

New Piperazine Derivatives of 6-Acetyl-7-hydroxy-4-methylcoumarin as 5-HT_{1A} Receptor Agents

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KO-510A-1H-cdcl3
KO 510A 1H w CDCl3

8.07

7.28

6.86

6.20
6.19

4.21
4.19
4.17

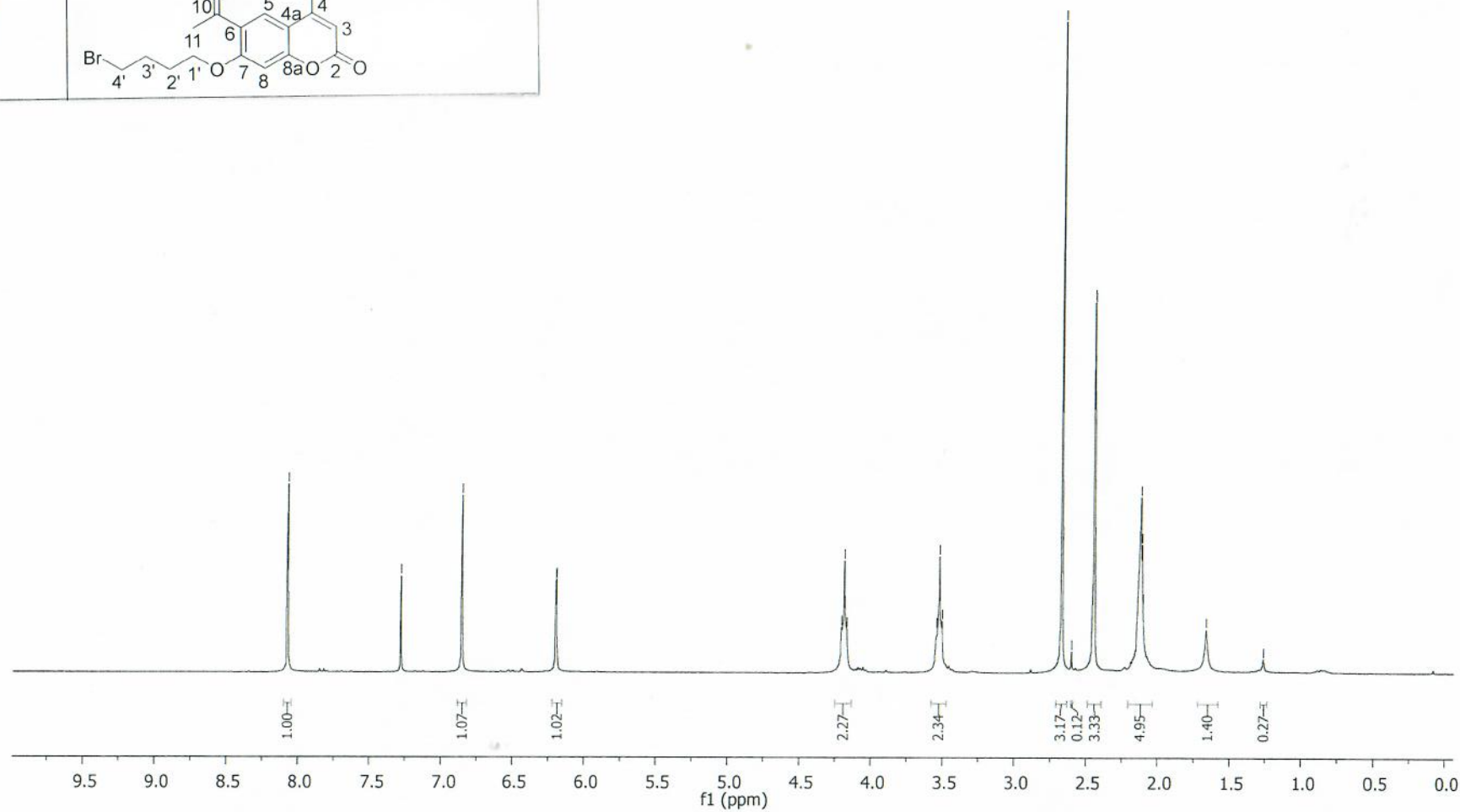
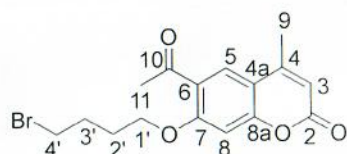
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3.52
3.50

2.67
2.60
2.45
2.45
2.13
2.12
2.11
2.10

1.66

1.26

A



KO-510A-13C
 KO-510A 13C w CDCl3

— 197.67

161.04
 160.45
 157.65
 152.94

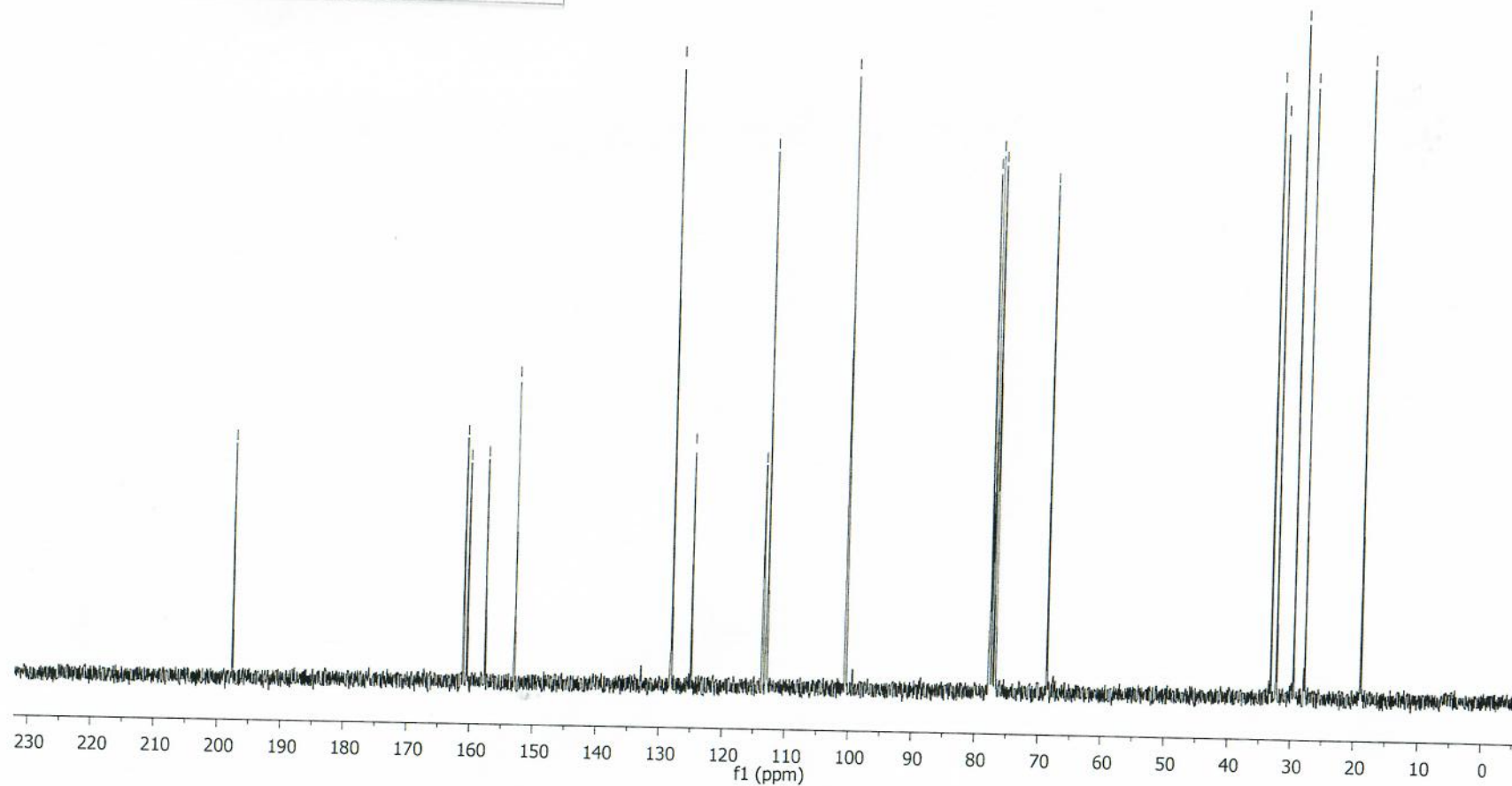
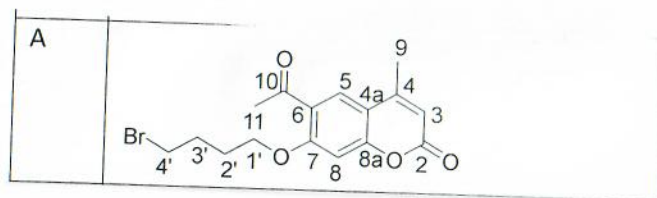
— 128.13
 — 124.95

113.55
 112.96

— 100.47

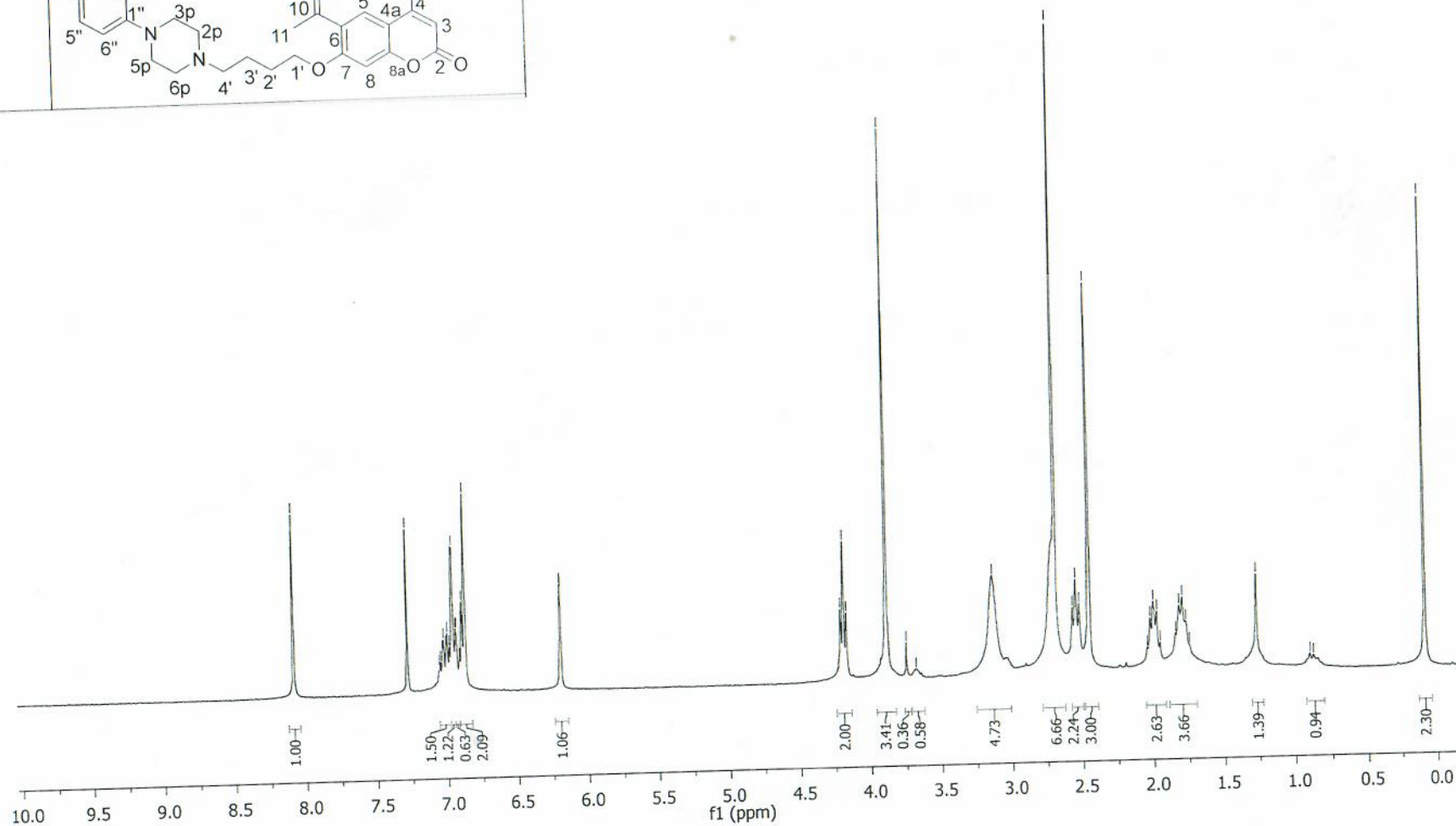
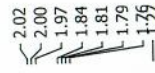
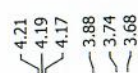
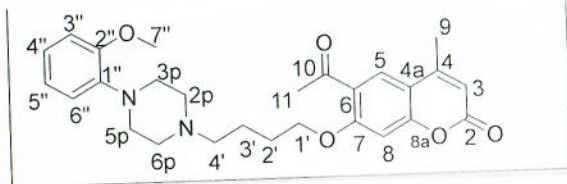
77.65
 77.23
 76.81
 — 68.60

33.11
 32.31
 29.51
 27.75
 — 18.86



KO-511-I-1H-cdd3
 KO 511 I 1H w CDCl3

1



KO-511-I-13C

— 197.91

161.34
160.62
157.78
153.04
152.40

— 141.28

128.19
125.03
123.25
121.17
118.42
113.53
112.96
111.27

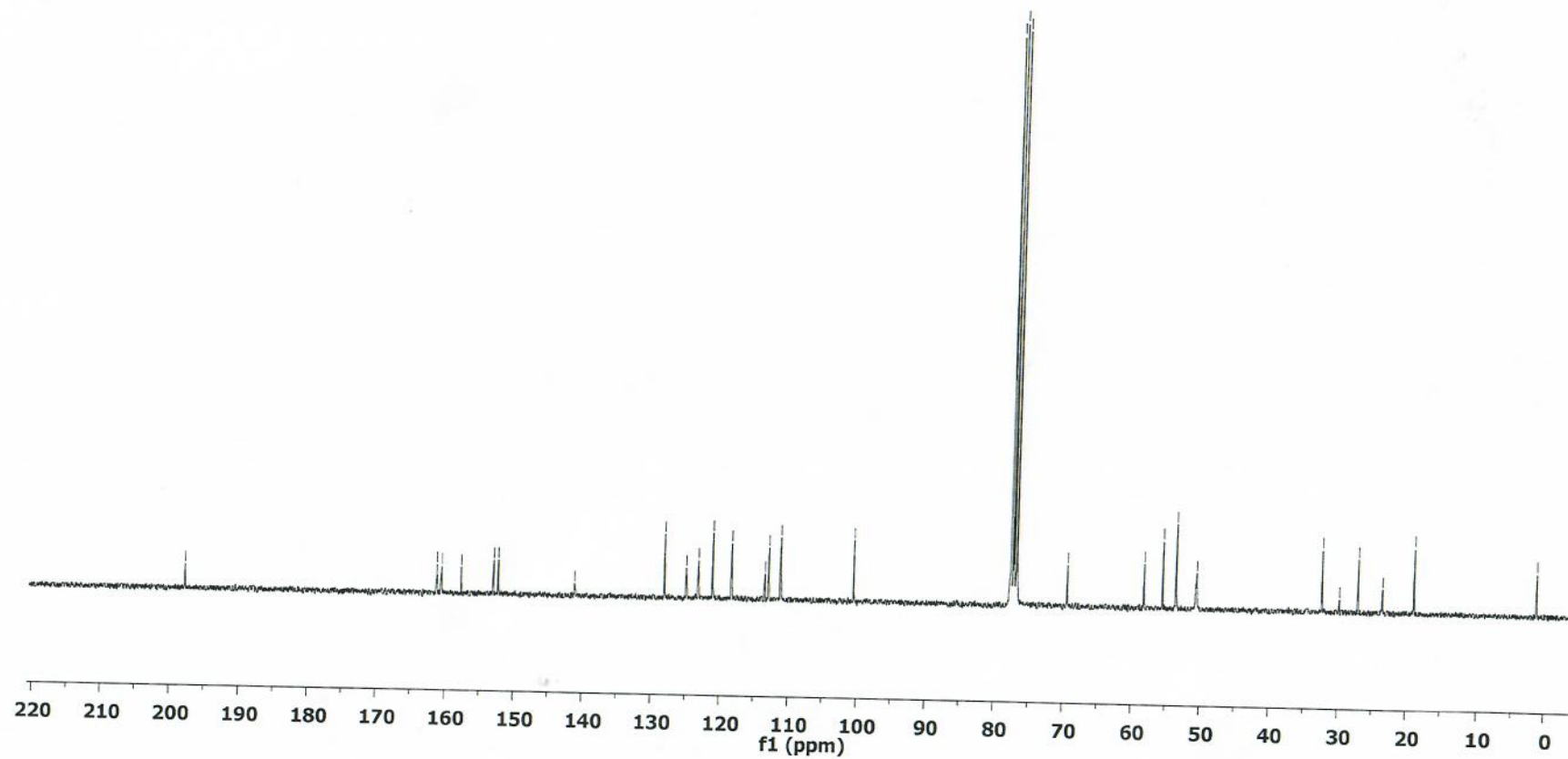
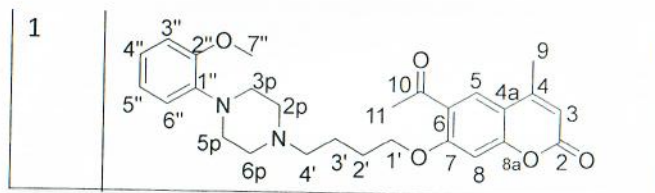
— 100.57

77.65
77.23
76.81
— 69.48

58.30
55.55
53.63
50.82
50.67

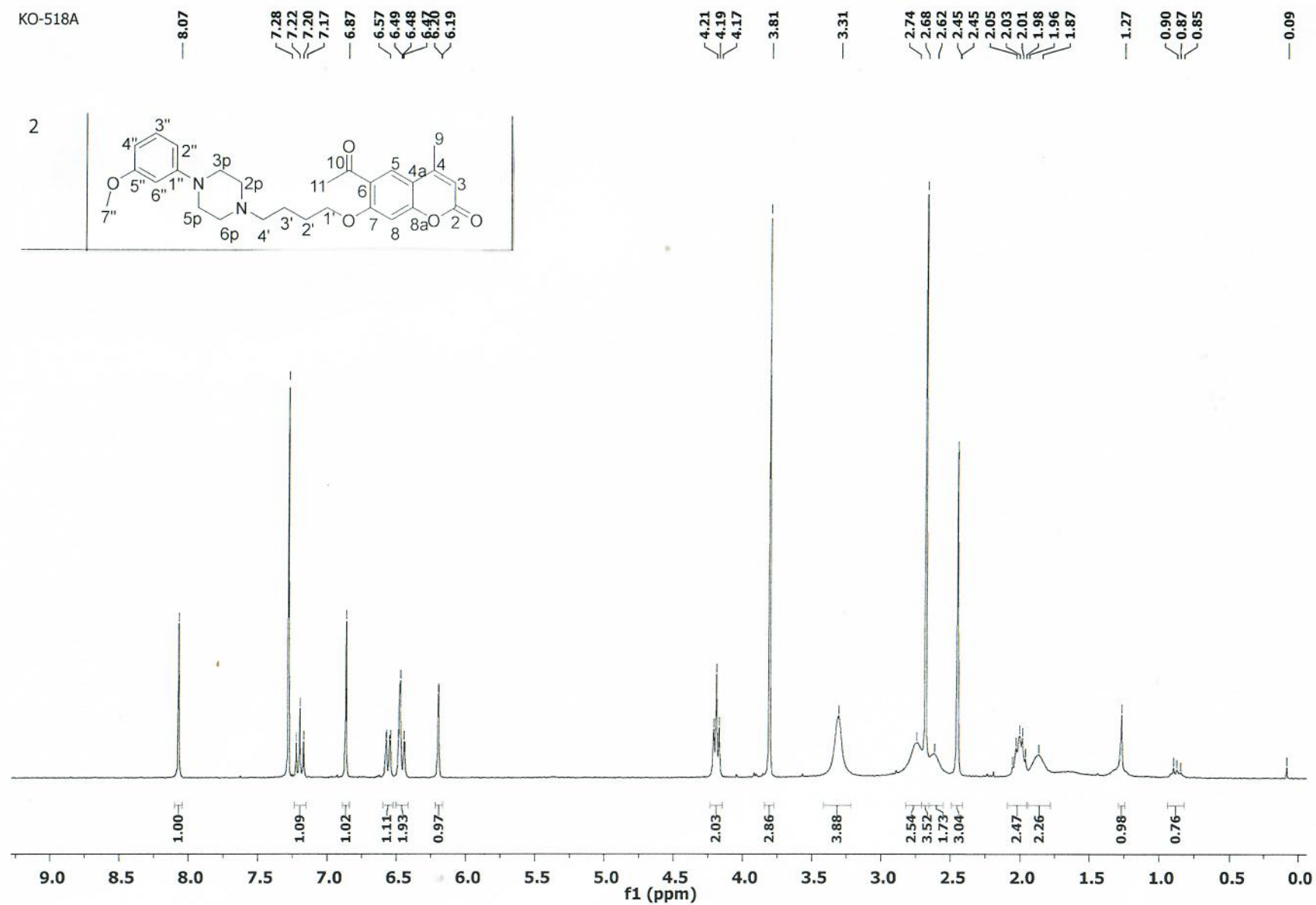
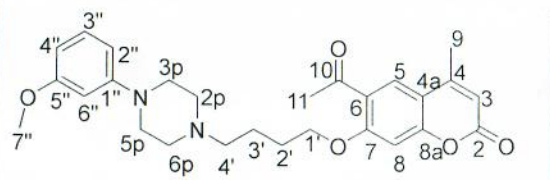
32.40
29.92
27.18
23.57
18.95

— 1.24



KO-518A

2



KO-518A-13C

— 197.82

161.08
160.79
160.56
157.72
152.96

130.15
128.14
125.09

113.61
113.06
109.37
105.37
103.14
100.60

77.65
77.23
76.81
— 69.15

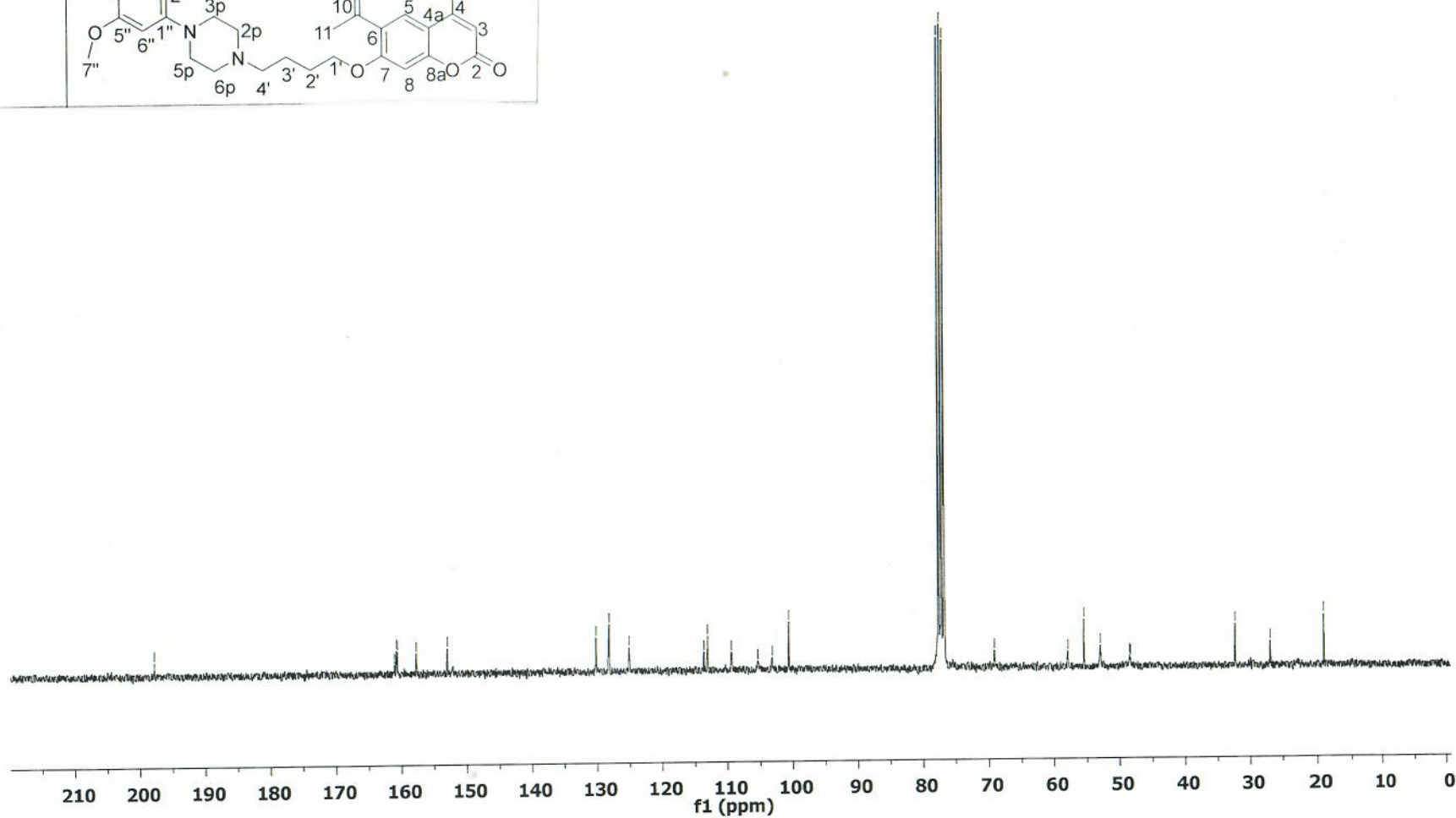
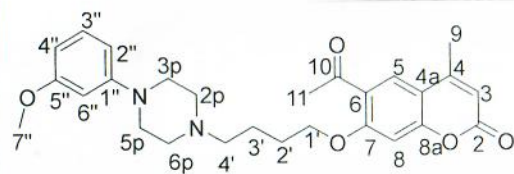
57.88
55.43
52.92
48.49
48.32

— 32.29

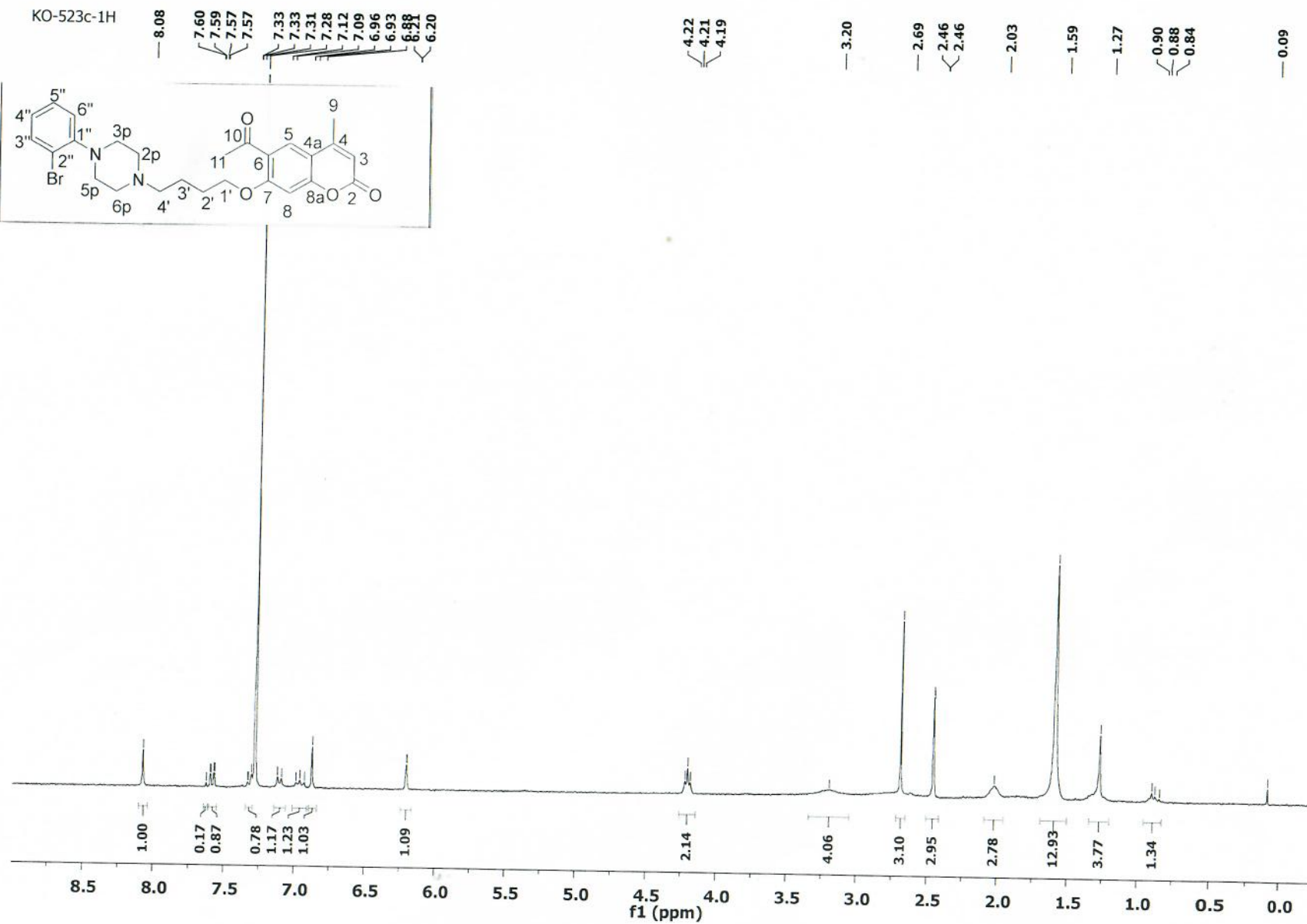
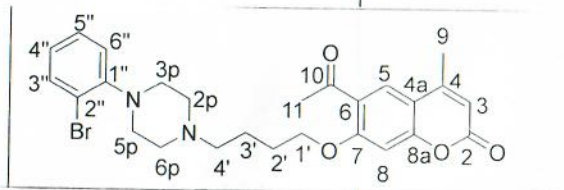
— 26.95

— 18.94

2



3



KO-523c-13C

— 197.72

160.83
160.50
157.68
152.89

134.01
128.81
128.11
125.13
121.60
120.03
113.68
113.15

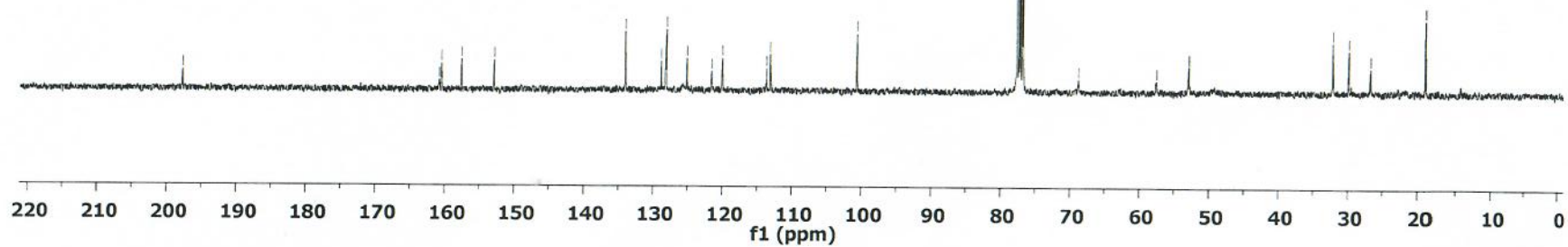
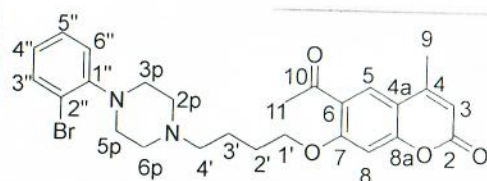
— 100.64

77.65
77.23
76.81
— 68.81

57.59
52.97
52.93

32.23
29.91
26.78
— 18.93

3



KO-525-1H

8.05

7.28
7.13
7.10
7.07
7.03
7.03
7.02
6.96
6.94
6.85
6.81
6.17
6.17

4.19
4.17
4.15

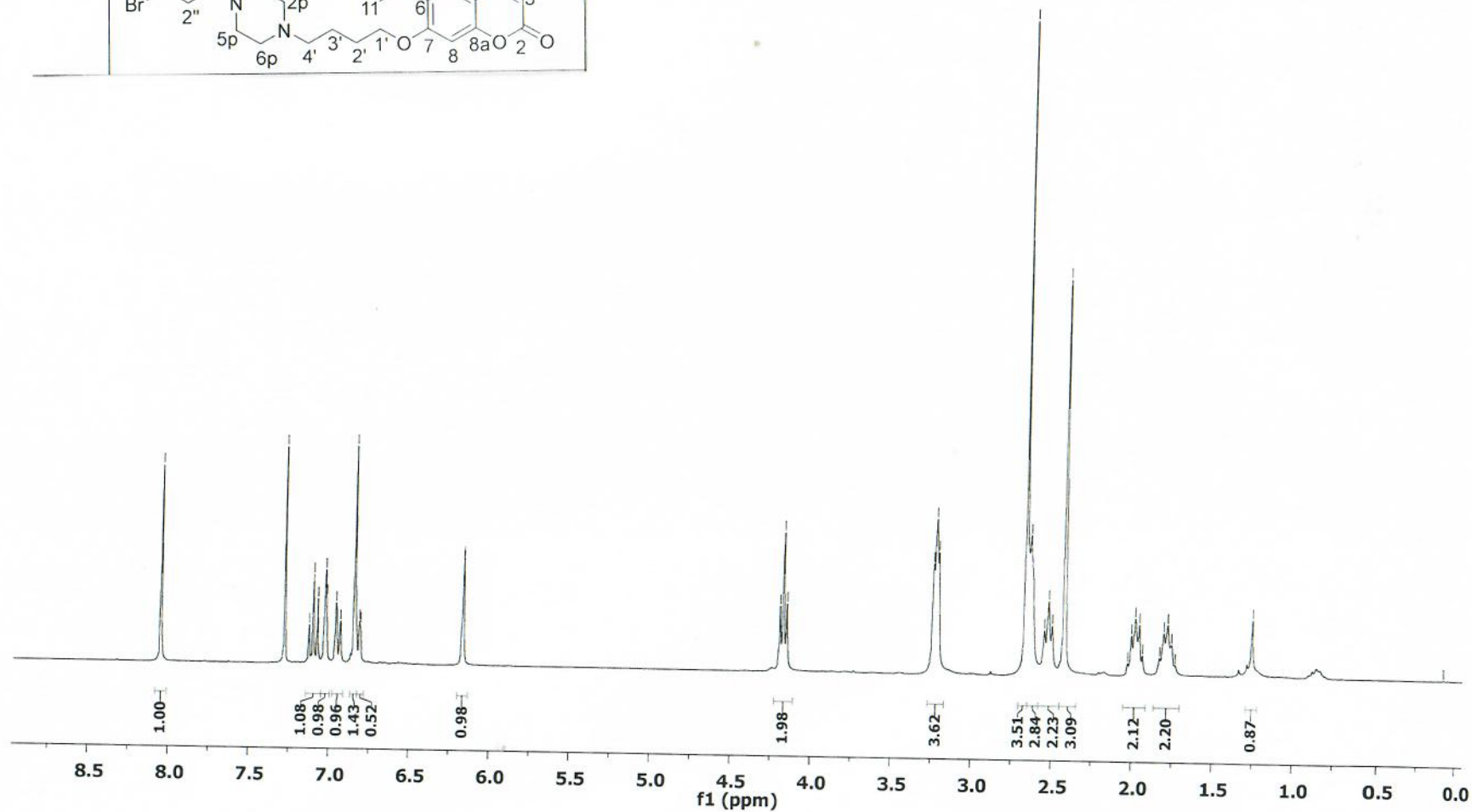
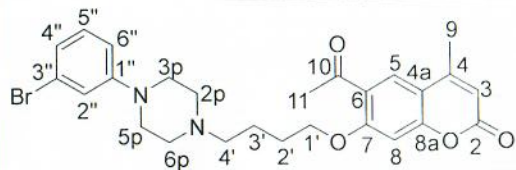
3.24
3.23
3.21

2.67
2.64
2.55
2.53
2.50
2.43
2.42

2.01
1.99
1.96
1.94
1.83
1.81
1.78
1.76

0.08

4



KO-525-13C

— 197.77

161.19
160.51
157.69
152.97
152.32

130.53
128.10
125.00
123.39
122.65
118.98
114.62
113.49
112.93

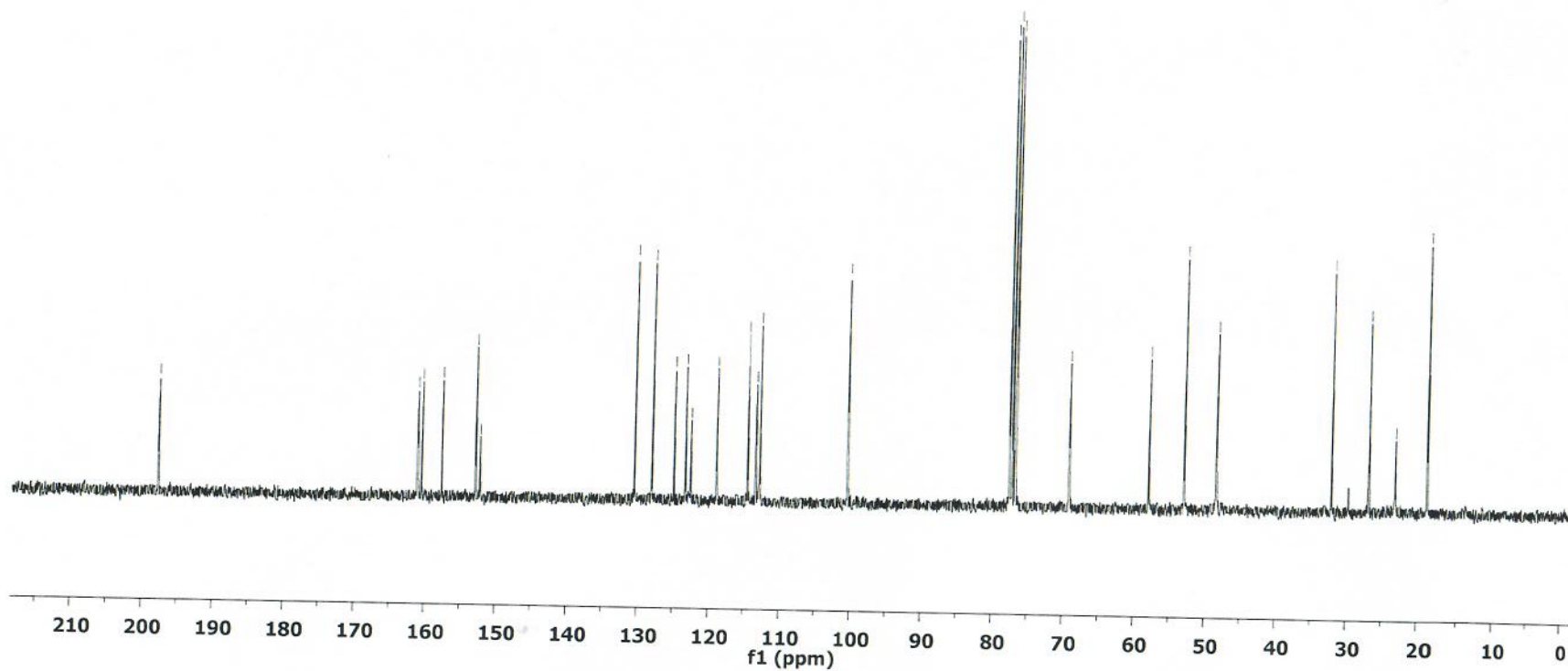
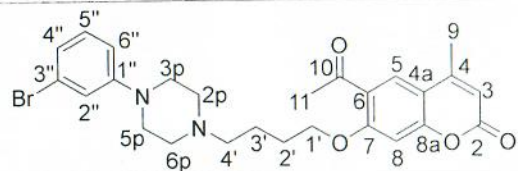
— 100.53

77.65
77.23
76.81
— 69.30

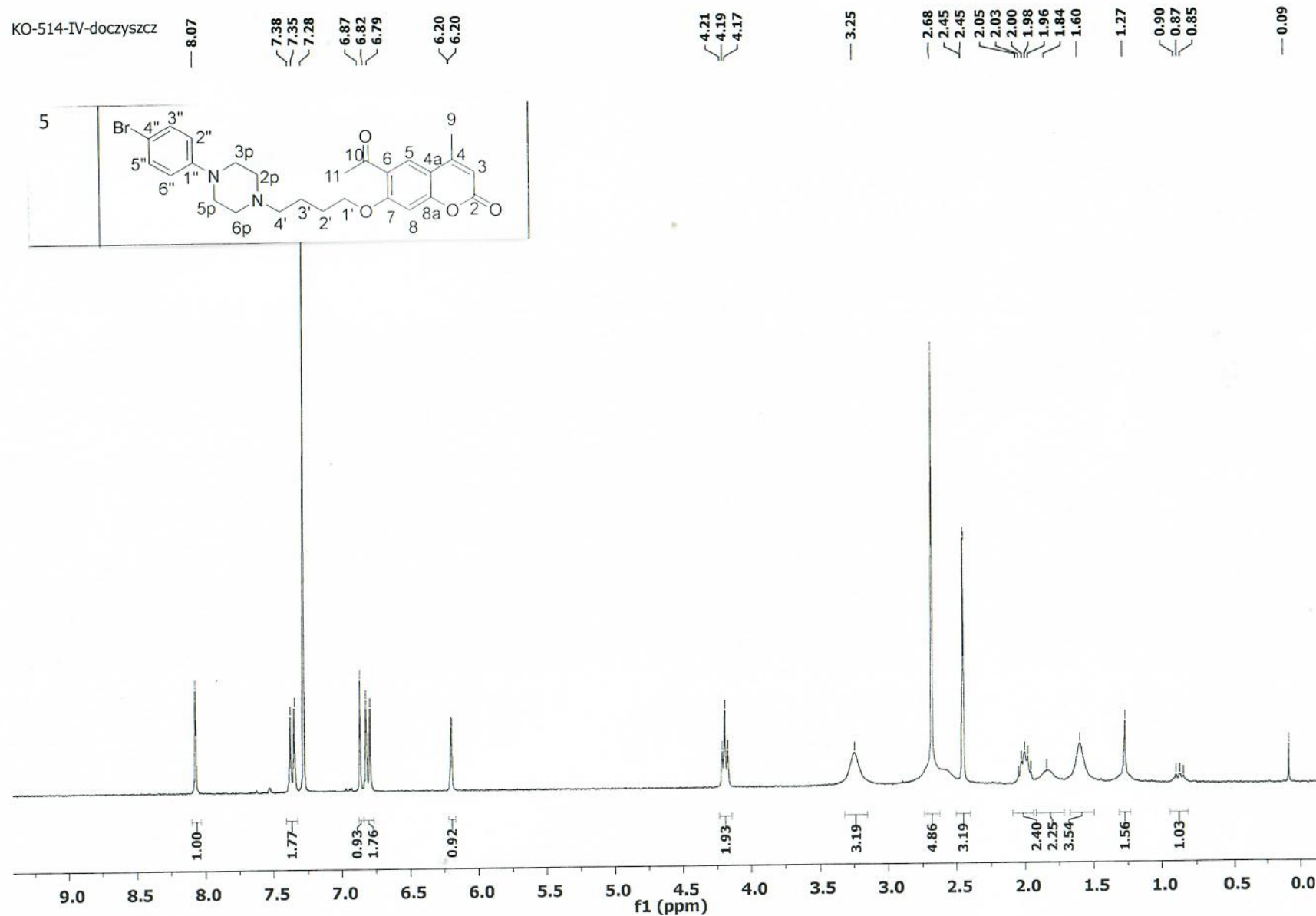
57.97
53.00
48.46

32.30
27.01
23.25
18.89

4



KO-514-IV-doczyszcz



KO-514-IV-13C
— 197.85

161.17
160.57
157.74
152.99

132.13
128.15
125.08

118.03
113.58
113.03

100.59

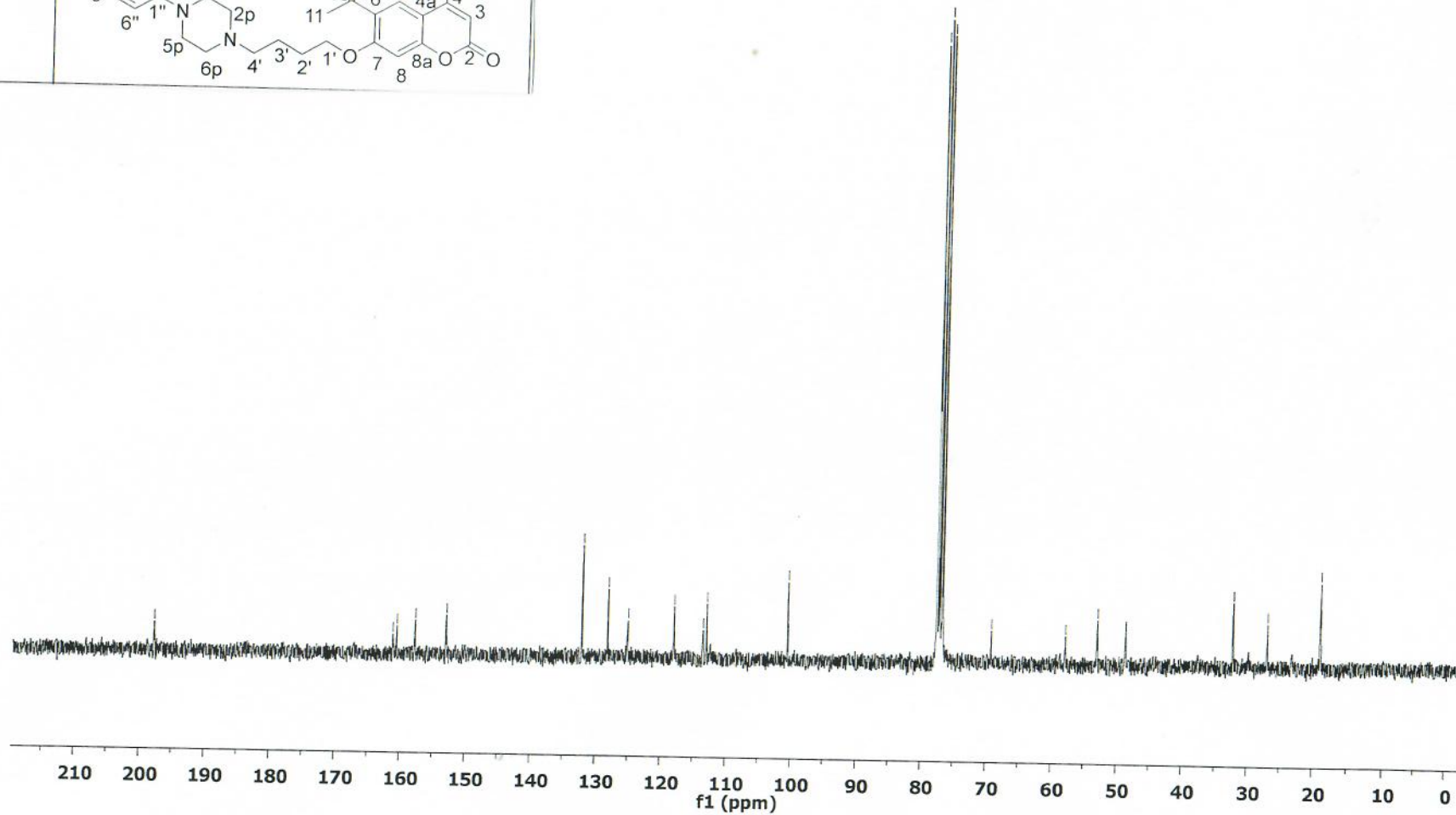
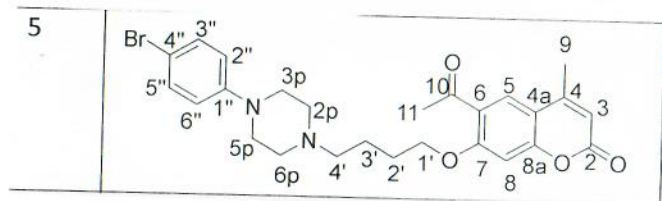
77.65
77.23
76.81
69.29

58.00
53.03
48.77
48.73

32.32

27.03

18.94



KO-513-III-powt

8.07
7.28
7.09
7.08
7.07
7.06
7.05
7.01
7.01
6.98
6.96
6.95
6.95
6.36
6.19

4.22
4.20
4.17

3.23

2.81

2.68

2.64

2.45

2.45

2.06

2.03

2.01

1.99

1.97

1.90

1.88

1.27

0.91

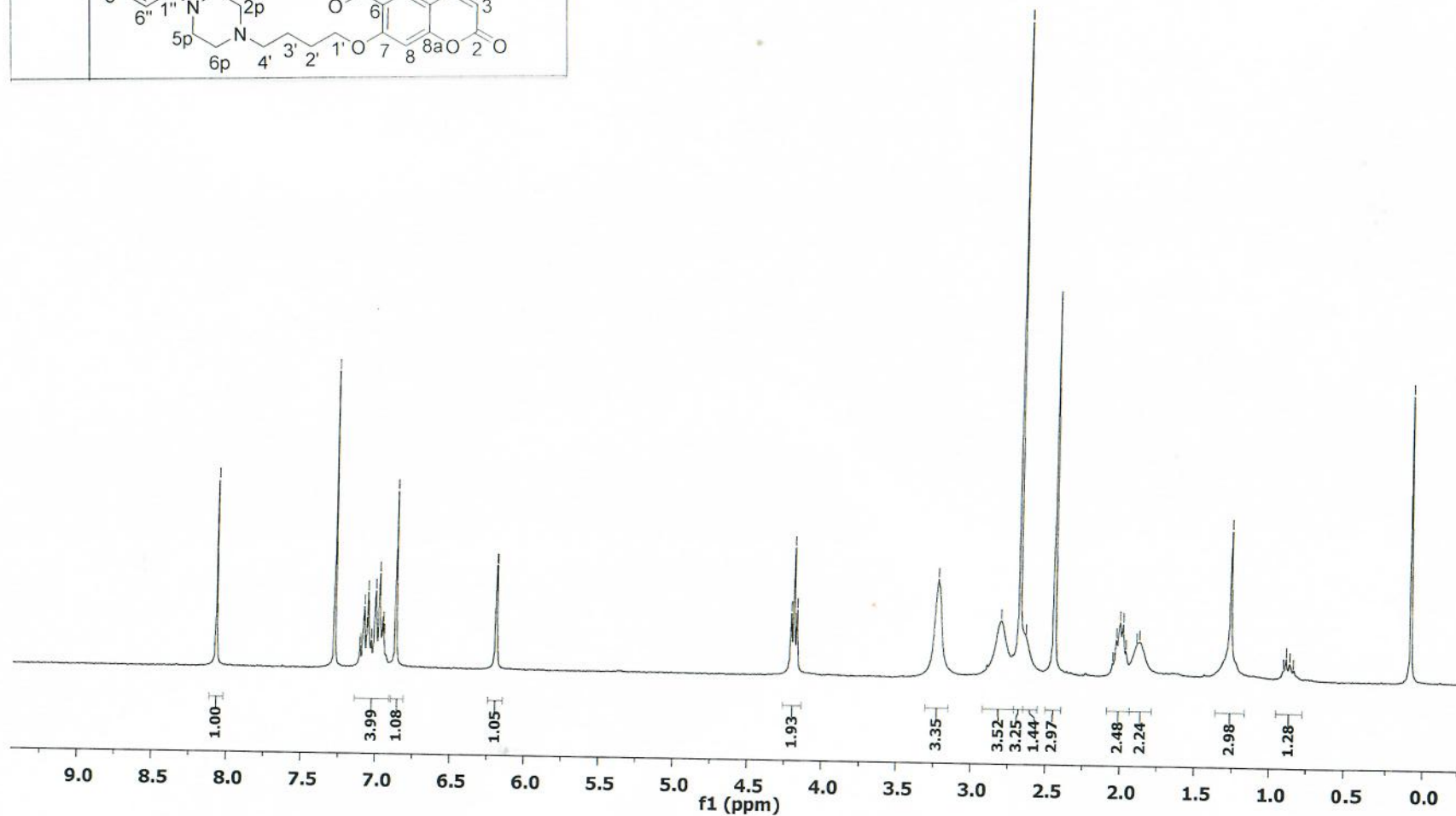
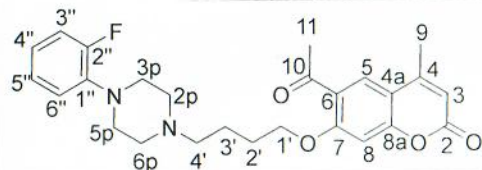
0.89

0.87

0.84

0.08

6



KO-513-III-13C

197.80

161.02
160.56
157.71
157.47
154.21
152.95

128.14
125.10
124.85
124.80
123.45
119.41
119.38
116.53
116.25
113.62
113.08
100.61

77.65
77.23
76.81

69.06

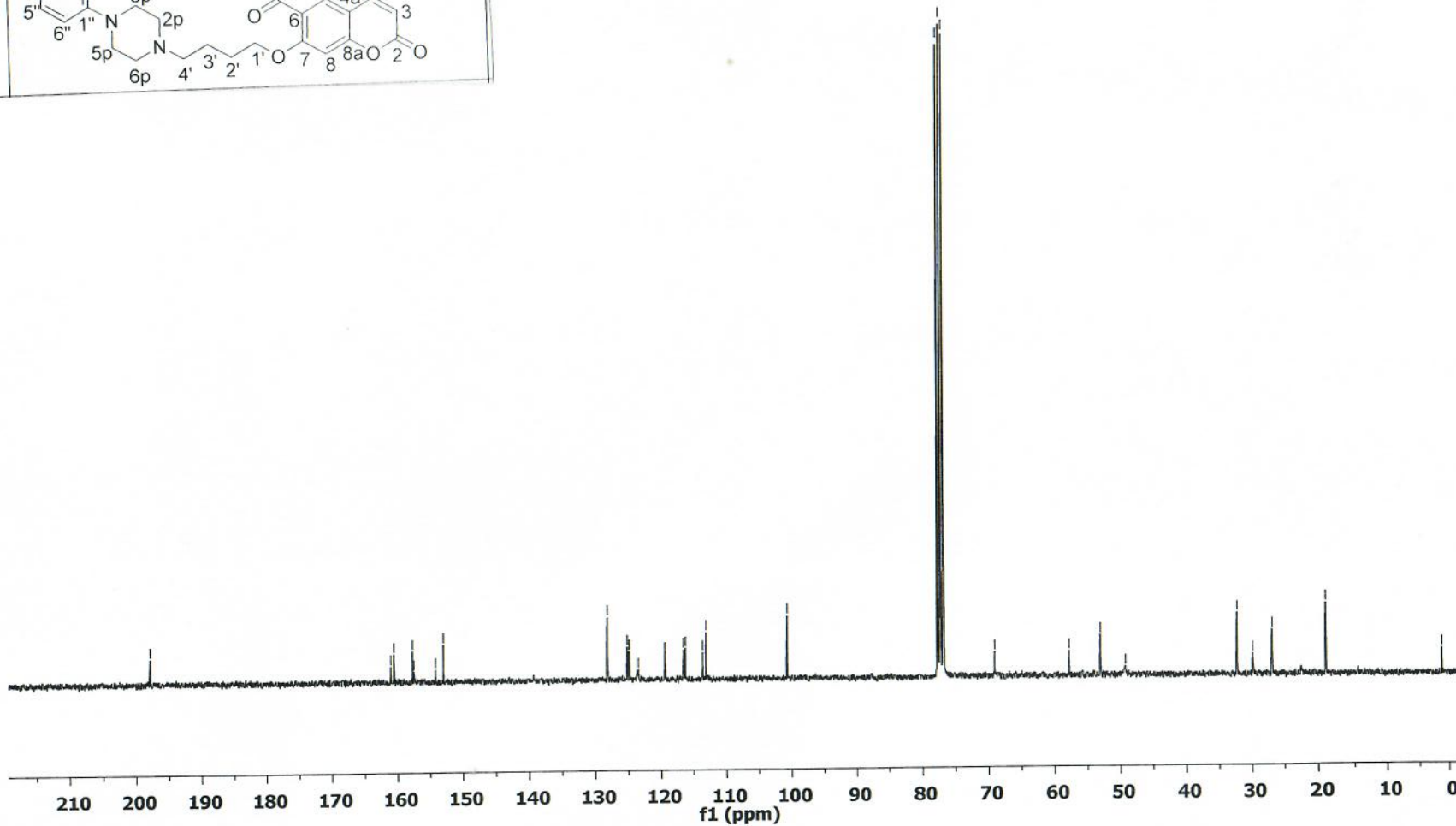
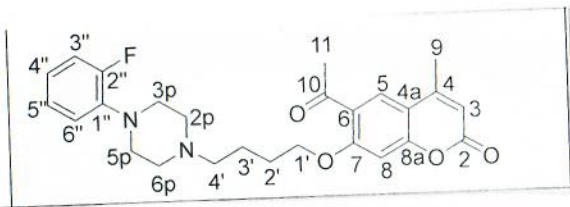
57.83
53.04
49.22

32.28
29.91
26.90

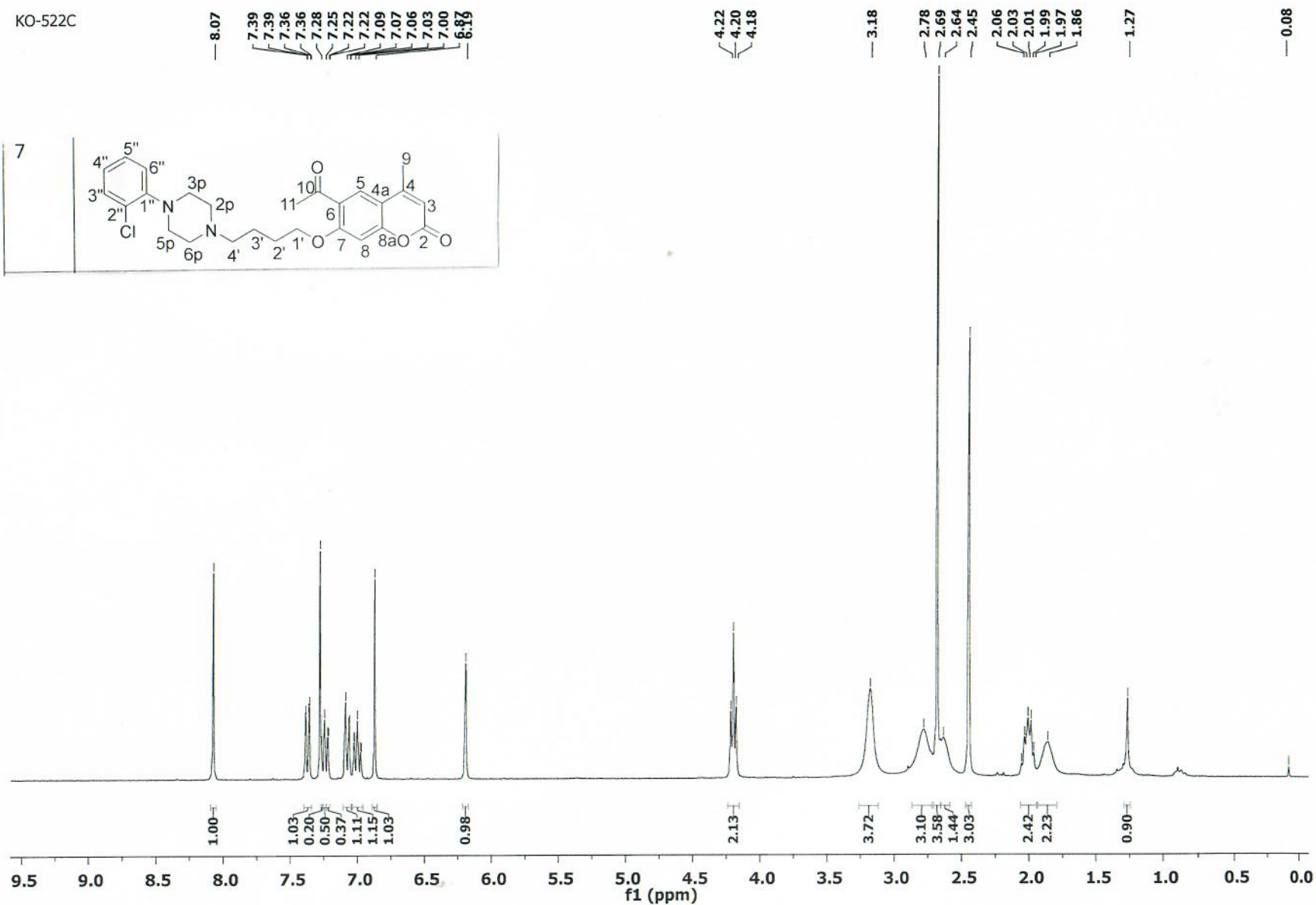
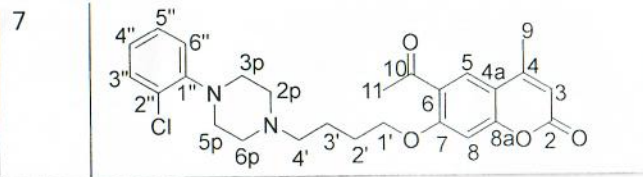
18.94

1.23

6



KO-522C



KO-522-C-13C

— 197.83

161.16
160.57
157.73
152.99

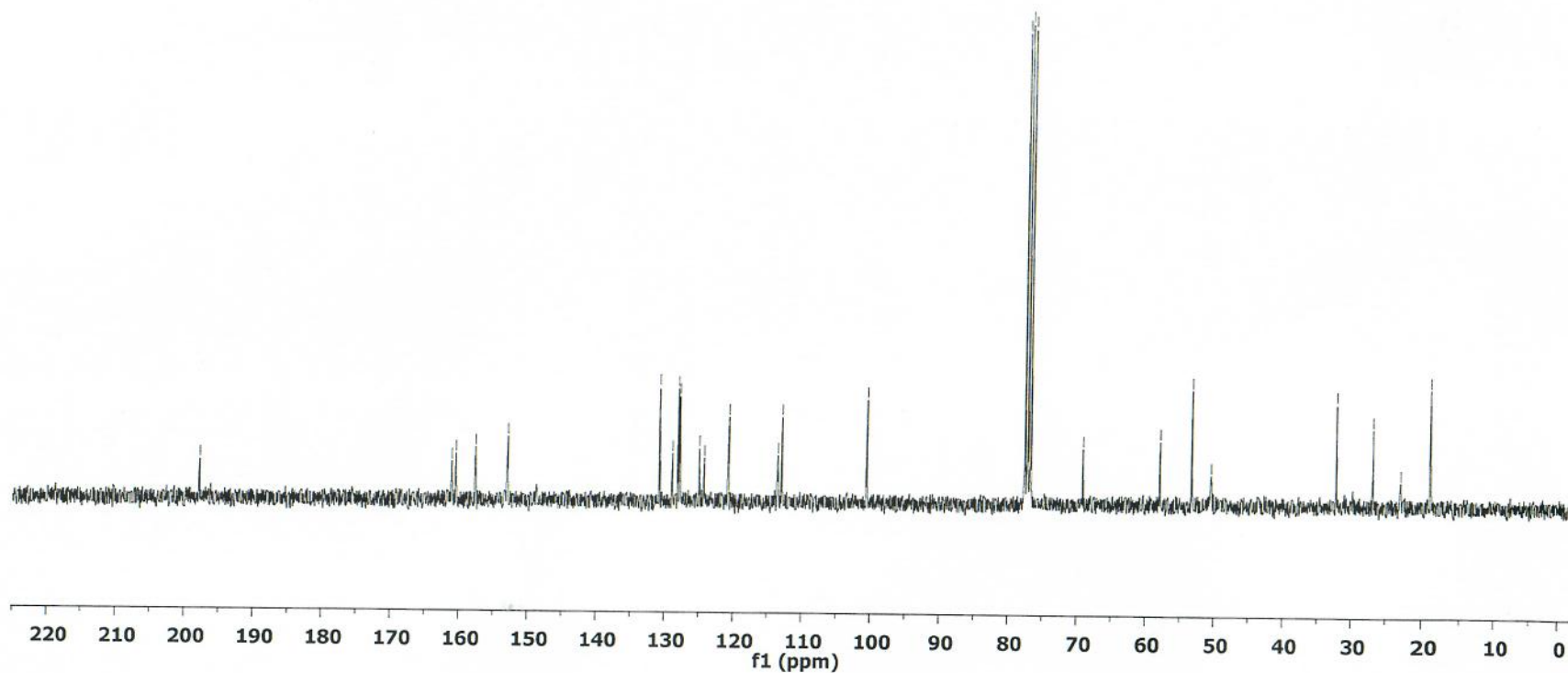
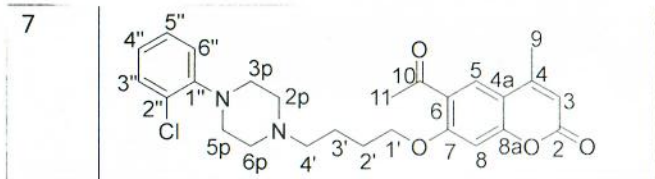
130.82
128.92
128.15
127.91
125.05
124.33
120.73
113.56
113.00

— 100.58

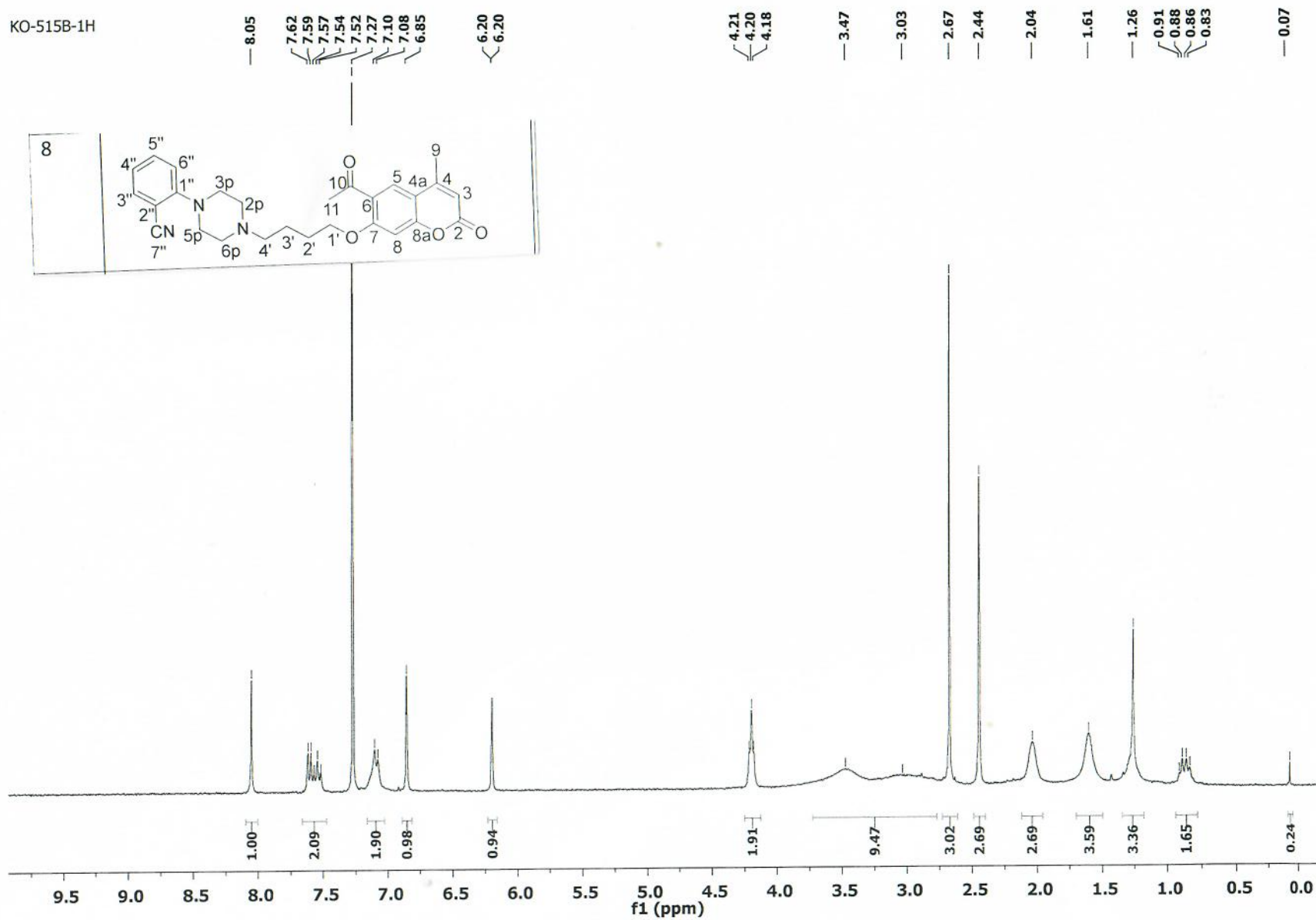
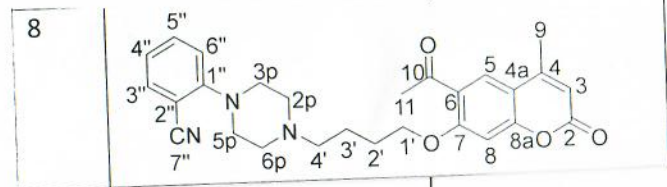
77.65
77.23
76.81
— 69.24

58.01
53.35
50.52

32.33
27.01
22.95
18.93



¹H NMR spectrum of KO-515B-1H in CDCl₃. The spectrum shows peaks at 8.05, 7.62, 7.59, 7.57, 7.54, 7.52, 7.27, 7.10, 7.08, 6.85, 6.20, and 6.20 ppm.



69.

—197

160.53
 157.67
 152.89

— 134.36

— 128.14

— 125.11

$$\begin{array}{r} 113.69 \\ 113.16 \\ \hline \end{array}$$

— 100.65

77.65
77.23
76.81

— 68.75

— 57.55

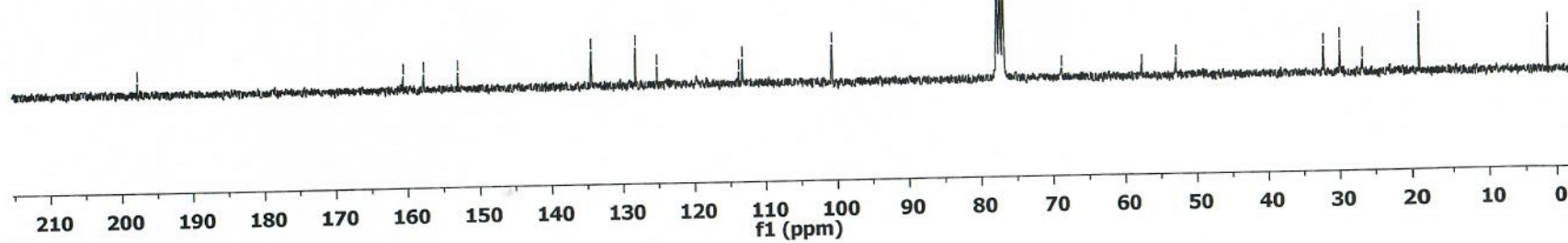
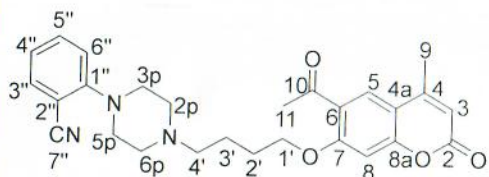
— 52.79

— 32.22
— 29.91
— 26.73

— 18.94

— 1.24

8



KO-512b-1H

8.07

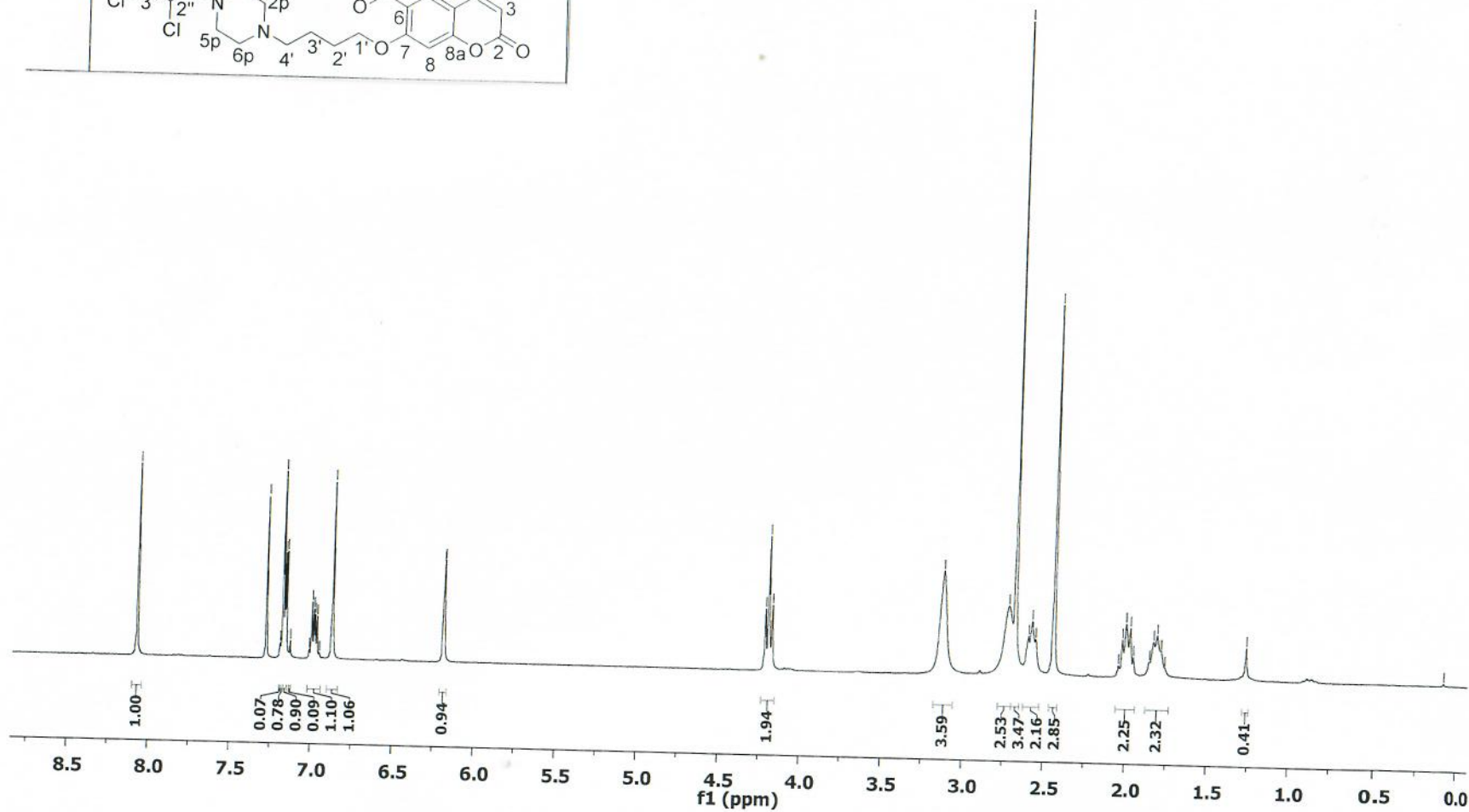
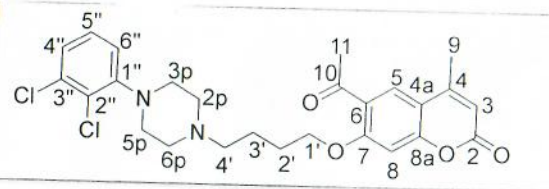
7.28
7.20
7.18
7.17
7.16
7.13
7.02
7.00
6.99
6.98
6.97
6.95
6.87
6.19
6.19

4.22
4.20
4.17

3.13
2.72
2.68
2.60
2.58
2.56
2.45
2.45
2.03
2.00
1.98
1.96
1.86
1.83
1.81
1.79
1.77

0.08

9



KO-512b-13C88

— 197.

161.15
160.55
157.71
152.98

— 134.23

128.13
127.77
125.20
125.95

113.55
112.99

— 100.57

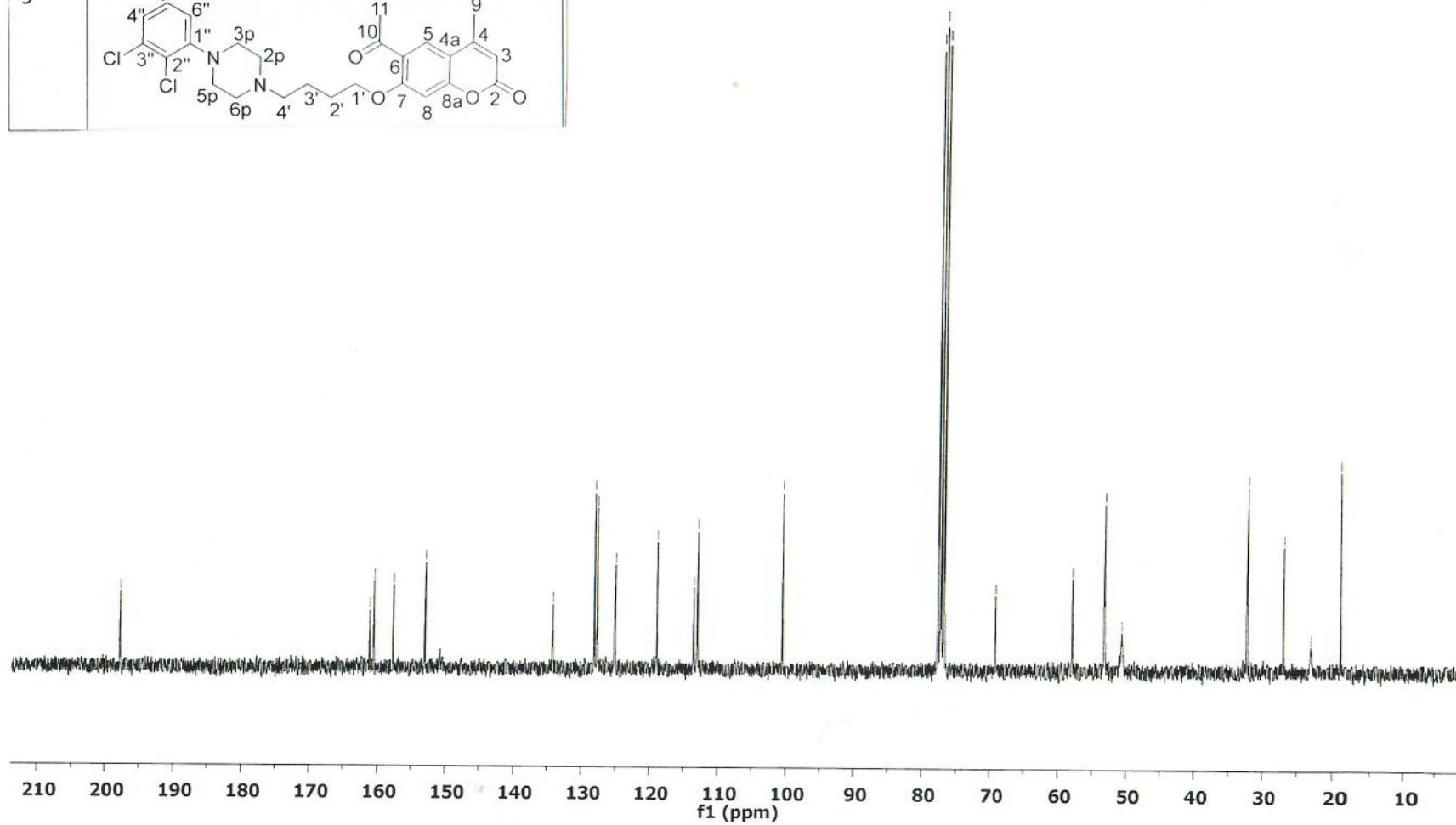
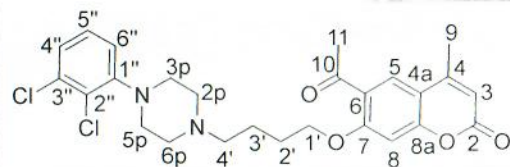
77.65
77.23
76.81

— 69.24

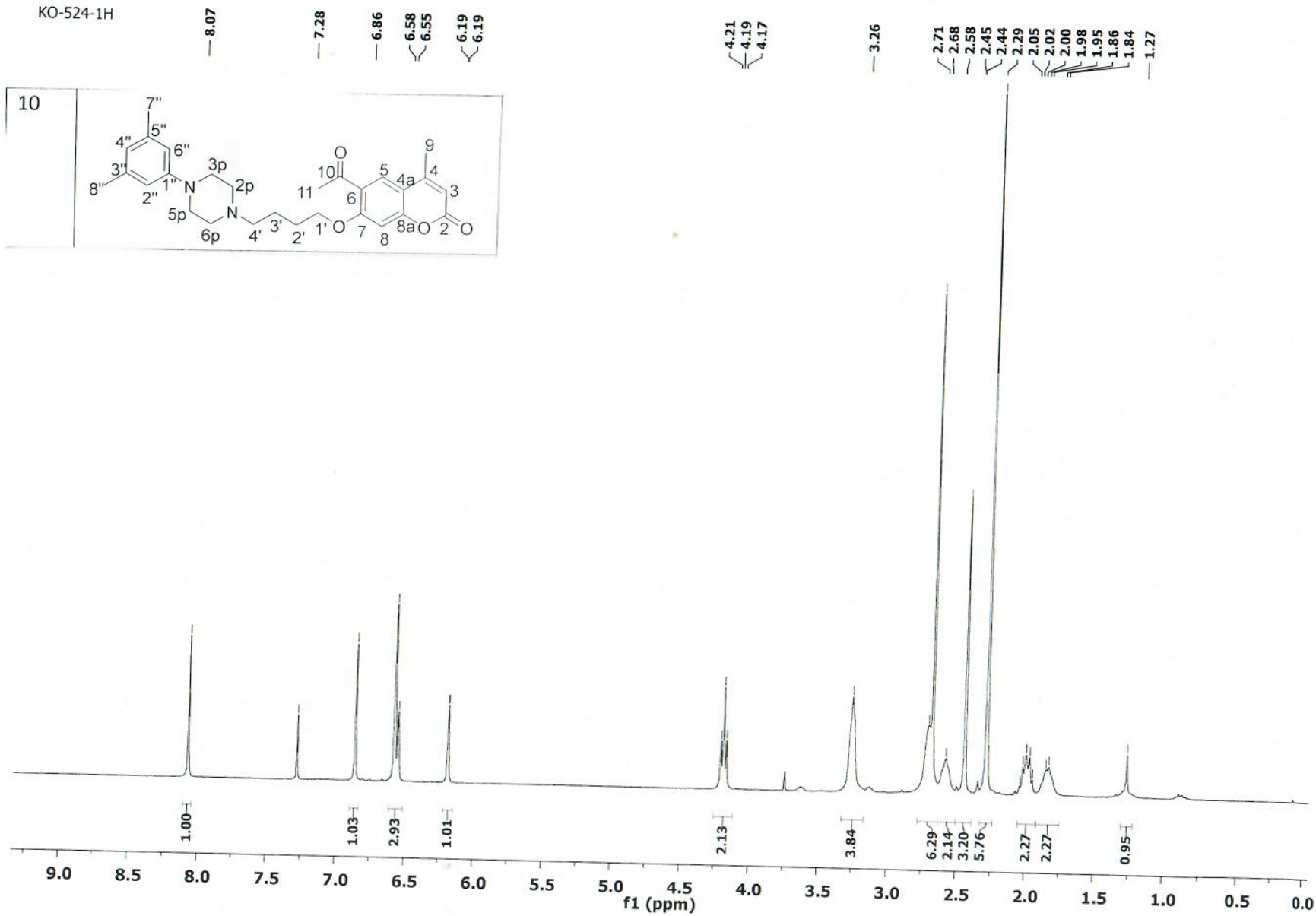
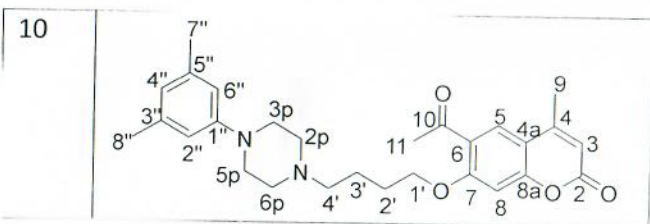
57.95
 53.28
 50.67

— 32.31

26.98
23.02
18.92



KO-524-1H



KO-524-13C

— 197.72

161.23
160.47
157.67
152.94
151.35

— 138.75

128.07
124.92
121.94

114.24
113.42
112.85

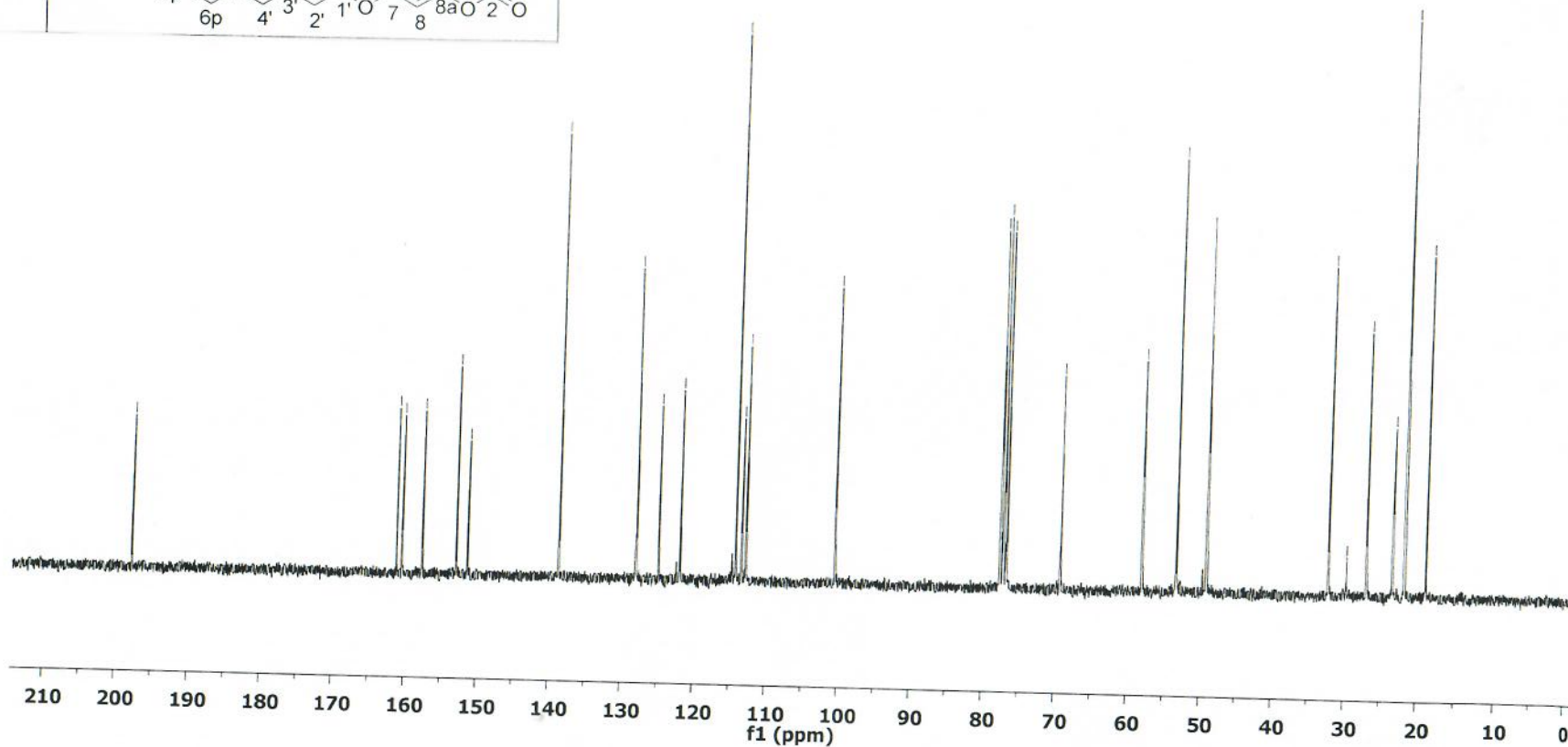
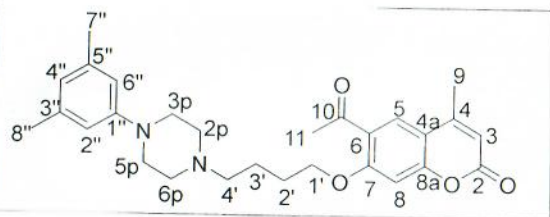
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77.65
77.23
76.81
— 69.36

58.10
53.36
49.21

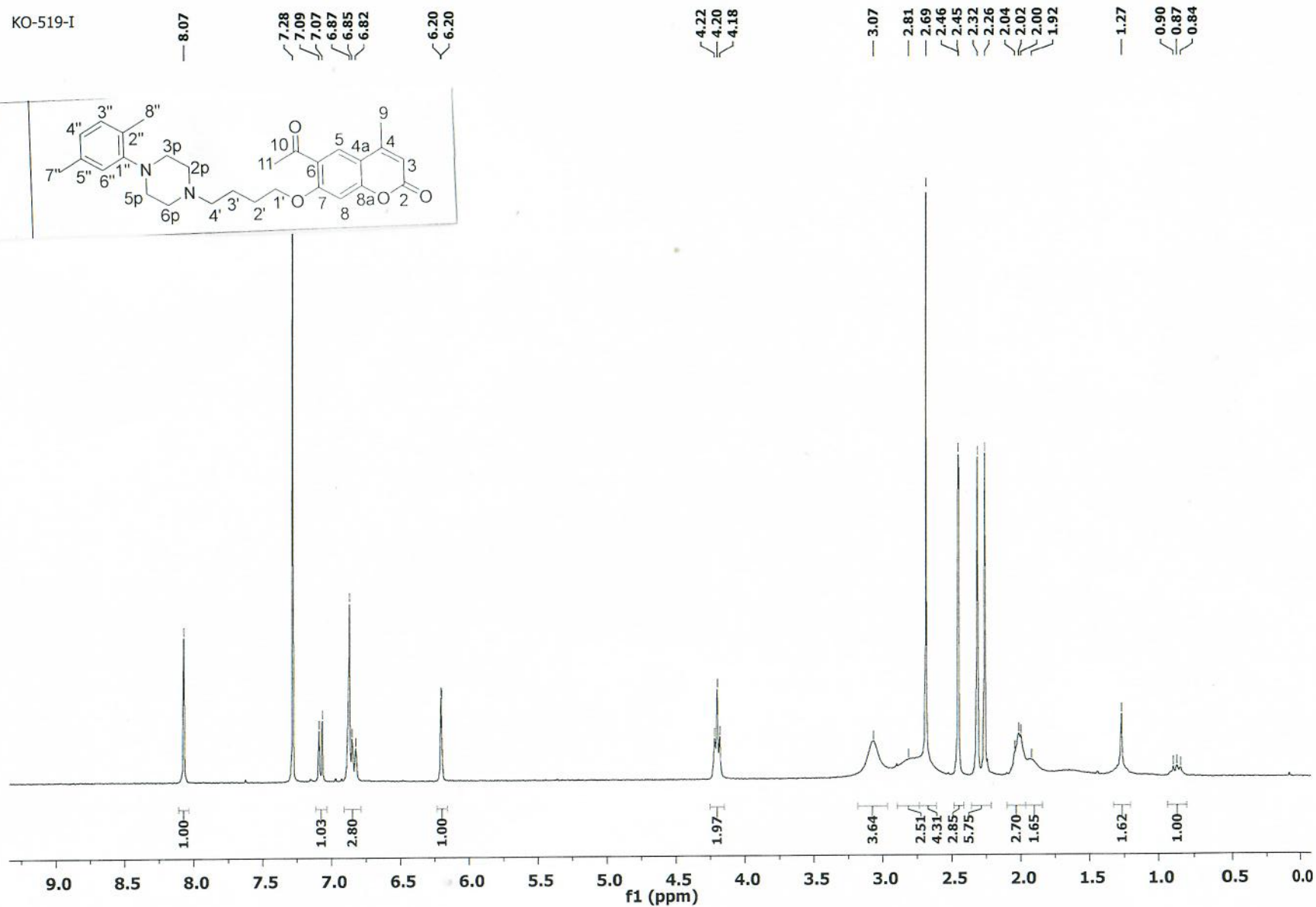
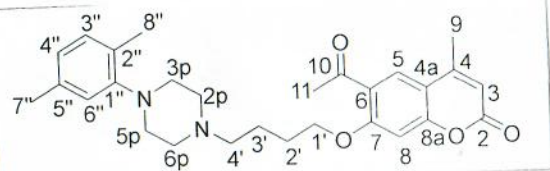
32.29
29.82
27.05
23.40
21.78
18.83

10



KO-519-I

11



KO-519-I-13C

— 197.80

160.99
160.54
157.70
152.94

136.65
131.10
129.35
128.11
125.09
124.80
120.38
113.61
113.07

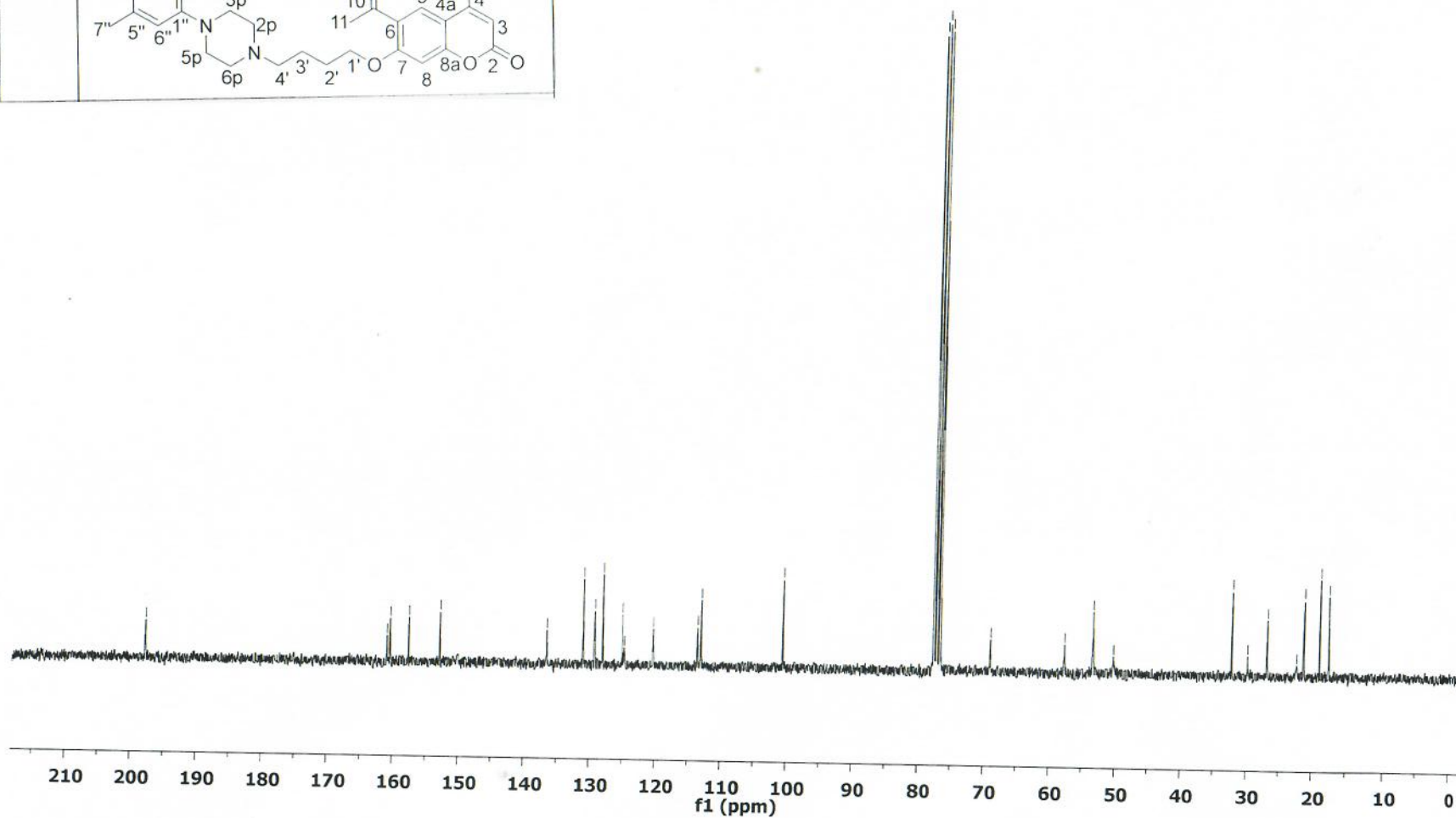
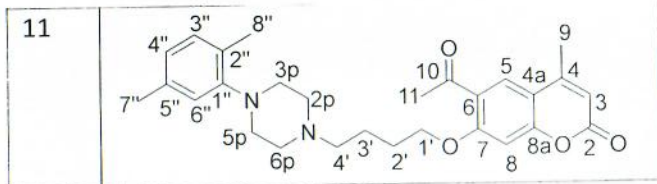
— 100.61

77.65
77.23
76.81

— 69.04

57.80
53.47
50.35

32.28
29.90
26.90
22.39
21.33
18.93
17.54



KO-516-II

8.17
8.14
8.07

7.28

6.87
6.84

6.20

4.22
4.20
4.18

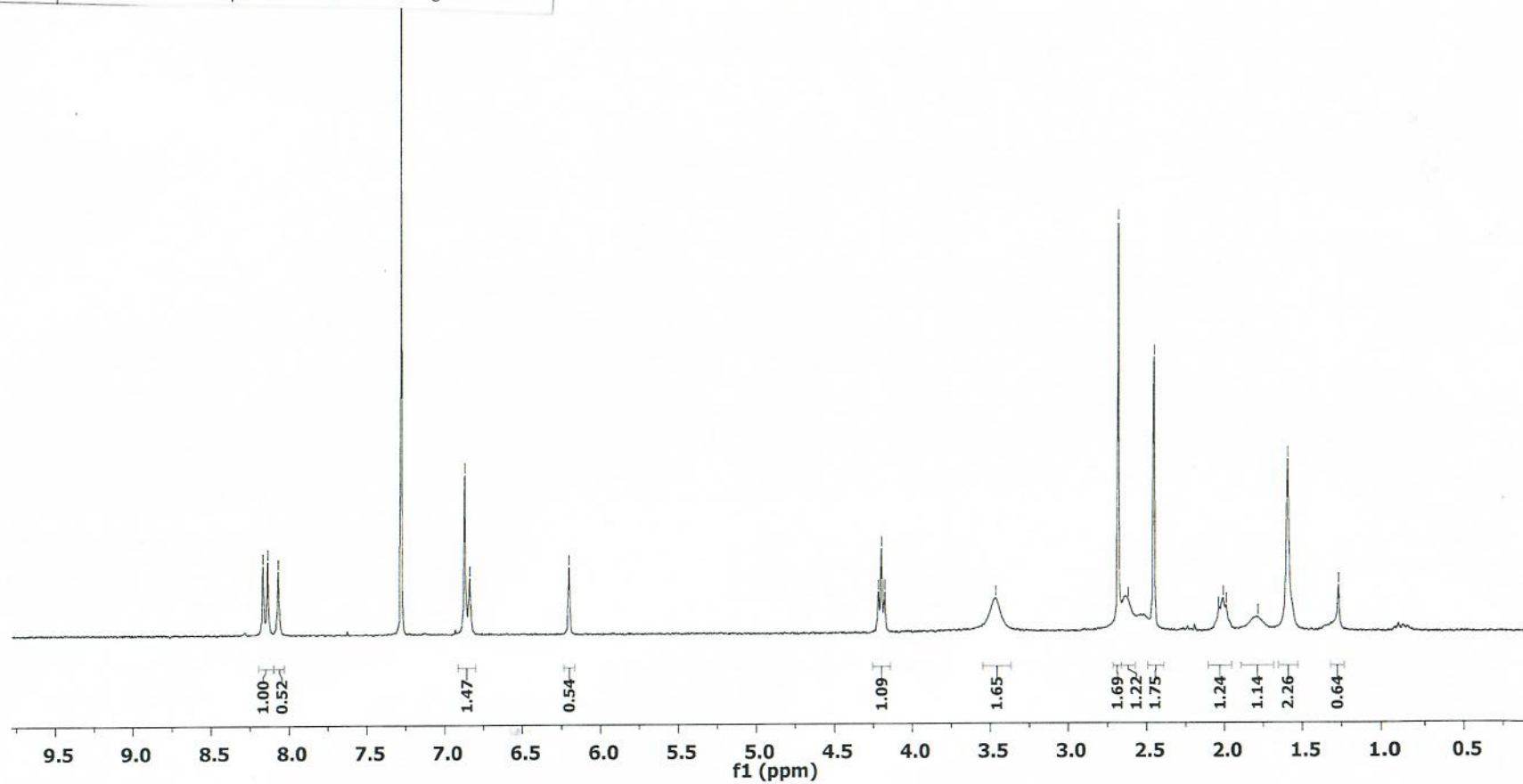
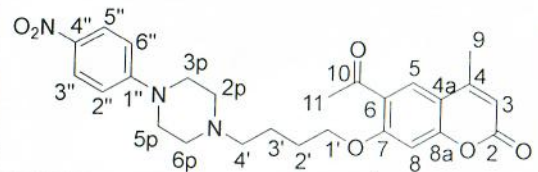
3.47

2.68
2.62
2.45

2.04
2.01
1.99
1.79
1.60

1.27

12



KO-516-II-13C

— 197.85

— 160.55
— 157.72
— 152.97
— 152.93

— 128.13
— 126.16
— 125.11

— 113.61
— 113.07

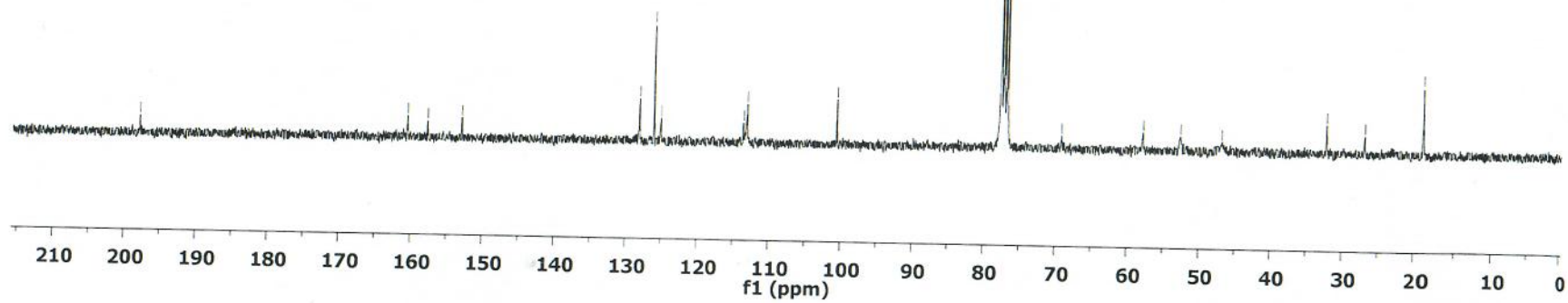
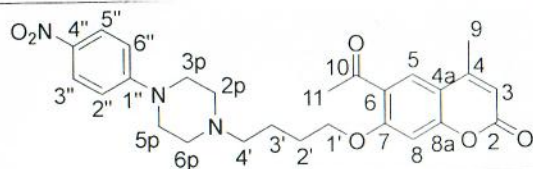
— 100.59

— 77.65
— 77.23
— 76.81
— 69.20

— 57.85
— 52.65
— 46.88

— 32.35
— 32.25
— 26.91
— 18.94

12



KO-520-III-1H

— 8.07

— 7.28

— 6.86

— 6.19
— 6.19

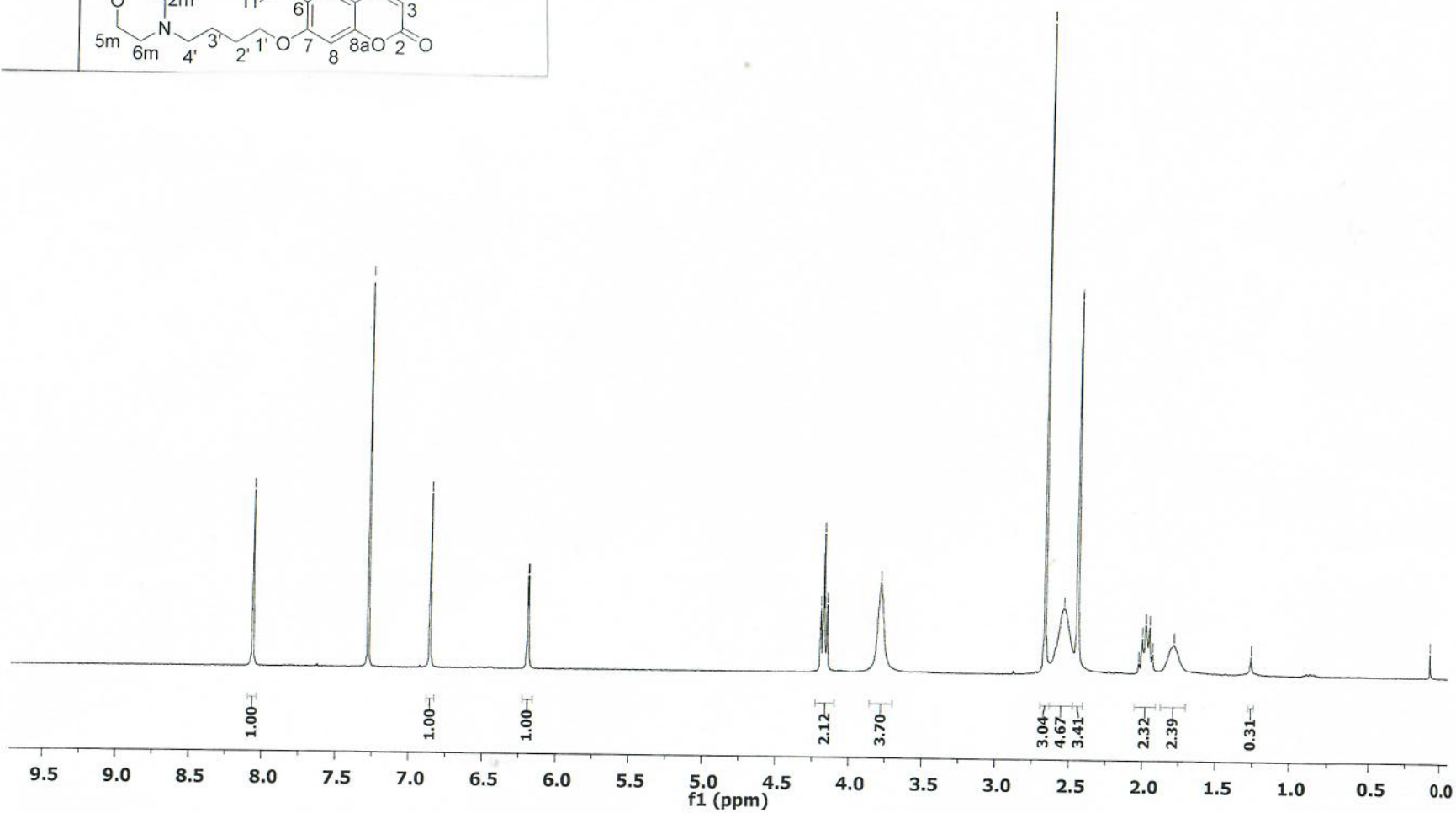
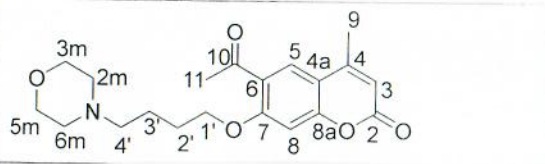
— 4.20
— 4.17
— 4.15
— 3.79

— 2.67
— 2.54
— 2.45
— 2.45
— 2.03
— 2.01
— 1.98
— 1.96
— 1.94
— 1.79

— 1.26

— 0.08

13



KO-520-III-13C

— 197.82

— 161.15
— 160.56
— 157.72
— 152.98

— 128.13
— 125.05

— 113.56
— 113.01

— 100.56

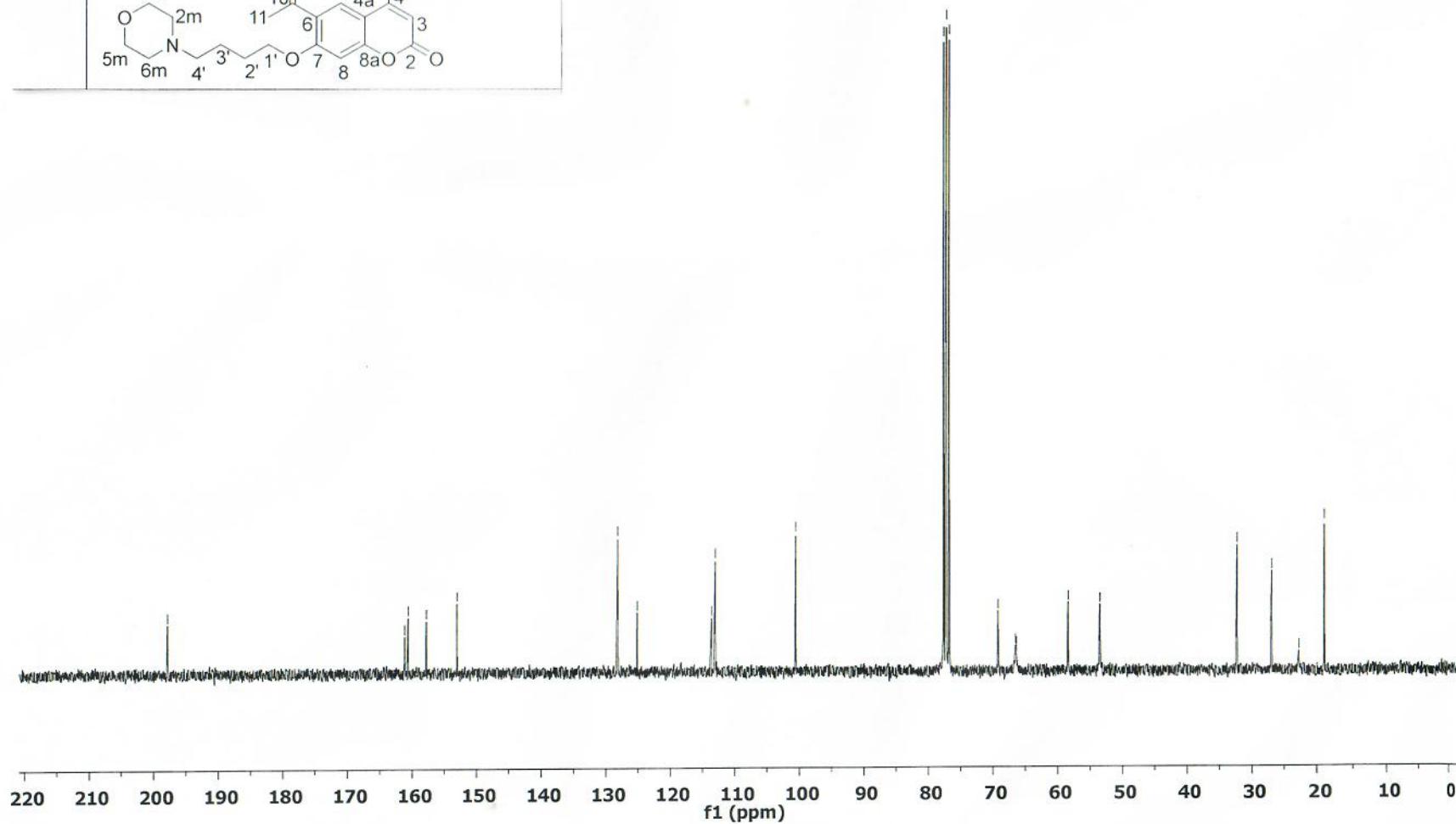
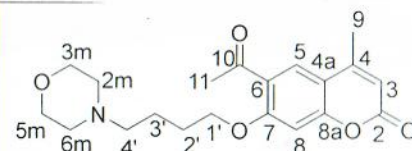
— 77.65
— 77.23
— 76.81

— 69.25
— 66.52
— 66.38

— 58.40
— 53.55

— 32.29
— 26.93
— 22.77
— 18.93

13



KO-517

8.21
8.19
8.07

7.28

6.88
6.84
6.81

6.20

4.22
4.20
4.18

3.78
3.61
3.59
3.58

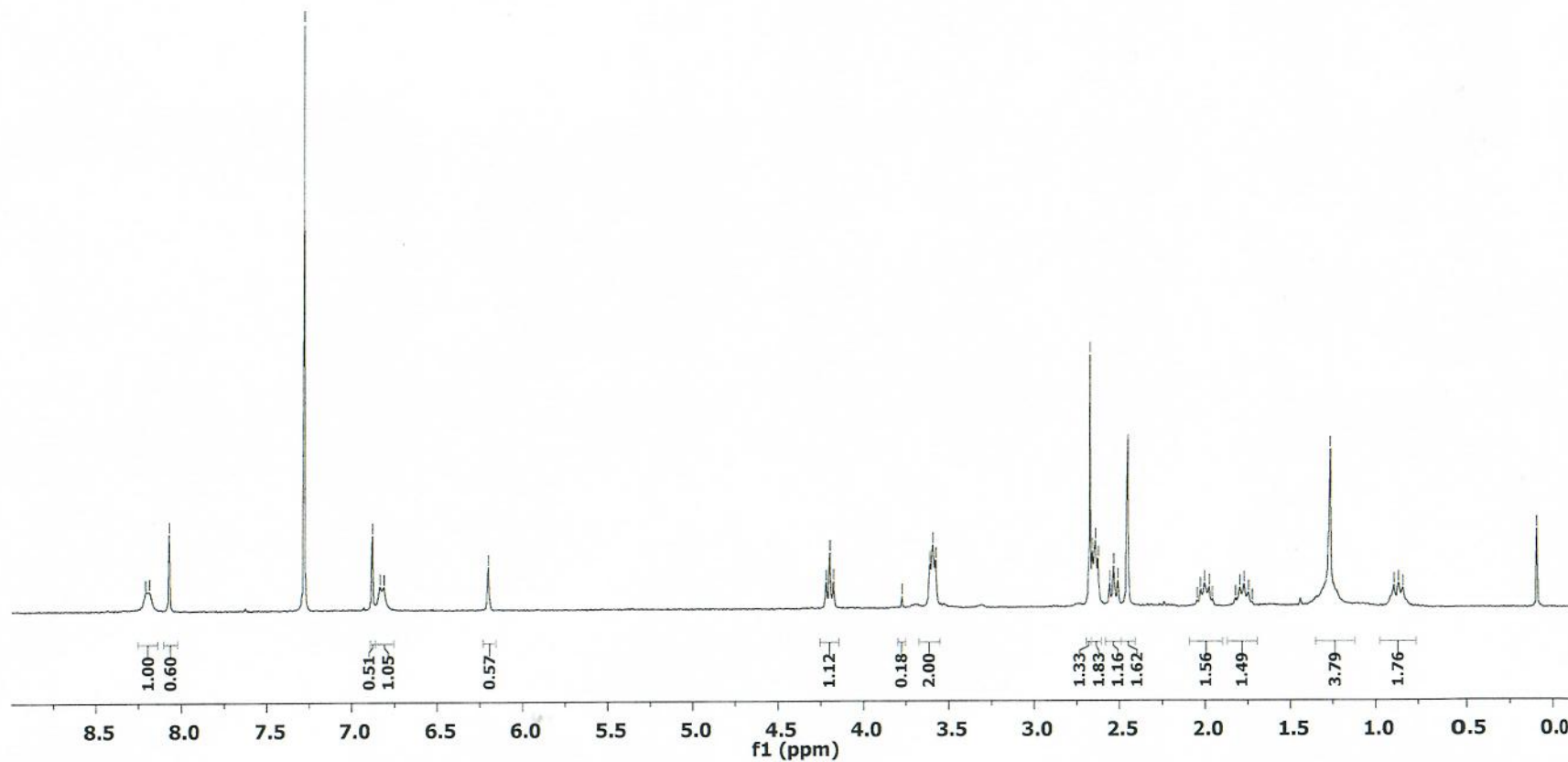
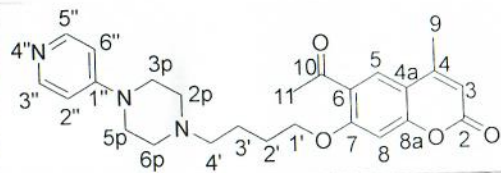
2.68
2.66
2.64
2.63
2.56
2.53
2.51
2.46
2.45

2.03
2.00
1.98
1.96
1.82
1.80
1.77
1.75

0.89
0.87
0.84

0.08

14



KO-517-13C

— 197.87

161.16
160.56
157.75
156.45
153.02

— 143.14

— 128.18
— 125.13

113.62
113.05
107.64

— 100.56

77.65
77.23
76.81

— 69.28

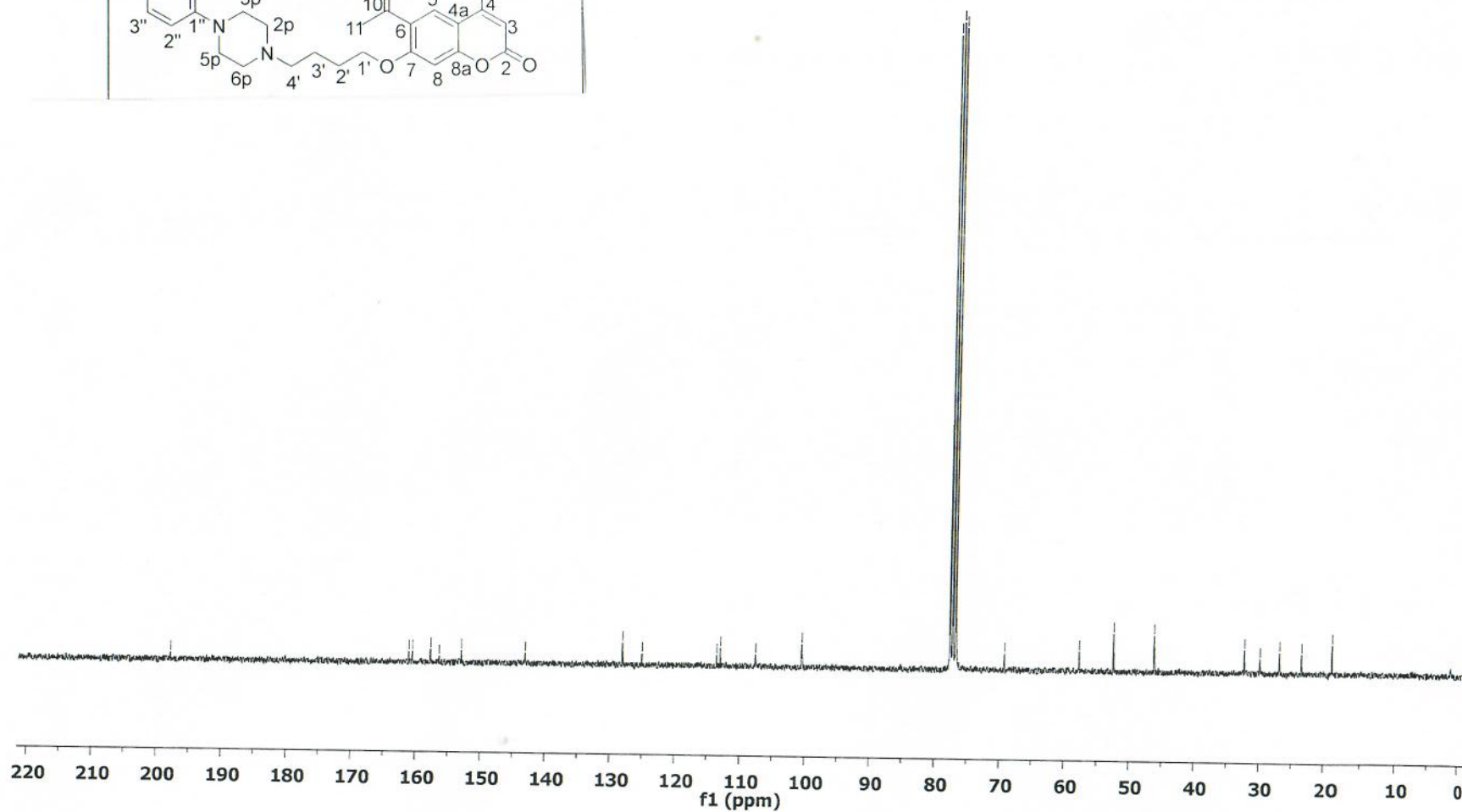
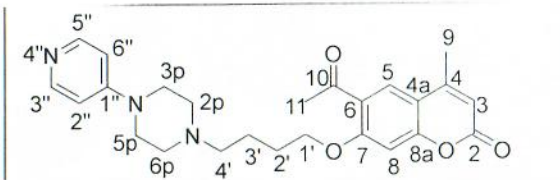
— 57.76

— 52.54

— 46.26

32.29
29.92
26.92
23.52
18.95

14



KO-521C-1H

8.16
8.15
8.08
8.07
8.07
8.06
7.87
7.86

7.28

6.86

6.18
6.18

4.21
4.19
4.17

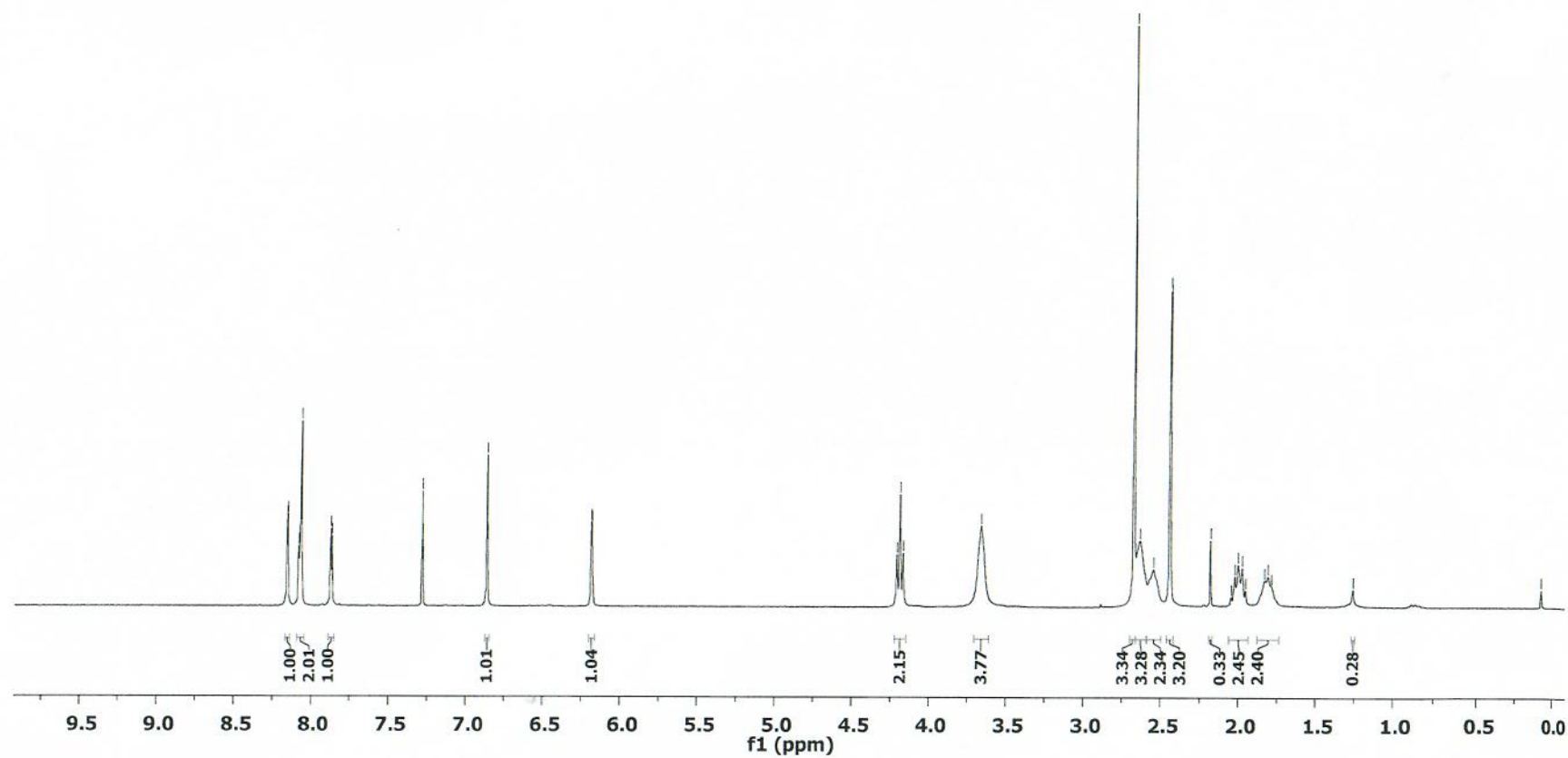
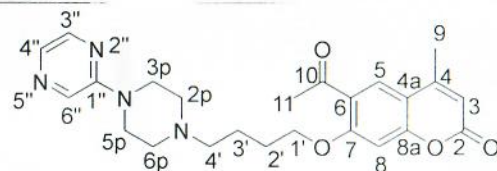
3.66

2.67
2.63
2.55
2.44
2.44

2.18
2.02
2.00
1.97
1.95
1.83
1.81
1.79

0.08

15



KO-521C-13C

— 197.83

161.27
160.56
157.74
155.11
153.01

— 141.91

133.23
131.23
128.16
125.03

113.53
112.96

— 100.54

77.65
77.23
76.81

— 69.40

— 58.17

— 52.96

— 44.56

32.33
27.07
23.55
18.92

15

