

Supplementary material

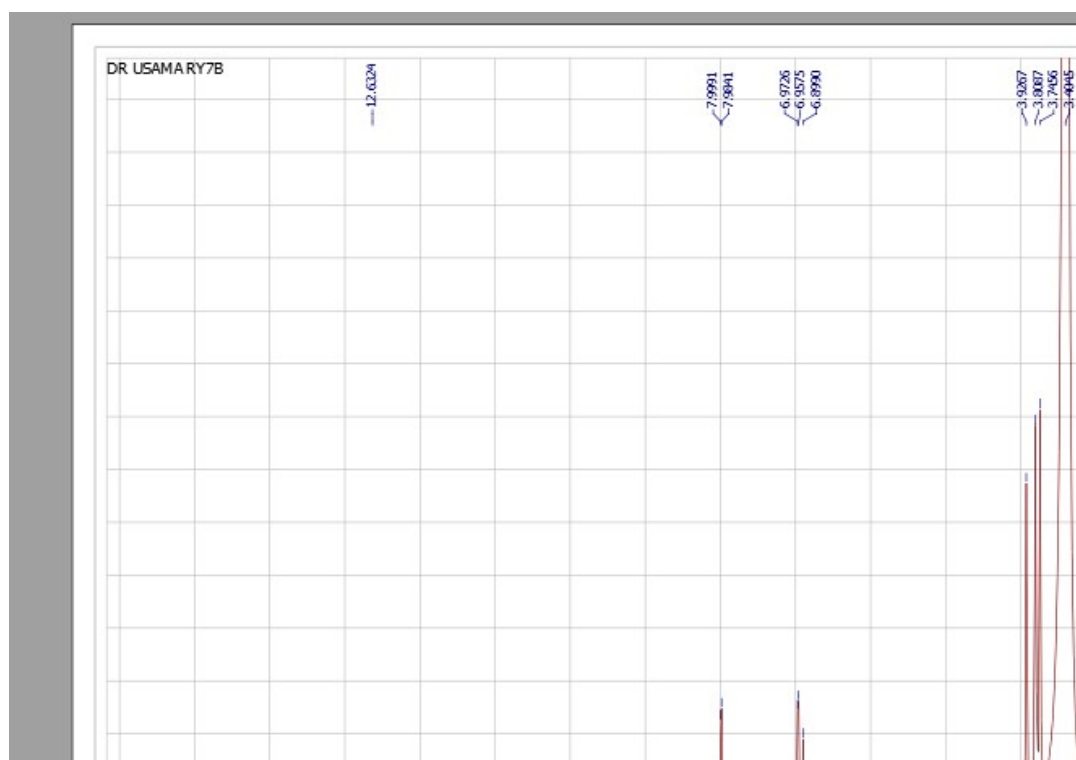


Figure S1: ^1H NMR spectrum of compound 1 (DMSO- d_6 , 500 MHz)

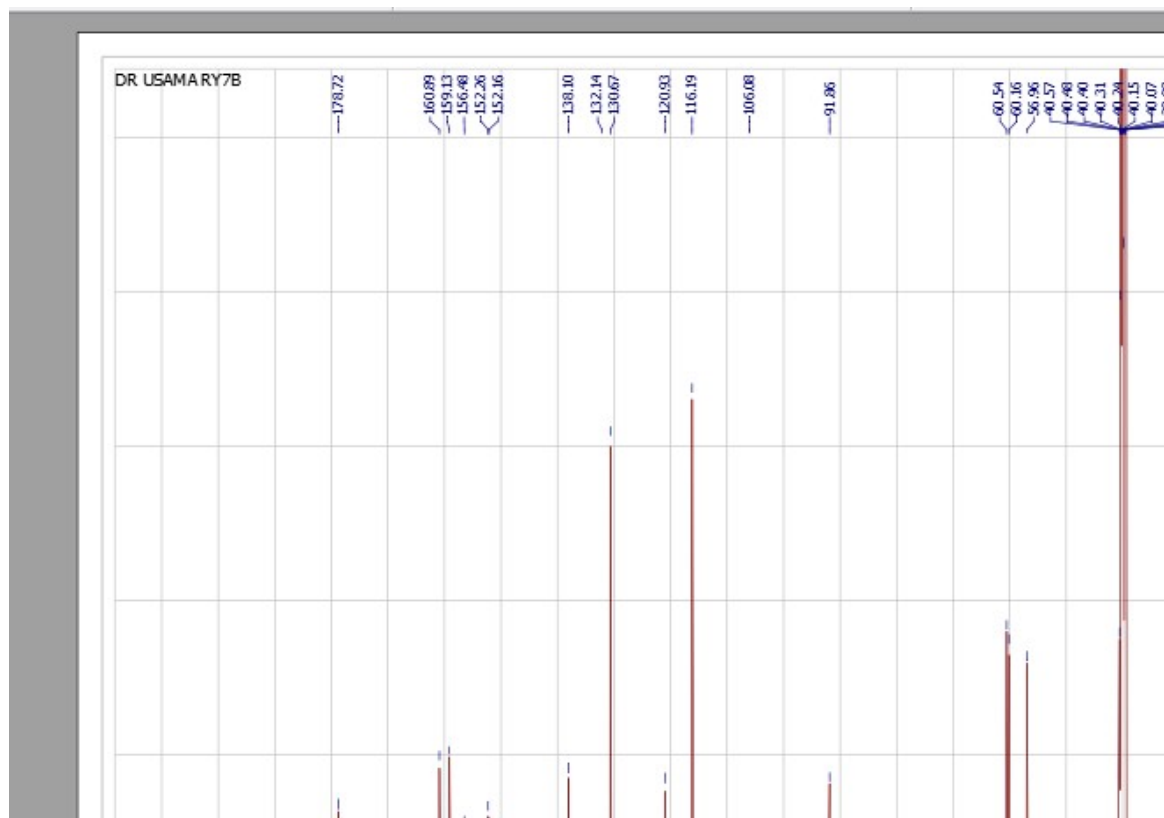


Figure S2: ^{13}C NMR spectrum of compound 1 (DMSO- d_6 , 500 MHz)

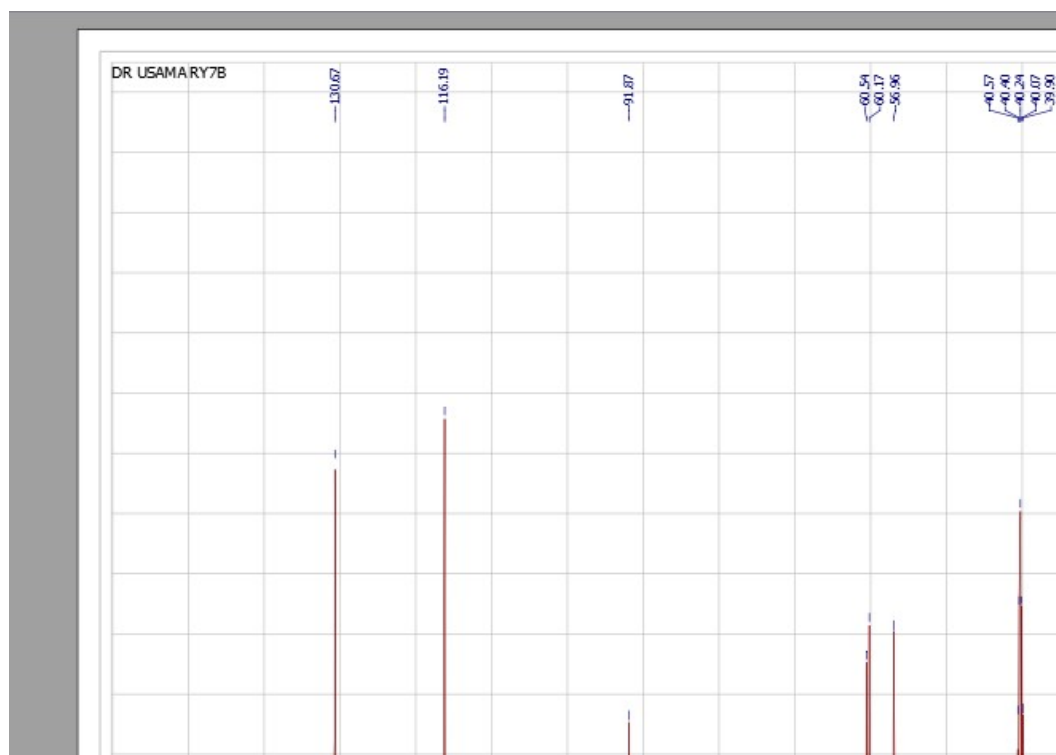


Figure S3: ^{13}C -DEPT NMR spectrum of compound 1 ($\text{DMSO-}d_6$, 500 MHz)

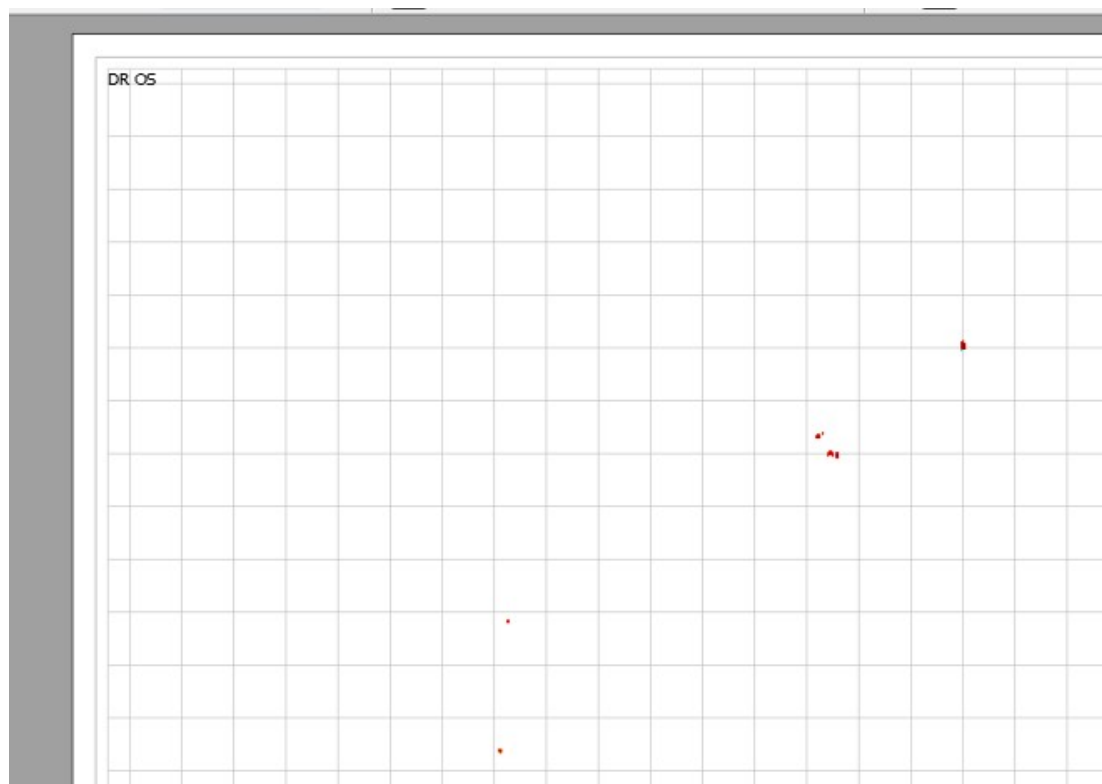


Figure S4: HSQC spectrum of compound 1 ($\text{DMSO-}d_6$, 500 MHz)

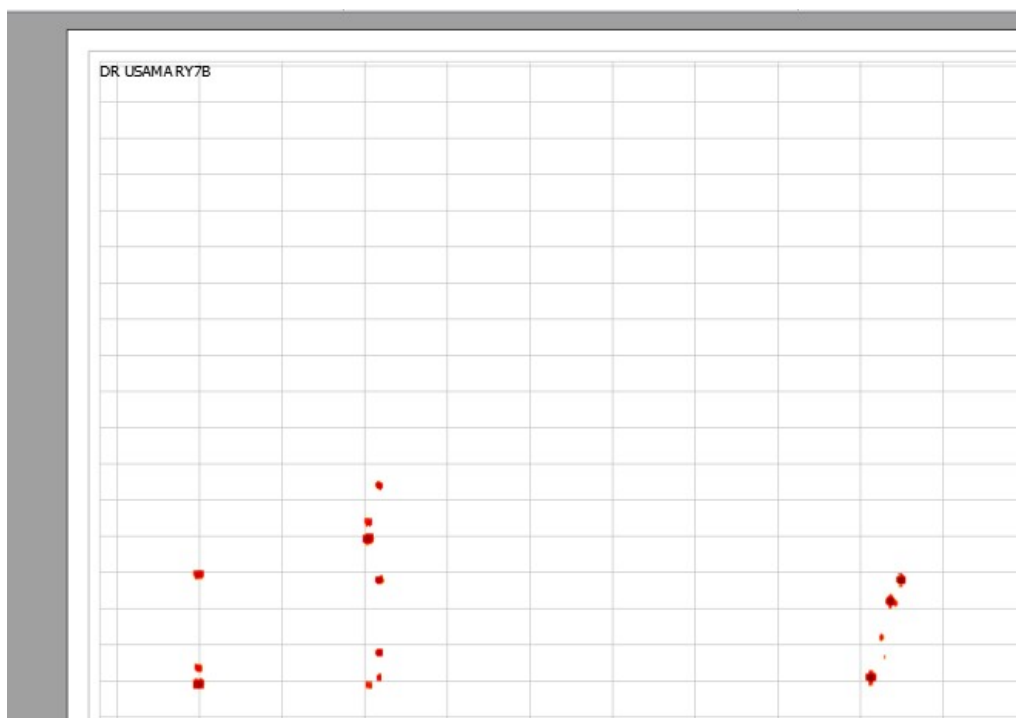


Figure S5: HMBC spectrum of compound 1 (DMSO- d_6 , 500 MHz)

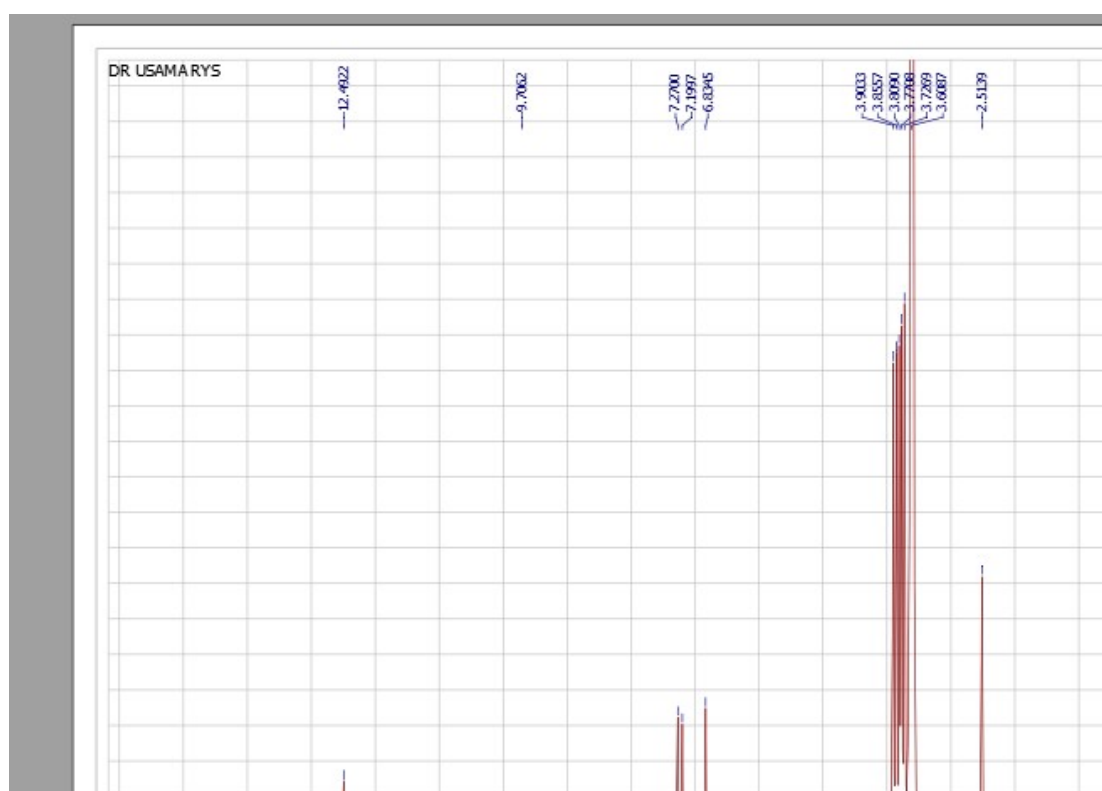


Figure S6: ^1H NMR spectrum of compound 2 (DMSO- d_6 , 500 MHz)

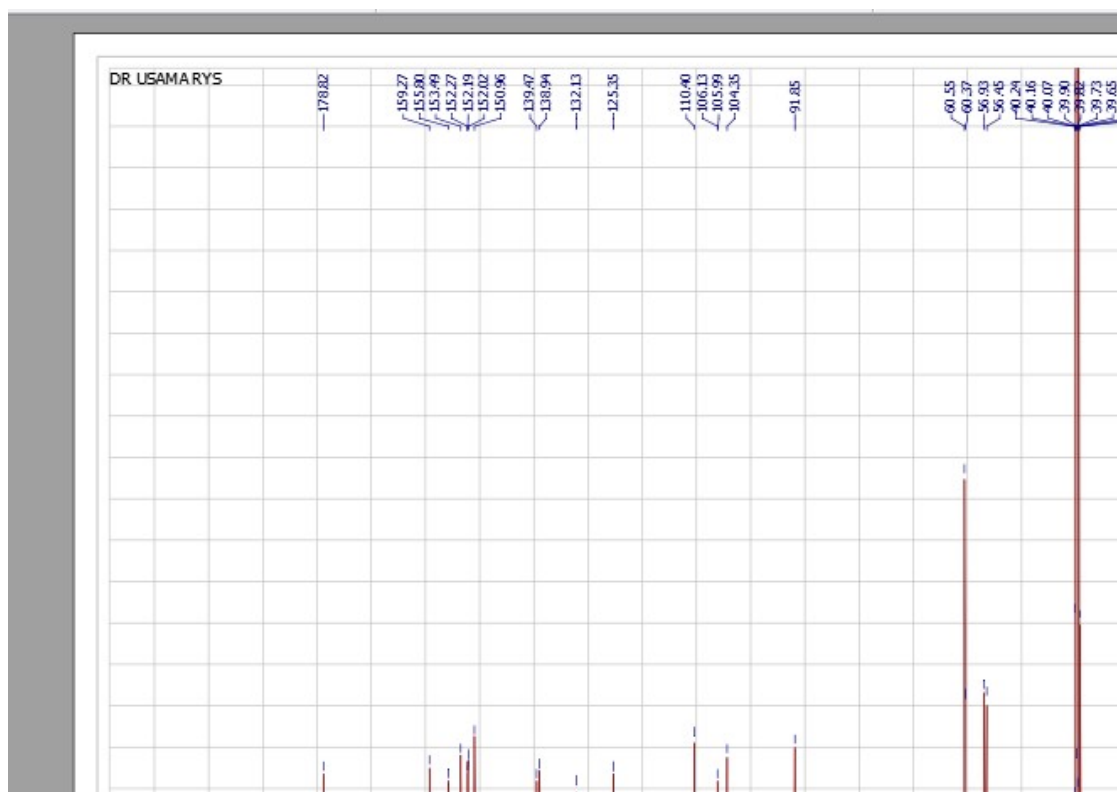


Figure S7: ^{13}C NMR spectrum of compound 2 ($\text{DMSO-}d_6$, 500 MHz)

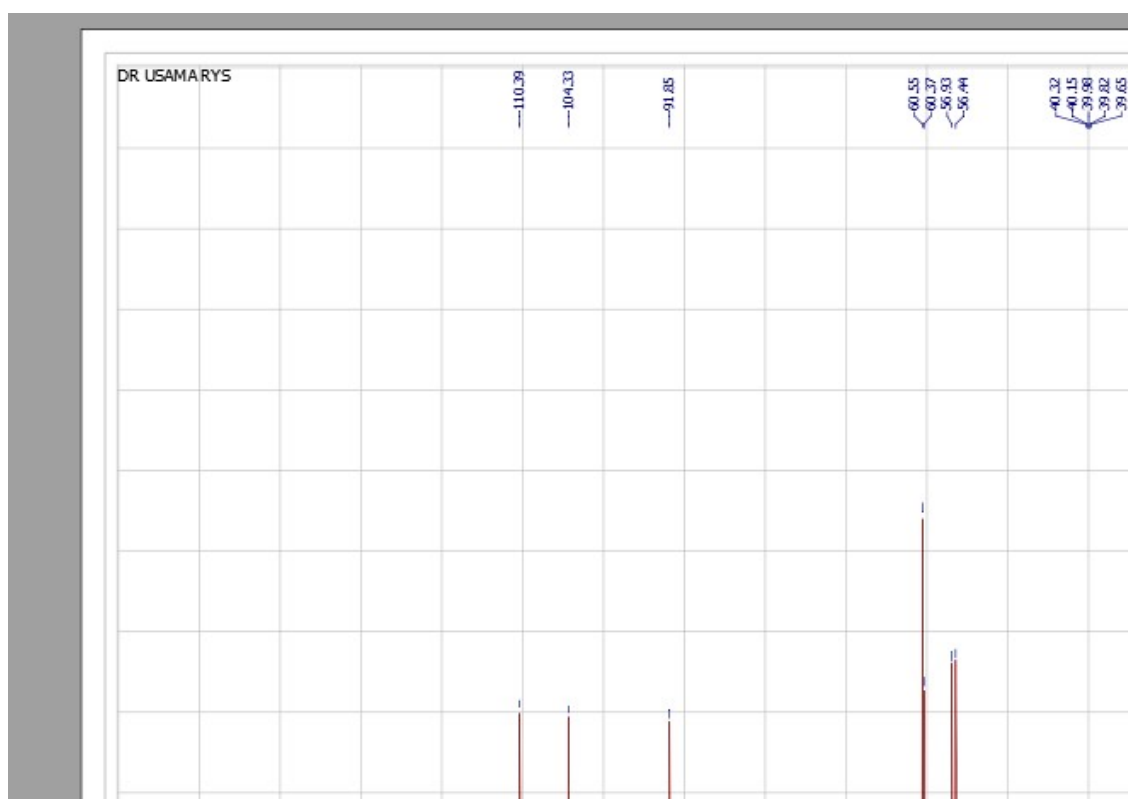


Figure S8: ^{13}C -DEPT NMR spectrum of compound 2 ($\text{DMSO-}d_6$, 500 MHz)

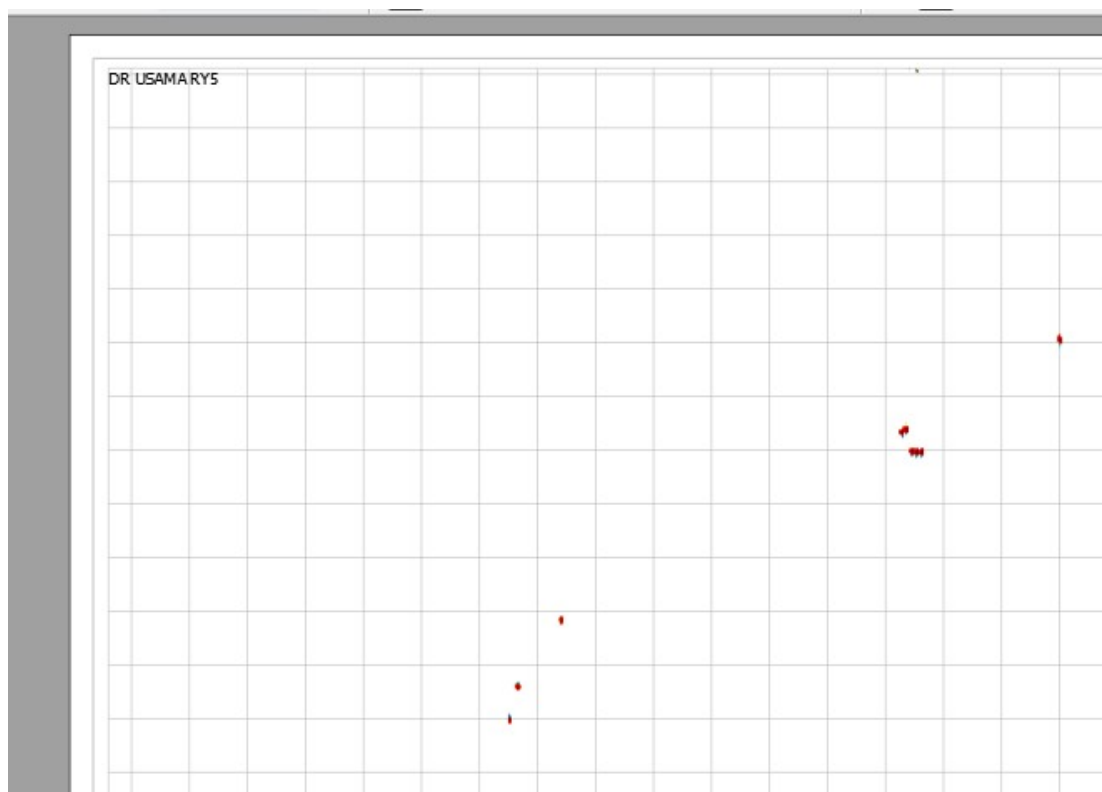


Figure S9: HSQC spectrum of compound 2 (DMSO-*d*₆, 500 MHz)

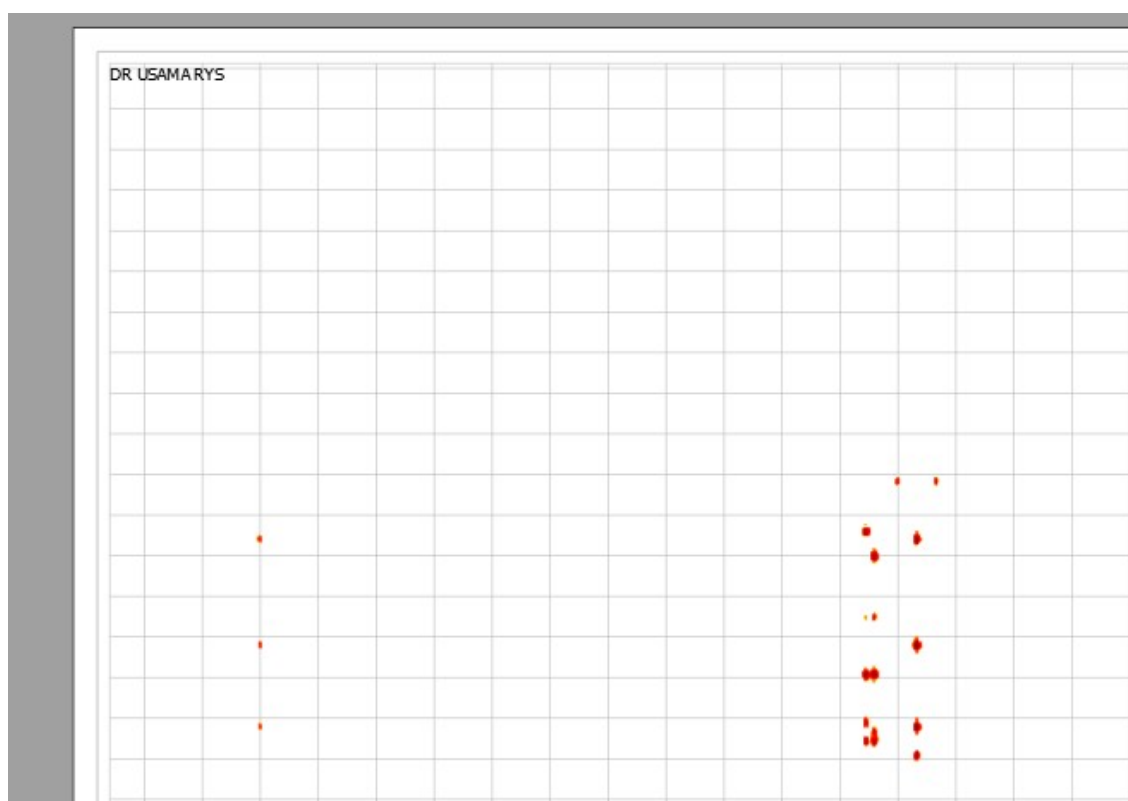


Figure S10: HMBC spectrum of compound 2 (DMSO-*d*₆, 500 MHz)

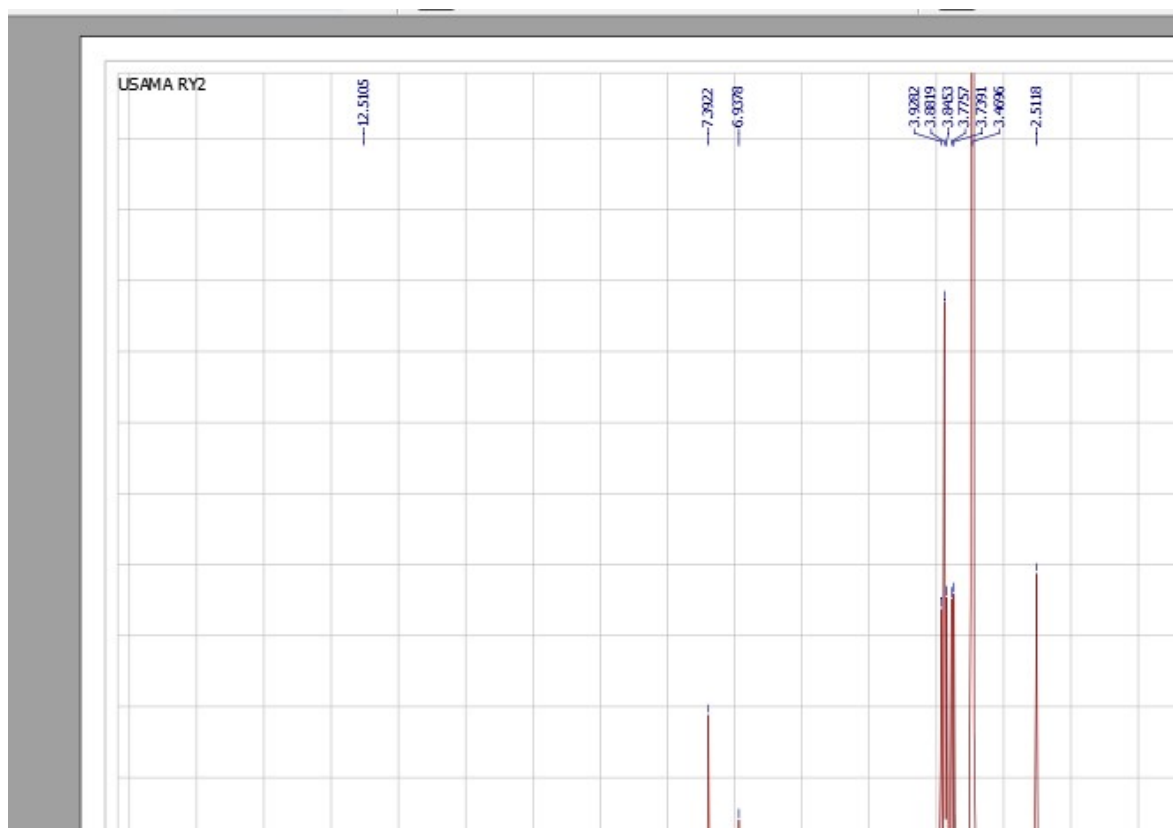


Figure S11: ^1H NMR spectrum of compound 3 ($\text{DMSO-}d_6$, 500 MHz)

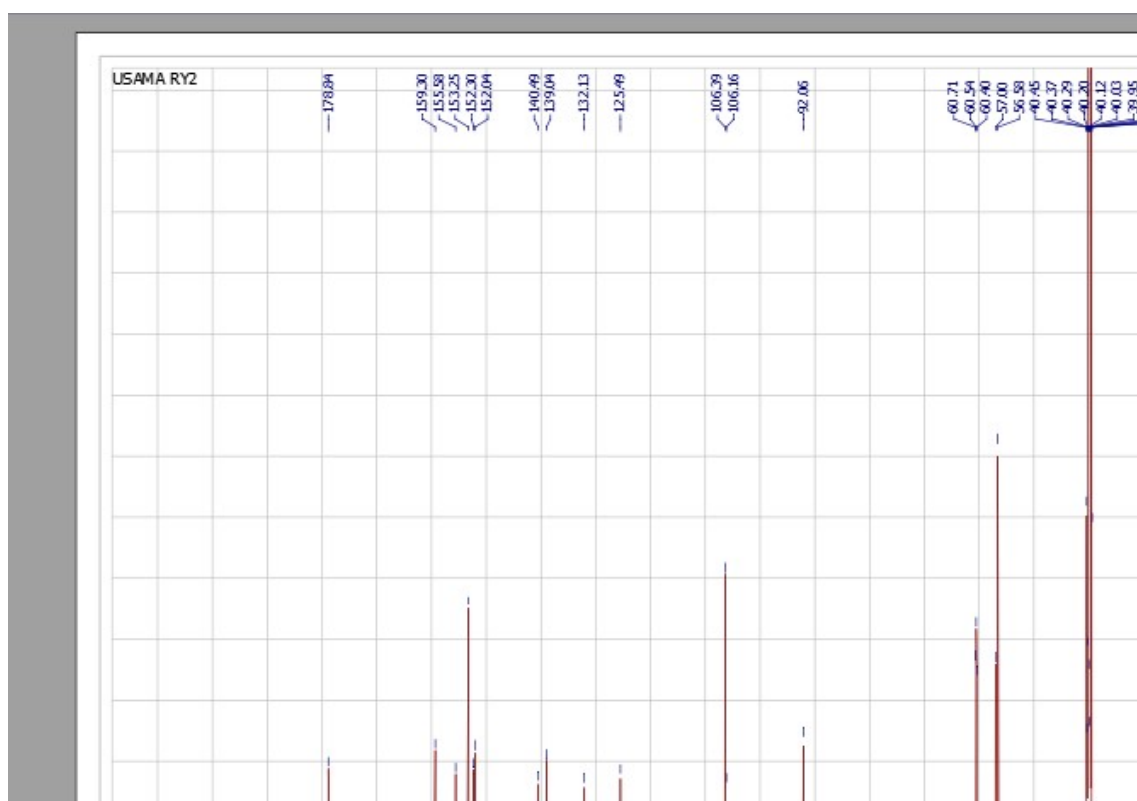


Figure S12: ^{13}C NMR spectrum of compound 3 ($\text{DMSO-}d_6$, 500 MHz)

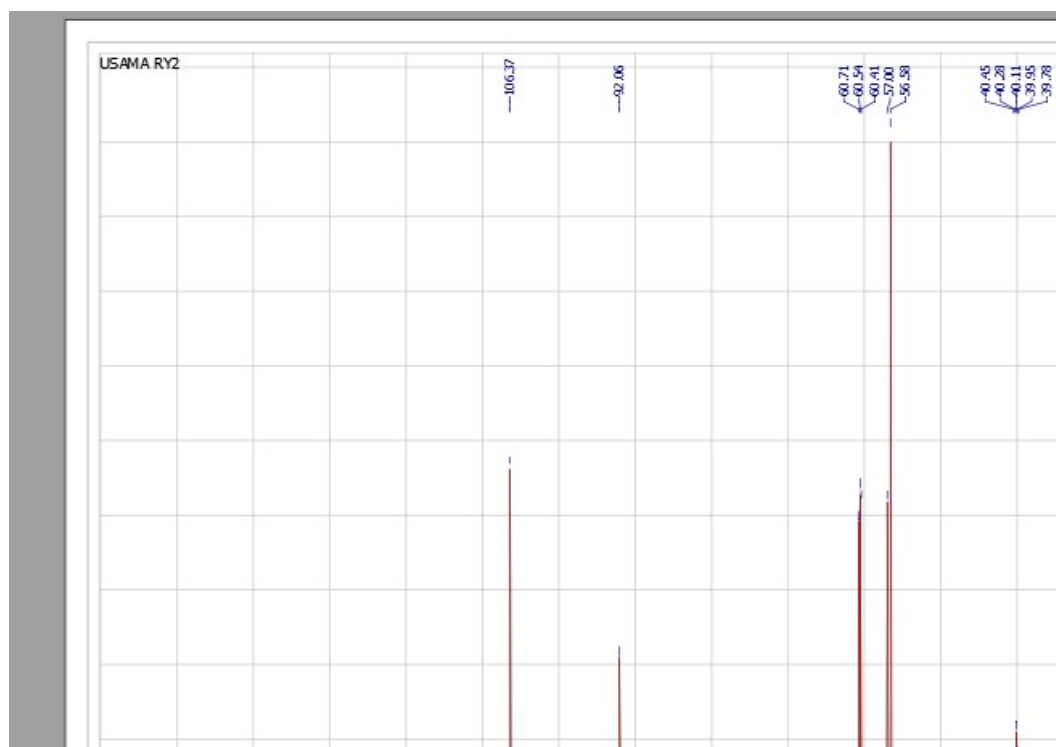


Figure S13: ^{13}C -DEPT NMR spectrum of compound 3 ($\text{DMSO-}d_6$, 500 MHz)

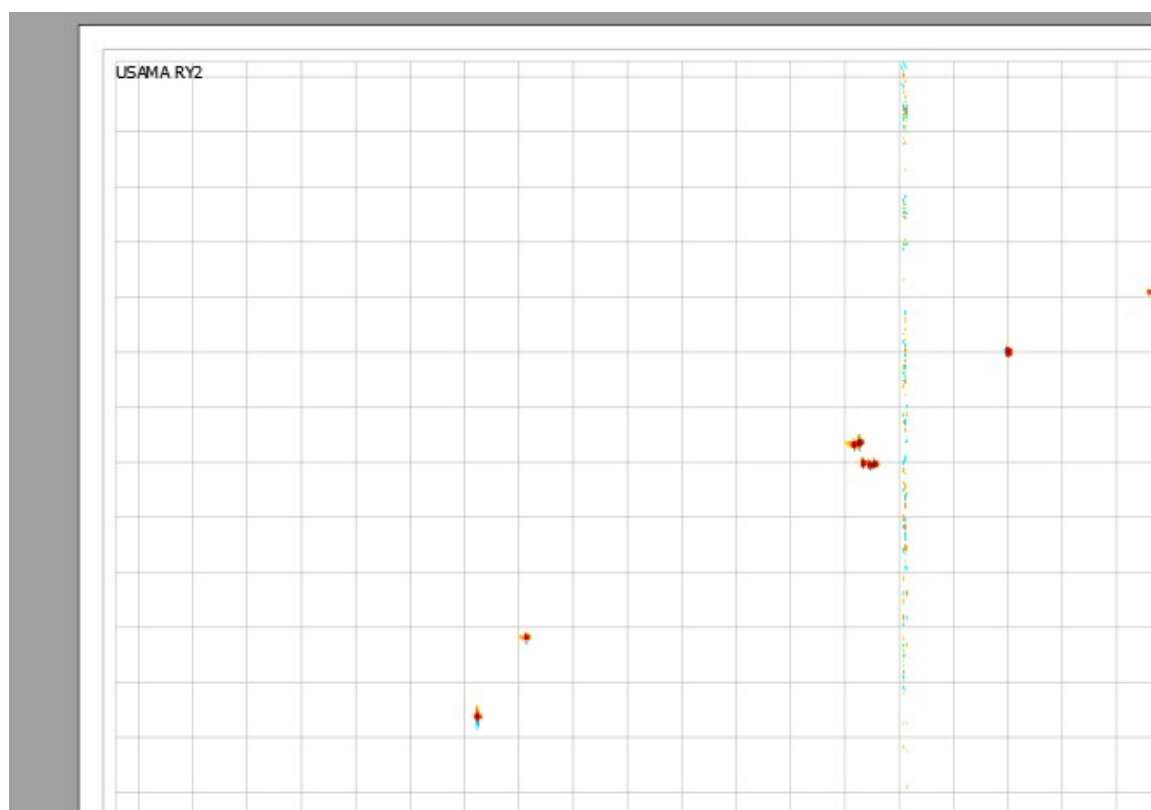


Figure S14: HSQC spectrum of compound 3 ($\text{DMSO-}d_6$, 500 MHz)

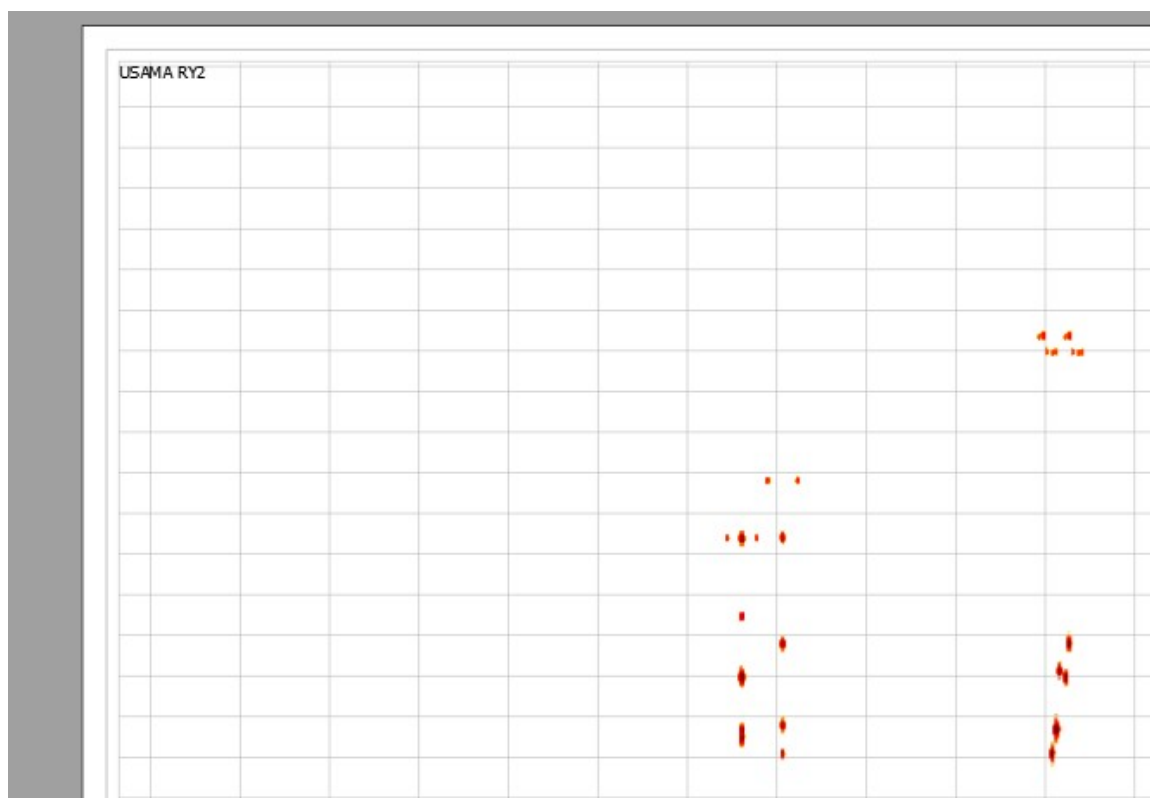


Figure S15: HMBC spectrum of compound 3 (DMSO- d_6 , 500 MHz)

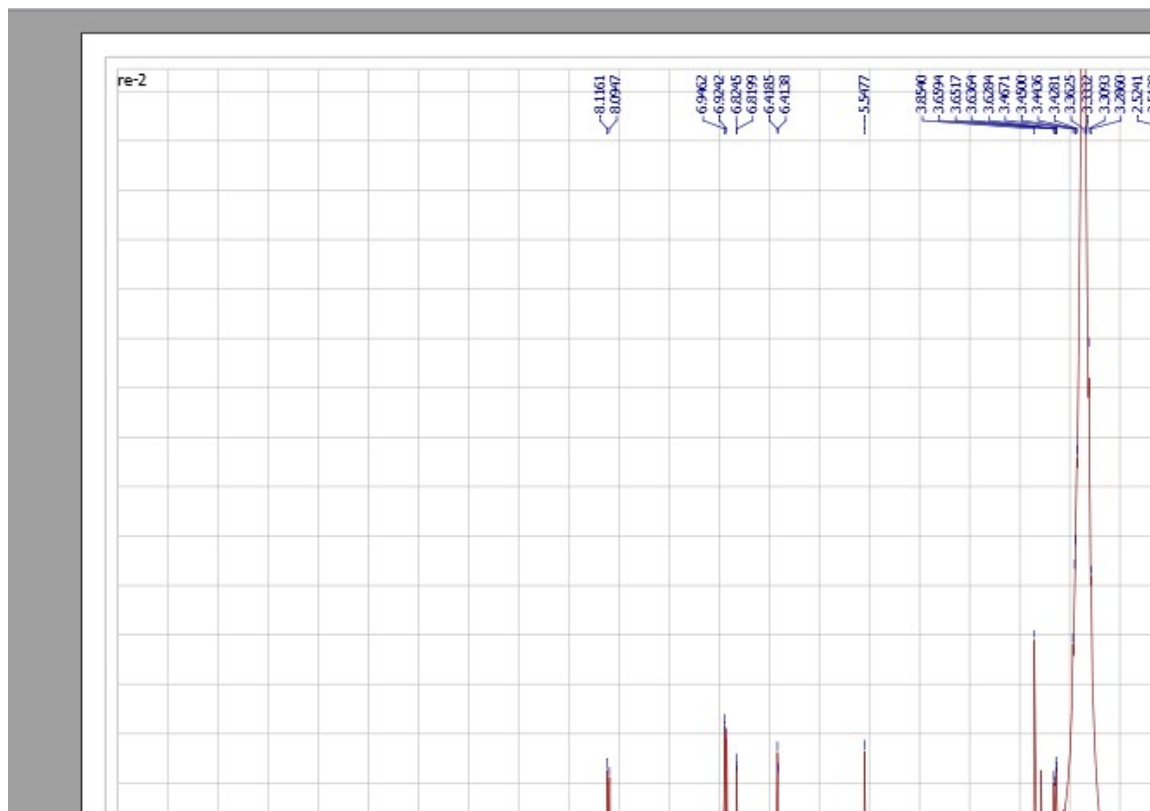


Figure S16: ^1H NMR spectrum of compound 4 (DMSO- d_6 , 400 MHz)

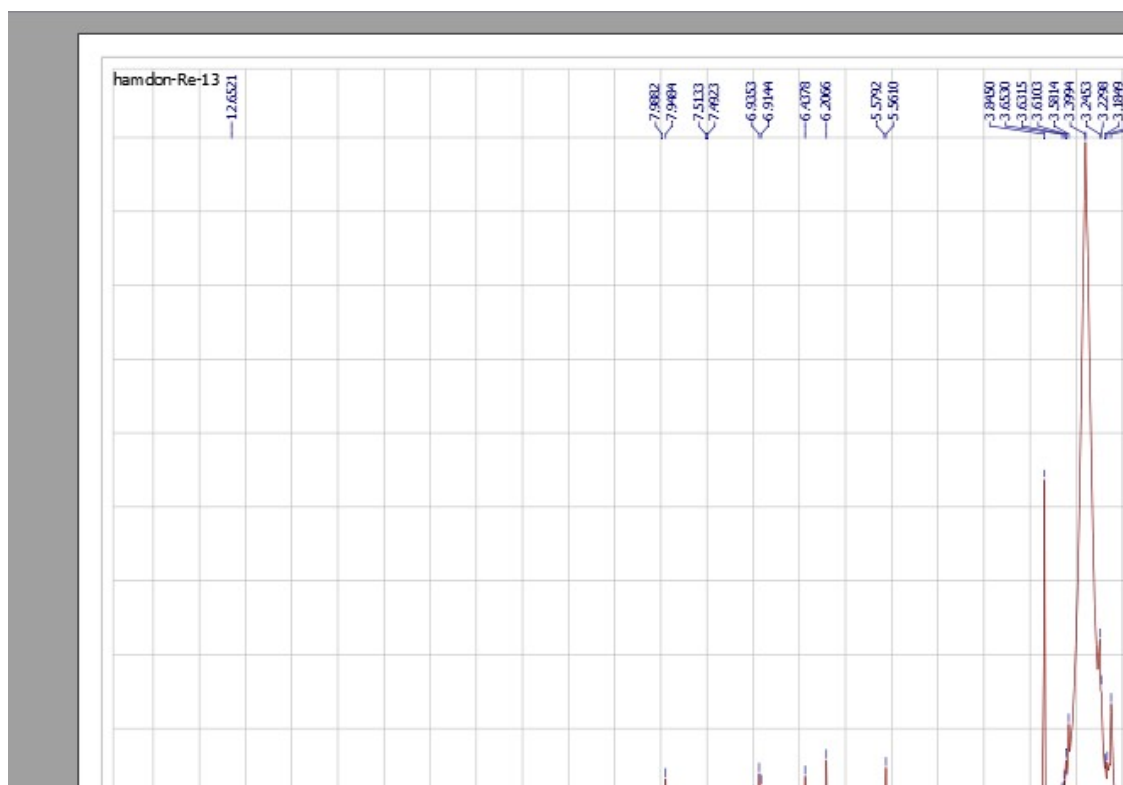


Figure S17: ^1H NMR spectrum of compound 5 ($\text{DMSO}-d_6$, 400 MHz)

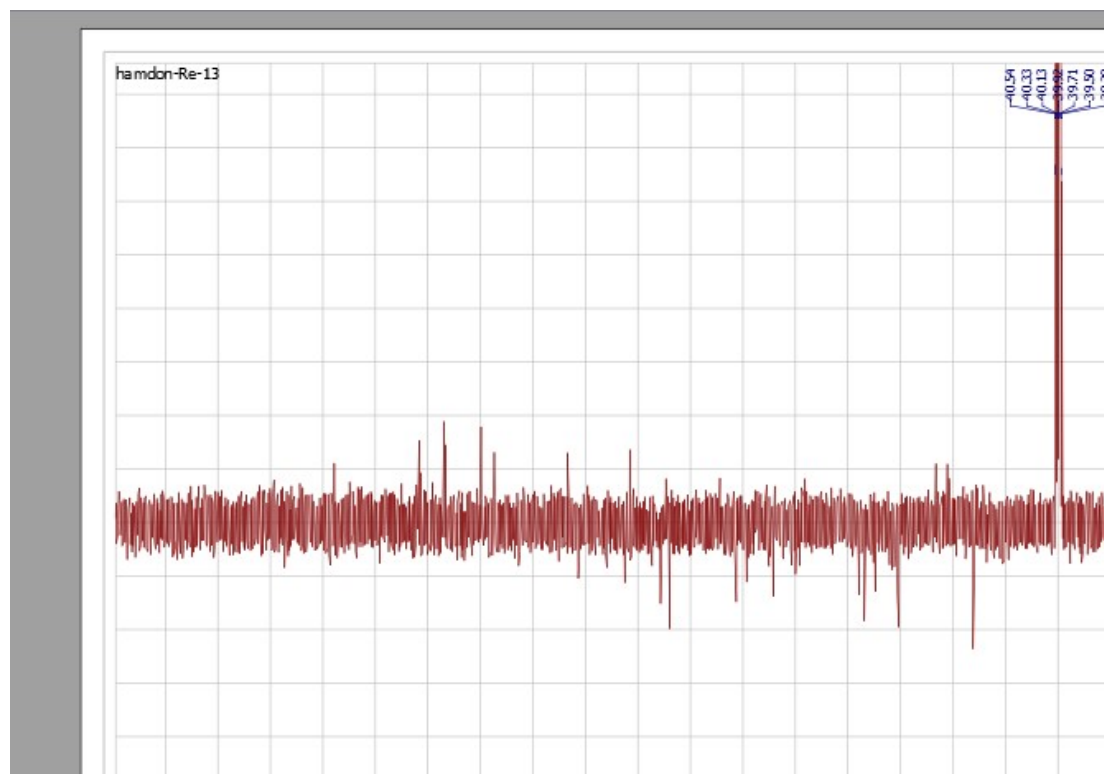


Figure S18: ^{13}C -APT NMR spectrum of compound 5 ($\text{DMSO}-d_6$, 400 MHz)

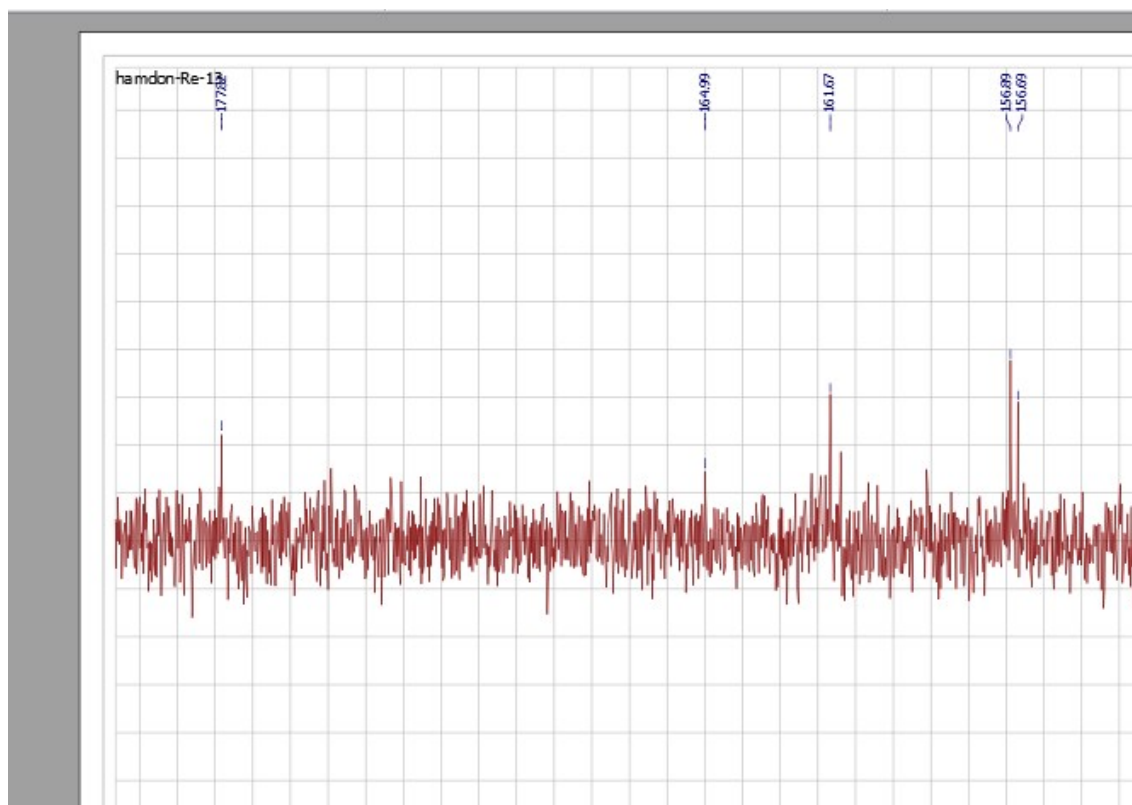


Figure S19: Expanded ¹³C-APT NMR spectrum of compound 5 (DMSO-*d*₆, 400 MHz)

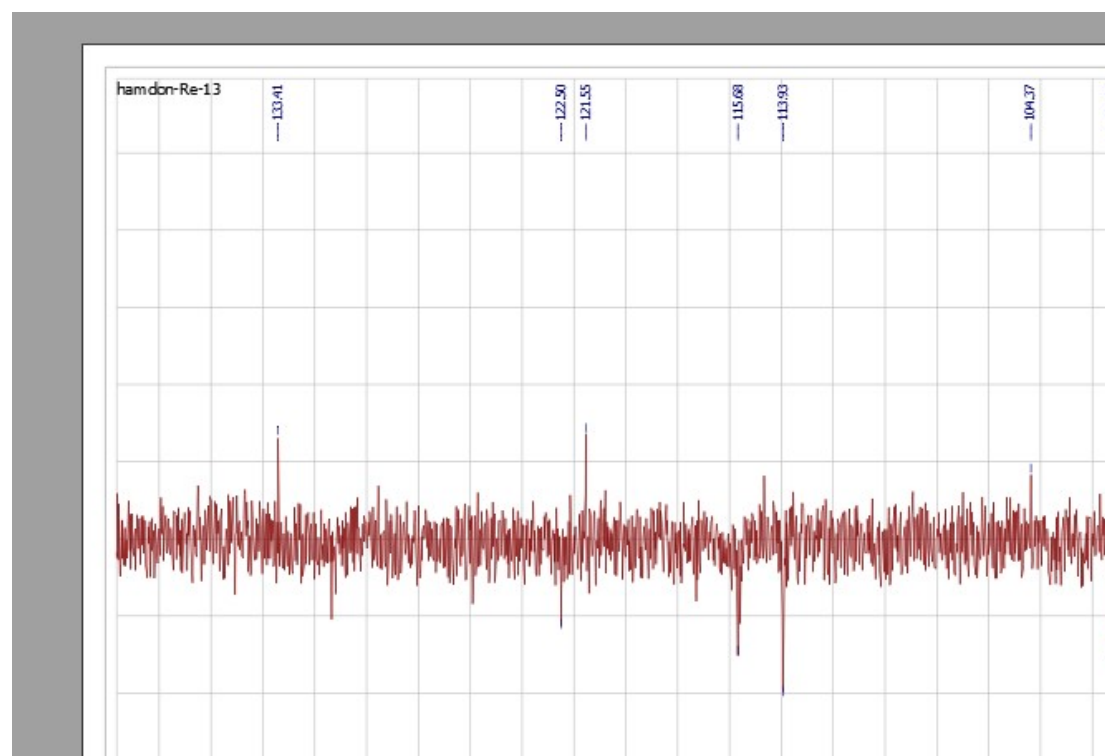


Figure S20: Expanded ¹³C-APT NMR spectrum of compound 5 (DMSO-*d*₆, 400 MHz)

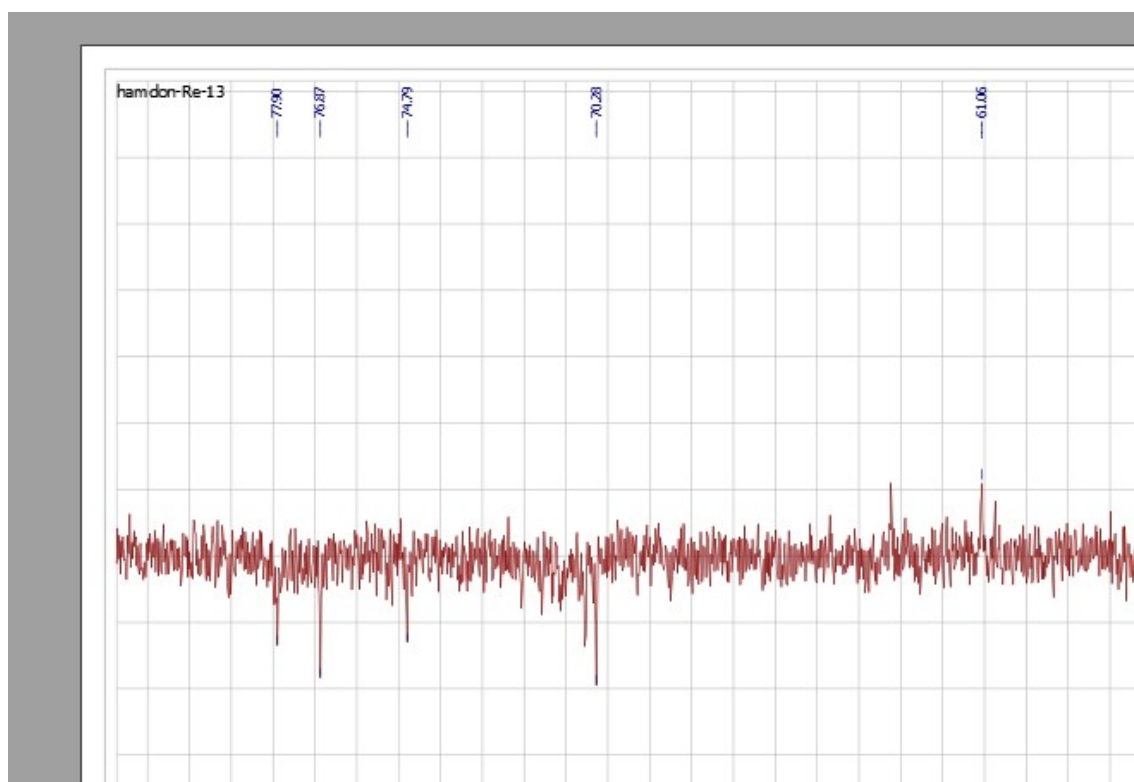


Figure S21: Expanded ^{13}C -APT NMR spectrum of compound 5 (DMSO- d_6 , 400 MHz)

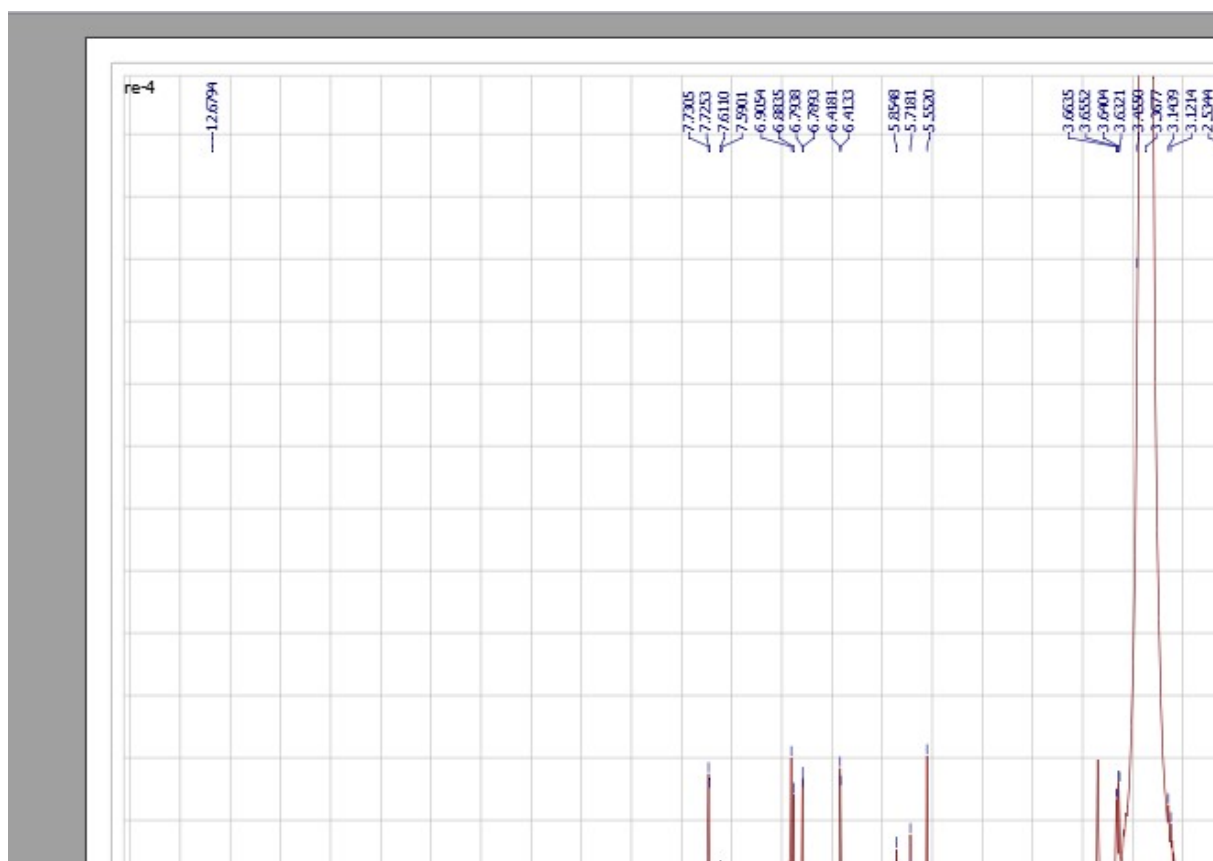


Figure S22: ^1H NMR spectrum of compound 6 (DMSO- d_6 , 400 MHz)

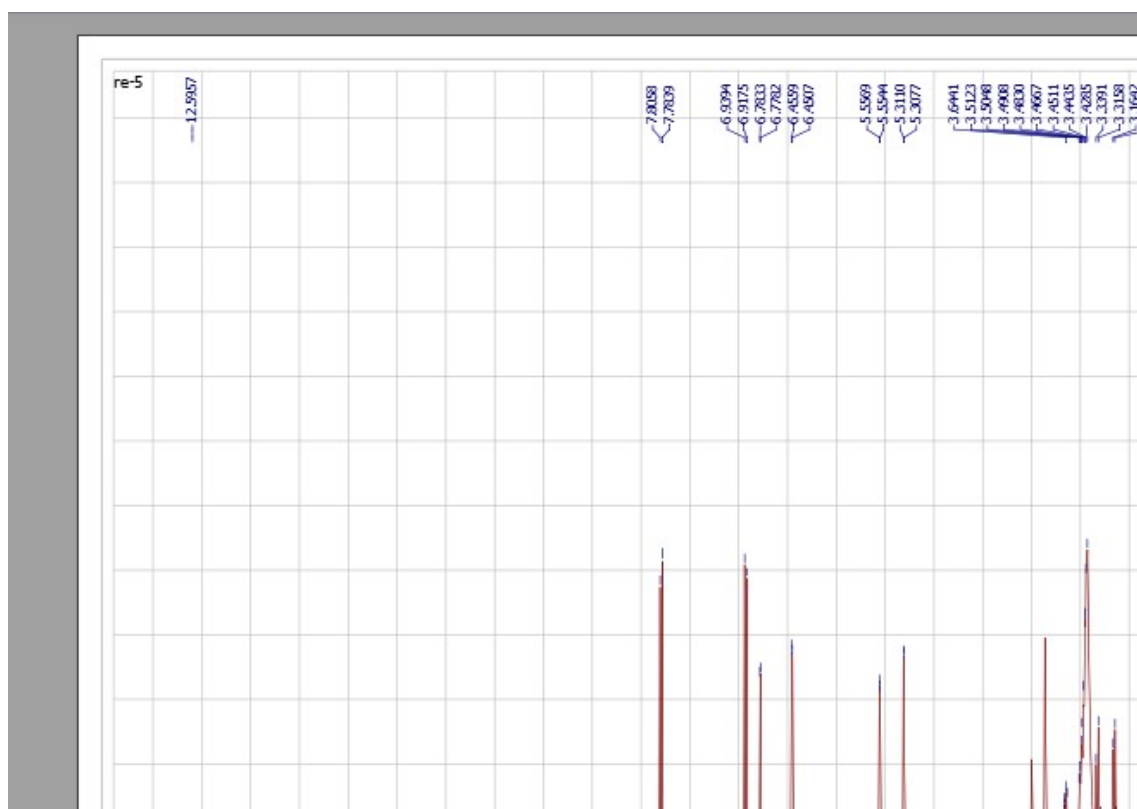


Figure S23: ^1H NMR spectrum of compound 7 (DMSO- d_6 , 400 MHz)

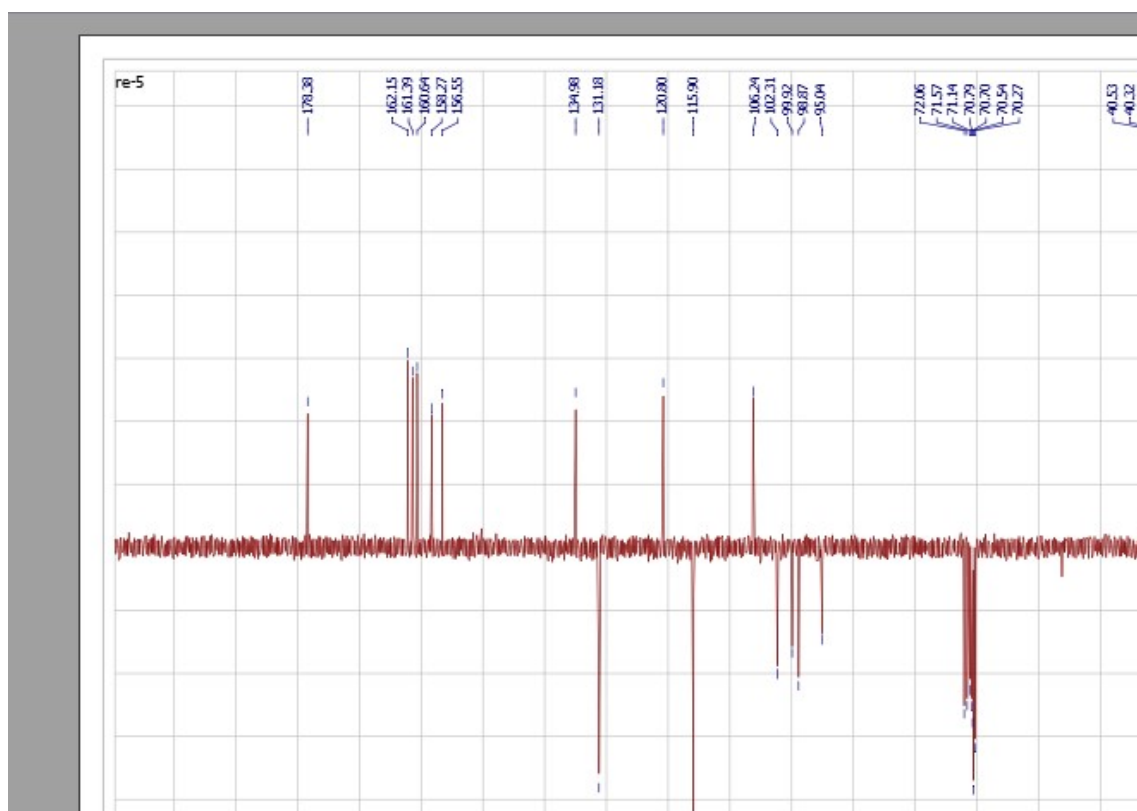


Figure S24: ^{13}C -APT NMR spectrum of compound 7 (DMSO- d_6 , 400 MHz)

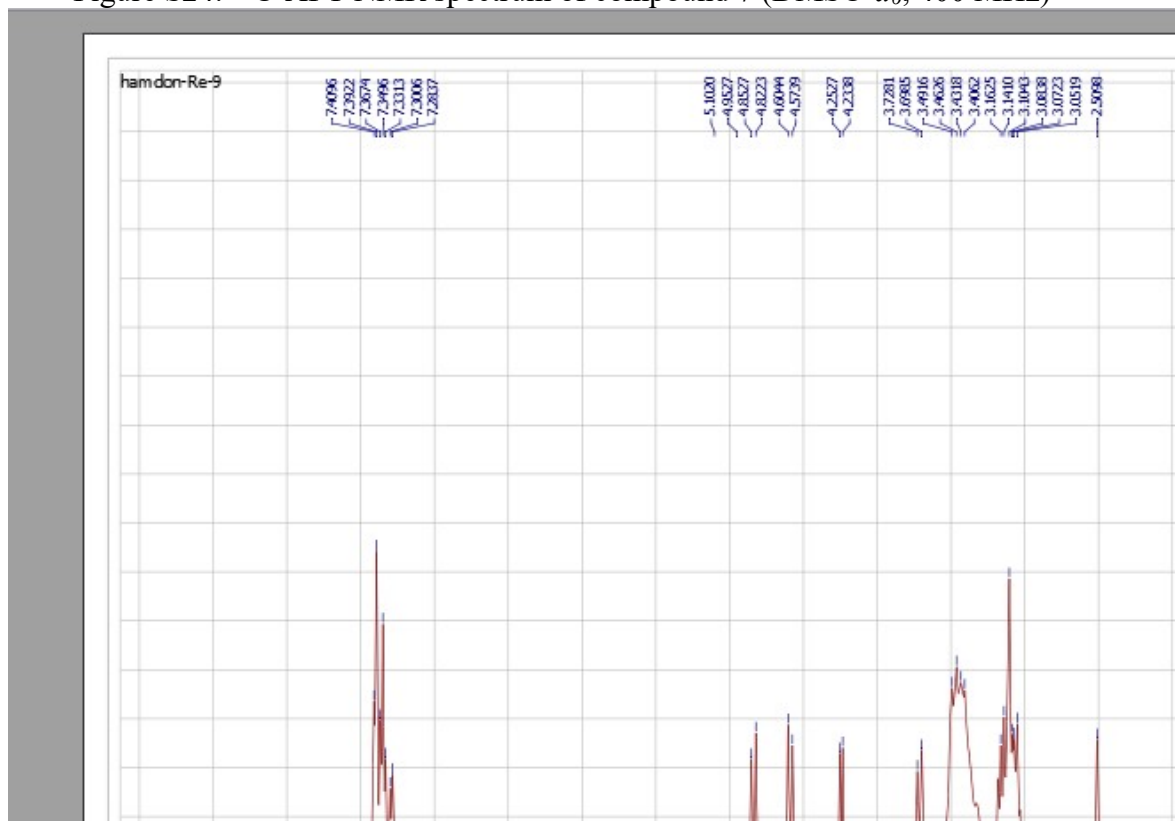


Figure S25: ^1H NMR spectrum of compound 8 (DMSO- d_6 , 400 MHz)

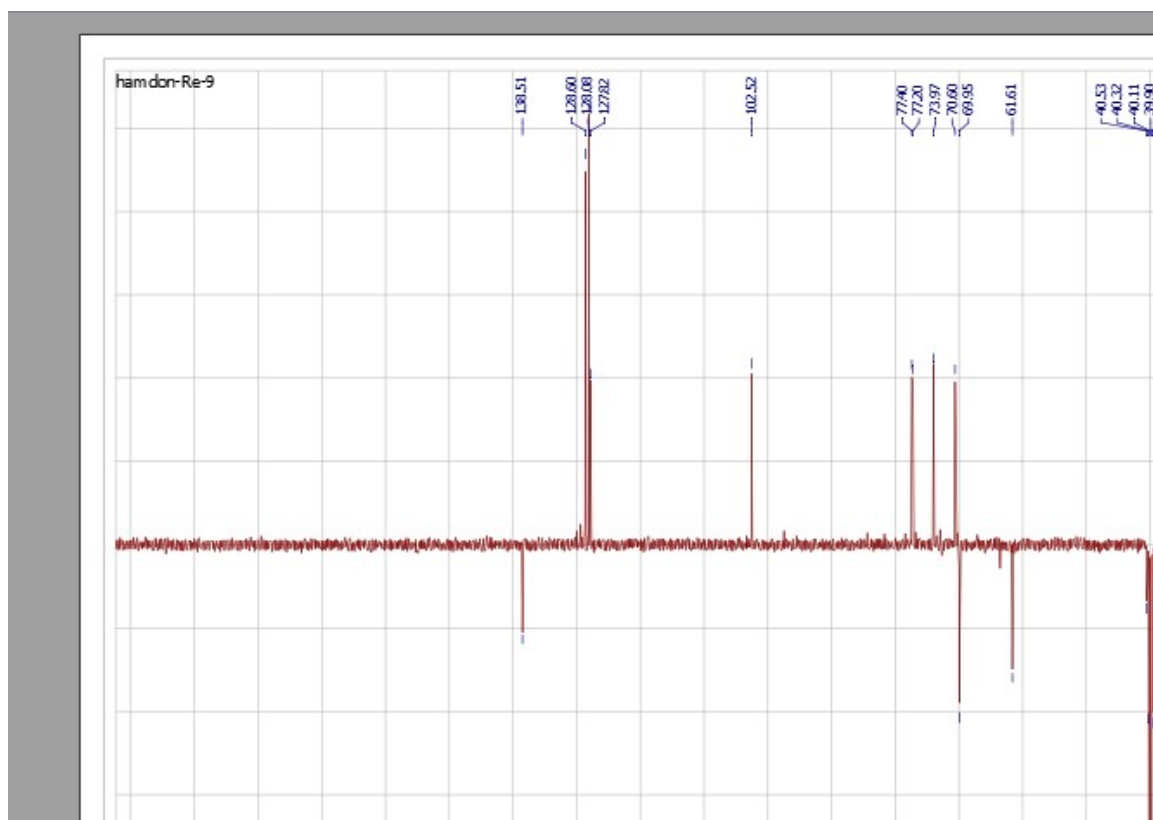


Figure S26: ^{13}C -APT NMR spectrum of compound 8 ($\text{DMSO-}d_6$, 400 MHz)



Figure S27: ^1H NMR spectrum of compound 9 ($\text{DMSO-}d_6$, 500 MHz)

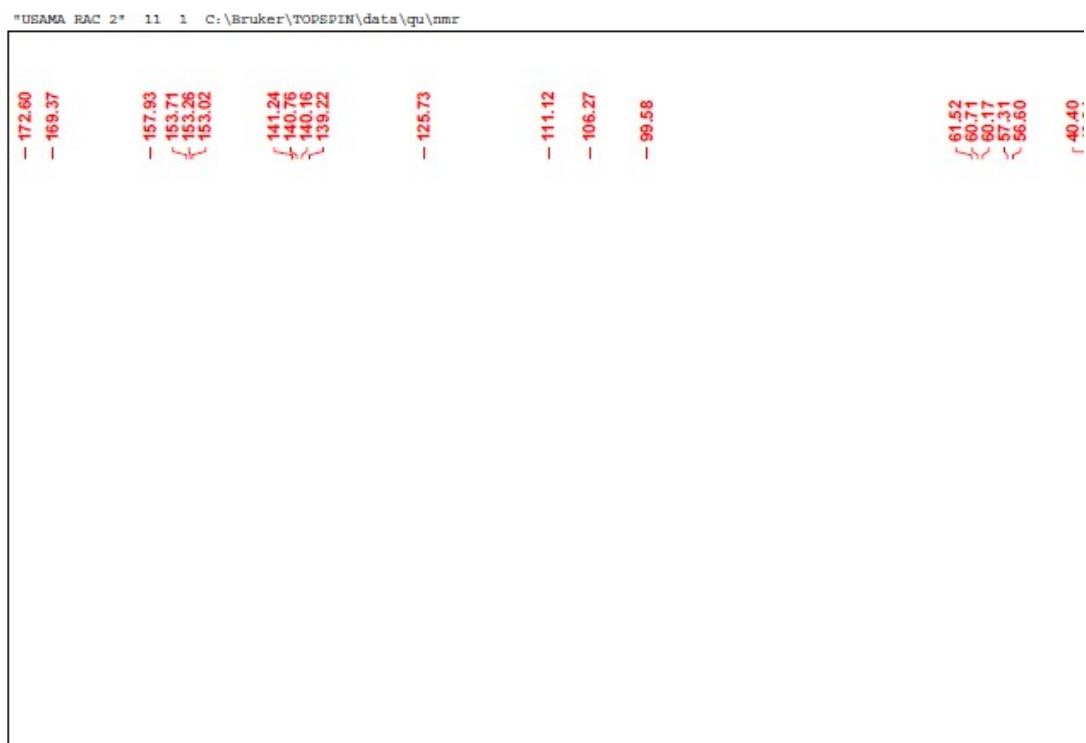


Figure S28: ^{13}C NMR spectrum of compound 9 (DMSO- d_6 , 500 MHz)

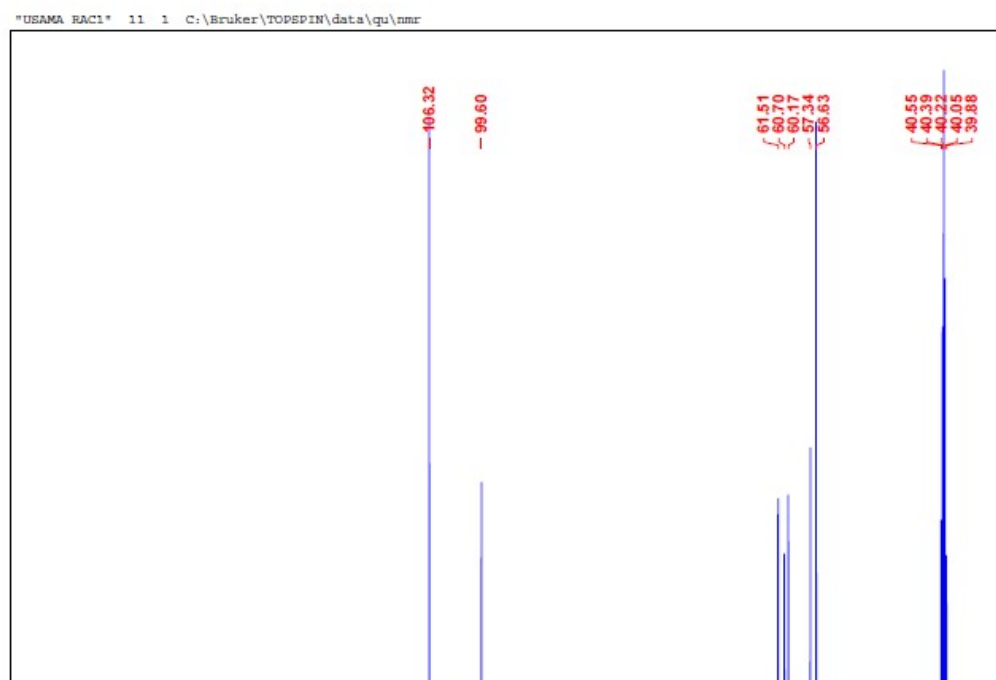


Figure S29: ^{13}C -DEPT NMR spectrum of compound 9 (DMSO- d_6 , 500 MHz)

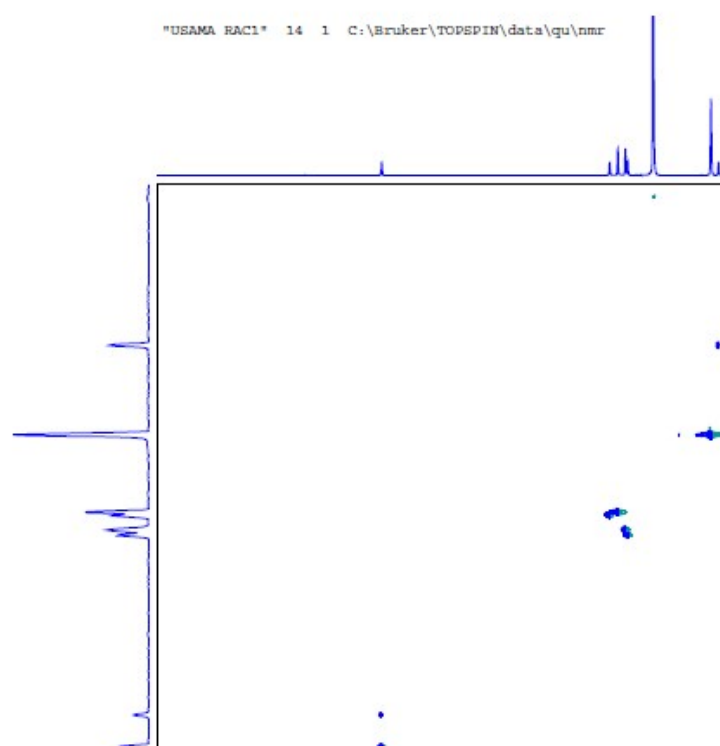


Figure S30: HSQC spectrum of compound 9 (DMSO- d_6 , 500 MHz)

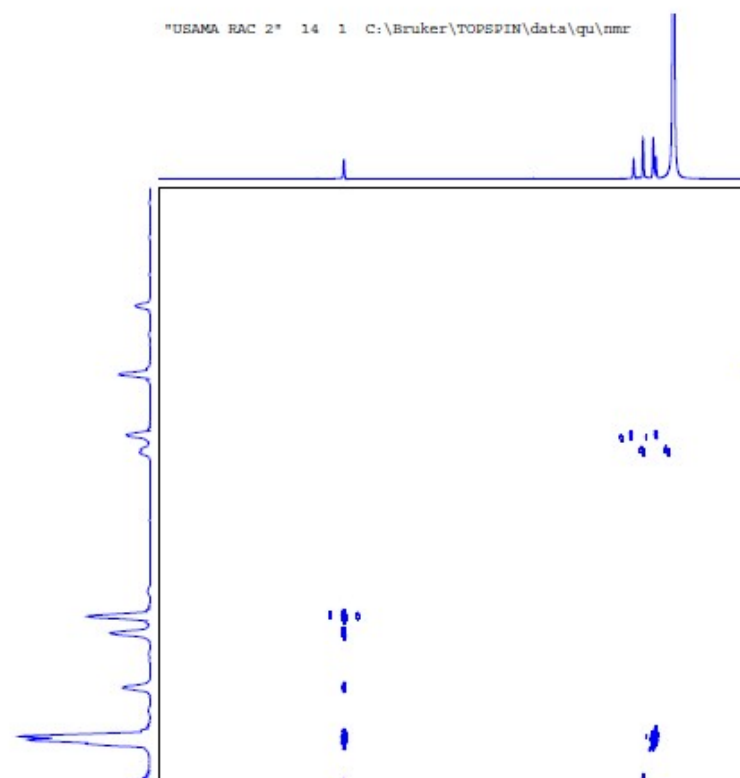


Figure S31: HMBC spectrum of compound 9 (DMSO- d_6 , 500 MHz)

Scheme S1: Extraction, fractionation and isolation of chemical constituents of *Rhamnus disperma* roots.

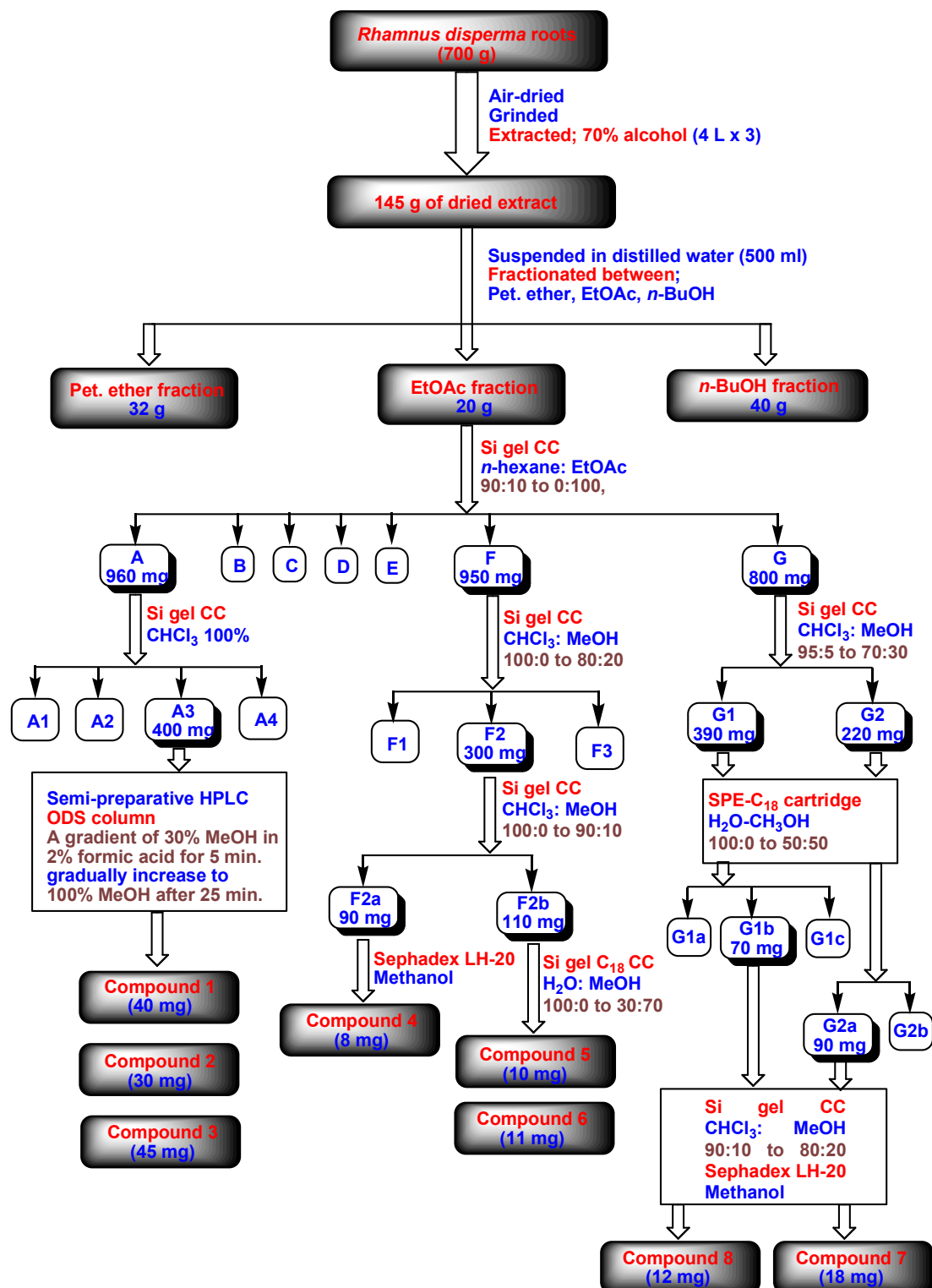


Table S1: NMR spectral data of compound 1 (DMSO-*d*₆, 500 MHz)

Position	¹ H	¹³ C	DEPT	HMBC
2	-	156.48	C	-
3	-	138.10	C	-
4	-	178.72	C	-
5	-	152.16	C	-
6	-	132.14	C	-
7	-	159.13	-	-
8	6.89, s	91.86	CH	C-6, 7, 9, 10
9	-	152.26	C	-
10	-	106.08	C	-
1'	-	120.93	C	-
2'	7.99, d, 7.5	130.67	CH	C-2, 6', 4'
3'	6.97, d, 7.5	116.19	CH	C-1', 4', 5'
4'	-	160.89	C	-
5'	6.97, d, 7.5	116.19	CH	C-1', 4', 3'
6'	7.99, d, 7.5	130.67	CH	C-2, 2', 4'
5-OH	12.63, brs	-	-	-
C-3 OCH ₃	3.80, s	60.16	CH ₃	C-3
C-6 OCH ₃	3.74, s	60.54	CH ₃	C-6
C-7 OCH ₃	3.92, s	56.96	CH ₃	C-7

Table S2: NMR spectral data of compound 2 (DMSO-*d*₆, 500 MHz)

Position	¹ H (J in Hz)	¹³ C	DEPT	HMBC
2	-	155.80	C	
3	-	138.94	C	
4	-	178.82	C	
5	-	152.02	C	
6	-	132.13	C	
7	-	159.27	C	
8	6.83, s	91.85	CH	C-6, 7, 9, 10
9	-	152.27	C	
10	-	106.13	C	
1'	-	125.35	C	
2'	7.27, s	110.40	CH	C-2, 1', 3', 4', 6'
3'	-	150.96	C	
4'	-	139.47	C	
5'	-	153.49	C	
6'	7.19, s	104.35	CH	C-2, 1', 2', 4', 5'
5-OH	12.49, brs	-	-	C-5, 6, 10
3'-OH	9.70	-	-	
3-OMe	3.80, s	60.37	CH ₃	C-3
6-OMe	3.72, s	60.55	CH ₃	C-6
7-OMe	3.90, s	56.93	CH ₃	C-7
5'-OMe	3.85, s	56.45	CH ₃	C-5'
4'-OMe	3.77, s	60.55	CH ₃	C-4'

Table S3: NMR spectral data of compound 3 (DMSO-*d*₆, 500 MHz)

Position	¹ H (J in Hz)	¹³ C	DEPT	HMBC
2	-	155.98	C	
3	-	139.04	C	
4	-	178.84	C	
5	-	152.04	C	
6	-	132.13	C	
7	-	159.30	C	
8	6.93, s	92.06	CH	C-6, 7, 9, 10
9	-	152.30	C	
10	-	106.16	C	
1'	-	125.49	C	
2'	7.39, s	106.39	CH	C-2, 1', 3', 4', 6'
3'	-	153.25	C	
4'	-	140.49	C	
5'	-	153.25	C	
6'	7.39, s	106.39	CH	C-2, 1', 2', 4', 5'
5-OH	12.51, brs	-	-	C-5, 6, 10
3-OMe	3.84, s	60.41	CH ₃	C-3
6-OMe	3.73, s	60.54	CH ₃	C-6
7-OMe	3.92, s	57.00	CH ₃	C-7
3', 5'-OMe	3.88, s	56.98	CH ₃	C-5'
4'-OMe	3.77, s	60.71	CH ₃	C-4'