Supplementary materials for

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Synthesis, structure and antiradical activity of functionally substituted hydrazides of isonicotinic acid

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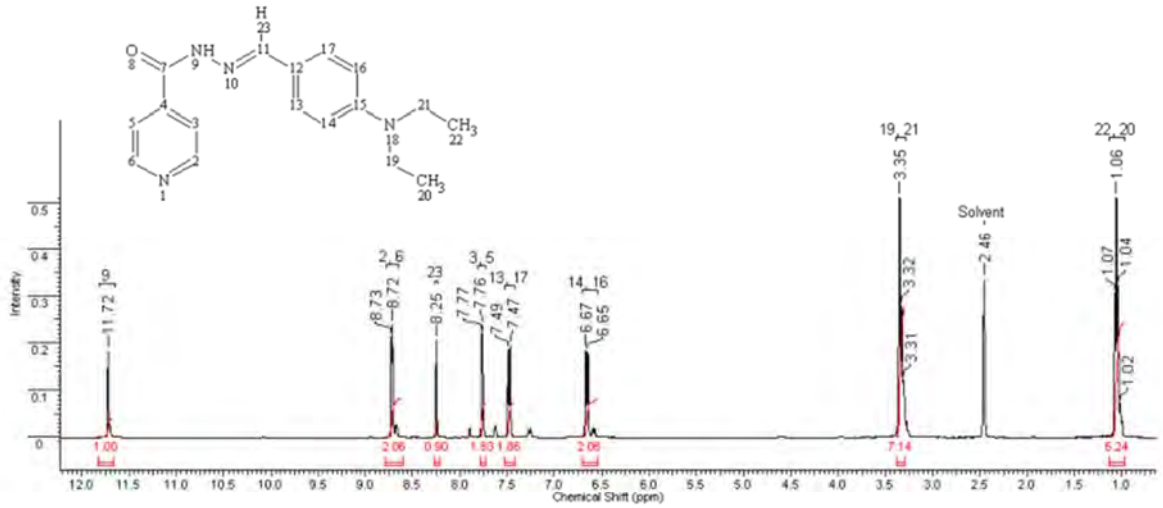
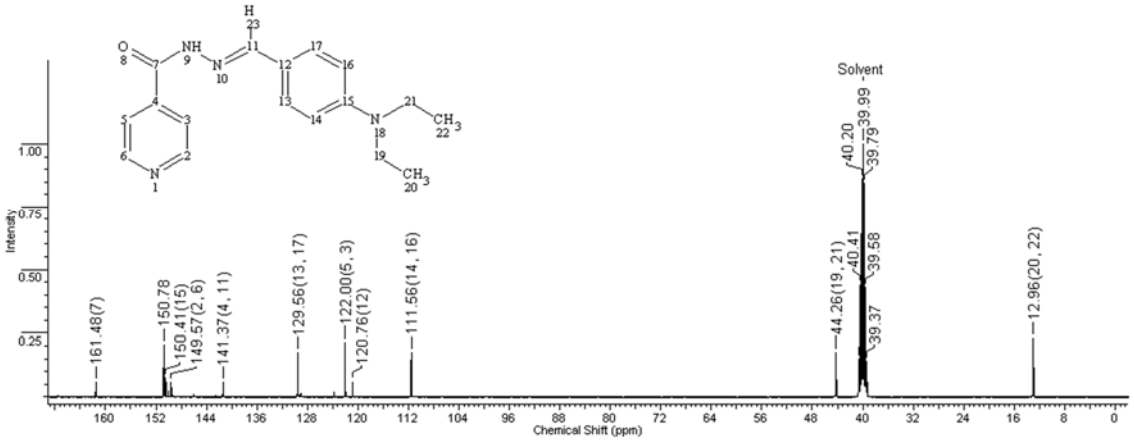


No.	Atom	Exp. Shift (ppm)
1	22	[0.97 .. 1.13]
2	20	[0.97 .. 1.13]
3	19	[3.29 .. 3.39]
4	21	[3.29 .. 3.39]
5	14	[6.55 .. 6.71]
6	16	[6.55 .. 6.71]
7	13	[7.42 .. 7.53]

No.	Atom	Exp. Shift (ppm)
8	17	[7.42 .. 7.53]
9	3	[7.73 .. 7.81]
10	5	[7.73 .. 7.81]
11	23	[8.23 .. 8.27]
12	2	[8.65 .. 8.78]
13	6	[8.65 .. 8.78]
14	9	[11.65 .. 11.81]

No.	(ppm)	Value	Absolute Value
1	[0.96 .. 1.13]	6.238	1.05685e+2
2	[3.30 .. 3.38]	7.143	1.21017e+2
3	[6.55 .. 6.71]	2.059	3.48830e+1
4	[7.42 .. 7.53]	1.859	3.14910e+1
5	[7.73 .. 7.79]	1.833	3.10488e+1
6	[8.21 .. 8.27]	0.904	1.53092e+1
7	[8.60 .. 8.79]	2.064	3.49590e+1
8	[11.67 .. 11.82]	0.996	1.68748e+1

Fig. S-1. ^{1}H-NMR-spectrum of **1** (399.78 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	2	149.57	148.690	0.880
2	3	122.00	126.050	-4.054
3	4	141.37	138.210	3.161
4	5	122.00	126.050	-4.054
5	6	149.57	148.690	0.880
6	7	161.48	162.470	-0.991
7	11	141.37	144.550	-3.179
8	12	120.76	121.800	-1.043
9	13	129.56	127.850	1.707

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
10	14	111.56	111.460	0.096
11	15	150.41	147.880	2.529
12	16	111.56	111.460	0.096
13	17	129.56	127.850	1.707
14	19	44.26	44.850	-0.589
15	20	12.96	12.860	0.099
16	21	44.26	44.850	-0.589
17	22	12.96	12.860	0.099

Fig. S-2. ^{13}C-NMR-spectrum of **1** (100.53 MHz, DMSO-d$_6$)

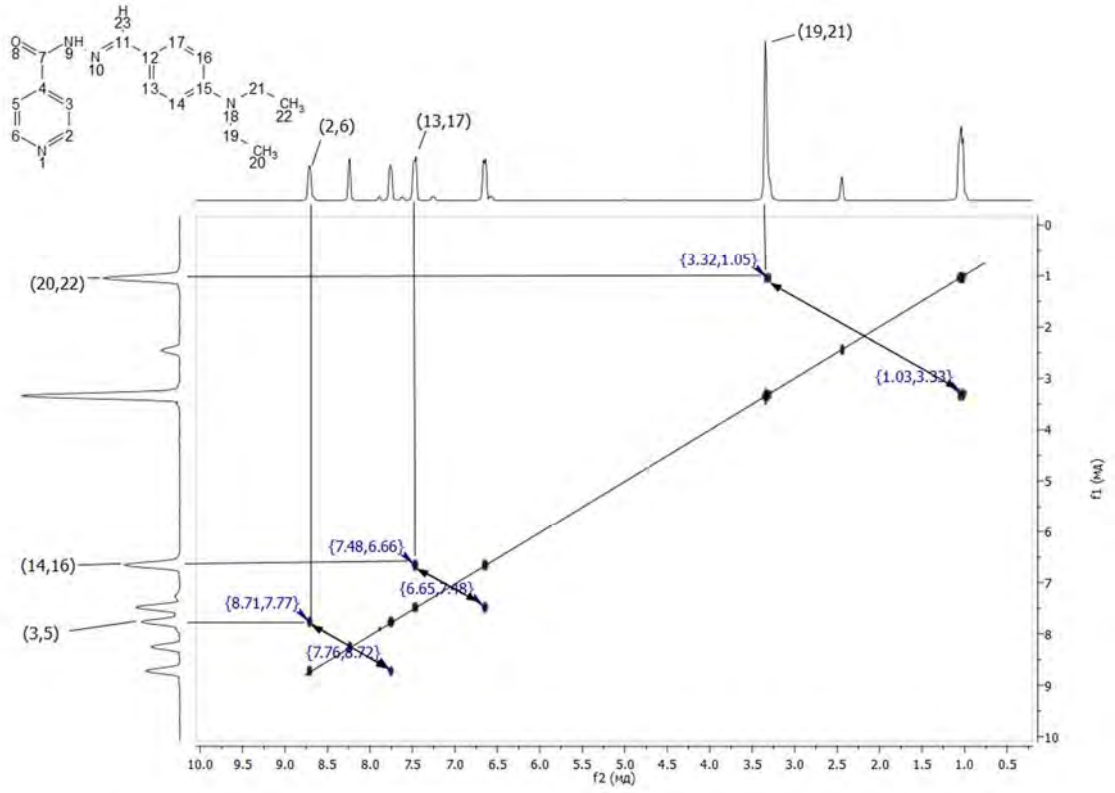


Fig. S-3. COSY ^{1}H-^{1}H -NMR-spectrum of **1** (399.78 MHz, DMSO-d$_6$)

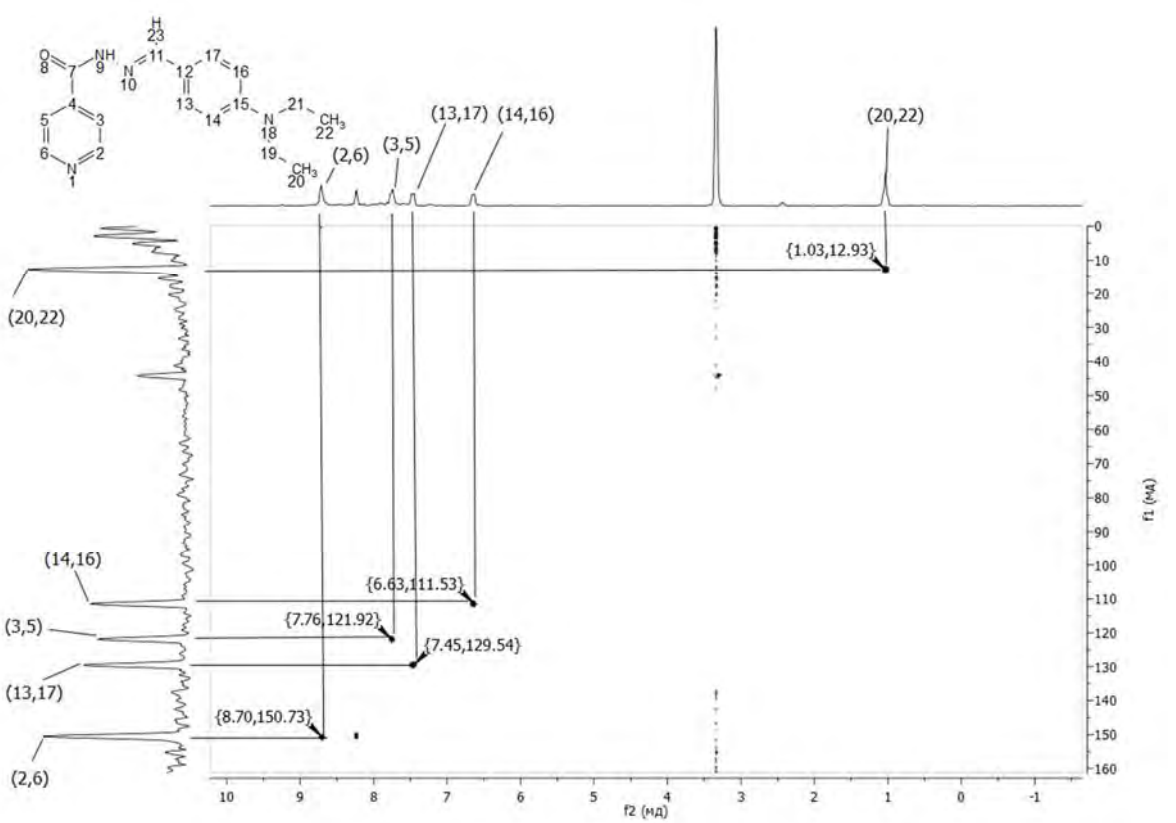
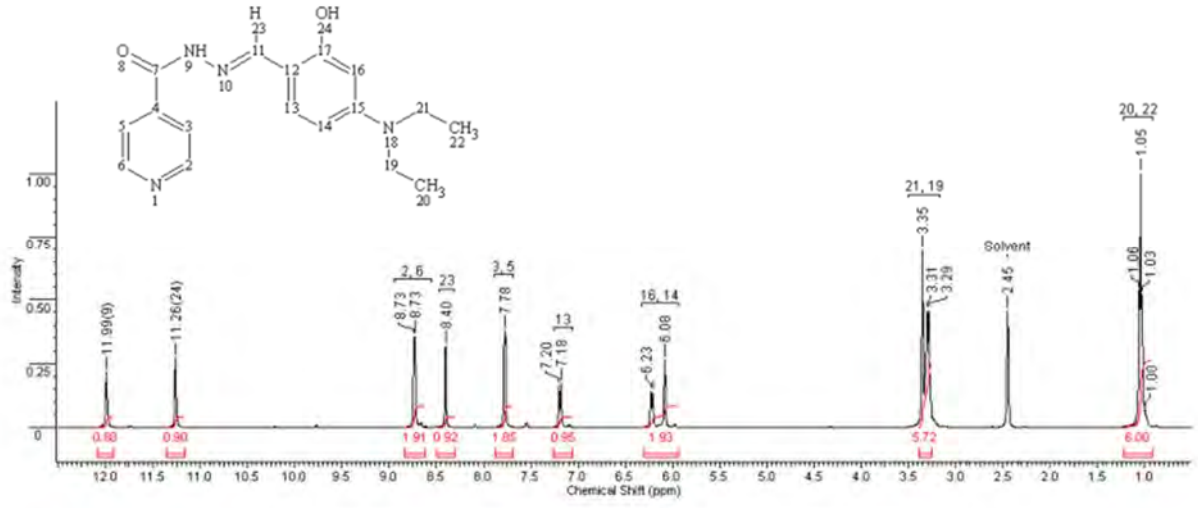


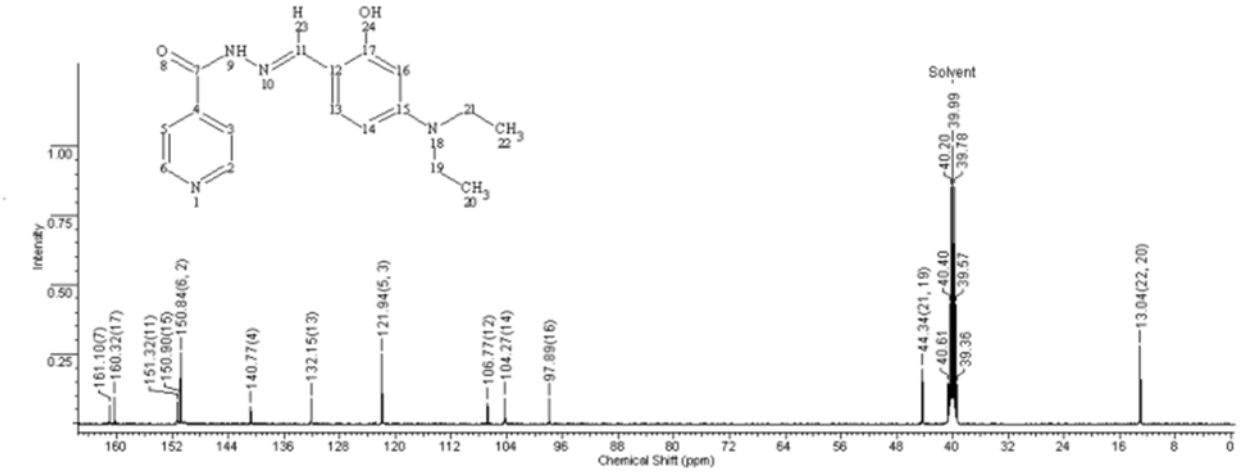
Fig. S-4. HMQC ^{1}H-^{13}C -NMR-spectrum of **1** (399.78 MHz, 100.53 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	No.	Atom	Exp. Shift (ppm)
1	2	[8.56 .. 8.94]	8	16	[5.94 .. 6.33]
2	3	[7.70 .. 7.89]	9	19	[3.17 .. 3.50]
3	5	[7.70 .. 7.89]	10	20	[0.92 .. 1.22]
4	6	[8.56 .. 8.94]	11	21	[3.17 .. 3.50]
5	9	11.99	12	22	[0.92 .. 1.22]
6	13	[7.06 .. 7.25]	13	23	[8.31 .. 8.47]
7	14	[5.94 .. 6.33]	14	24	11.26

No.	(ppm)	Value	Absolute Value
1	[11.92 .. 12.08]	0.876	1.48635e+1
2	[11.16 .. 11.36]	0.898	1.52350e+1
3	[8.30 .. 8.50]	0.918	1.55742e+1
4	[7.05 .. 7.27]	0.947	1.60607e+1
5	[7.69 .. 7.87]	1.846	3.13135e+1
6	[8.62 .. 8.84]	1.910	3.23974e+1
7	[5.94 .. 6.31]	1.932	3.27656e+1
8	[3.26 .. 3.40]	5.720	9.70248e+1
9	[0.93 .. 1.22]	6.000	1.01770e+2

Fig. S-5. ^{1}H-NMR-spectrum of **2** (399.78 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	2	150.84	148.690	2.148
2	3	121.94	126.050	-4.111
3	4	140.77	138.210	2.560
4	5	121.94	126.050	-4.111
5	6	150.84	148.690	2.148
6	7	161.10	162.470	-1.372
7	11	151.32	143.750	7.565
8	12	106.77	112.170	-5.400
9	13	132.15	132.890	-0.739

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
10	14	104.27	102.210	2.061
11	15	150.90	147.470	3.426
12	16	97.89	96.310	1.583
13	17	160.32	163.590	-3.274
14	19	44.34	44.600	-0.263
15	20	13.04	12.300	0.745
16	21	44.34	44.600	-0.263
17	22	13.04	12.300	0.745

Fig. S-6. ^{13}C-NMR-spectrum of **2** (100.53 MHz, DMSO-d$_6$)

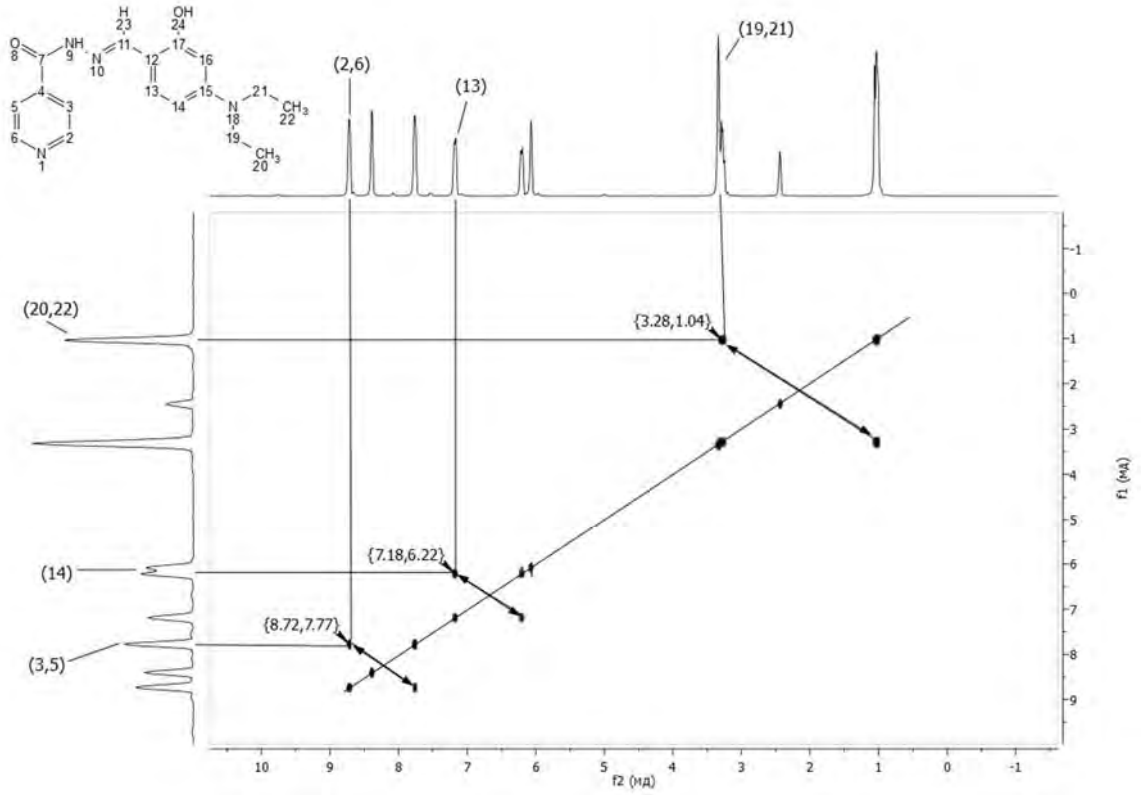


Fig. S-7. COSY ^{1}H-^{1}H -NMR-spectrum of **2** (399.78 MHz, DMSO-d$_6$)

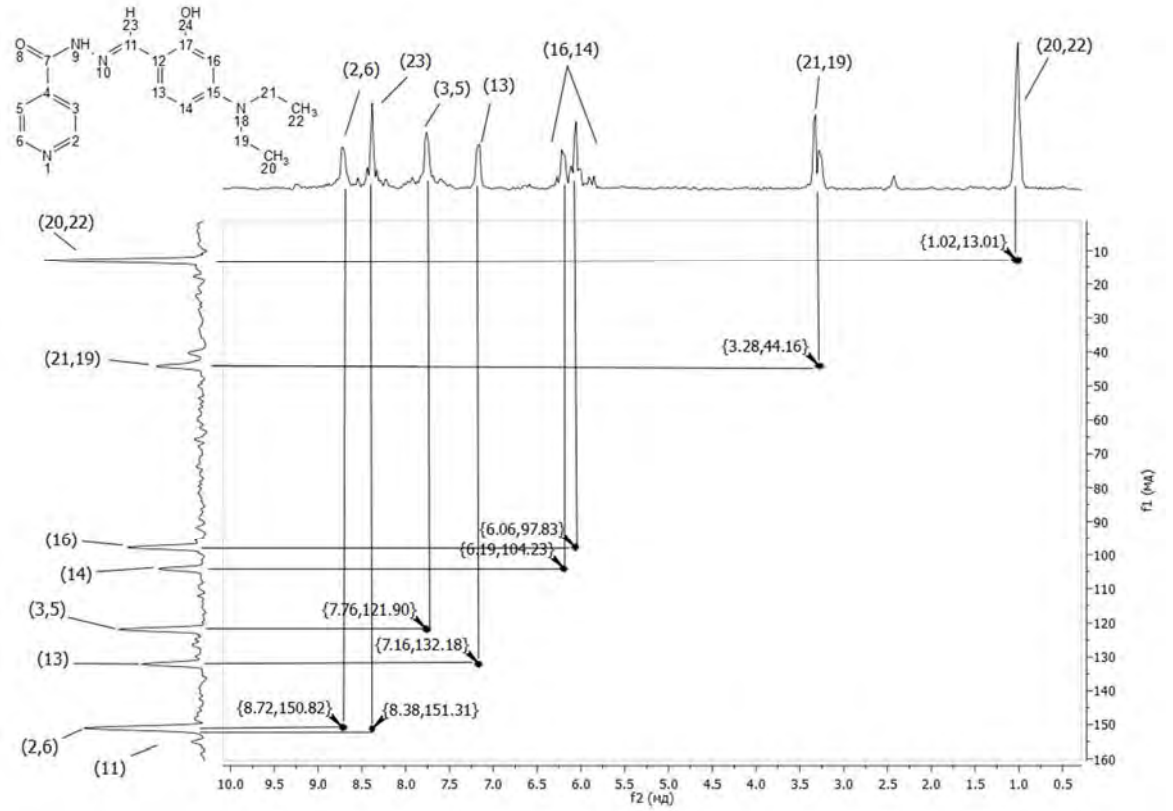
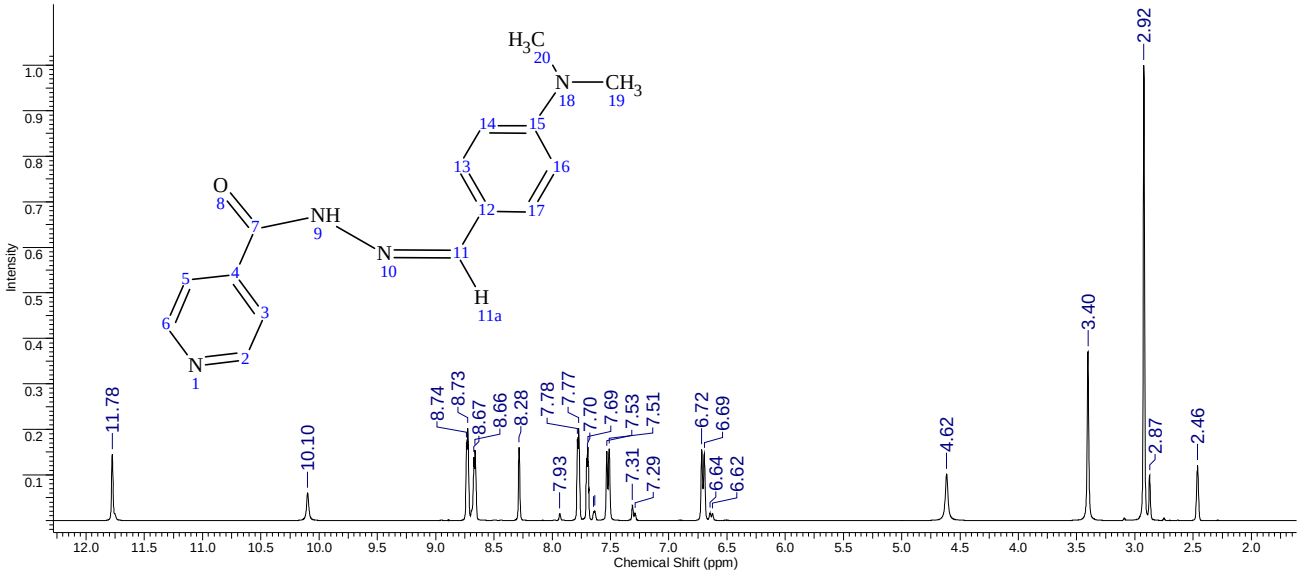


Fig. S-8. HMQC ^{1}H-^{13}C -NMR-spectrum of **2** (399.78 MHz, 100.53 MHz, DMSO-d_6)

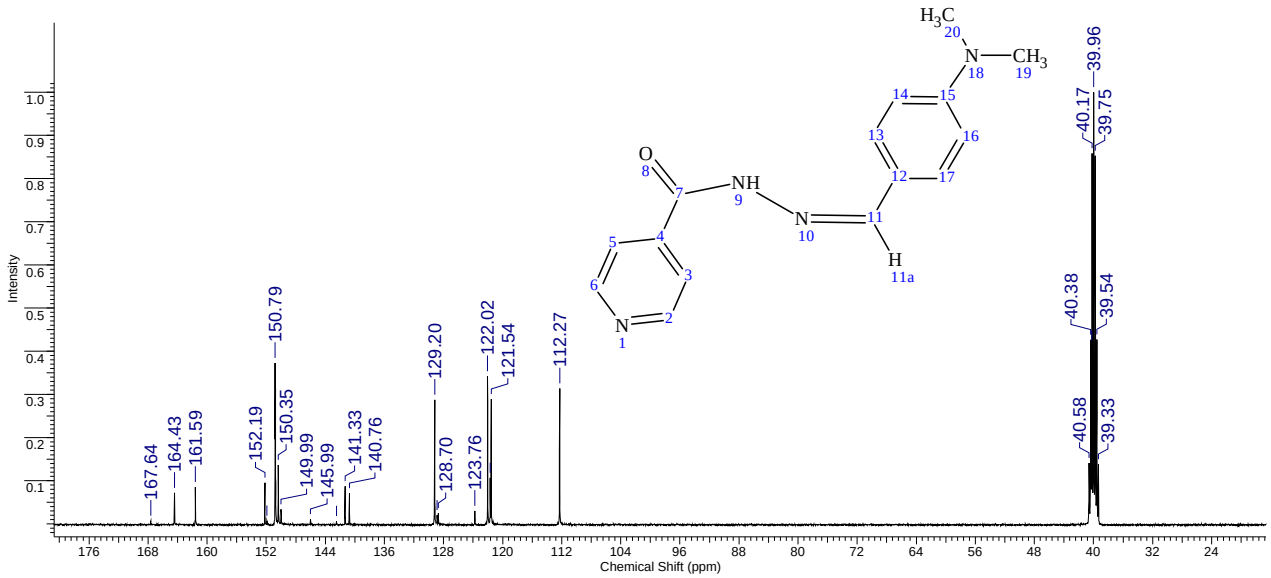


No.	(ppm)	(Hz)	Height
1	2.46	984.1	0.1211
2	2.87	1148.5	0.0989
3	2.92	1168.2	1.0000
4	3.40	1360.1	0.3715
5	4.62	1845.0	0.1019
6	6.62	2648.3	0.0146
7	6.64	2656.5	0.0162
8	6.69	2676.2	0.1474
9	6.72	2684.9	0.1562
10	7.29	2913.9	0.0155
11	7.31	2923.0	0.0336

No.	(ppm)	(Hz)	Height
12	7.51	3002.3	0.1577
13	7.53	3011.0	0.1520
14	7.63	3052.2	0.0208
15	7.64	3056.3	0.0186
16	7.69	3076.0	0.1612
17	7.70	3077.8	0.1463
18	7.70	3080.1	0.1360
19	7.77	3107.6	0.2027
20	7.78	3109.4	0.1836
21	7.78	3111.7	0.1788
22	7.93	3172.2	0.0153

No.	(ppm)	(Hz)	Height
23	8.28	3311.8	0.1600
24	8.66	3463.0	0.1552
25	8.67	3464.8	0.1371
26	8.67	3467.1	0.1389
27	8.73	3488.2	0.2026
28	8.73	3490.0	0.1780
29	8.74	3492.3	0.1704
30	10.10	4037.2	0.0603
31	11.78	4707.7	0.1450

Fig. S-9. ^{1}H-NMR-spectrum of **3** (399.78 MHz, DMSO-d_6)



No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	39.33	3953.8	0.1387	11	121.66	12230.2	0.1067	21	149.99	15077.8	0.0339
2	39.54	3974.9	0.4271	12	122.02	12266.6	0.3423	22	150.35	15114.2	0.1370
3	39.75	3996.0	0.8527	13	123.76	12441.0	0.0301	23	150.74	15153.5	0.3128
4	39.96	4017.1	1.0000	14	128.70	12937.5	0.0252	24	150.79	15158.3	0.3732
5	40.17	4038.2	0.8583	15	128.85	12952.9	0.0205	25	151.90	15269.5	0.0072
6	40.26	4046.8	0.4124	16	129.20	12988.3	0.2877	26	152.19	15299.2	0.0957
7	40.38	4059.2	0.4268	17	140.76	14150.0	0.0717	27	161.59	16244.2	0.0861
8	40.58	4079.4	0.1416	18	141.33	14207.5	0.0879	28	164.43	16529.8	0.0718
9	112.27	11286.1	0.3138	19	142.51	14325.4	0.0070	29	167.64	16851.9	0.0076
10	121.54	12217.7	0.2890	20	145.99	14675.2	0.0114				

Fig. S-10. ^{13}C-NMR-spectrum of **3** (100.53 MHz, DMSO-d$_6$)

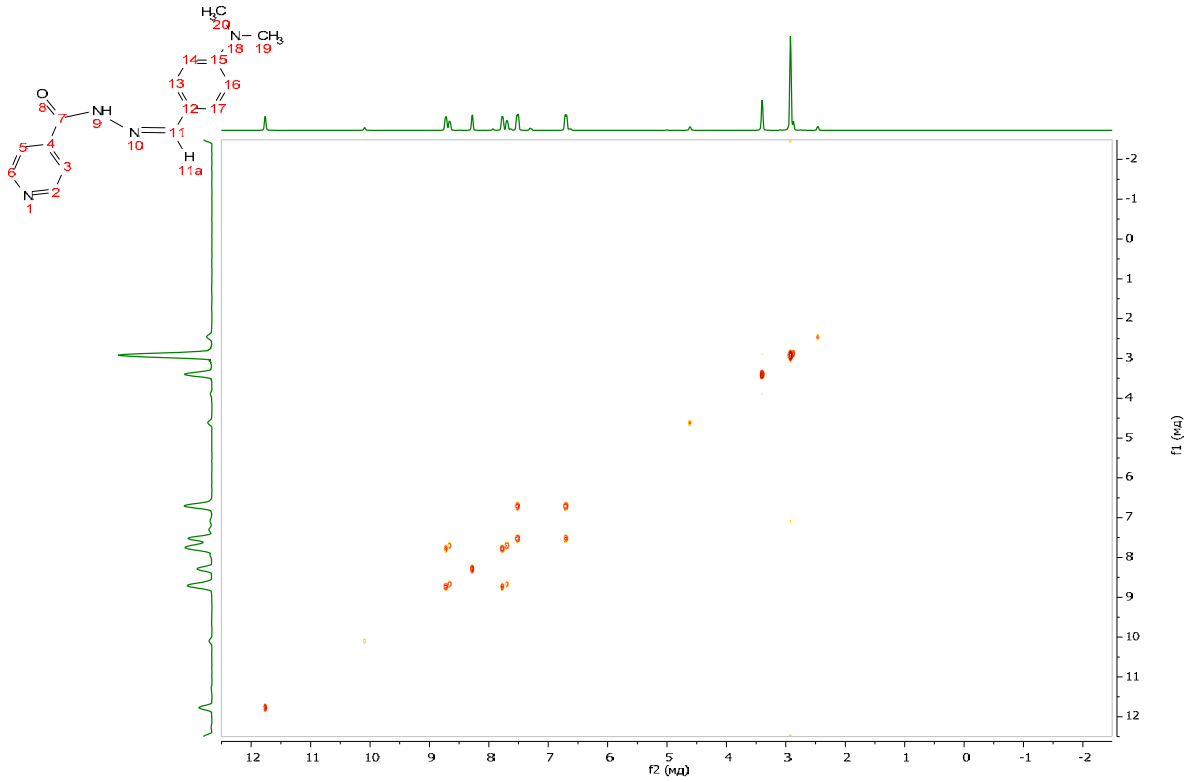


Fig. S-11. COSY ^{1}H-^{1}H -NMR-spectrum of **3** (399.78 MHz, DMSO-d$_6$)

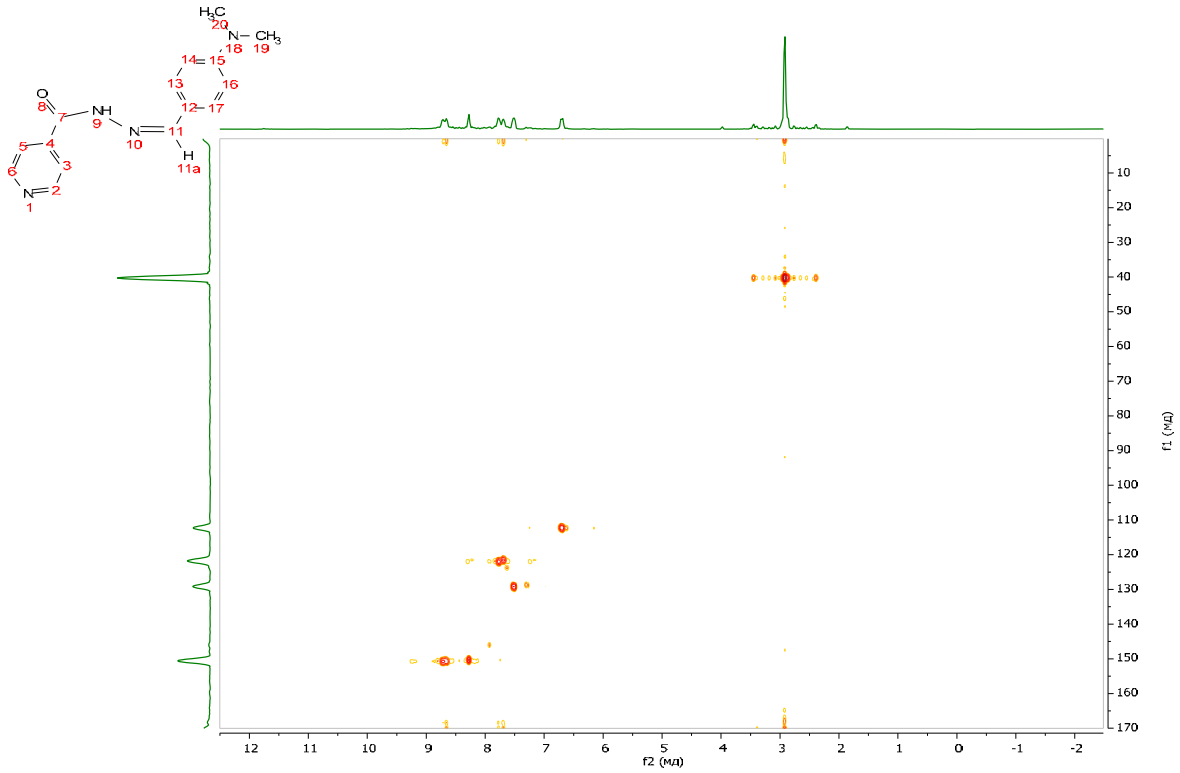


Fig. S-12. HMQC ^{1}H-^{13}C -NMR-spectrum of **3** (399.78 MHz, 100.53 MHz, DMSO-d_6)

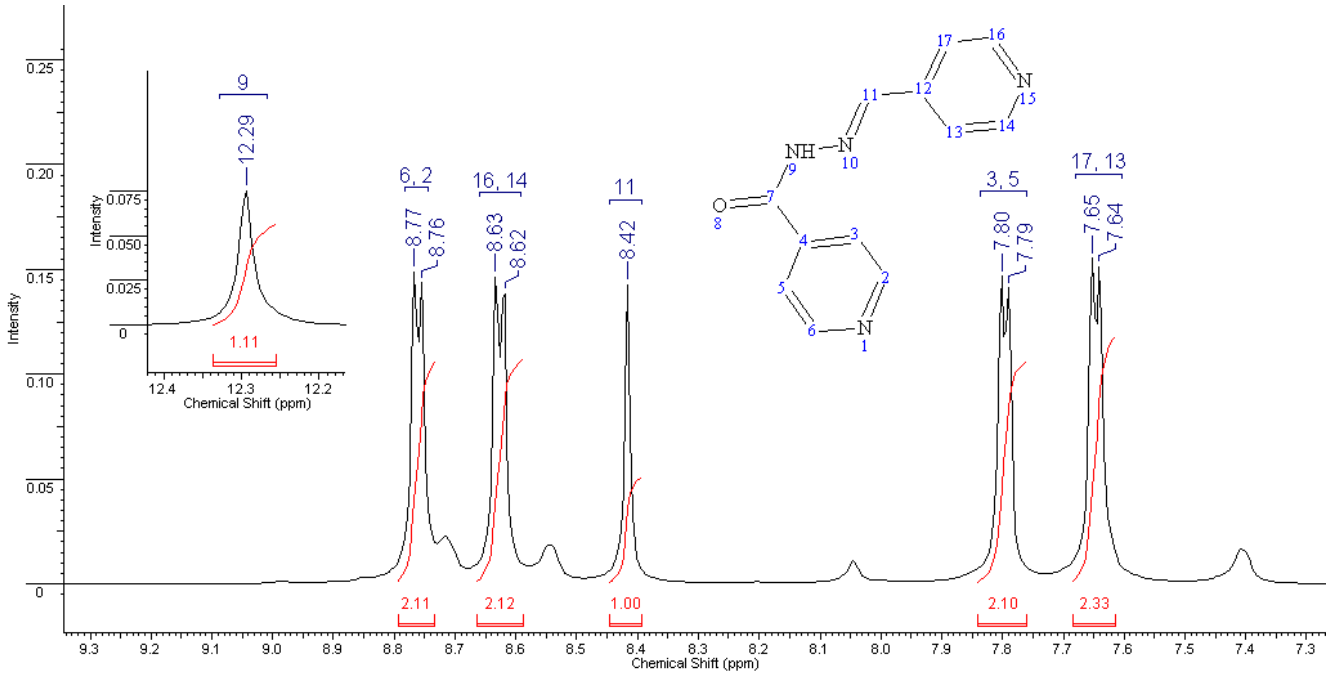


Fig. S-13. ^{1}H-NMR-spectrum of **4** (399.78 MHz, DMSO-d_6)

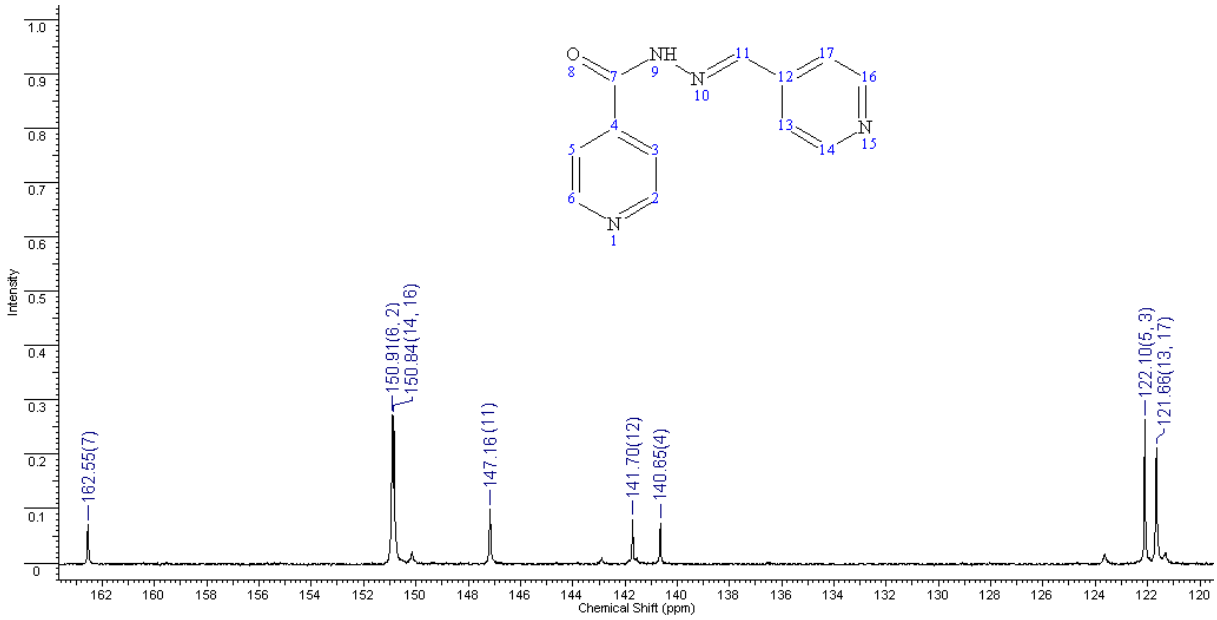


Fig. S-14. ^{13}C-NMR-spectrum of **4** (100.53 MHz, DMSO-d$_6$)

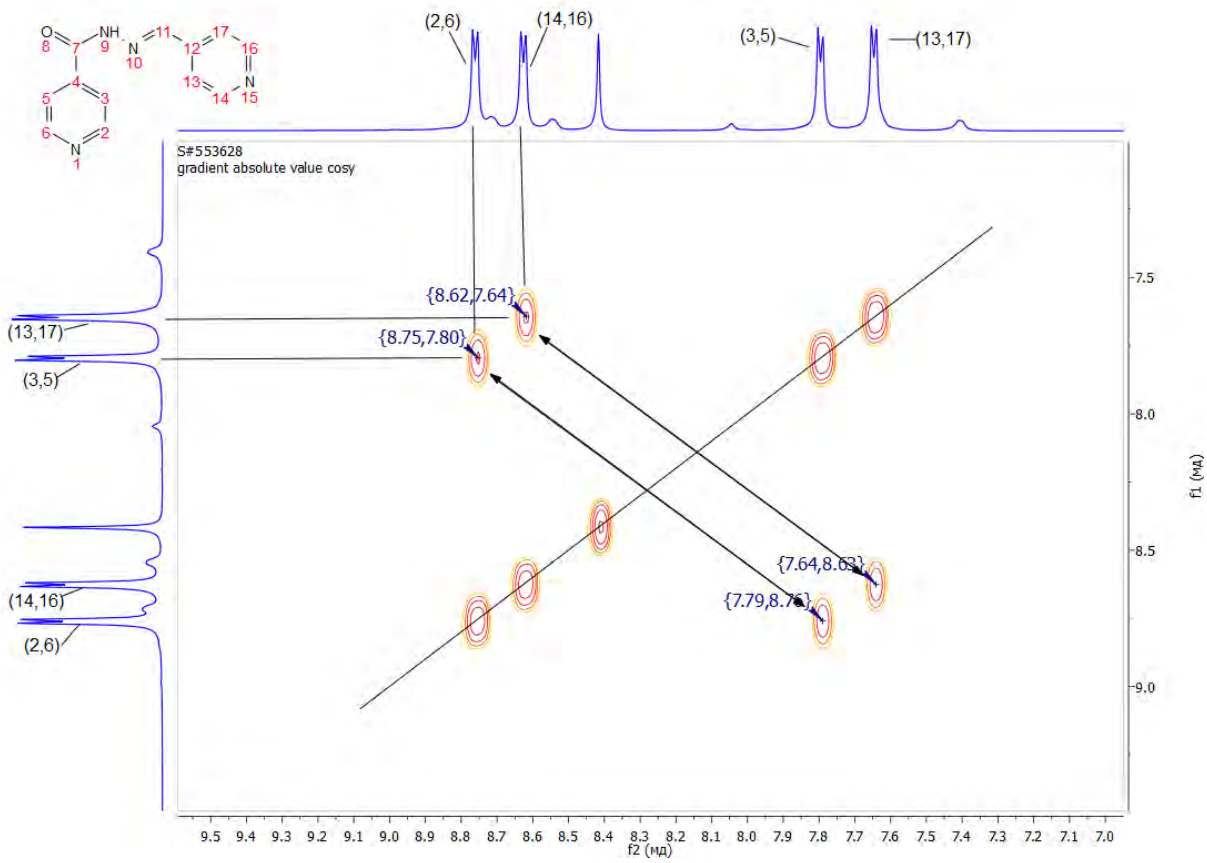


Fig. S-15. COSY ^{1}H-^{1}H -NMR-spectrum of **4** (399.78 MHz, DMSO-d$_6$)

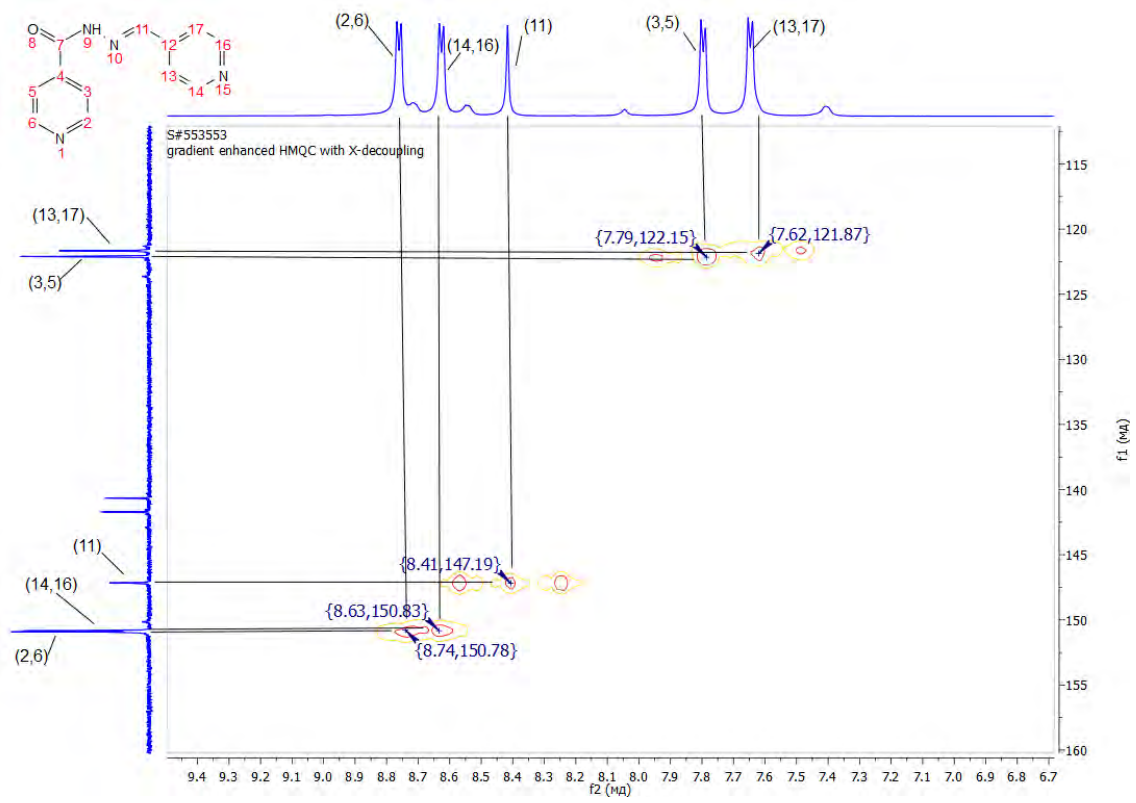
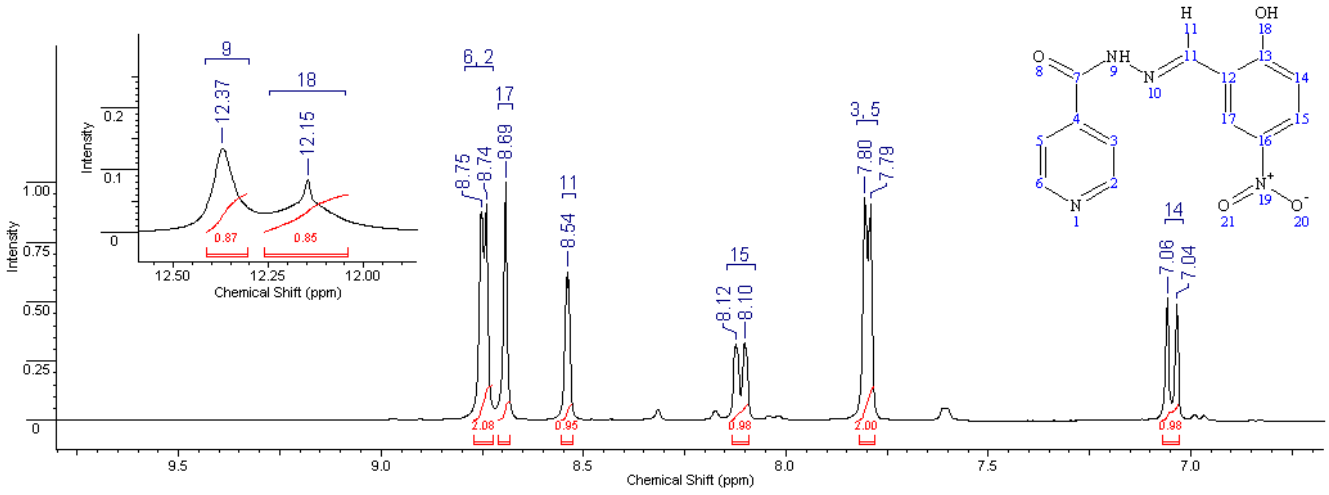
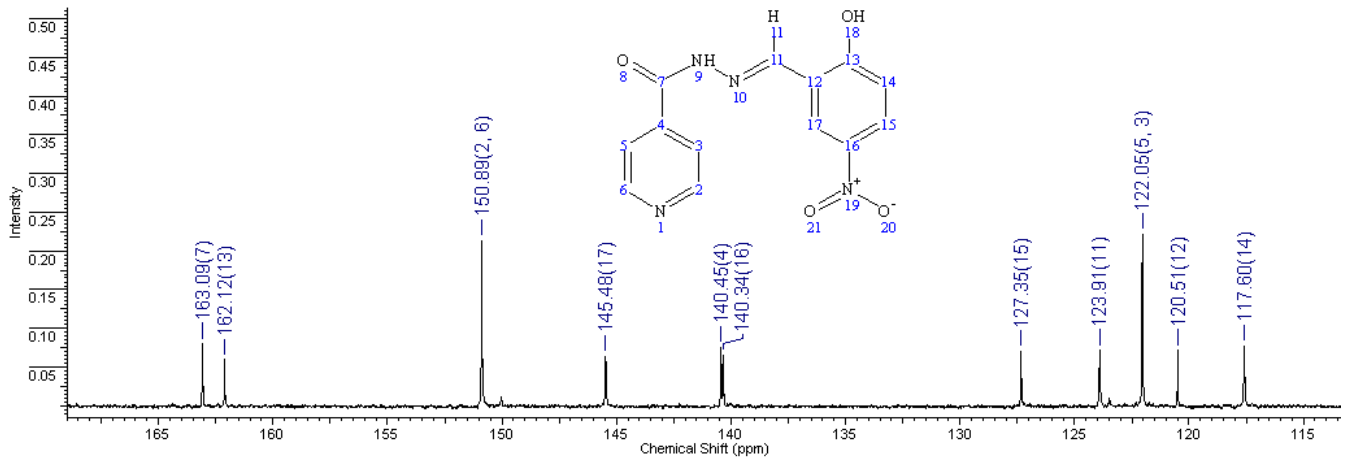


Fig. S-16. HMQC ^{1}H-^{13}C -NMR-spectrum of **4** (399.78 MHz, 100.53 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)	No.	Atom	Exp. Shift (ppm)
1	14	[7.02 .. 7.06]	6	17	[8.67 .. 8.71]
2	3	[7.77 .. 7.83]	7	6	[8.72 .. 8.79]
3	5	[7.77 .. 7.83]	8	2	[8.72 .. 8.79]
4	15	[8.08 .. 8.15]	9	18	[12.05 .. 12.25]
5	11	[8.52 .. 8.55]	10	9	[12.30 .. 12.42]

Fig. S-17. ^{1}H-NMR-spectrum of **5** (399.78 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	14	117.60	114.750	2.851
2	12	120.51	119.320	1.189
3	17	145.48	122.150	23.330
4	15	127.35	124.420	2.925
5	3	122.05	126.050	-3.997
6	5	122.05	126.050	-3.997
7	16	140.34	138.030	2.311

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
8	4	140.45	138.210	2.236
9	6	150.89	148.690	2.196
10	2	150.89	148.690	2.196
11	11	123.91	149.200	-25.287
12	13	162.12	159.910	2.208
13	7	163.09	162.470	0.620

Fig. S-18. ^{13}C-NMR-spectrum of **5** (100.53 MHz, DMSO-d$_6$)

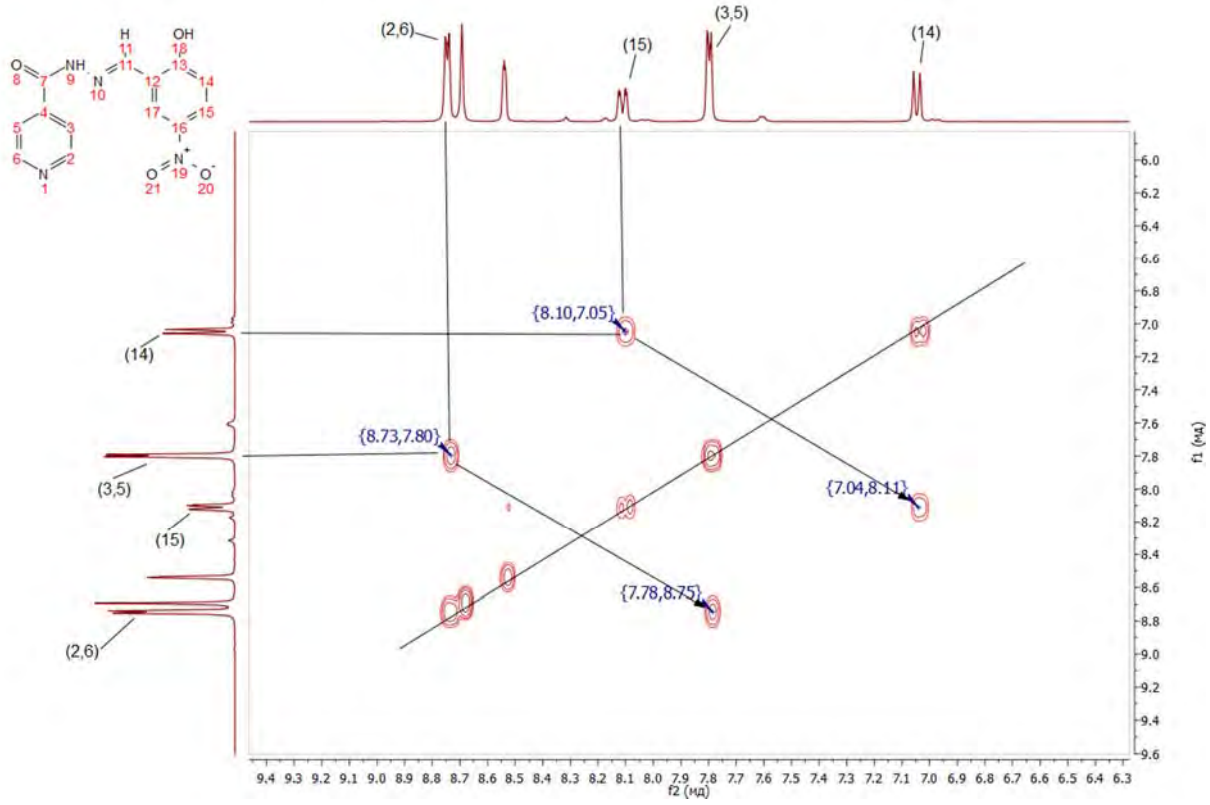


Fig. S-19. COSY ^{1}H-^{1}H -NMR-spectrum of **5** (399.78 MHz, DMSO-d$_6$)

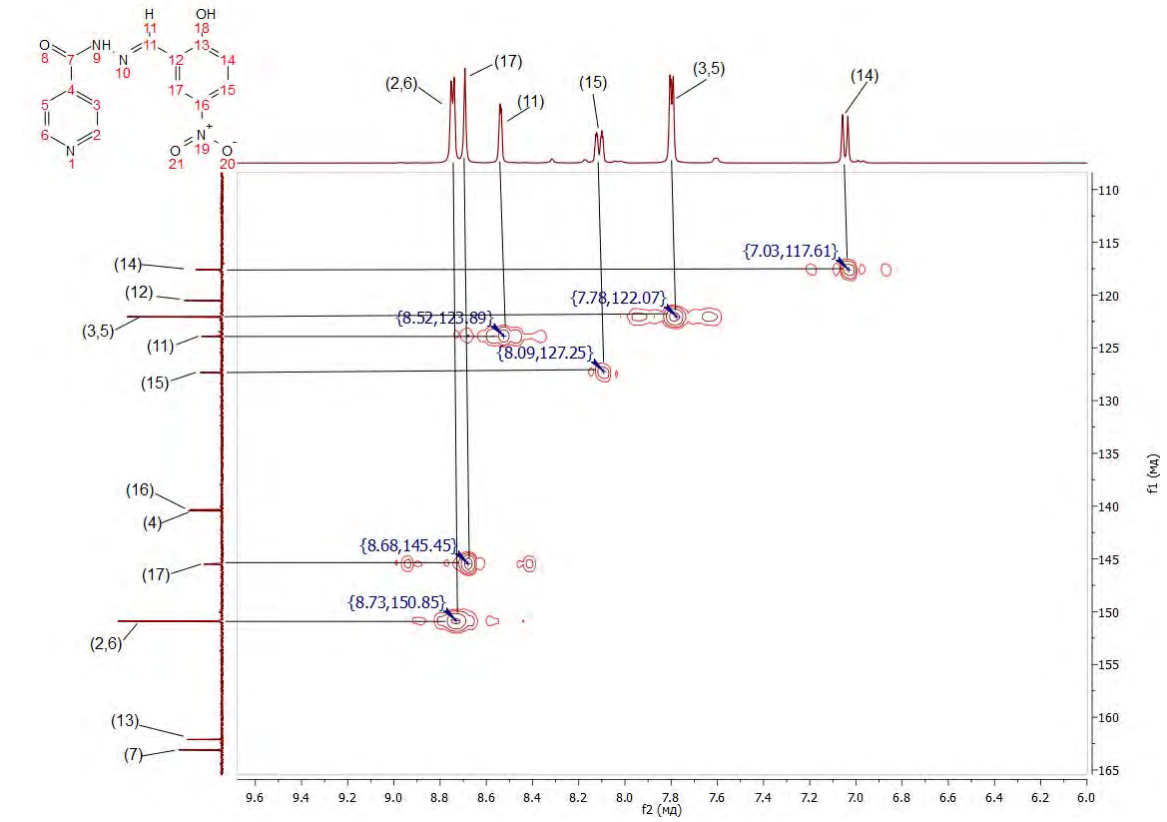
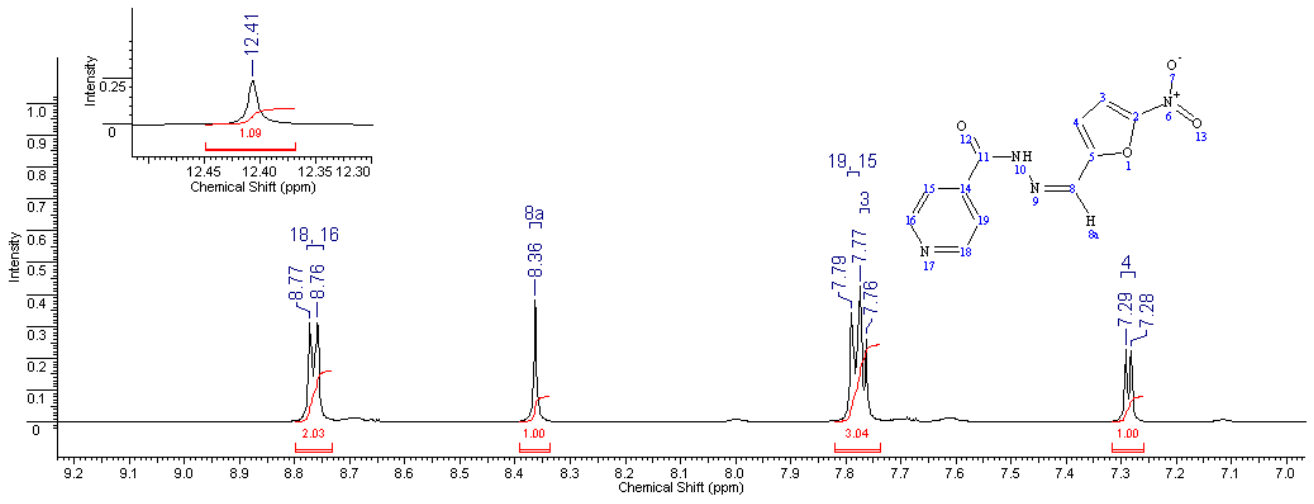
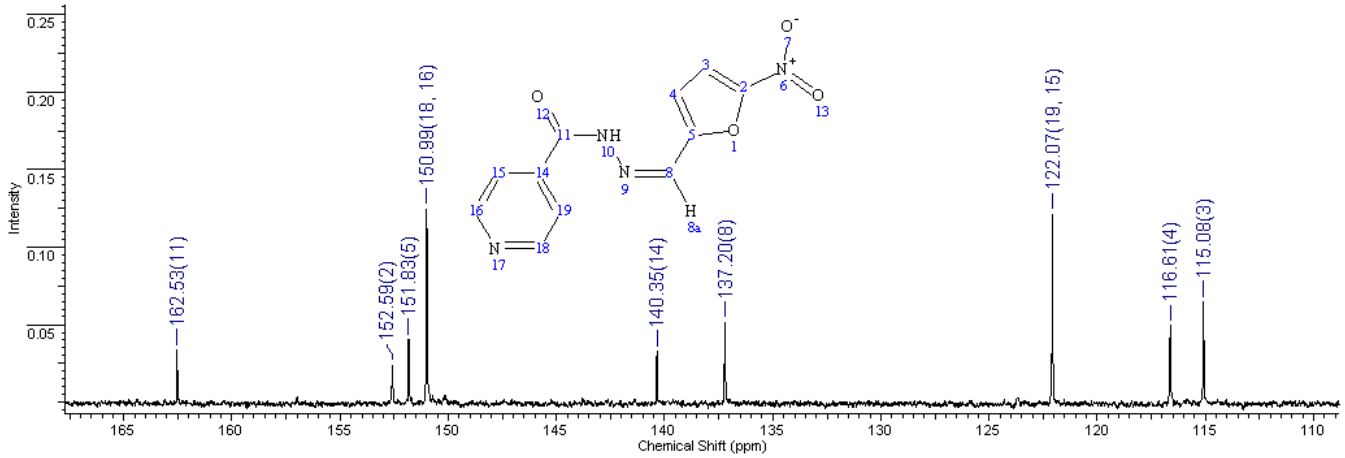


Fig. S-20. HMQC ^{1}H-^{13}C -NMR-spectrum of **5** (399.78 MHz, 100.53 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)
1	4	[7.28 .. 7.29]
2	3	[7.76 .. 7.77]
3	19	[7.77 .. 7.79]
4	15	[7.77 .. 7.79]
5	8a	8.36
6	18	[8.76 .. 8.77]
7	16	[8.76 .. 8.77]
8	10	12.41

Fig. S-21. ^{1}H-NMR-spectrum of **6** (399.78 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	4	116.61	111.060	5.549
2	3	115.08	114.950	0.134
3	19	122.07	122.830	-0.757
4	15	122.07	122.830	-0.757
5	14	140.35	142.810	-2.460
6	8	137.20	148.840	-11.636

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
7	5	151.83	149.550	2.280
8	16	150.99	150.950	0.041
9	18	150.99	150.950	0.041
10	2	152.59	152.800	-0.207
11	11	162.53	162.240	0.288

Fig. S-22. ^{13}C-NMR-spectrum of **6** (100.53 MHz, DMSO-d$_6$)

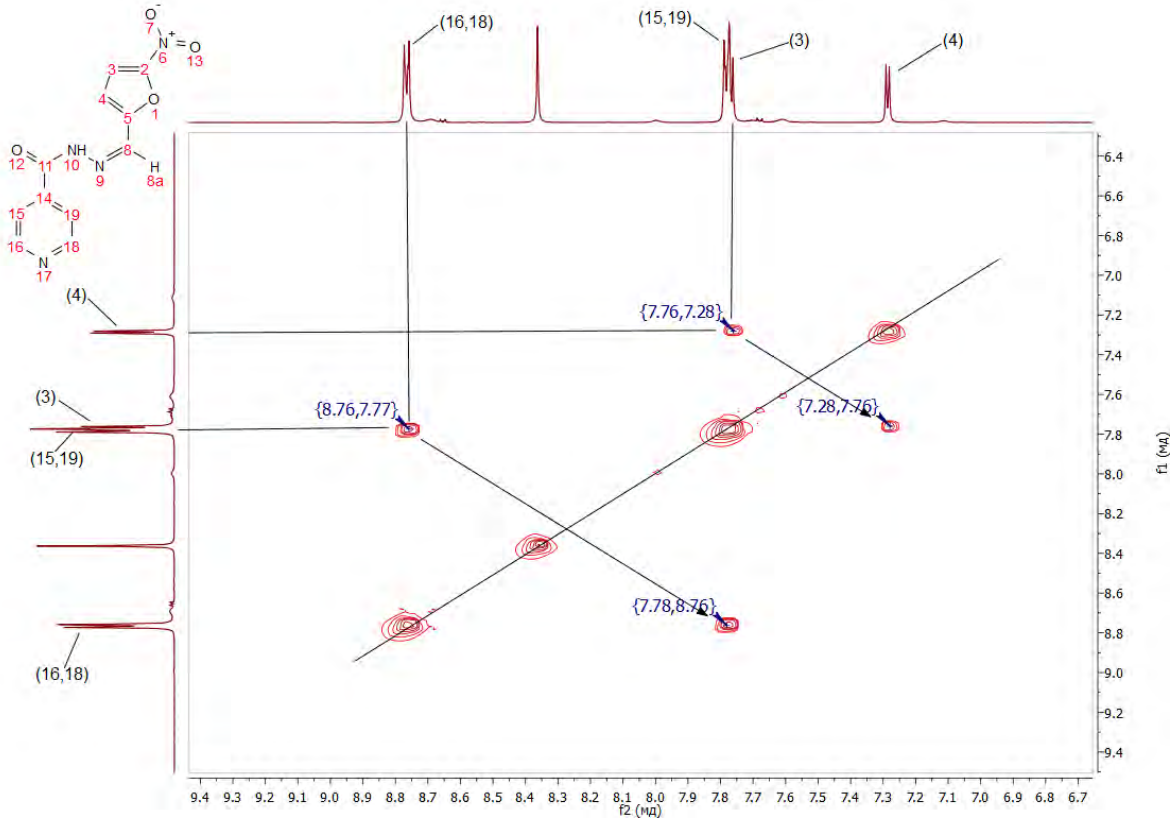


Fig. S-23. COSY ^{1}H-^{1}H -NMR-spectrum of **6** (399.78 MHz, DMSO-d$_6$)

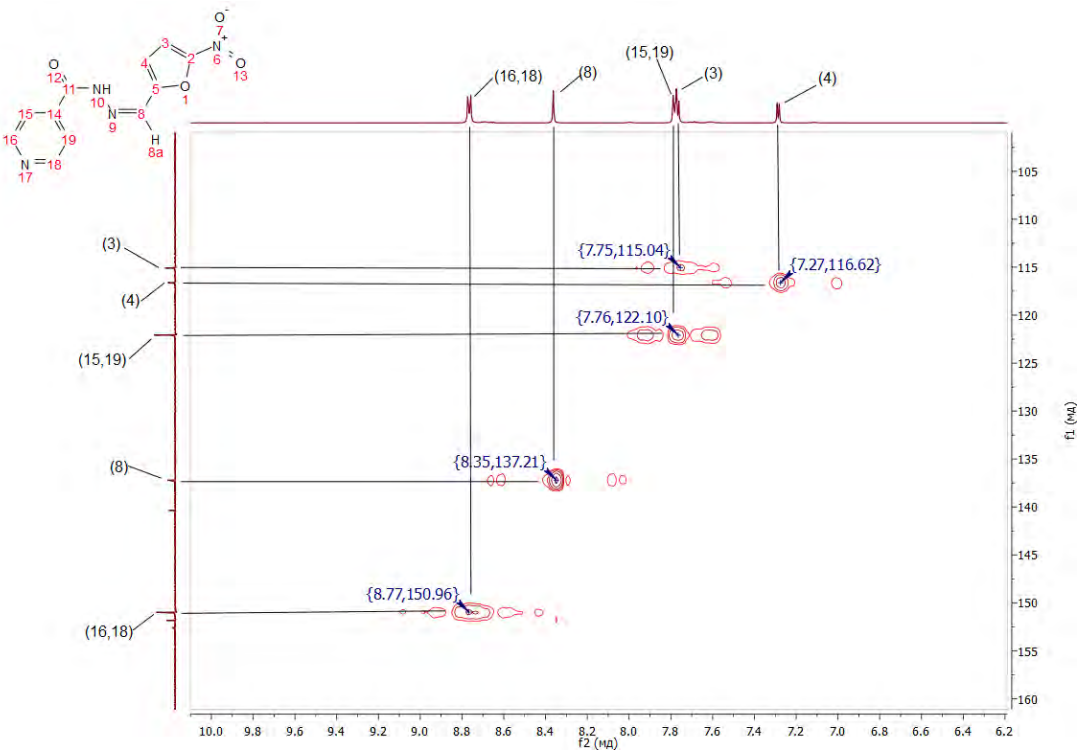
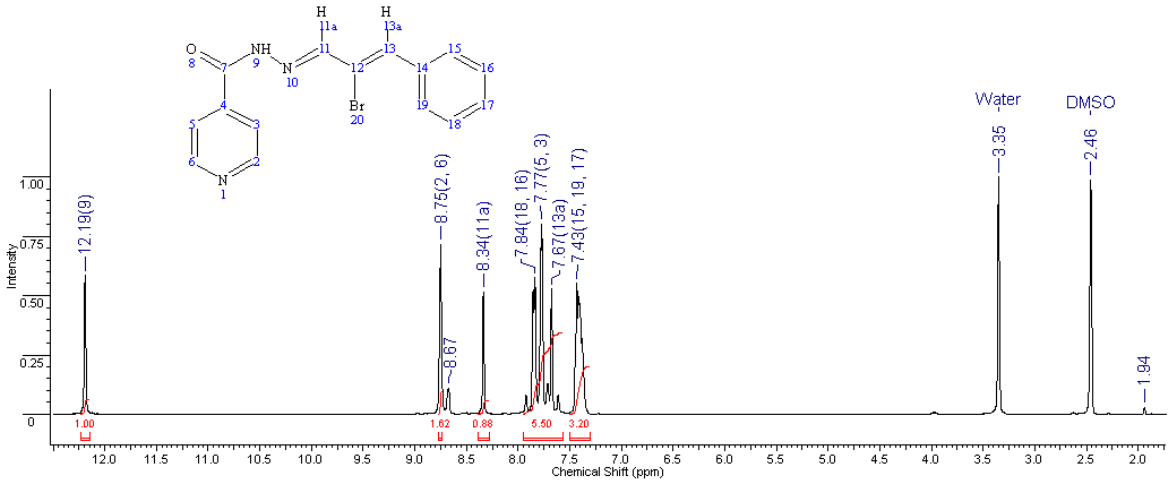


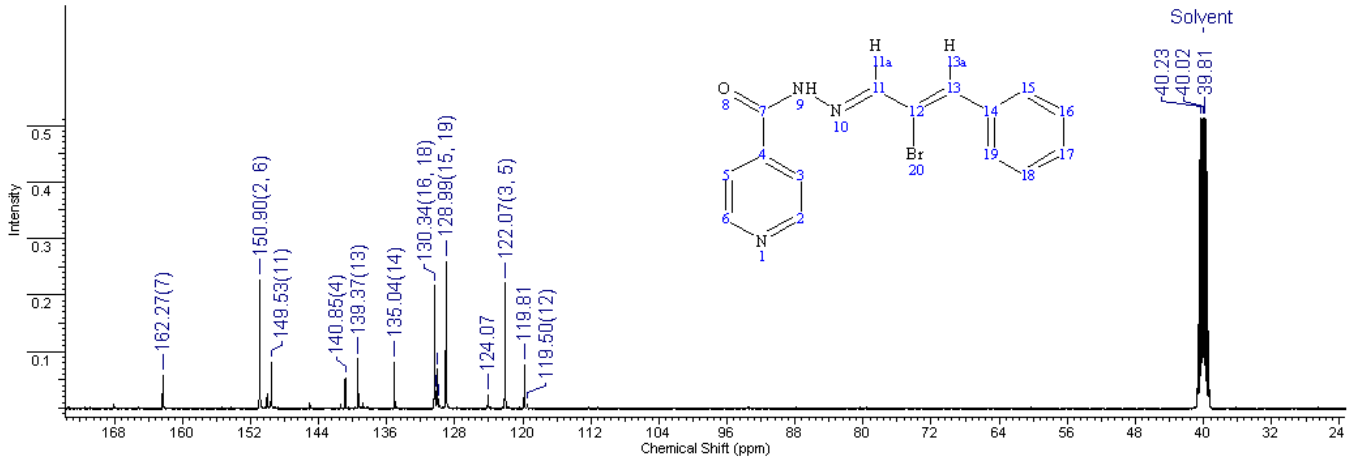
Fig. S-24. HMQC ^{1}H-^{13}C -NMR-spectrum of **6** (399.78 MHz, 100.53 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	2	8.75	8.909	-0.161
2	3	7.77	7.862	-0.089
3	5	7.77	7.862	-0.089
4	6	8.75	8.909	-0.161
5	9	12.19	-	-
6	11a	8.34	7.173	1.163

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
7	13a	7.67	8.035	-0.360
8	15	7.43	7.582	-0.152
9	16	7.84	7.367	0.469
10	17	7.43	7.659	-0.229
11	18	7.84	7.367	0.469
12	19	7.43	7.582	-0.152

Fig. S-25. ^{1}H-NMR-spectrum of **7** (399.78 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	2	150.90	150.950	-0.054
2	3	122.07	122.830	-0.757
3	4	140.85	143.770	-2.924
4	5	122.07	122.830	-0.757
5	6	150.90	150.950	-0.054
6	7	162.27	162.240	0.030
7	11	149.53	159.850	-10.318
8	12	119.50	122.430	-2.932

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
9	13	139.37	137.740	1.628
10	14	135.04	133.230	1.810
11	15	128.99	125.700	3.285
12	16	130.34	129.260	1.079
13	17	130.01	129.450	0.555
14	18	130.34	129.260	1.079
15	19	128.99	125.700	3.285

Fig. S-26. ^{13}C-NMR-spectrum of **7** (100.53 MHz, DMSO-d$_6$)

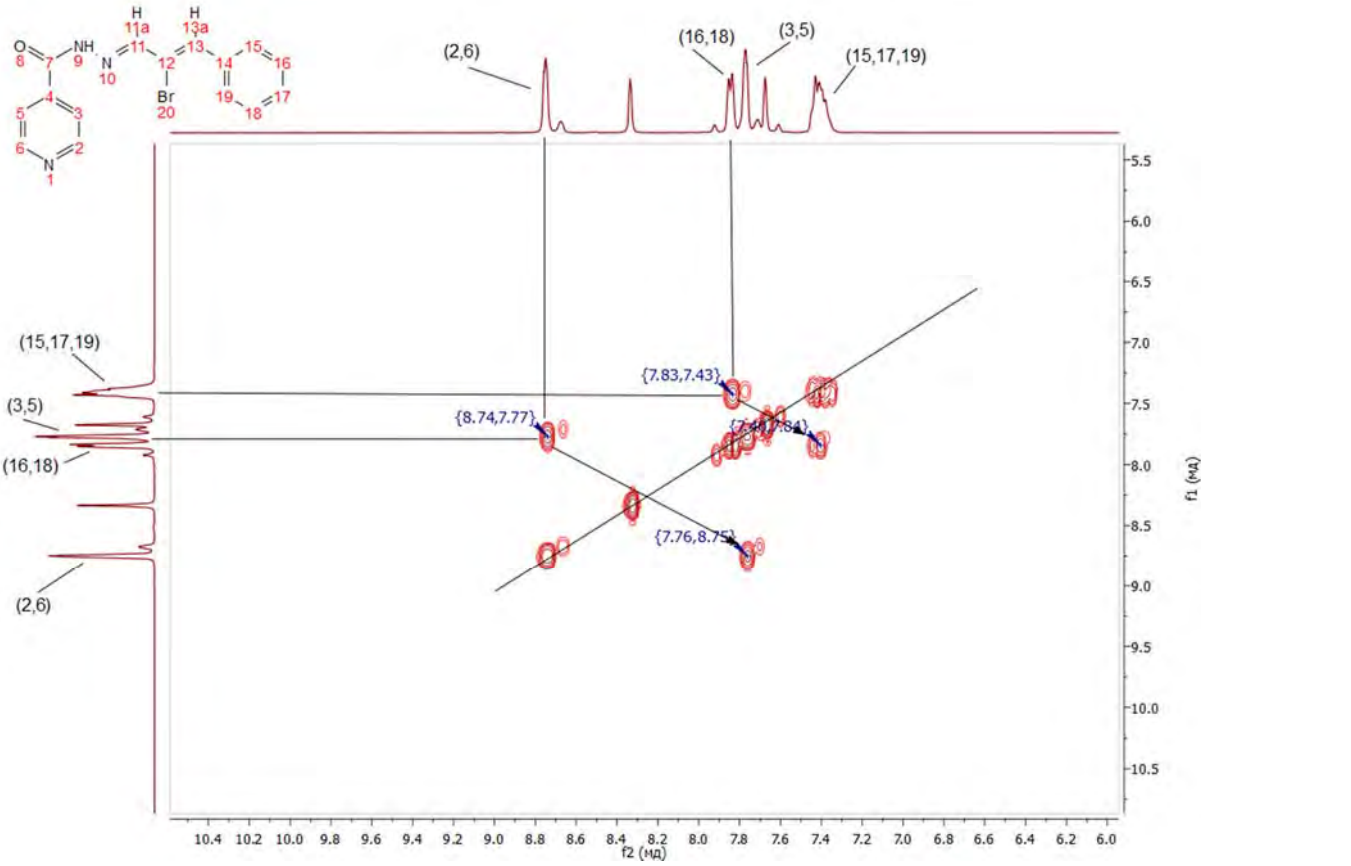


Fig. S-27. COSY ^{1}H-^{1}H -NMR-spectrum of **7** (399.78 MHz, DMSO-d$_6$)

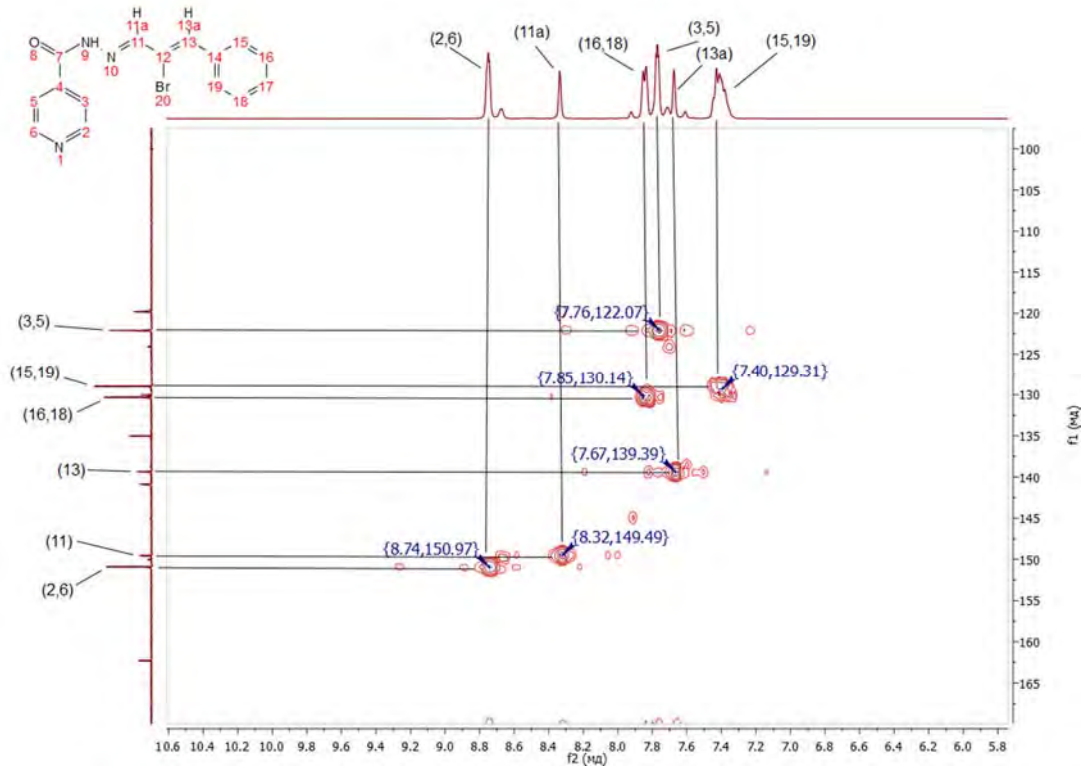


Fig. S-28. HMQC ^{1}H-^{13}C -NMR-spectrum of **7** (399.78 MHz, 100.53 MHz, DMSO-d_6)

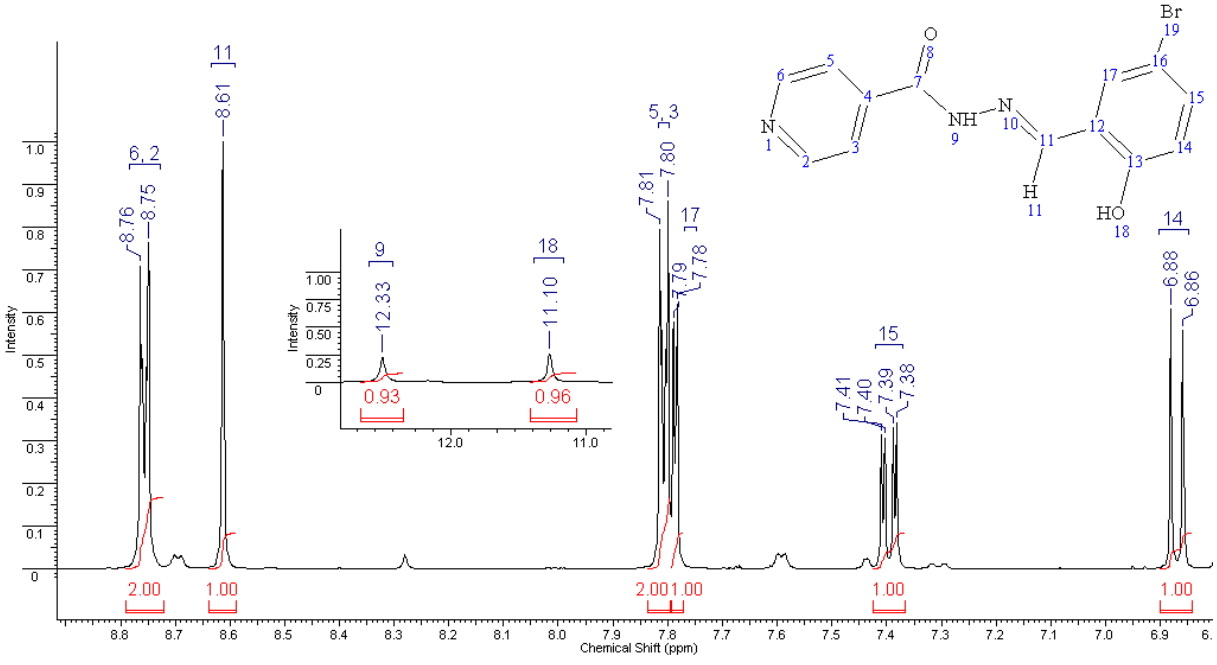


Fig. S-29. ^{1}H-NMR-spectrum of **8** (399.78 MHz, DMSO-d_6)

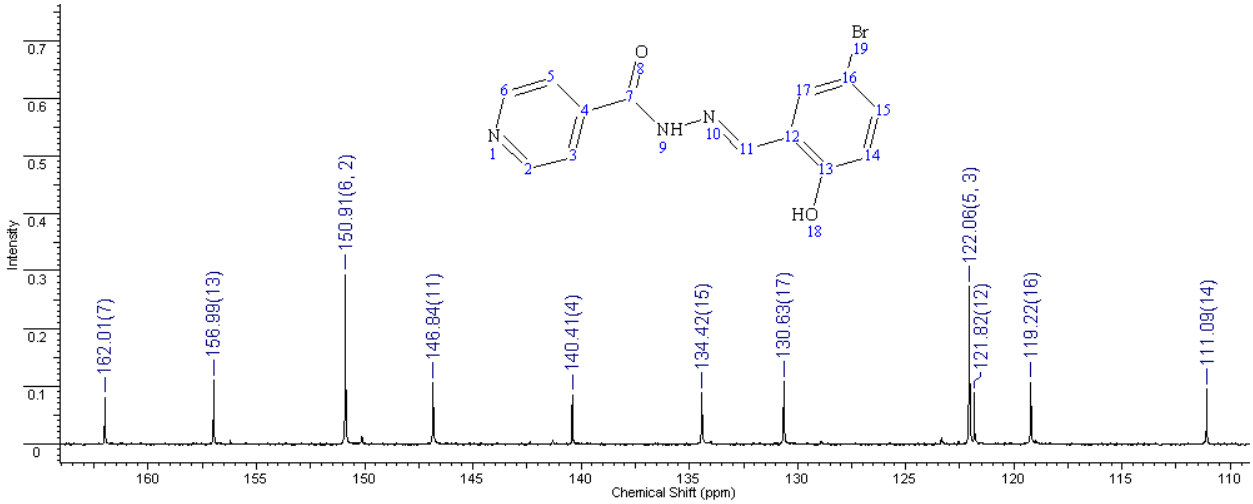


Fig. S-30. ^{13}C-NMR-spectrum of **8** (100.53 MHz, DMSO-d$_6$)

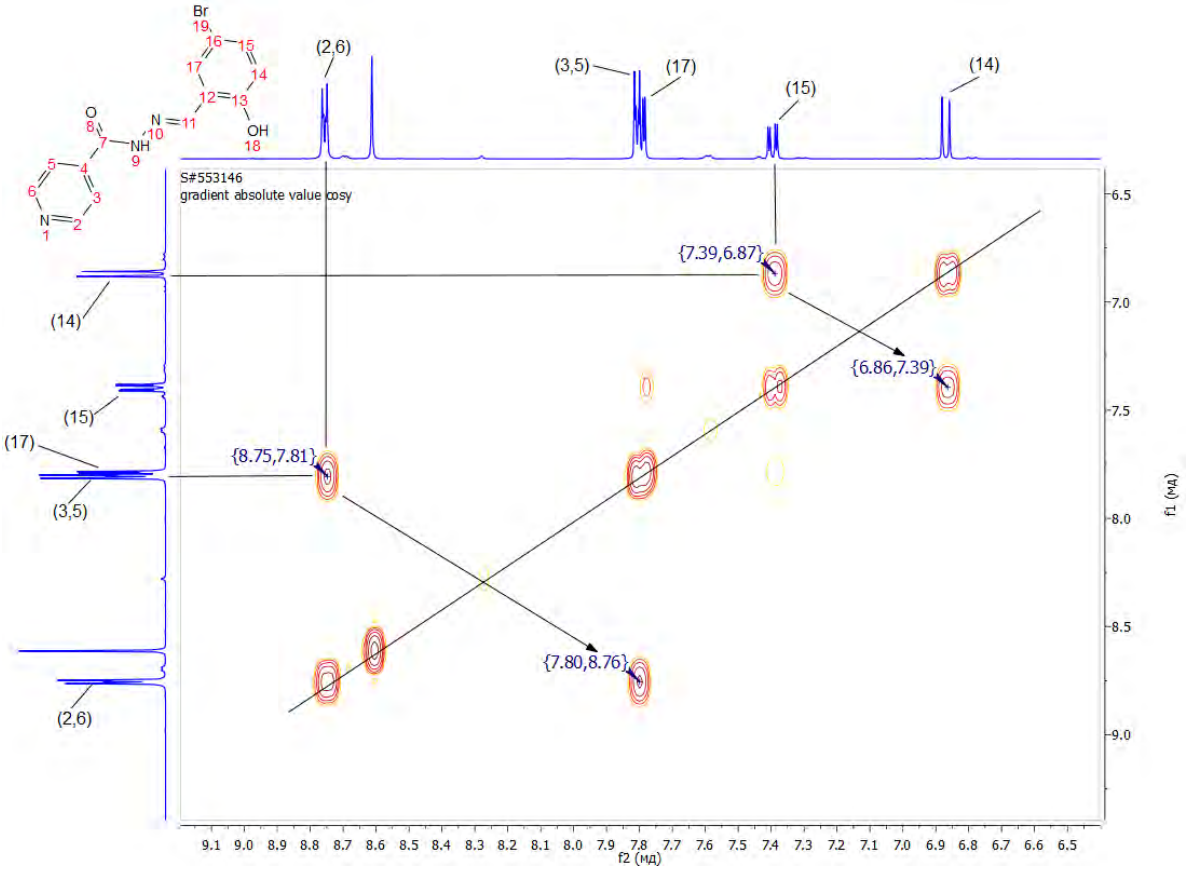


Fig. S-31. COSY ^{1}H-^{1}H -NMR-spectrum of **8** (399.78 MHz, DMSO-d$_6$)

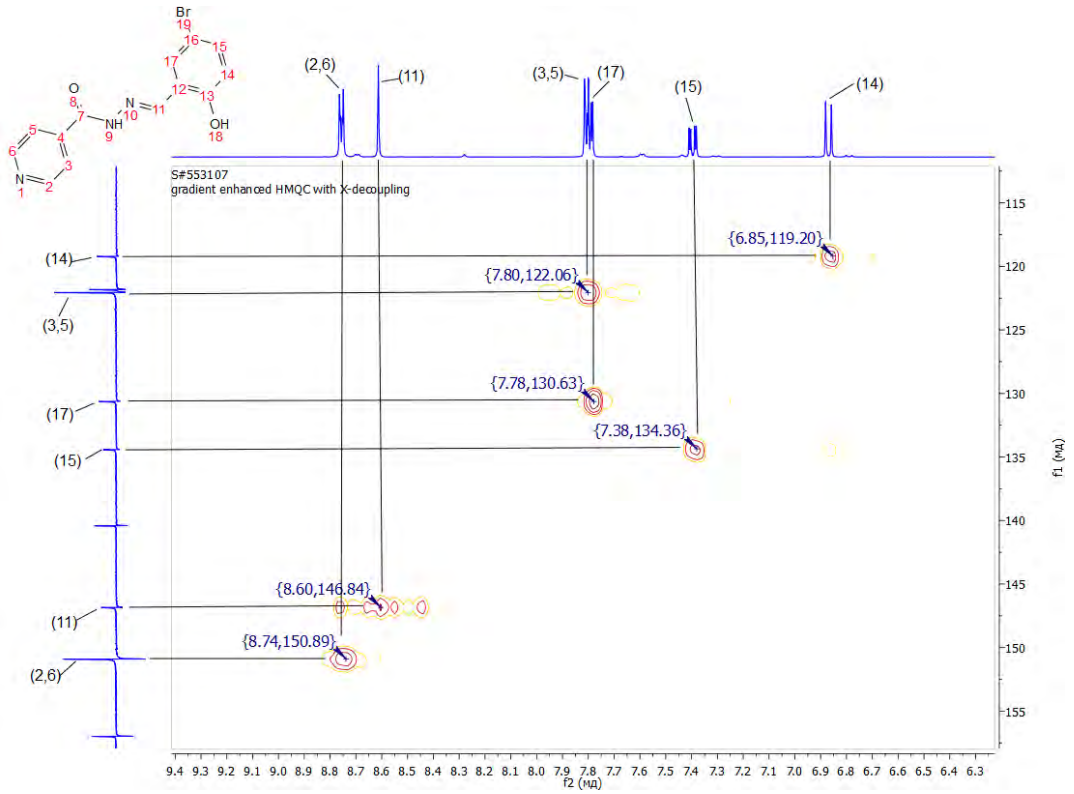
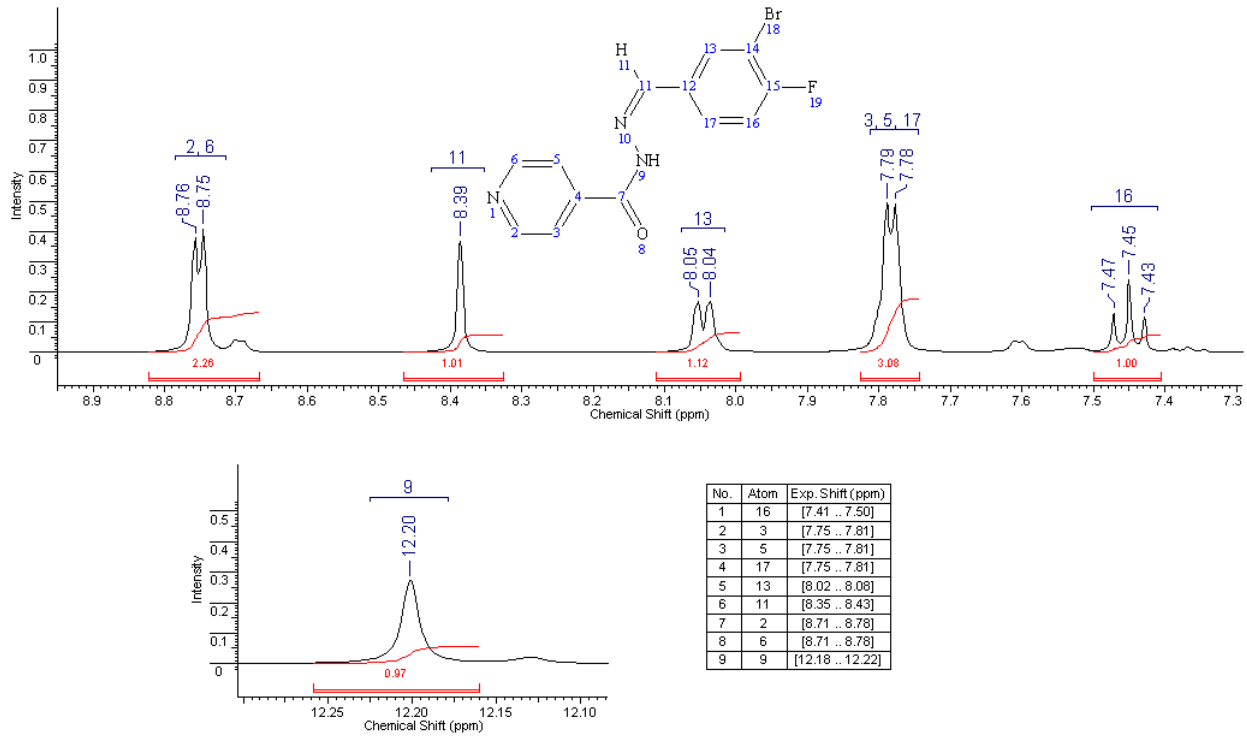
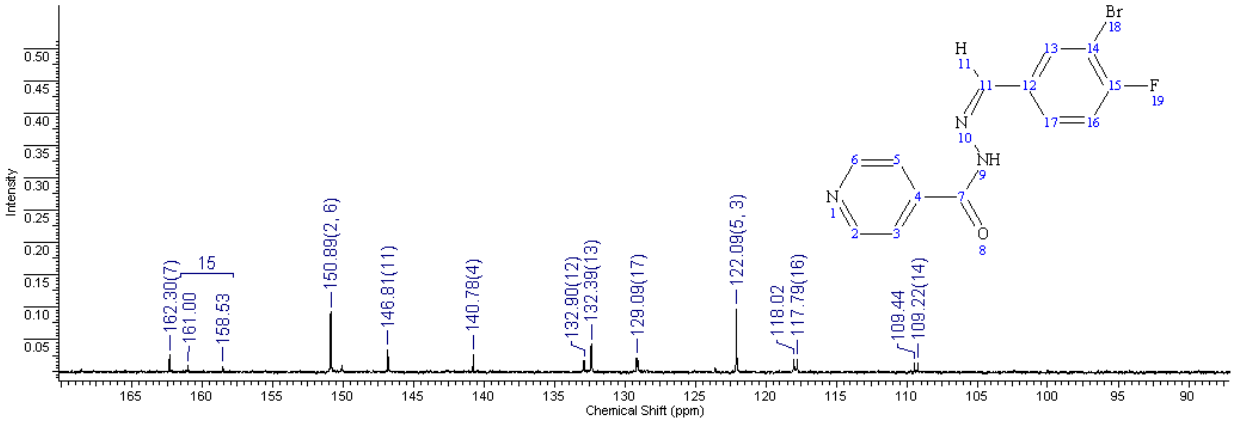


Fig. S-32. HMQC ^{1}H-^{13}C -NMR-spectrum of **8** (399.78 MHz, 100.53 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)
1	16	[7.41 .. 7.50]
2	3	[7.75 .. 7.81]
3	5	[7.75 .. 7.81]
4	17	[7.75 .. 7.81]
5	13	[8.02 .. 8.08]
6	11	[8.35 .. 8.43]
7	2	[8.71 .. 8.78]
8	6	[8.71 .. 8.78]
9	9	[12.18 .. 12.22]

Fig. S-33. ^{1}H-NMR-spectrum of **9** (399.78 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	14	109.22	107.290	1.930
2	16	117.79	114.570	3.222
3	13	132.39	125.250	7.139
4	3	122.09	126.050	-3.958
5	5	122.09	126.050	-3.958
6	17	129.09	126.890	2.200
7	12	132.90	131.710	1.194

No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
8	4	140.78	138.210	2.569
9	6	150.89	148.690	2.196
10	2	150.89	148.690	2.196
11	11	146.81	152.740	-5.925
12	15	[157.76 .. 161.52]	160.050	-0.411
13	7	162.30	162.470	-0.171

Fig. S-34. ^{13}C-NMR-spectrum of **9** (100.53 MHz, DMSO-d$_6$)

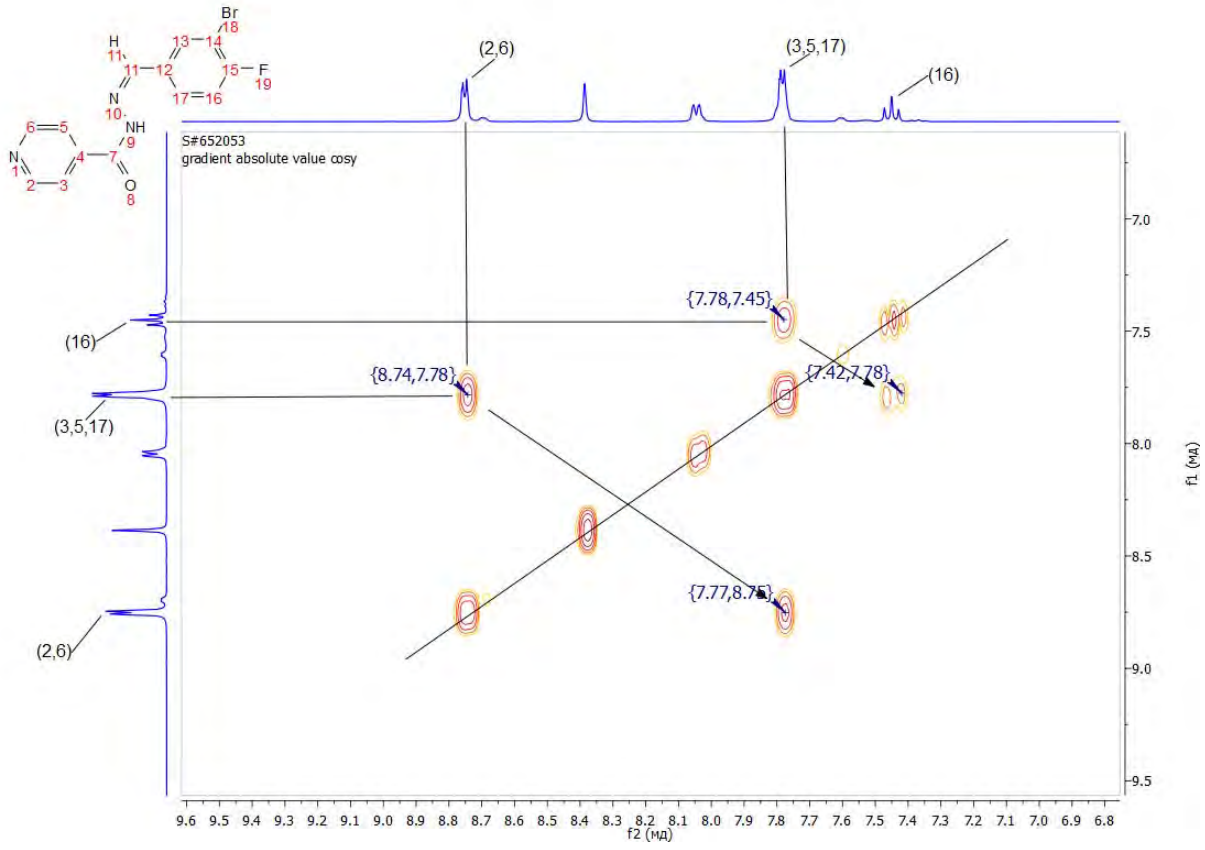


Fig. S-35. COSY ^{1}H-^{1}H -NMR-spectrum of **9** (399.78 MHz, DMSO-d$_6$)

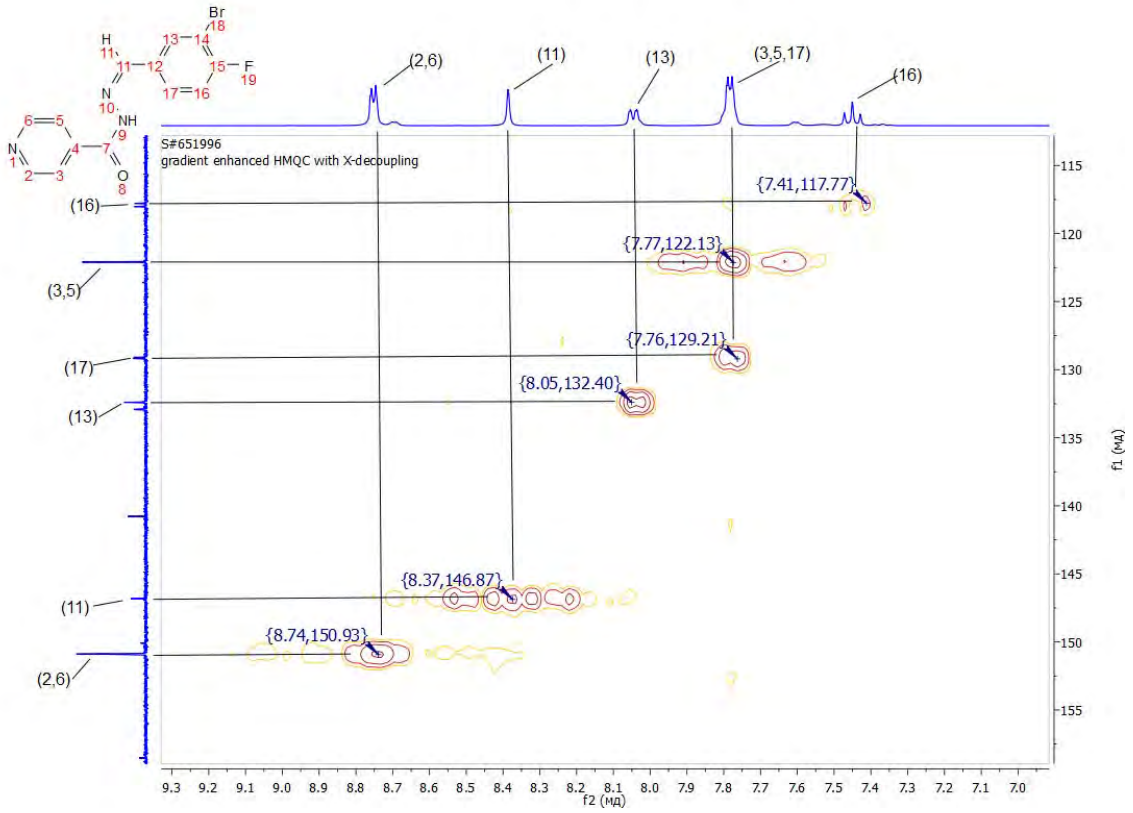


Fig. S-36. HMQC ^{1}H-^{13}C -NMR-spectrum of **9** (399.78 MHz, 100.53 MHz, DMSO-d$_6$)

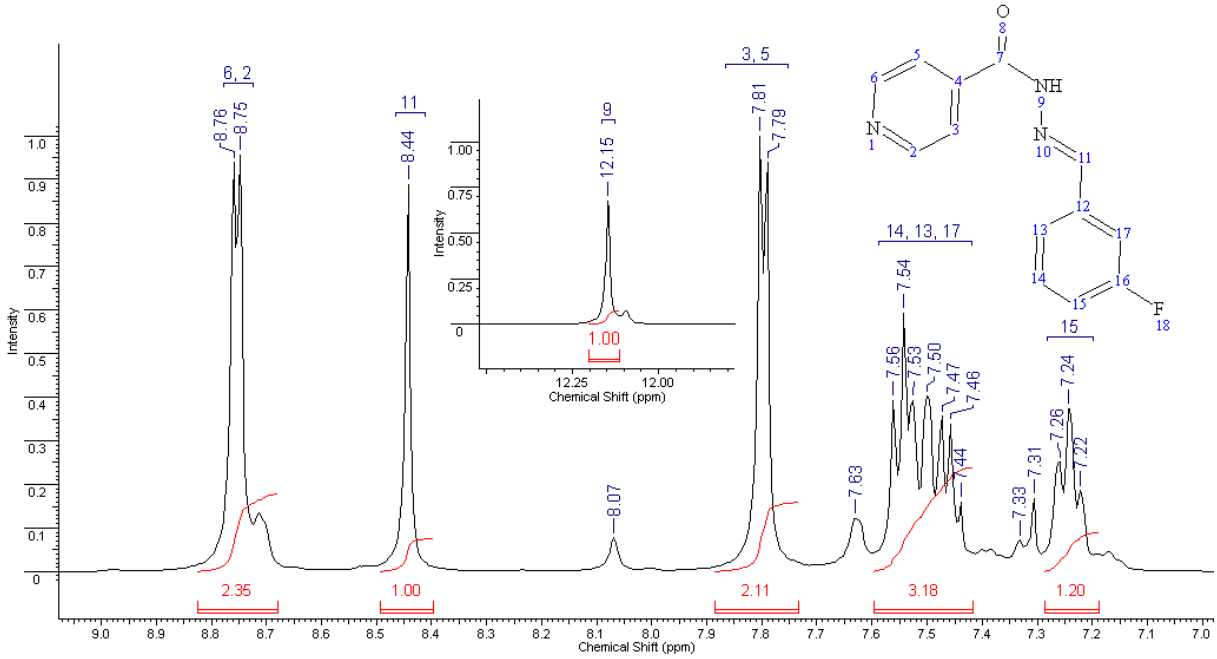


Fig. S-37. ^{1}H-NMR-spectrum of **10** (399.78 MHz, DMSO-d$_6$)

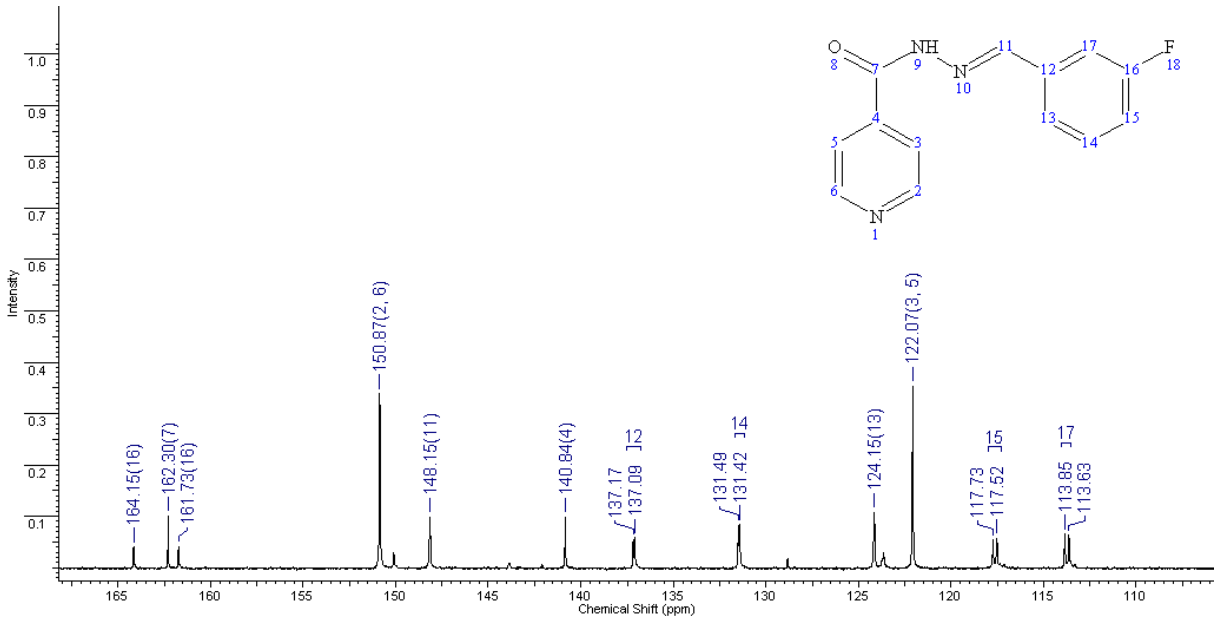


Fig. S-38. ^{13}C-NMR-spectrum of **10** (100.53 MHz, DMSO-d$_6$)

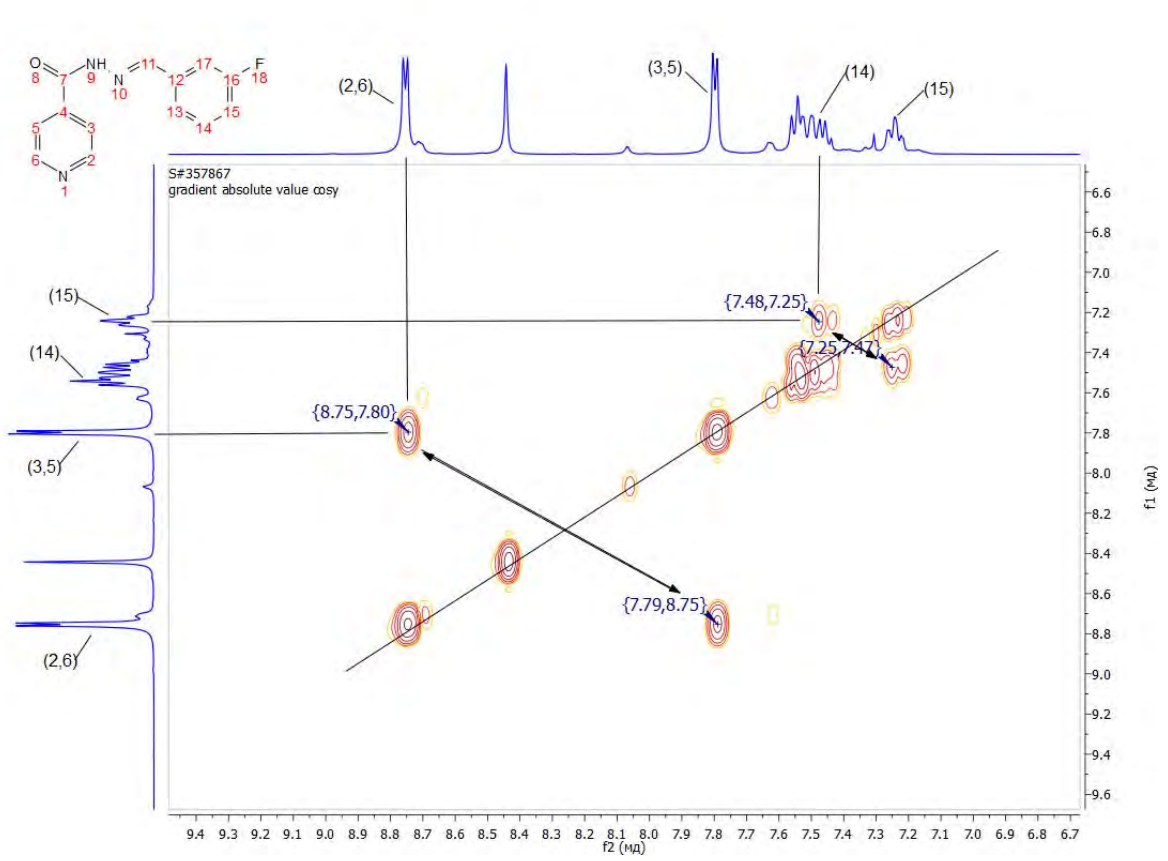


Fig. S-39. COSY ^{1}H-^{1}H -NMR-spectrum of **10** (399.78 MHz, DMSO-d$_6$)

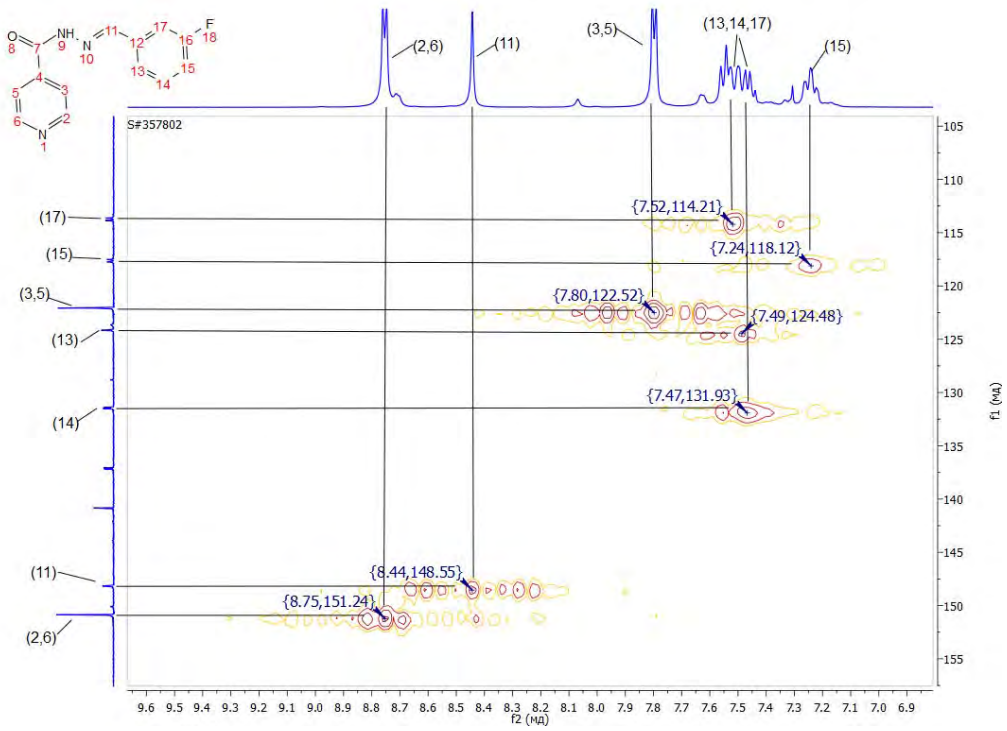


Fig. S-40. HMQC ^{1}H-^{13}C -NMR-spectrum of **10** (399.78 MHz, 100.53 MHz, DMSO-d_6)

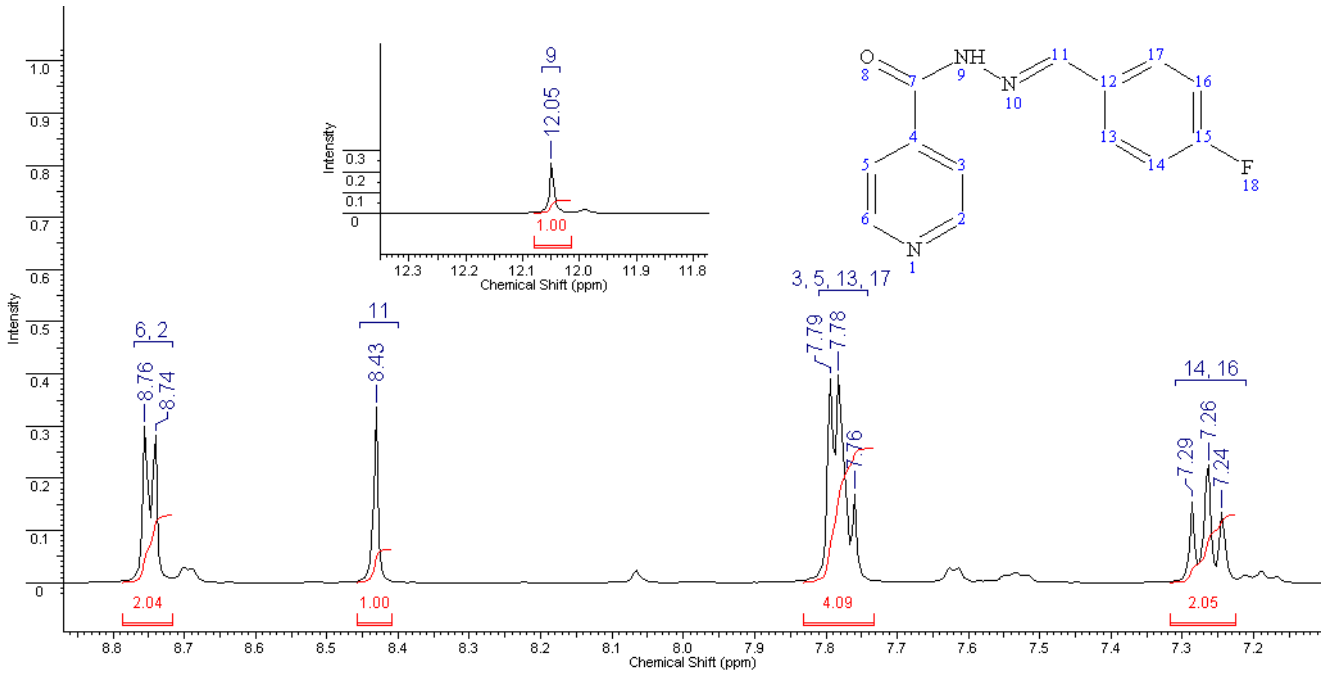


Fig. S-41. ^{1}H-NMR-spectrum of **11** (399.78 MHz, DMSO-d_6)

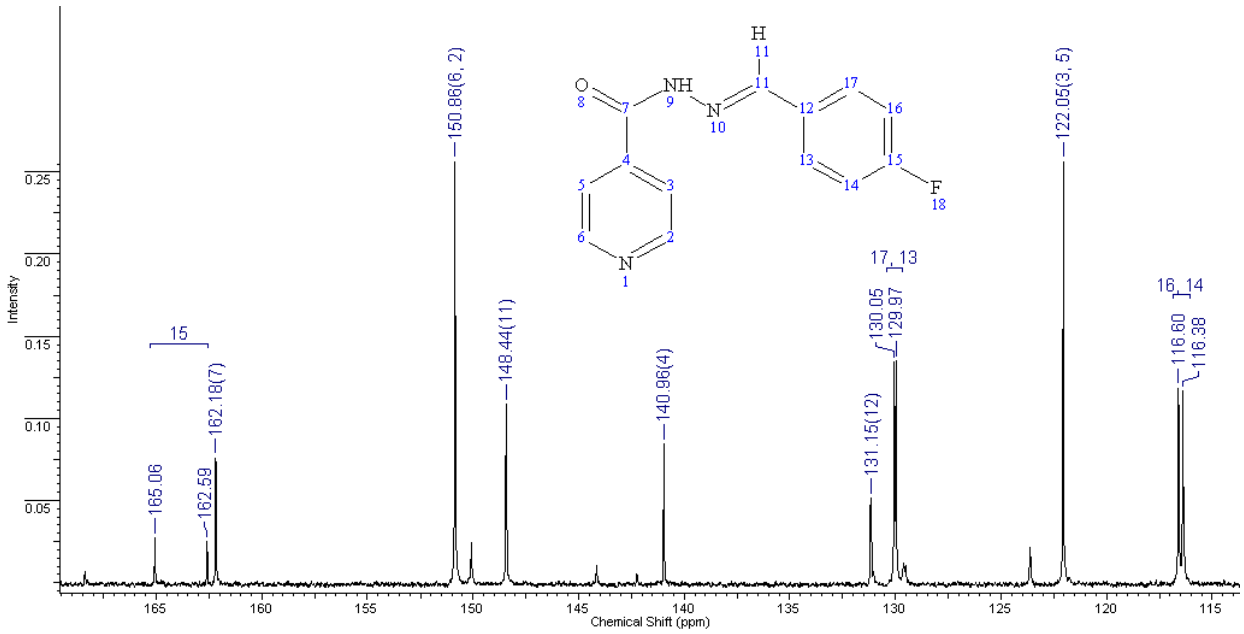


Fig. S-42. ^{13}C-NMR-spectrum of **11** (100.53 MHz, DMSO-d$_6$)

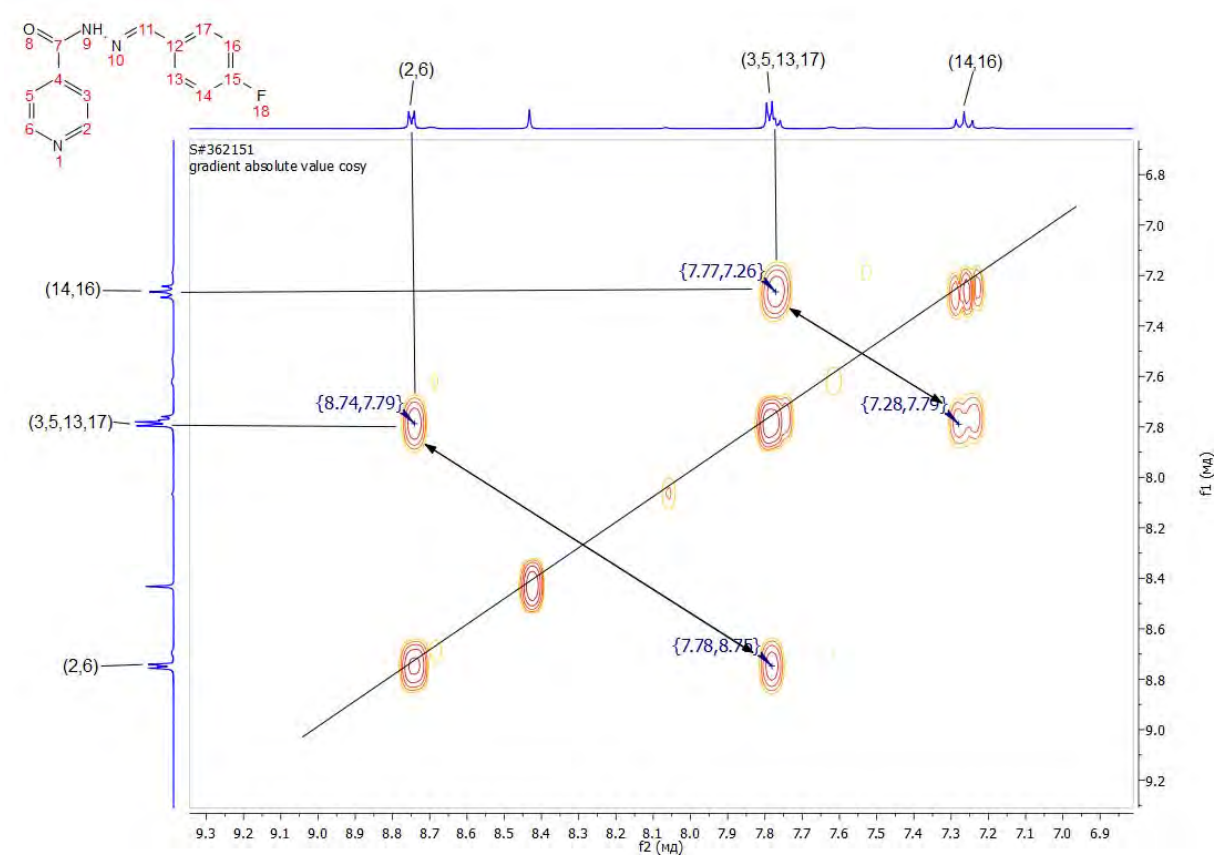


Fig. S-43. COSY ^{1}H-^{1}H -NMR-spectrum of **11** (399.78 MHz, DMSO-d$_6$)

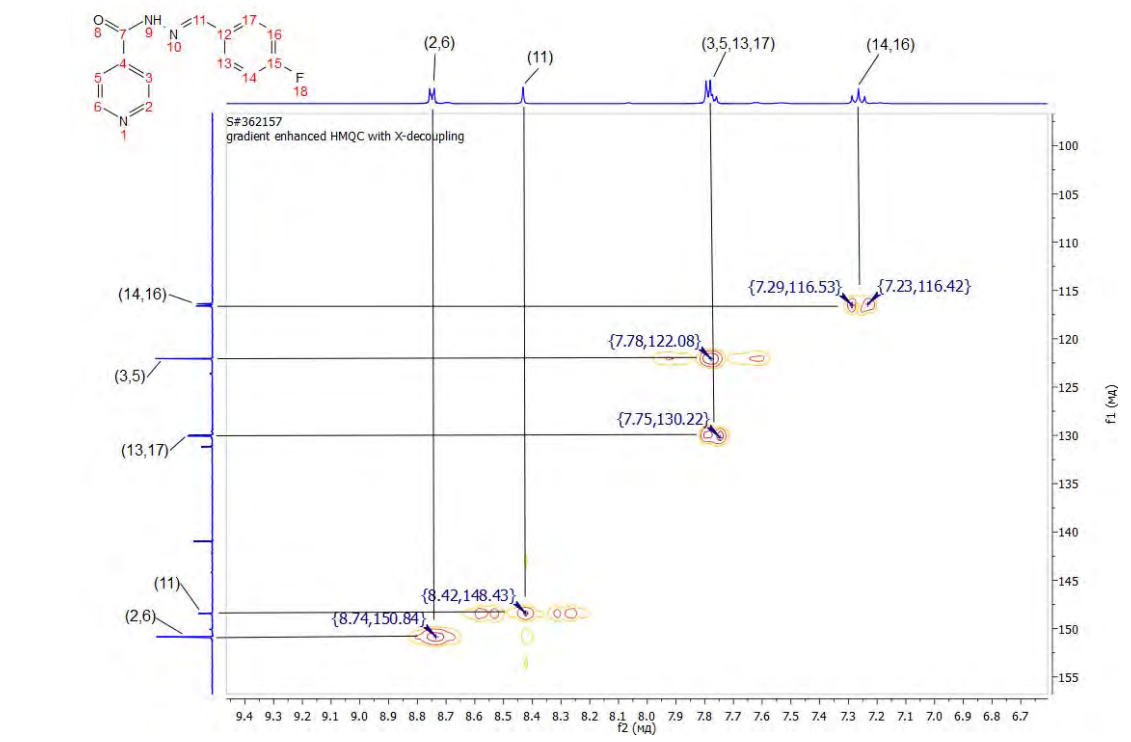
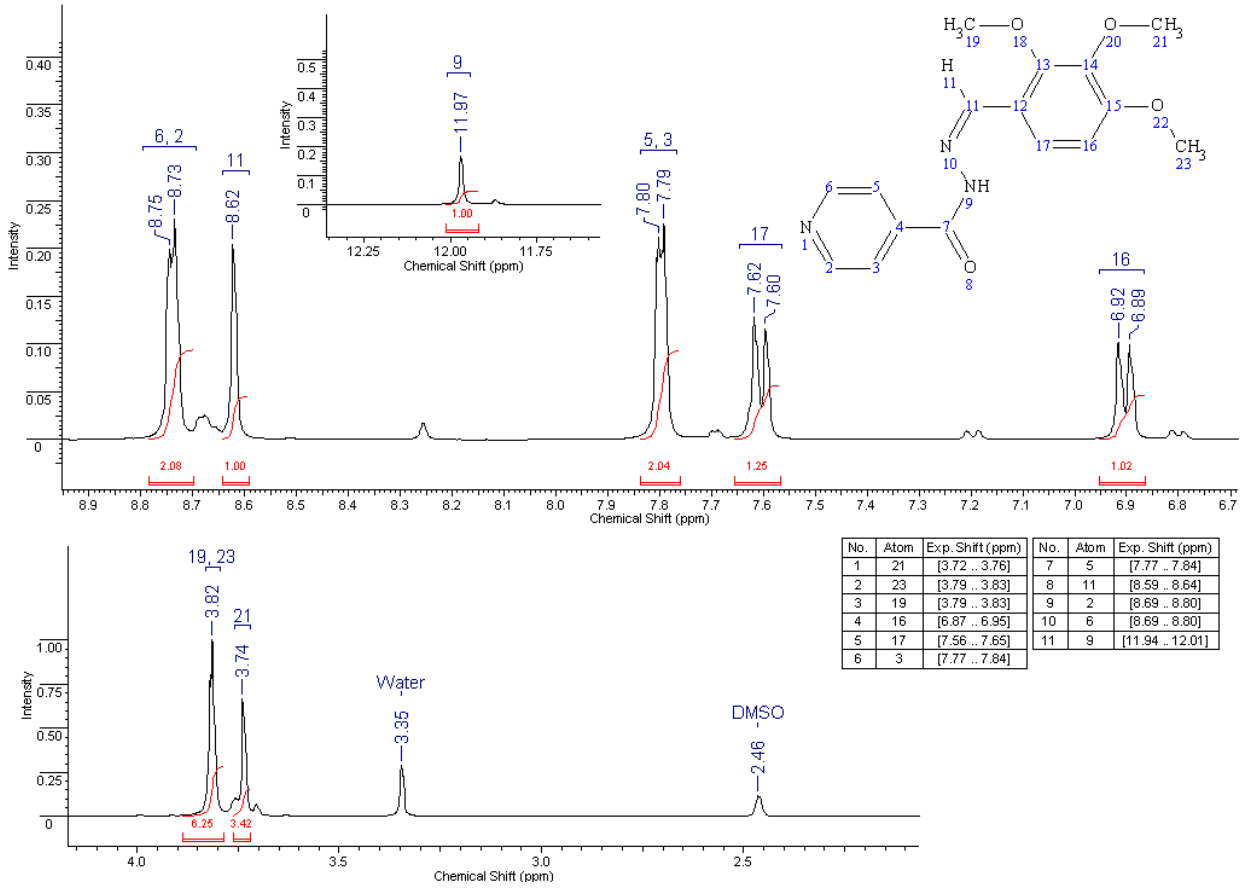


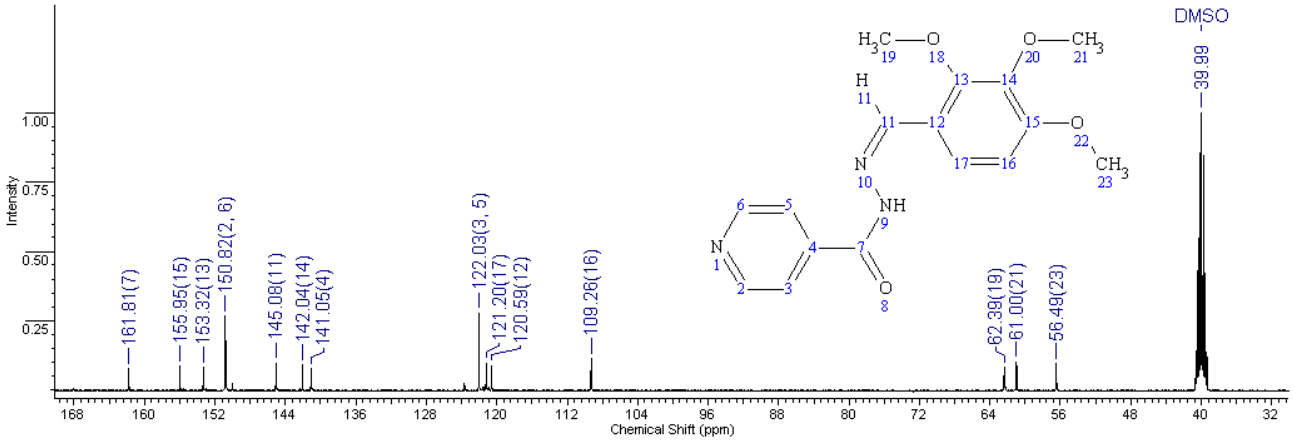
Fig. S-44. HMQC ^{1}H-^{13}C -NMR-spectrum of **11** (399.78 MHz, 100.53 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)
1	21	[3.72 .. 3.76]
2	23	[3.79 .. 3.83]
3	19	[3.79 .. 3.83]
4	16	[6.87 .. 6.95]
5	17	[7.56 .. 7.65]
6	3	[7.77 .. 7.84]

No.	Atom	Exp. Shift (ppm)
7	5	[7.77 .. 7.84]
8	11	[8.59 .. 8.64]
9	2	[8.69 .. 8.80]
10	6	[8.69 .. 8.80]
11	9	[11.94 .. 12.01]

Fig. S-45. ^{1}H-NMR-spectrum of **12** (399.78 MHz, DMSO-d$_6$)



No.	Atom	Exp. Shift (ppm)	No.	Atom	Exp. Shift (ppm)
1	23	56.49	9	4	141.05
2	21	61.00	10	14	142.04
3	19	62.39	11	11	145.08
4	16	109.26	12	2	150.82
5	12	120.59	13	6	150.82
6	17	121.20	14	13	153.32
7	3	122.03	15	15	155.95
8	5	122.03	16	7	161.81

Fig. S-46. ^{13}C-NMR-spectrum of **12** (100.53 MHz, DMSO-d$_6$)

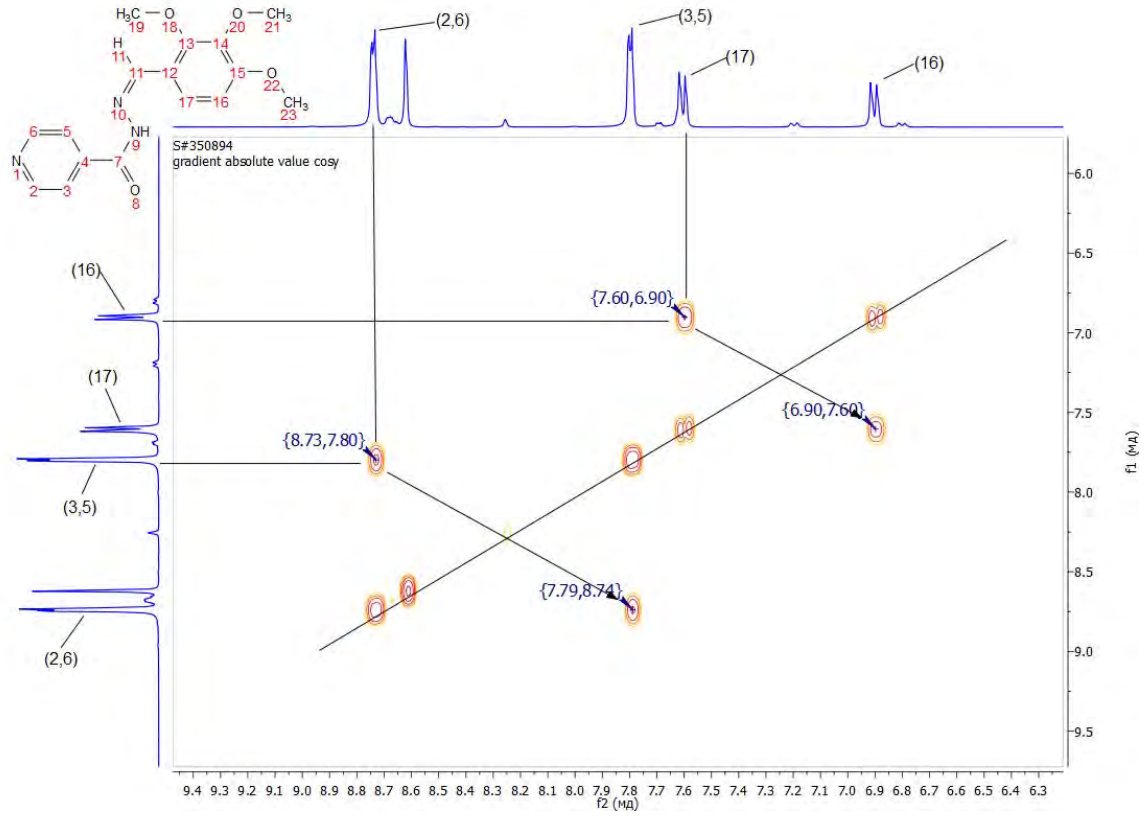


Fig. S-47. COSY ^{1}H-^{1}H -NMR-spectrum of **12** (399.78 MHz, DMSO-d$_6$)

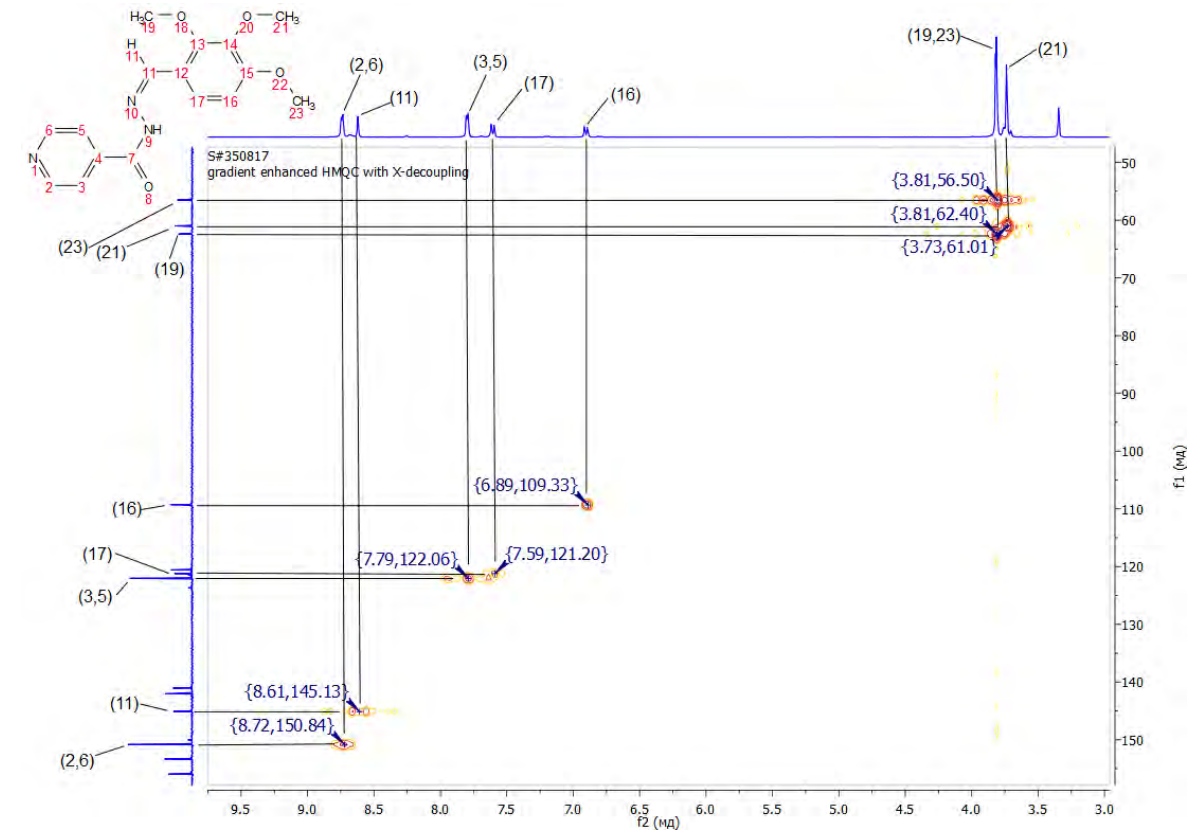


Fig. S-48. HMQC ^{1}H-^{13}C -NMR-spectrum of **12** (399.78 MHz, 100.53 MHz, DMSO-d$_6$)

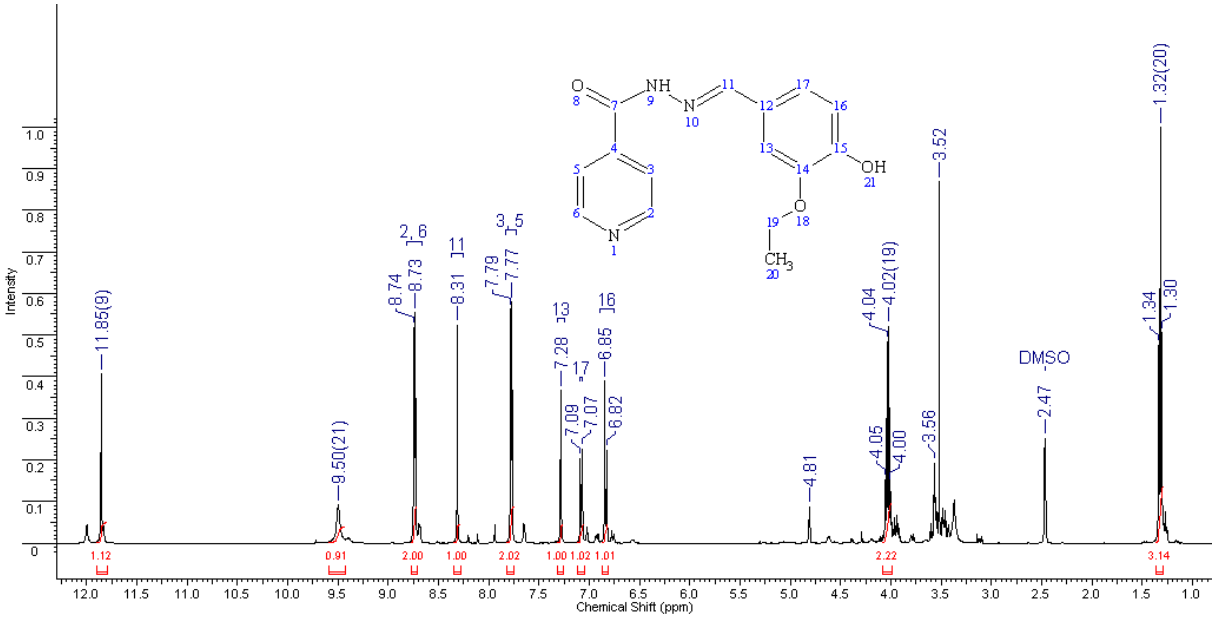


Fig. S-49. ^{1}H-NMR-spectrum of **13** (399.78 MHz, DMSO-d$_6$)

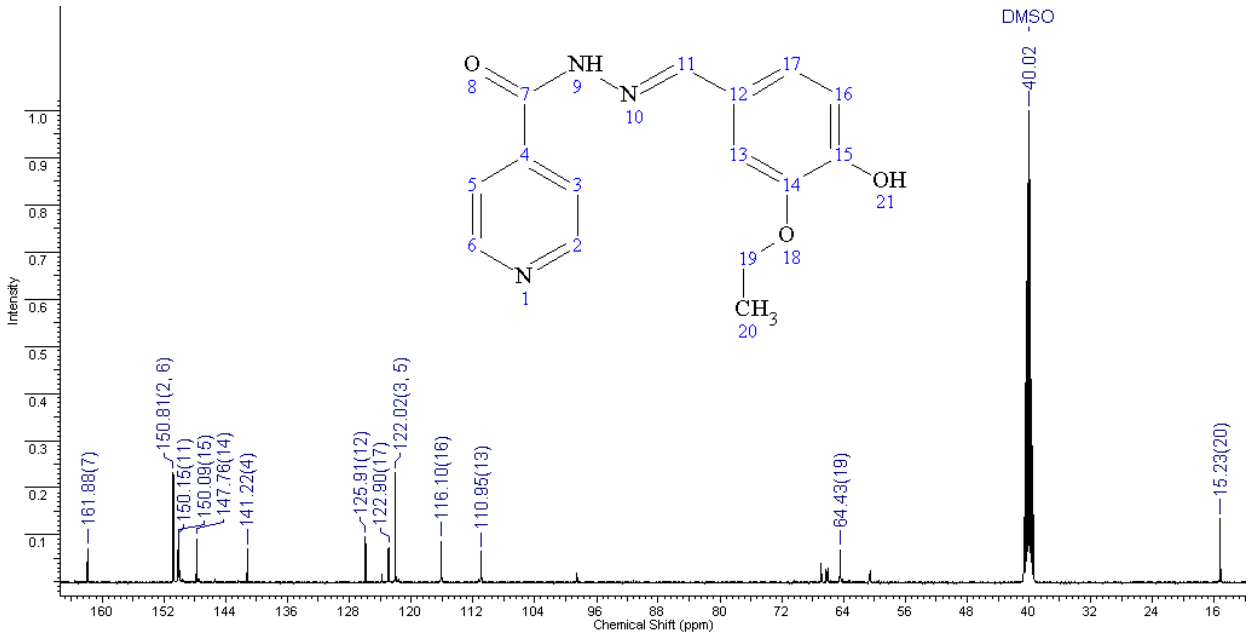


Fig. S-50. ^{13}C-NMR-spectrum of **13** (100.53 MHz, DMSO-d$_6$)

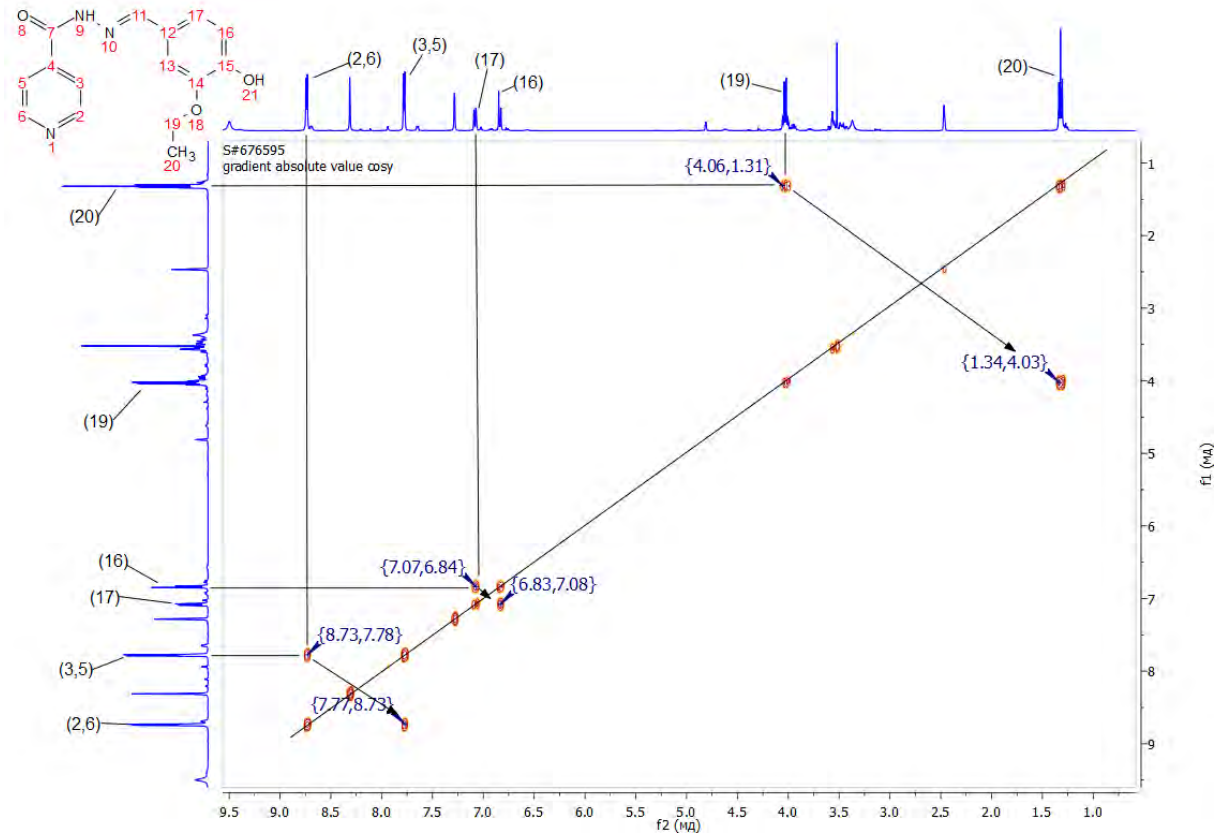


Fig. S-51. COSY ^{1}H-^{1}H -NMR-spectrum of **13** (399.78 MHz, DMSO-d$_6$)

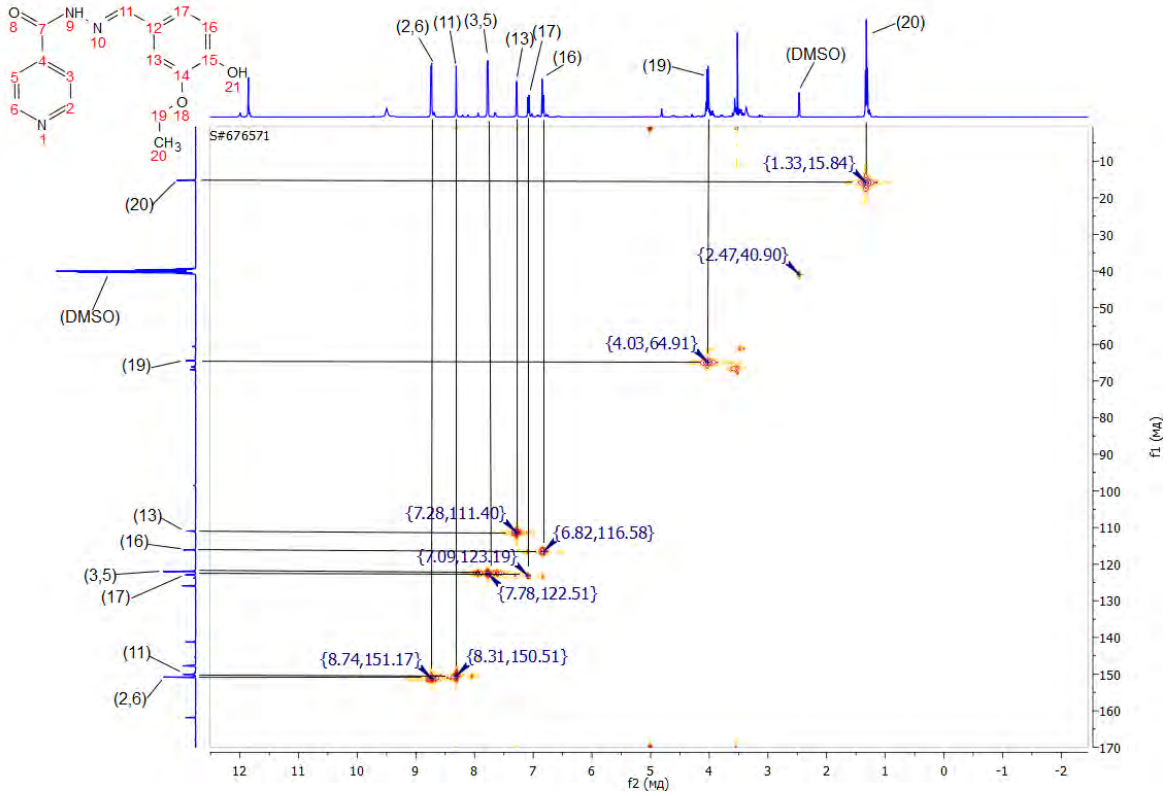
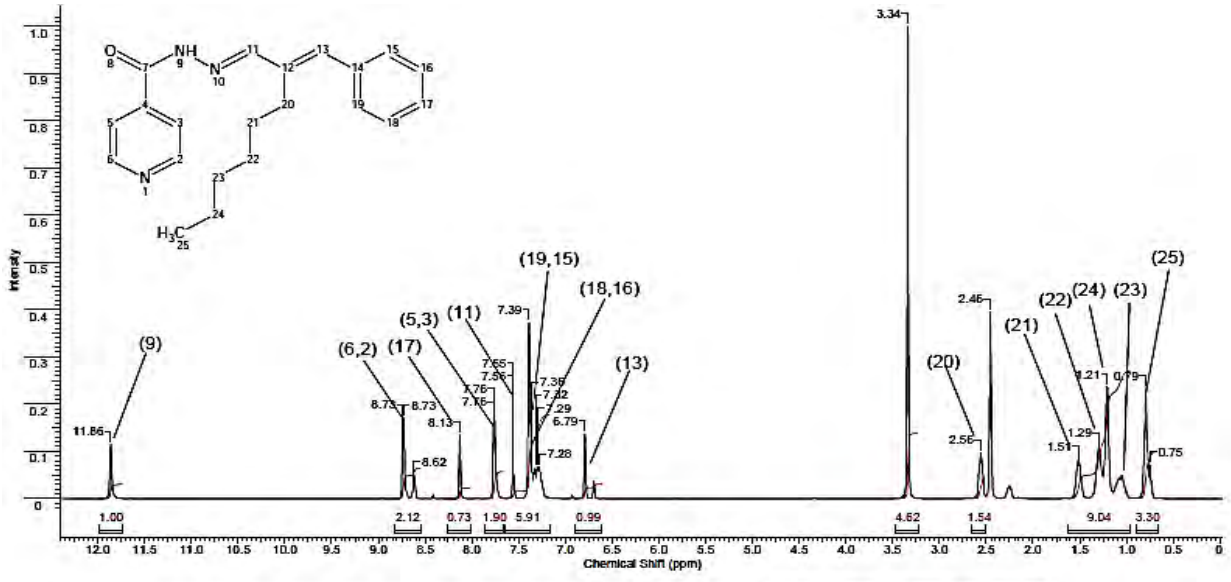


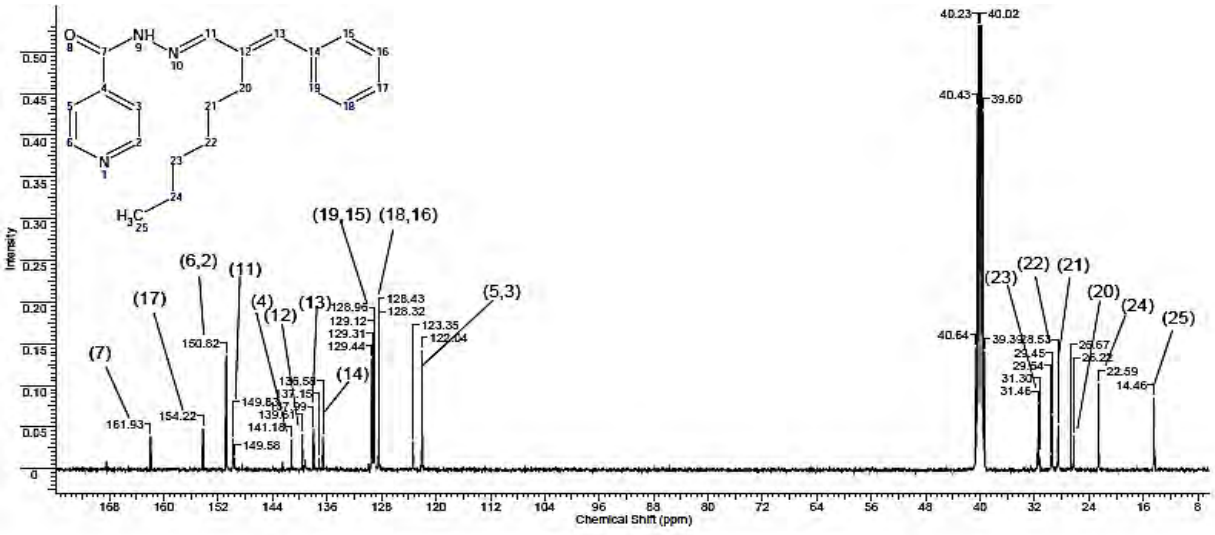
Fig. S-52. HMQC ^{1}H-^{13}C -NMR-spectrum of **13** (399.78 MHz, 100.53 MHz, DMSO-d_6)



No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	0.75	298.6	0.0719	10	7.28	2910.7	0.0673	19	7.76	3101.6	0.1737
2	0.79	317.3	0.2324	11	7.29	2913.0	0.0678	20	7.76	3103.9	0.1778
3	1.21	482.2	0.2358	12	7.30	2917.1	0.0645	21	8.13	3249.1	0.1353
4	1.29	517.0	0.1120	13	7.32	2926.3	0.0671	22	8.62	3445.6	0.0501
5	1.51	604.9	0.0831	14	7.36	2941.4	0.0562	23	8.72	3487.7	0.1682
6	2.46	981.8	0.3947	15	7.39	2953.3	0.3725	24	8.73	3489.5	0.1694
7	2.56	1022.6	0.0972	16	7.55	3019.2	0.0521	25	8.73	3491.8	0.1710
8	3.34	1334.4	1.0000	17	7.56	3021.5	0.0531	26	11.86	4741.6	0.1150
9	6.79	2714.7	0.1374	18	7.75	3099.8	0.1725				

No.	(ppm)	Value	Absolute Value
1	[0.67 .. 0.89]	3.298	3.07224e+1
2	[0.96 .. 1.63]	9.037	8.41916e+1
3	[2.50 .. 2.65]	1.540	1.43429e+1
4	[3.23 .. 3.46]	4.624	4.30799e+1
5	[6.61 .. 6.90]	0.991	9.23368e+0
6	[7.17 .. 7.64]	5.913	5.50832e+1
7	[7.67 .. 7.86]	1.902	1.77173e+1
8	[8.02 .. 8.26]	0.735	6.84324e+0
9	[8.55 .. 8.83]	2.116	1.97120e+1
10	[11.74 .. 11.98]	1.000	9.31629e+0

Fig. S-53. ^{1}H-NMR-spectrum of **14** (399.78 MHz, DMSO-d_6)



No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height	No.	(ppm)	(Hz)	Height
1	14.46	1453.2	0.0853	13	39.81	4001.7	0.8547	25	129.44	13012.3	0.1314
2	22.59	2270.7	0.1022	14	40.02	4022.8	1.0000	26	136.58	13730.2	0.0390
3	26.22	2635.9	0.0404	15	40.23	4043.9	0.8494	27	137.15	13786.7	0.0127
4	26.67	2681.0	0.0122	16	40.43	4064.0	0.4336	28	137.99	13871.1	0.0473
5	28.53	2867.9	0.0520	17	40.64	4085.1	0.1455	29	139.61	14034.0	0.0418
6	28.62	2877.4	0.0158	18	122.04	12268.5	0.1419	30	141.18	14192.1	0.0344
7	29.45	2960.8	0.0641	19	123.35	12399.8	0.0323	31	149.58	15036.6	0.0128
8	29.64	2980.0	0.0160	20	128.32	12899.2	0.0133	32	149.83	15061.5	0.0357
9	31.30	3146.8	0.0199	21	128.43	12910.7	0.0408	33	150.82	15161.2	0.1358
10	31.46	3162.1	0.0776	22	128.96	12963.4	0.0135	34	154.22	15503.3	0.0477
11	39.39	3959.6	0.1409	23	129.12	12979.7	0.1447	35	161.93	16277.8	0.0384
12	39.60	3980.6	0.4287	24	129.31	12998.9	0.0392				

Fig. S-54. ^{13}C-NMR-spectrum of **14** (100.53 MHz, DMSO-d$_6$)

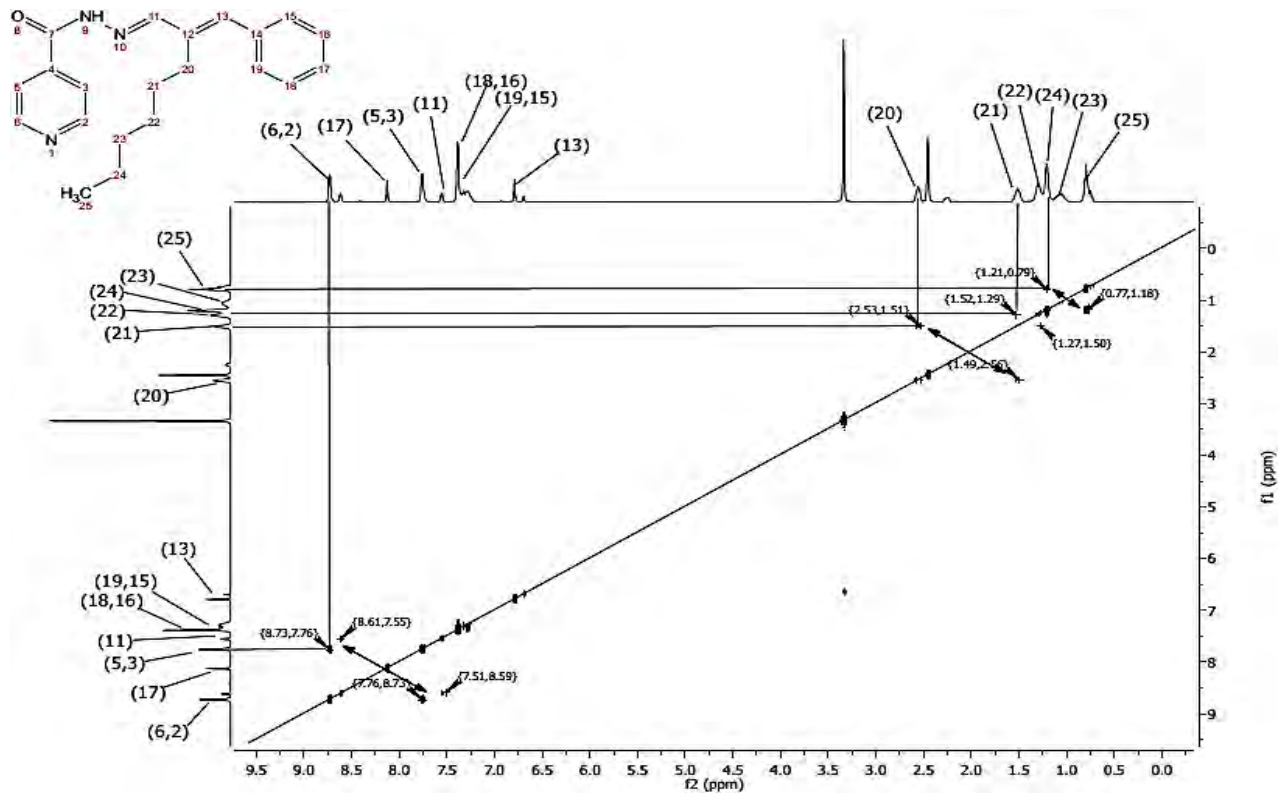


Fig. S-55. COSY ^{1}H-^{1}H -NMR-spectrum of **14** (399.78 MHz, DMSO-d$_6$)

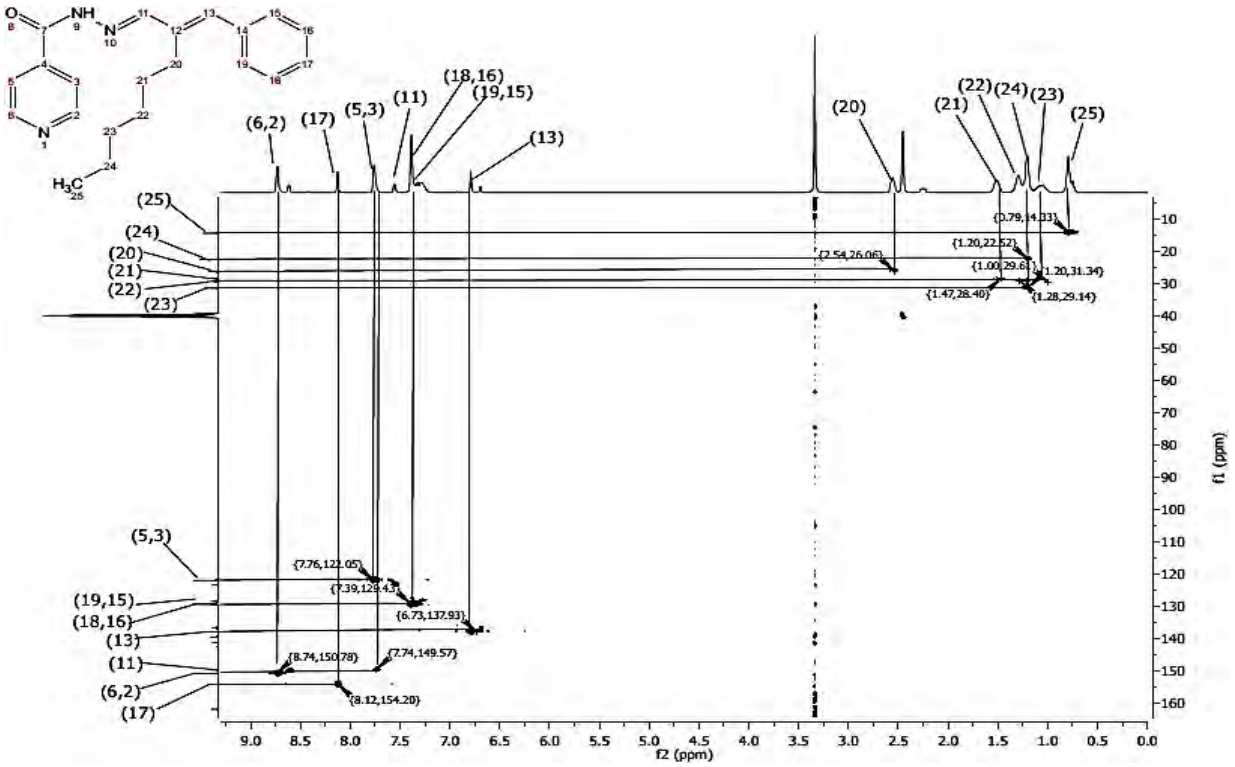
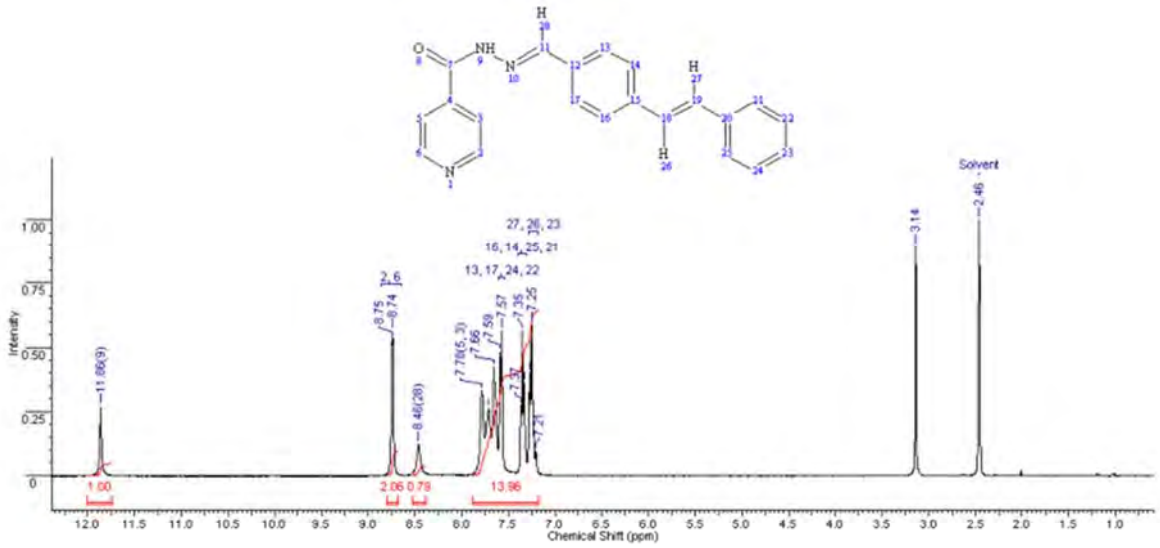


Fig. S-56. HMQC ^{1}H-^{13}C -NMR-spectrum of **14** (399.78 MHz, 100.53 MHz, DMSO-d_6)

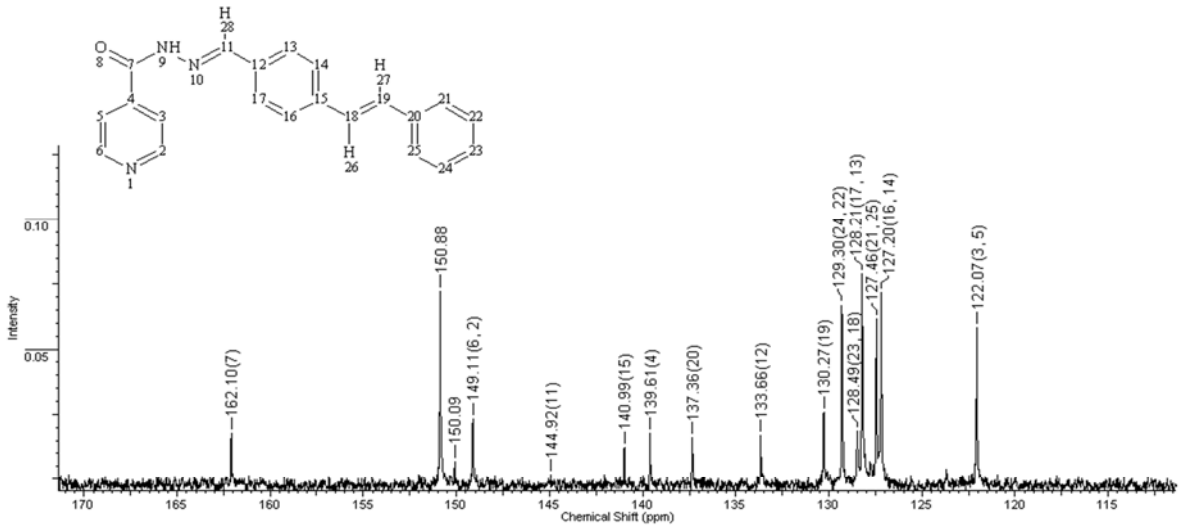


No.	Atom	Exp. Shift (ppm)
1	2	[8.64 .. 8.86]
2	3	7.78
3	5	7.78
4	6	[8.64 .. 8.86]
5	9	11.86
6	13	[7.54 .. 7.61]
7	14	[7.31 .. 7.40]
8	16	[7.31 .. 7.40]
9	17	[7.54 .. 7.61]

No.	Atom	Exp. Shift (ppm)
10	21	[7.31 .. 7.40]
11	22	[7.54 .. 7.61]
12	23	[7.19 .. 7.29]
13	24	[7.54 .. 7.61]
14	25	[7.31 .. 7.40]
15	26	[7.19 .. 7.29]
16	27	[7.19 .. 7.29]
17	28	8.46

No.	(ppm)	Value	Absolute Value
1	[8.38 .. 8.53]	0.792	8.79496e+0
2	[11.74 .. 12.01]	1.000	1.11017e+1
3	[8.68 .. 8.80]	2.060	2.28686e+1
4	[7.17 .. 7.88]	13.958	1.54960e+2

Fig. S-57. ^{1}H-NMR-spectrum of **15** (399.78 MHz, DMSO-d_6)



No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)	No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)	No.	Atom	Exp. Shift (ppm)	Calc. Shift (ppm)	Difference (ppm)
1	2	149.11	148.690	0.423	8	12	133.66	133.080	0.577	15	19	130.27	130.780	-0.508
2	3	122.07	126.050	-3.977	9	13	128.21	128.930	-0.717	16	20	137.36	137.960	-0.604
3	4	139.61	138.210	1.397	10	14	127.20	126.500	0.702	17	21	127.46	128.340	-0.880
4	5	122.07	126.050	-3.977	11	15	140.99	140.800	0.189	18	22	129.30	129.850	-0.550
5	6	149.11	148.690	0.423	12	16	127.20	126.500	0.702	19	23	128.49	128.460	0.029
6	7	162.10	162.470	-0.371	13	17	128.21	128.930	-0.717	20	24	129.30	129.850	-0.550
7	11	144.92	144.550	0.367	14	18	128.49	128.480	0.009	21	25	127.46	128.340	-0.880

Fig. S-58. ^{13}C-NMR-spectrum of **15** (100.53 MHz, DMSO-d_6)

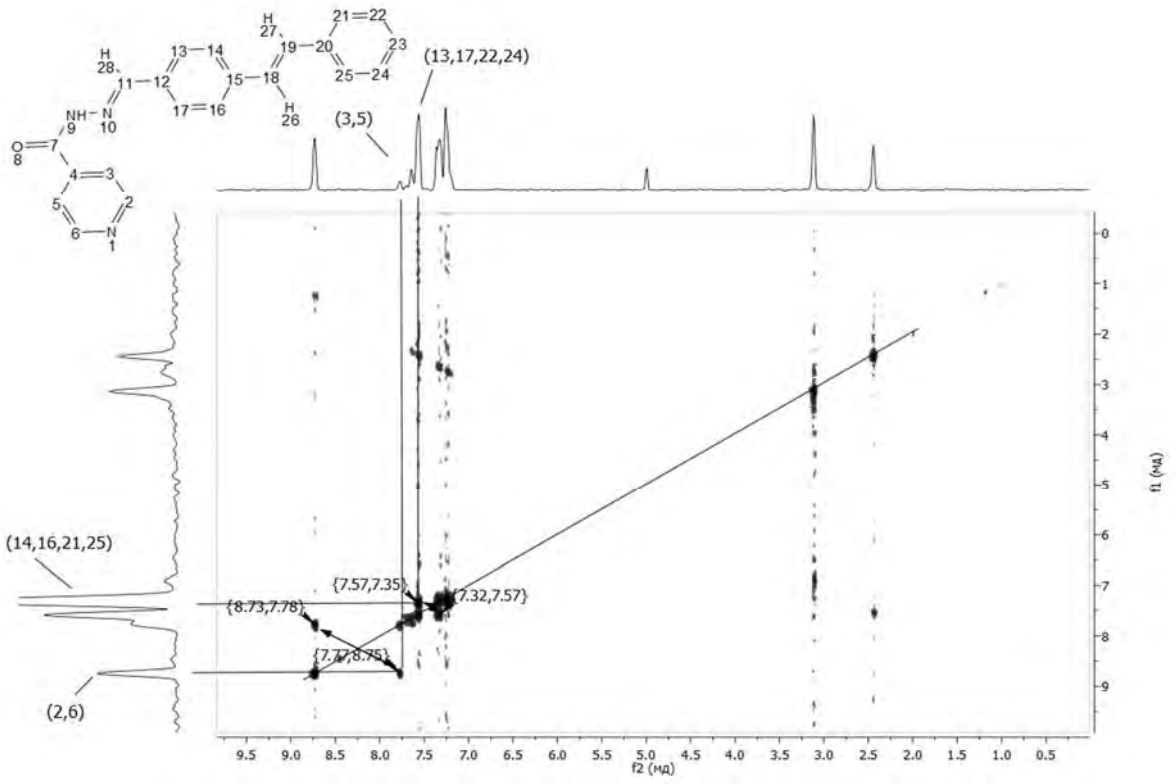


Fig. S-59. COSY ^{1}H-^{1}H -NMR-spectrum of **15** (399.78 MHz, DMSO-d_6)