Supporting Information for:

Asymmetric total synthesis of (-)-α-kainic acid using an enantioselective, metal-promoted ene cyclization

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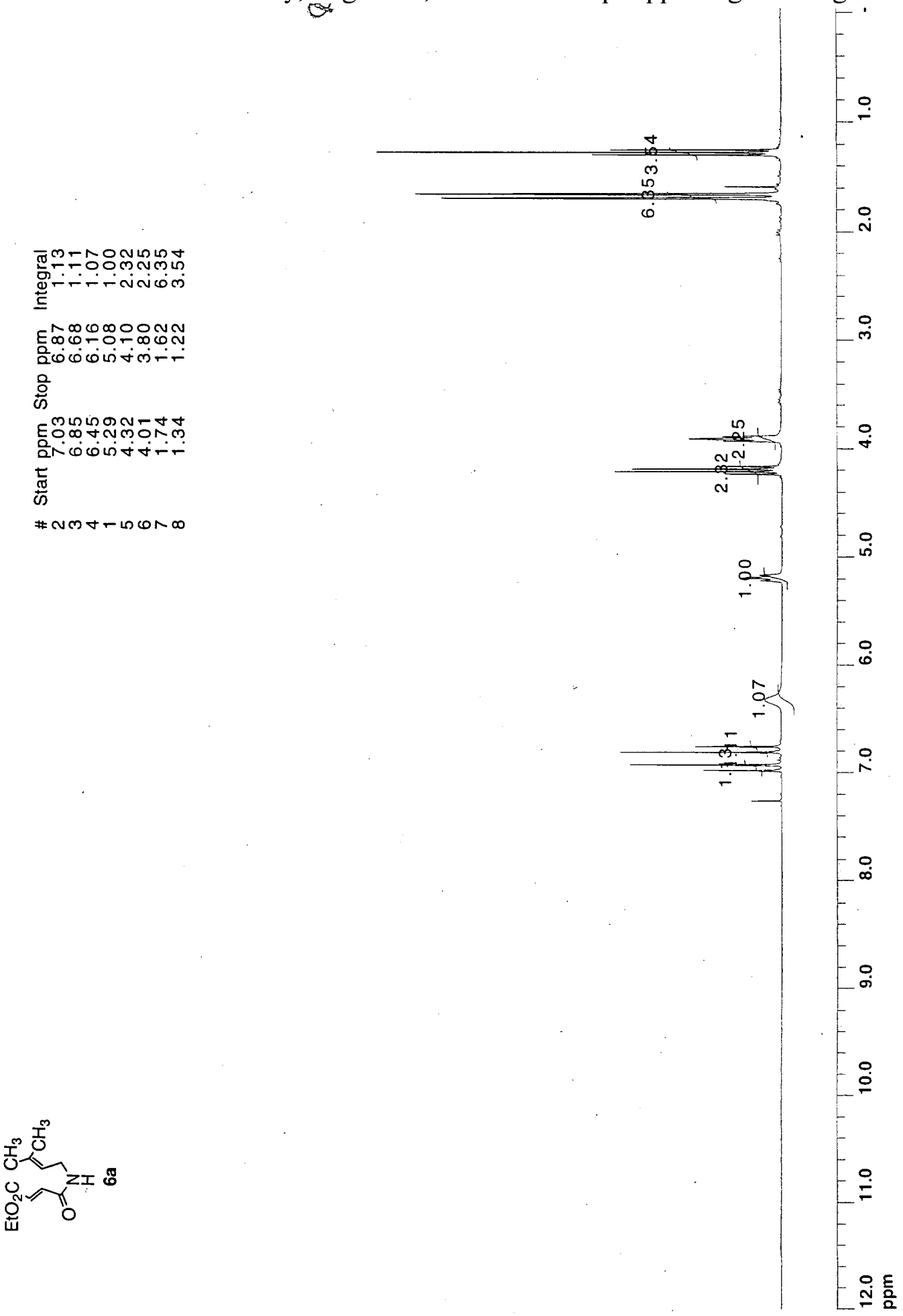
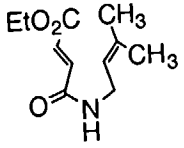
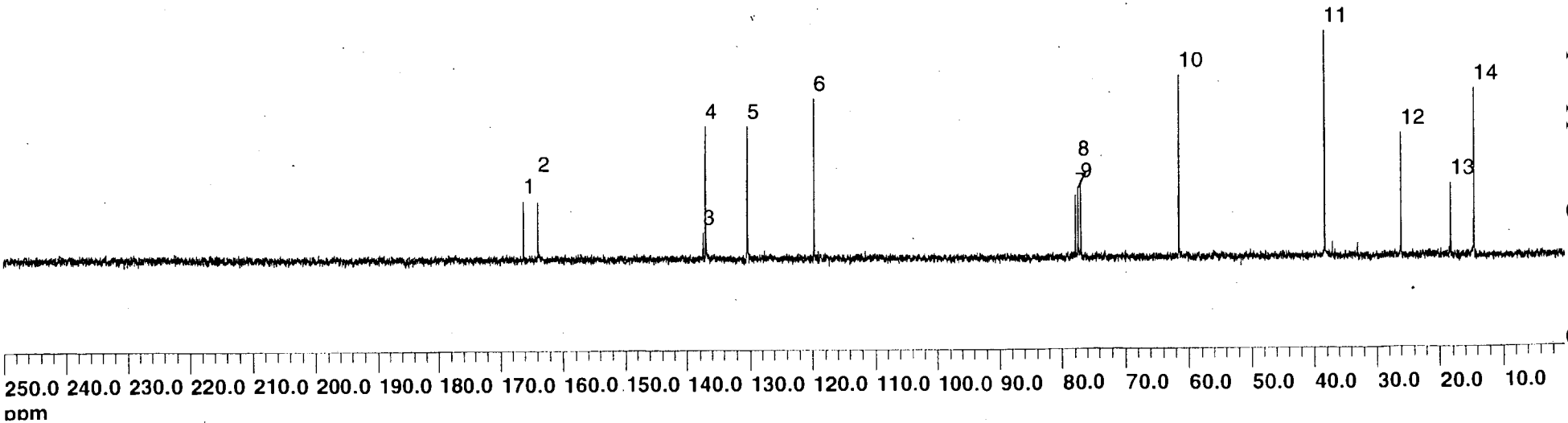

EtO2C CH3 CH3 N H O
6a
Start ppm Stop ppm Integral
2 7.03 6.87 1.13
3 6.85 6.68 1.11
4 6.45 6.16 1.07
1 5.29 5.08 1.00
5 4.32 4.10 2.32
6 4.01 3.80 2.25
7 1.74 1.62 6.35
8 1.34 1.22 3.54
6.35
3.54
2.32
2.25
1.00
1.07
1.13
1.11
12.0 11.0 10.0 9.0 8.0 7.0 6.0 5.0 4.0 3.0 2.0 1.0
ppm

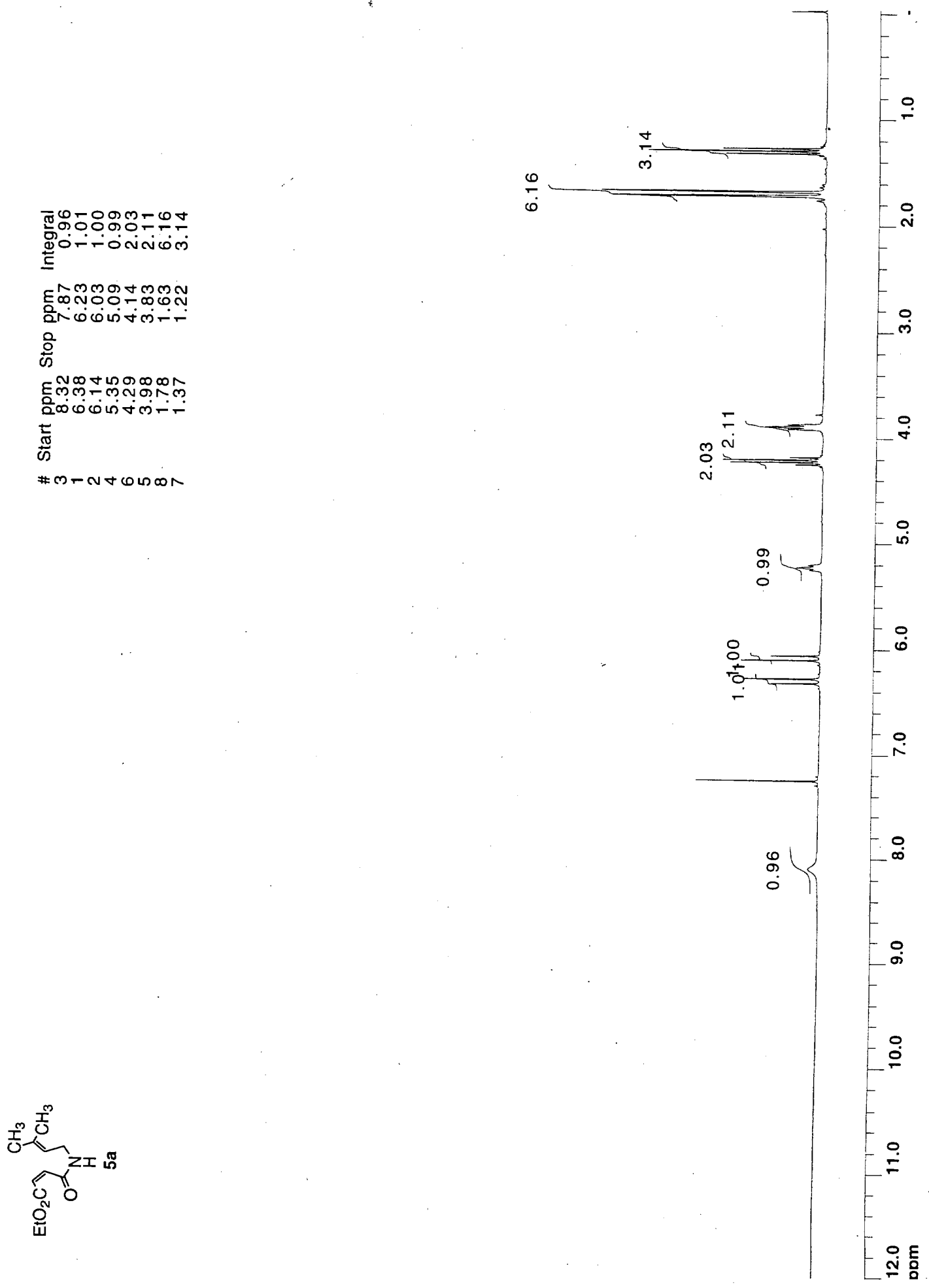


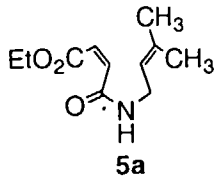
6a

14 peaks found in C13-AX-III-046b

peak	ppm	freq	amp
1	166.076	12533.51	1833788.25
2	163.747	12357.73	1777528.75
3	137.301	10361.88	815893.50
4	136.912	10332.58	4125664.00
5	130.248	9829.66	4128147.25
6	119.621	9027.65	4987043.00
7	77.728	5866.03	1926172.50
8	77.308	5834.29	2206854.25
9	76.887	5802.56	2231933.25
10	61.359	4630.68	5684535.00
11	38.180	2881.41	7050713.00
12	25.855	1951.24	3826376.00
13	18.123	1367.74	2247182.75
14	14.355	1083.32	5213993.50



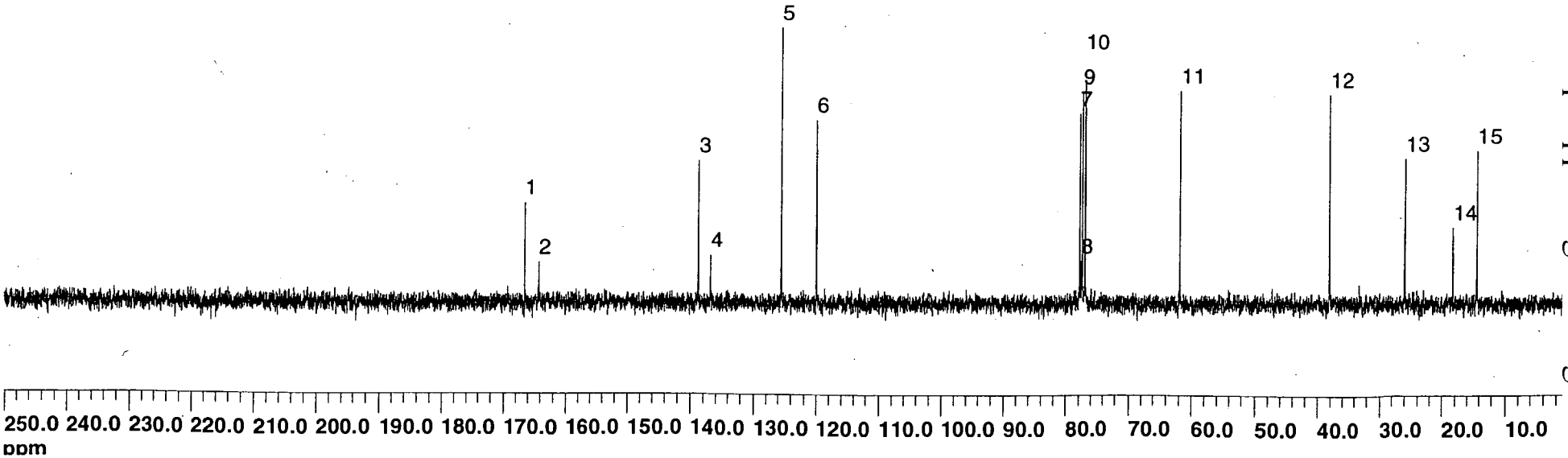

EtO2C
CH3
CH3
N
H
O
5a
Start ppm Stop ppm Integral
3 8.32 7.87 0.96
1 6.38 6.23 1.01
2 6.14 6.03 1.00
4 5.35 5.09 0.99
6 4.29 4.14 2.03
5 3.98 3.83 2.11
8 1.78 1.63 6.16
7 1.37 1.22 3.14
6.16
3.14
2.03
2.11
0.99
1.00
1.01
0.96
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
ppm

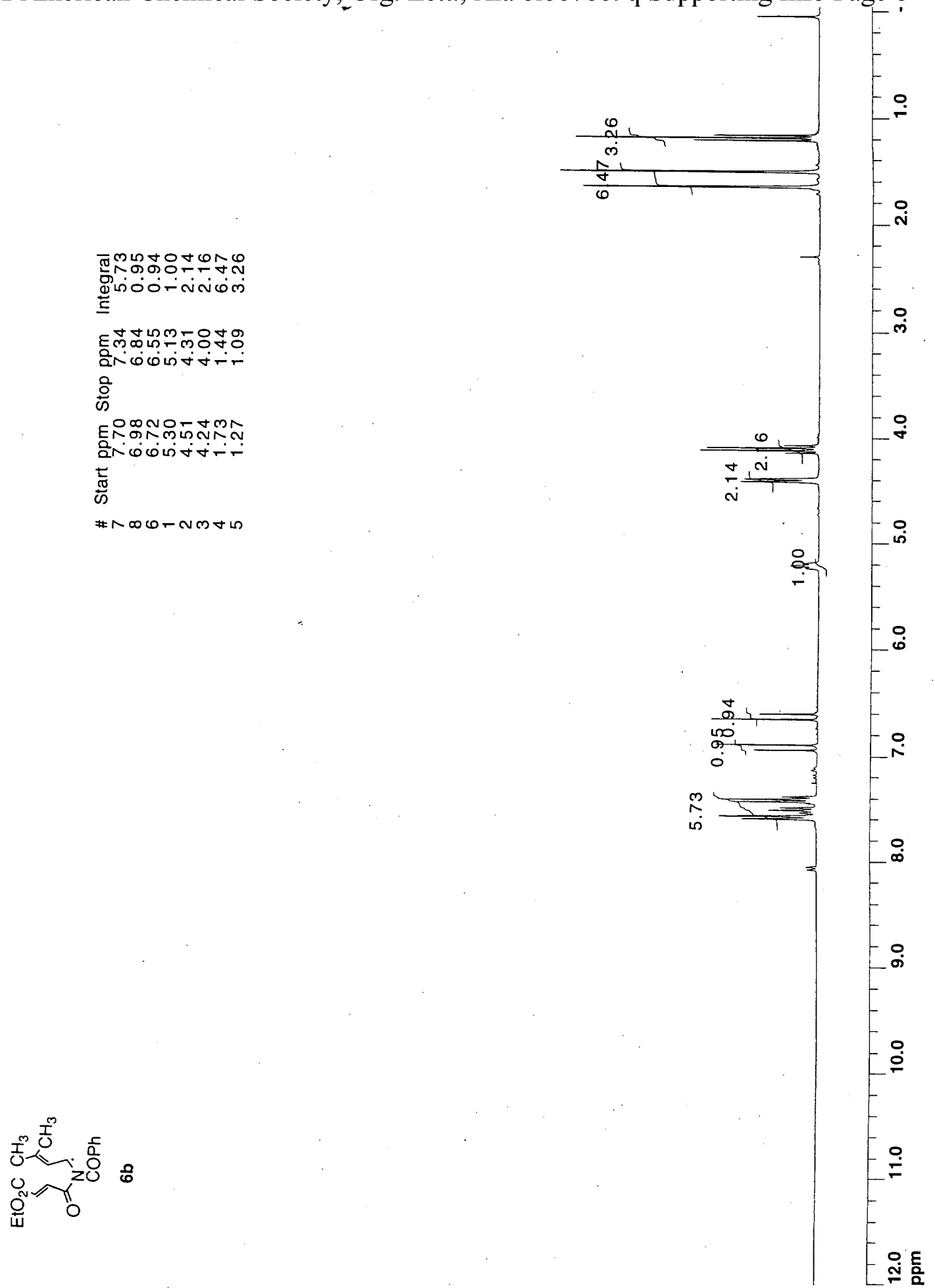


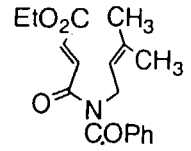
5a

15 peaks found in C13-AX-II-034a

peak	ppm	freq	amp
1	166.464	12562.81	771383.62
2	164.054	12380.92	306201.47
3	138.692	10466.86	1108986.00
4	136.751	10320.38	370156.59
5	125.444	9467.11	2156539.00
6	119.913	9049.63	1432776.38
7	77.728	5866.03	1486776.12
8	77.502	5848.94	331077.22
9	77.291	5833.07	1659614.62
10	76.871	5801.33	1755688.88
11	61.780	4662.42	1671362.25
12	38.035	2870.43	1641959.38
13	25.903	1954.90	1137705.25
14	18.188	1372.62	598645.81
15	14.274	1077.21	1203297.88



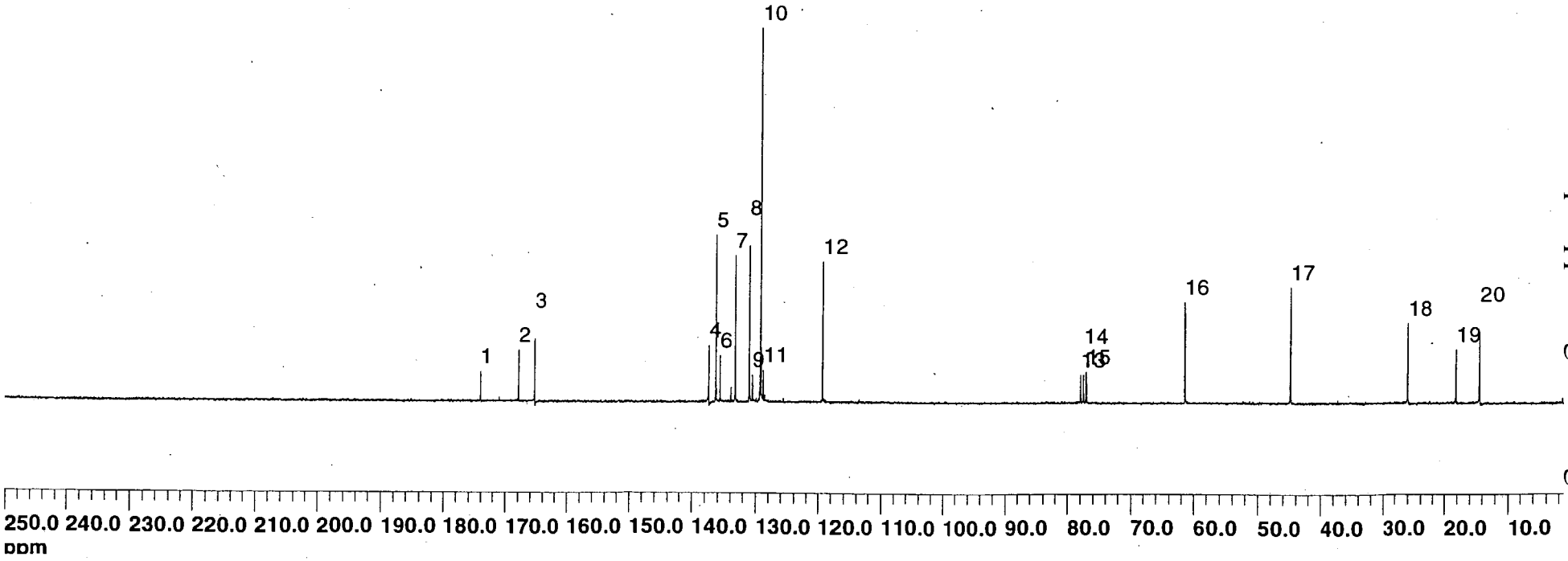

EtO2C CH3 CH3 N COPh O
6b
Start ppm Stop ppm Integral
7 7.70 7.34 5.73
8 6.98 6.84 0.95
6 6.72 6.55 0.94
1 5.30 5.13 1.00
2 4.51 4.31 2.14
3 4.24 4.00 2.16
4 1.73 1.44 6.47
5 1.27 1.09 3.26
6.47
3.26
2.14
2.16
1.00
0.95
0.94
5.73
12.0 11.0 10.0 9.0 8.0 7.0 6.0 5.0 4.0 3.0 2.0 1.0
ppm

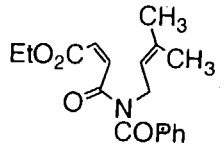


6b

20 peaks found in C13-AX-III-020b

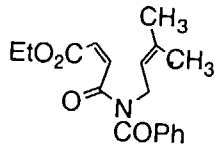
peak	ppm	freq	amp
1	173.953	13128.00	3640953.75
2	167.774	12661.69	6347187.50
3	165.202	12467.59	7688512.50
4	137.252	10358.22	7000763.00
5	136.152	10275.21	20843956.00
6	135.521	10227.60	5672497.50
7	133.095	10044.50	18278752.00
8	130.895	9878.48	19469764.00
9	130.362	9838.20	3338805.50
10	129.100	9742.99	47045504.00
11	128.679	9711.25	3901120.75
12	119.152	8992.25	17575828.00
13	77.809	5872.14	3446985.75
14	77.372	5839.18	3501172.00
15	76.952	5807.44	3846852.25
16	61.311	4627.02	12595572.00
17	44.747	3377.02	14487697.00
18	25.887	1953.68	9940318.00
19	18.010	1359.20	6694967.00
20	14.290	1078.43	8841925.00





5b

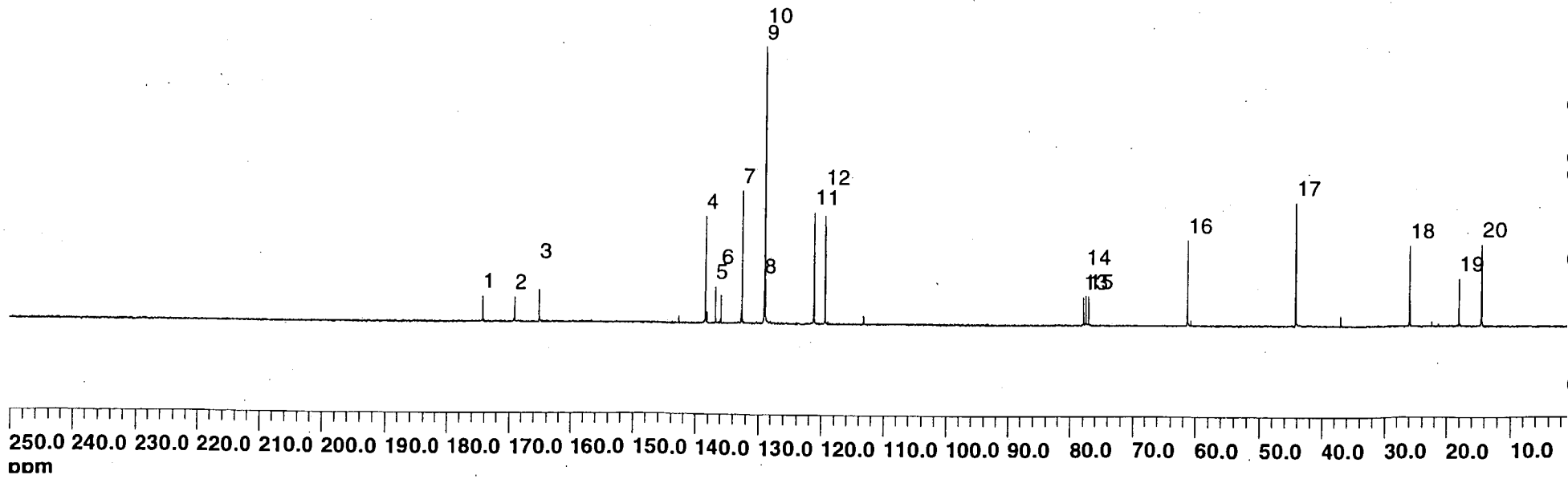
#	Start ppm	Stop ppm	Integral
5	7.61	7.33	5.42
4	6.45	6.29	0.96
3	5.71	5.58	0.94
2	5.33	5.14	1.00
1	4.47	4.37	2.07
6	4.21	4.09	2.18
7	1.69	1.60	3.23
8	1.48	1.37	2.95
9	1.29	1.16	3.63

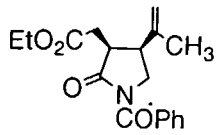


5b

20 peaks found in C13-AX-II-269a

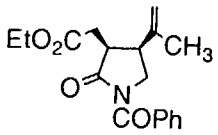
peak	ppm	freq	amp
1	174.147	13142.64	6205981.50
2	169.020	12755.68	6014482.50
3	165.057	12456.61	7894894.50
4	138.336	10440.01	26644568.00
5	136.654	10313.05	8922805.00
6	135.748	10244.69	6933756.50
7	132.545	10003.00	33142932.00
8	128.954	9732.00	10466012.00
9	128.890	9727.12	69539408.00
10	128.809	9721.01	68056120.00
11	121.077	9137.52	27903570.00
12	119.330	9005.68	27078446.00
13	77.793	5870.92	7038155.00
14	77.372	5839.18	7375697.50
15	76.952	5807.44	7197285.50
16	61.197	4618.47	21288164.00
17	44.117	3329.41	30899326.00
18	25.855	1951.24	20171720.00
19	17.913	1351.87	11785018.00
20	14.322	1080.88	20409264.00





7b

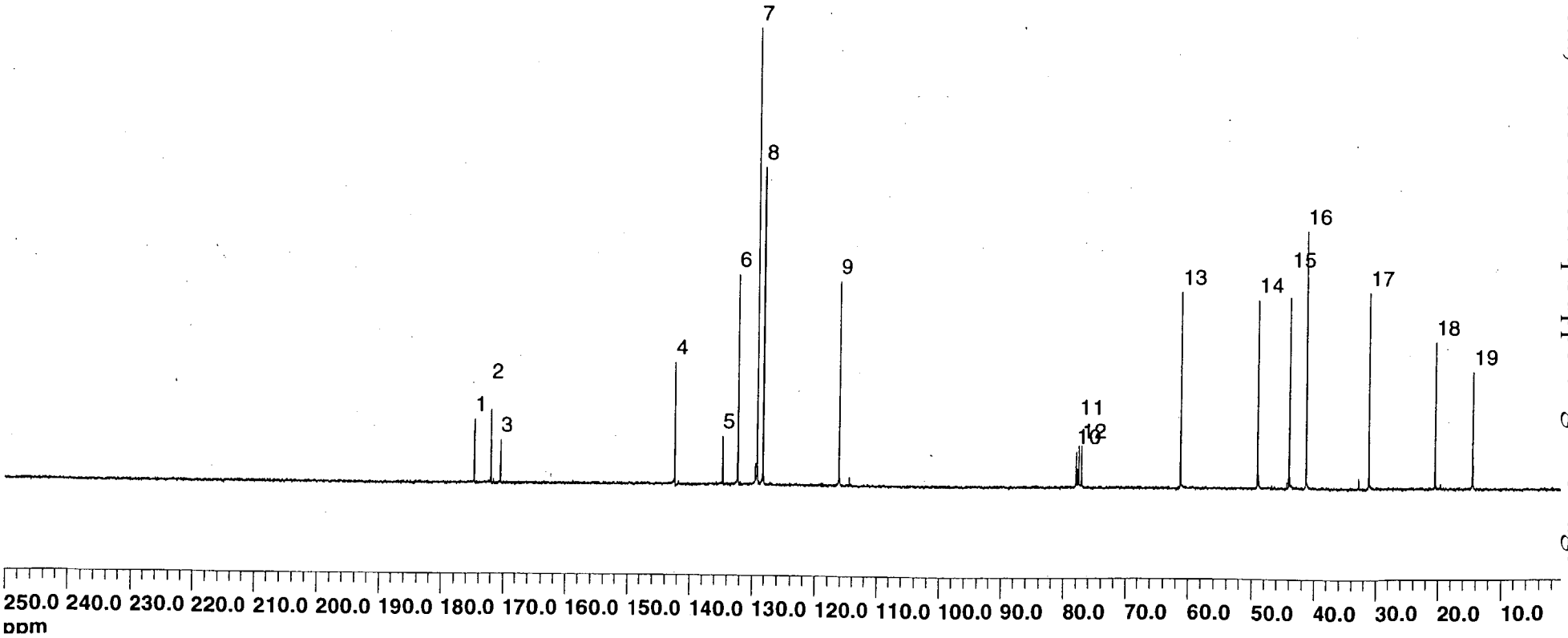
#	Start ppm	Stop ppm	Integral
10	7.59	7.43	2.91
9	7.43	7.32	2.13
6	5.01	4.71	2.16
5	4.29	3.84	4.26
4	3.45	3.17	2.01
2	2.87	2.61	1.07
1	2.44	2.20	1.00
7	1.85	1.55	3.33
8	1.35	1.09	3.27

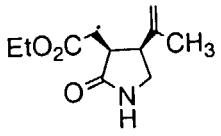


7b

19 peaks found in C13-AX-II-237a

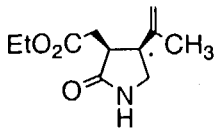
peak	ppm	freq	amp
1	174.632	13179.26	7912658.50
2	171.867	12970.52	9119116.00
3	170.346	12855.78	5293763.50
4	142.299	10739.08	15161015.00
5	134.567	10155.58	5978974.00
6	132.189	9976.14	26298266.00
7	129.019	9736.88	57668336.00
8	128.049	9663.64	40019088.00
9	116.014	8755.44	25646238.00
10	77.841	5874.58	4443045.00
11	77.405	5841.62	5187597.00
12	76.984	5809.88	5102071.50
13	61.116	4612.37	24577204.00
14	48.953	3694.40	23639328.00
15	43.842	3308.66	23987036.00
16	41.237	3112.13	32405872.00
17	31.047	2343.08	24595312.00
18	20.436	1542.30	18373612.00
19	14.435	1089.42	14750820.00





7a

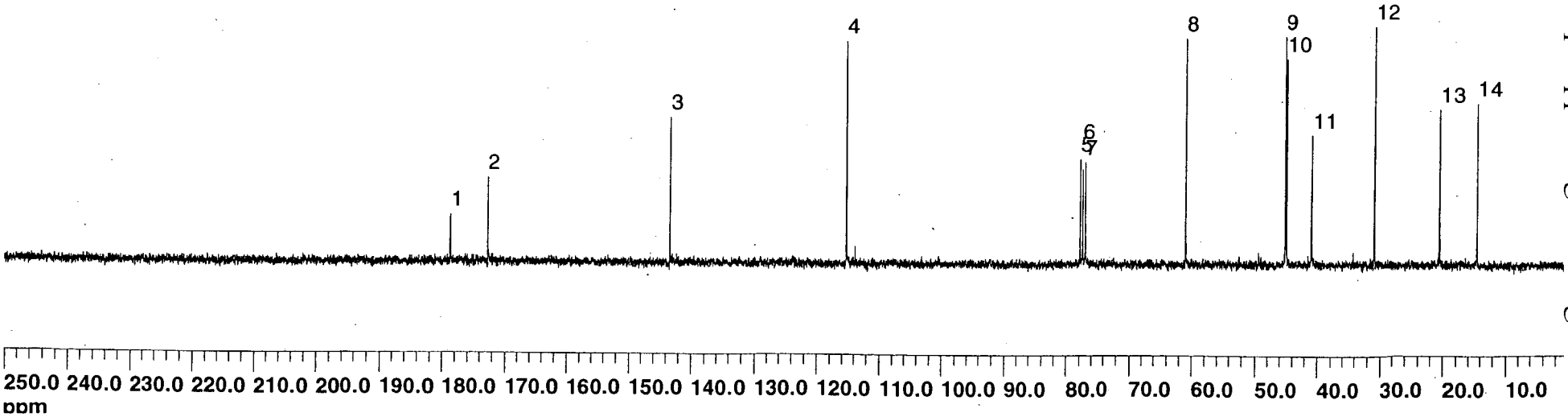
#	Start ppm	Stop ppm	Integral
12	7.10	6.77	1.01
2	4.91	4.63	2.13
3	4.22	3.96	2.11
4	3.61	3.45	1.00
7	3.31	3.17	2.01
6	3.11	2.97	0.98
5	2.87	2.59	1.15
11	1.68	1.56	2.99
1	2.32	2.13	1.01
10	1.26	1.16	3.14

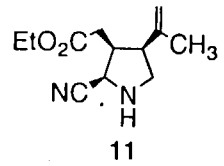


7a

14 peaks found in C13-AX-II-272a

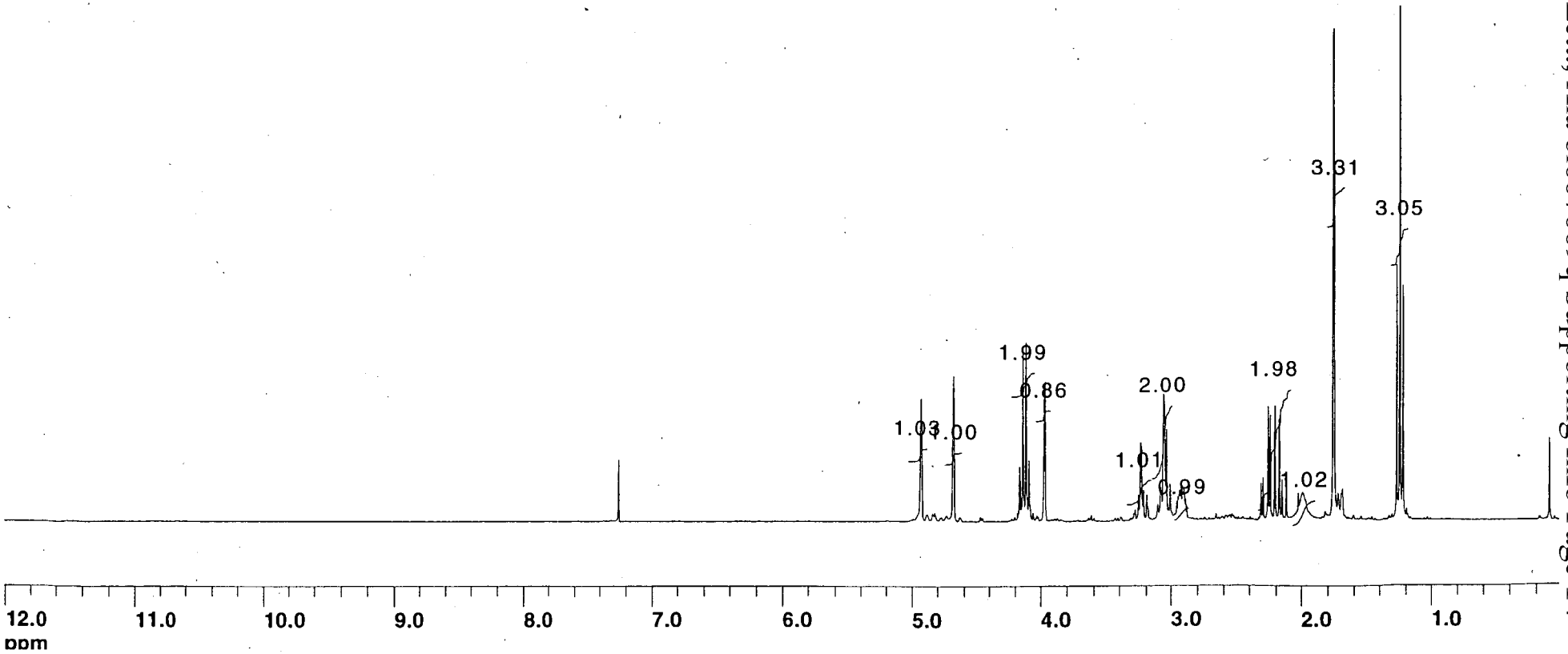
peak	ppm	freq	amp
1	178.579	13477.12	1449568.75
2	172.611	13026.68	2605164.75
3	143.253	10811.10	4517558.00
4	115.141	8689.52	6933034.50
5	77.744	5867.25	3283228.00
6	77.324	5835.51	2949580.50
7	76.887	5802.56	3177640.75
8	60.858	4592.84	7088402.00
9	45.055	3400.21	7147586.50
10	44.844	3384.34	6439852.00
11	40.784	3077.95	4038668.25
12	30.853	2328.43	7467610.50
13	20.420	1541.08	4865857.50
14	14.435	1089.42	5046794.50

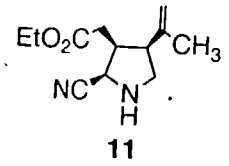




11

#	Start ppm	Stop ppm	Integral
1	5.02	4.87	1.03
2	4.74	4.61	1.00
3	4.23	4.05	1.99
4	4.03	3.92	0.86
5	3.34	3.15	1.01
6	3.14	2.98	2.00
7	2.97	2.85	0.99
8	2.34	2.08	1.98
9	2.07	1.89	1.02
11	1.80	1.67	3.31
10	1.31	1.17	3.05

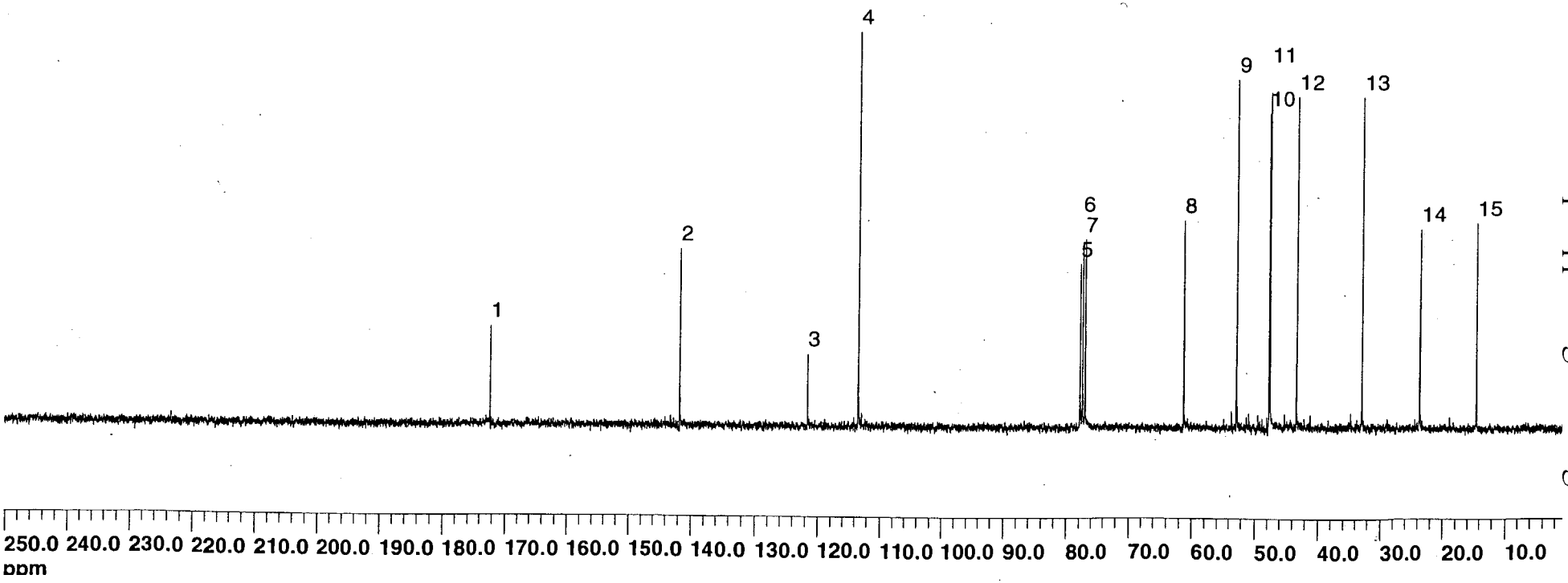


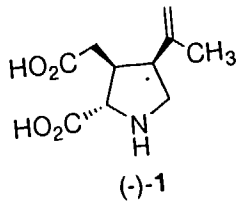


11

15 peaks found in C13-AX-II-108a

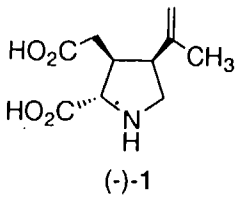
peak	ppm	freq	amp
1	172.206	12996.16	6118036.00
2	141.652	10690.25	10996339.00
3	121.514	9170.48	4470187.50
4	113.297	8550.36	24822586.00
5	77.728	5866.03	10207249.00
6	77.308	5834.29	11599231.00
7	76.887	5802.56	11732003.00
8	61.149	4614.81	12963799.00
9	52.641	3972.72	21939740.00
10	47.691	3599.19	19812092.00
11	47.497	3584.54	21116374.00
12	43.178	3258.61	20853578.00
13	32.794	2474.92	20876284.00
14	23.526	1775.46	12524187.00
15	14.419	1088.20	12908985.00





(-)-1

#	Start ppm	Stop ppm	Integral
7	5.10	4.95	0.98
8	4.75	4.70	1.14
3	4.18	3.97	1.00
4	3.69	3.53	1.00
5	3.47	3.31	1.00
2	3.15	2.88	1.96
1	2.54	2.22	1.97
6	1.87	1.55	2.96



(-)-1

10 peaks found in C13-AX-II-111b

peak	ppm	freq	amp
1	173.250	13075.02	3966614.75
2	170.387	12858.95	5137709.50
3	137.035	10341.87	14749280.00
4	110.686	8353.34	28837374.00
5	62.792	4738.84	14308295.00
6	43.608	3291.08	27867166.00
7	42.913	3238.59	27513226.00
8	37.850	2856.51	24082430.00
9	30.377	2292.55	13498608.00
10	19.298	1456.37	19255998.00