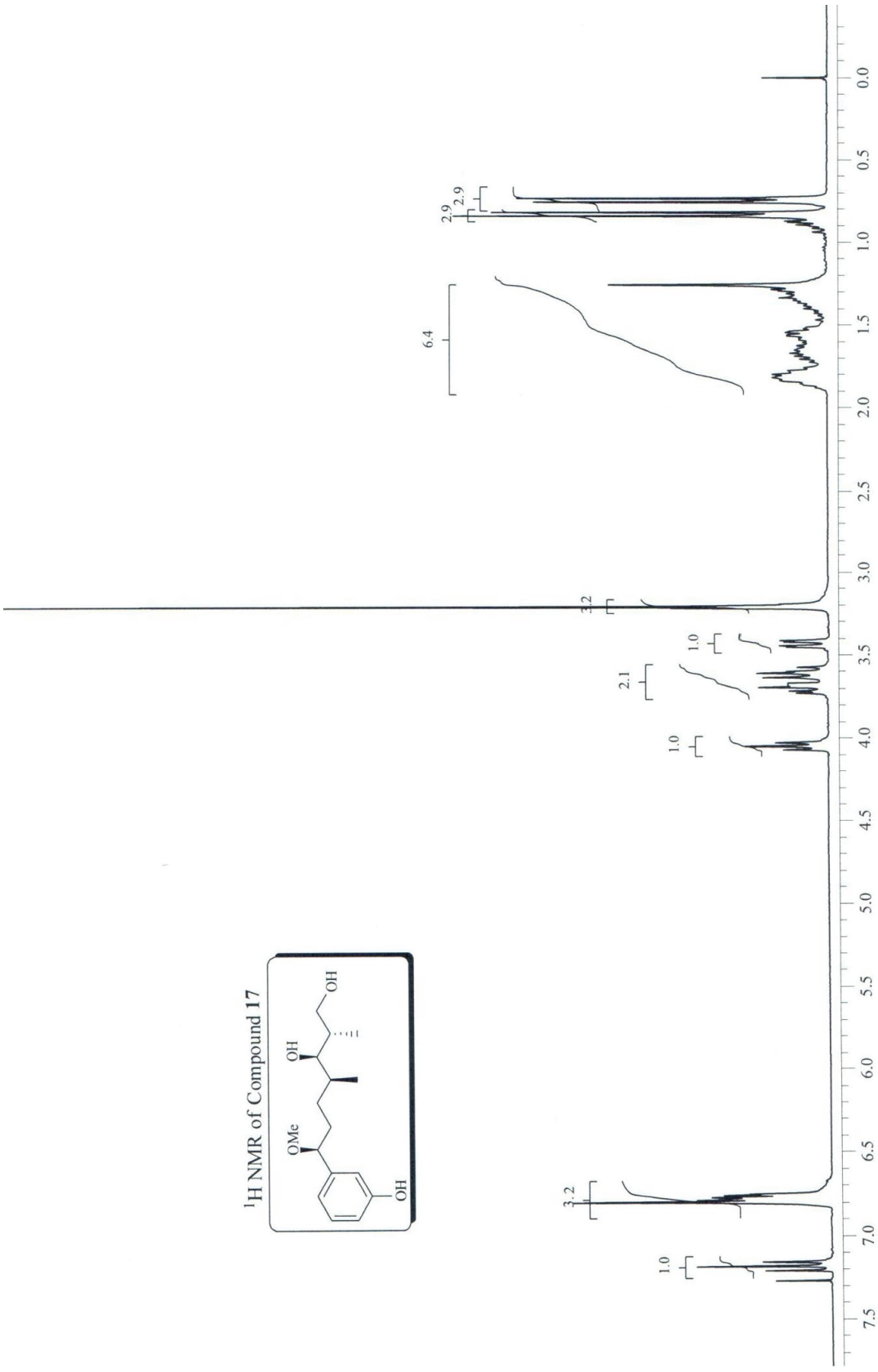
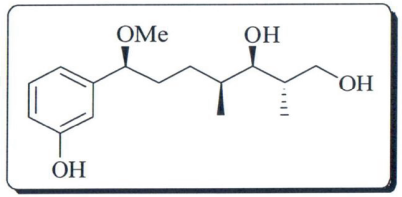


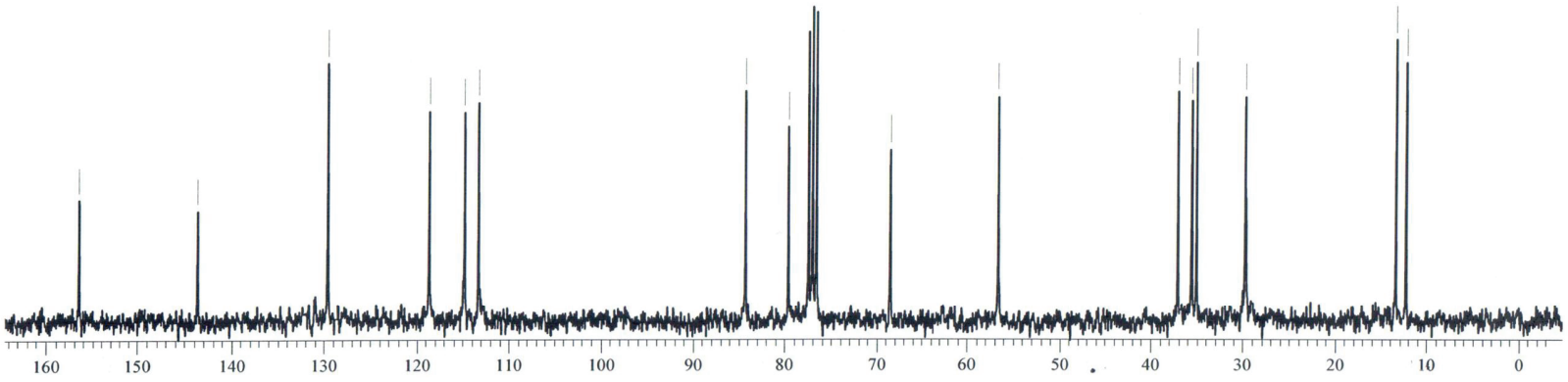


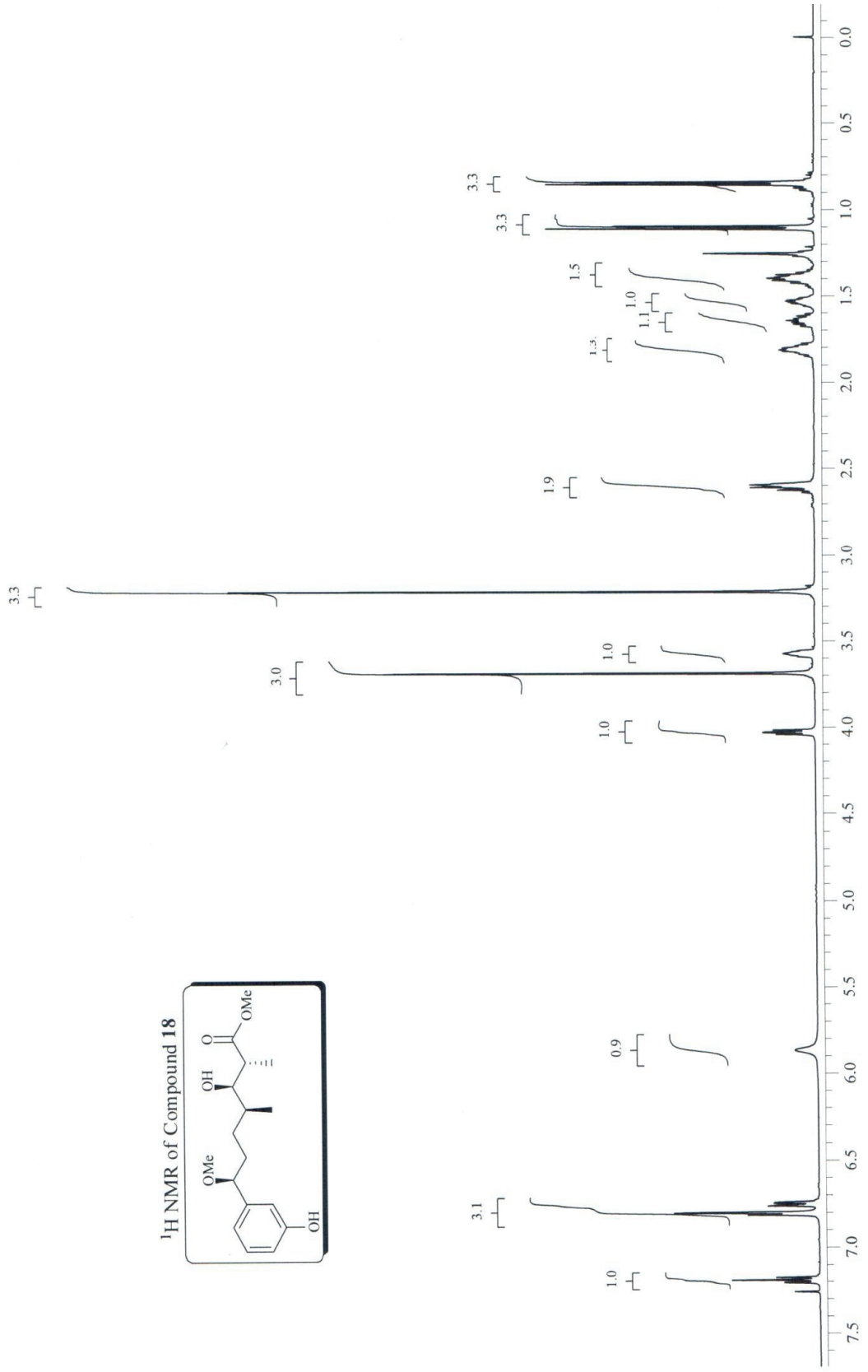


156.454
143.605
129.575
118.602
114.792
113.278
84.219
79.607
68.495
56.604
37.049
35.538
35.035
29.743
13.408
12.245

^{13}C NMR of Compound **17**







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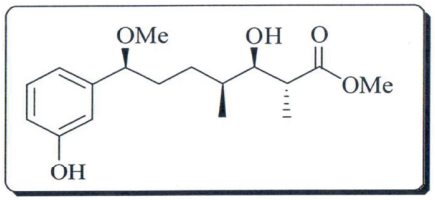

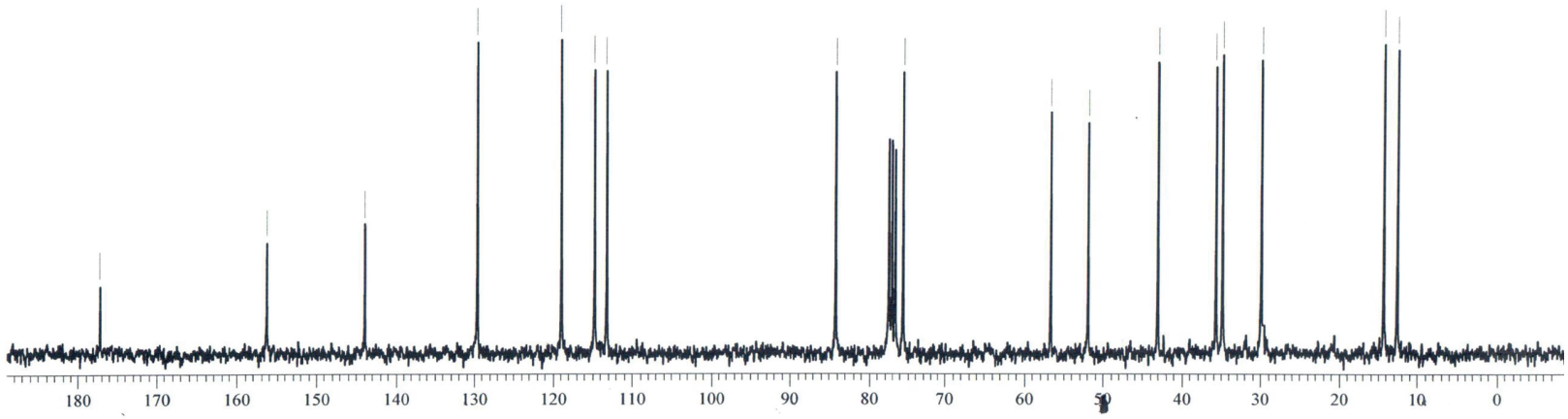

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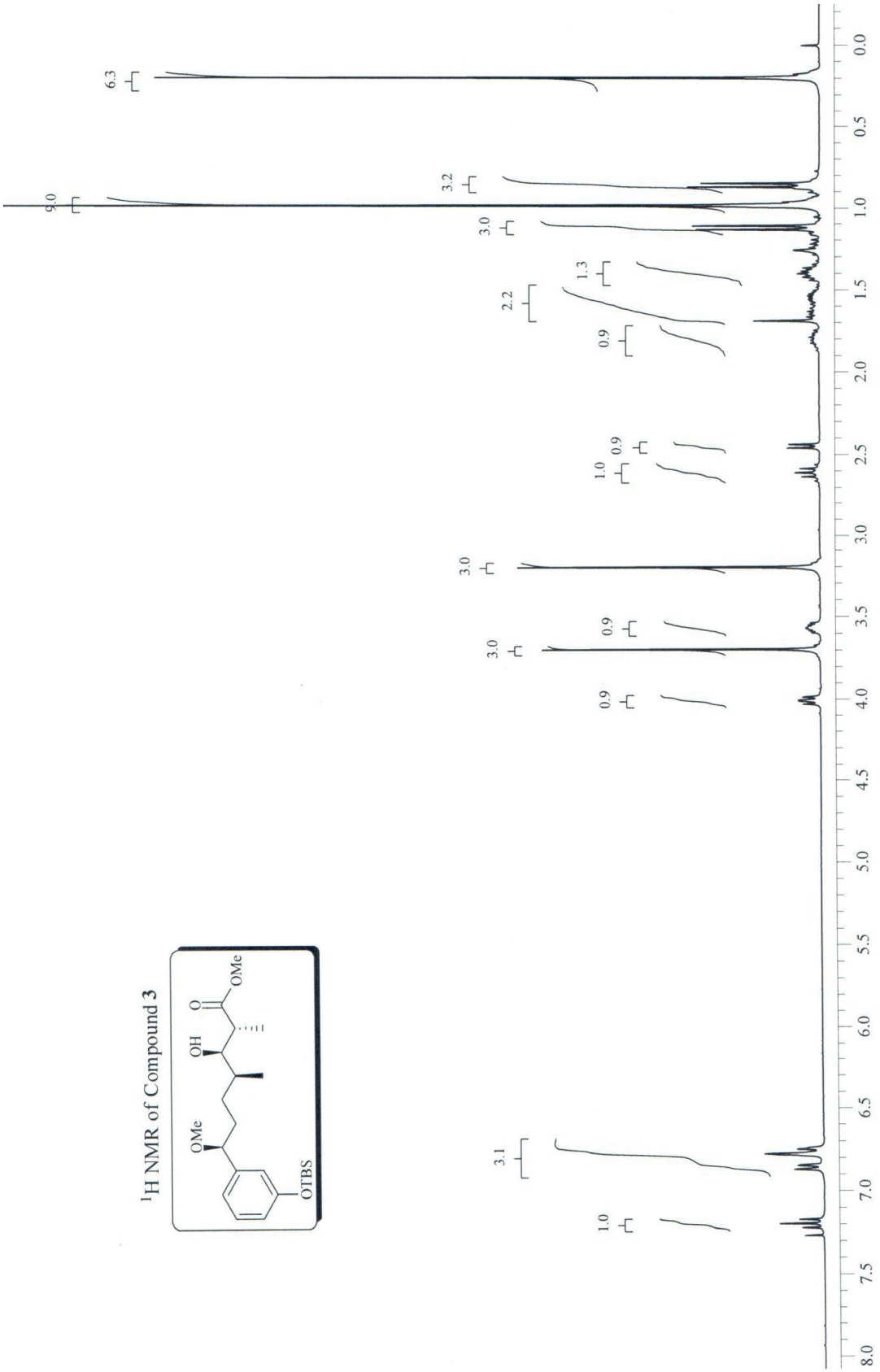

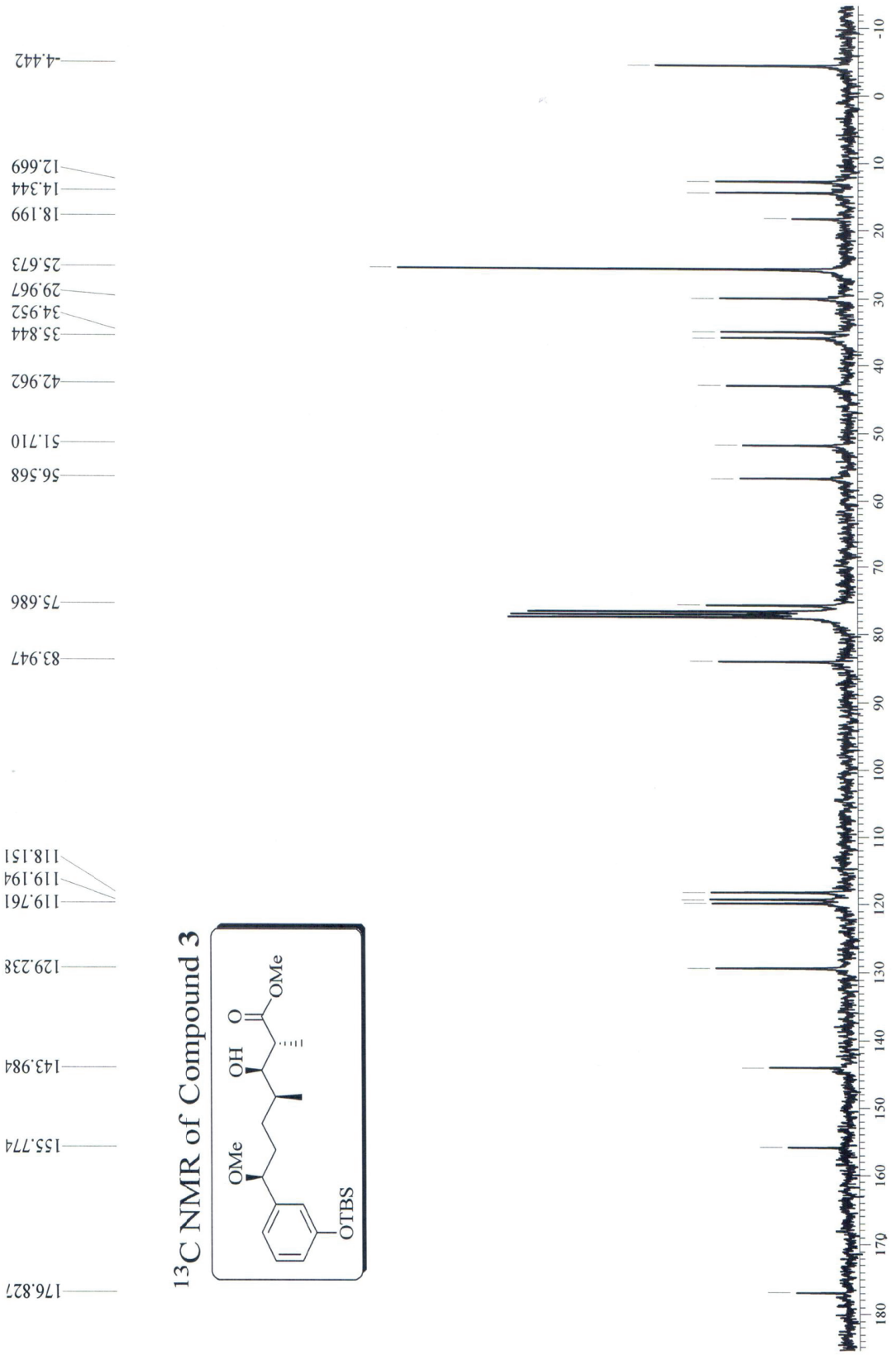

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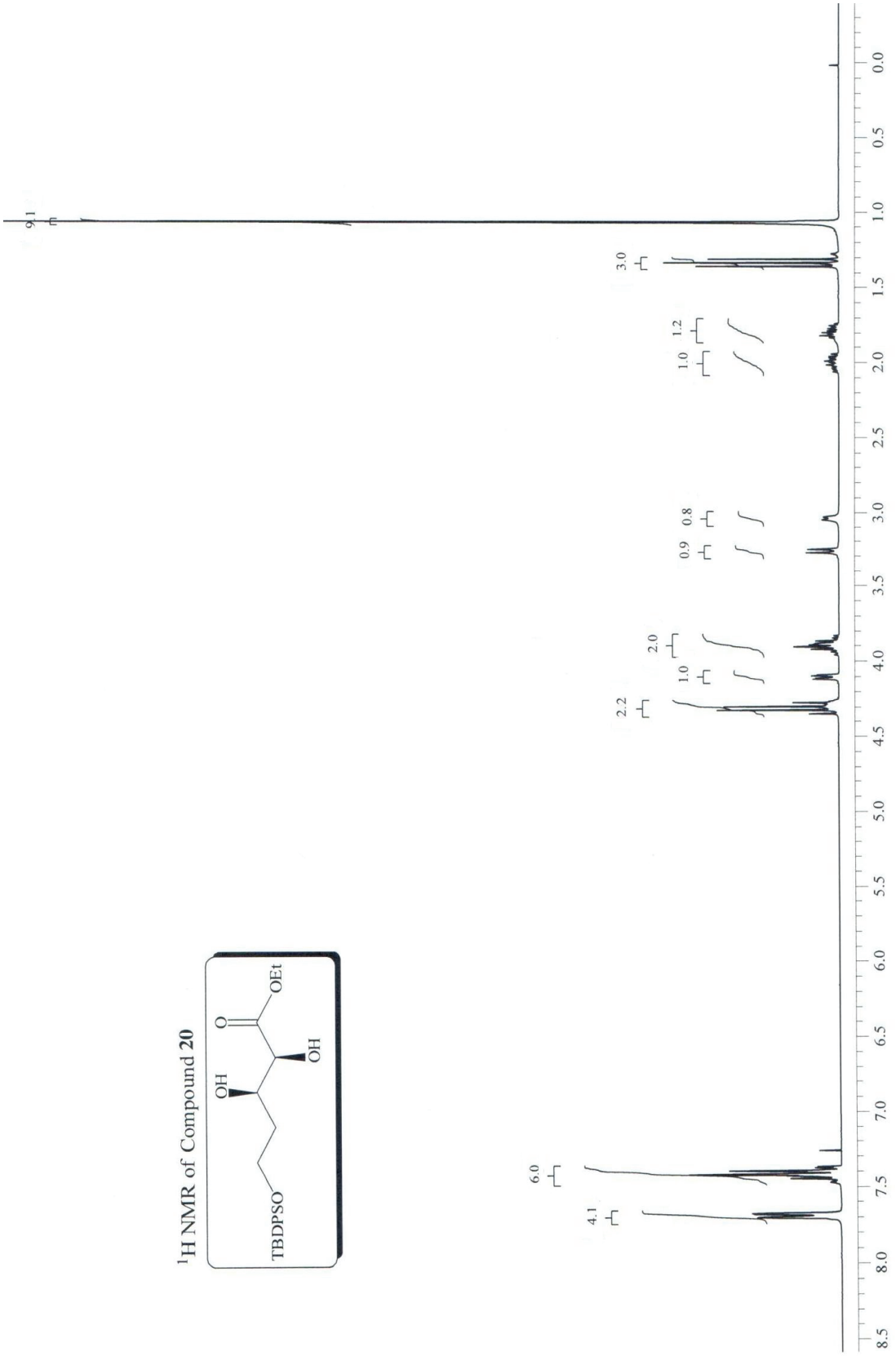
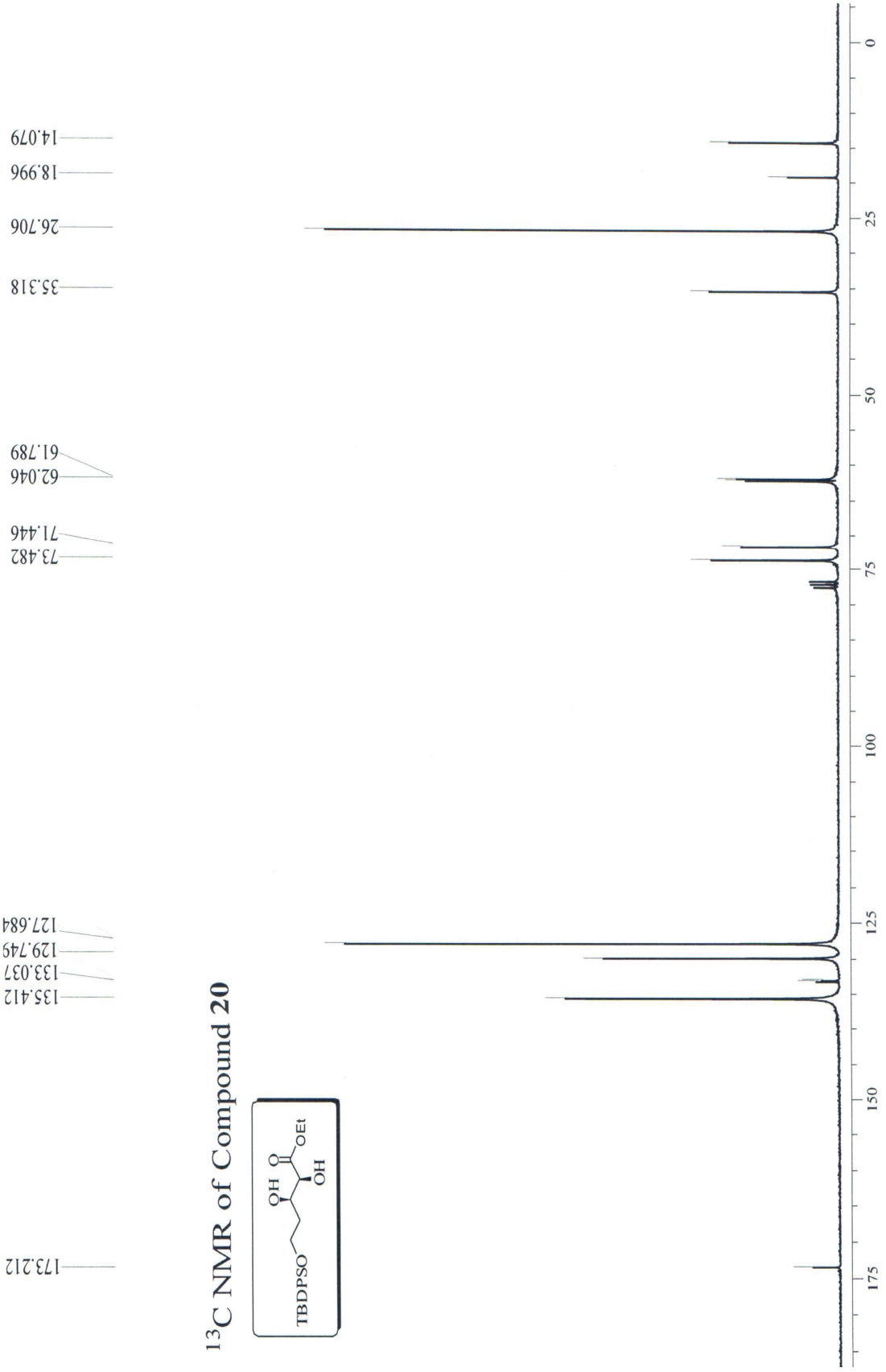
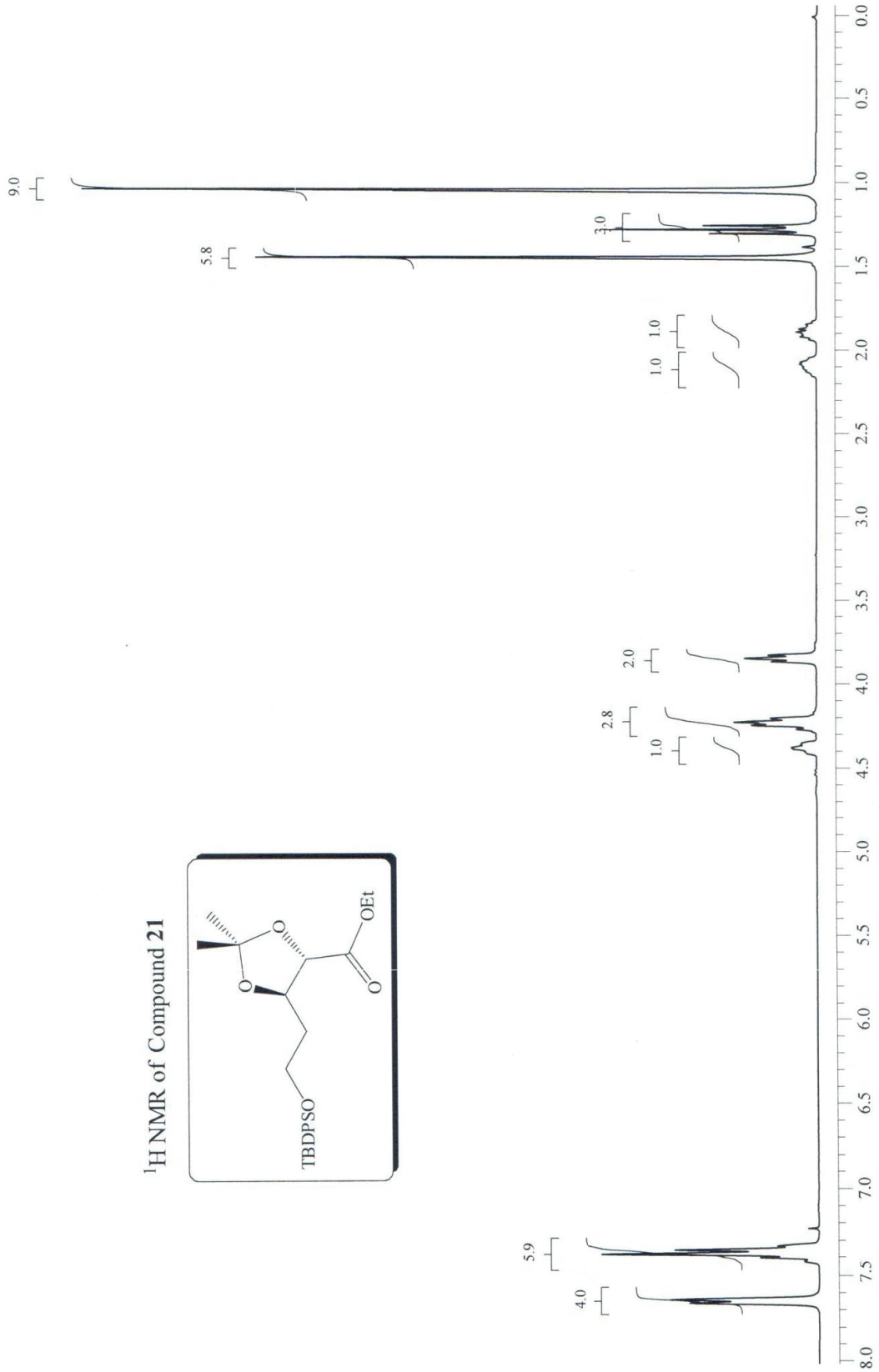
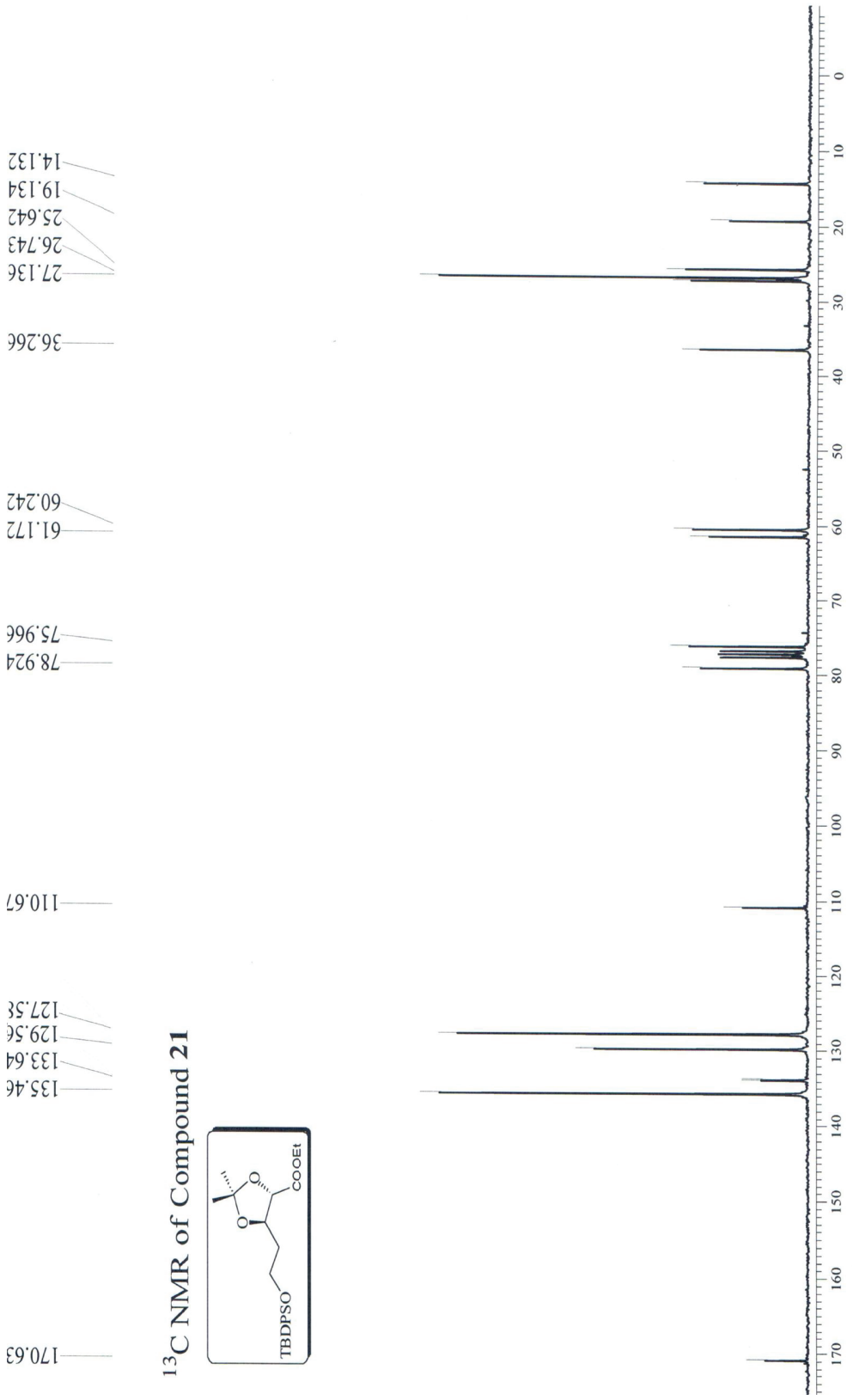



^{13}C NMR of Compound **20**
TBDPSO
OH
OEt
OH
14.079
18.996
26.706
35.318
61.789
62.046
71.446
73.482
127.684
129.749
133.037
135.412
173.212
0
25
50
75
100
125
150
175

^{1}H NMR of Compound **21**





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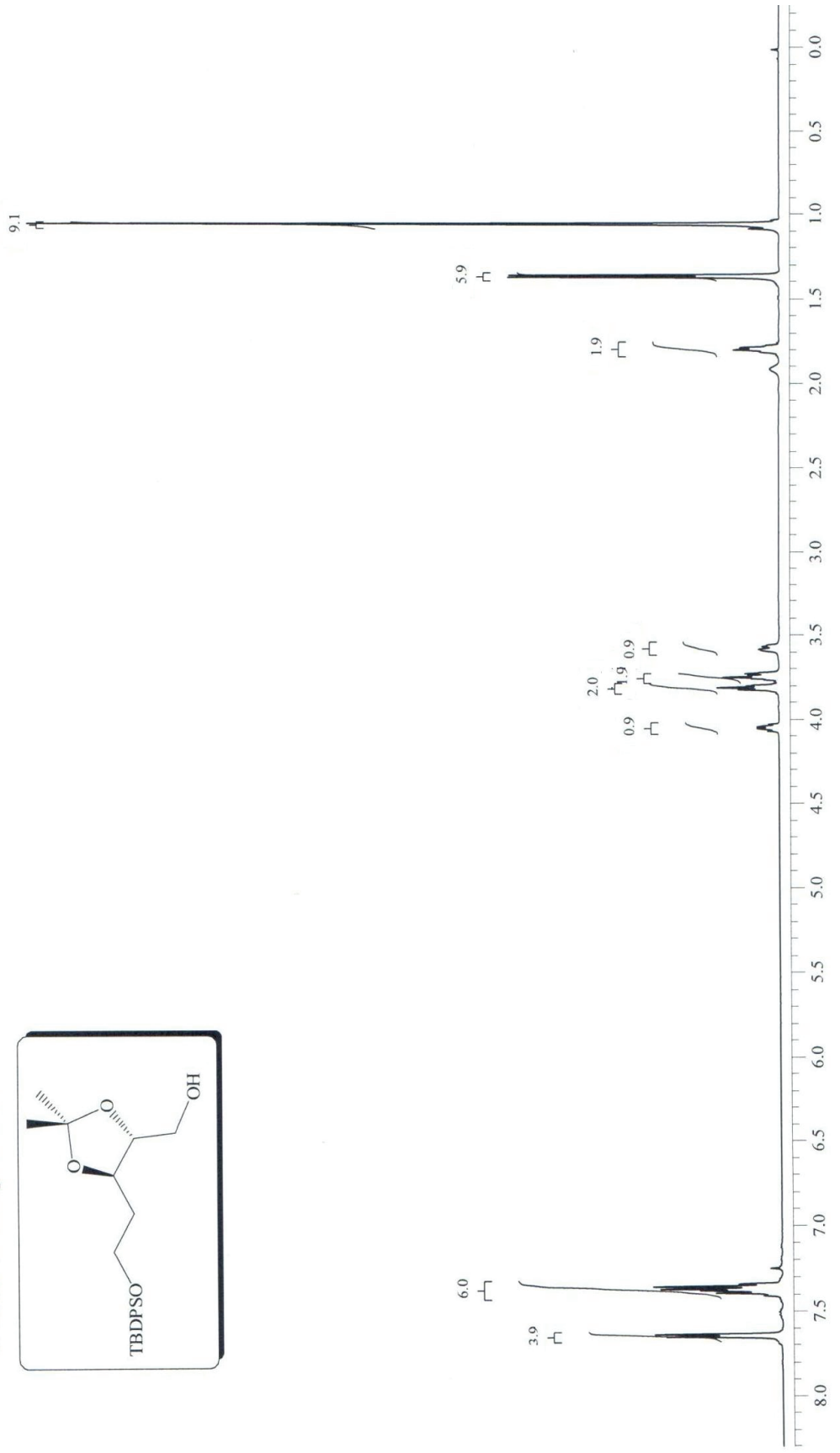

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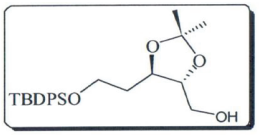

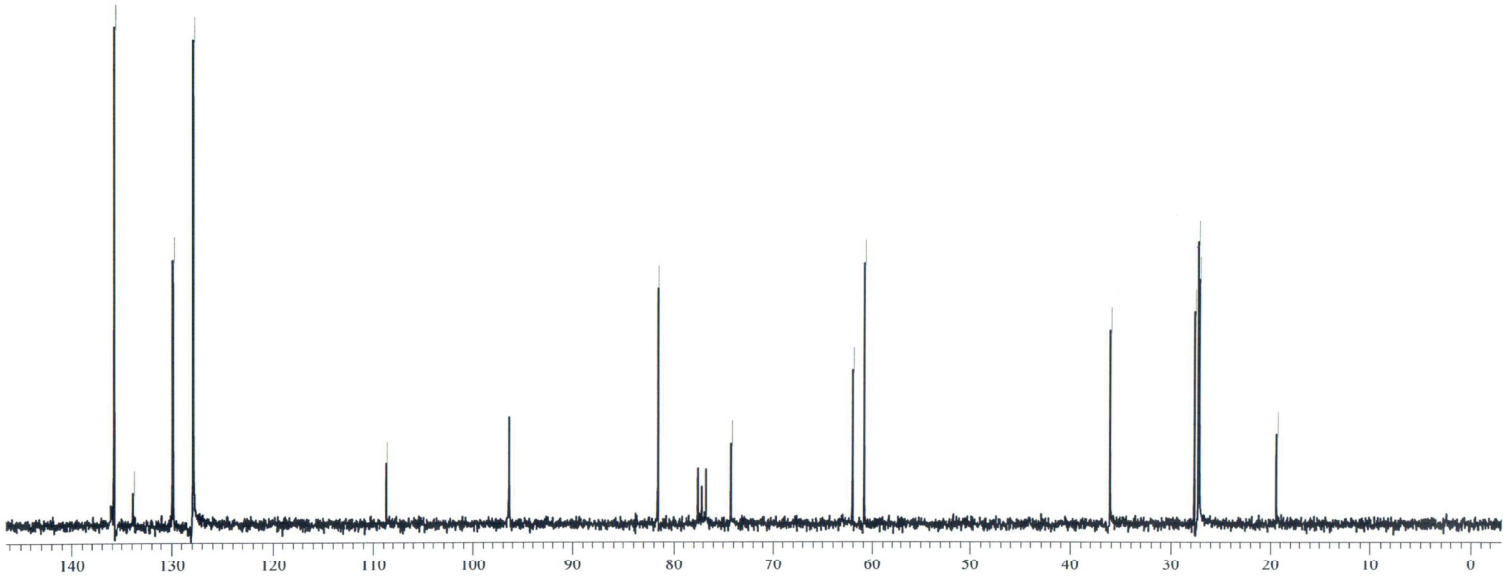

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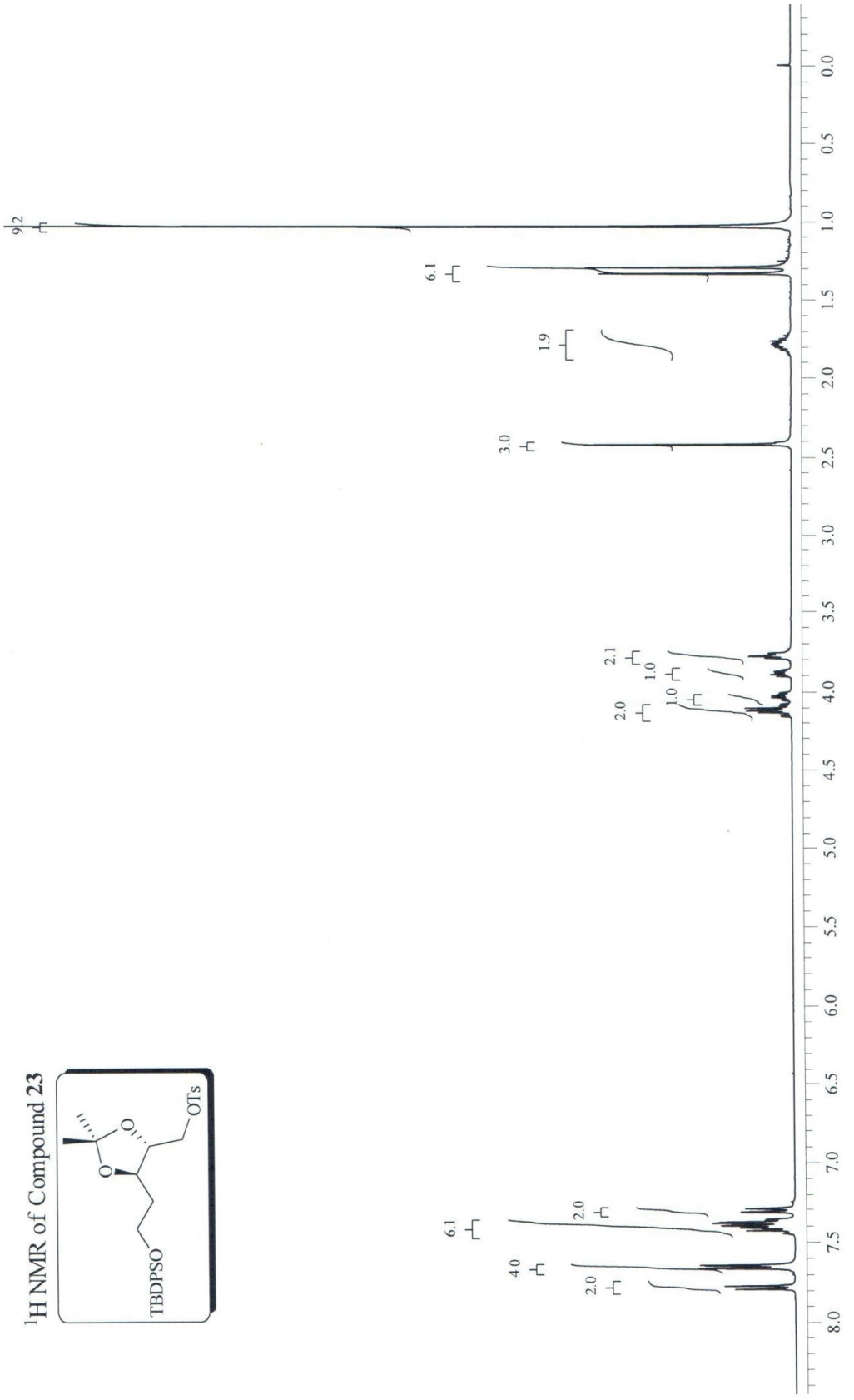
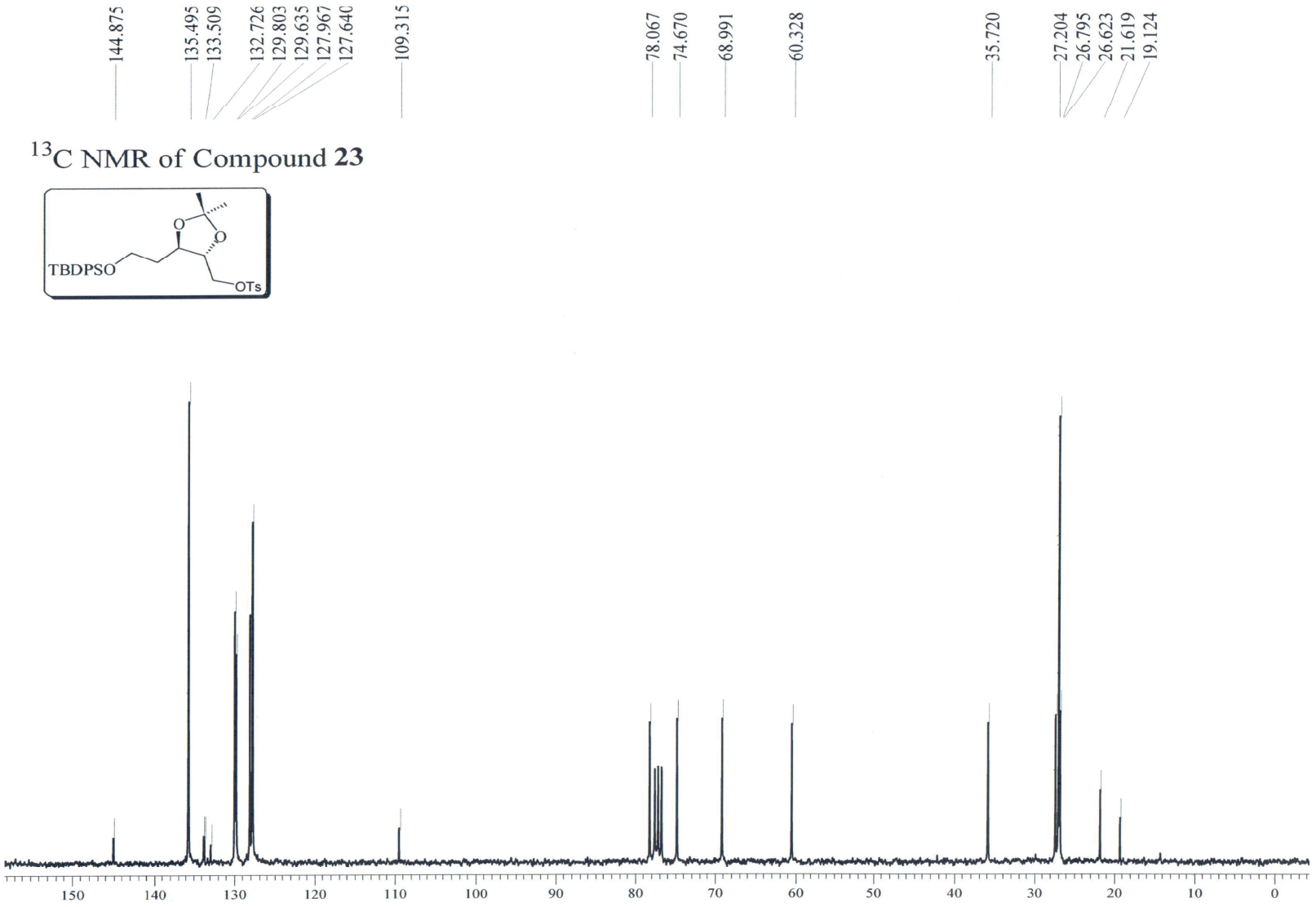


^{13}C NMR of Compound **23**



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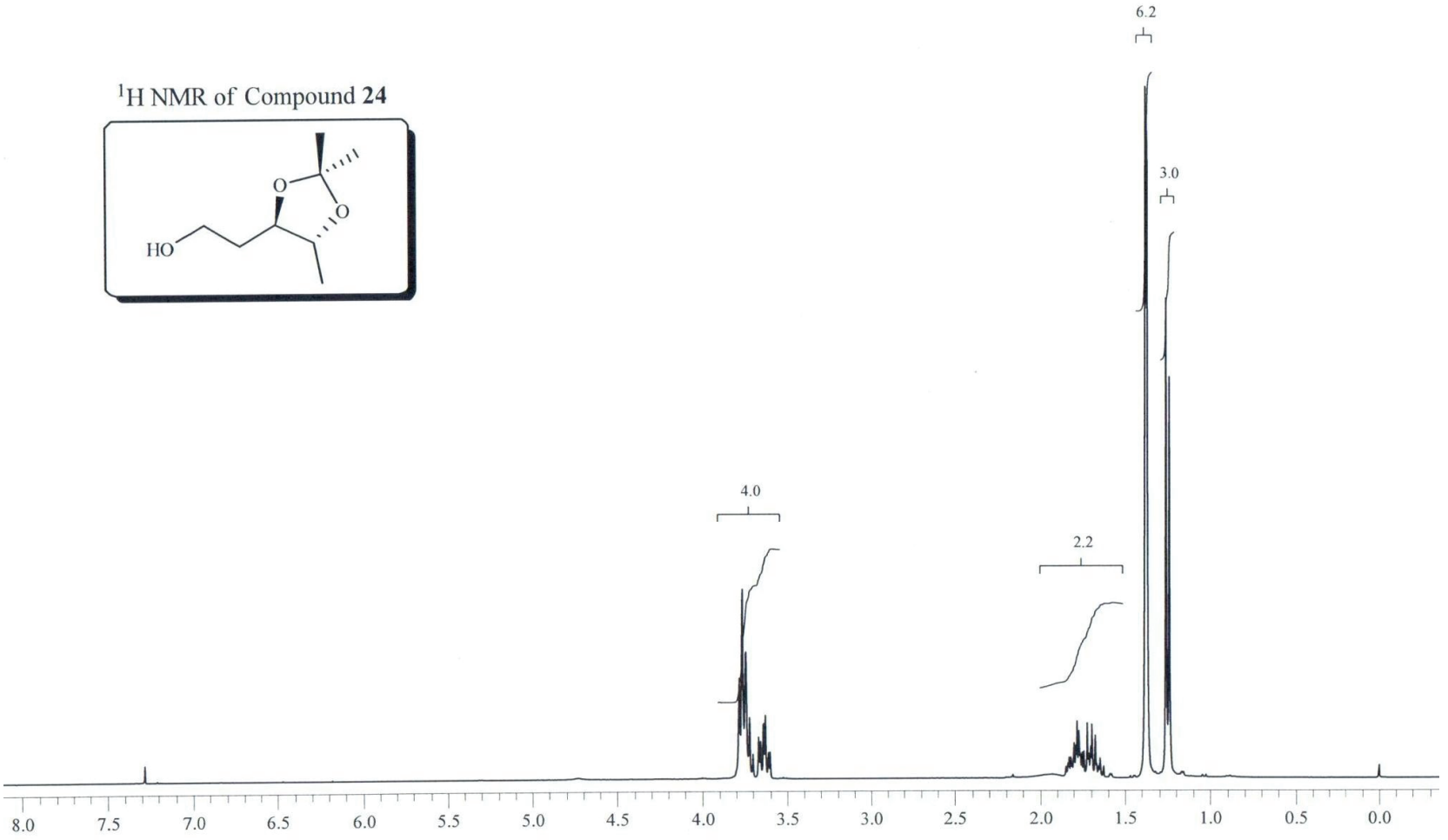

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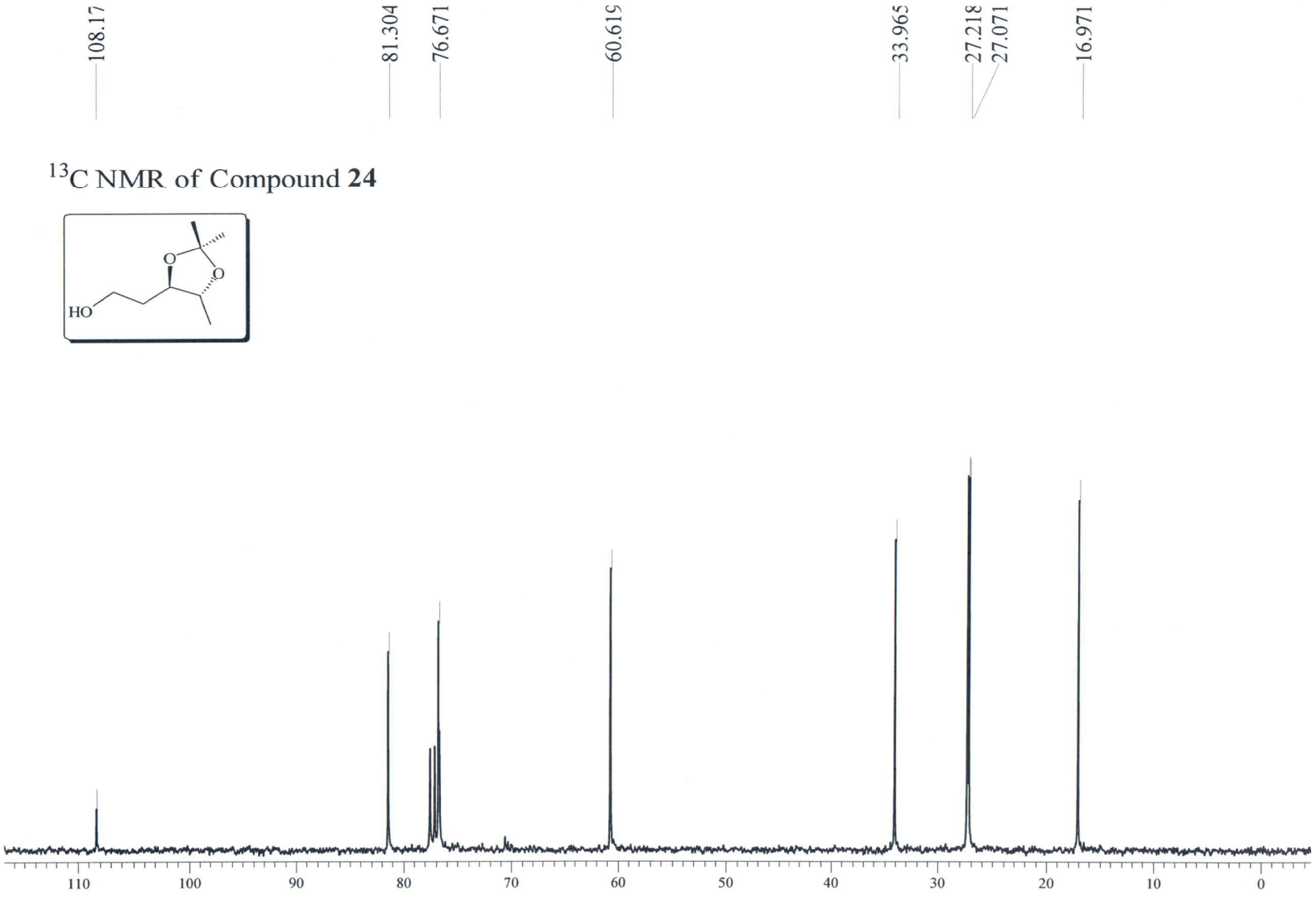

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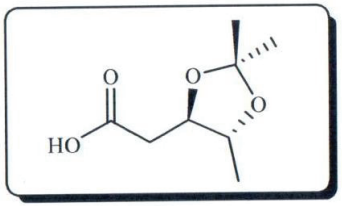

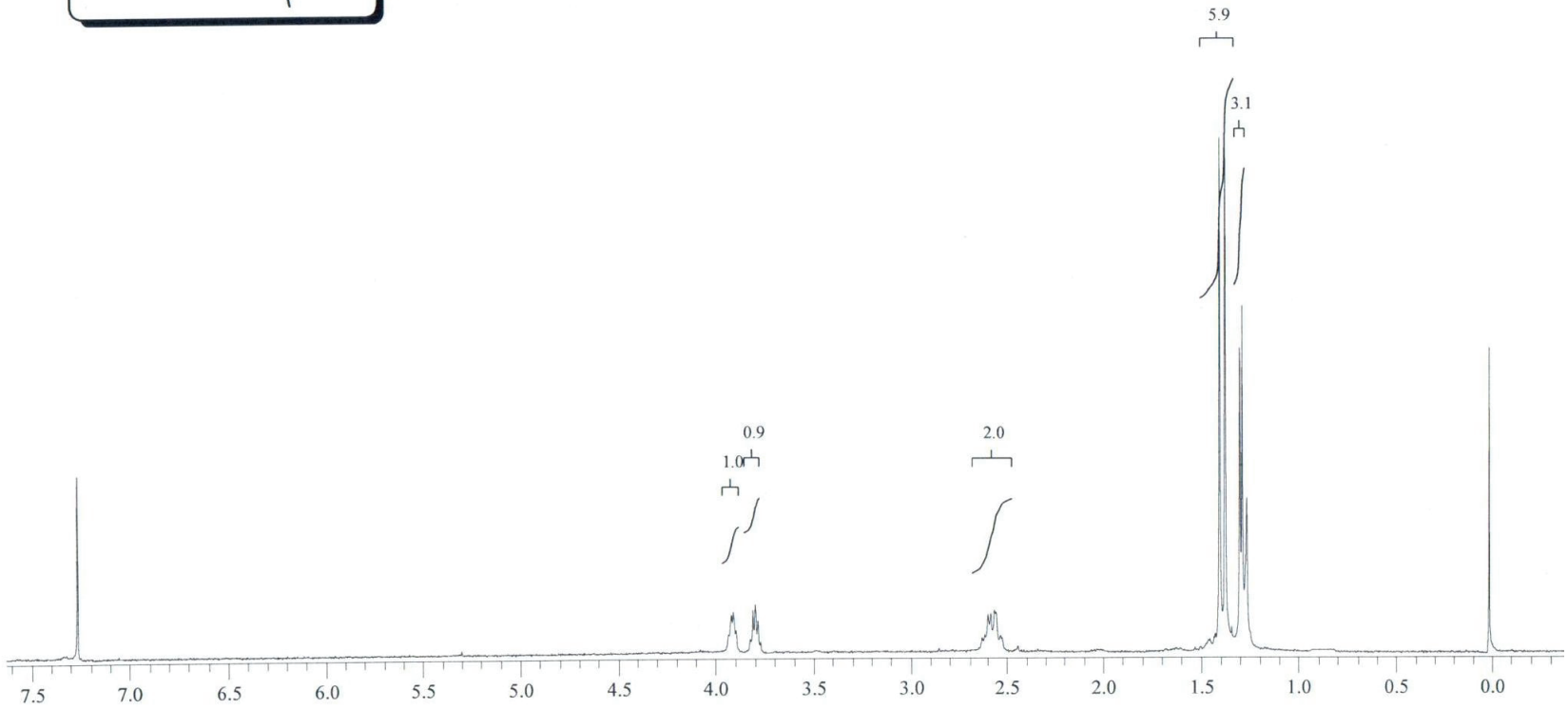

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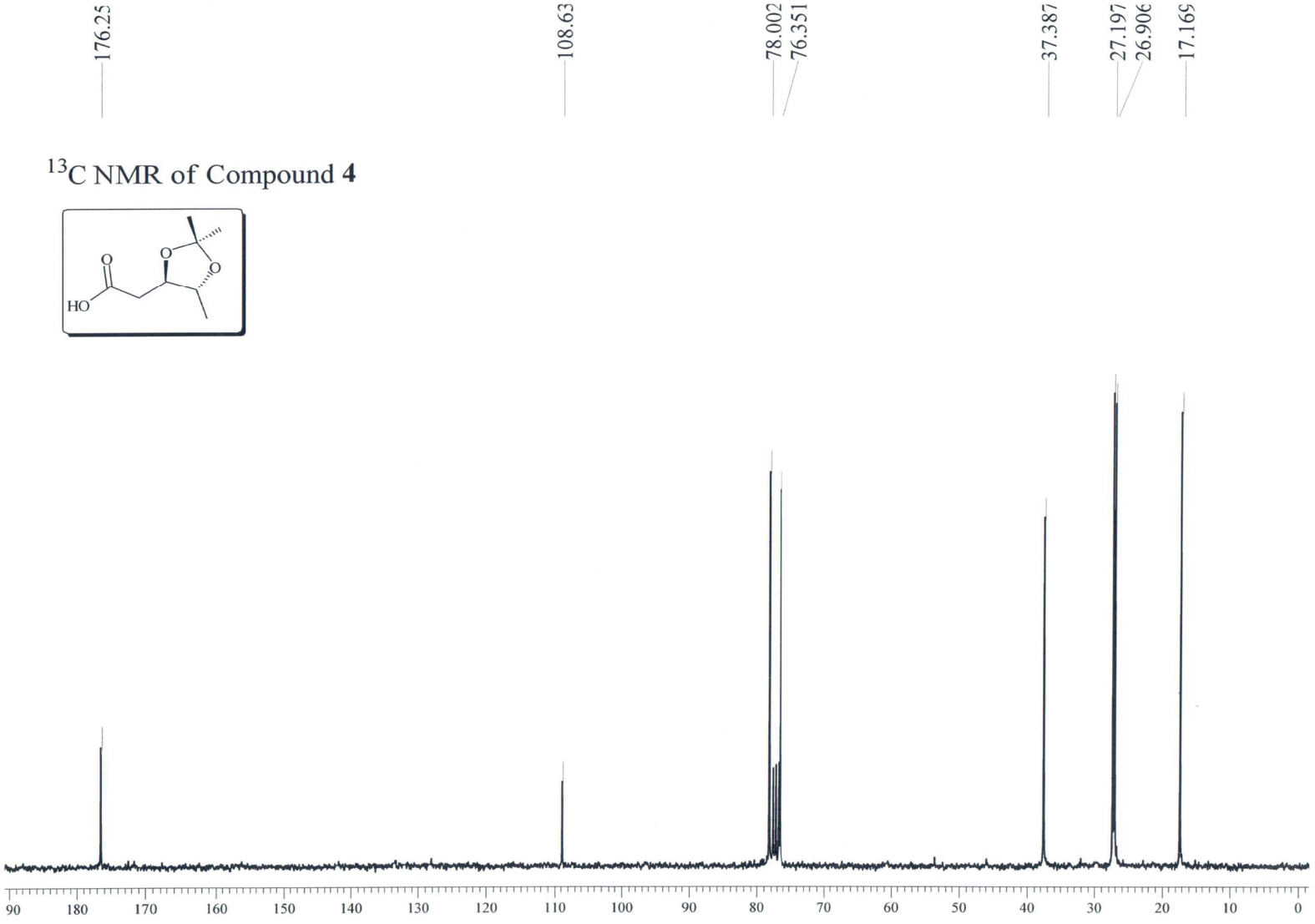

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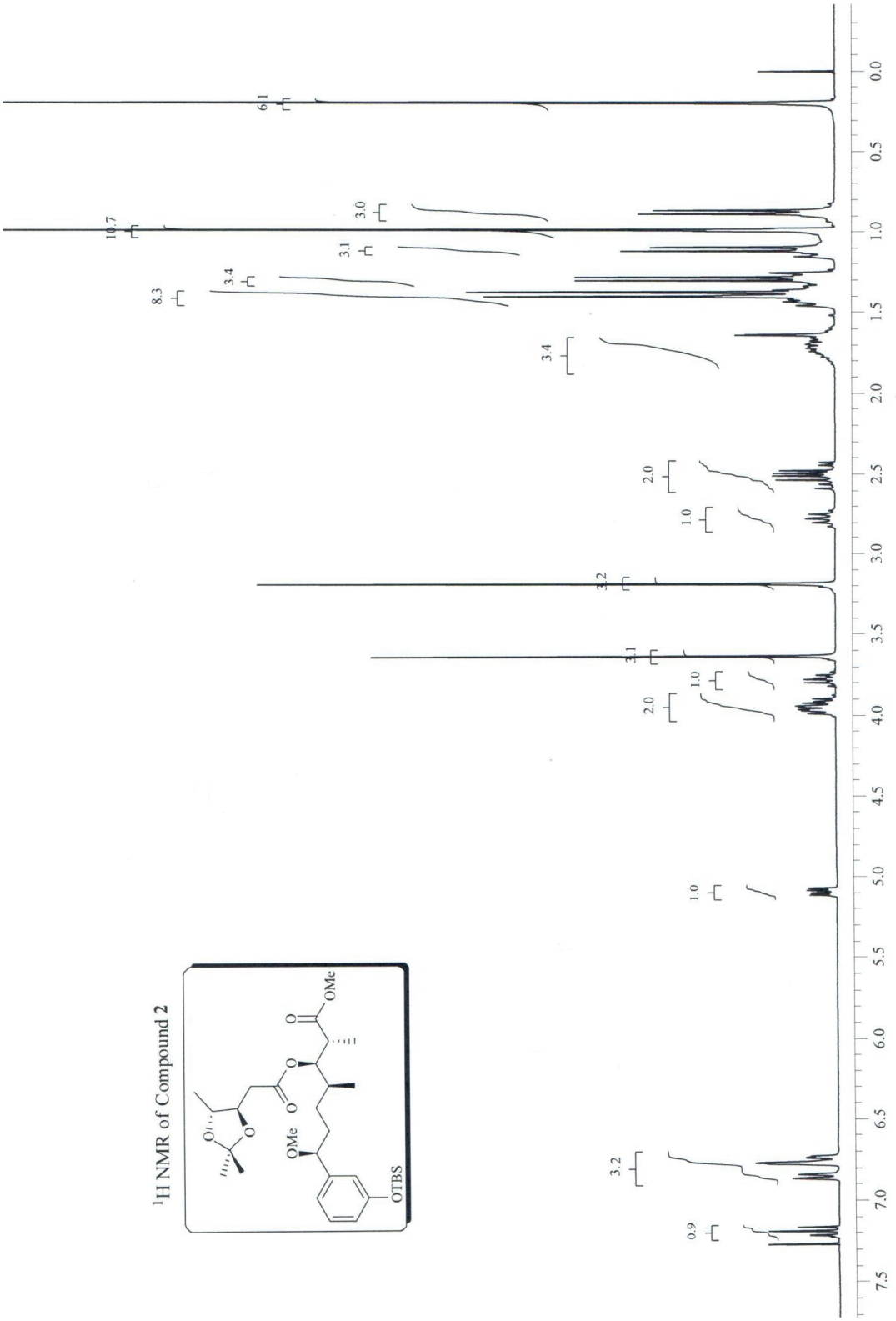

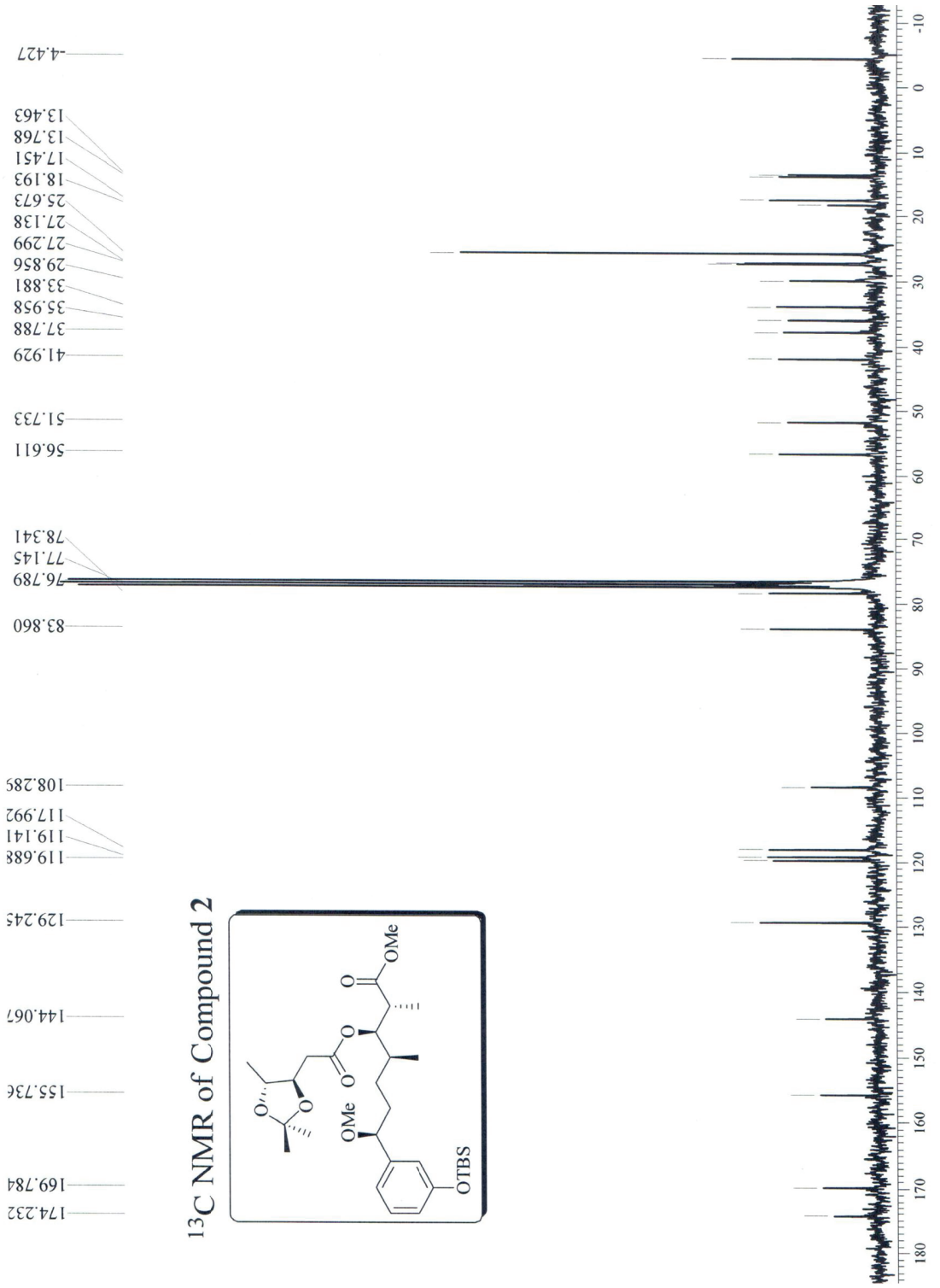

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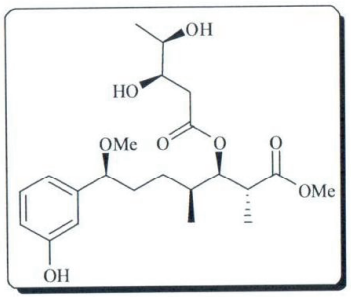
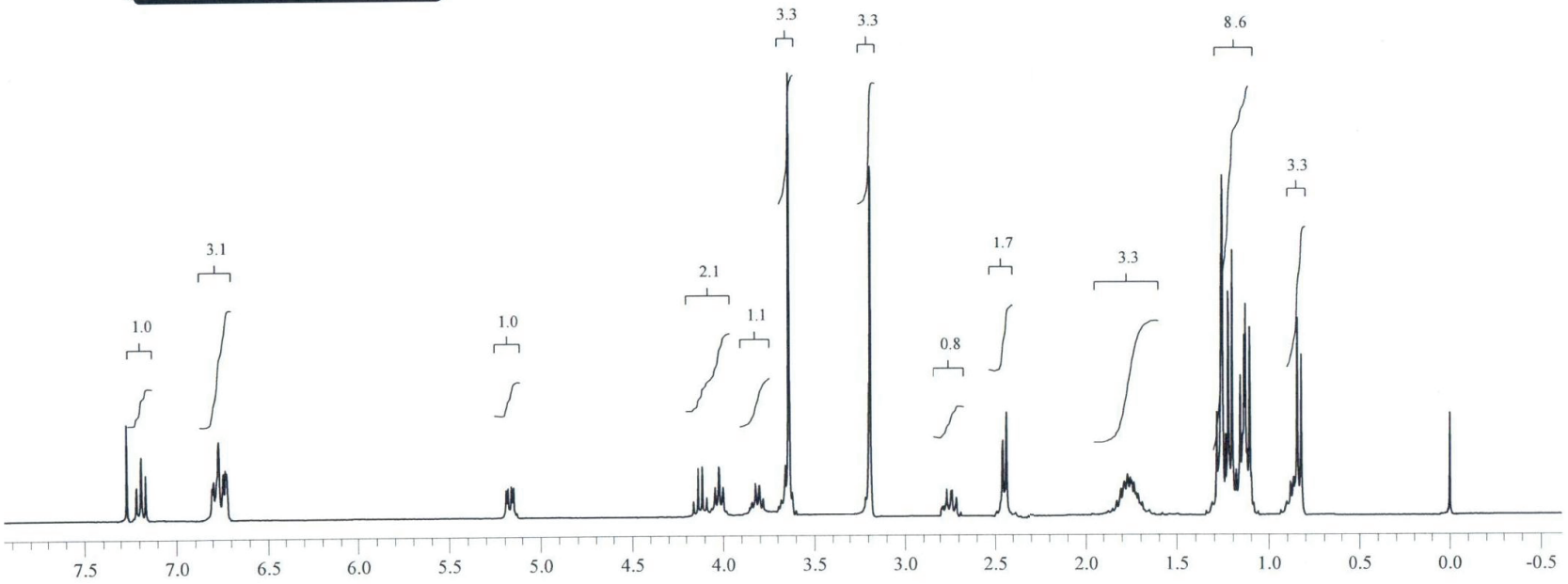
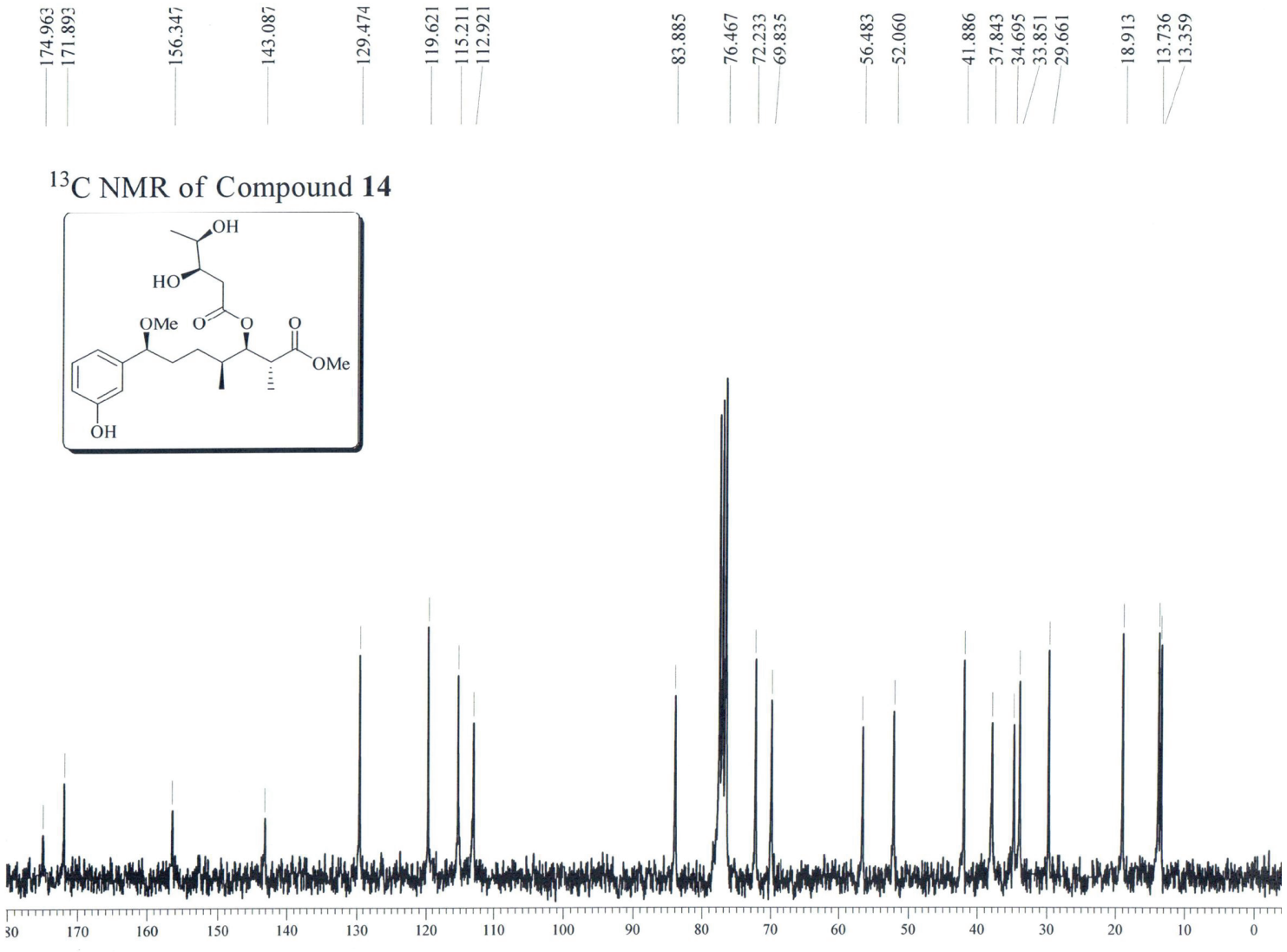
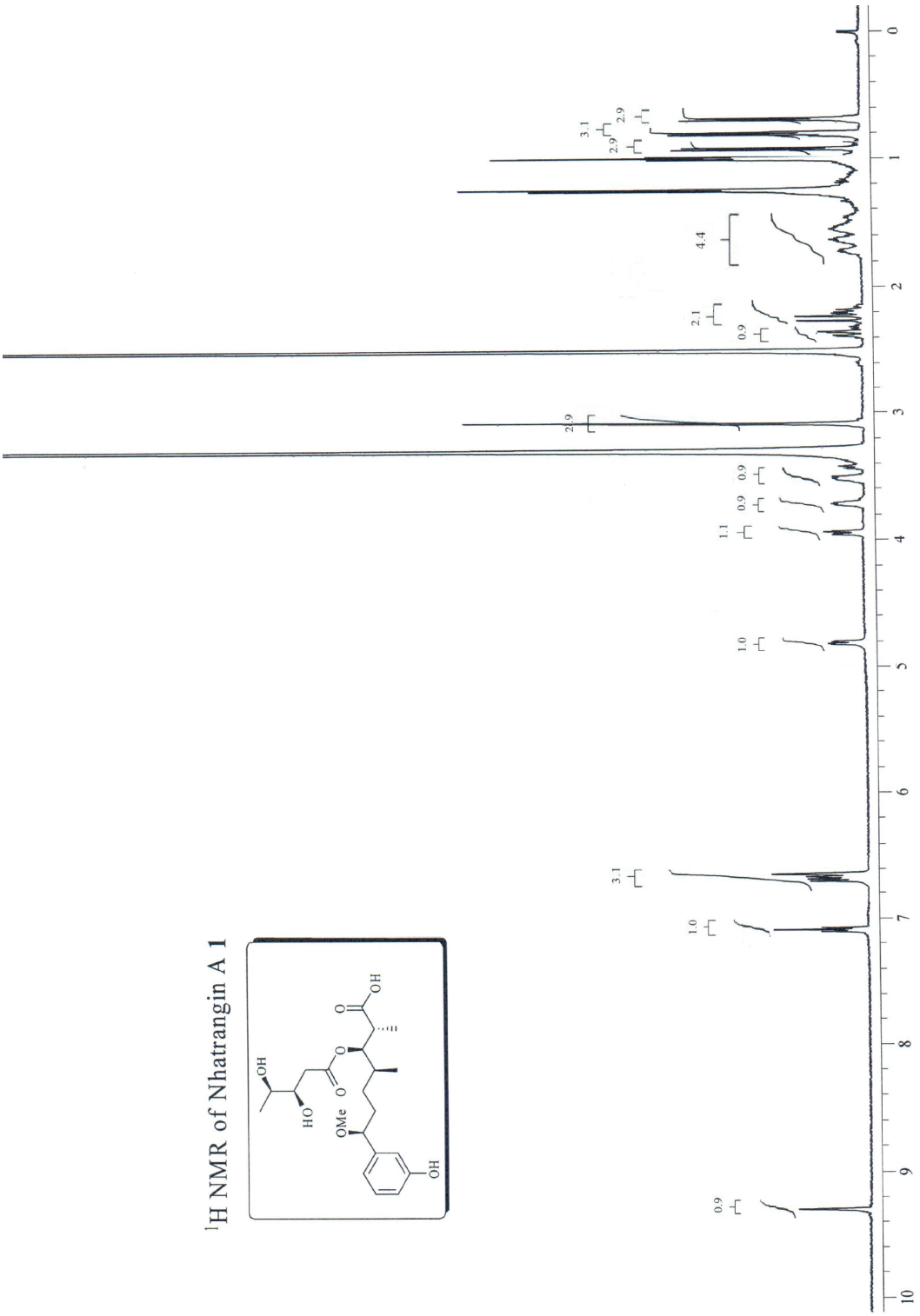


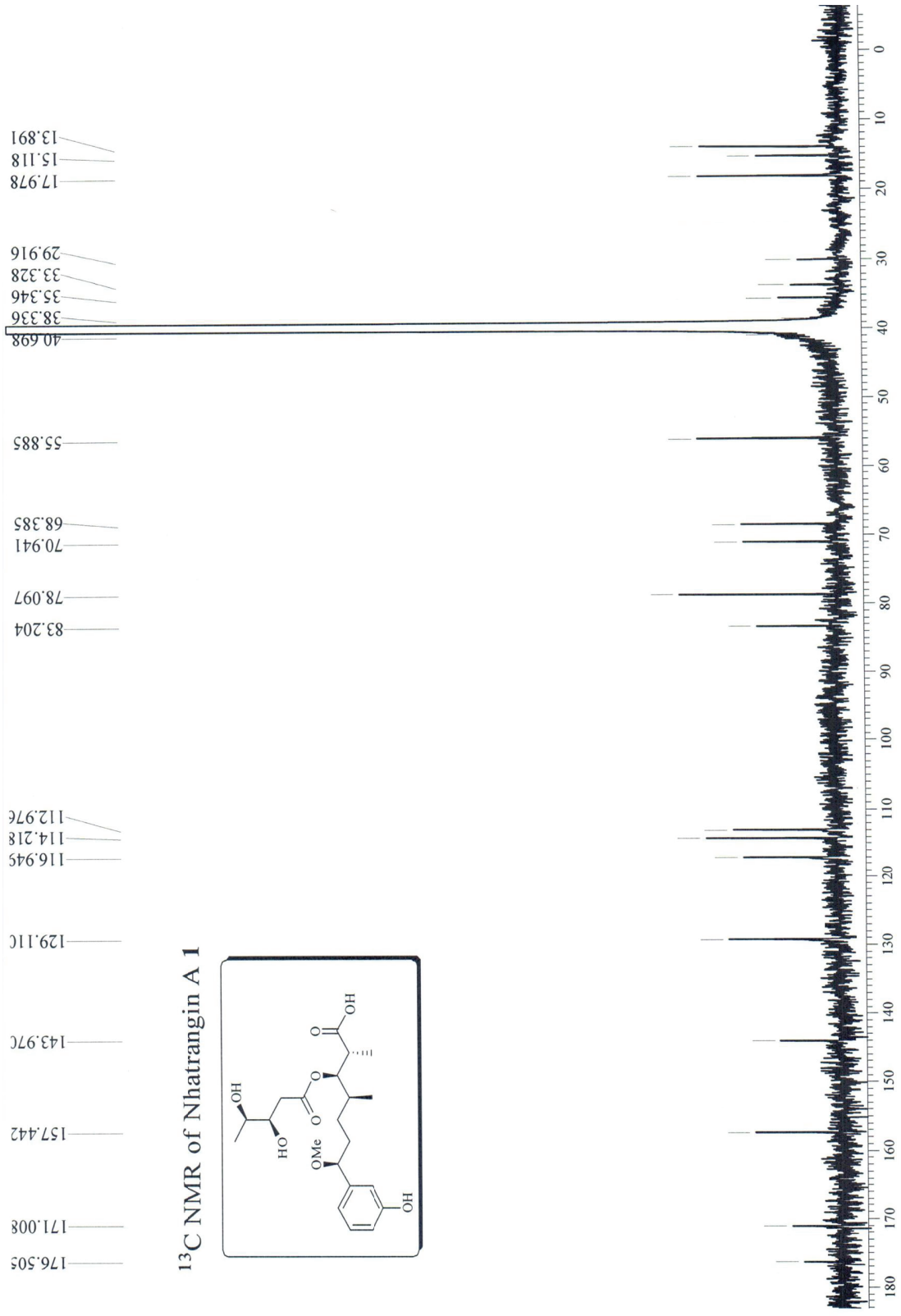


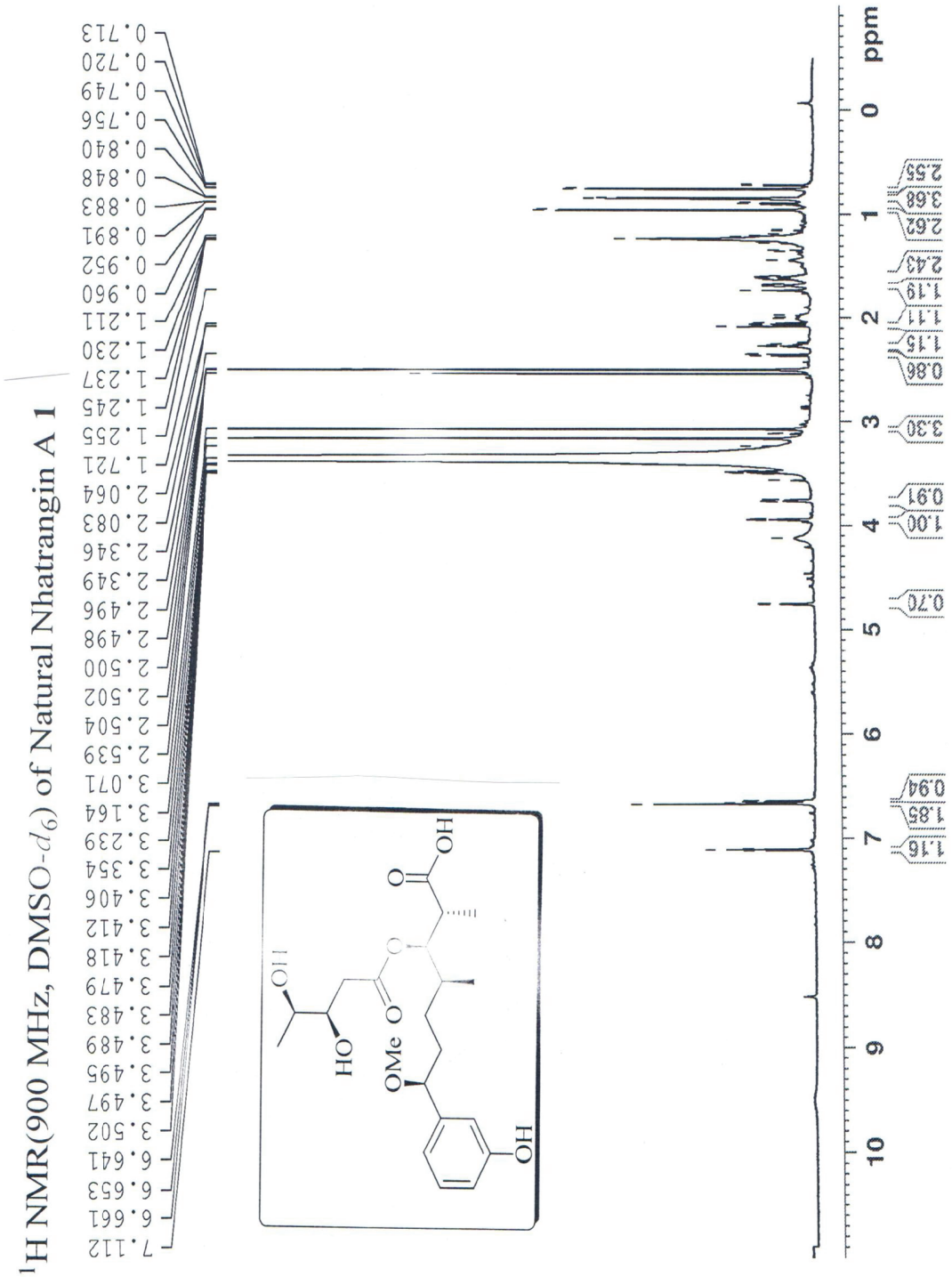


^{13}C NMR of Compound **14**

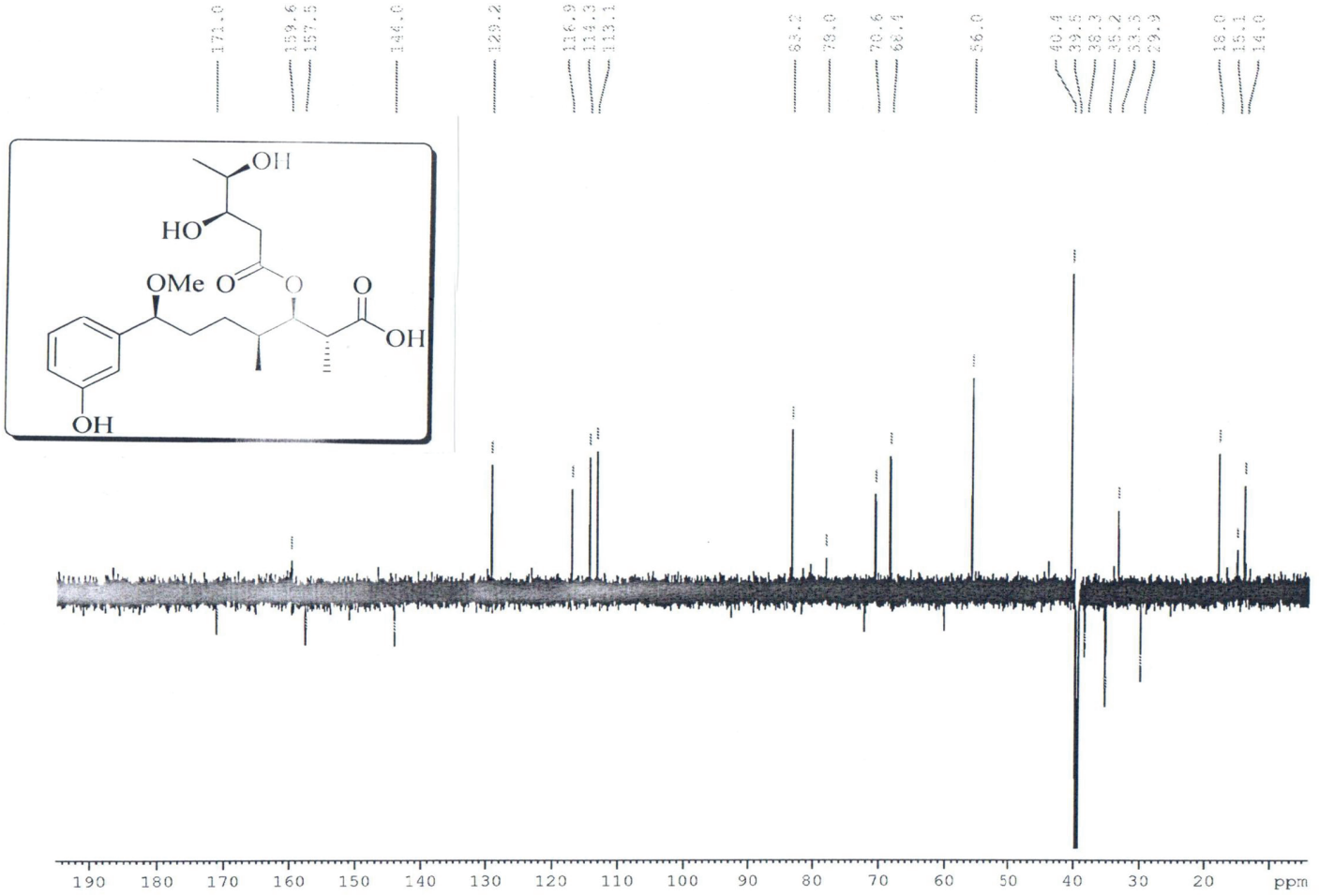
^{1}H NMR of Nhatrangin A 1



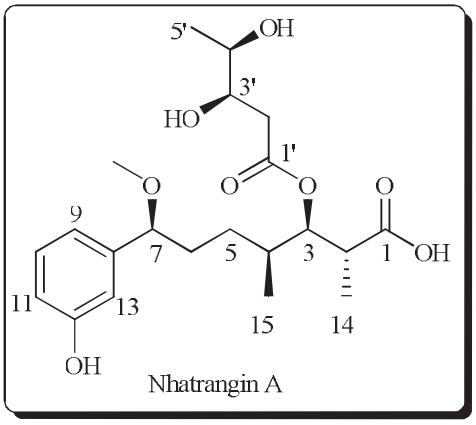




DEPTQ Spectrum (226 MHz, DMSO-d_6) of Natural Nhatrangin A **1**



Comparison Table:

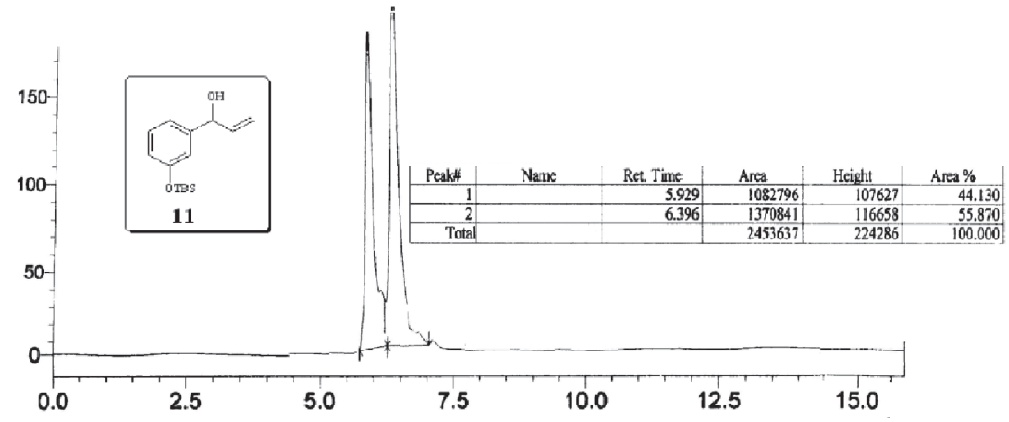


Nhatrangin A

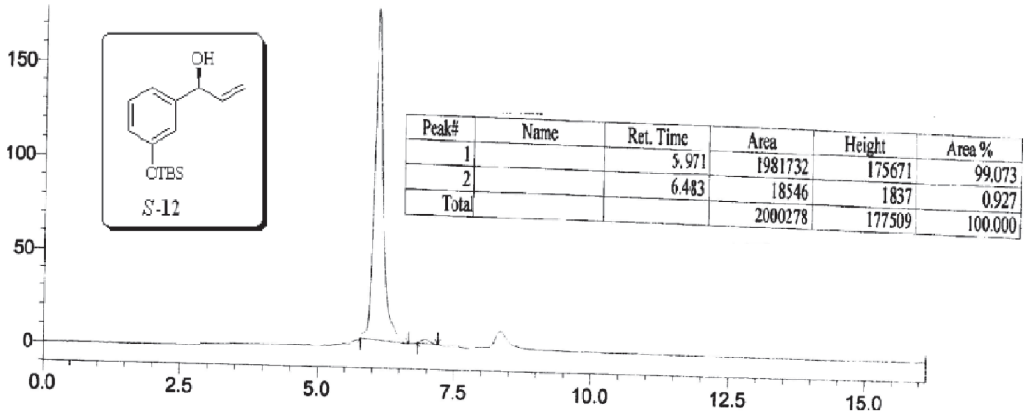
Comparison of NMR Data of Natural and Synthetic Nhatrangins A (1).

position	δ_C, natural	δ_C, synthetic	δ_H, m(in Hz) natural	δ_H, m(in Hz) , synthetic
1	176.5	176.5		9.31, s
2	40.4	40.6	2.26, dd(8.3, 3.6)	2.25, d (7.8)
3	78.0	78.0	4.74 , dd (8.3, 3.6)	4.79, dd (7.8, 4.4)
4	33.3	33.3	1.67 , qd (6.7, 3.6)	1.67, m
5	30.0	29.9	1.23 , m	1.23, m
6	35.2	35.3	1.60 , m	1.62, m
7	83.3	83.2	3.93, dd (7.4, 5.4)	3.94, dd (7.6, 4.4)
7-OMe	56.0	55.9	3.07, s	3.08, s
8	144.0	144.0		
9	113.1	113.0	6.65 , m	6.65, m
10	129.2	129.1	7.10, t (7.8)	7.11, t (7.8)
11	116.9	116.9	6.63, m	6.63, m
12	157.5	157.4		
13	114.3	114.2	6.67 , m	6.66, m
14	15.1	15.2	0.83 , d (7.0)	0.82, d (7.8)
15	14.0	13.9	0.74 , d (6.7)	0.72, d (6.6)
1′	171.1	171.0		
2′a 2′b	38.3	38.3	2.35, dd (14.3, 3.2) 2.05 , dd (14.3, 10.5)	2.36, dd (15.4, 4.4) 2.17. dd (15.4, 5.5)
3′	70.6	70.9	3.75, ddd (10.5, 4.2, 3.2)	3.74, m
4′	68.4	68.4	3.48, qd (6.4, 4.2)	3.50, qd (6.5, 4.2)
5′	18.0	18.0	0.95, d (6.4)	0.93, d (6.6)

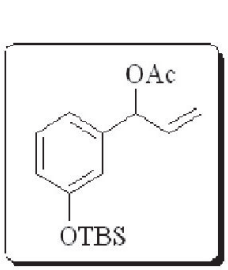
Deterinatmion of the enantiomeric excess of (*S*)-12 and (*R*)-12a:The ee was determined by chiral HPLC analysis using a chiralcel OD-H column. The 3% iso propanol in hexane was used as mobile phase with, 0.7 mL/min flow rate. It has been established that the (*S*) enantiomer elutes first at 5.92 min and (*R*) enantiomer elutes at 6.39 min. The Acetate of (*S*) enantiomer elutes first at 3.10 min and acetate of (*R*) enantiomer elutes at 3.53 min compound.



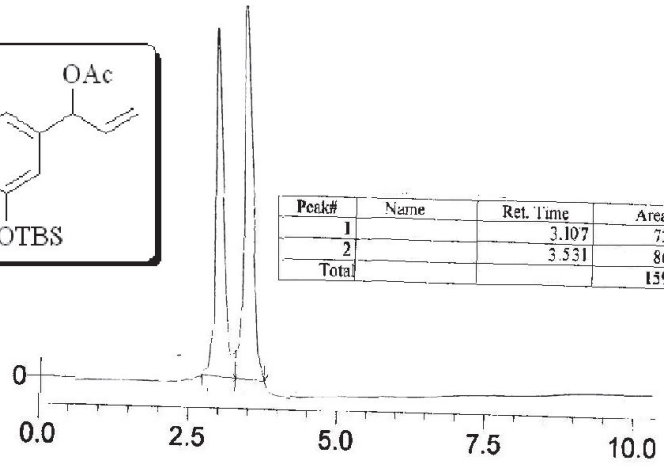
Peak#	Name	Ret. Time	Area	Height	Area %
1		5.929	1082796	107627	44.130
2		6.396	1370841	116658	55.870
Total			2453637	224286	100.000



Peak#	Name	Ret. Time	Area	Height	Area %
1		5.971	1981732	175671	99.073
2		6.483	18546	1837	0.927
Total			2000278	177509	100.000



Peak#	Name	Ret. Time	Area	Height	Area %
1		3.107	728485	74779	45.726
2		3.531	864657	68347	54.274
Total			1593142	143127	100.000



Peak#	Name	Ret. Time	Area	Height	Area %
1		3.058	82835	7023	5.799
2		3.460	1345634	145324	94.201
Total			1428469	152346	100.000