

Supporting Information

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Antioxidant Activities of Chemical Constituents Isolated from *Echinops orientalis* Trauv.

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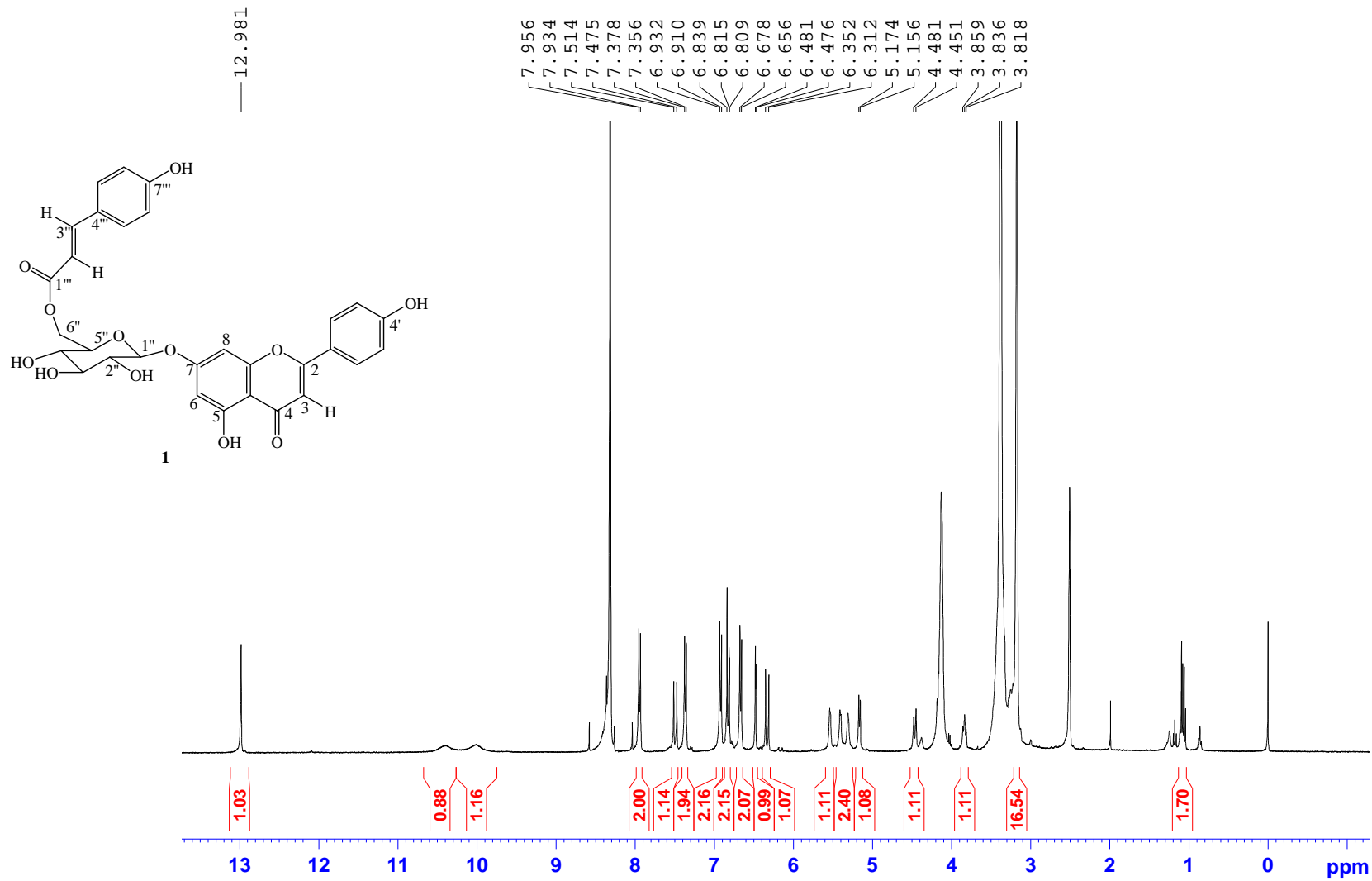
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Campus, 18100 Cankiri, Türkiye*

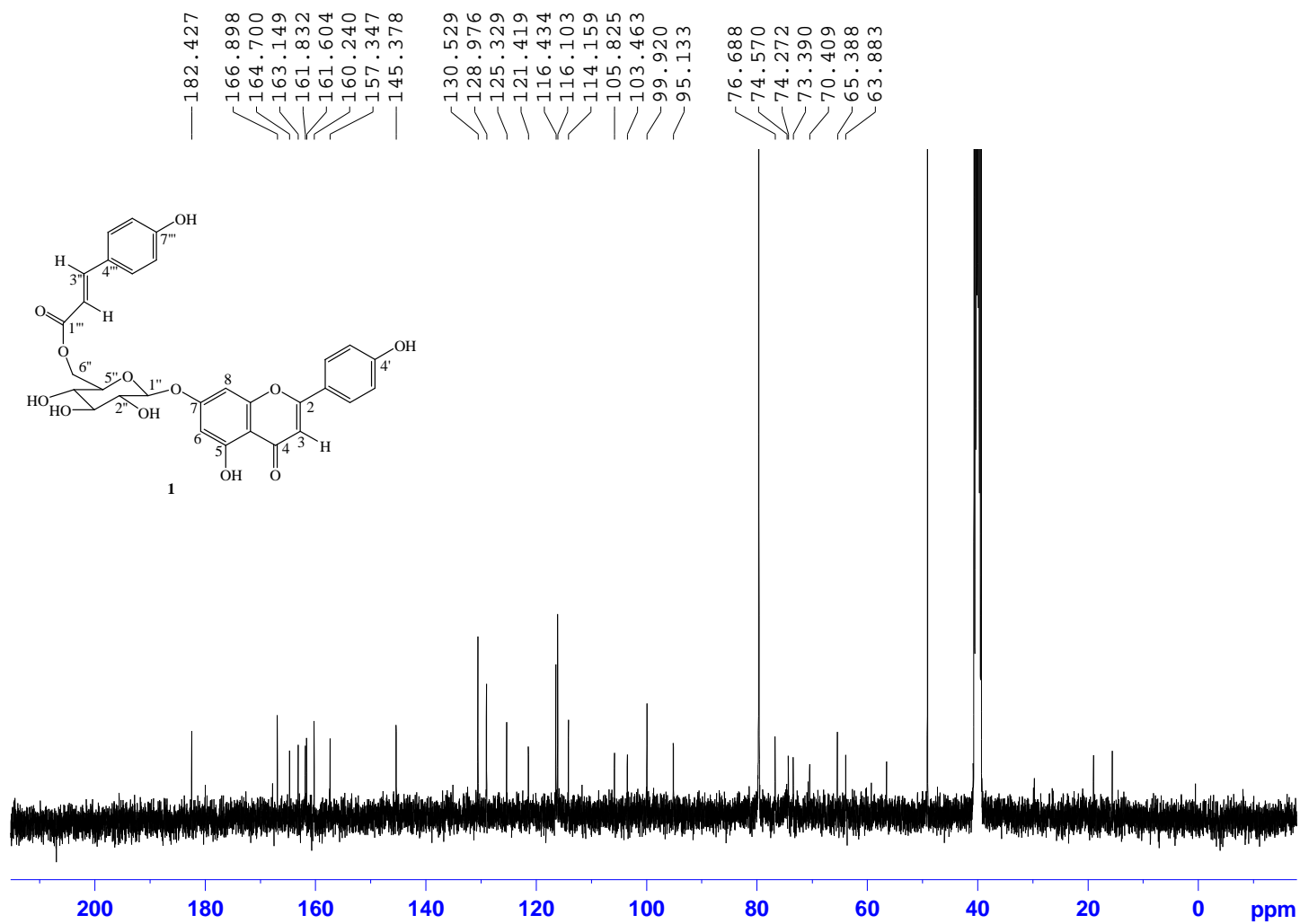
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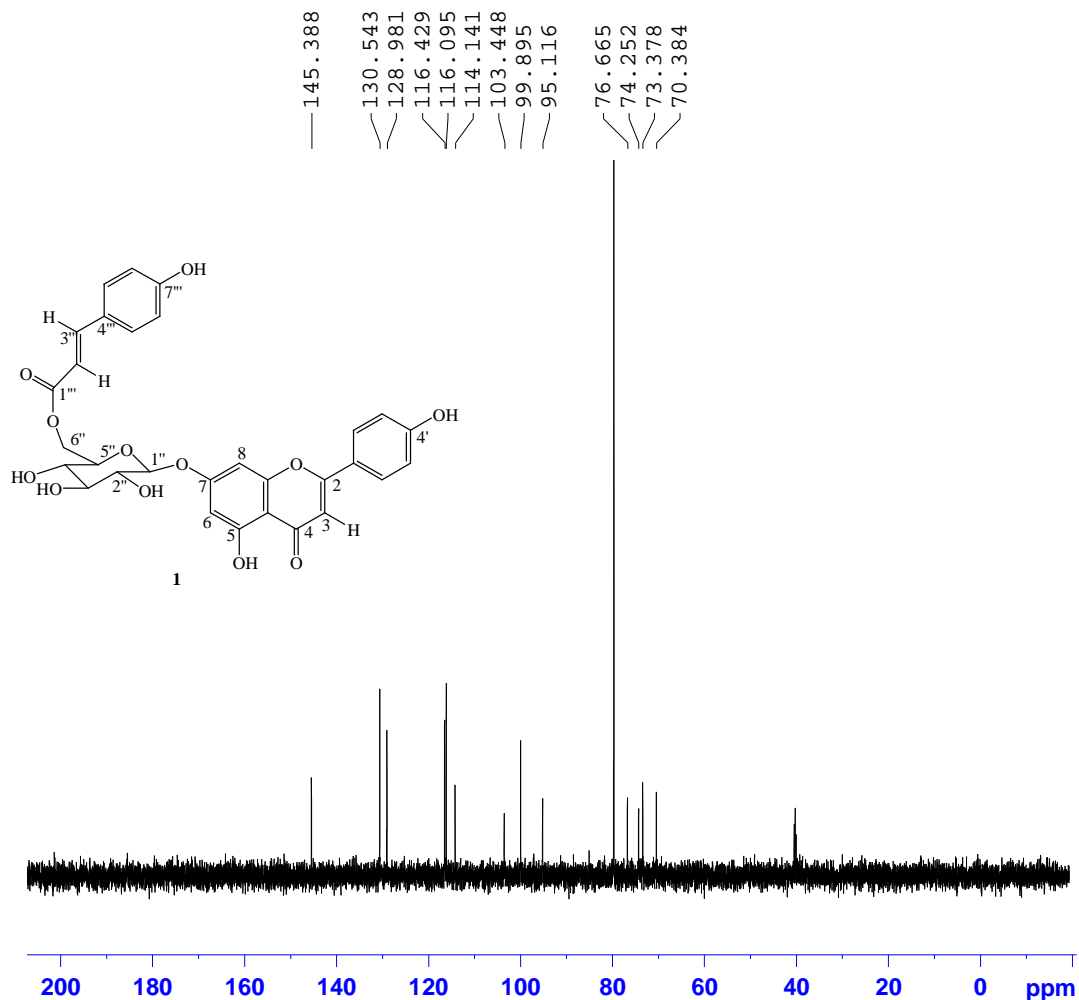
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S1: $^1\text{H-NMR}$ (400 MHz, $\text{DMSO-}d_6$) Spectrum of Compound 1



S2: ^{13}C -NMR (100 MHz, DMSO-*d*₆) Spectrum of compound 1



```

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PROCNO    1
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Time      21.54
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DW         20.800 usec
DE         6.50 usec
TE         300.0 K
CNST2     145.0000000
D1         2.00000000 sec
D2         0.00344828 sec
D12        0.00002000 sec
TD0        1

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P2         18.00 usec
PL1        -1.00 dB
PL1W      46.16925430 W
SFO1      100.6228298 MHz

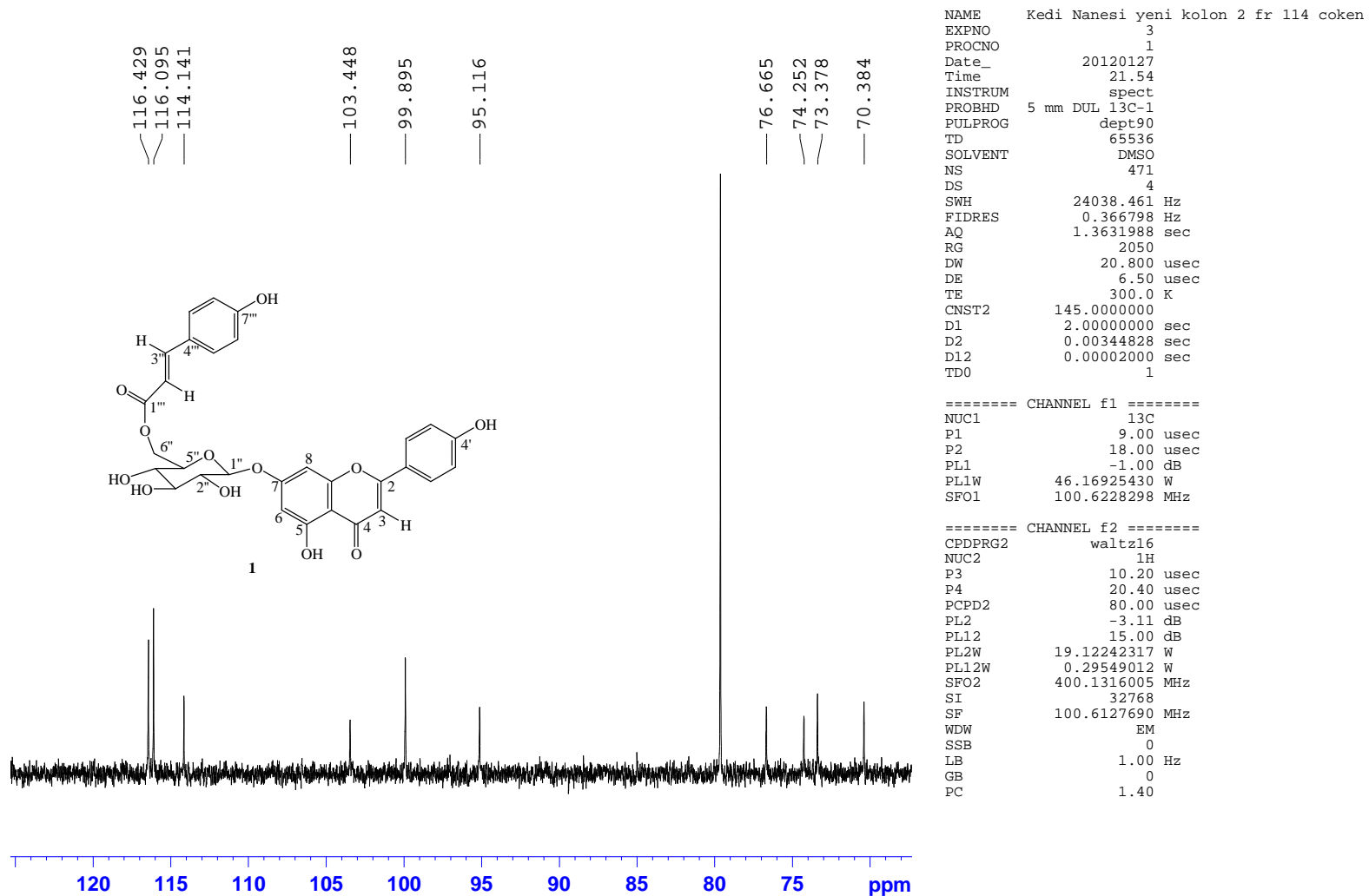
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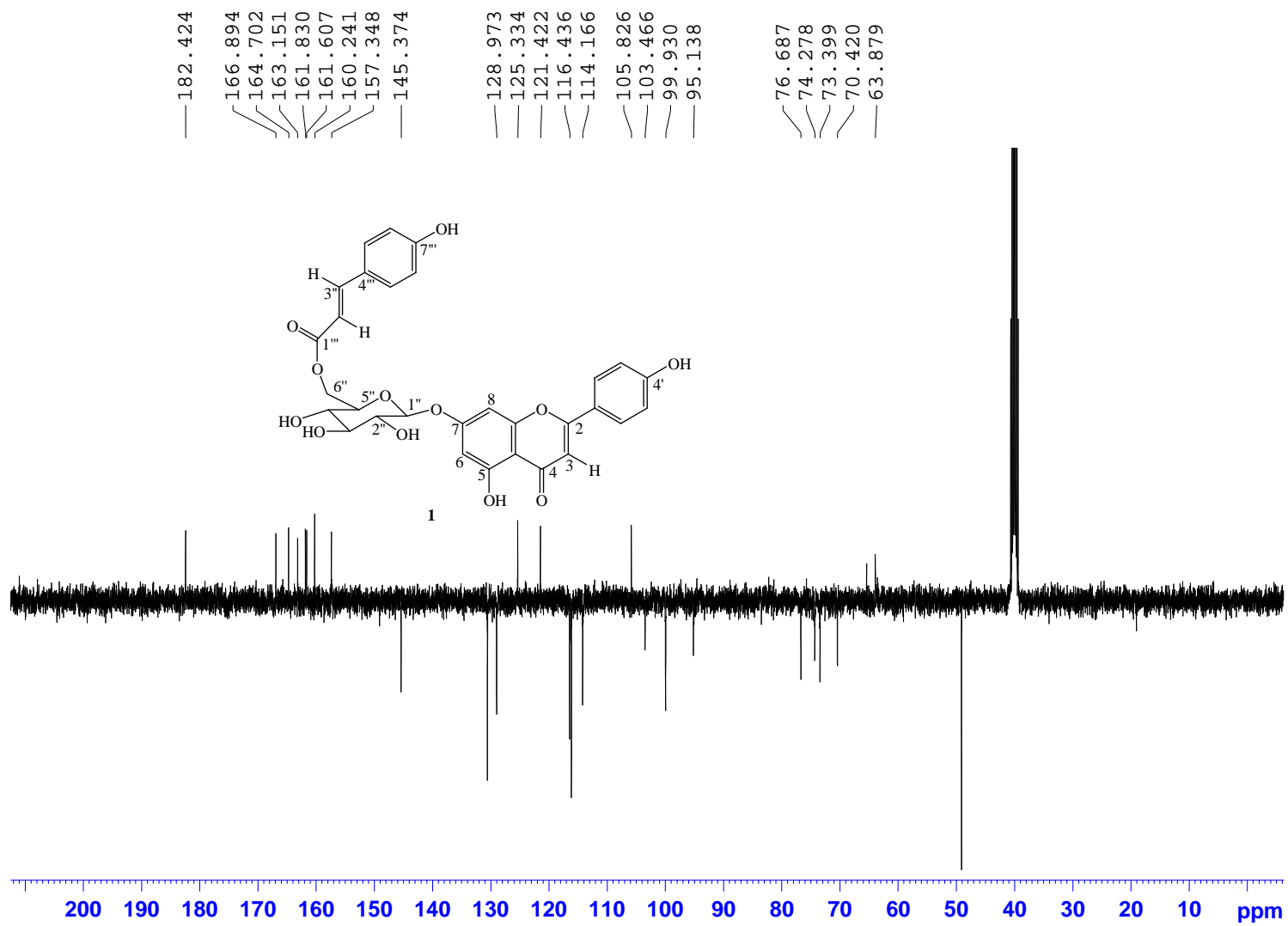
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PL2        -3.11 dB
PL12       15.00 dB
PL2W      19.12242317 W
PL12W     0.29549012 W
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WDW        EM
SSB         0
LB          1.00 Hz
GB          0
PC          1.40

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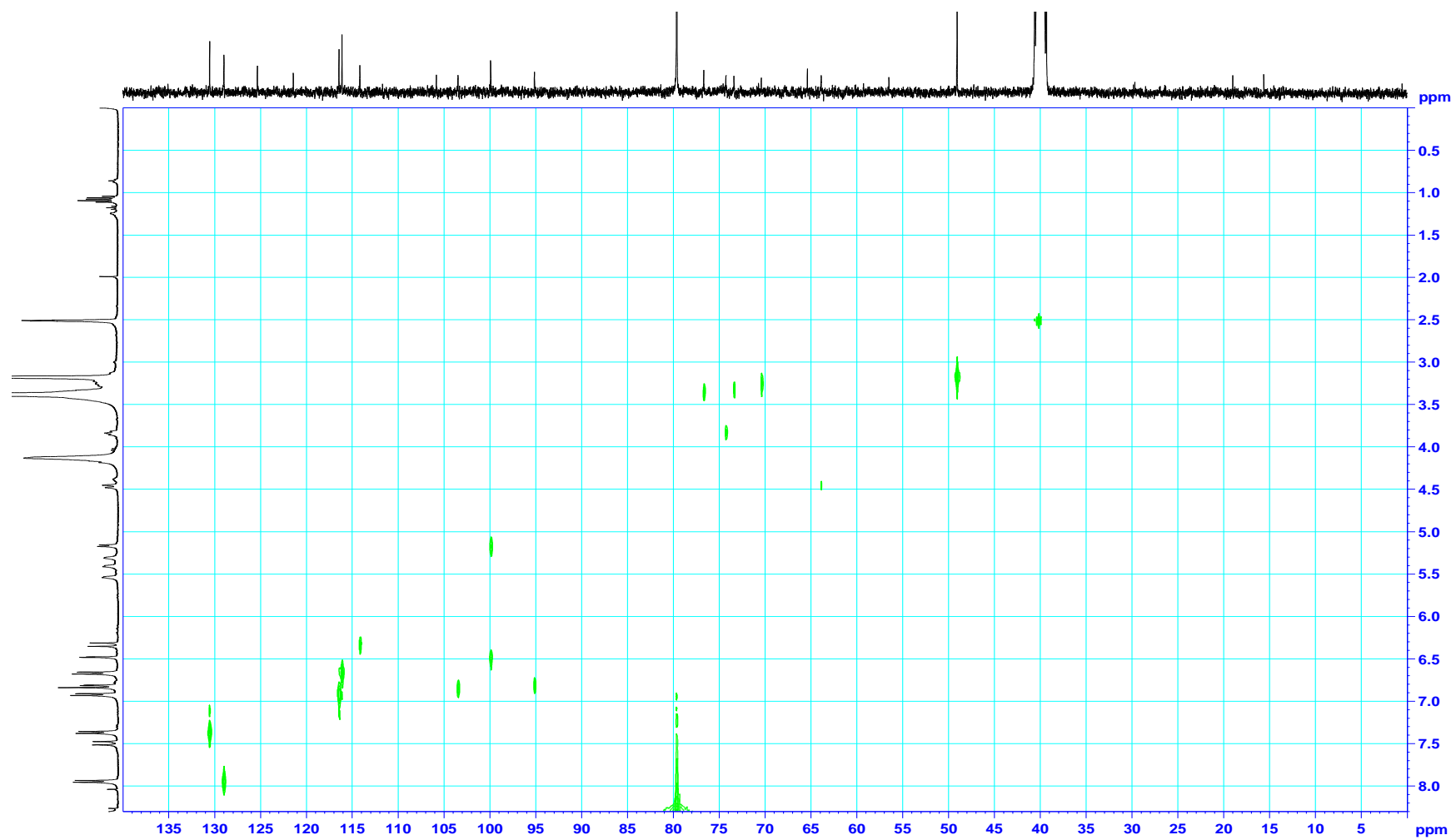
S3: DEPT-90 (100 MHz, DMSO-*d*₆) Spectrum of compound **1**



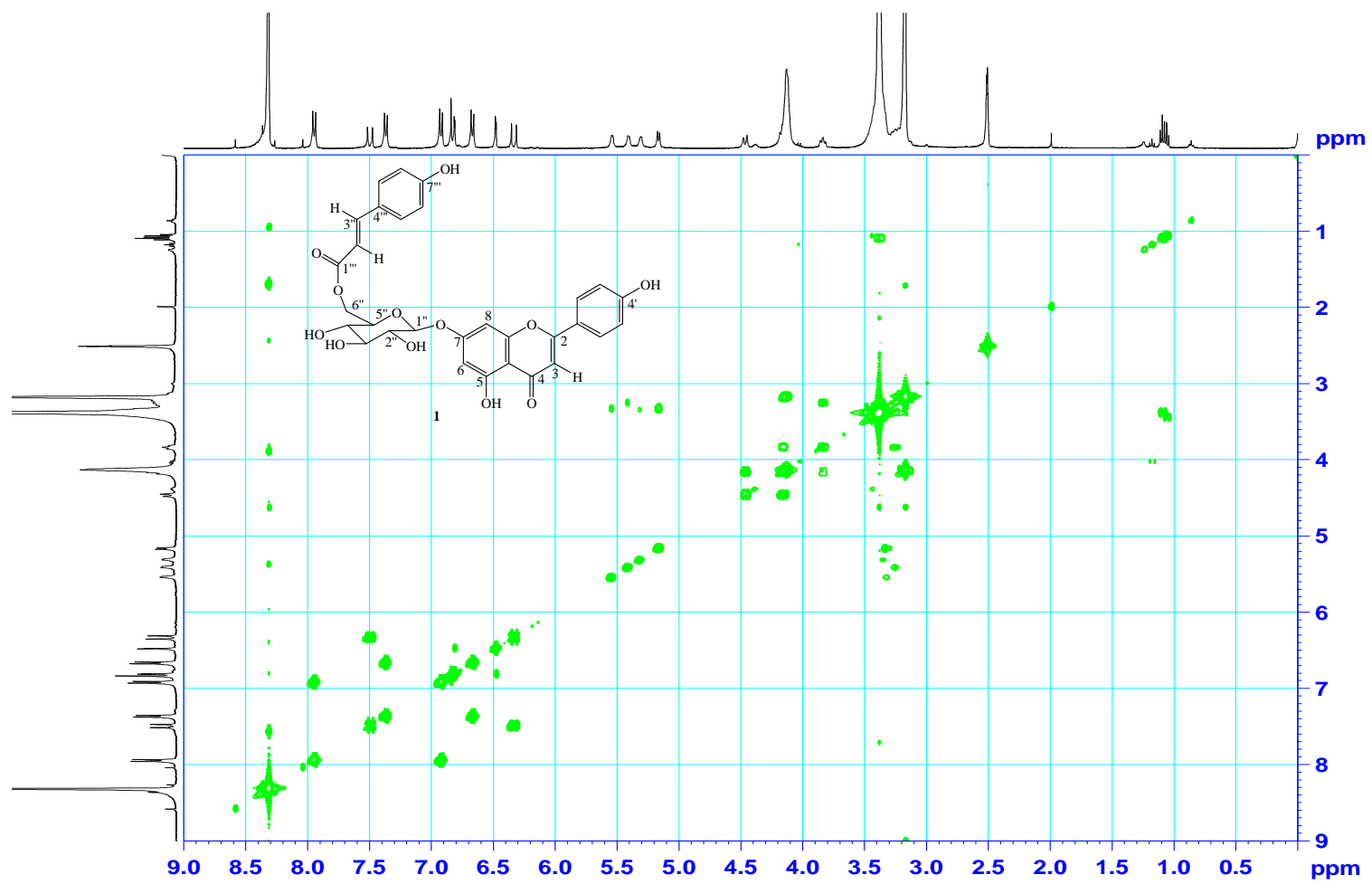
S4: DEPT-90 (100 MHz, DMSO-*d*₆) Spectrum of compound **1**(Expanded)



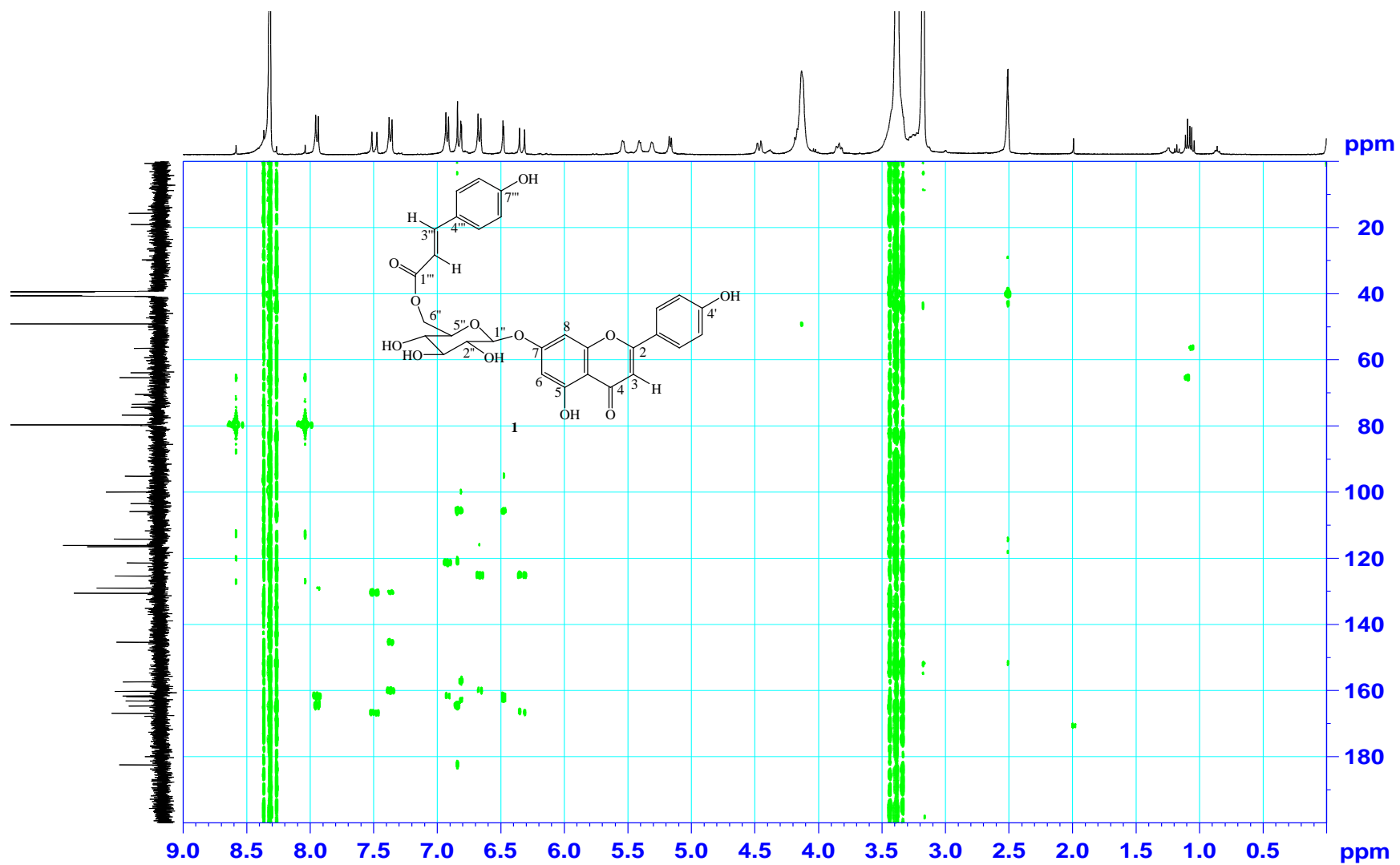
S5: APT (100 MHz, DMSO-*d*₆) Spectrum of compound 1

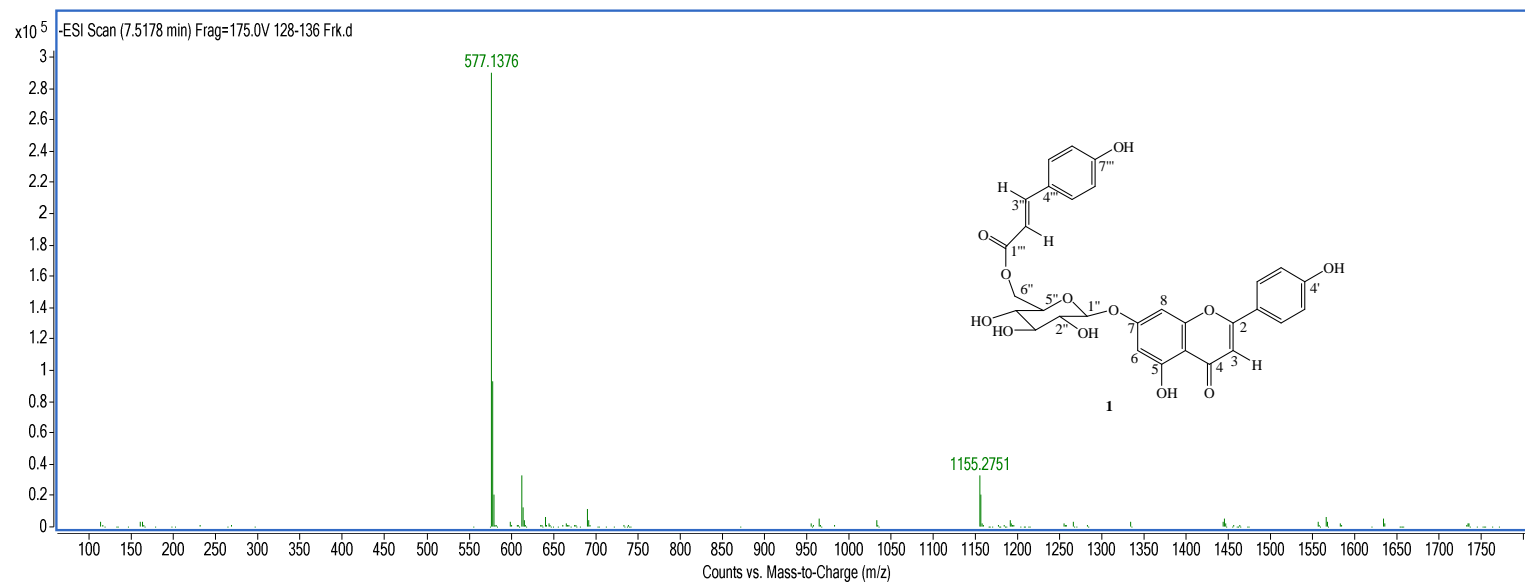


S6: HETCOR (400 MHz, DMSO-*d*₆) Spectrum of compound **1**

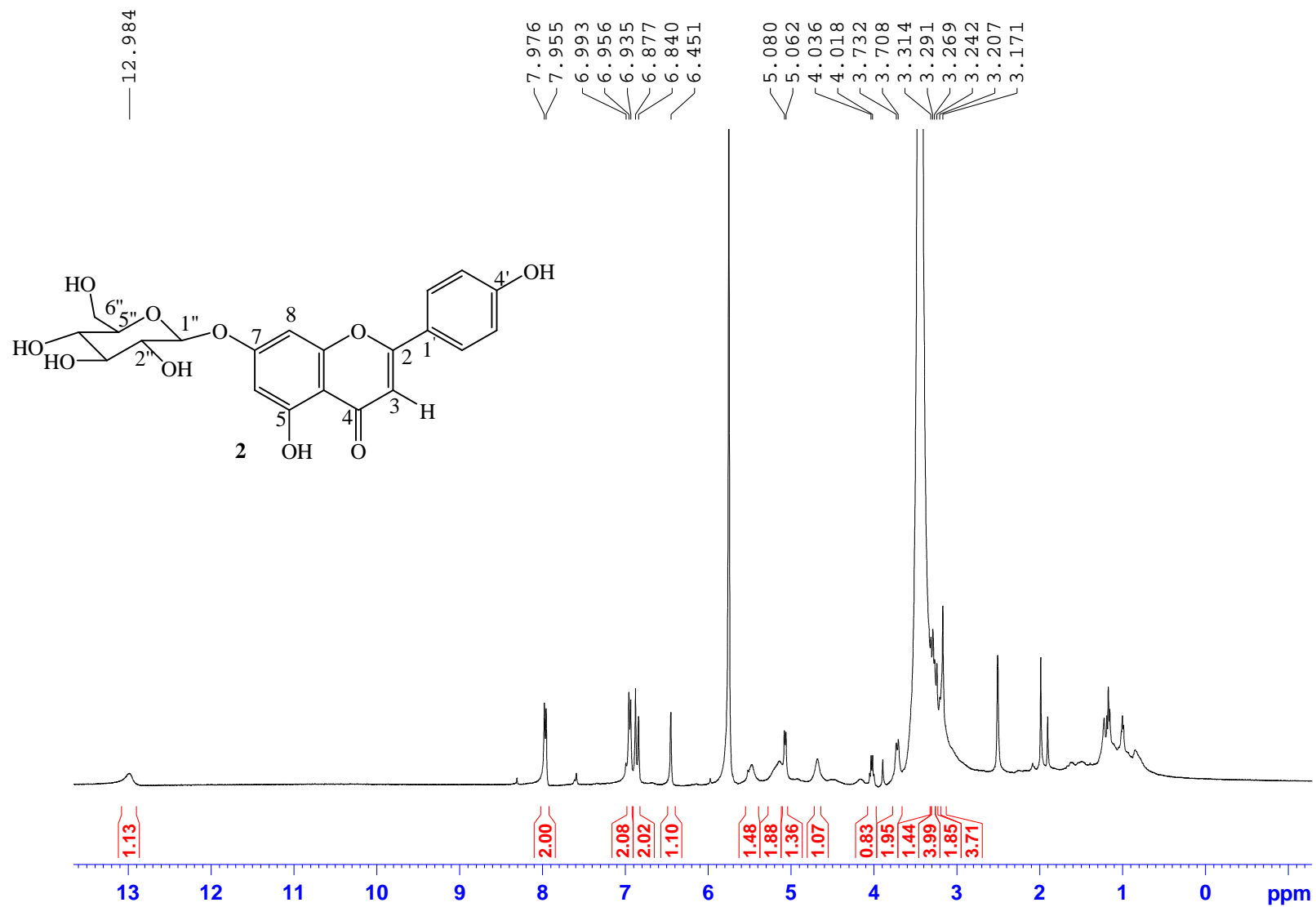


S7: COSY-90 (400 MHz, DMSO-*d*₆) Spectrum of compound **1**

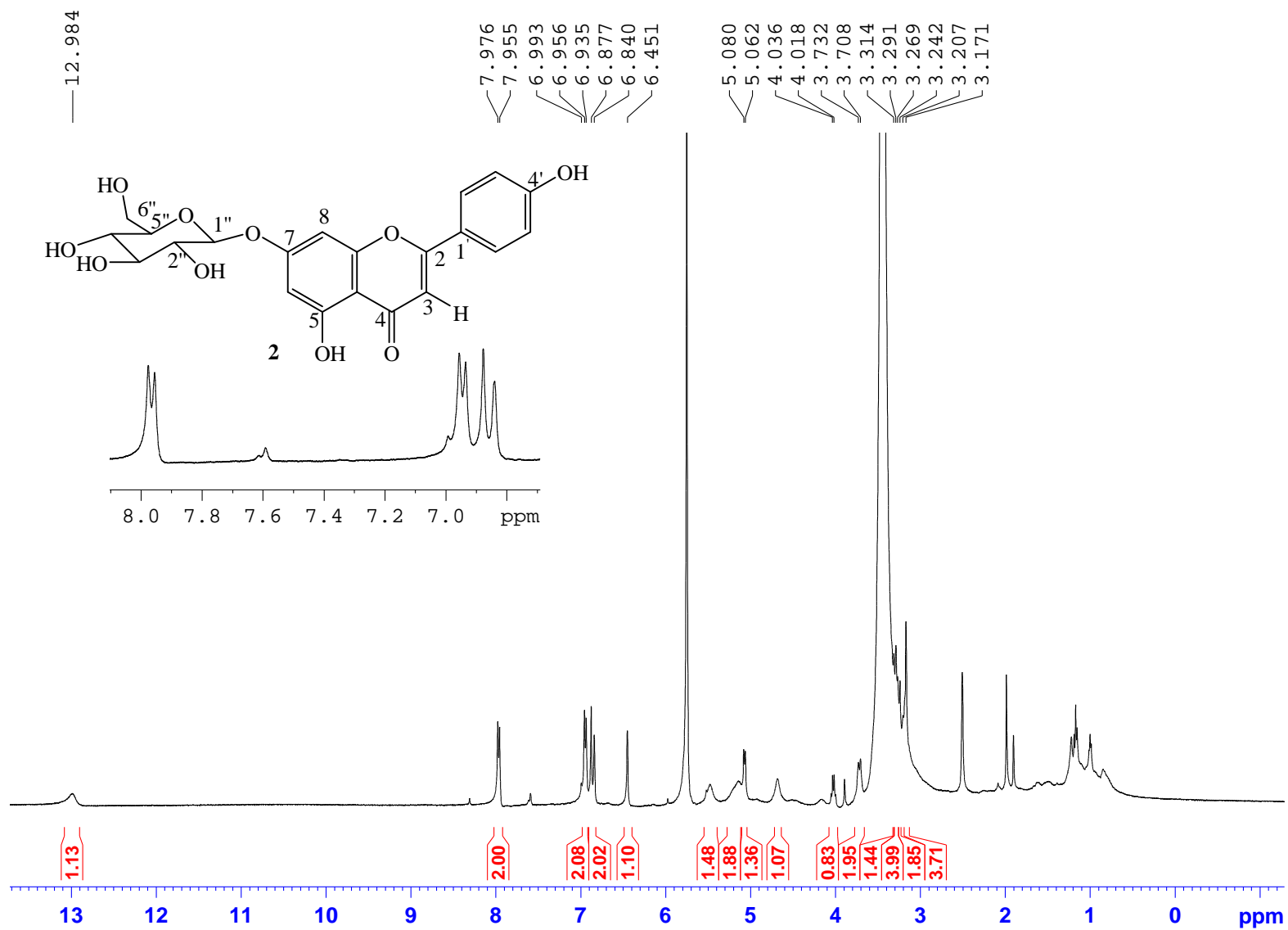




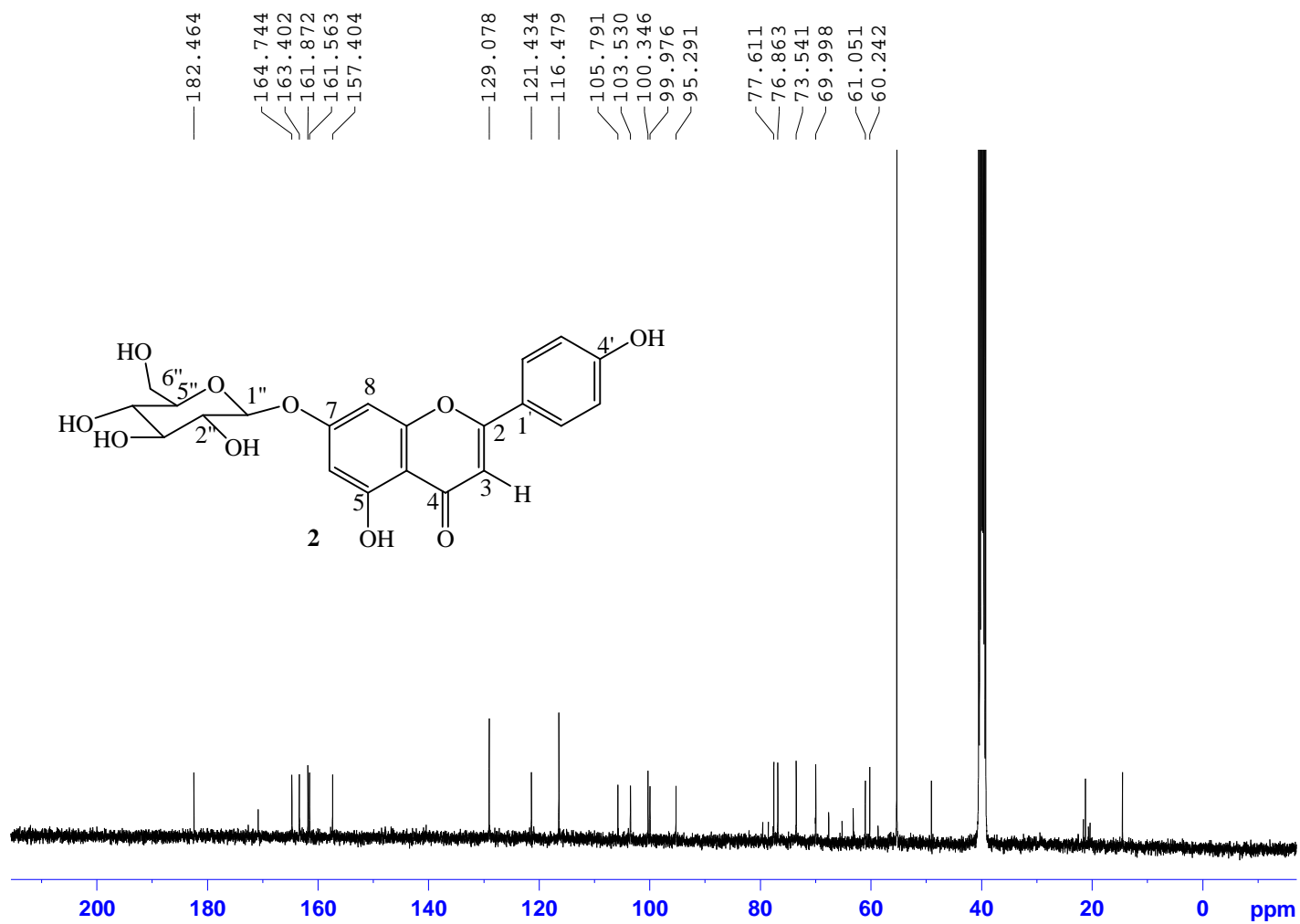
S9: HPLC-QTOF Spectrum of compound 1



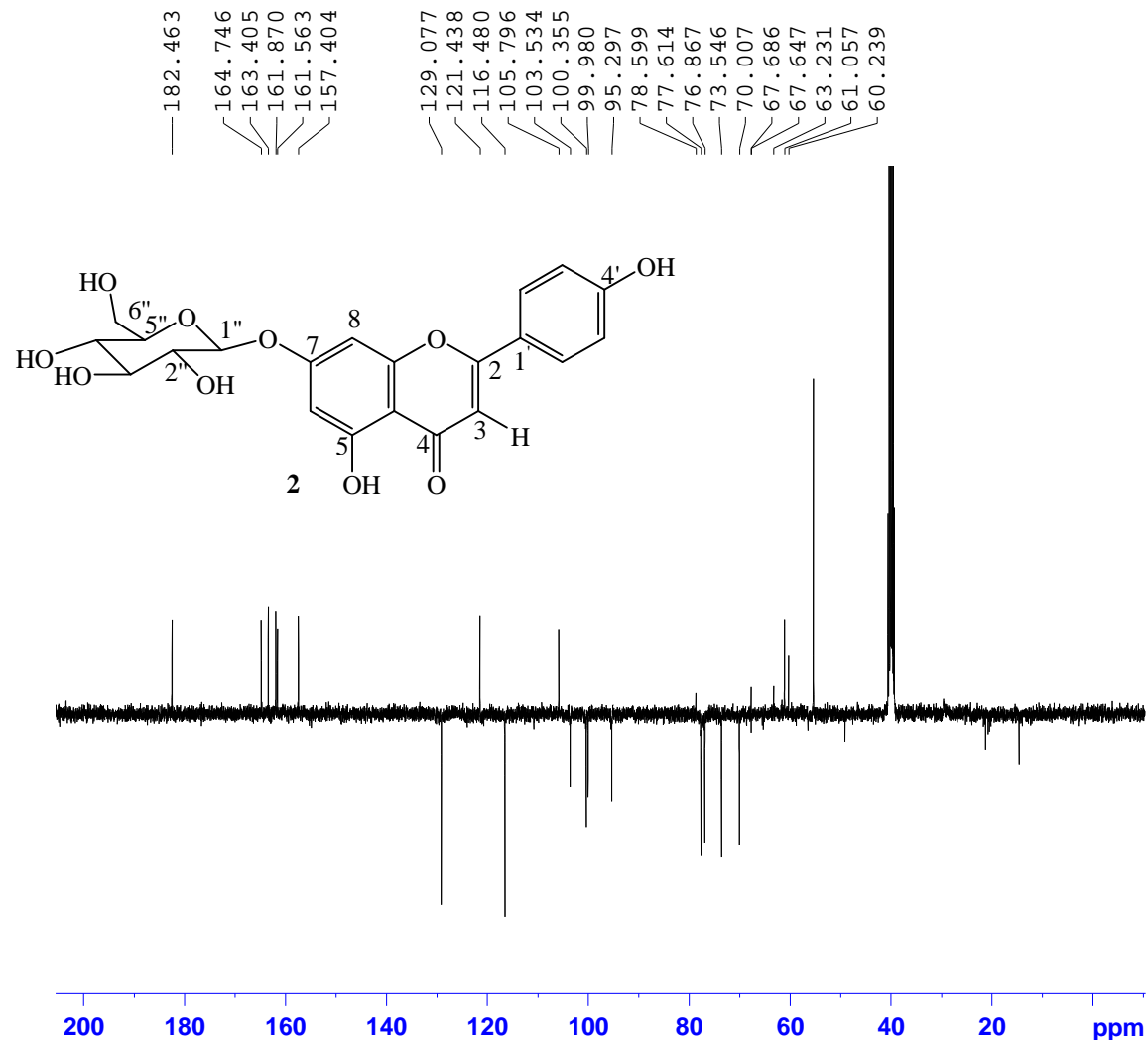
S10: ¹H-NMR (400 MHz, DMSO-*d*₆) Spectrum of Compound 2



S11: ¹H-NMR (400 MHz, DMSO-*d*₆) Spectrum of Compound 2 (Expanded)



S12: ¹³C-NMR (100 MHz, DMSO-*d*₆) Spectrum of Compound 2



```

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EXPNO     3
PROCNO    1
Date_     20111227
Time      4.17
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PROBHD    5 mm DUL 13C-1
PULPROG   jmod
TD        65536
SOLVENT   DMSO
NS        3072
DS        4
SWH       24038.461 Hz
FIDRES    0.366798 Hz
AQ        1.3631988 sec
RG        2050
DW        20.800 usec
DE        6.50 usec
TE        300.0 K
CNST2     145.0000000
CNST11    1.0000000
D1        2.000000000 sec
D20       0.00689655 sec
TD0       1

```

```

===== CHANNEL f1 =====
NUC1      13C
P1        9.00 usec
P2        18.00 usec
PL1       -1.00 dB
PL1W      46.16925430 W
SFO1      100.6228298 MHz

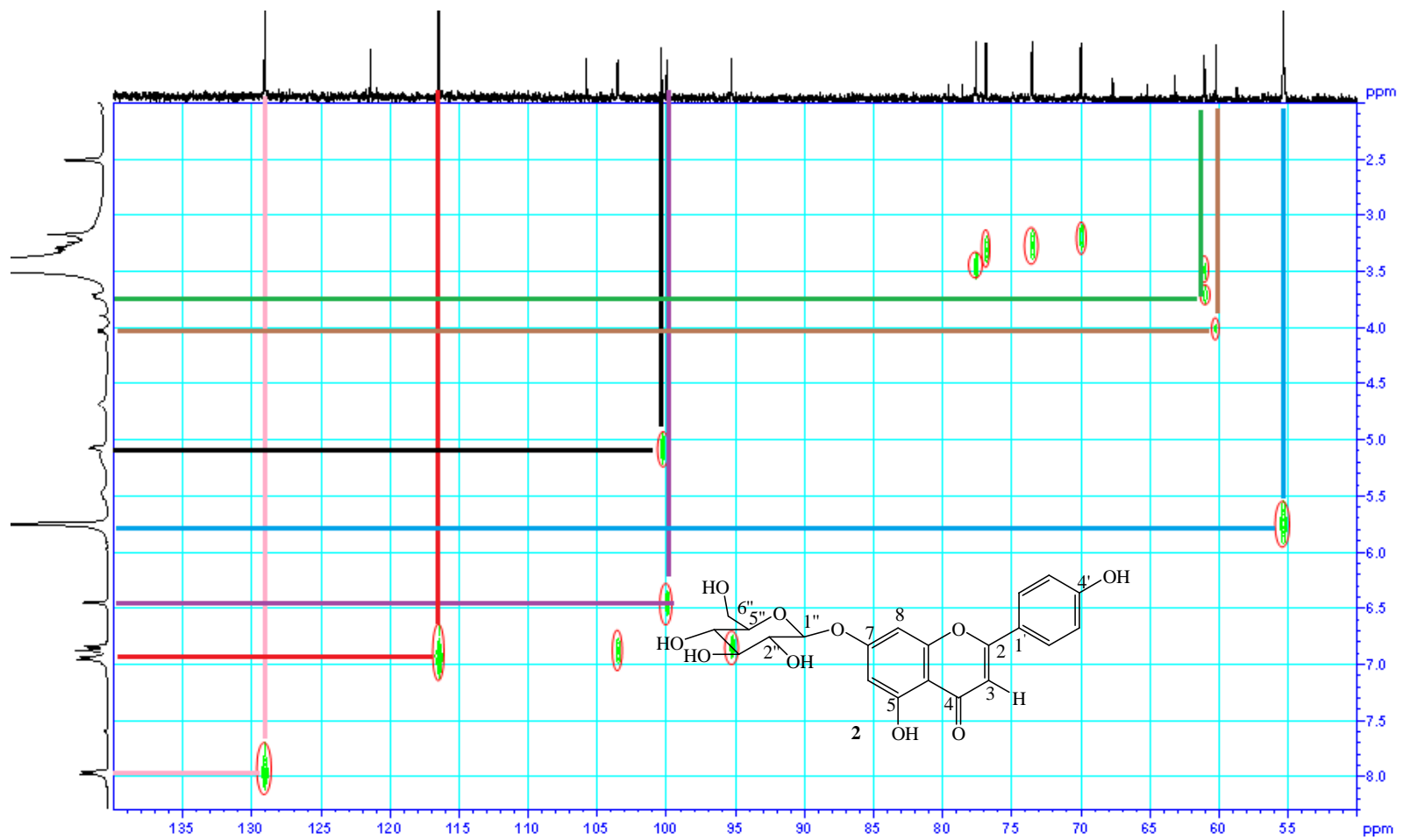
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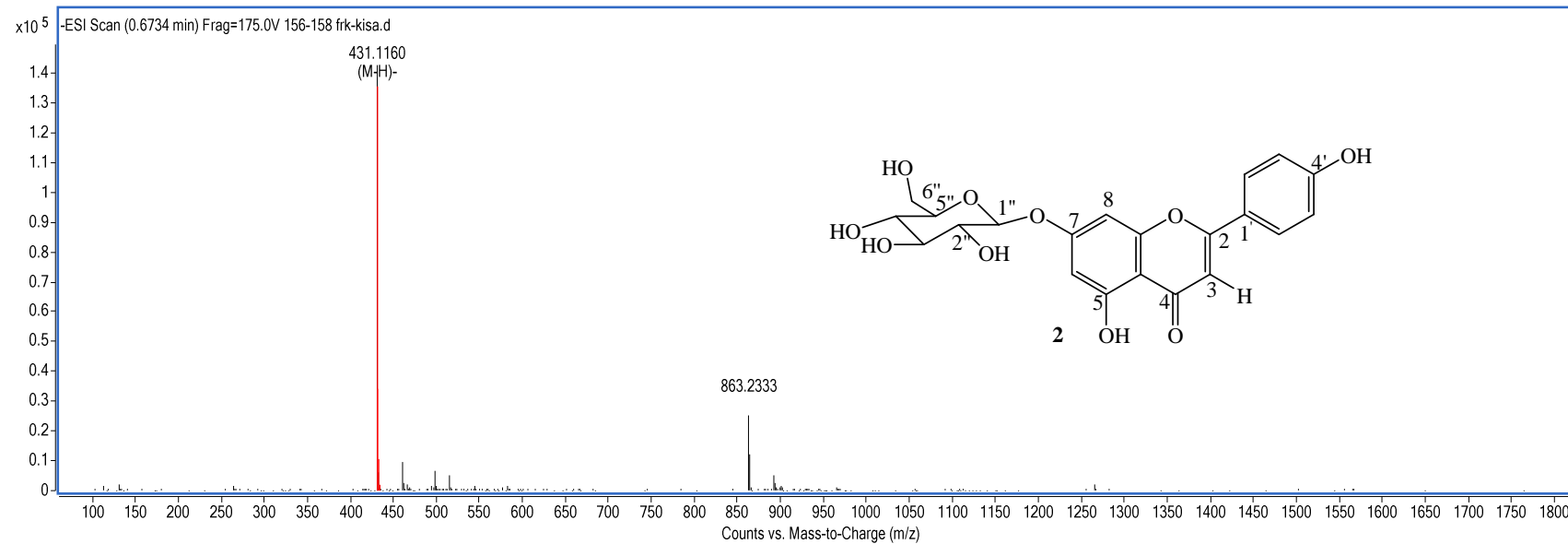
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NUC2      1H
PCPD2     80.00 usec
PL2       -3.11 dB
PL12      15.00 dB
PL2W      19.12242317 W
PL12W     0.29549012 W
SFO2      400.1316005 MHz
SI        32768
SF        100.6127690 MHz
WDW       EM
SSB       0
LB        1.00 Hz
GB        0
PC        1.40

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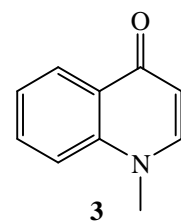
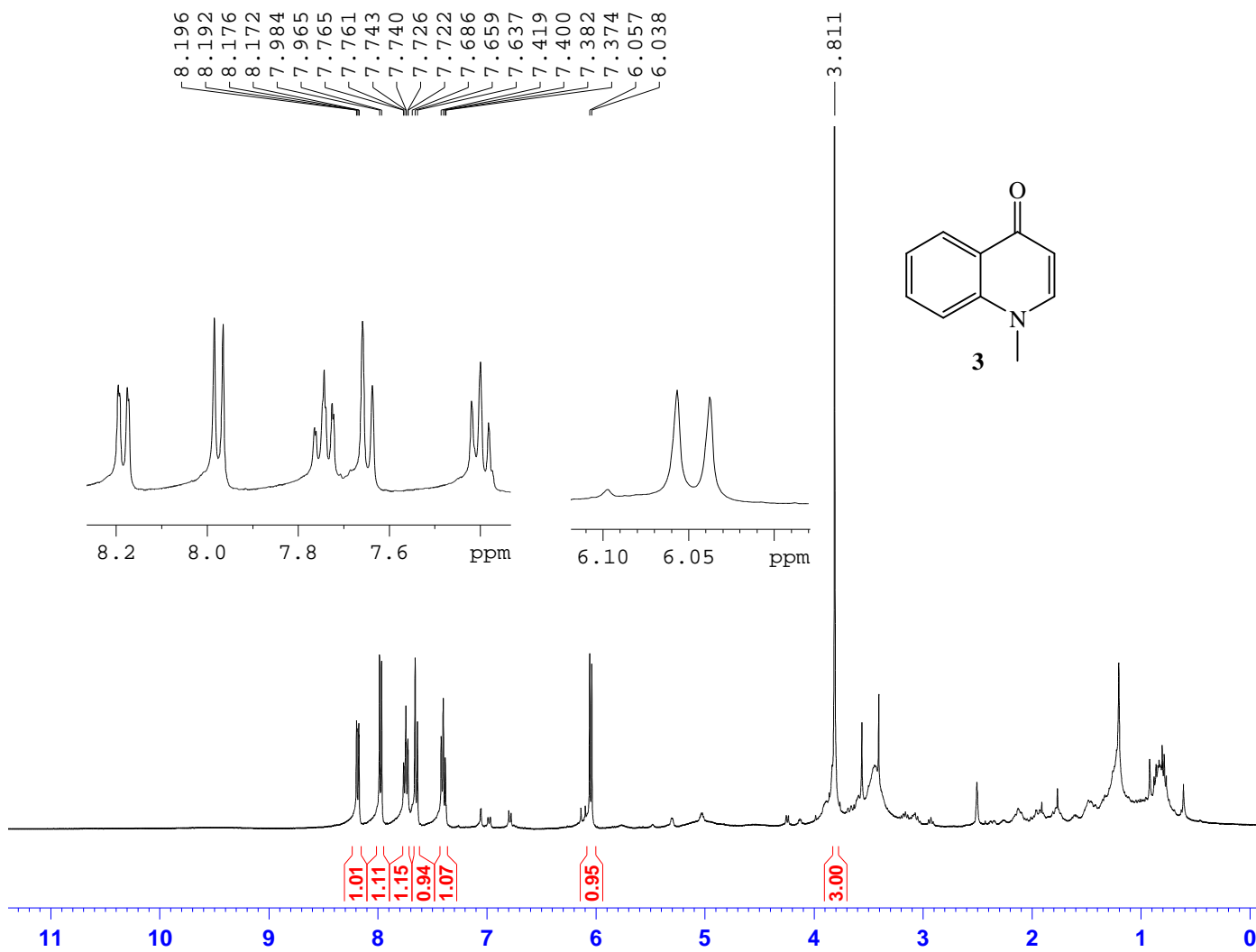
S13: APT (100 MHz, DMSO-*d*₆) Spectrum of Compound 2



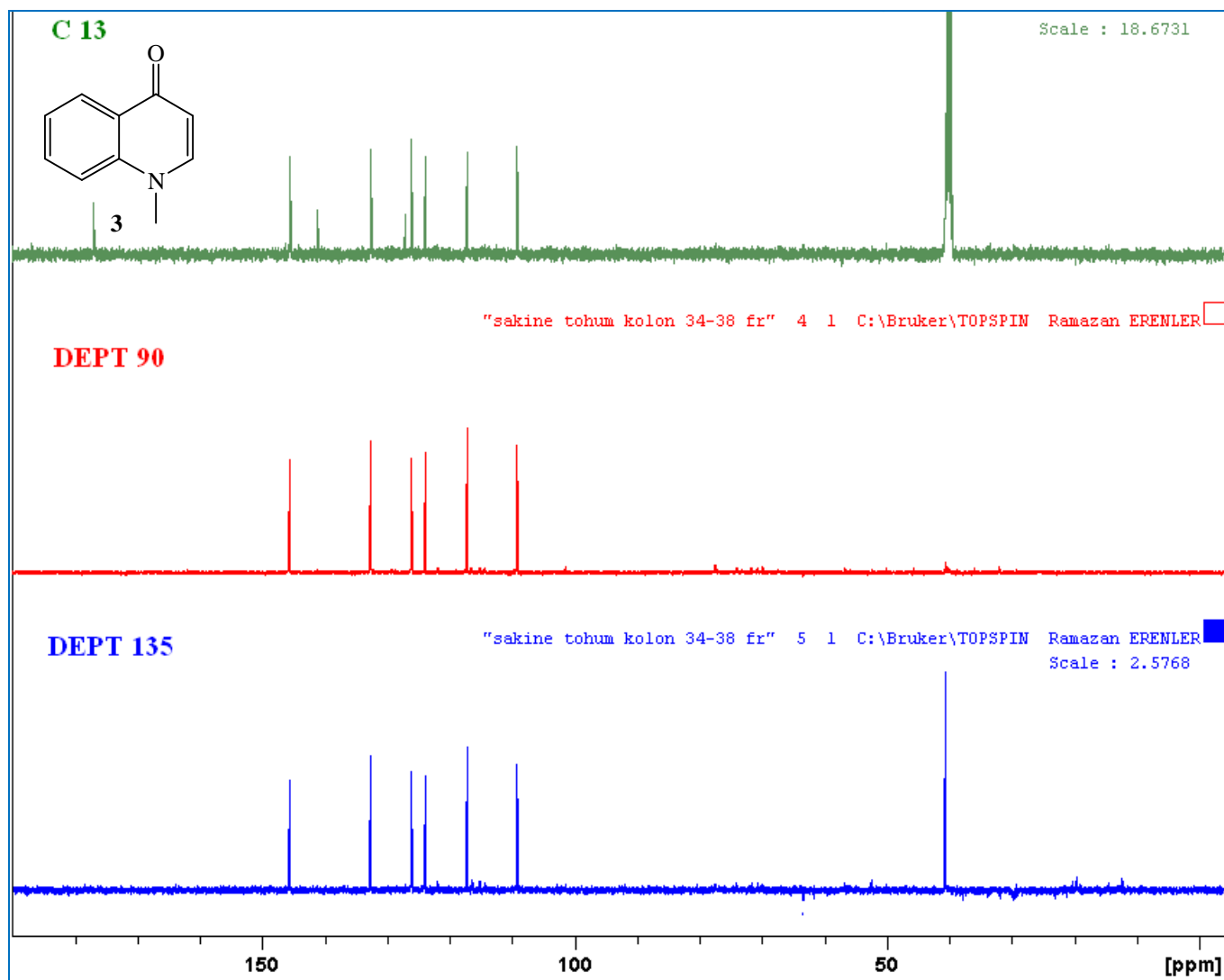
S14: HETCOR (100 MHz, DMSO-*d*₆) Spectrum of Compound 2



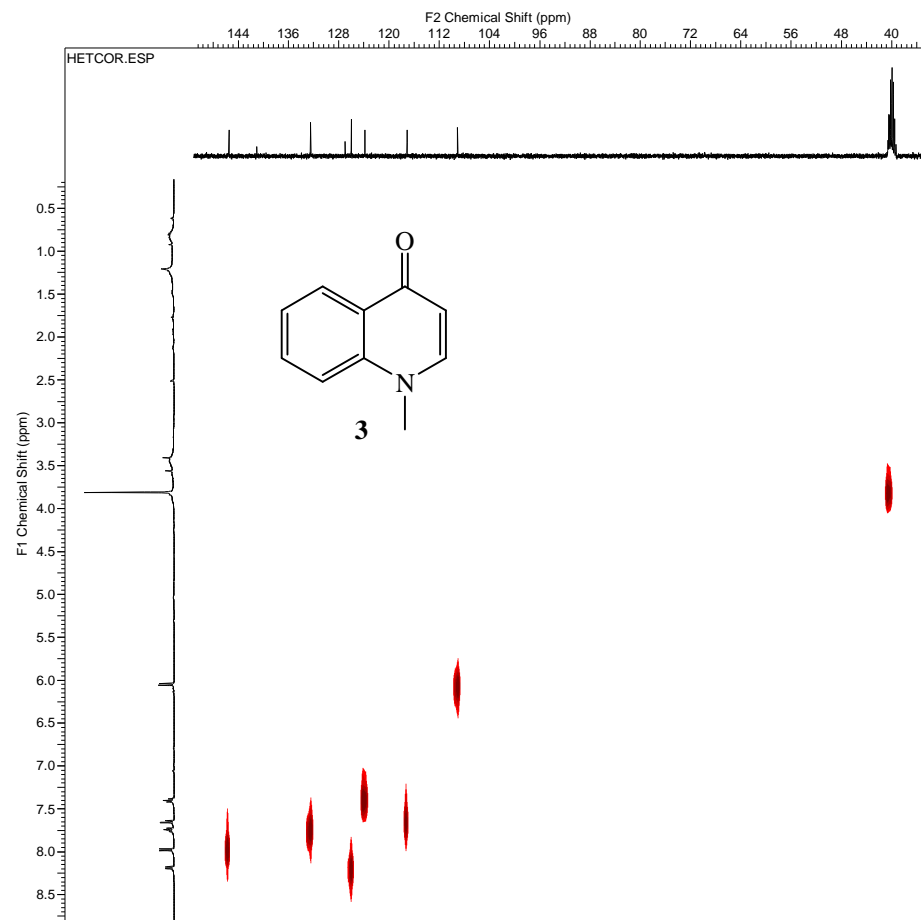
S15: HPLC-QTOF Spectrum of Compound 2



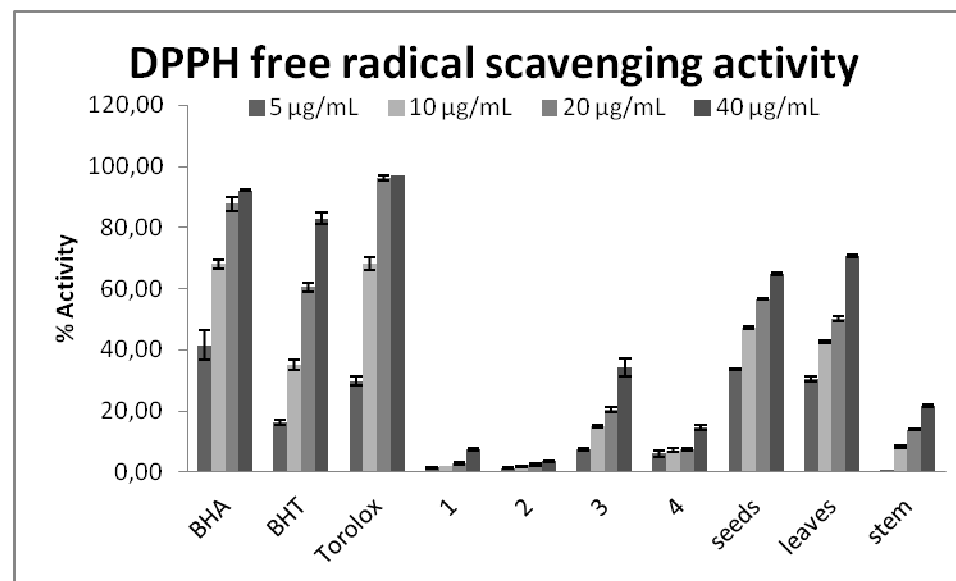
S16: ¹H-NMR (400 MHz, DMSO-*d*₆) Spectrum of Compound 3



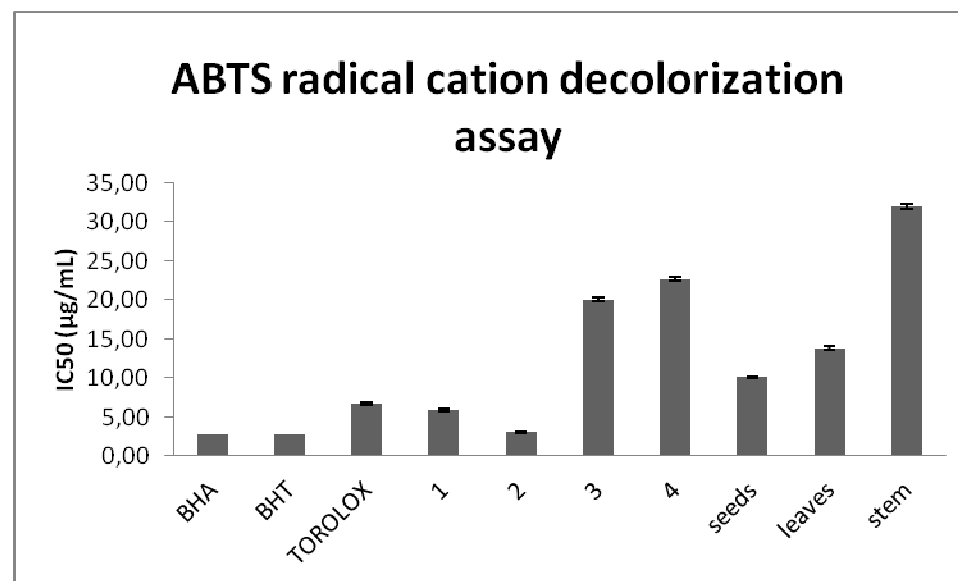
S17: ^{13}C -NMR, DEPT-90, DEPT-135 (100 MHz, $\text{DMSO-}d_6$) Spectrum of Compound 3



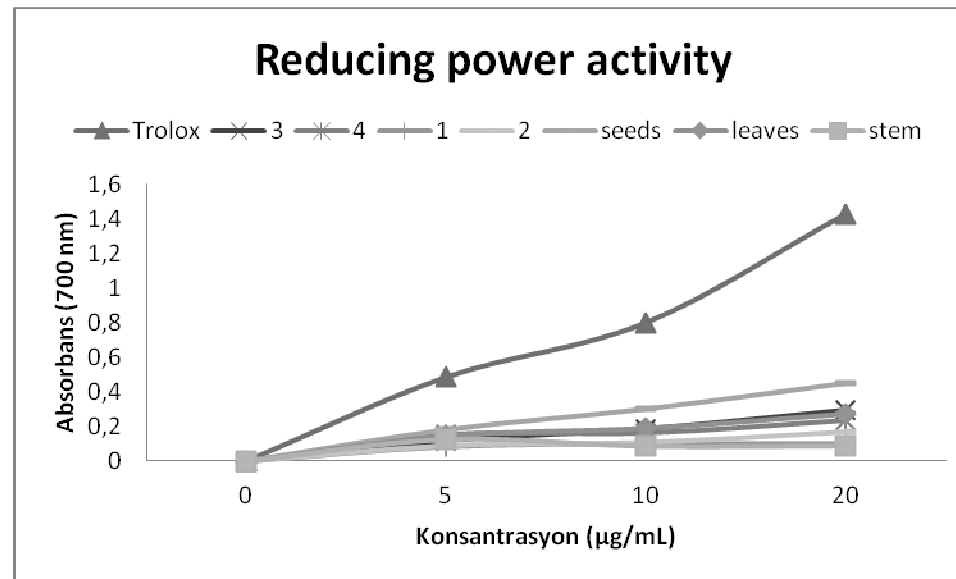
S18:HETCOR (400 MHz, DMSO-*d*₆) Spectrum of Compound **3**



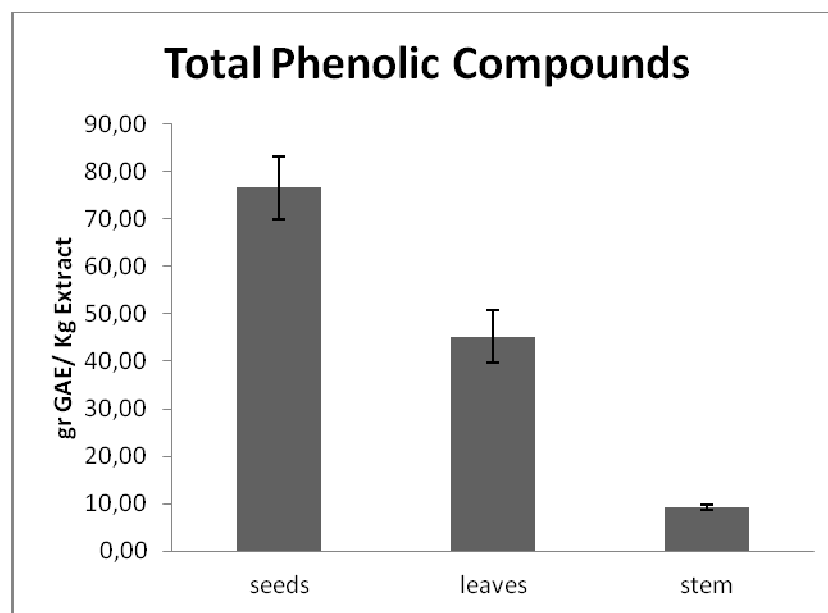
S19: DPPH free radical scavenging activity of standards, compounds and extracts



S20: ABTS^{•+} scavenging activity of standards, compounds and extracts



S21: Reducing power activity of standard, compounds and extracts



S22: Total phenolic compounds

Table 1. Carbon, proton and HMBC data of the flavonoids (**1**, **2**).

<i>Compound 1</i>				<i>Compound 2</i>		
C/H	δ_C (ppm)	δ_H (J Hz)	HMBC (H \rightarrow C)	C/H	δ_C	δ_H (J Hz)
2	164.7			2	164.7	
3	103.5	6.83 s	H-3/C-2, 4, 10, 1'	3	103.5	6.9 s
4	182.4			4	182.5	
5	161.8	13.0 s		5	163.4	13 s
6	99.9	6.47 (d, $J=2.1$)	H-6/C-7, 8	6	95.3	6.84 brs
7	163.2			7	161.6	
8	95.1	6.81 (d, $J=2.1$)	H-8/C-6, 7, 9, 10	8	100.0	6.46 (d, $J=1.2$)
9	157.3			9	157.4	
10	105.8			10	105.8	
1'	121.4			1'	121.4	
2', 6'	129.0	7.94 (d, $J=8.8$)	H-2', 6'/C-2, 4'	2', 6'	129.1	7.96 (d, $J=8.4$)
3', 5'	116.8	6.92 (d, $J=8.8$)	H-3', 5'/C-1', 4'	3', 5'	116.5	6.97 (d, $J=8.4$)
4'	161.6			4'	161.9	
<i>Glucose</i>						
1''	99.9	5.16 (d, $J=7.3$)	H-1''/C-7	1''	100.3	5.06 (d, $J=7.0$)
2''	73.4	3.33 (t, $J=7.3$)		2''	73.5	3.27 (t, $J=7.0$)
3''	76.7	3.34 m		3''	76.9	3.30 m
4''	70.4	3.18 m		4''	70.0	3.18 m
5''	74.3	3.83 m		5''	77.6	3.44 m
6''a	63.9	3.46 m		6''a	61.1	3.48 m
6''b	61.1	4.19 m		6''b	61.1	3.72 m
OH-5		13.0 s		OH-5	13.0	
OH-4'		10.4 s		OH-4'	10.4	
<i>coumaroyl</i>						
1'''	166.9					
2'''	114.2	7.49 (d, $J=15.8$)	H-2'''/C-1''', 3'''			
3'''	145.4	6.33 (d, $J=15.8$)	H-3'''/C-2''', 4'''			
4'''	125.3					
5''', 9'''	116.1	6.66 (d, $J=8.6$)	H-5''', 9'''/C-4''', 6''', 8''', 7'''			
6''', 8'''	130.5	7.36 (d, $J=8.6$)	H-6''', 8'''/C-5''', 9''', 7''', 4'''			
7'''	160.2					

Table 2. Carbon and proton data of 1-methylquinolin-4(*1H*)-one (**3**)

C/H	δ_C ppm	δ_H (J Hz)	HMBC (H \rightarrow C)
2	145.5	7.98 (d, $J = 8.0$)	H-2/C-3, 4, 10
3	109.9	6.05 (d, $J = 8.0$)	H-3/C-2, 4, 9
4	176.9		
5	117.1	7.65 (d, $J = 8.0$)	H-5/C-6, 7
6	124.0	7.40 (t, $J = 8.0$)	H-6/C-5, 7, 8
7	132.5	7.74 (ddd, $J = 8.0, 1.6$)	H-7/C-6, 8
8	125.9	8.19 (dd, $J = 8.0, 1.6$)	H-8/C-4, 6, 7, 10
9	127.0		
10	141.0		
CH ₃	40.6	3.75 s	