Supporting information

GO/APTES mediated bifunctional $CuFe_2O_4$@GO-NH_2 facilitated synthesis of pyrazolo-triazepine scaffolds as potent post prandial antidiabetic agent against dual α-amylase and α-glucosidase enzymes

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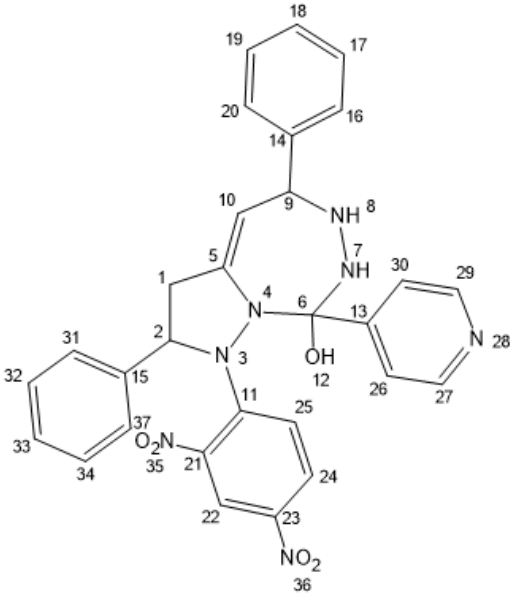


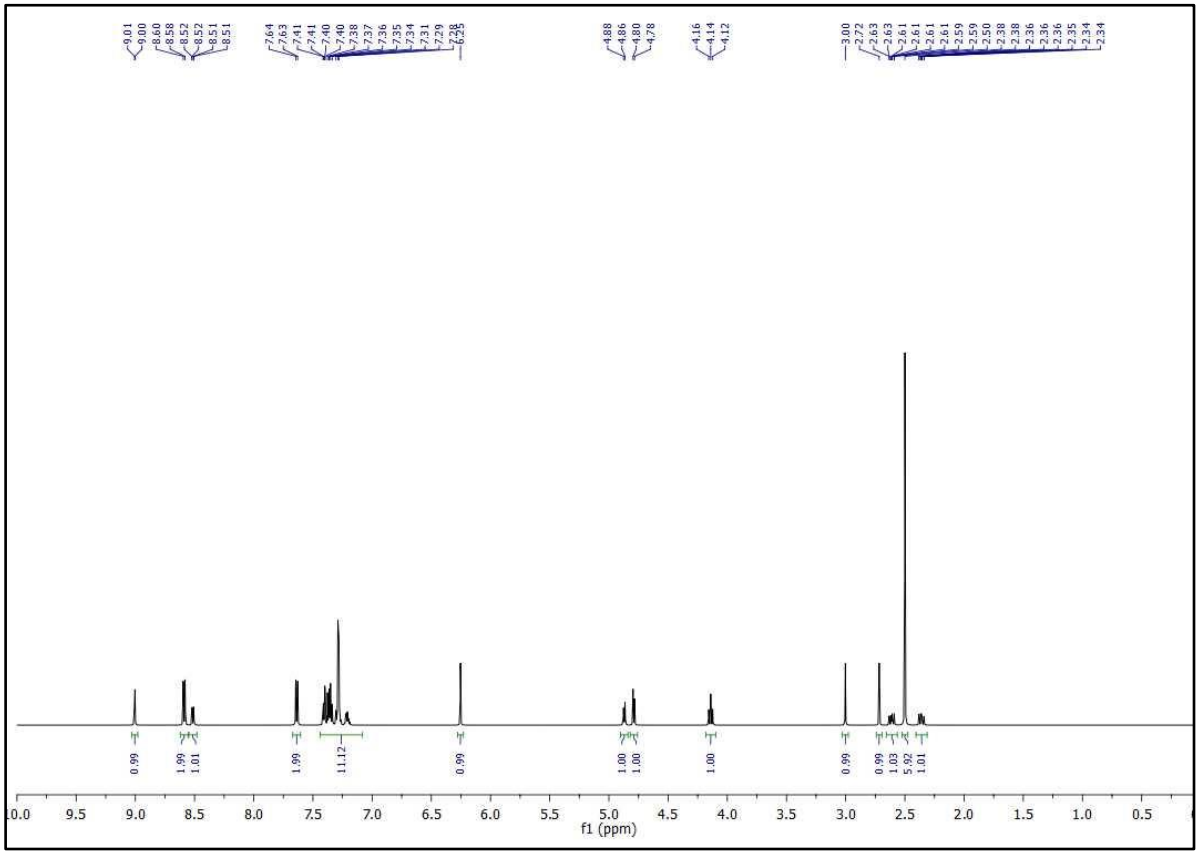


Figure S2. ^{13}C NMR of 1-(2,4-dinitrophenyl)-2,5-diphenyl-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepin-8-ol (4a)

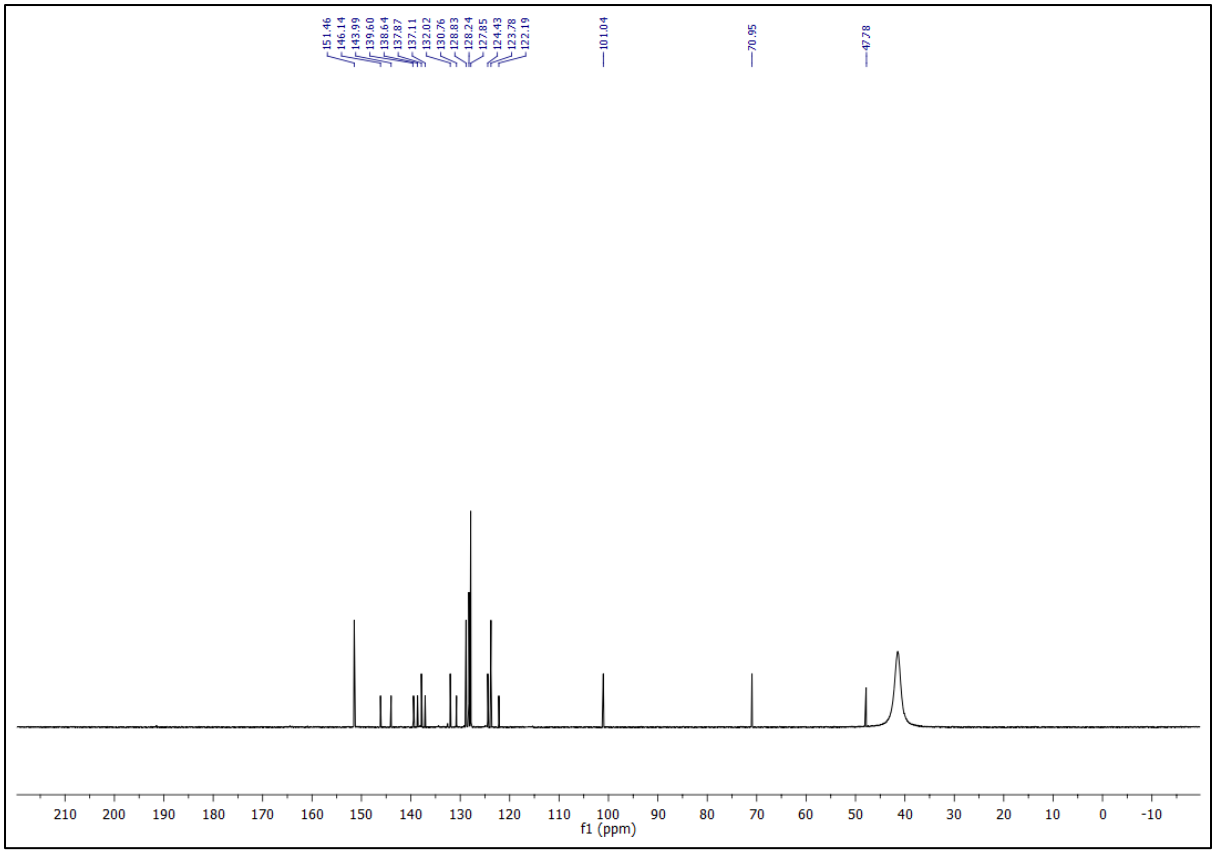
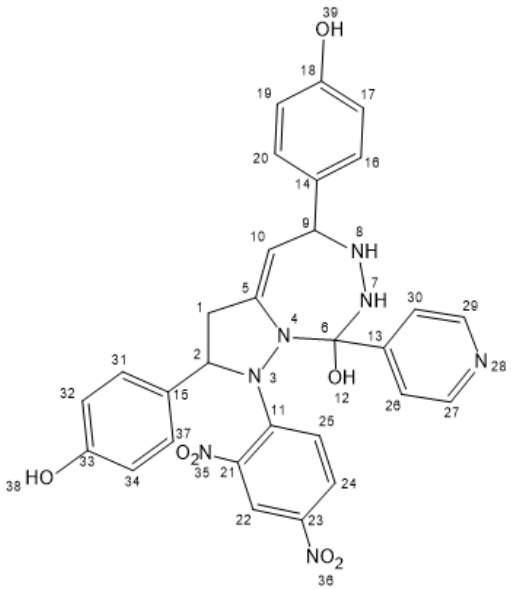
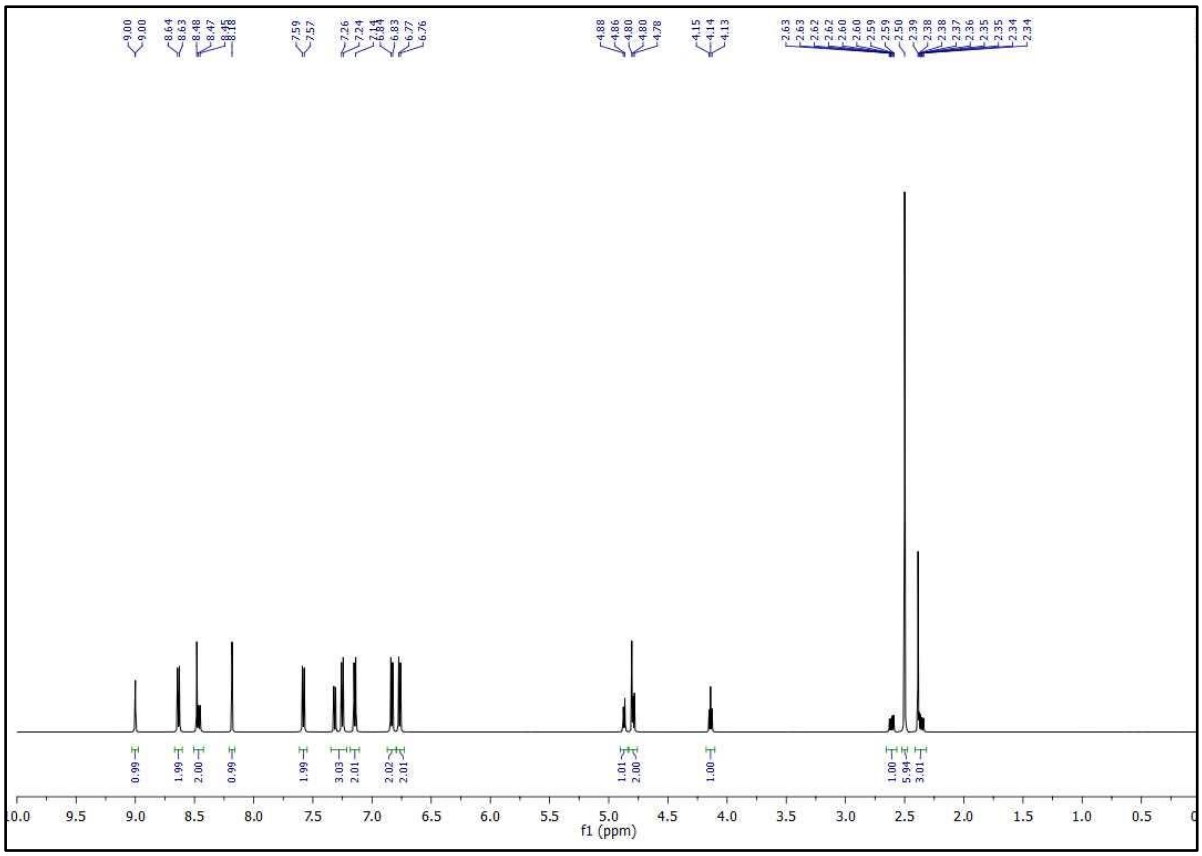


Figure S3. ^{1}H NMR of 4,4'-(1-(2,4-dinitrophenyl)-8-hydroxy-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1, 5-d][1,2,4]triazepine-2,5-diyl)diphenol (4b)





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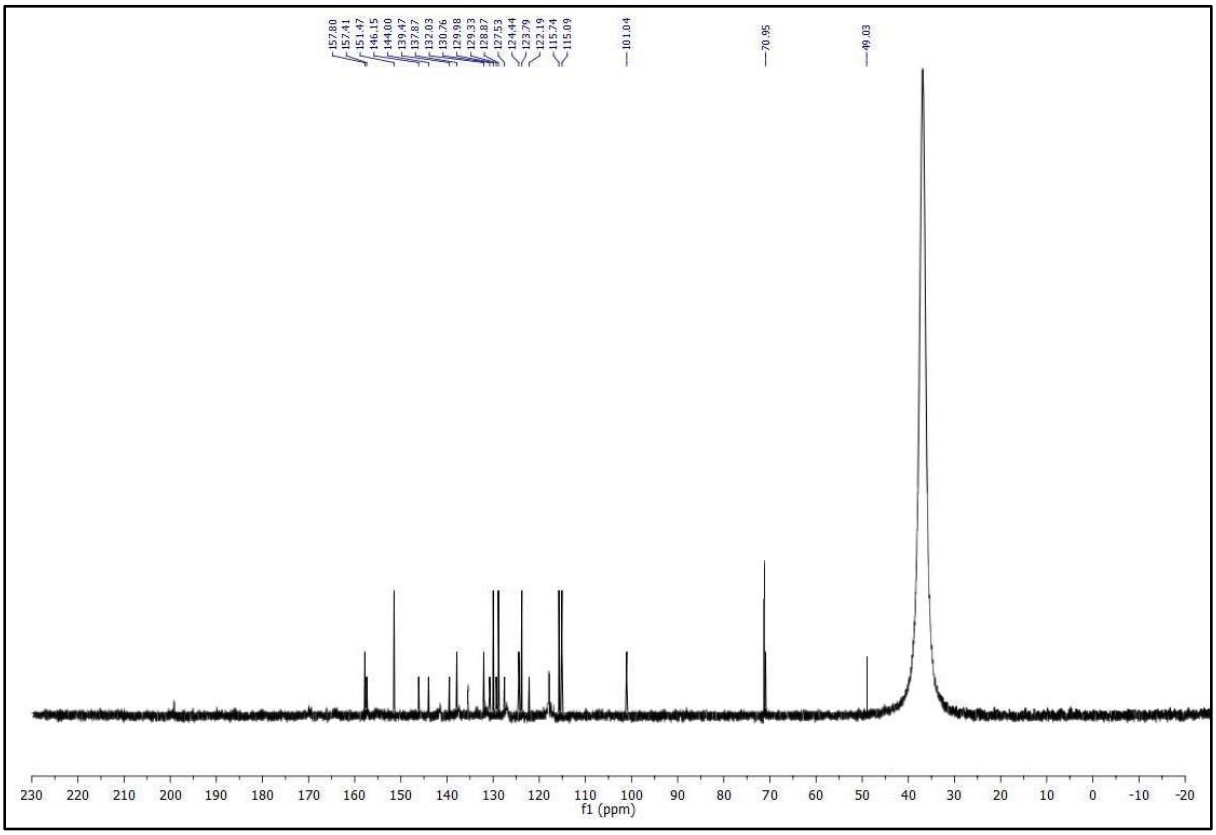
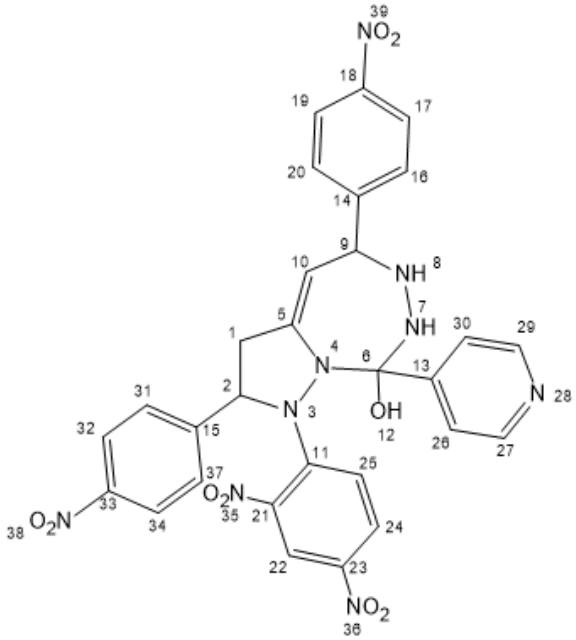


Figure S5. ^{1}H NMR of 1-(2,4-dinitrophenyl)-2,5-bis(4-nitrophenyl)-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepin-8-ol (4c)



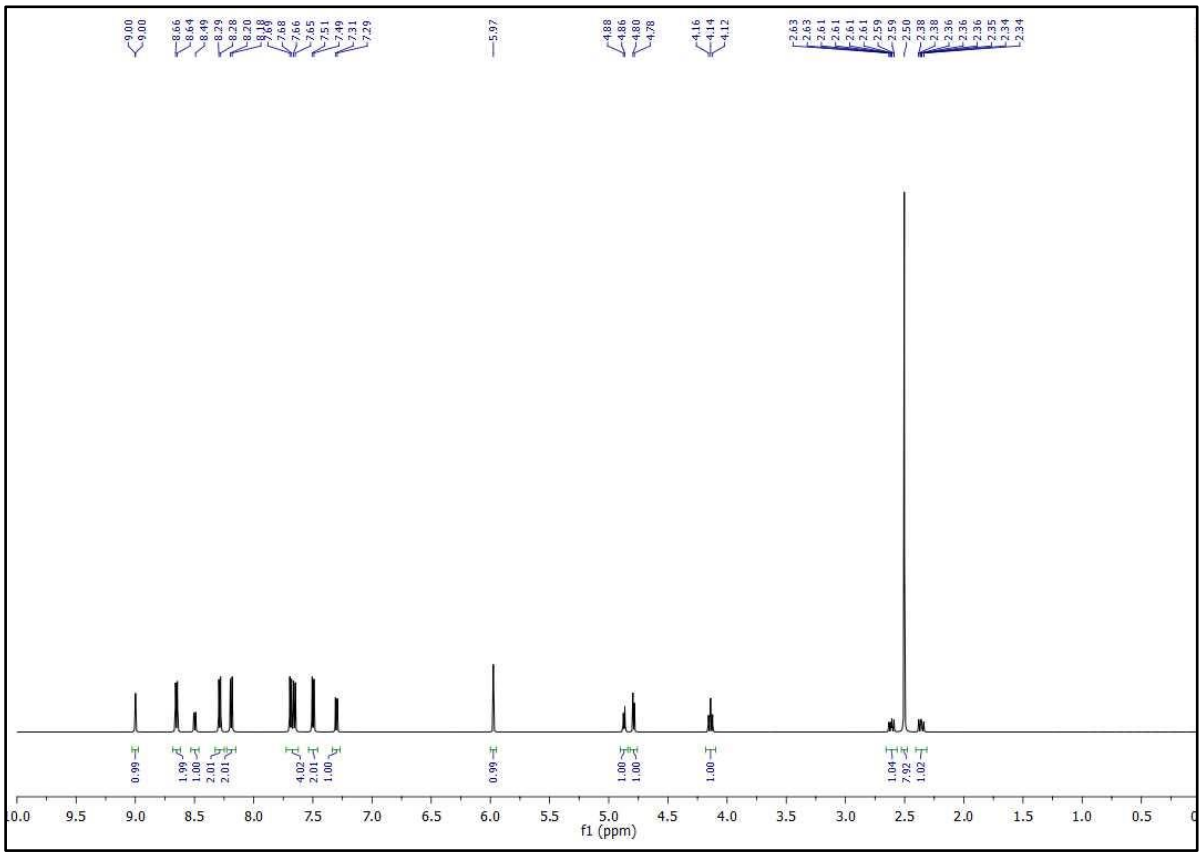
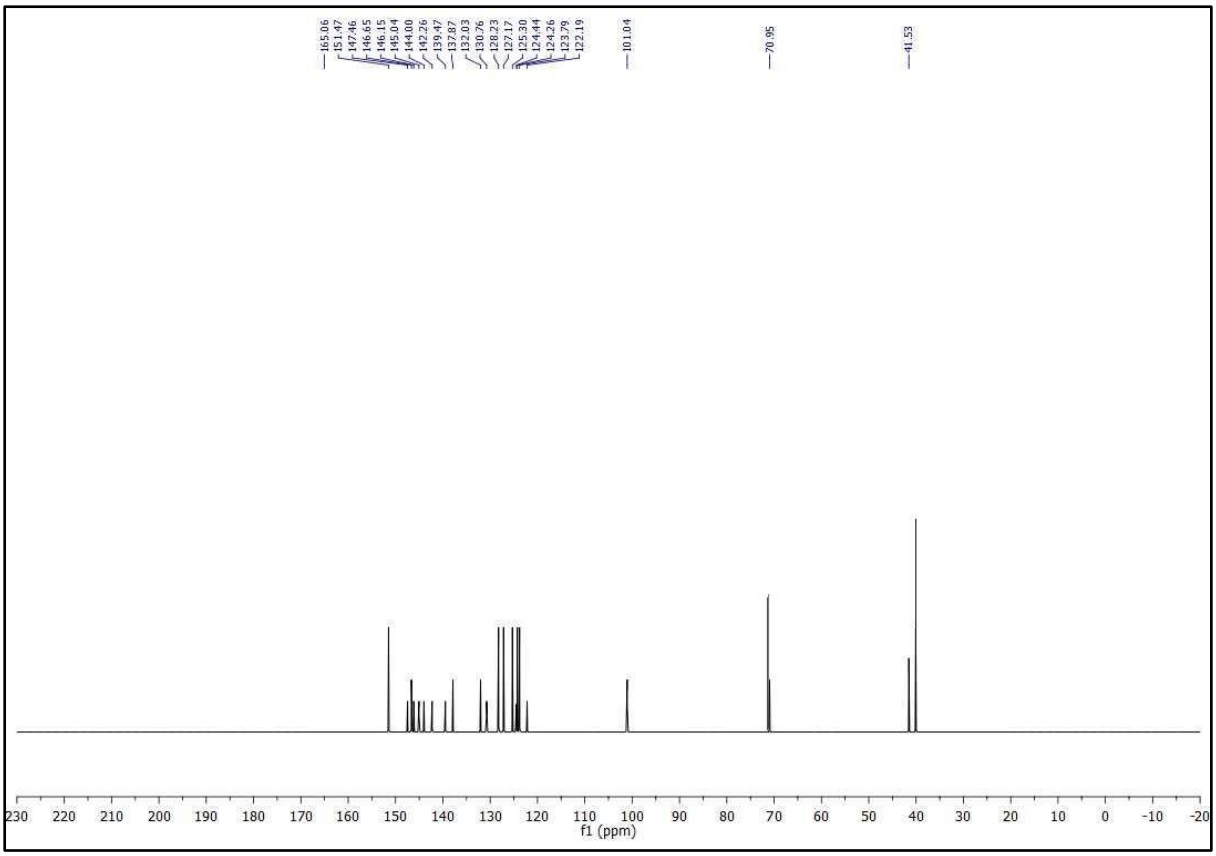


Figure S6. ^{13}C NMR of 1-(2,4-dinitrophenyl)-2,5-bis(4-nitrophenyl)-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepin-8-ol (4c)



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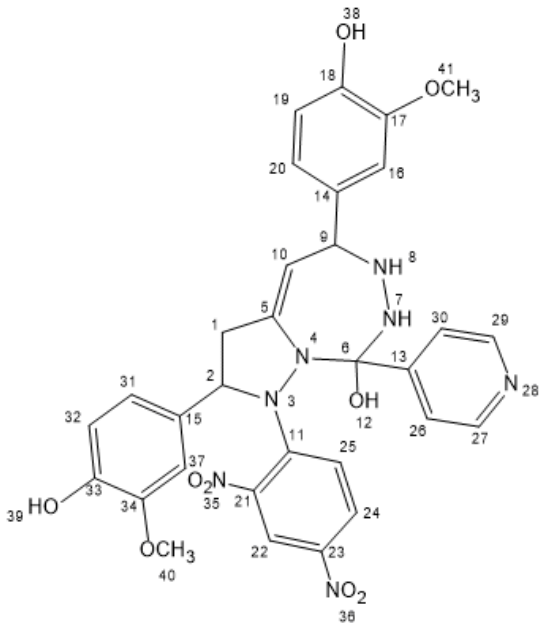

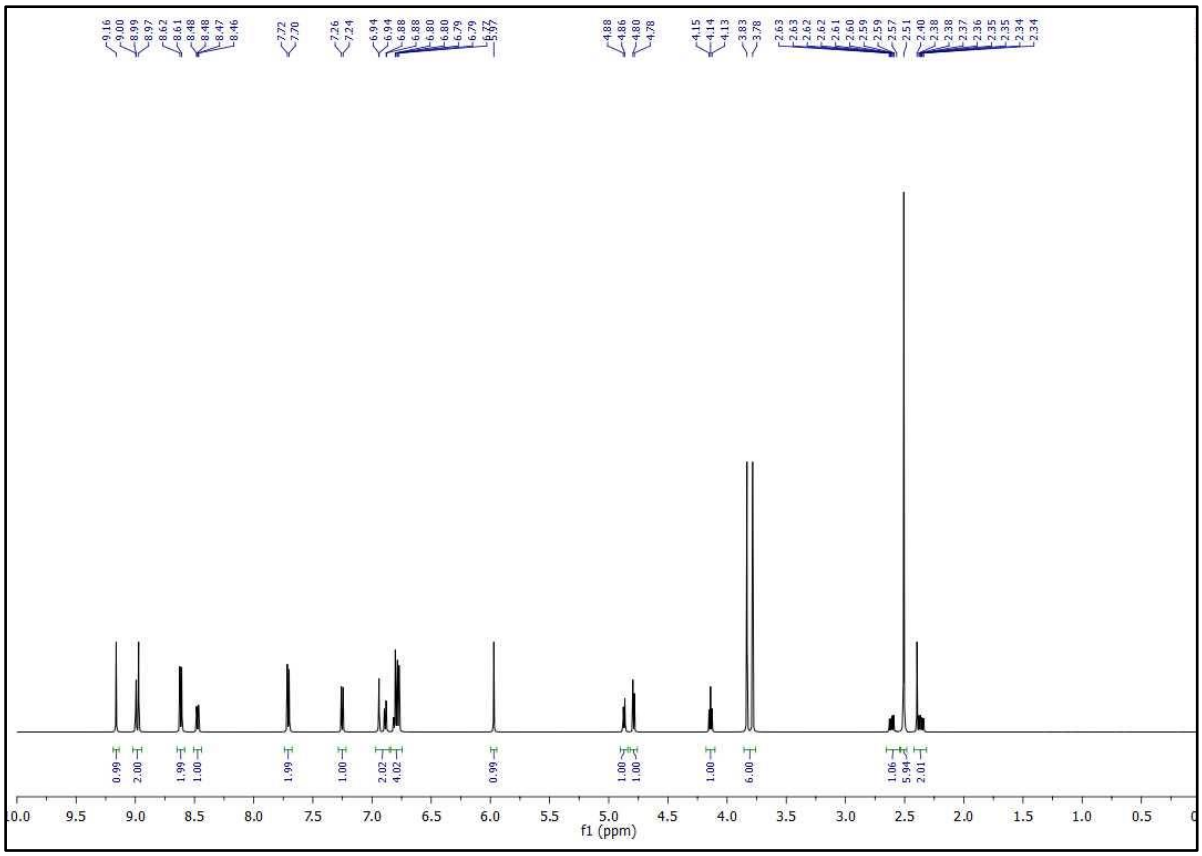

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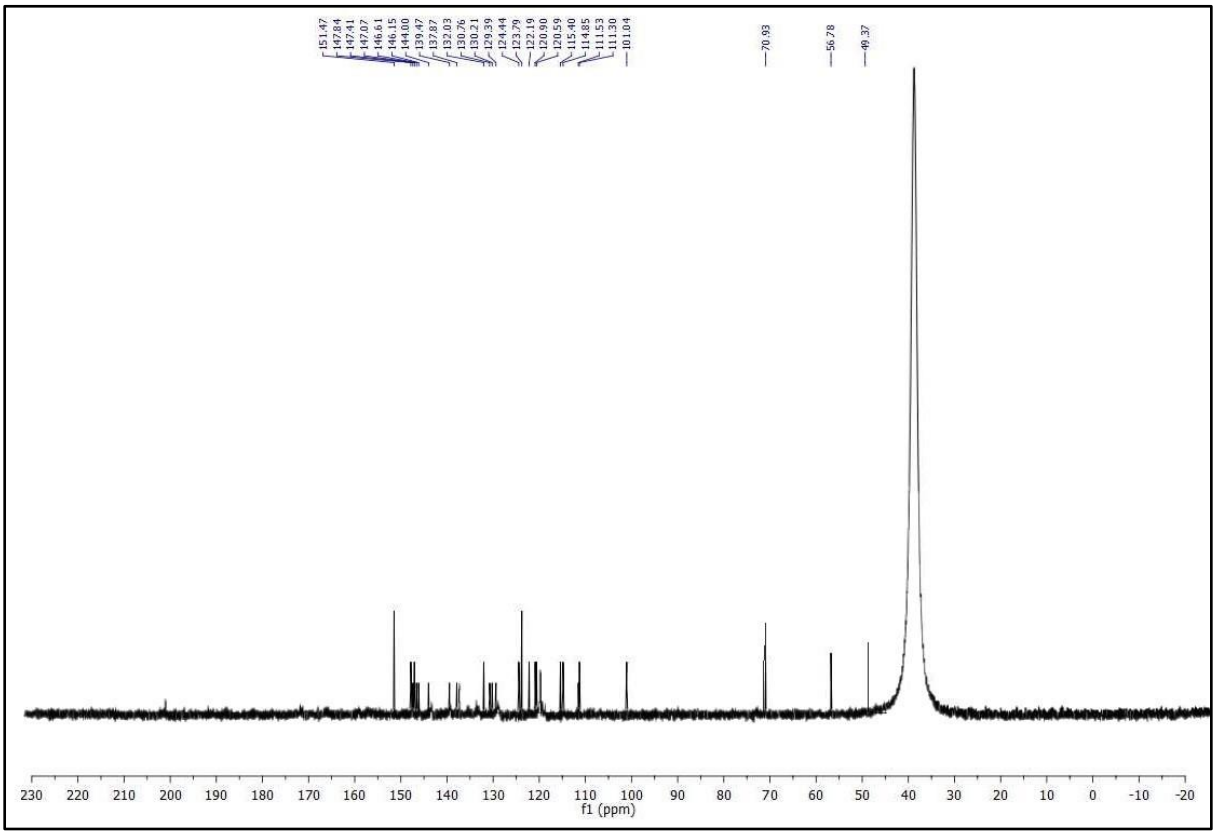

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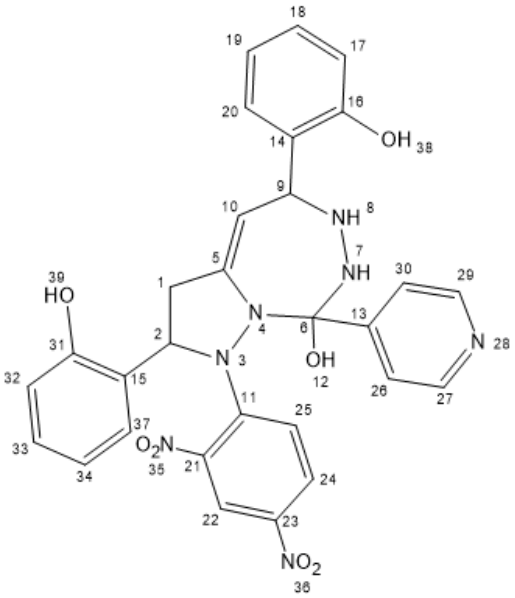

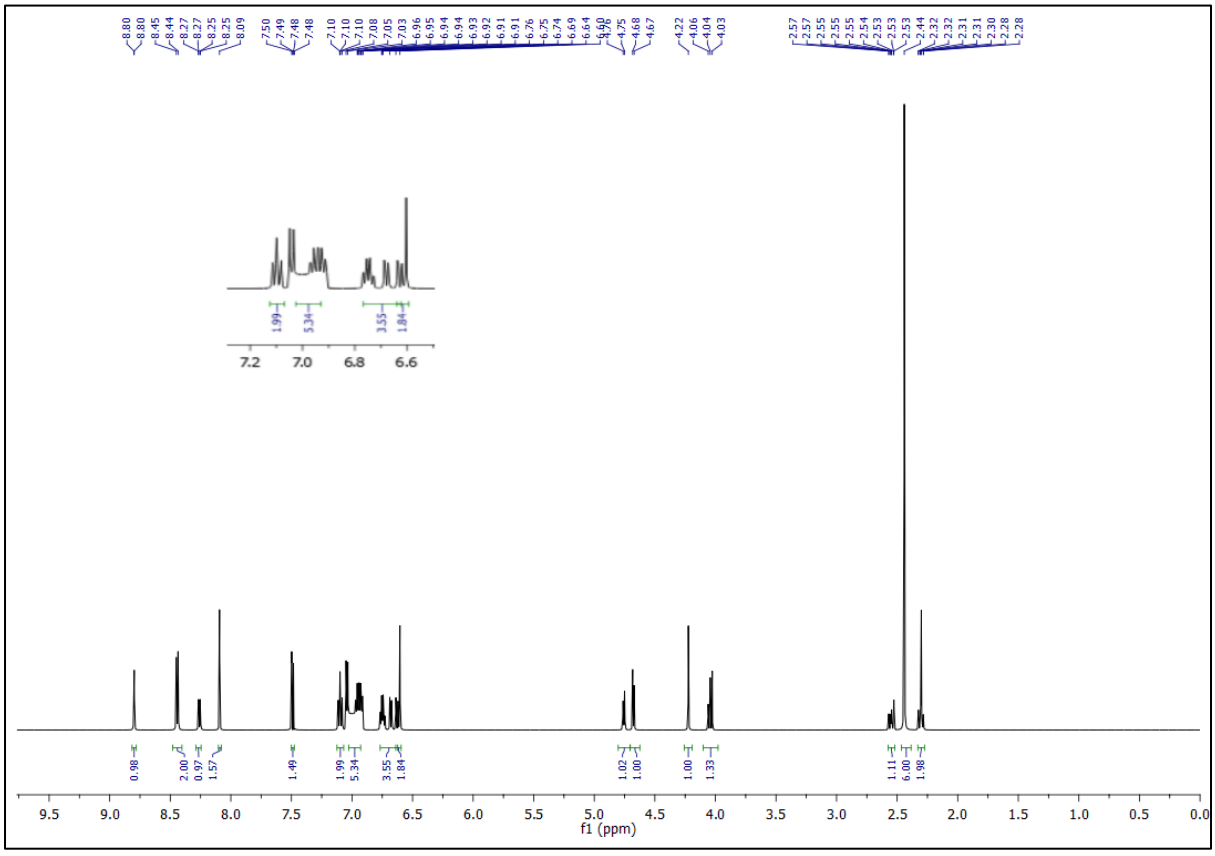

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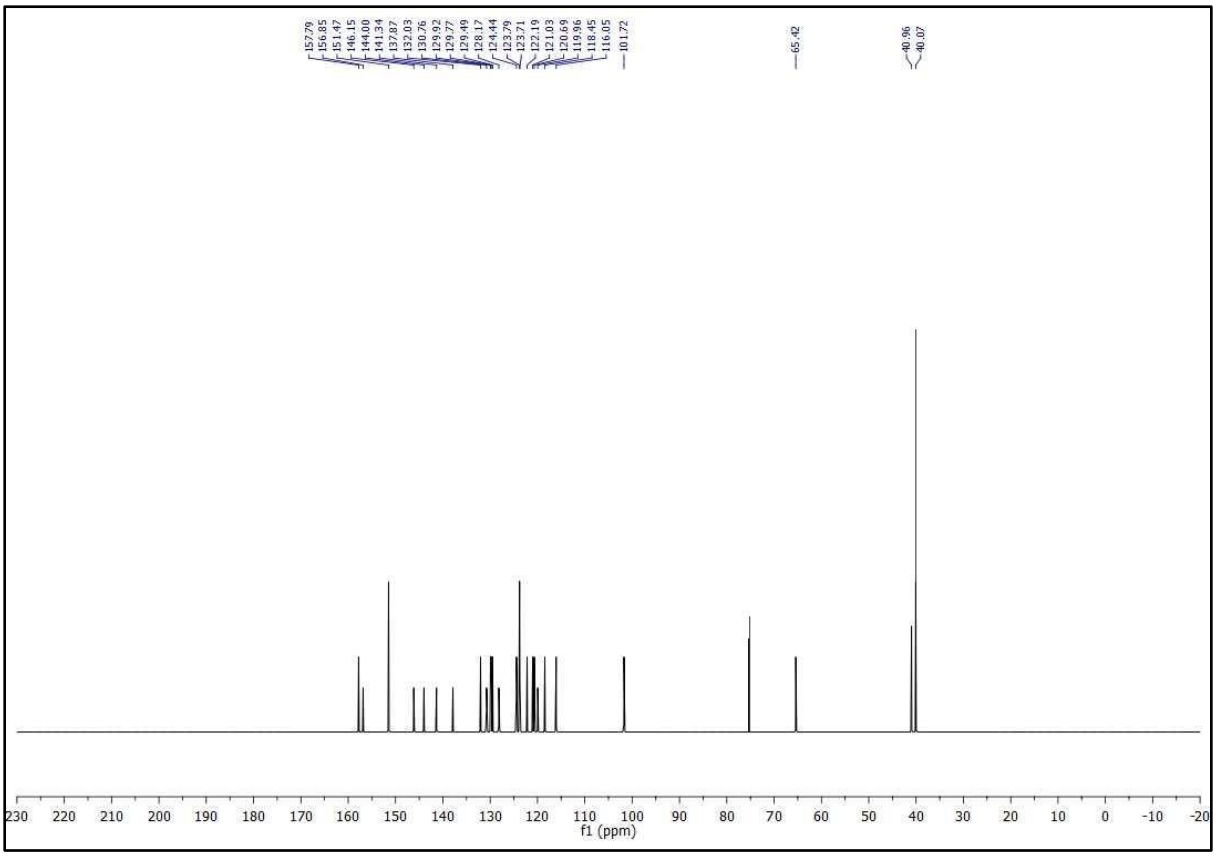

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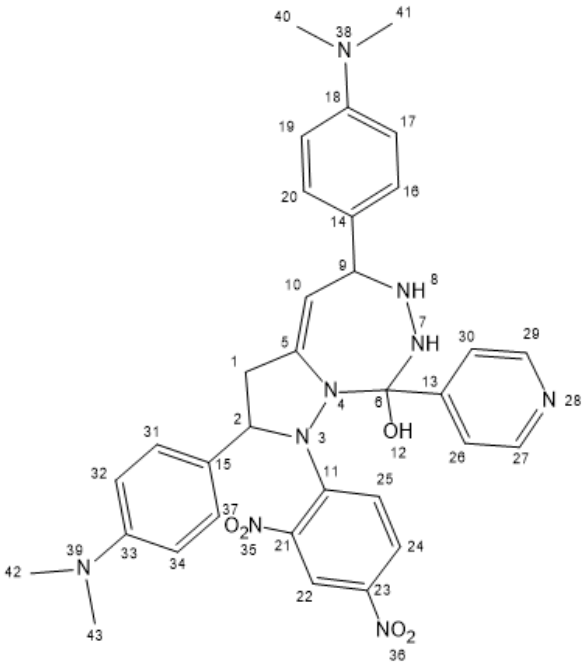

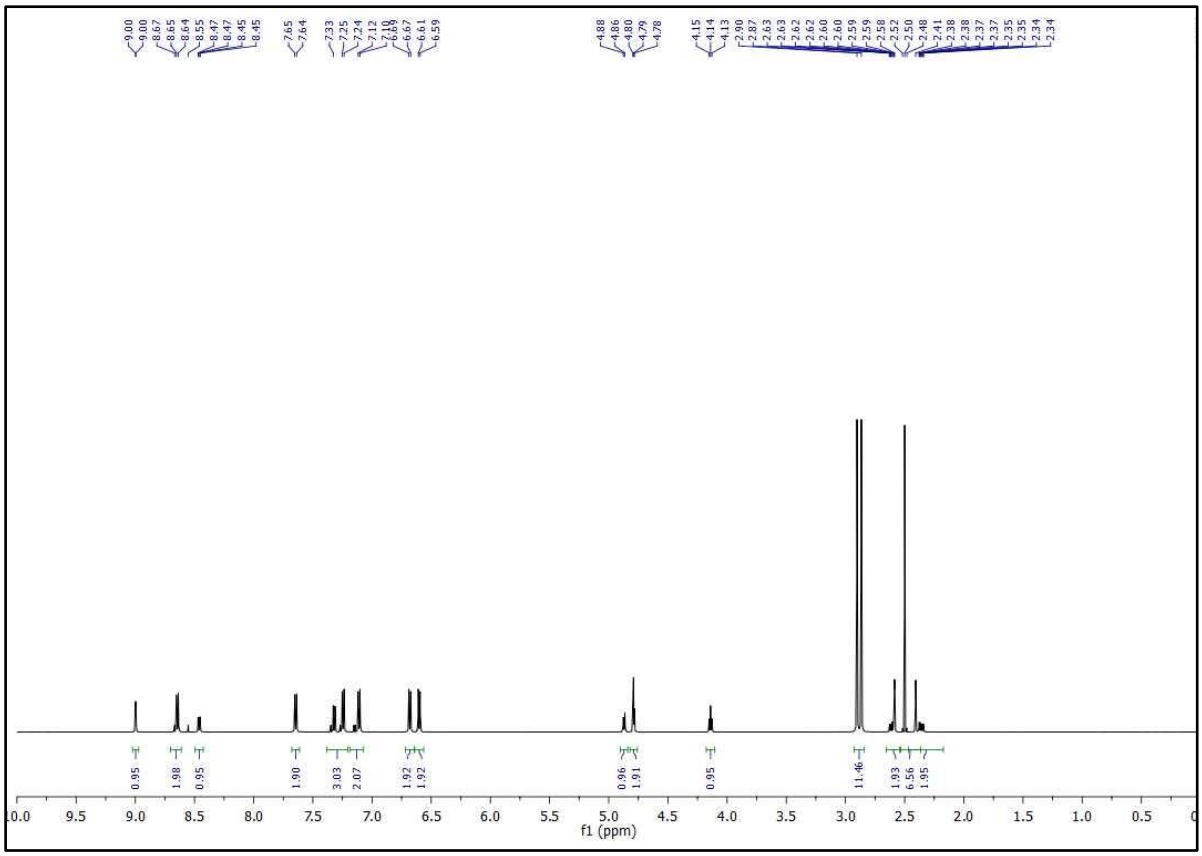

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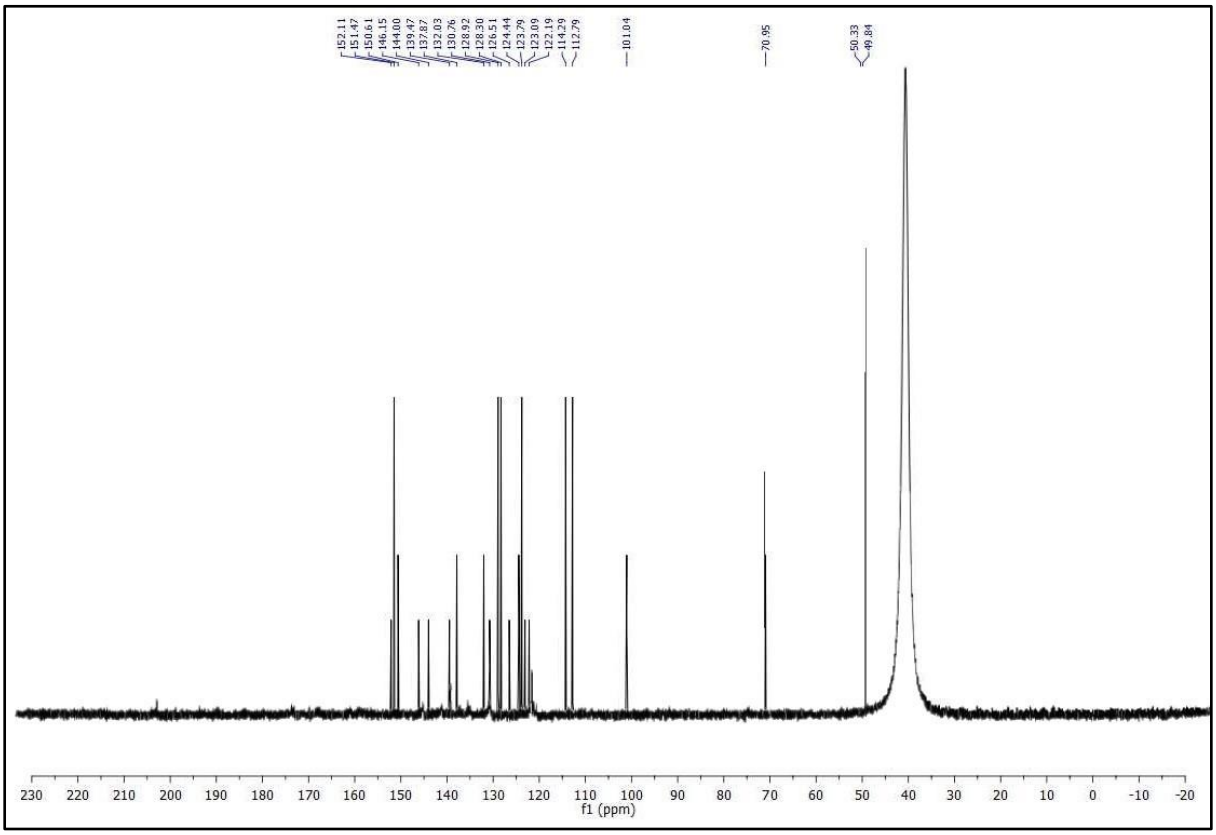

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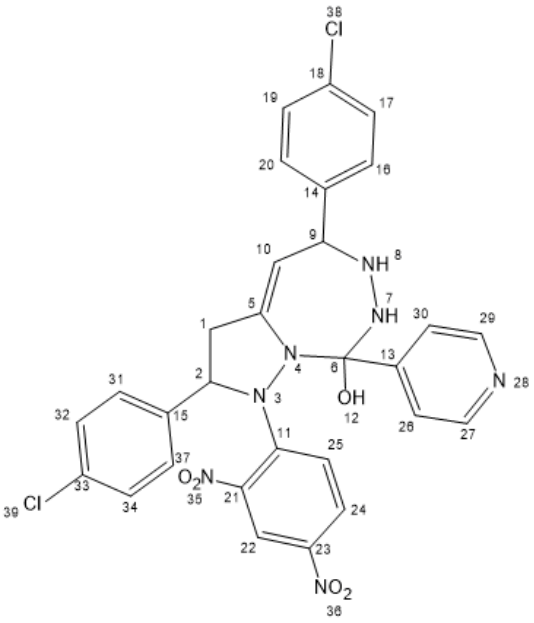

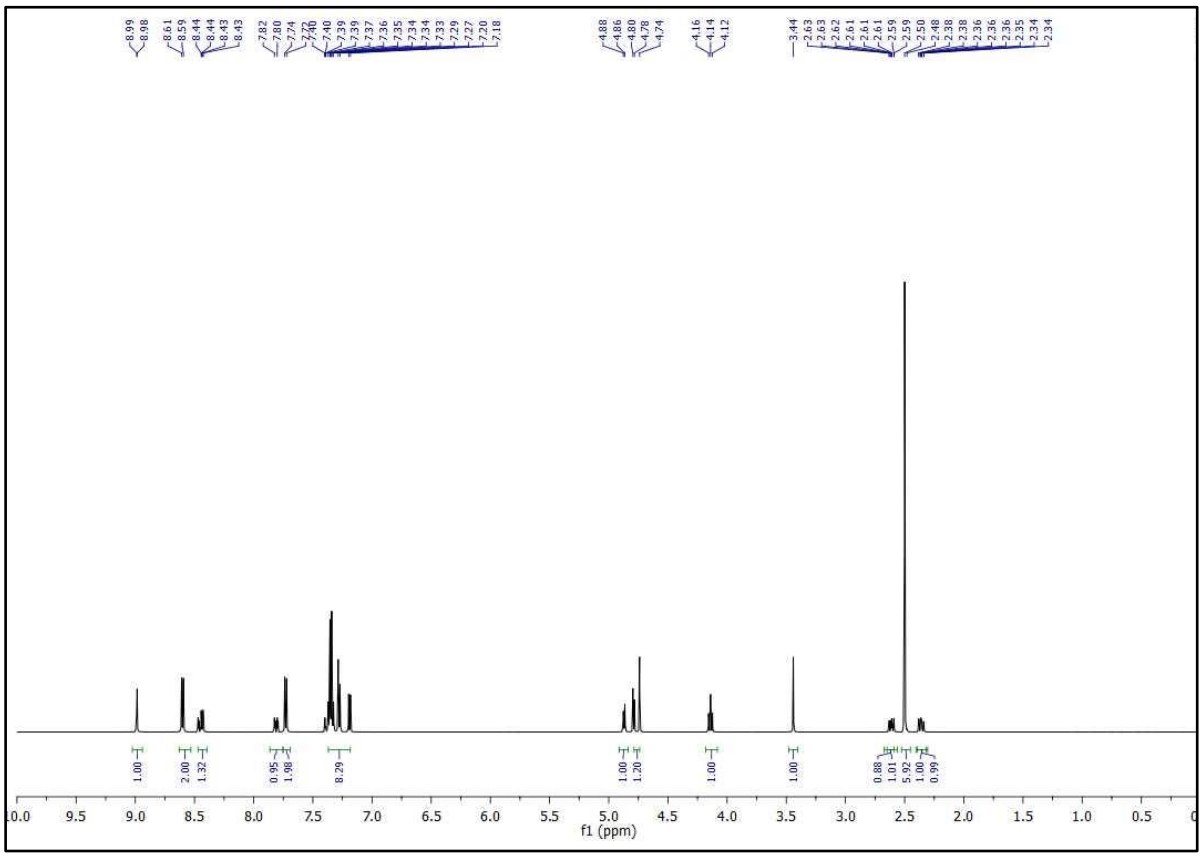

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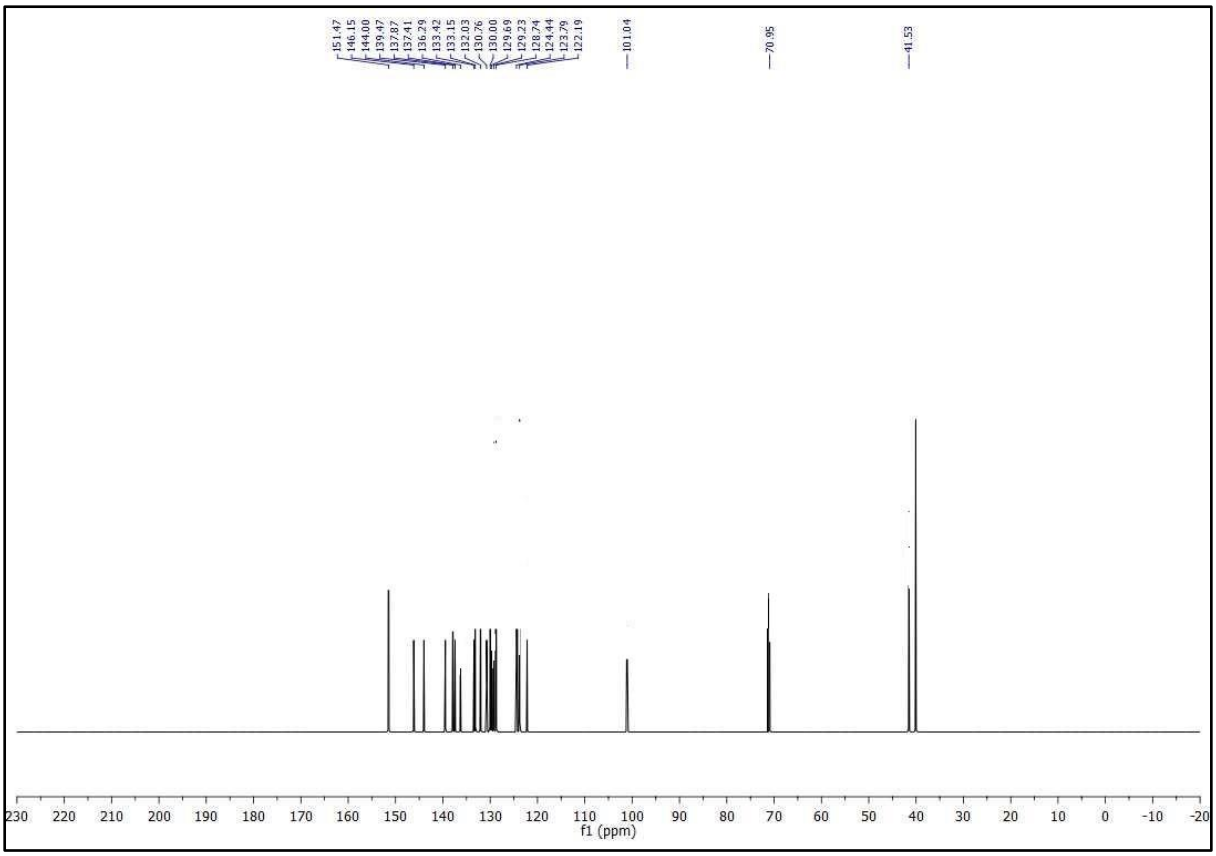

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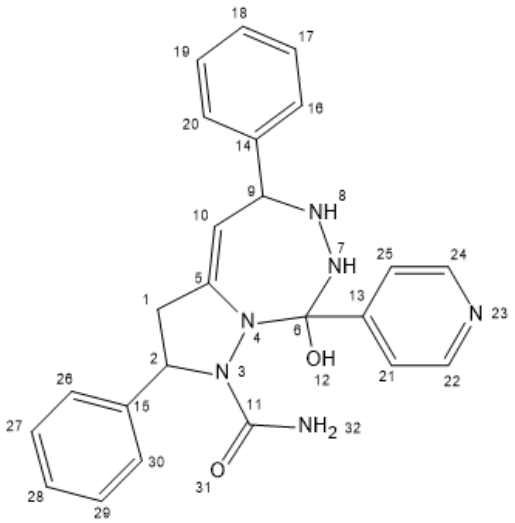

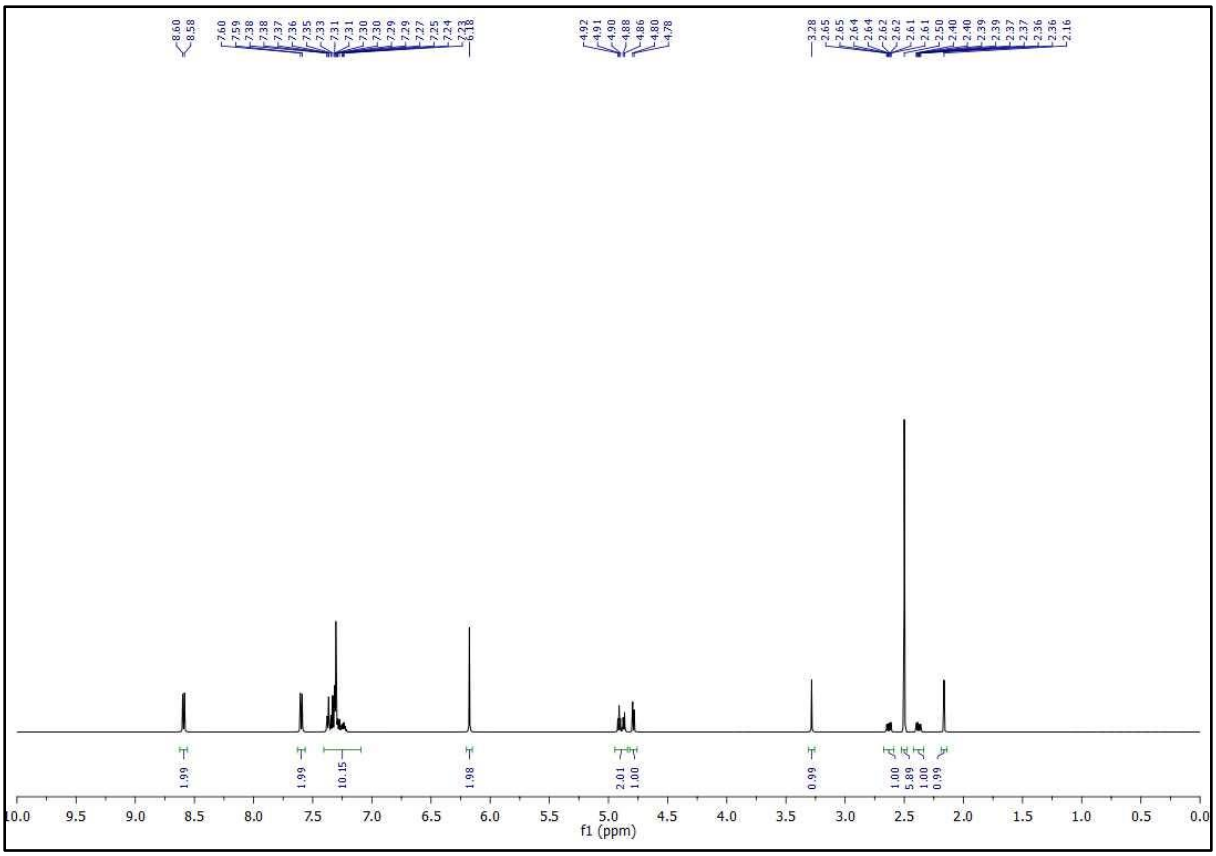

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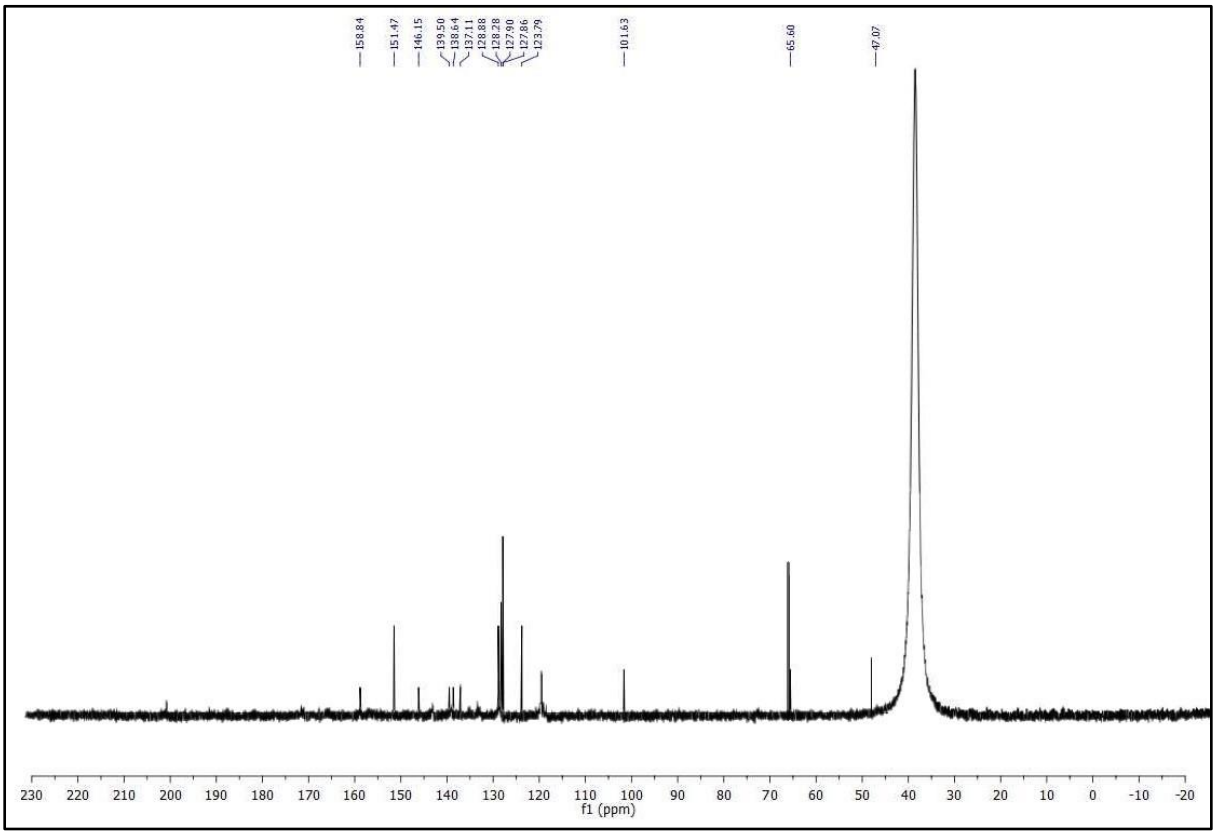

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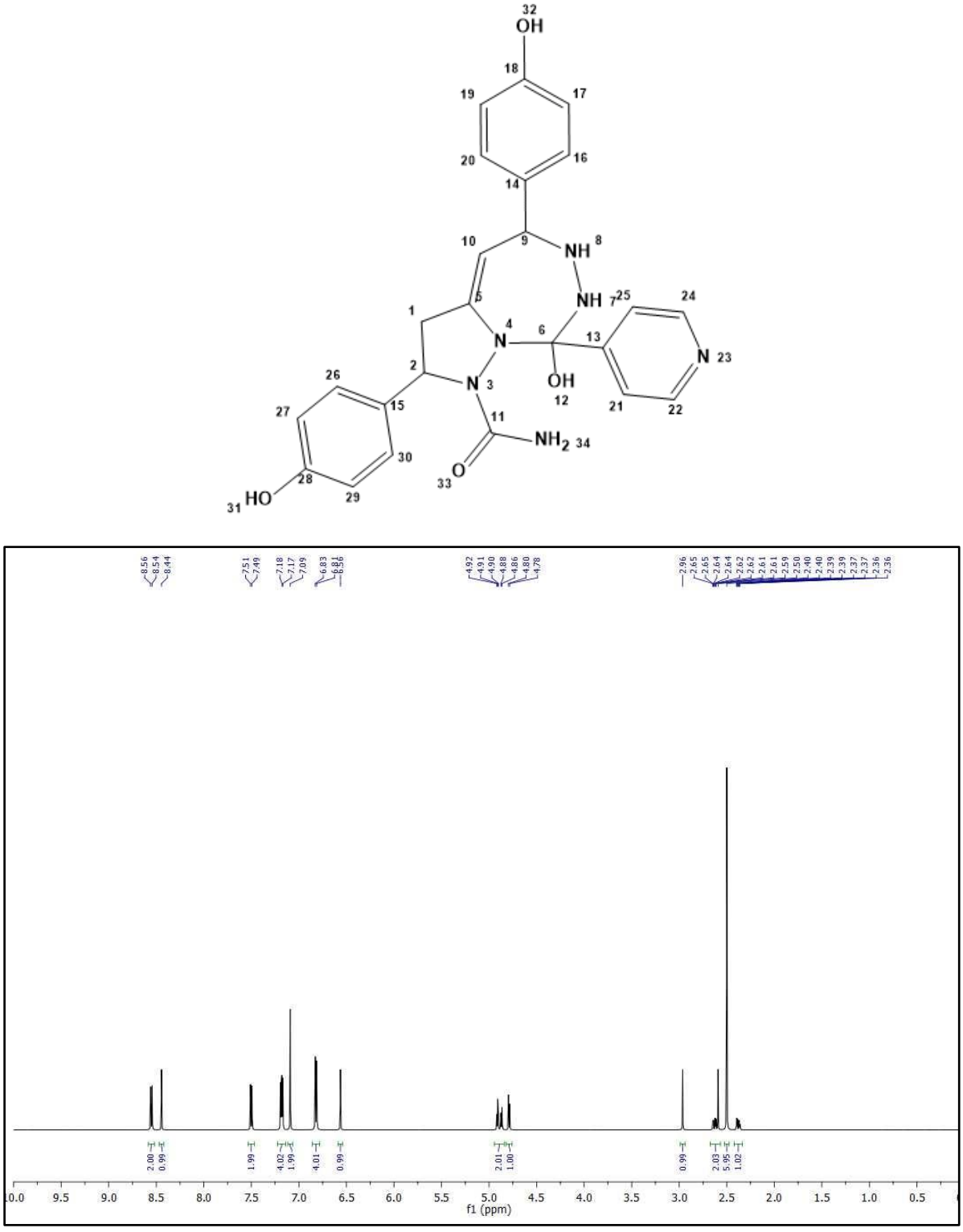

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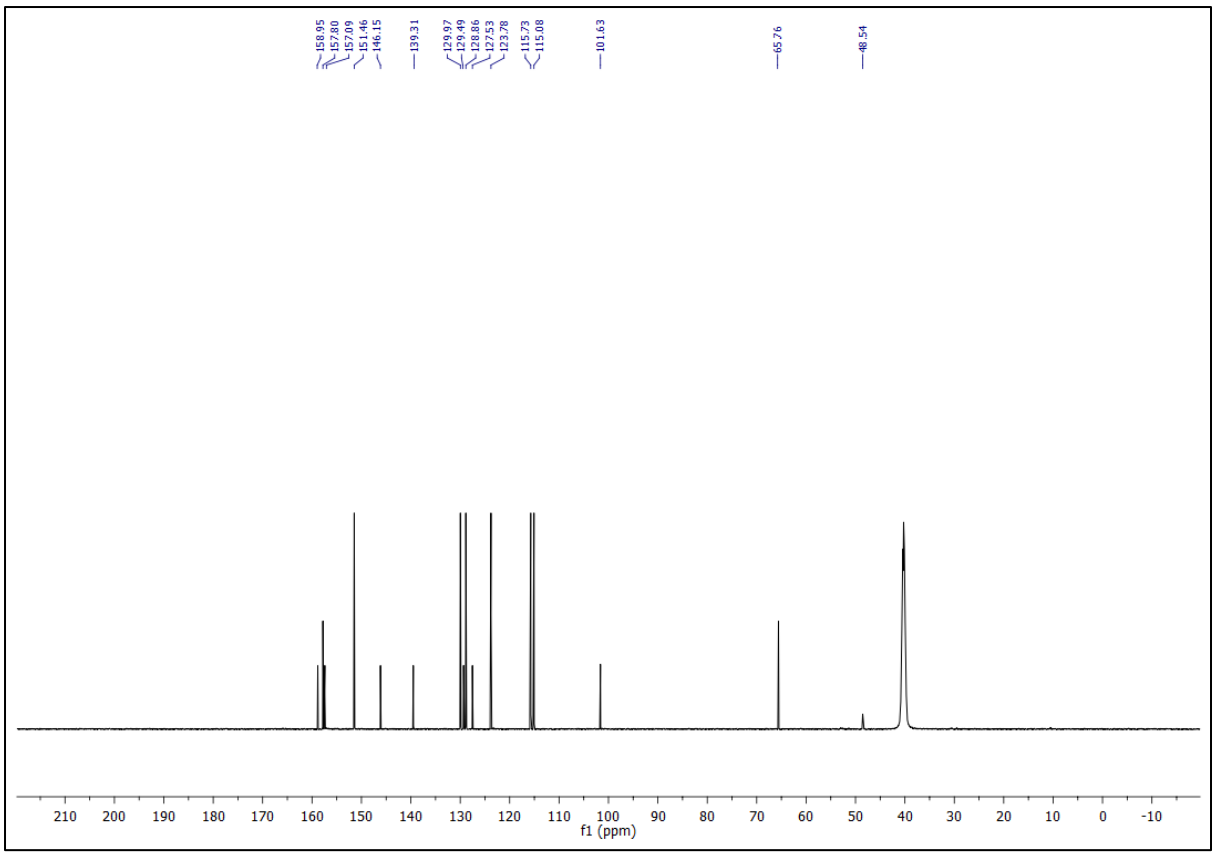

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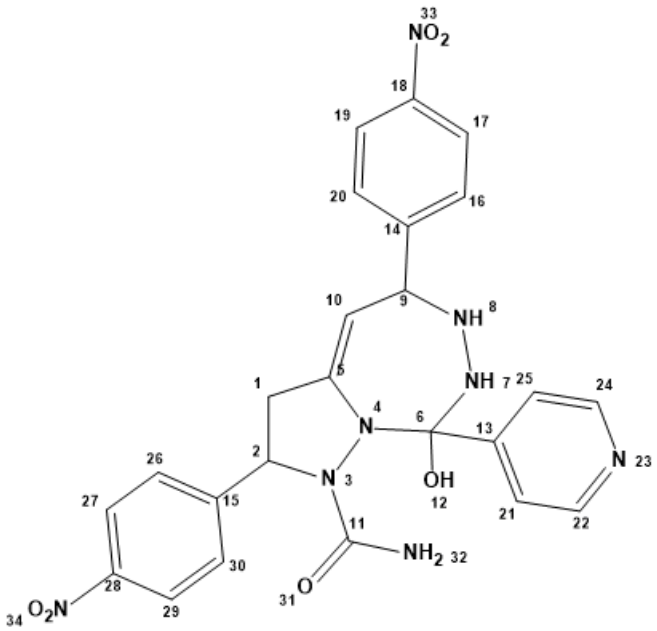

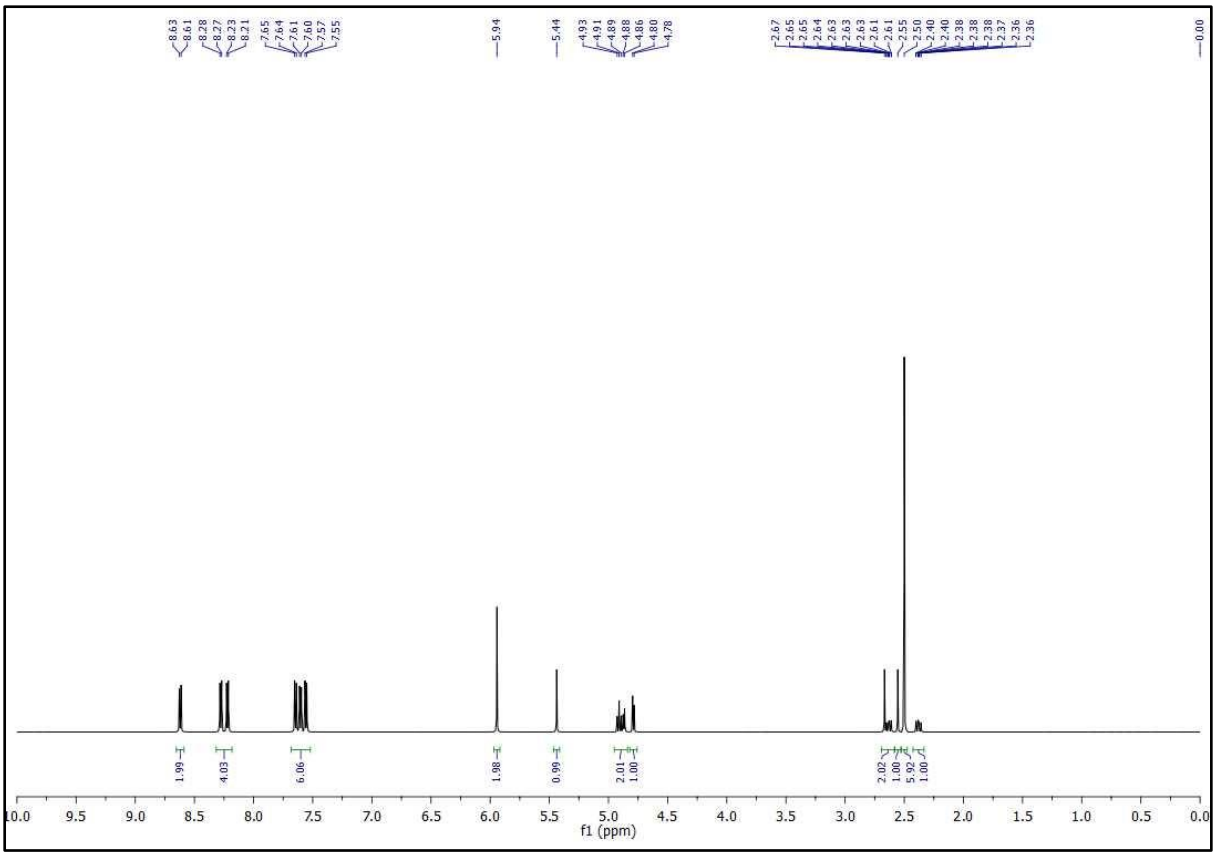

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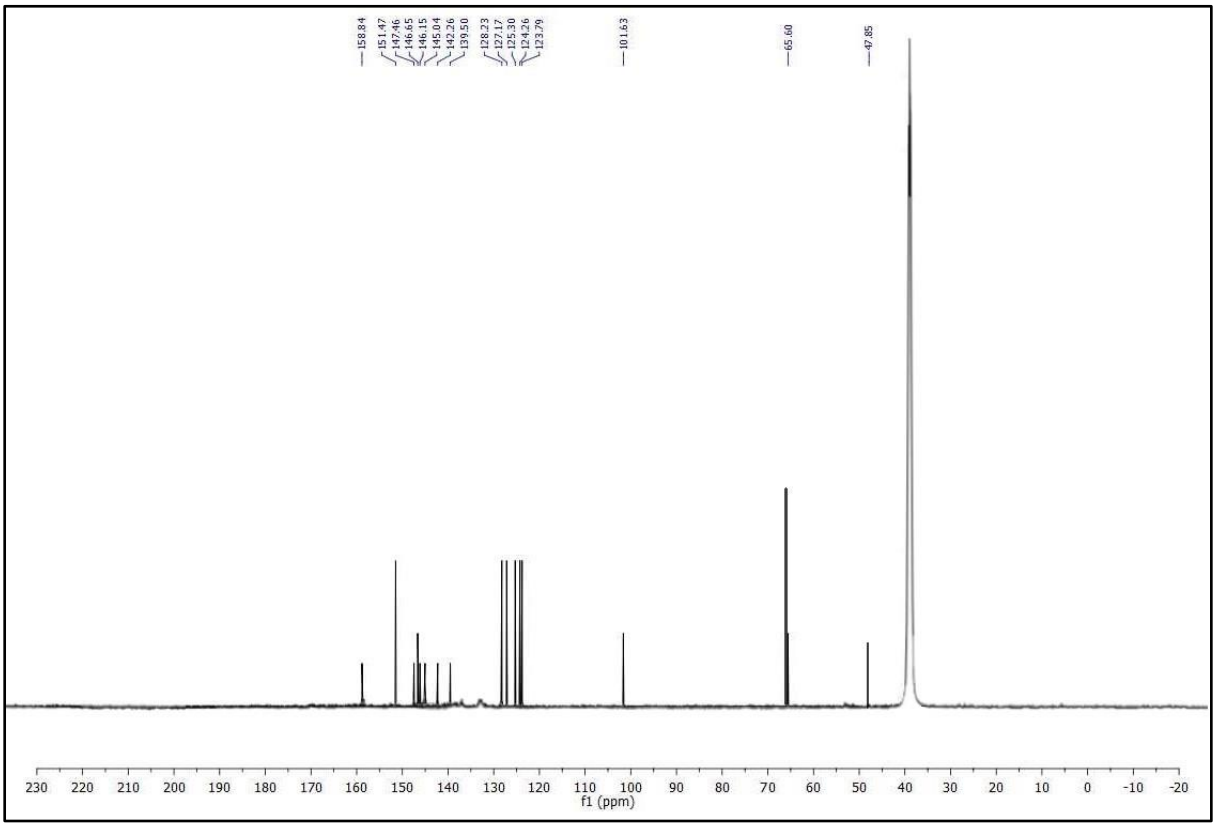

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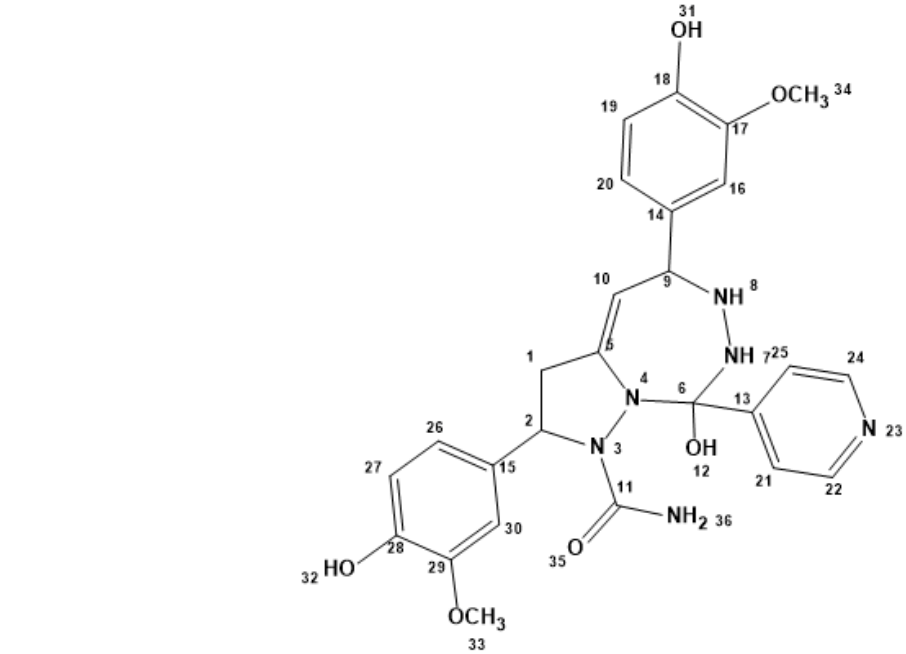

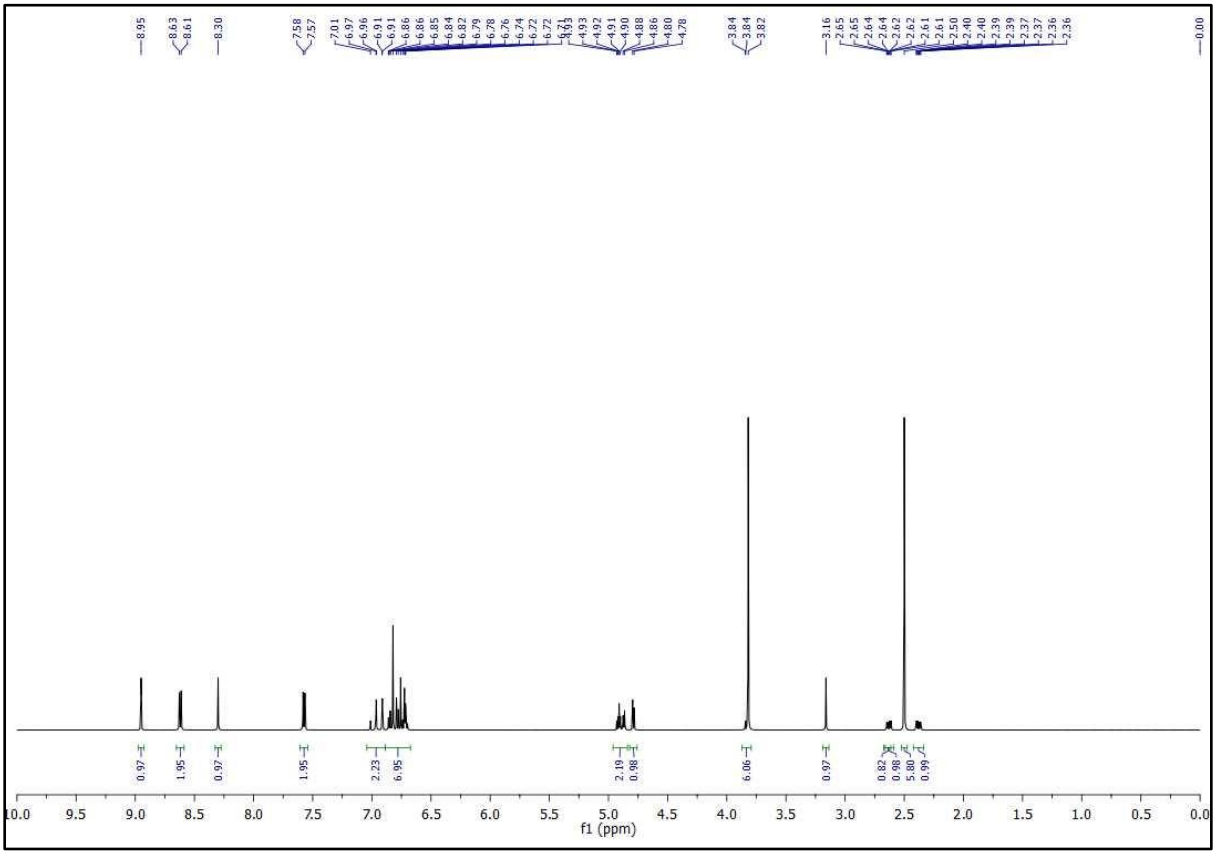

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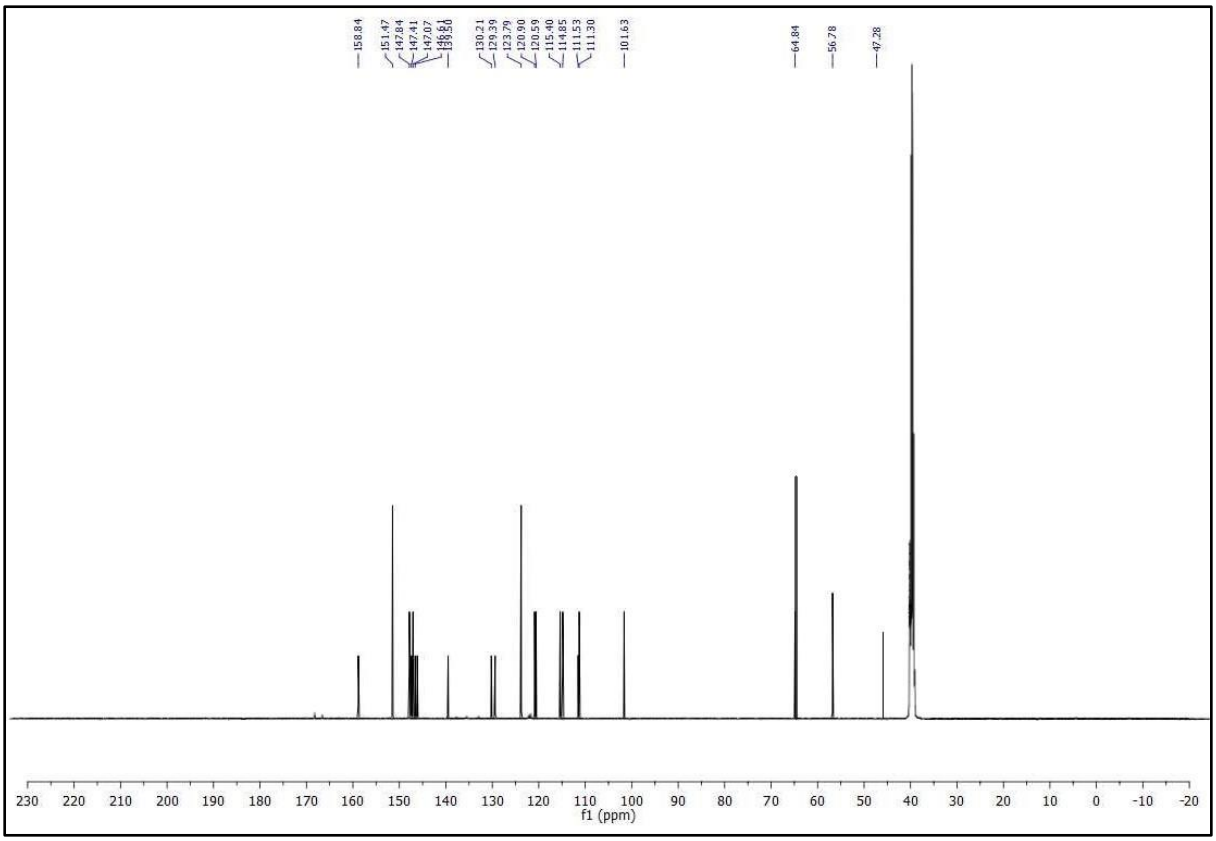

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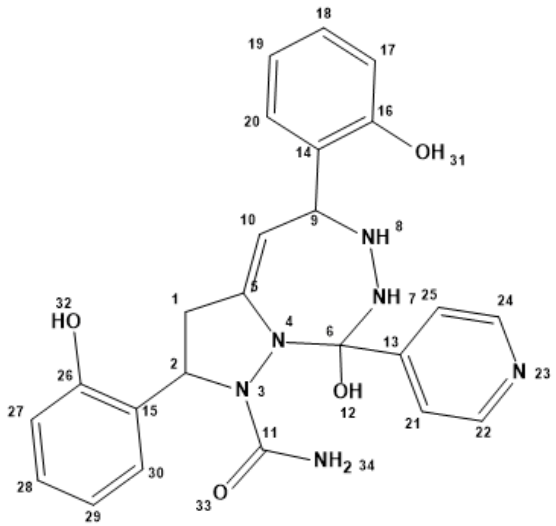


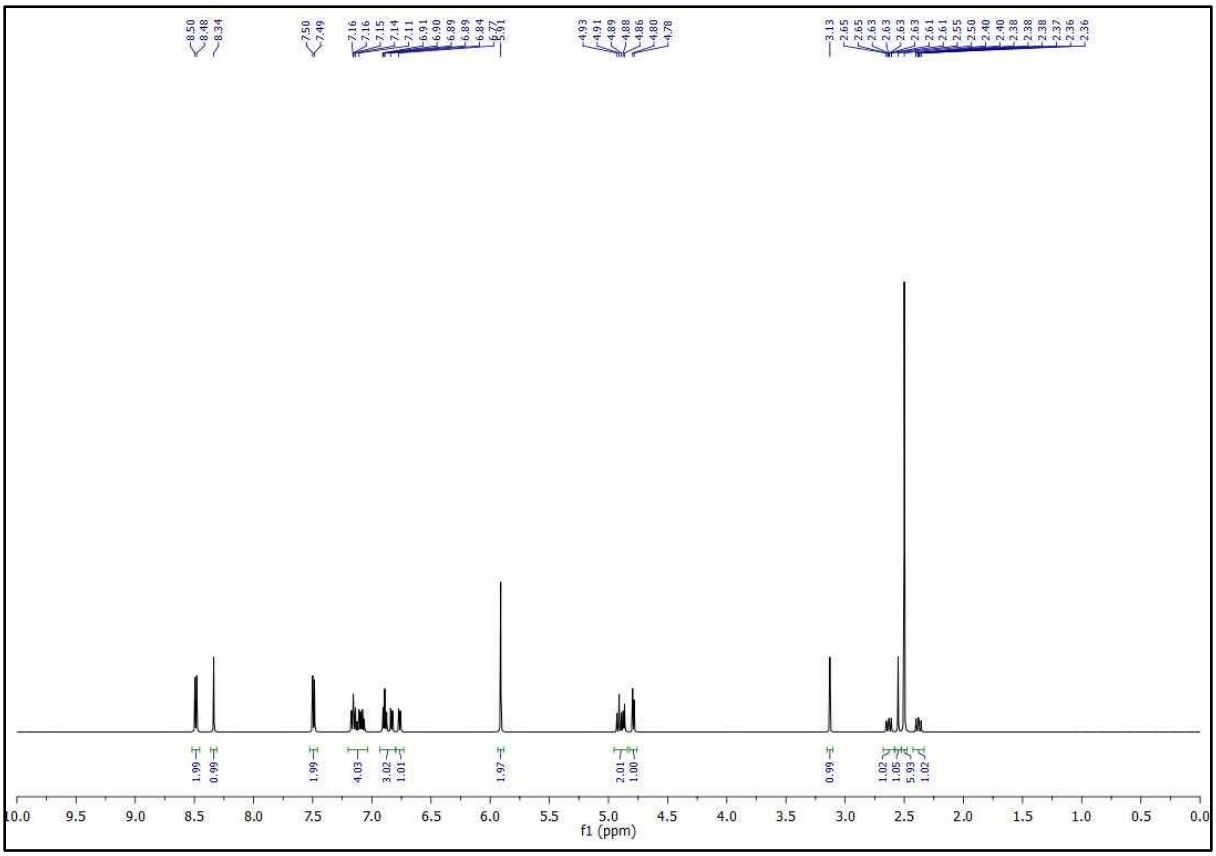


Figure S24. ^{13}C NMR of 8-hydroxy-2,5-bis(2-hydroxyphenyl)-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepine-1-carboxamide (4l)

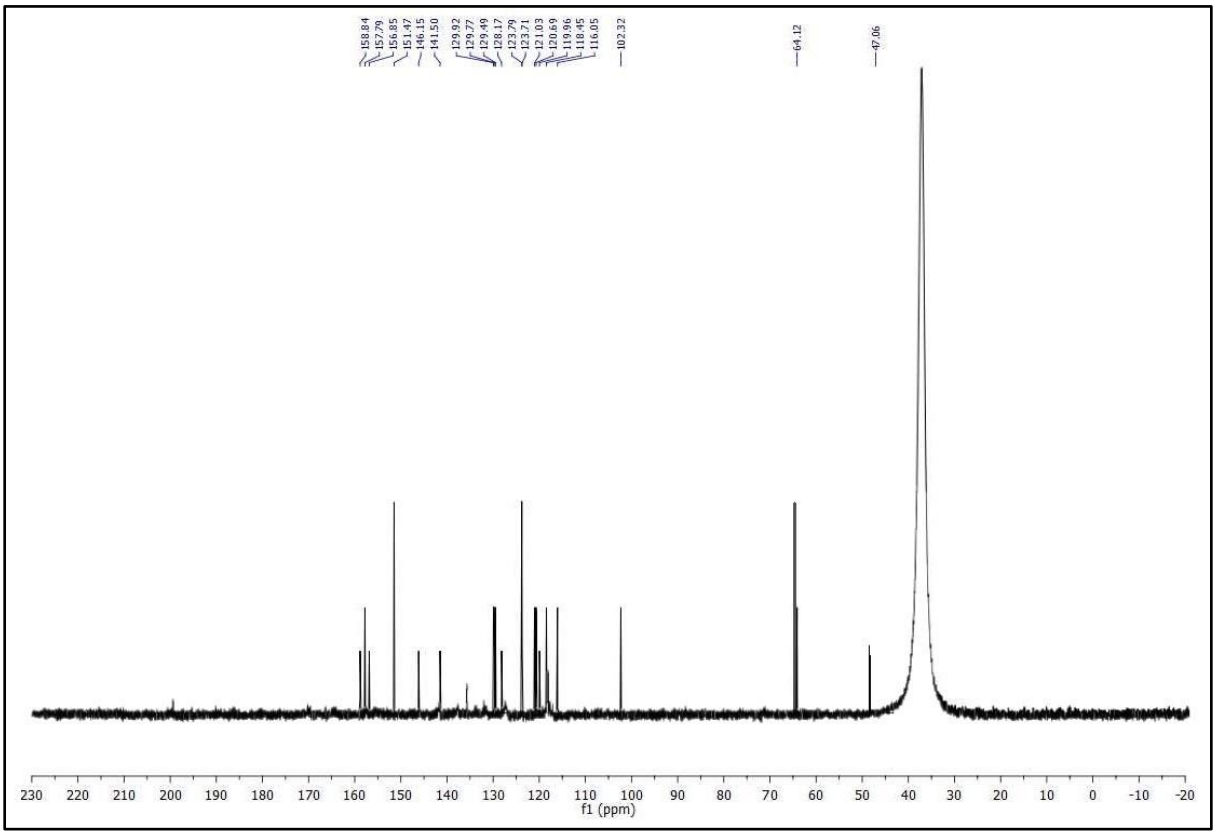
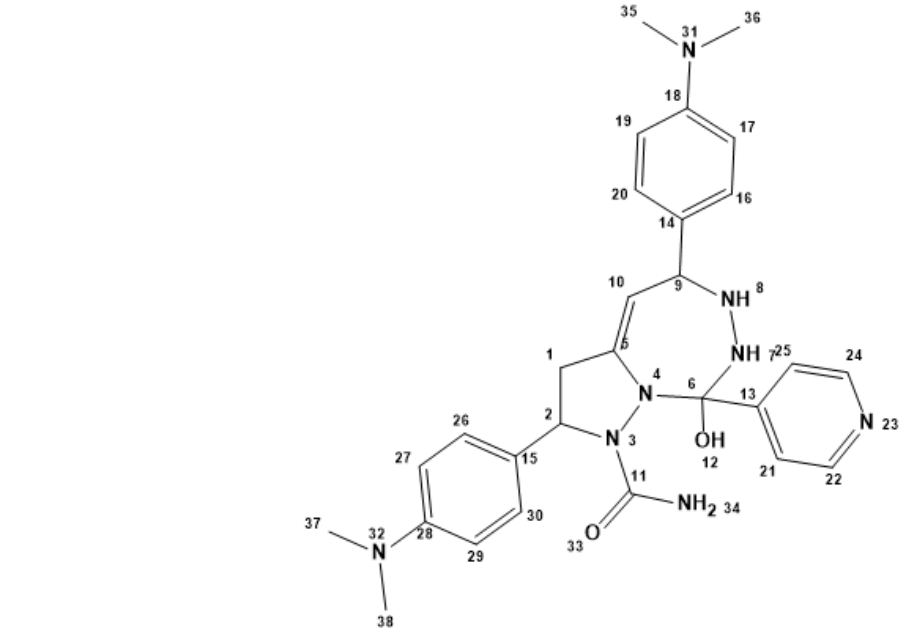


Figure S25. ^{1}H NMR of 2,5-bis(4-(dimethylamino)phenyl)-8-hydroxy-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepine-1-carboxamidecarboxamide (4m)



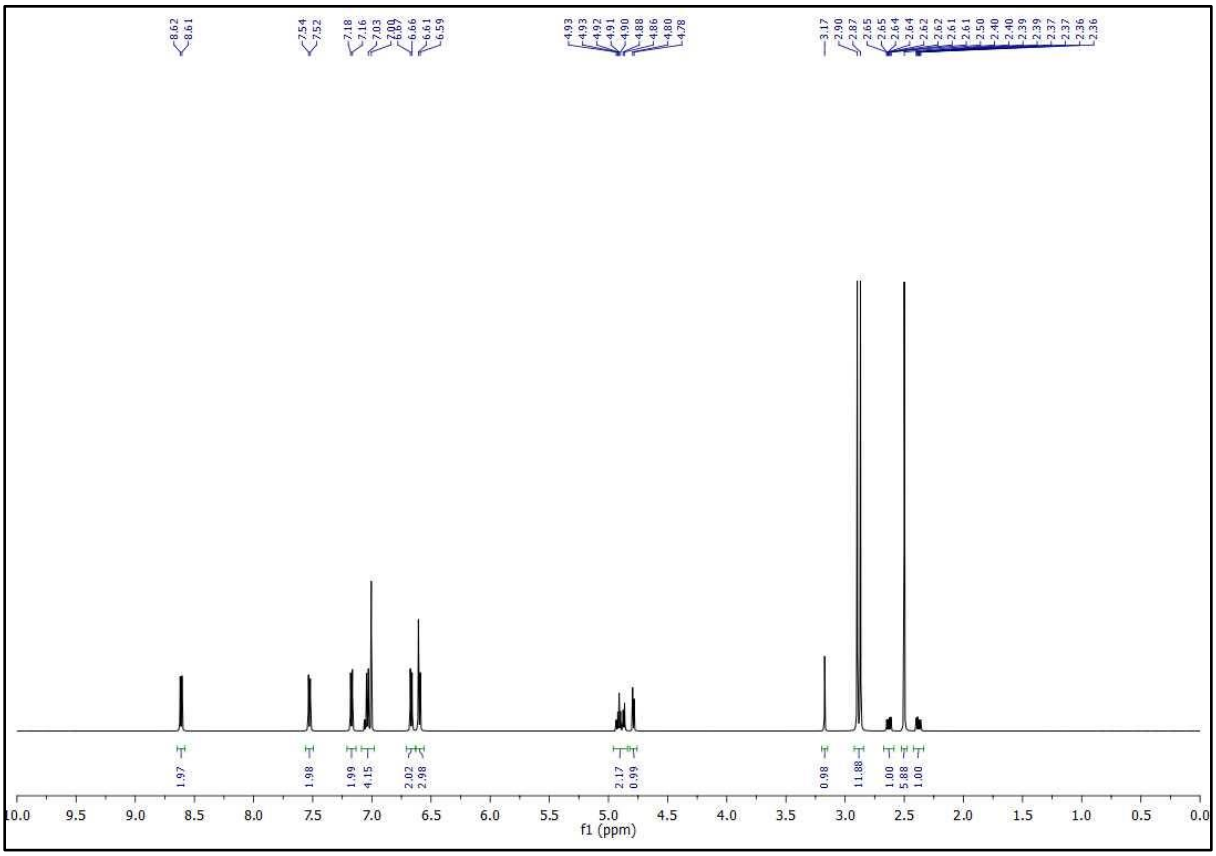


Figure S26. ^{13}C NMR of 2,5-bis(4-(dimethylamino)phenyl)-8-hydroxy-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepine-1-carboxamide (4m)

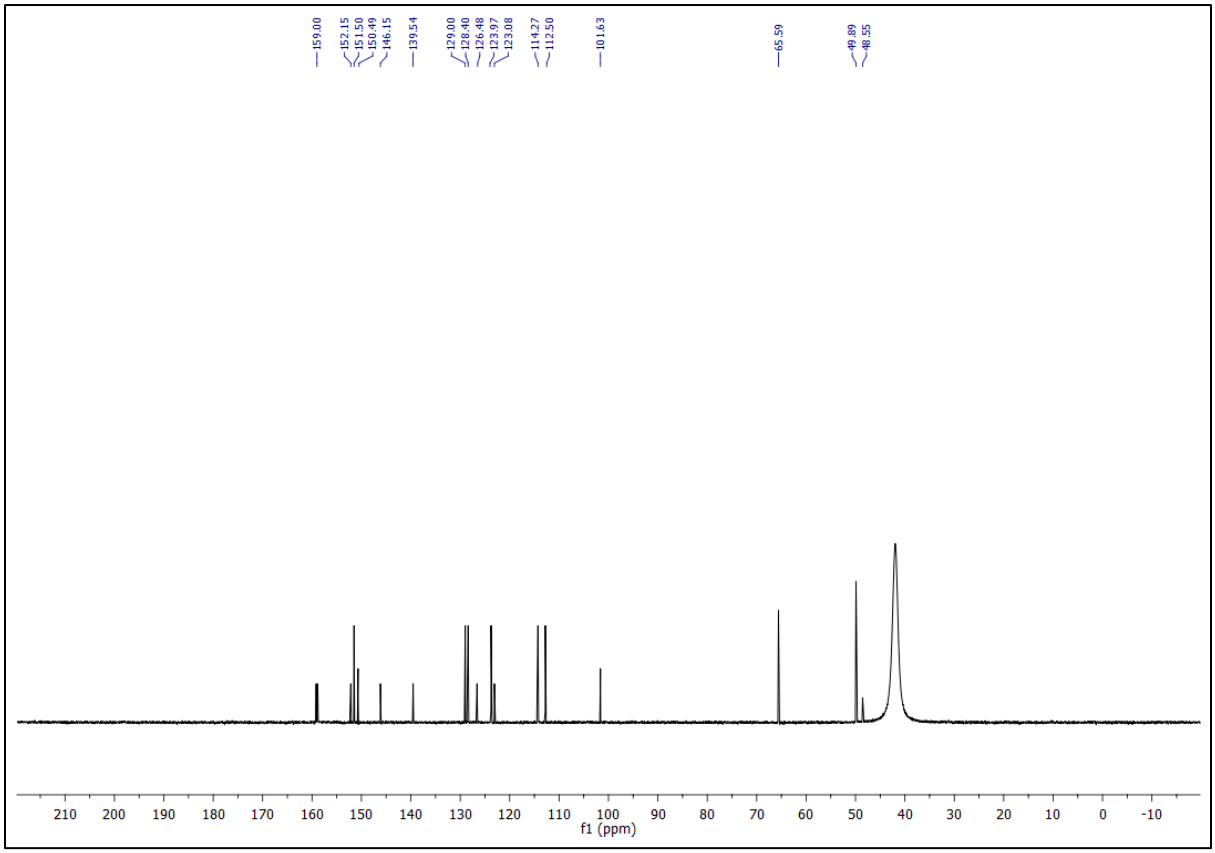
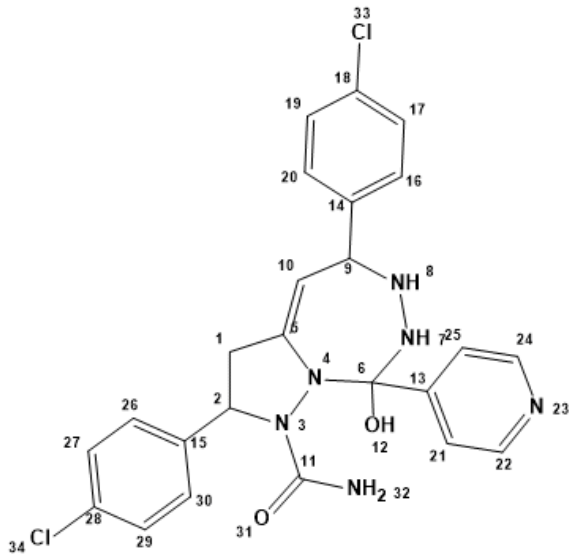


Figure S27. ^{1}H NMR of 2,5-bis(4-chlorophenyl)-8-hydroxy-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepine-1-carboxamide (4n)



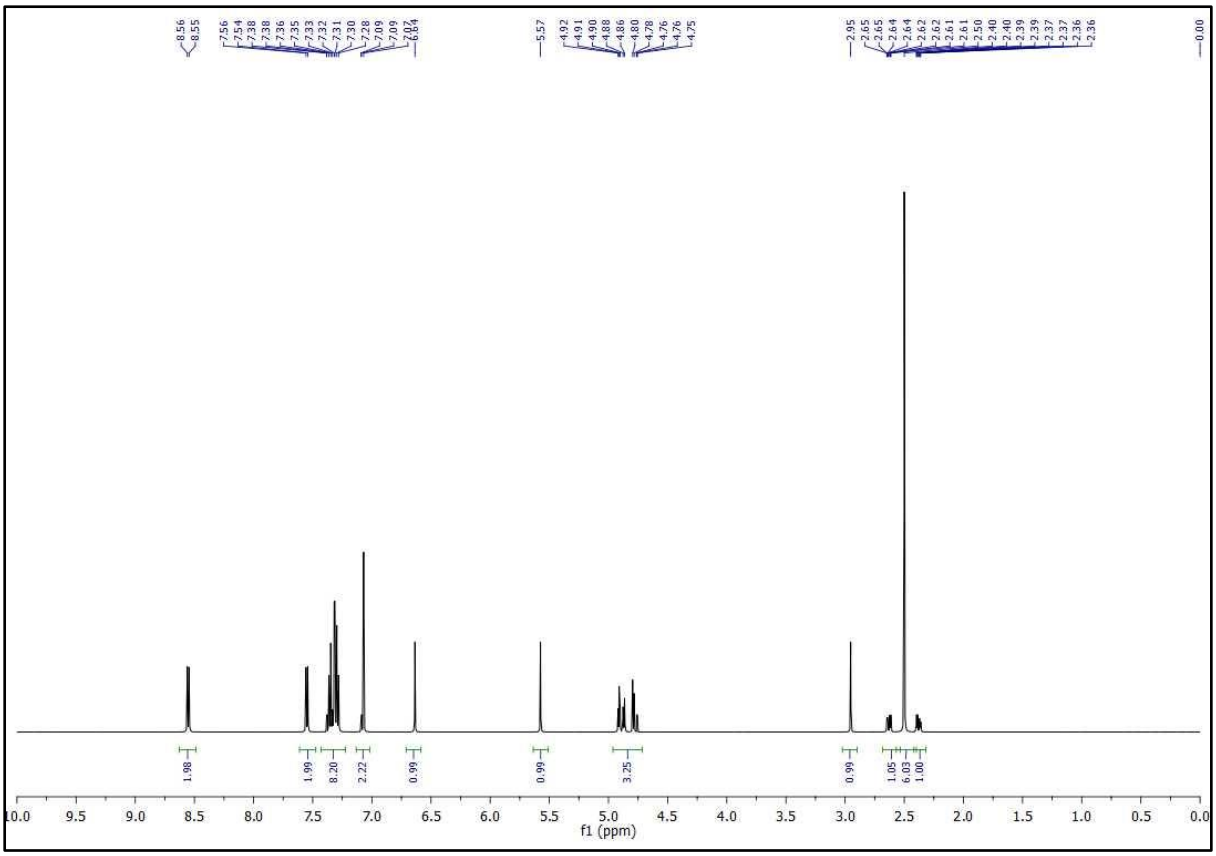


Figure S28. ^{13}C NMR of 2,5-bis(4-chlorophenyl)-8-hydroxy-8-(pyridin-4-yl)-2,3,5,6,7,8-hexahydro-1H-pyrazolo[1,5-d][1,2,4]triazepine-1-carboxamide (4n)

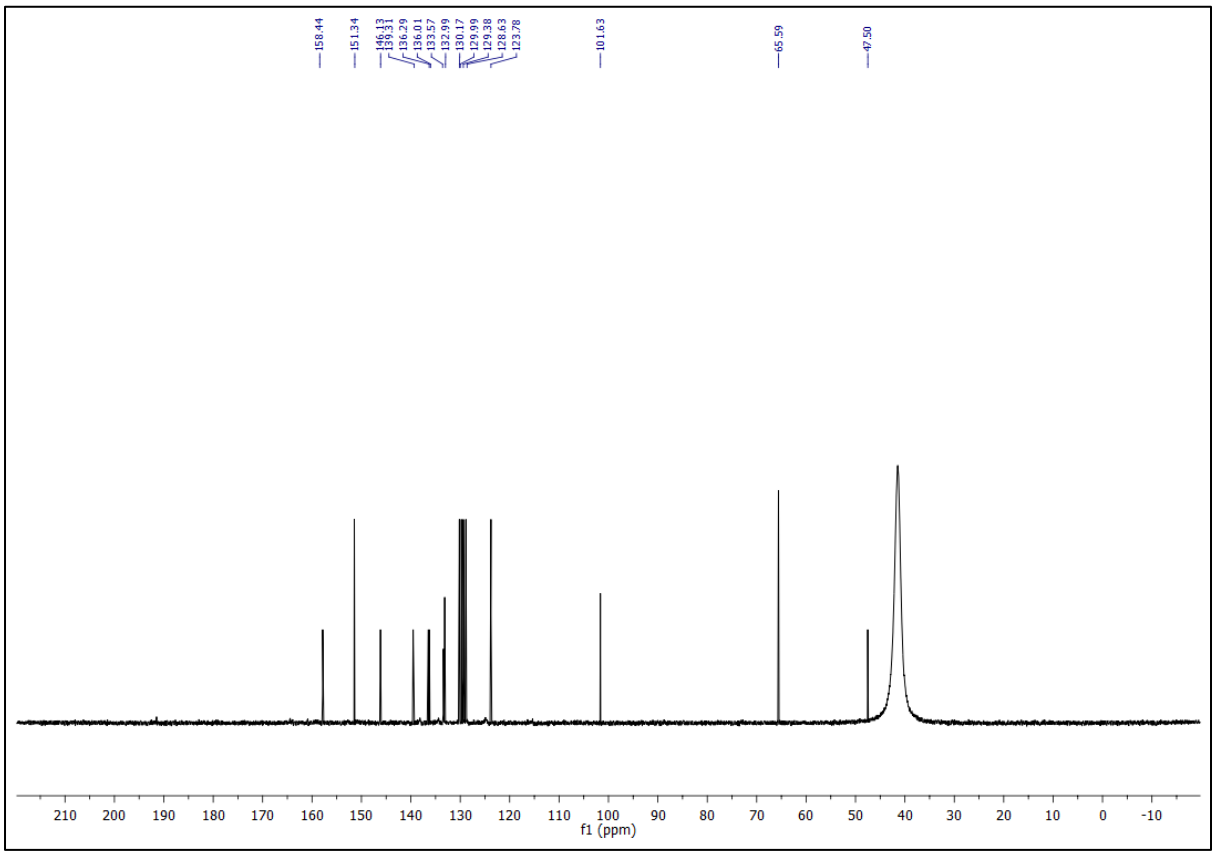


Figure S29. ^{1}H NMR of 1,5-diphenylpenta-1,4-dien-3-one (1a)

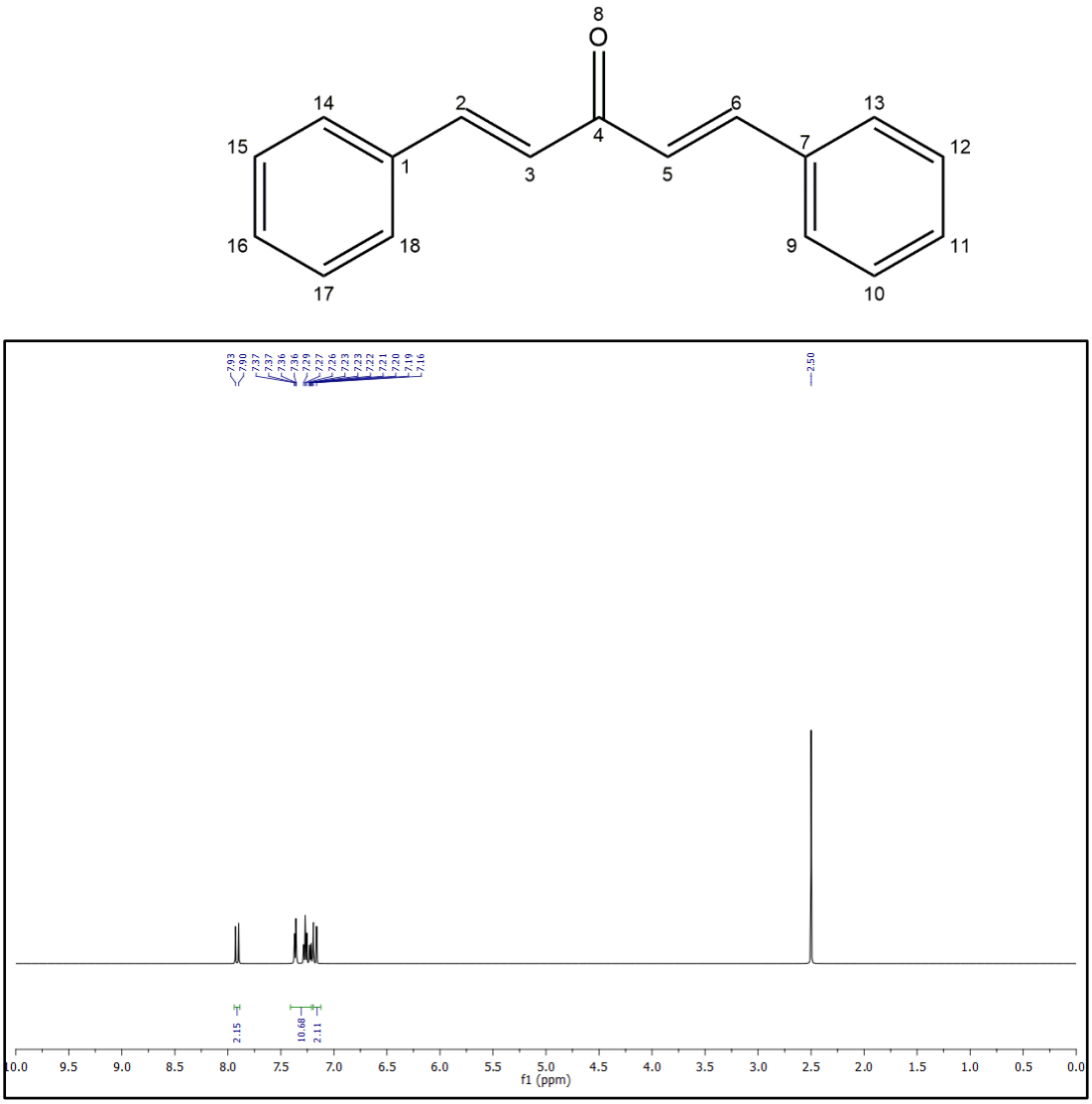


Figure S30. ^{13}C NMR of 1,5-diphenylpenta-1,4-dien-3-one (1a)

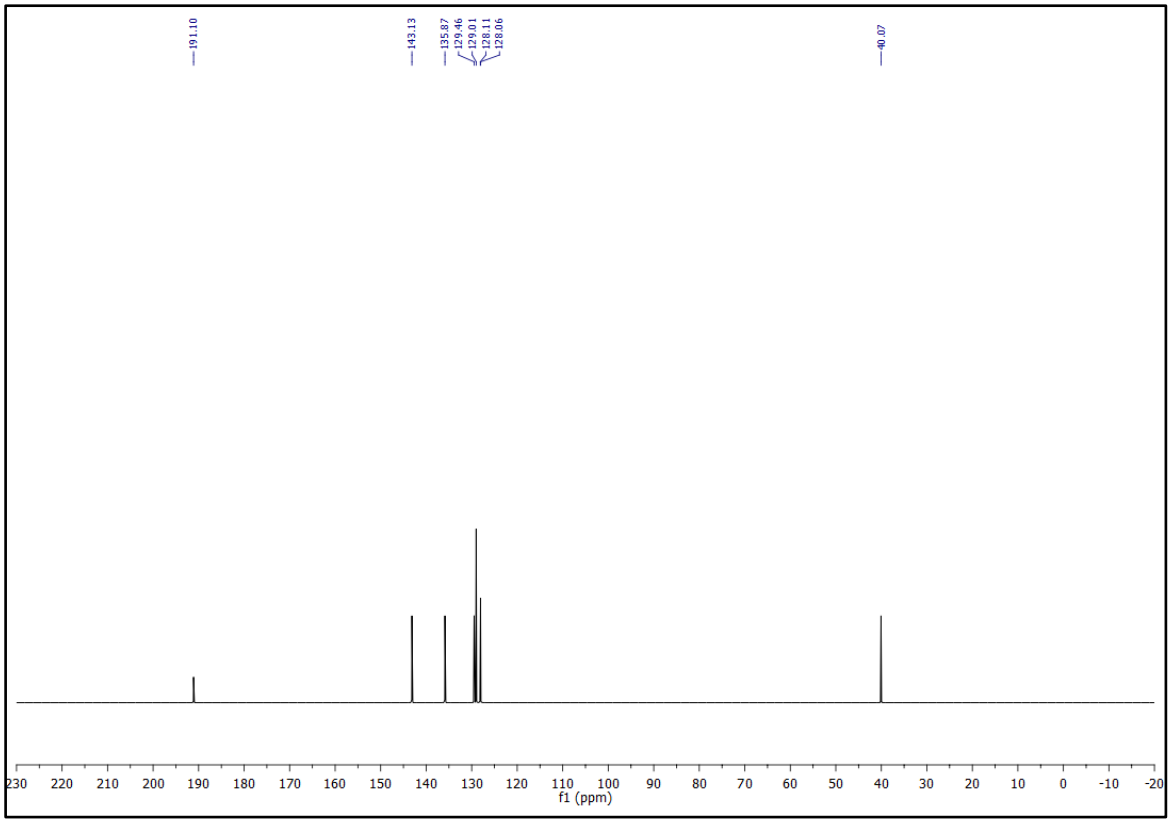
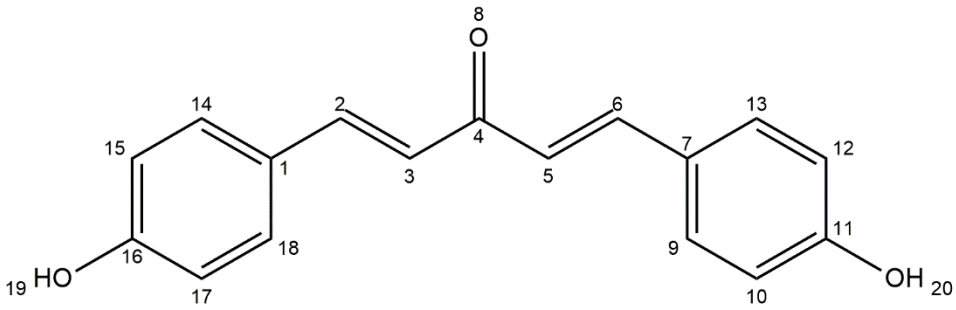


Figure S31. ^{1}H NMR of 1,5-bis(4-hydroxyphenyl)penta-1,4-dien-3-one (1b)



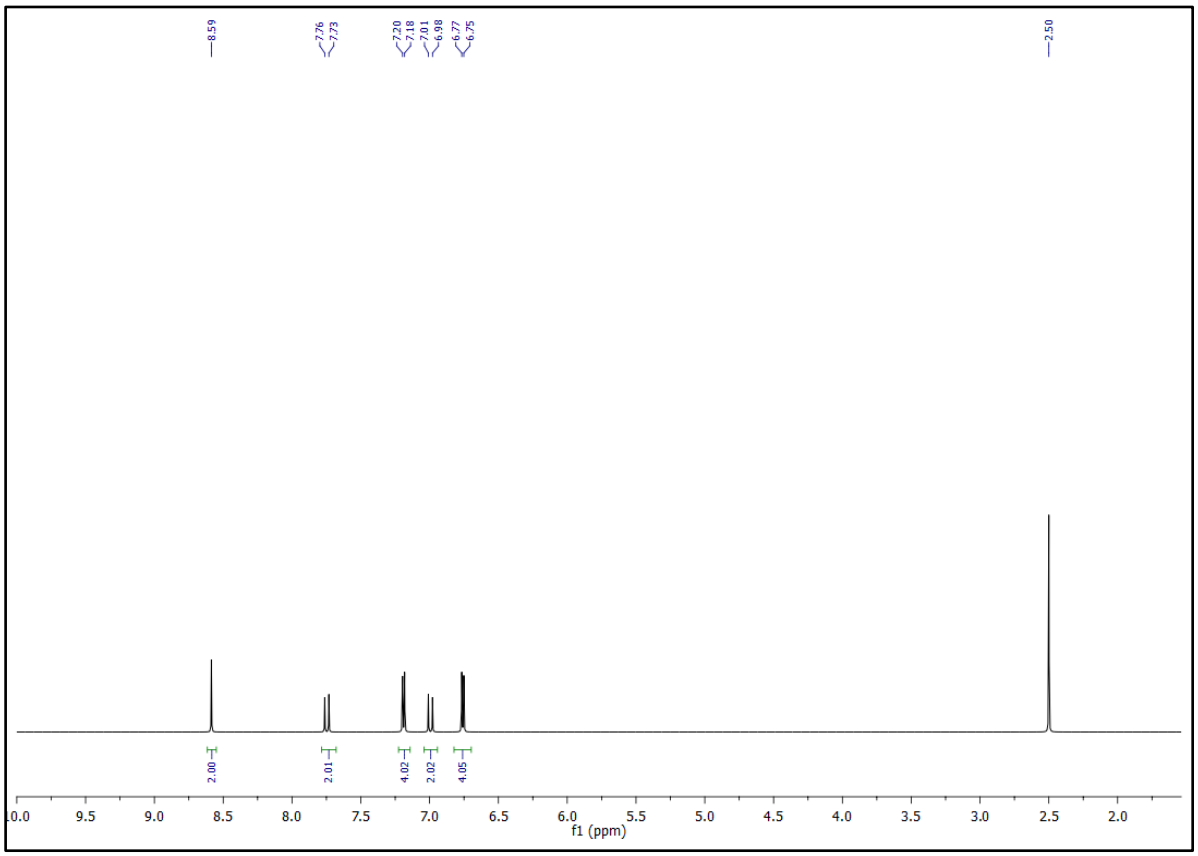


Figure S32. ^{13}C NMR of 1,5-bis(4-hydroxyphenyl)penta-1,4-dien-3-one (1b)

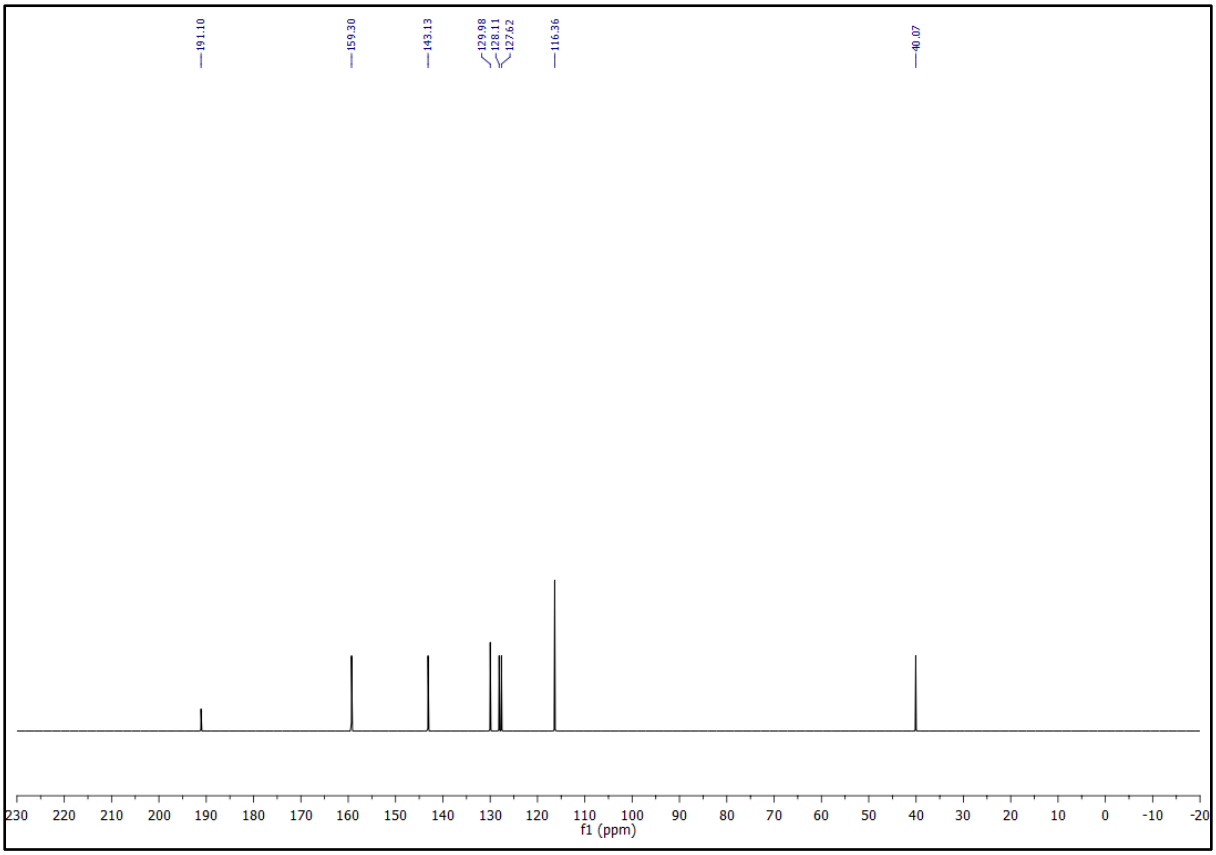


Figure S33. ^{1}H NMR of 1,5-bis(4-nitrophenyl)penta-1,4-dien-3-one (1c)

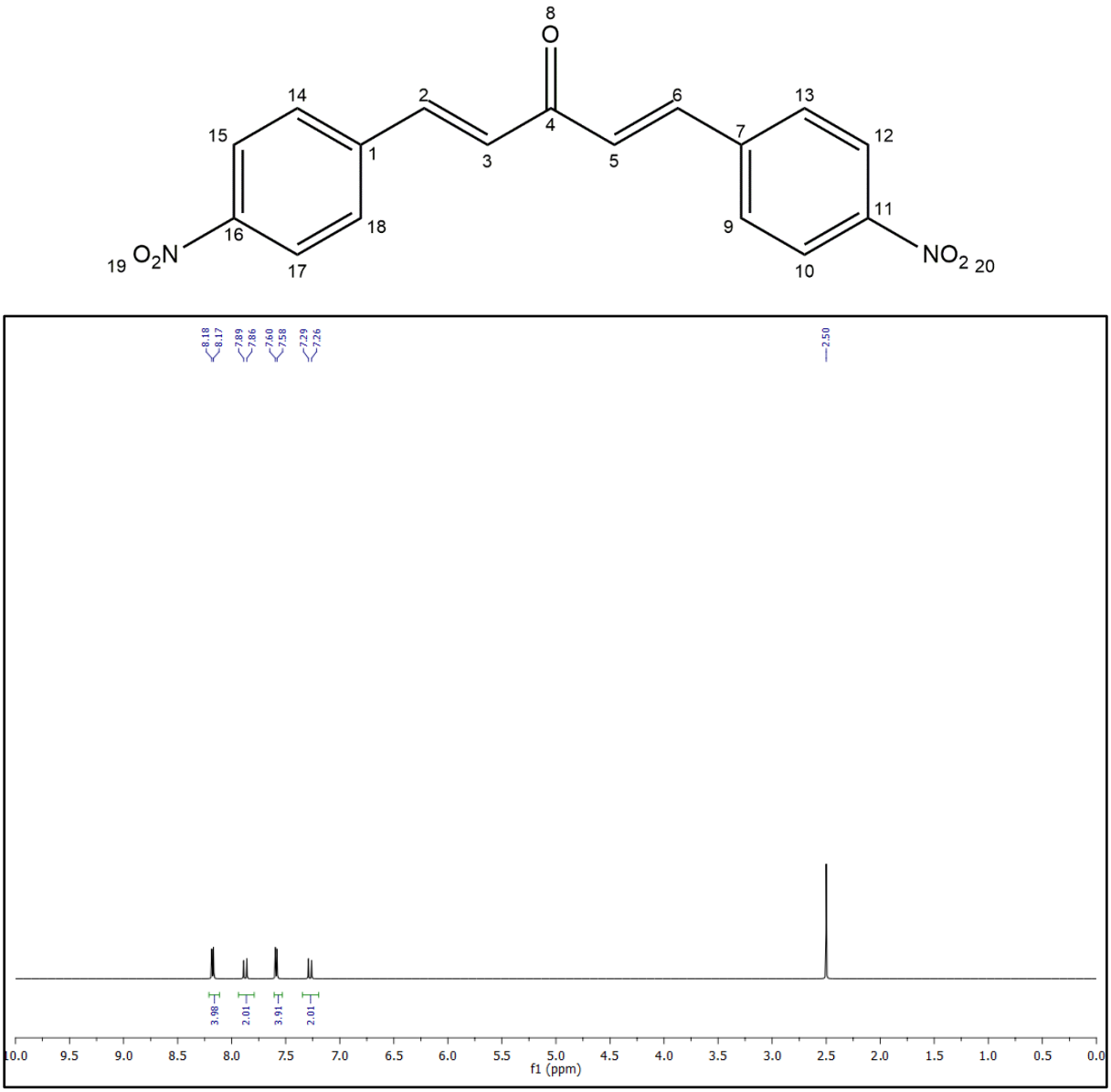


Figure S34. ^{13}C NMR of 1,5-bis(4-nitrophenyl)penta-1,4-dien-3-one (1c)

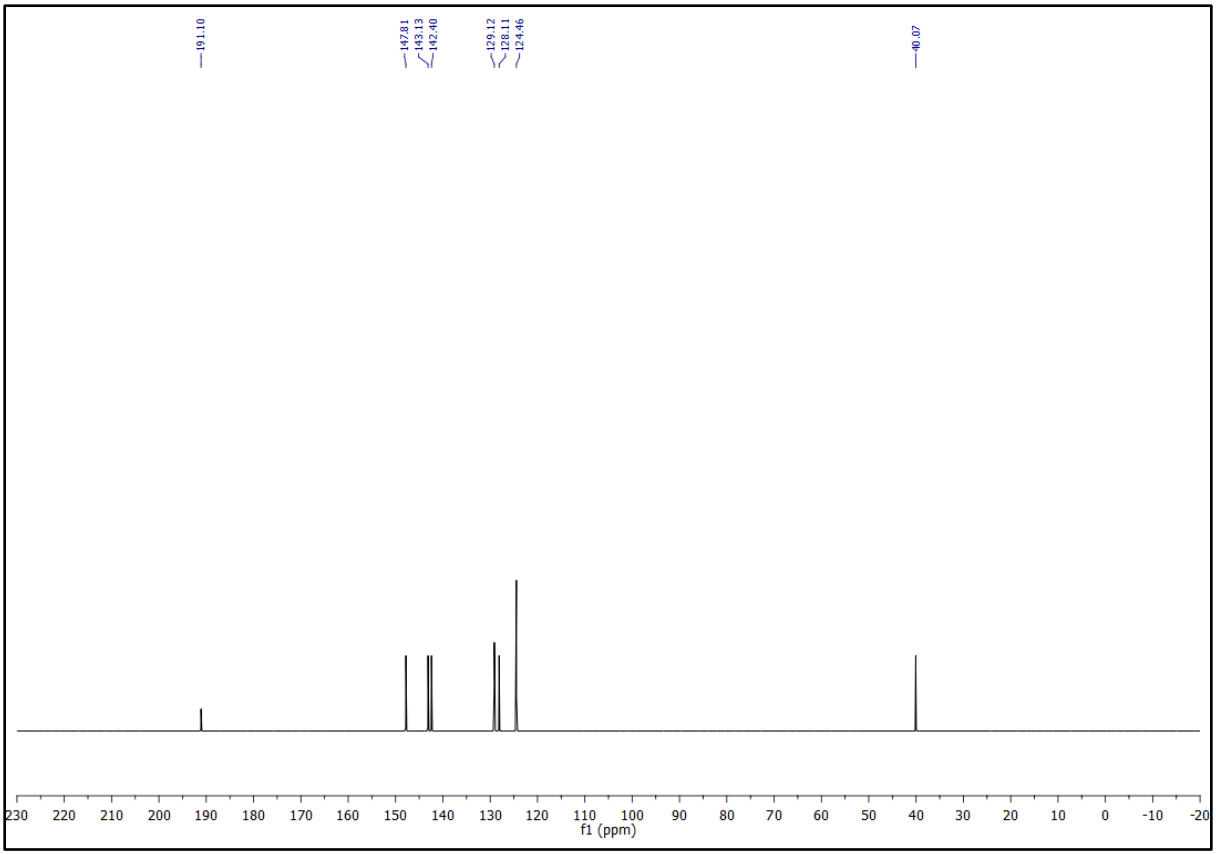
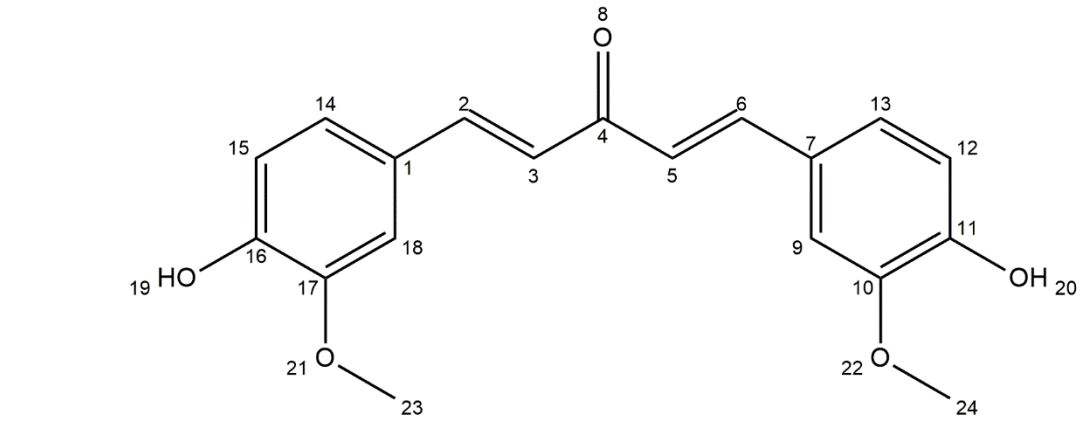


Figure S35. ^{1}H NMR of 1,5-bis(4-hydroxy-3-methoxyphenyl)penta-1,4-dien-3-one (1d)



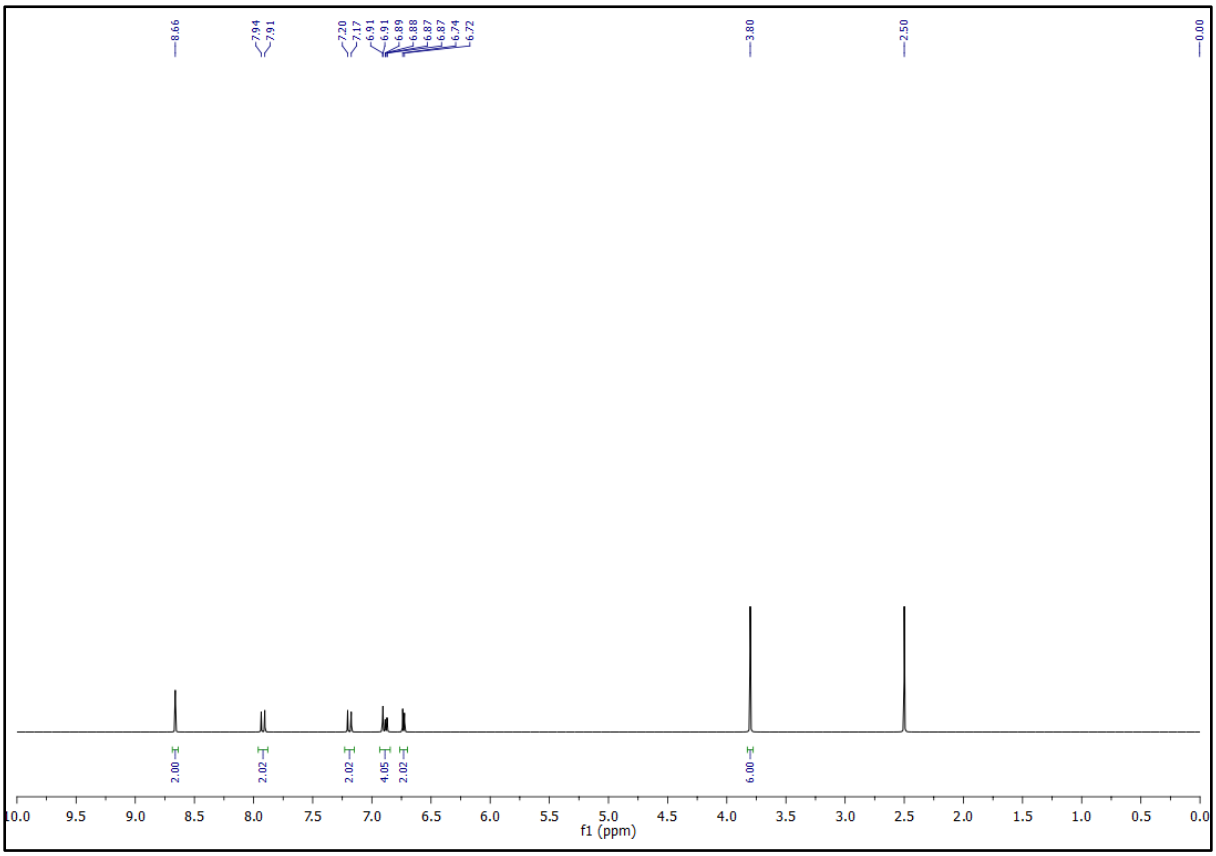


Figure S36. ^{13}C NMR of 1,5-bis(4-hydroxy-3-methoxyphenyl)penta-1,4-dien-3-one (1d)

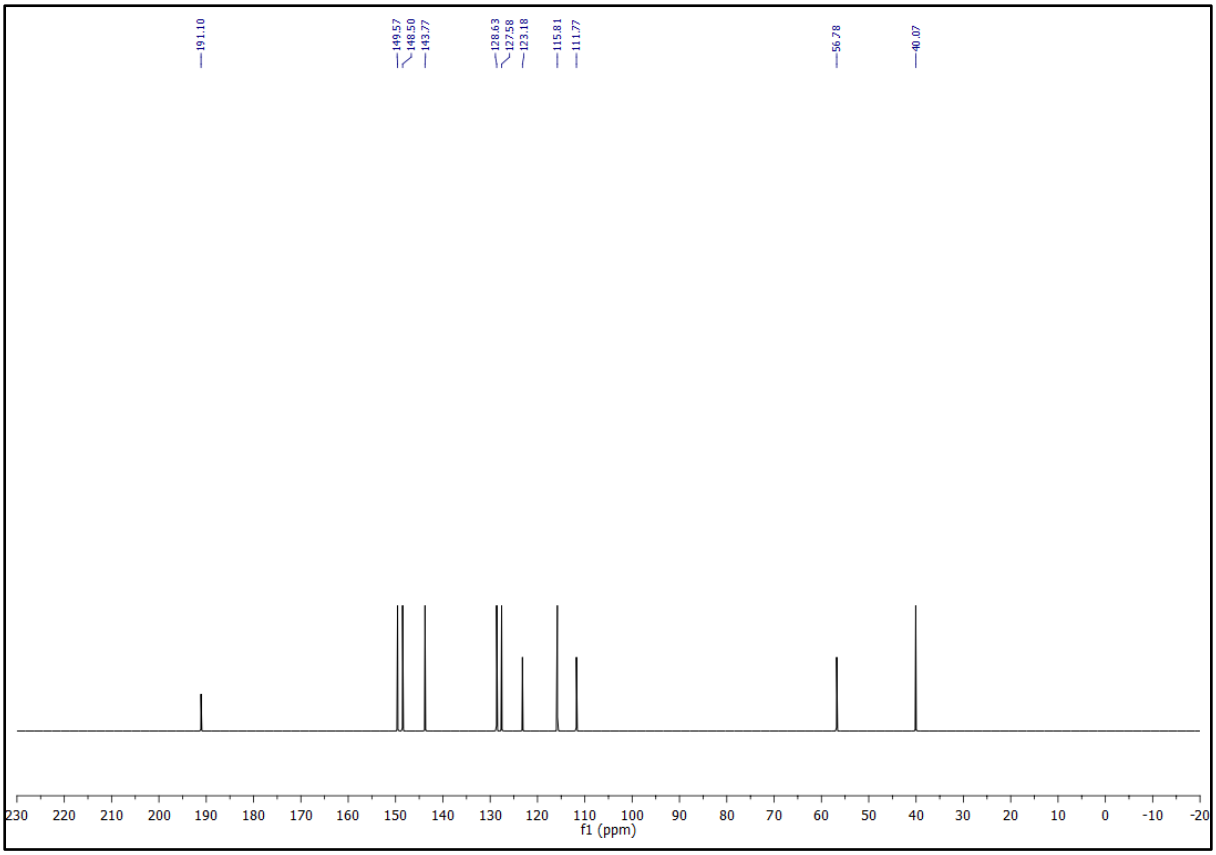


Figure S37. ^{1}H NMR of 1,5-bis(2-hydroxyphenyl)penta-1,4-dien-3-one (1e)

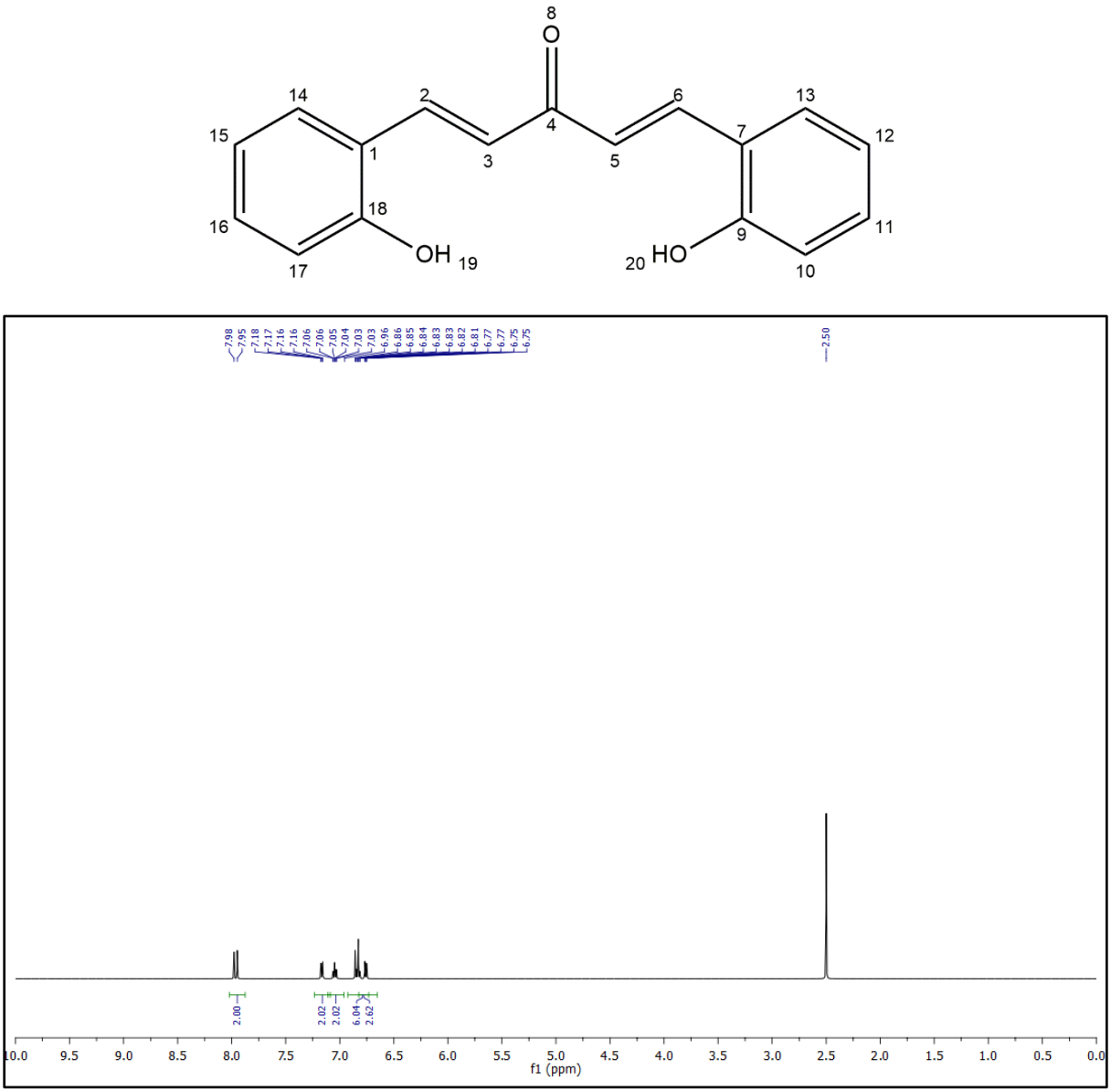


Figure S38. ^{13}C NMR of 1,5-bis(2-hydroxyphenyl)penta-1,4-dien-3-one (1e)

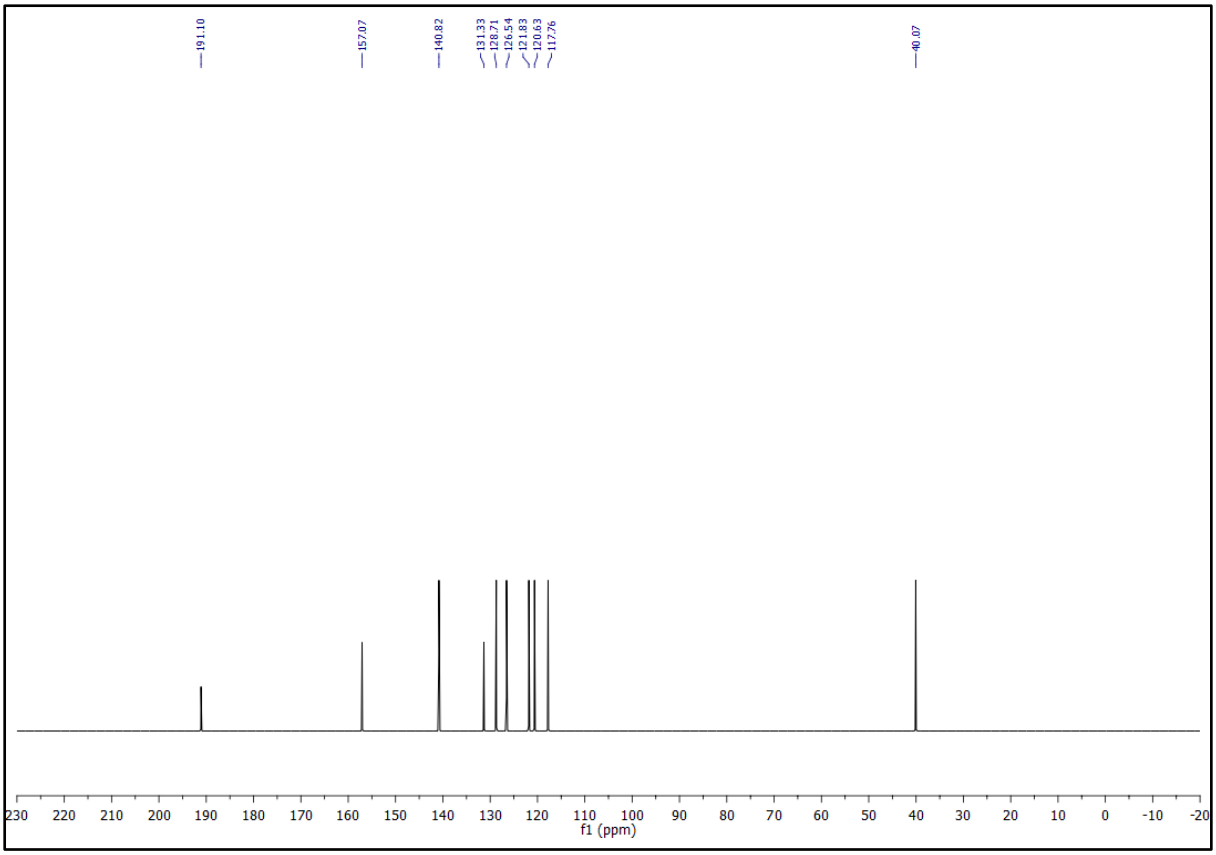


Figure S39. ^{1}H NMR of 1,5-bis(4-(dimethylamino)phenyl)penta-1,4-dien-3-one (1f)

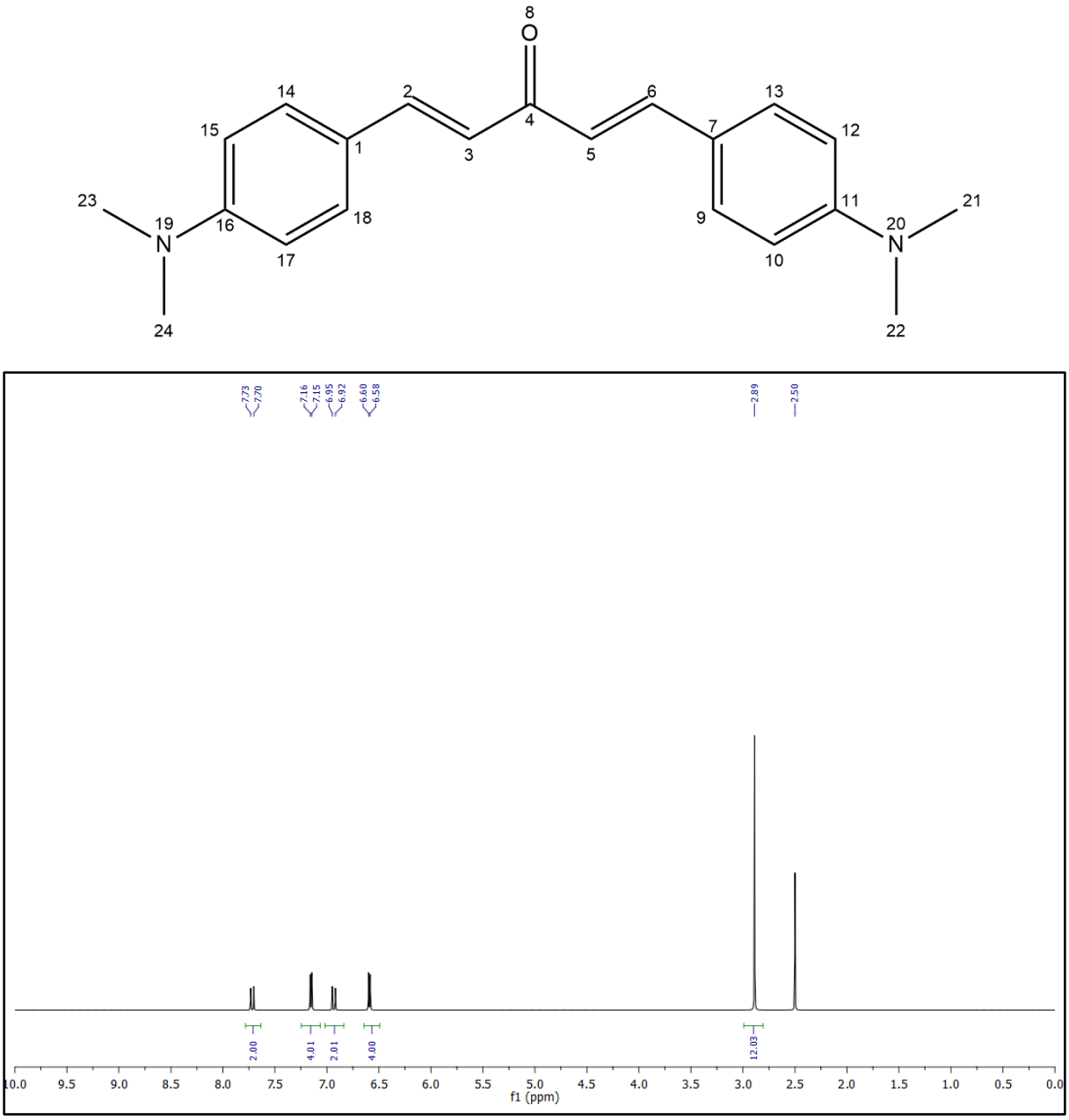


Figure S40. ^{13}C NMR of 1,5-bis(4-(dimethylamino)phenyl)penta-1,4-dien-3-one (1f)

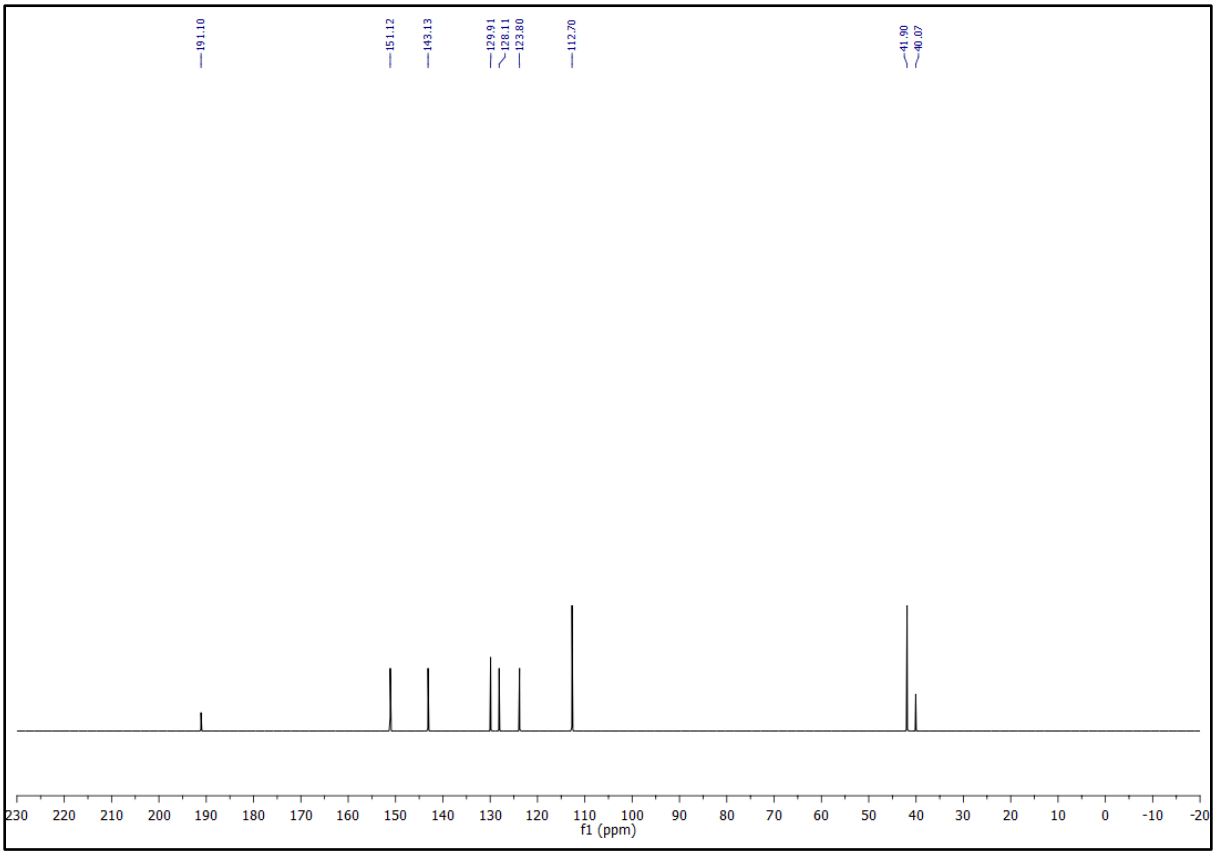
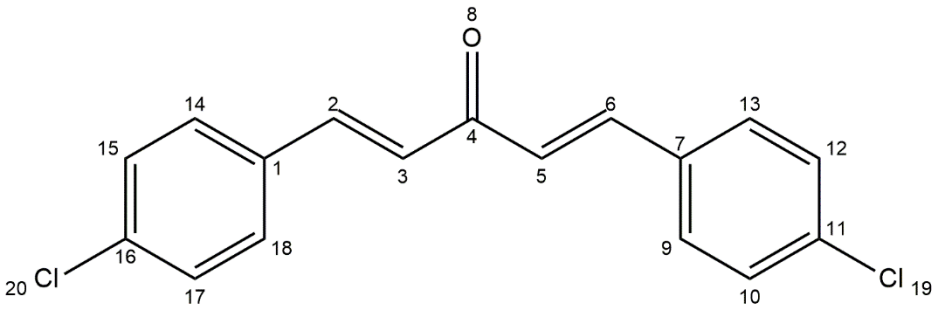


Figure S41. ^{1}H NMR of 1,5-bis(4-chlorophenyl)penta-1,4-dien-3-one (1g)



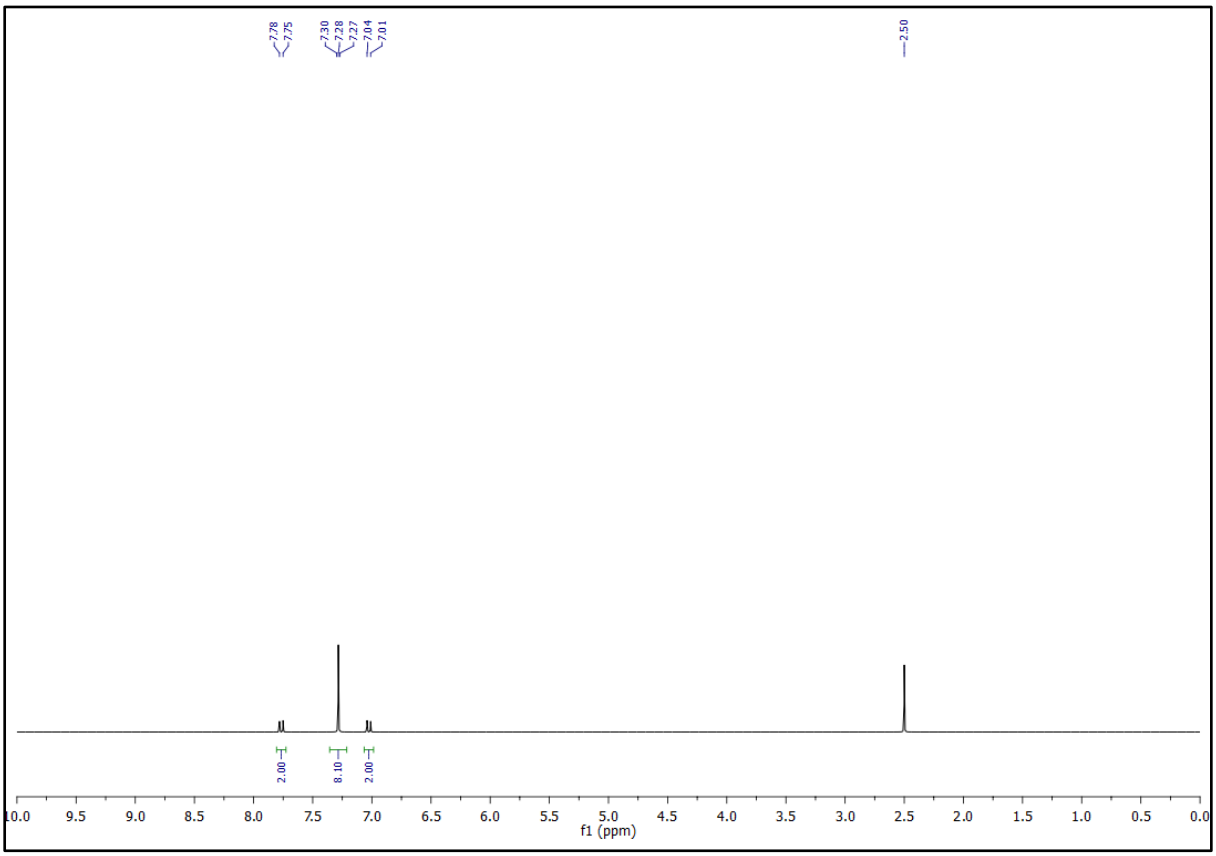


Figure S42. ^{13}C NMR of 1,5-bis(4-chlorophenyl)penta-1,4-dien-3-one (1g)

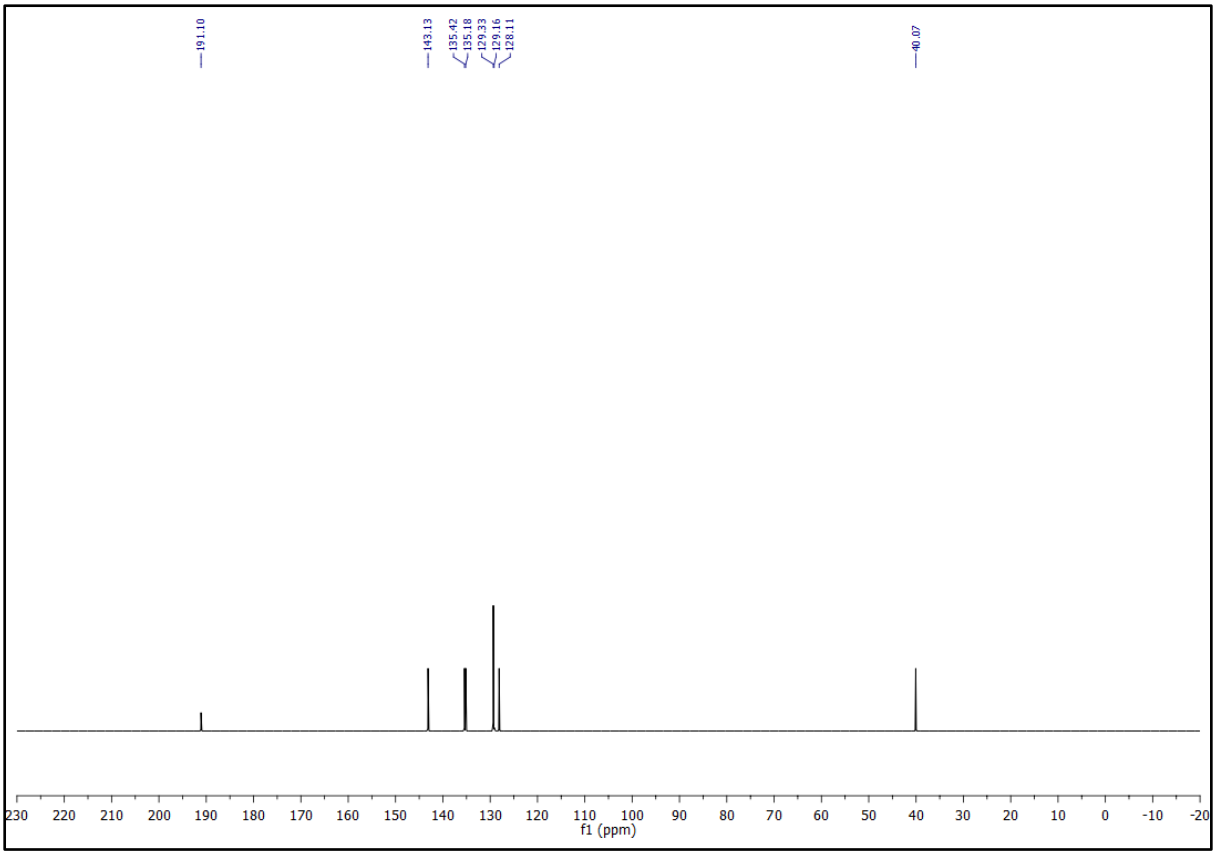


Figure S43. ^{1}H NMR of *4-(1-(3,5-dinitrophenyl)-3-(4-hydroxystyryl)-4,5-dihydro-1H-pyrazol-5-yl)phenol (IIIab)*

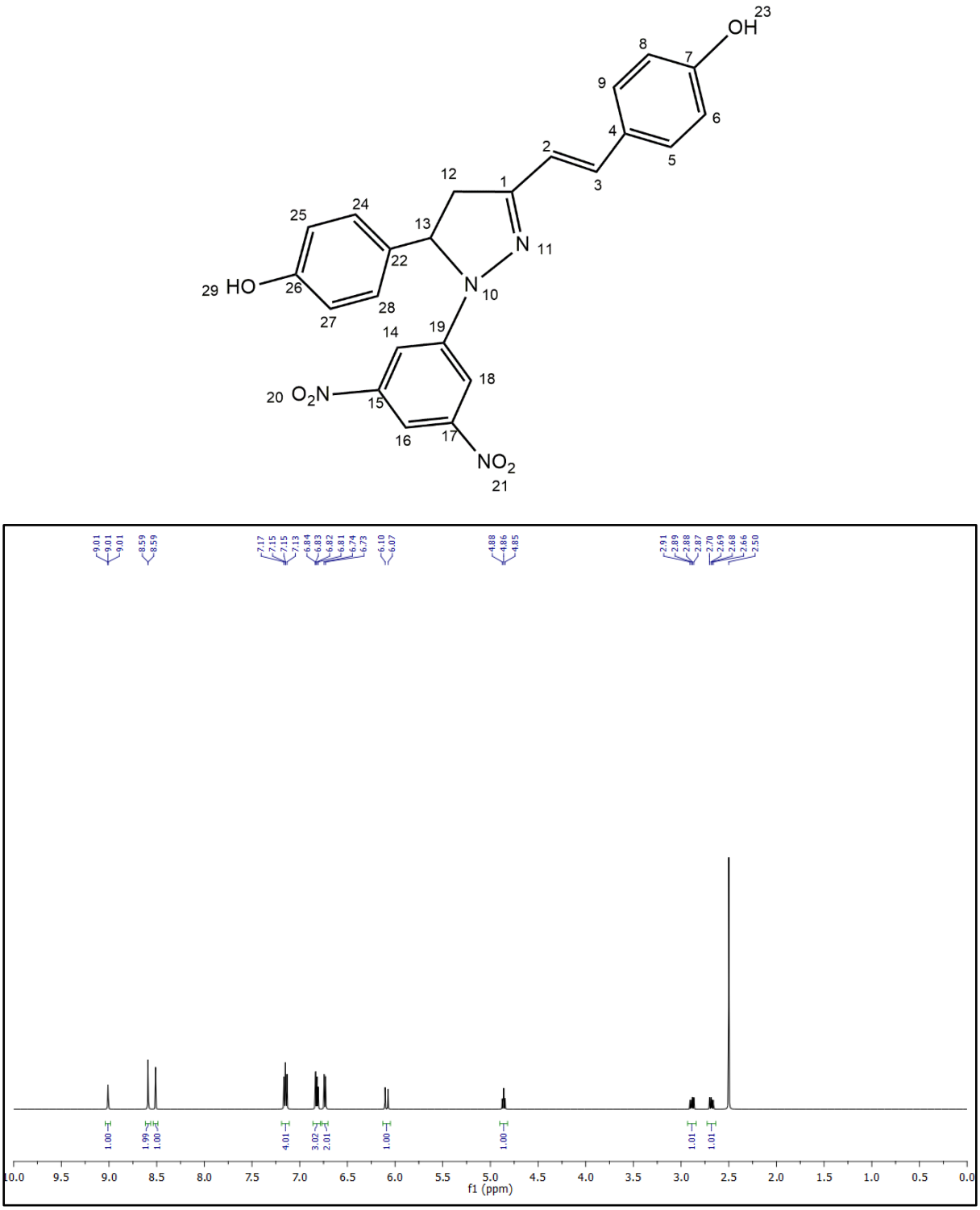


Figure S44. ^{13}C NMR of *4-(1-(3,5-dinitrophenyl)-3-(4-hydroxystyryl)-4,5-dihydro-1H-pyrazol-5-yl)phenol (IIIab)*

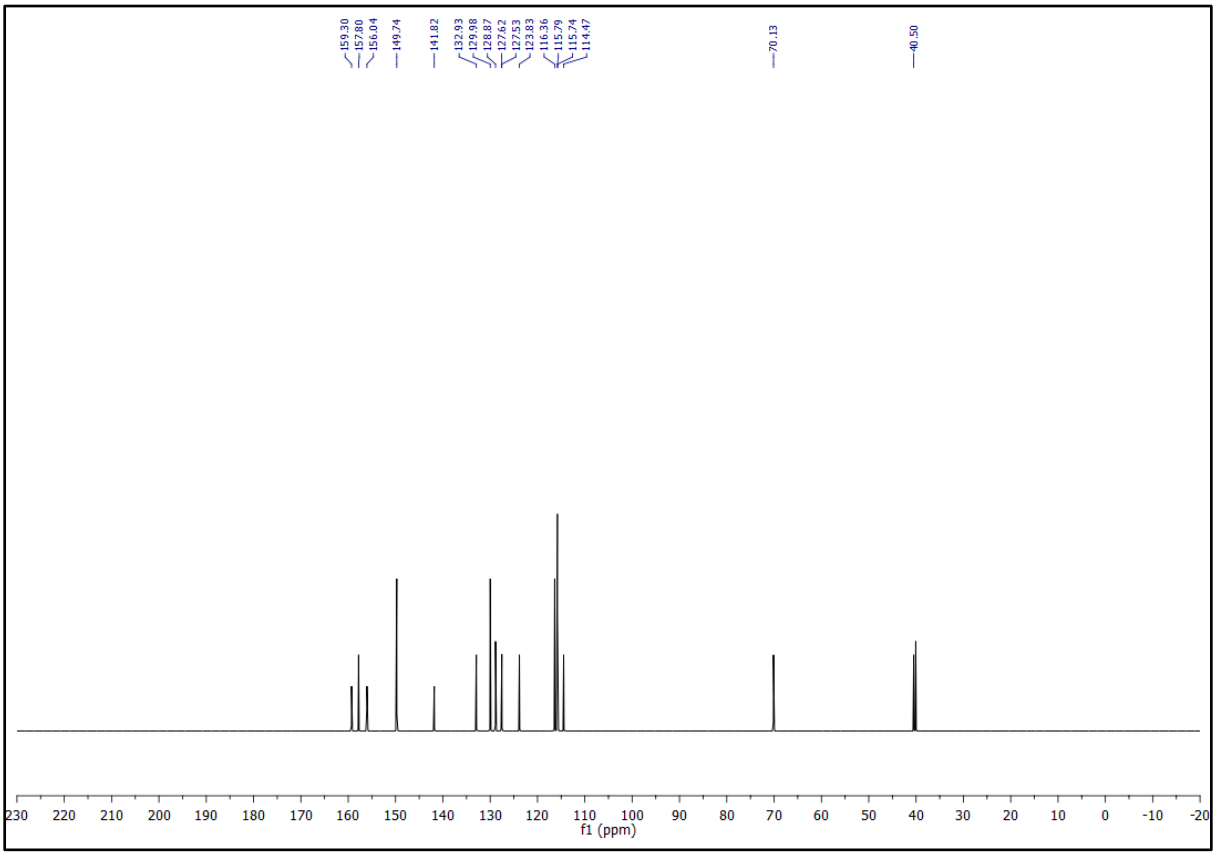


Figure S45. ^{1}H NMR of *4,4'-(3-(2-(2,4-dinitrophenyl)hydrazono)penta-1,4-diene-1,5-diyl)diphenol (IIab)*

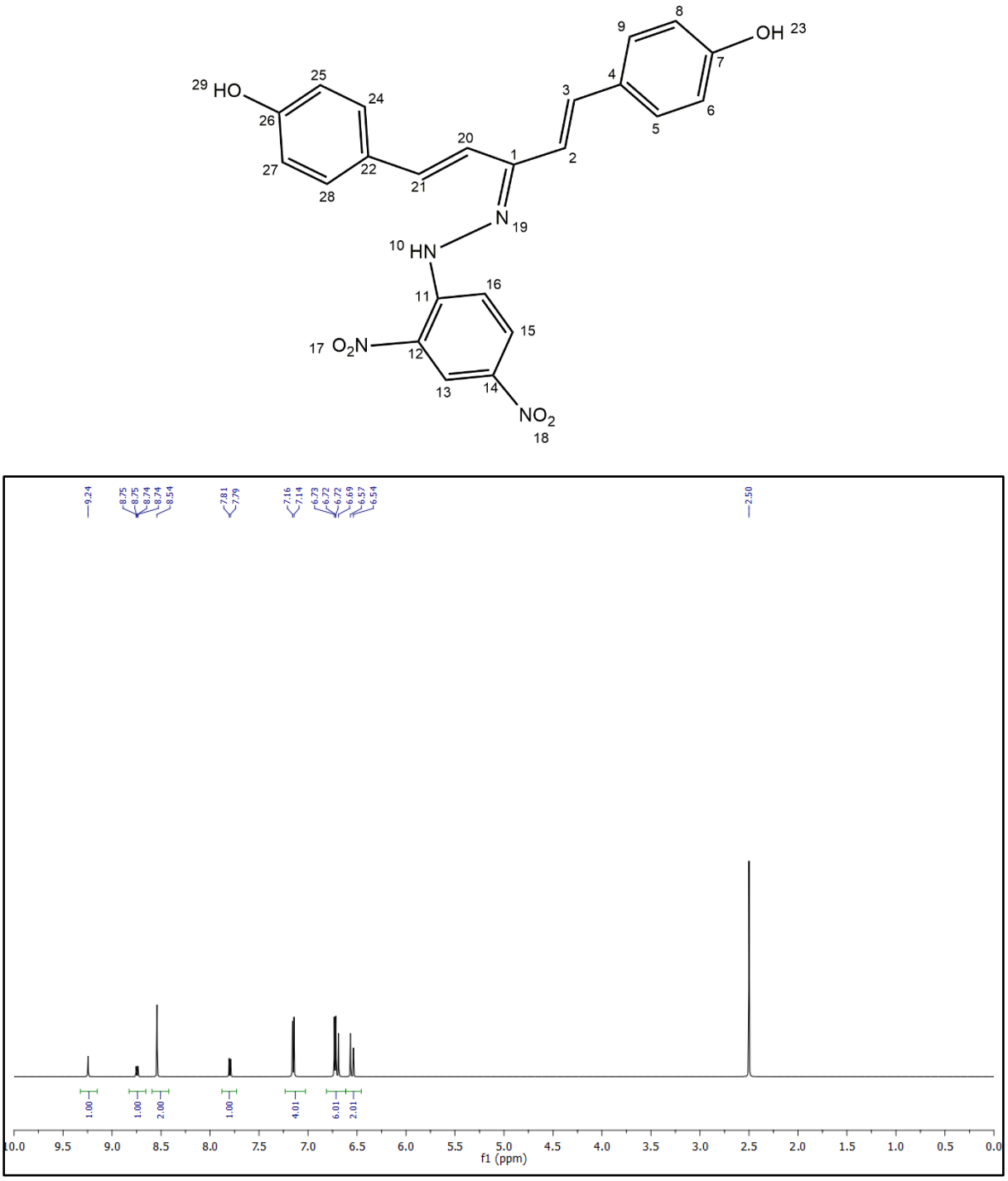


Figure S46. ^{13}C NMR of *4,4'-(3-(2-(2,4-dinitrophenyl)hydrazono)penta-1,4-diene-1,5-diyl)diphenol (IIab)*

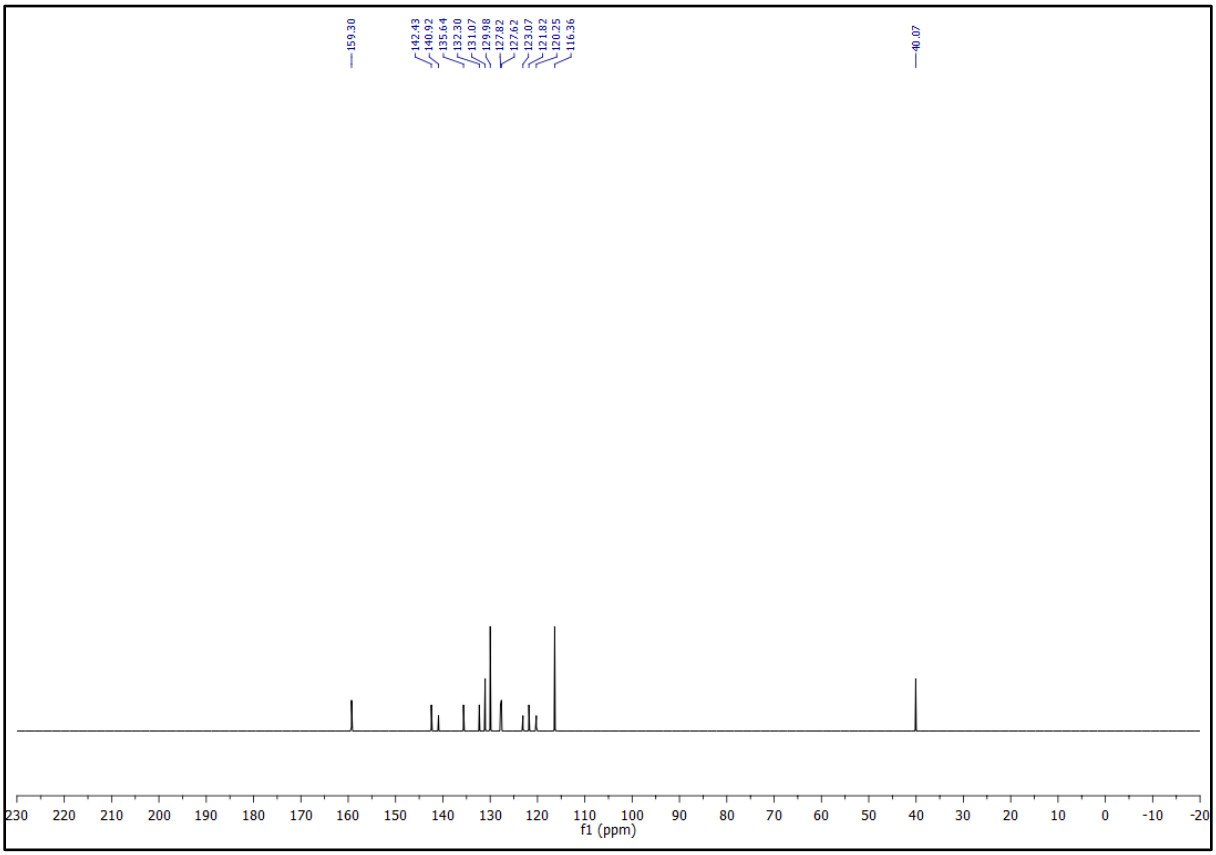
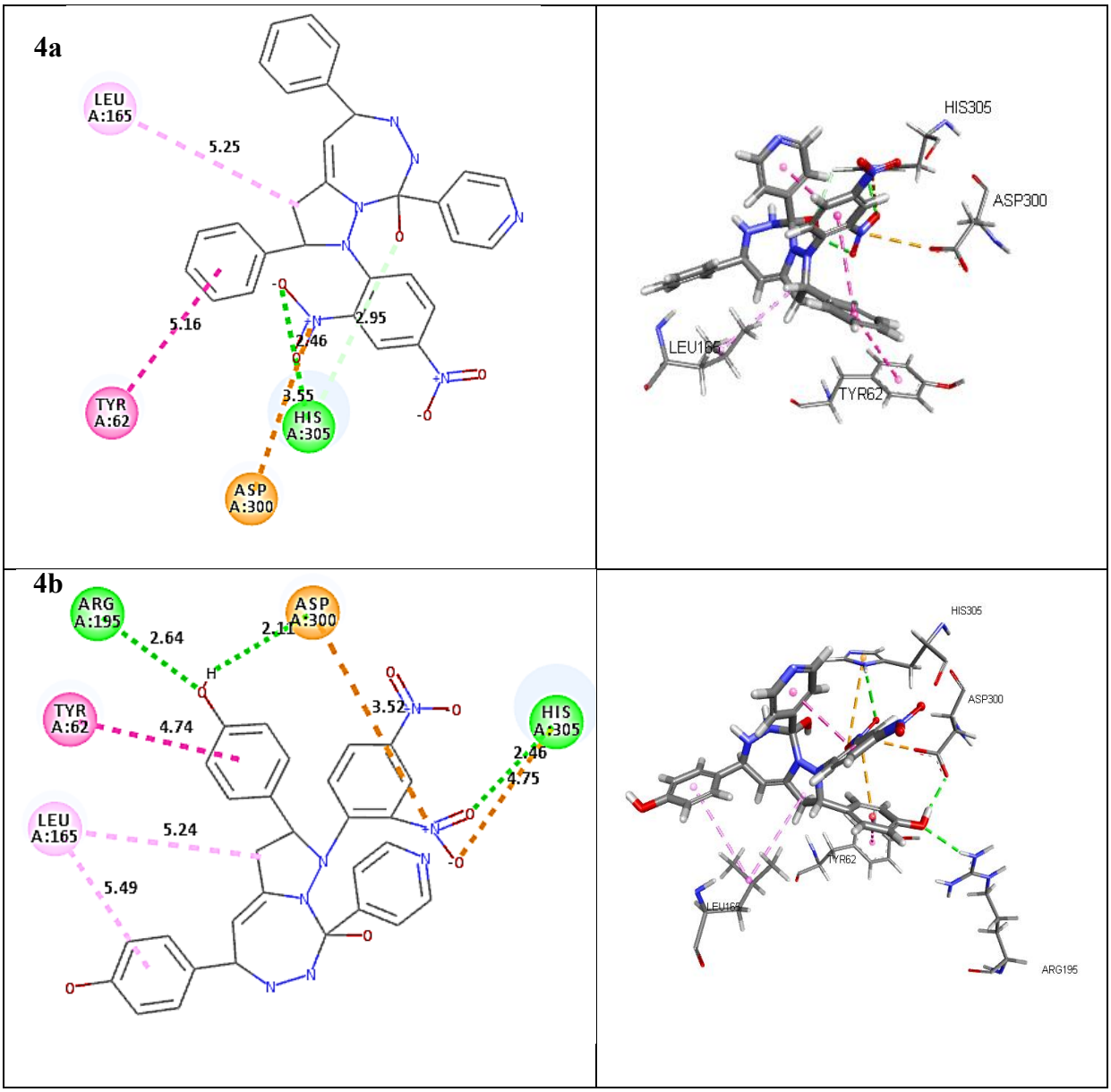
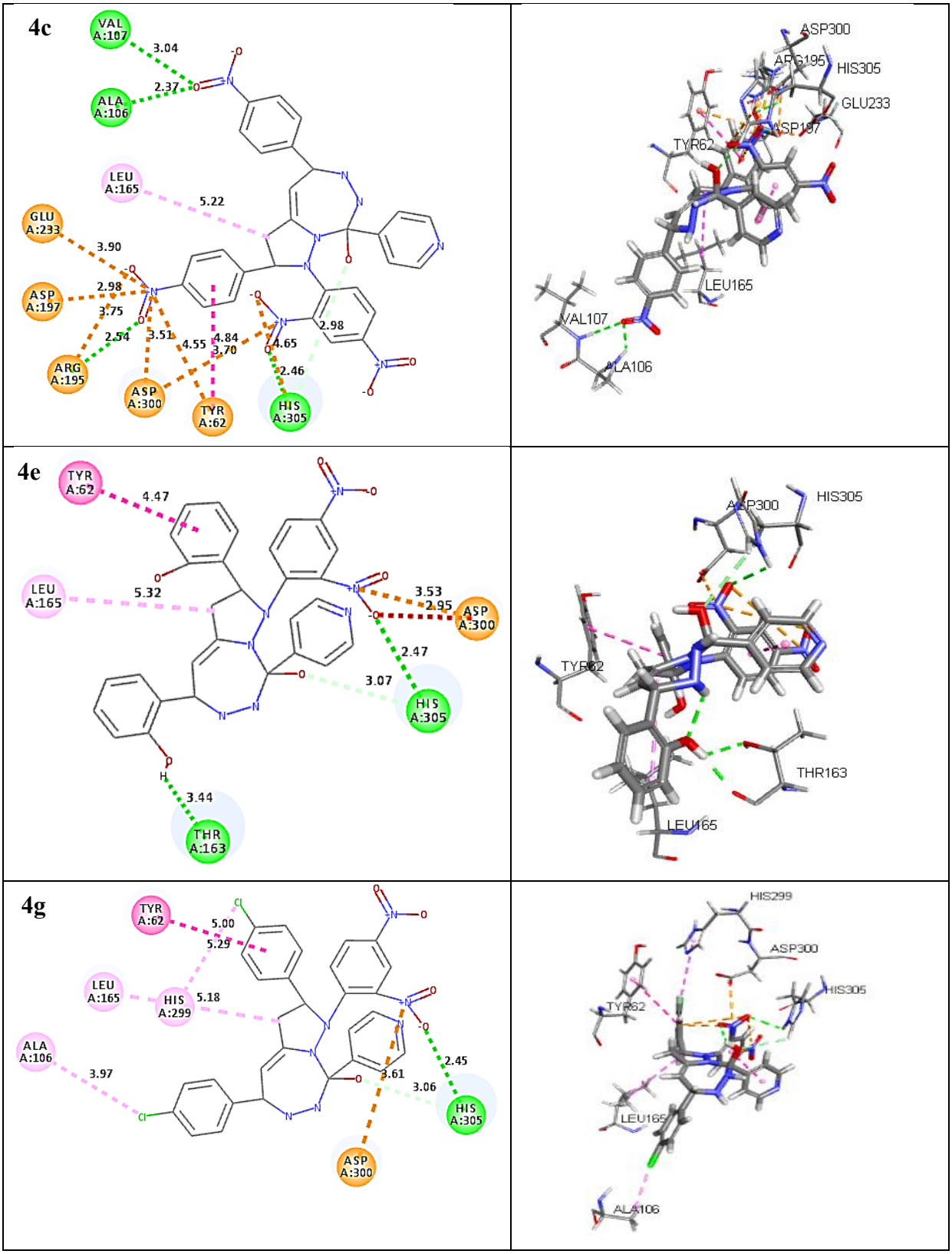
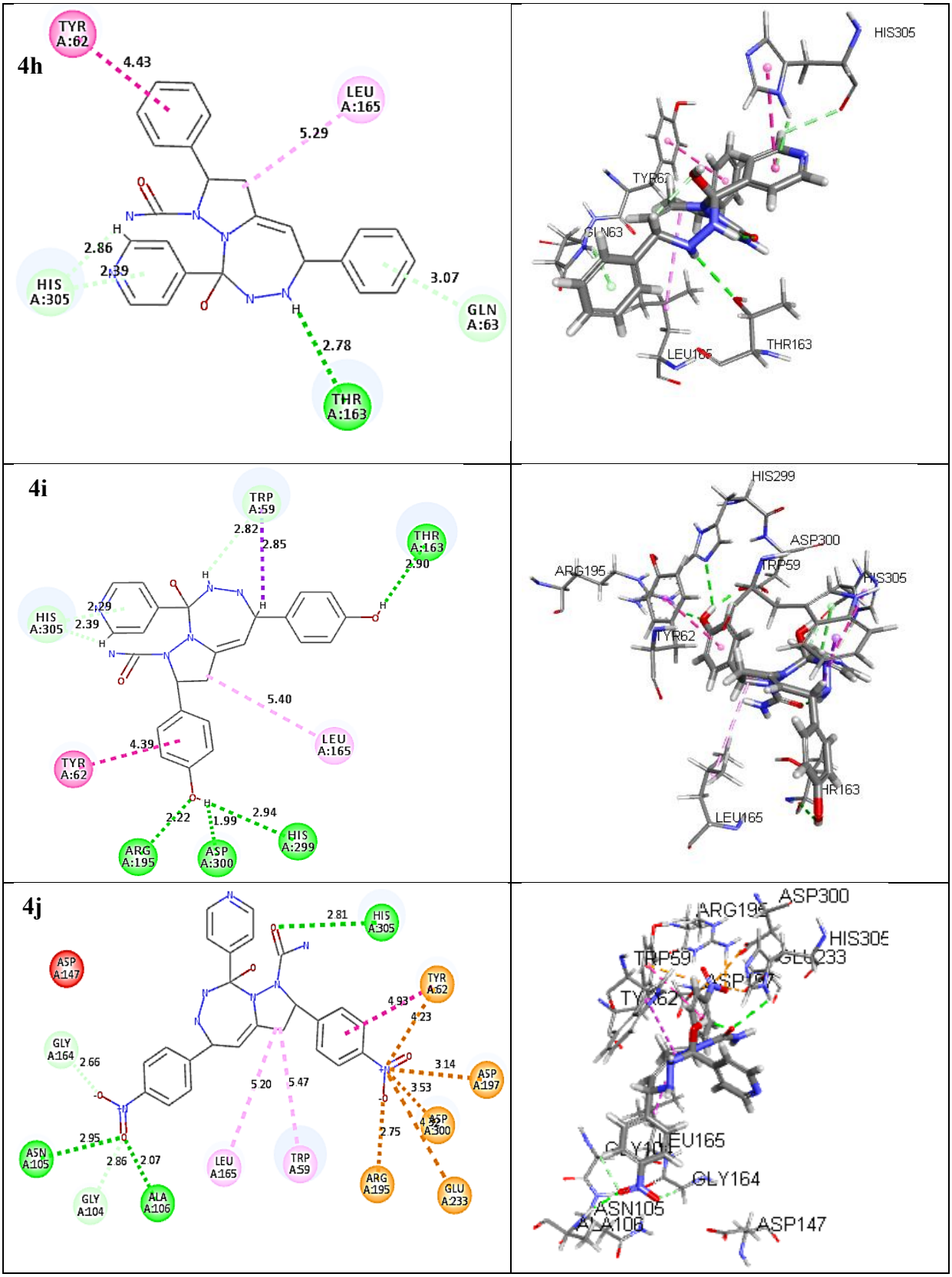


Figure S47. 2D (left) and 3D (right) representations of closest binding interaction between synthesized ligands (4a-4n) and receptor protein 2QV4.




4c
VAL A:107
3.04
2.37
ALA A:106
LEU A:165
5.22
GLU A:233
3.90
2.98
ASP A:197
3.75
2.54
3.51
4.55
4.84
3.70
4.65
2.46
2.98
ARG A:195
ASP A:300
TYR A:62
HIS A:305
ASP300
ARG195
HIS305
GLU233
ASP197
TYR62
LEU165
VAL107
ALA106
4e
TYR A:62
4.47
LEU A:165
5.32
3.53
2.95
ASP A:300
2.47
3.07
HIS A:305
3.44
THR A:163
ASP300
HIS305
TYR62
THR163
LEU165
4g
TYR A:62
5.00
5.29
LEU A:165
HIS A:299
5.18
ALA A:106
3.97
2.45
3.61
3.06
HIS A:305
ASP A:300
HIS299
ASP300
HIS305
TYR62
LEU165
ALA106


4h
TYR A:62
4.43
LEU A:165
5.29
2.86
2.39
HIS A:305
3.07
GLN A:63
2.78
THR A:163
HIS305
TYR62
GLN63
THR163
LEU165
4i
TRP A:59
2.82
2.85
THR A:163
2.90
2.29
HIS A:305
2.39
5.40
LEU A:165
4.39
TYR A:62
2.22
1.99
2.94
ARG A:195
ASP A:300
HIS A:299
HIS299
ASP300
ARG195
TRP59
HIS305
TYR62
THR163
LEU165
4j
2.81
HIS A:305
ASP A:147
TYR A:62
4.93
4.23
GLY A:164
2.66
3.14
ASP A:197
5.20
5.47
3.53
2.95
ASN A:105
2.86
2.07
LEU A:165
TRP A:59
2.75
ARG A:195
GLU A:233
GLY A:104
ALA A:106
ASP300
ARG195
HIS305
TRP59
GLU233
LEU165
GLY164
ASN105
ASP147

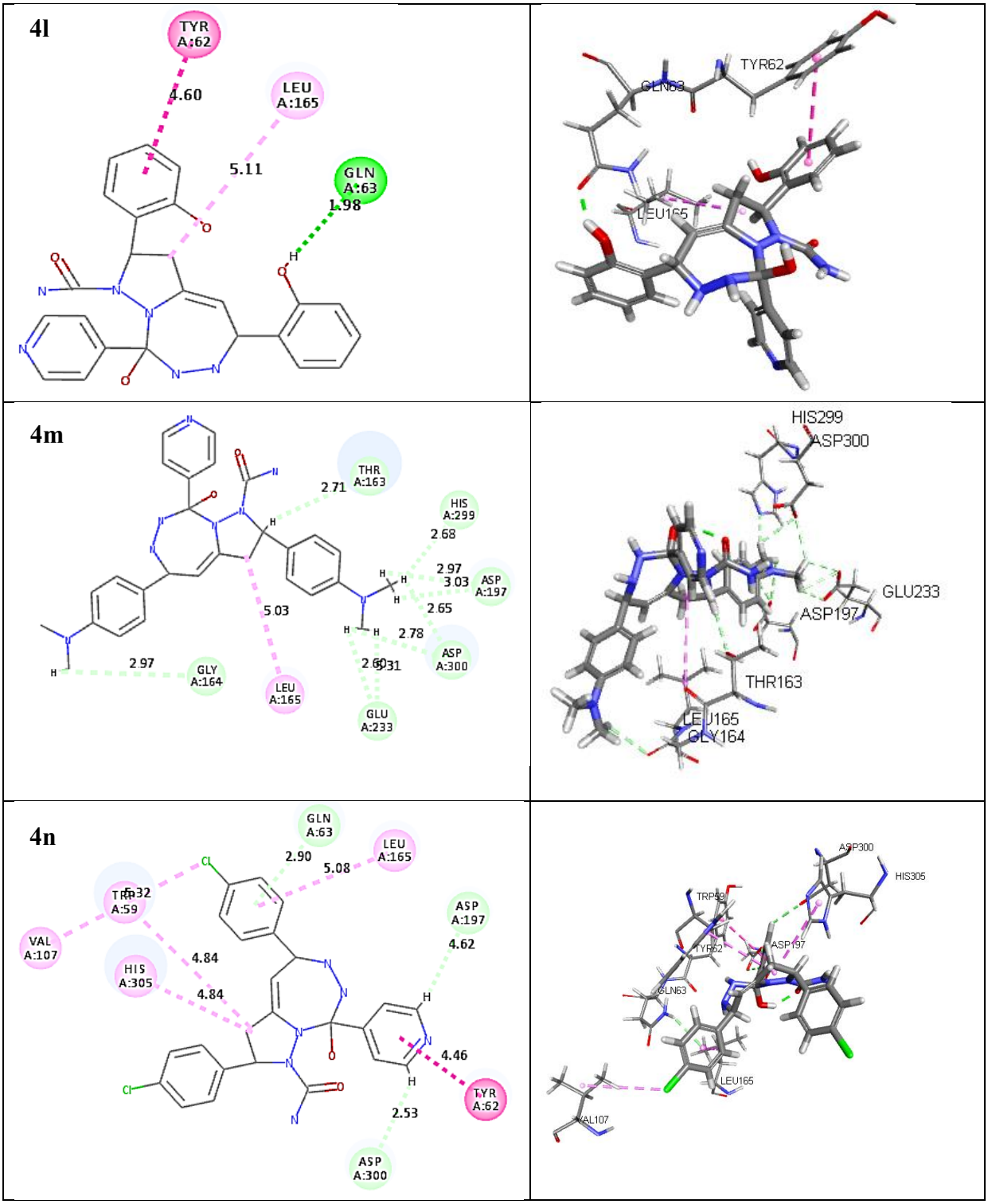
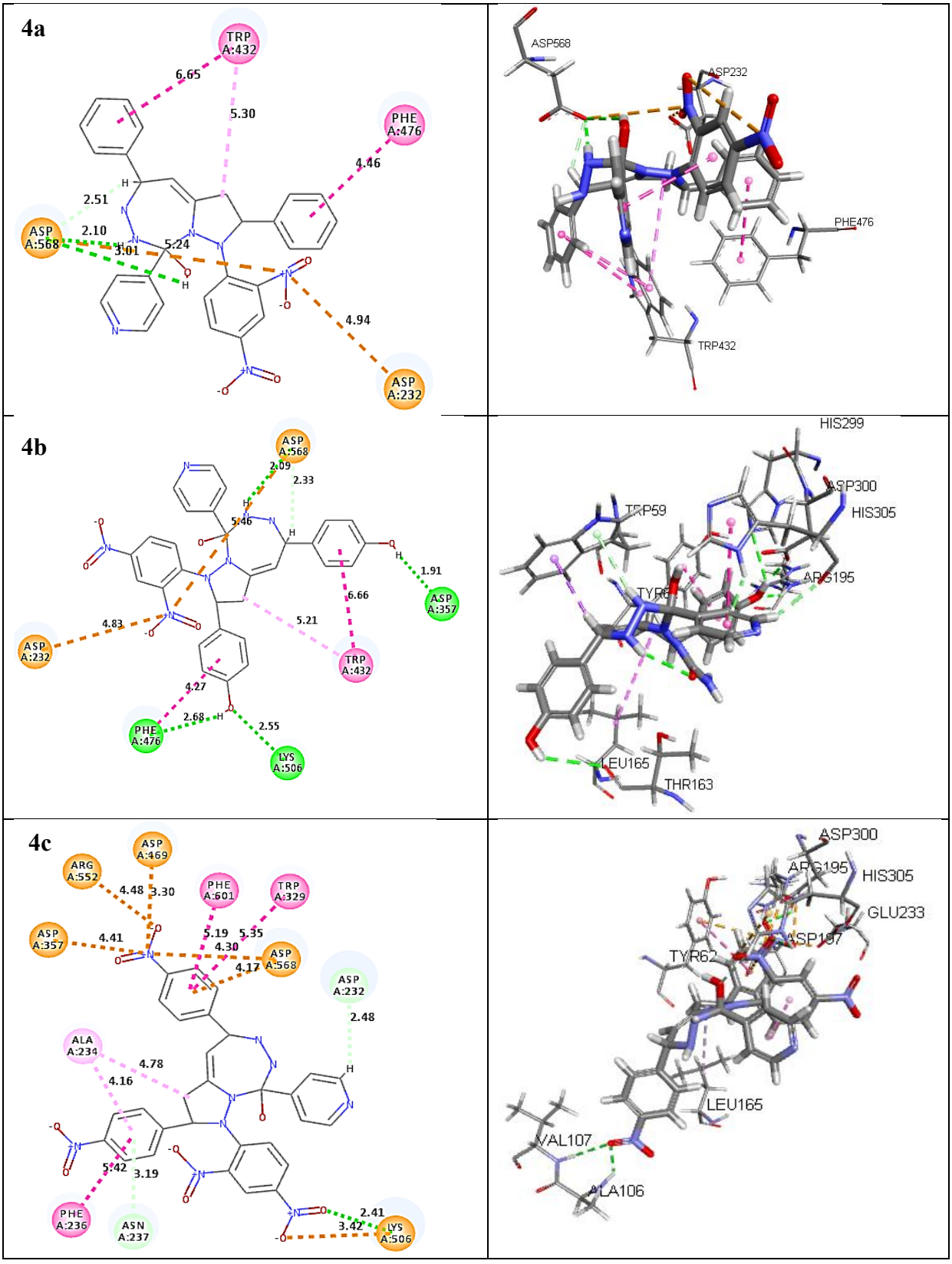
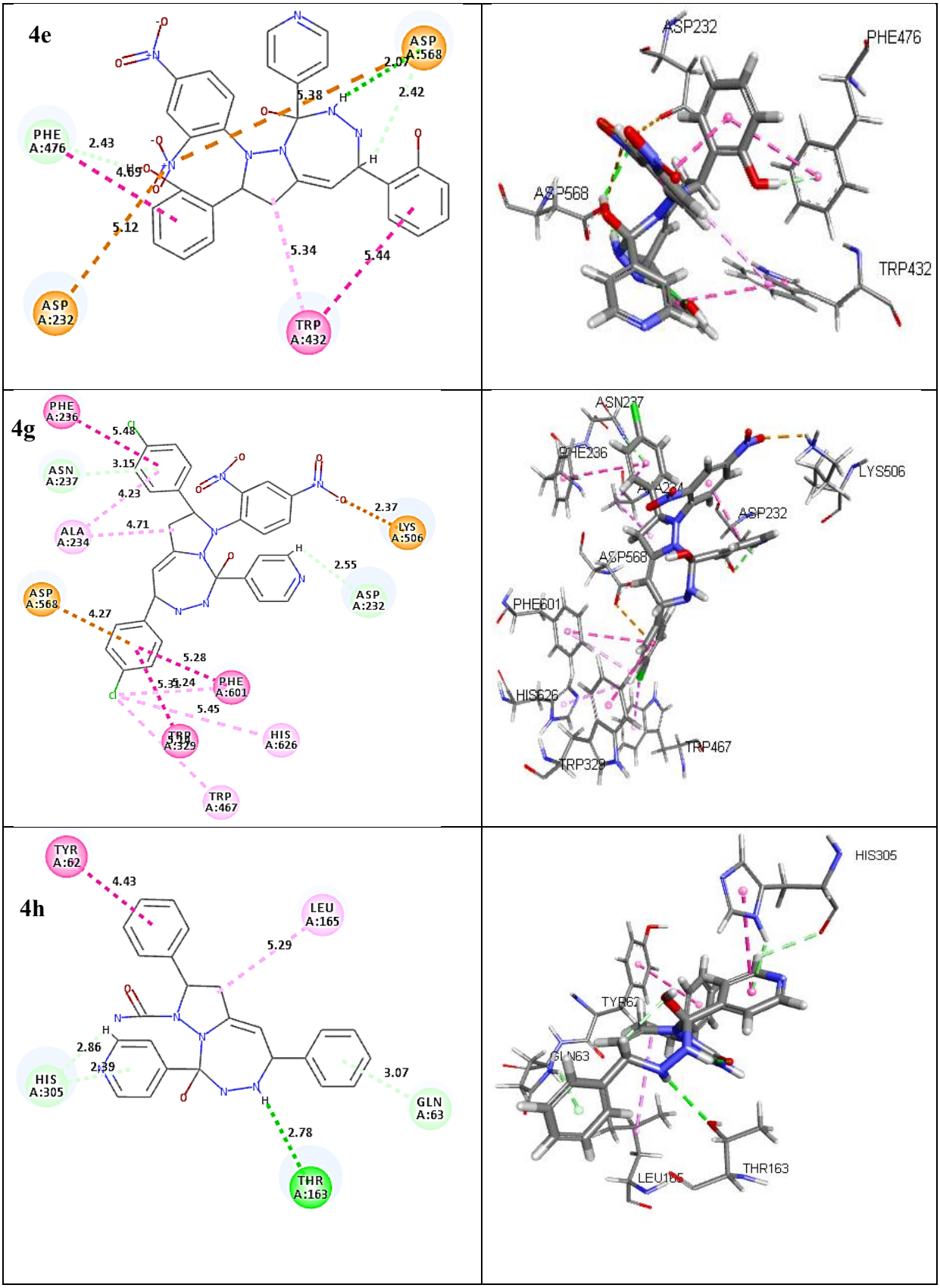
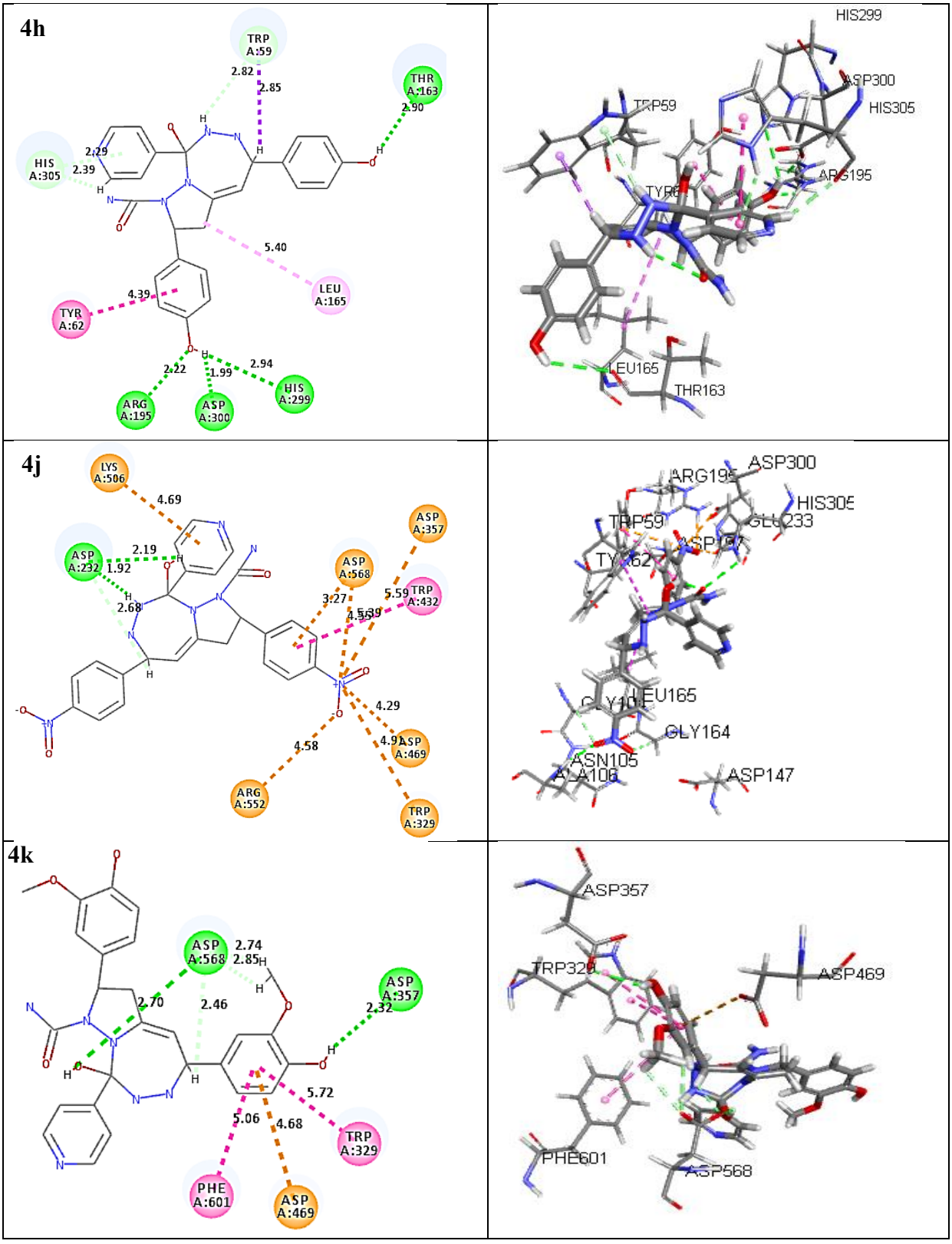


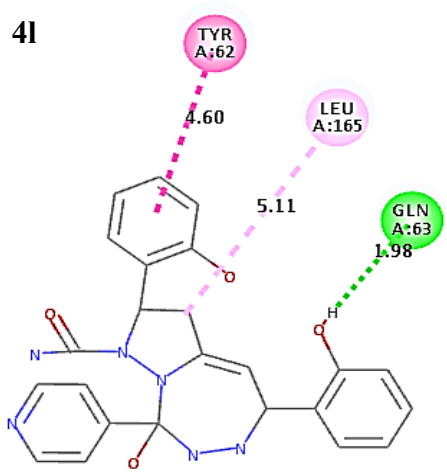
Figure S48. 2D (left) and 3D (right) representations of closest binding interaction between synthesized ligands (4a-4n) and receptor protein 3W37.


4a
TRP A:432
6.65
5.30
PHE A:476
4.46
2.51
ASP A:568
2.10
3.01
5.24
4.94
ASP A:232
ASP568
ASP232
PHE476
TRP432
4b
ASP A:568
2.09
2.33
5.46
1.91
ASP A:357
6.66
5.21
4.83
ASP A:232
TRP A:432
4.27
2.68
2.55
PHE A:476
LYS A:506
HIS299
ASP300
TRP59
HIS305
ARG195
TYR6
LEU165
THR163
4c
ASP A:469
ARG A:552
4.48
3.30
PHE A:601
TRP A:329
ASP A:357
4.41
5.19
5.35
4.30
ASP A:568
4.17
ASP A:232
2.48
ALA A:234
4.78
4.16
5.42
3.19
PHE A:236
ASN A:237
2.41
3.42
LYS A:506
ASP300
ARG195
HIS305
GLU233
ASP197
TYR62
LEU165
VAL107
ALA106


4e
ASP A:568
2.07
2.42
5.38
PHE A:476
2.43
4.69
5.12
5.34
5.44
ASP A:232
TRP A:432
ASP232
PHE476
ASP568
TRP432
4g
PHE A:236
5.48
3.15
ASN A:237
4.23
4.71
ALA A:234
2.37
LYS A:506
2.55
ASP A:232
ASP A:568
4.27
5.28
5.31
5.24
PHE A:601
5.45
HIS A:626
TRP A:467
ASN237
PHE236
LYS506
ASP232
ASP568
PHE601
HIS626
TRP467
TRP329
4h
TYR A:62
4.43
LEU A:165
5.29
2.86
2.39
HIS A:305
3.07
GLN A:63
2.78
THR A:163
HIS305
TYR62
GLN63
THR163
LEU165


4h
TRP A:59
2.82
2.85
THR A:163
2.90
HIS A:305
2.29
2.39
5.40
LEU A:165
4.39
TYR A:62
2.22
1.99
2.94
HIS A:299
ARG A:195
ASP A:300
HIS299
ASP300
TRP59
HIS305
ARG195
TYR62
LEU165
THR163
4j
LYS A:506
4.69
ASP A:357
ASP A:232
2.19
1.92
ASP A:568
2.68
3.27
5.59
TRP A:432
4.29
4.58
4.91
ASP A:469
ARG A:552
TRP A:329
ASP300
ARG195
HIS305
TRP59
GLU233
ASP147
LEU165
GLY164
ASN105
ALA106
ASP147
4k
ASP A:568
2.74
2.85
2.70
2.46
ASP A:357
2.32
5.72
5.06
4.68
TRP A:329
PHE A:601
ASP A:469
ASP357
TRP329
ASP469
PHE601
ASP568

4l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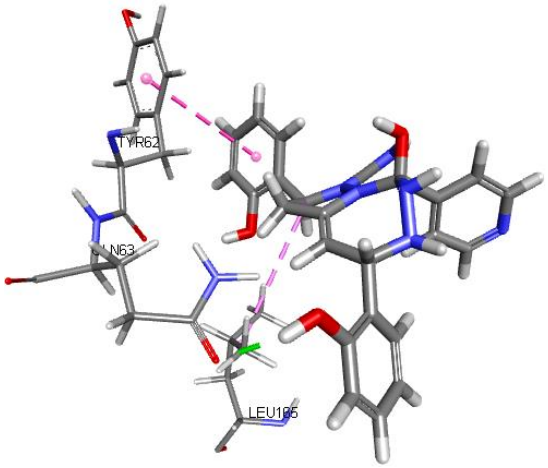
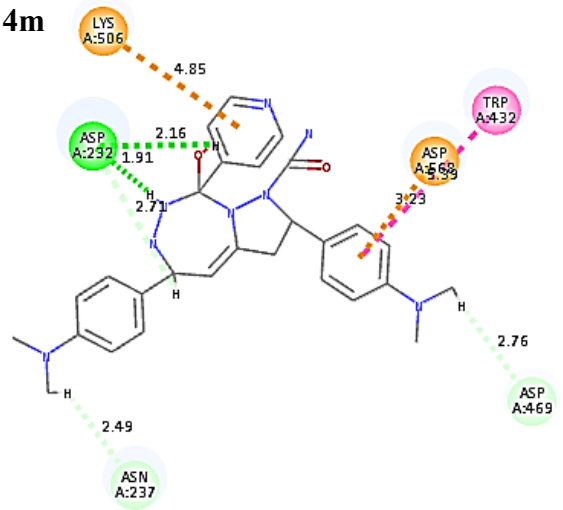
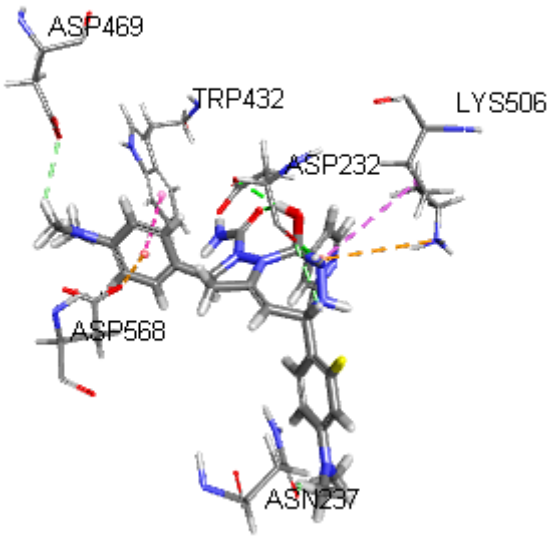
4.60
LEU A:165
5.11
GLN A:63
1.98

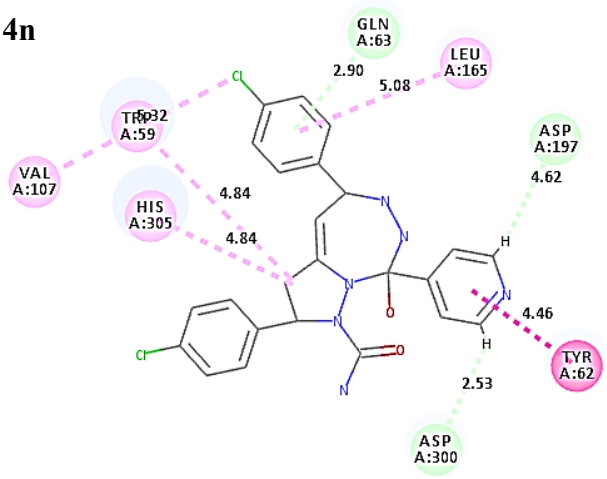

TYR62
N63
LEU165

4m


LYS A:506
4.85
TRP A:432
ASP A:232
2.16
1.91
2.71
ASP A:568
3.23
2.76
ASP A:469
2.49
ASN A:237


ASP469
TRP432
LYS506
ASP232
ASP568
ASN237

4n


GLN A:63
2.90
LEU A:165
5.08
TRP A:59
VAL A:107
4.84
HIS A:305
4.84
ASP A:197
4.62
4.46
TYR A:62
2.53
ASP A:300

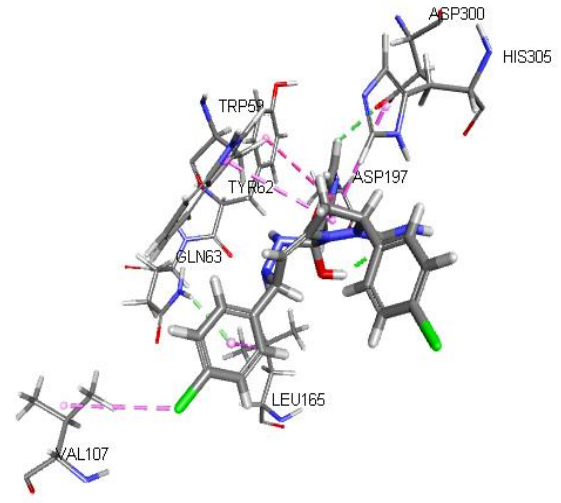
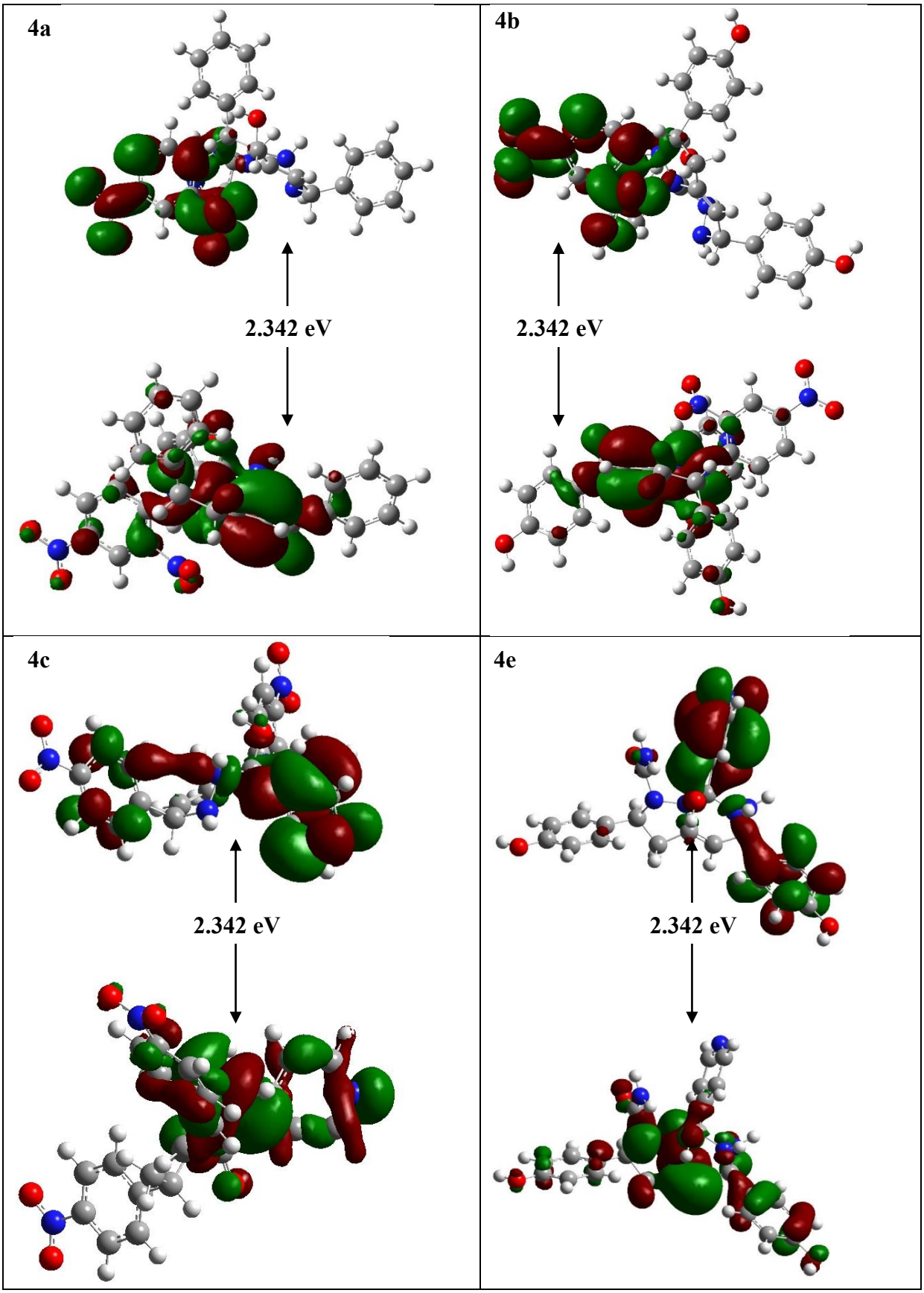
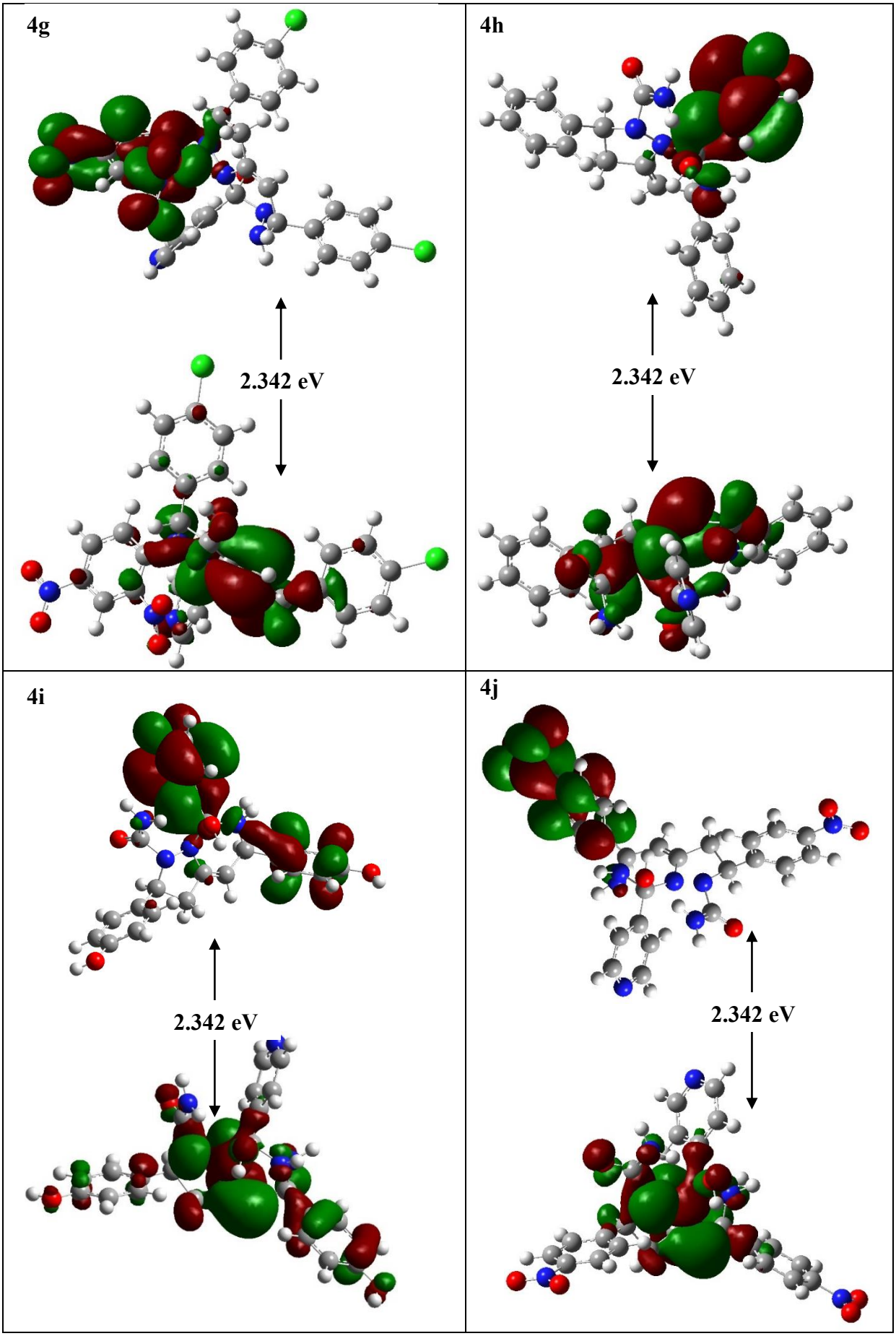

ASP300
HIS305
TRP59
TYR62
ASP197
GLN63
LEU165
VAL107

Figure S49. Molecular orbitals diagram (HOMO; bottom and LUMO; top) with HOMO-LUMO energy gap.




4g
2.342 eV
4h
2.342 eV
4i
2.342 eV
4j
2.342 eV

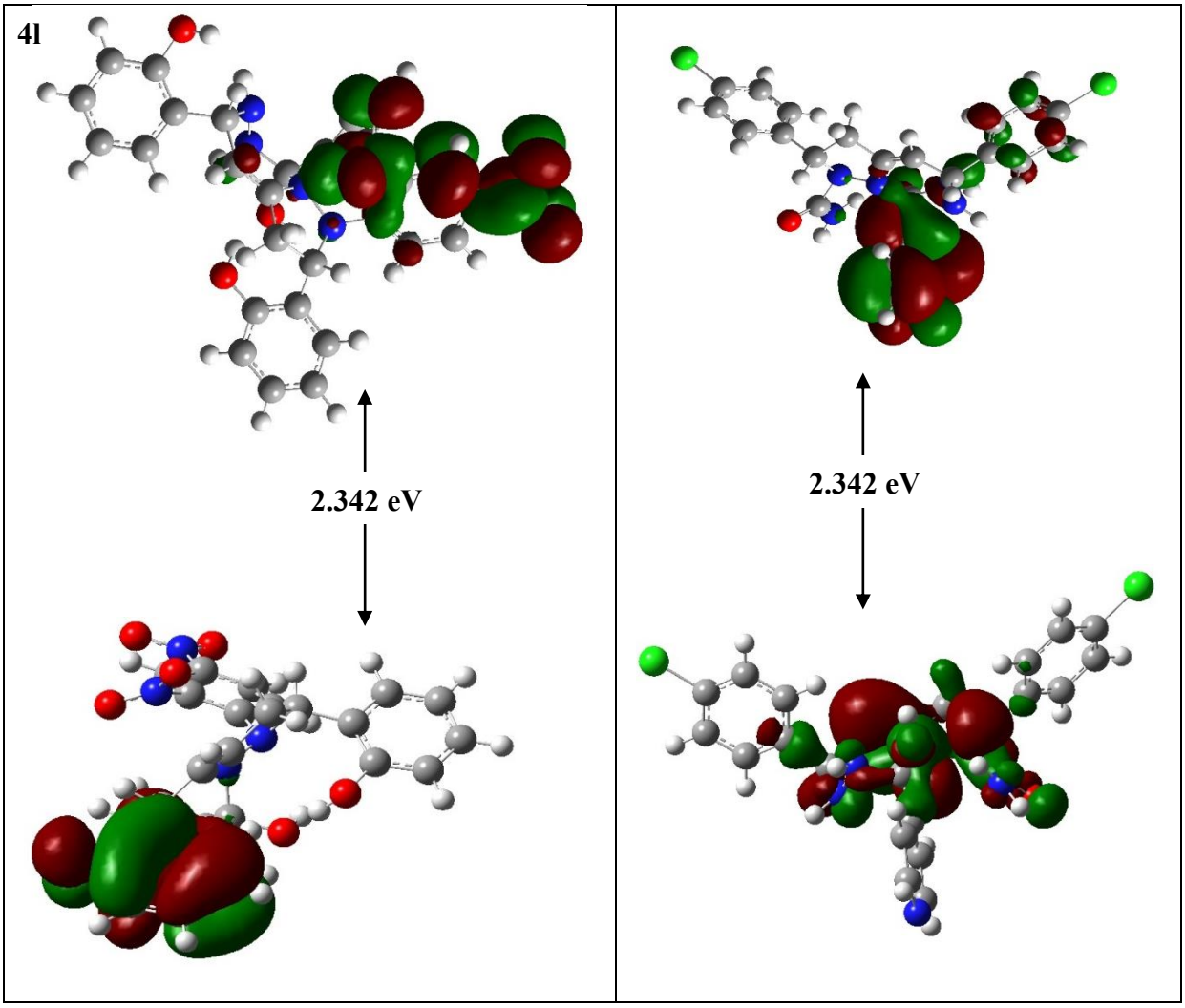


Table S1. Absorbance and corresponding % Inhibition of the tested compounds (4a-4n) against α-amylase enzyme at different concentrations.

Compounds	Absorbance			% Inhibition (50 µg/ml)			Mean	Std. Dev.	% Inhibition (50 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.77	0.85	0.74	16.30435	20.65217	19.56522	18.84058	2.26268	18.84 ± 2.26
4b	0.56	0.64	0.53	39.13043	34.78261	42.3913	38.76812	3.817266	39.13 ± 3.81
4c	0.58	0.66	0.55	36.95652	32.6087	40.21739	36.5942	3.817266	36.59 ± 3.81
4d	0.48	0.56	0.45	47.82609	45.65217	51.08696	48.18841	2.735447	48.18 ± 2.73
4e	0.7	0.78	0.67	23.91304	23.91304	27.17391	25	1.882664	25.00 ± 1.88
4f	0.51	0.59	0.48	44.56522	45.65217	47.82609	46.01449	1.660354	46.01 ± 1.66
4g	0.74	0.78	0.7	19.56522	21.73913	23.91304	21.73913	2.173913	21.73 ± 2.17
4h	0.78	0.82	0.74	15.21739	16.30435	19.56522	17.02899	2.26268	17.02 ± 2.26
4i	0.64	0.68	0.6	30.43478	36.95652	34.78261	34.05797	3.320707	34.05 ± 3.32
4j	0.68	0.72	0.64	26.08696	31.52174	30.43478	29.34783	2.875817	29.34 ± 2.87
4k	0.6	0.64	0.56	34.78261	35.86957	39.13043	36.5942	2.26268	36.59 ± 2.26
4l	0.71	0.77	0.67	22.82609	27.17391	27.17391	25.72464	2.510219	25.72 ± 2.51
4m	0.62	0.68	0.58	32.6087	39.13043	36.95652	36.23188	3.320707	36.23 ± 3.32
4n	0.75	0.81	0.71	18.47826	15.21739	22.82609	18.84058	3.817266	18.84 ± 3.81

Compounds	Absorbance			% Inhibition (100 µg/ml)			Mean	Std. Dev.	% Inhibition (100 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.6	0.63	0.61	34.78261	36.95652	33.69565	35.14493	1.660354	35.14 ± 1.66
4b	0.41	0.41	0.42	55.43478	55.43478	54.34783	55.07246	0.627555	55.07 ± 0.63
4c	0.5	0.5	0.51	45.65217	45.65217	44.56522	45.28986	0.627555	45.29 ± 0.63
4d	0.28	0.35	0.35	69.56522	72.82609	72.82609	71.73913	1.882664	71.74 ± 1.88
4e	0.55	0.63	0.56	40.21739	42.3913	39.13043	40.57971	1.660354	40.58 ± 1.66
4f	0.3	0.3	0.31	67.3913	67.3913	66.30435	67.02899	0.627555	67.03 ± 0.63
4g	0.57	0.59	0.59	38.04348	35.86957	35.86957	36.5942	1.255109	36.59 ± 1.26
4h	0.59	0.58	0.58	35.86957	36.95652	36.95652	36.5942	0.627555	36.59 ± 0.63
4i	0.5	0.58	0.52	45.65217	47.82609	43.47826	45.65217	2.173913	45.65 ± 2.17
4j	0.53	0.55	0.55	42.3913	40.21739	40.21739	40.94203	1.255109	40.94 ± 1.26
4k	0.56	0.56	0.5	50	50	45.65217	48.55072	2.510219	48.55 ± 2.51
4l	0.64	0.64	0.63	41.30435	41.30435	42.3913	41.66667	0.627555	41.67 ± 0.63
4m	0.49	0.5	0.51	46.73913	45.65217	44.56522	45.65217	1.086957	45.65 ± 1.09
4n	0.58	0.61	0.6	36.95652	33.69565	34.78261	35.14493	1.660354	35.14 ± 1.66

Compounds	Absorbance			% Inhibition (200 µg/ml)			Mean	Std. Dev.	% Inhibition (200 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.58	0.58	0.57	36.95652	36.95652	38.04348	37.31884	0.627555	37.32 ± 0.63
4b	0.38	0.37	0.37	58.69565	59.78261	59.78261	59.42029	0.627555	59.42 ± 0.63
4c	0.43	0.44	0.42	53.26087	52.17391	54.34783	53.26087	1.086957	53.26 ± 1.09
4d	0.2	0.2	0.19	78.26087	78.26087	79.34783	78.62319	0.627555	78.62 ± 0.63
4e	0.48	0.46	0.47	47.82609	50	48.91304	48.91304	1.086957	48.91 ± 1.09
4f	0.25	0.33	0.24	72.82609	75	73.91304	73.91304	1.086957	73.91 ± 1.09
4g	0.48	0.47	0.46	47.82609	48.91304	50	48.91304	1.086957	48.91 ± 1.09
4h	0.63	0.64	0.64	36.95652	44.56522	44.56522	42.02899	4.392882	42.03 ± 4.39
4i	0.46	0.44	0.45	50	52.17391	51.08696	51.08696	1.086957	51.09 ± 1.09
4j	0.49	0.48	0.48	46.73913	47.82609	47.82609	47.46377	0.627555	47.46 ± 0.63
4k	0.42	0.43	0.41	54.34783	53.26087	55.43478	54.34783	1.086957	54.35 ± 1.09
4l	0.5	0.49	0.49	45.65217	46.73913	46.73913	46.37681	0.627555	46.38 ± 0.63
4m	0.48	0.47	0.49	52.17391	47.82609	48.91304	53.26087	2.26268	53.26 ± 2.26
4n	0.51	0.51	0.5	44.56522	44.56522	45.65217	44.92754	0.627555	44.93 ± 0.63

Compounds	Absorbance			% Inhibition (300 µg/ml)			Mean	Std. Dev.	% Inhibition (300 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.5	0.49	0.49	45.65217	46.73913	46.73913	46.37681	0.627555	46.38 ± 0.63
4b	0.31	0.3	0.29	66.30435	67.3913	68.47826	67.3913	1.086957	67.39 ± 1.09
4c	0.4	0.41	0.41	56.52174	55.43478	55.43478	55.7971	0.627555	55.80 ± 0.63
4d	0.11	0.1	0.13	88.04348	89.13043	85.86957	87.68116	1.660354	87.68 ± 1.66
4e	0.46	0.45	0.46	50	51.08696	50	50.36232	0.627555	50.36 ± 0.63
4f	0.2	0.19	0.18	78.26087	79.34783	80.43478	79.34783	1.086957	79.35 ± 1.09
4g	0.45	0.47	0.45	51.08696	48.91304	51.08696	50.36232	1.255109	50.36 ± 5.02
4h	0.53	0.52	0.52	42.3913	43.47826	43.47826	43.11594	0.627555	43.12 ± 0.63
4i	0.44	0.43	0.43	52.17391	53.26087	54.34783	53.26087	1.086957	53.26 ± 1.09

4j	0.45	0.44	0.44	51.08696	52.17391	53.26087	53.26087	1.086957	53.26 ± 1.09
4k	0.41	0.4	0.45	55.43478	56.52174	57.6087	56.52174	1.086957	56.52 ± 1.09
4l	0.44	0.43	0.44	52.17391	53.26087	52.17391	52.53623	0.627555	52.54 ± 0.63
4m	0.42	0.41	0.42	54.34783	55.43478	54.34783	54.71014	0.627555	54.71 ± 0.63
4n	0.48	0.47	0.46	47.82609	48.91304	50	48.91304	1.086957	48.91 ± 1.09

Compounds	Absorbance			% Inhibition (400 µg/ml)			Mean	Std. Dev.	% Inhibition (400 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.48	0.49	0.48	47.82609	46.73913	47.82609	47.46377	0.627555	47.46 ± 0.63
4b	0.29	0.3	0.29	68.47826	67.3913	68.47826	68.11594	0.627555	68.12 ± 0.63
4c	0.38	0.39	0.38	58.69565	57.6087	58.69565	58.33333	0.627555	58.33 ± 0.63
4d	0.11	0.1	0.1	88.04348	89.13043	89.13043	88.76812	0.627555	88.77 ± 0.63
4e	0.44	0.45	0.44	52.17391	51.08696	52.17391	51.81159	0.627555	51.81 ± 0.63
4f	0.18	0.19	0.18	80.43478	79.34783	80.43478	80.07246	0.627555	80.07 ± 0.63
4g	0.44	0.45	0.44	52.17391	51.08696	52.17391	51.81159	0.627555	51.81 ± 0.62
4h	0.41	0.41	0.42	55.43478	55.43478	54.34783	55.07246	0.627555	55.07 ± 0.63
4i	0.44	0.43	0.43	52.17391	53.26087	54.34783	53.26087	1.086957	53.26 ± 1.09
4j	0.39	0.44	0.39	57.26087	52.17391	57.26087	55.56522	2.936956	52.90 ± 0.63
4k	0.41	0.4	0.4	55.43478	56.52174	56.52174	56.15942	0.627555	56.16 ± 0.63
4l	0.44	0.43	0.42	52.17391	53.26087	54.34783	53.26087	1.086957	53.26 ± 1.09
4m	0.42	0.41	0.41	54.34783	55.43478	55.43478	55.07246	0.627555	55.07 ± 0.63
4n	0.43	0.44	-	53.26087	52.17391	-	52.71739	0.768594	52.72 ± 0.77

Compounds	Absorbance			% Inhibition (500 µg/ml)			Mean	Std. Dev.	% Inhibition (500µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.44	0.43	0.43	52.17391	54.34783	54.34783	53.62319	1.255109	53.62 ± 1.25
4b	0.29	0.3	0.29	68.47826	67.3913	68.47826	68.11594	0.627555	68.11 ± 0.62
4c	0.38	0.36	0.36	58.69565	60.86957	60.86957	60.14493	1.255109	60.14 ± 1.25
4d	0.1	0.1	0.1	89.13043	89.13043	89.13043	89.13043	0	89.13 ± 0.00
4e	0.42	0.42	0.44	52.17391	54.34783	54.34783	53.62319	1.255109	53.62 ± 1.25
4f	0.18	0.18	0.18	80.43478	80.43478	80.43478	80.43478	0	80.43 ± 0.00
4g	0.53	0.54	0.54	53.26087	52.17391	52.17391	52.53623	0.627555	52.54 ± 0.63
4h	0.41	0.41	0.4	55.43478	55.43478	56.52174	55.7971	0.627555	55.79 ± 0.62
4i	0.43	0.43	0.41	53.26087	53.26087	55.43478	53.98551	1.255109	53.98 ± 1.25
4j	0.39	0.38	0.4	57.26087	58.69565	56.52174	57.49275	1.105352	57.49 ± 1.10
4k	0.39	0.38	0.38	57.26087	58.69565	58.69565	58.21739	0.828372	58.21 ± 0.82
4l	0.42	0.43	0.42	54.34783	53.26087	54.34783	53.98551	0.627555	53.98 ± 0.62
4m	0.4	0.41	0.41	56.52174	55.43478	55.43478	55.7971	0.627555	55.79 ± 0.62
4n	0.43	0.42	-	53.26087	54.34783	-	53.80435	0.768594	53.80 ± 0.76

Table S2. Absorbance and corresponding % Inhibition of the tested compounds (4a-4n) against α-glucosidase enzyme at different concentrations.

Compounds	Absorbance			% Inhibition (50 µg/ml)			Mean	Std. Dev.	% Inhibition (50 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	-	-	-	-	-	-	-	-	-
4b	0.62	0.63	0.61	20.51282	19.23077	21.79487	20.51282	1.282051	20.51 ± 1.28
4c	0.66	0.65	0.67	15.38462	16.66667	14.10256	15.38462	1.282051	15.38 ± 1.28
4d	0.5	0.51	0.51	35.89744	34.61538	34.61538	35.04274	0.740193	35.04 ± 0.74
4e	0.68	0.68	0.67	12.82051	12.82051	14.10256	13.24786	0.740193	13.25 ± 0.74
4f	0.52	0.52	0.51	33.33333	33.33333	34.61538	33.76068	0.740193	33.76 ± 0.74
4g	0.58	0.57	0.57	25.64103	26.92308	26.92308	26.49573	0.740193	26.50 ± 0.74
4h	-	-	-	-	-	-	-	-	-
4i	0.54	0.53	0.55	30.76923	32.05128	29.48718	30.76923	1.282051	30.77 ± 1.28
4j	0.57	0.56	0.57	26.92308	28.20513	26.92308	27.35043	0.740193	27.35 ± 0.74
4k	0.56	0.55	0.56	28.20513	29.48718	28.20513	28.63248	0.740193	28.63 ± 0.74
4l	0.69	0.68	0.69	11.53846	12.82051	11.53846	11.96581	0.740193	11.97 ± 0.74
4m	0.6	0.61	0.6	23.07692	21.79487	23.07692	22.64957	0.740193	22.65 ± 0.74
4n	0.65	0.64	0.65	16.66667	17.94872	16.66667	17.09402	0.740193	17.09 ± 0.74

Compounds	Absorbance			% Inhibition (100 µg/ml)			Mean	Std. Dev.	% Inhibition (100 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	-	-	-	-	-	-	-	-	-
4b	0.52	0.54	0.51	33.33333	30.76923	34.61538	32.90598	1.958366	32.91 ± 1.96
4c	0.56	0.57	0.54	28.20513	26.92308	30.76923	28.63248	1.958366	28.63 ± 1.96
4d	0.43	0.41	0.44	44.87179	47.4359	43.58974	45.29915	1.958366	45.30 ± 1.96
4e	0.66	0.63	0.67	15.38462	19.23077	14.10256	16.23932	2.668803	16.24 ± 2.67
4f	0.49	0.47	0.47	37.17949	39.74359	39.74359	38.88889	1.480385	38.89 ± 1.48
4g	0.51	0.52	0.53	34.61538	33.33333	32.05128	33.33333	1.282051	33.33 ± 1.28
4h	-	-	-	-	-	-	-	-	-
4i	0.5	0.53	0.51	35.89744	32.05128	34.61538	34.18803	1.958366	34.19 ± 1.96
4j	0.58	0.56	0.55	25.64103	28.20513	29.48718	27.77778	1.958366	27.78 ± 1.96
4k	0.52	0.54	0.54	33.33333	30.76923	30.76923	31.62393	1.480385	31.62 ± 1.48
4l	0.63	0.62	0.64	19.23077	20.51282	17.94872	19.23077	1.282051	19.23 ± 1.28
4m	0.56	0.55	0.57	28.20513	29.48718	26.92308	28.20513	1.282051	28.21 ± 1.28
4n	0.61	0.63	0.64	21.79487	19.23077	17.94872	19.65812	1.958366	19.66 ± 1.96

Compounds	Absorbance			% Inhibition (200 µg/ml)			Mean	Std. Dev.	% Inhibition (200 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.66	0.65	0.64	15.38462	16.66667	17.94872	16.66667	1.813094	16.67 ± 1.81
4b	0.48	0.47	0.45	38.46154	39.74359	42.30769	40.17094	23.03851	40.17 ± 23.04
4c	0.5	0.55	0.52	35.89744	29.48718	33.33333	32.90598	19.64603	32.91 ± 19.65
4d	0.36	0.38	0.34	53.84615	51.28205	56.41026	53.84615	31.56566	53.85 ± 31.57
4e	0.59	0.57	0.55	24.35897	26.92308	29.48718	26.92308	15.36688	26.92 ± 15.37
4f	0.4	0.42	0.43	48.71795	46.15385	44.87179	46.5812	26.78593	46.58 ± 26.79
4g	-	-	-	-	-	-	-	-	-
4h	0.62	0.61	0.61	20.51282	21.79487	21.79487	21.36752	0.906547	21.37 ± 0.91
4i	-	-	-	-	-	-	-	-	-

4j	0.53	0.54	0.53	32.05128	30.76923	32.05128	31.62393	18.17573	17.09 ± 9.13
4k	0.43	0.41	0.41	44.87179	47.4359	47.4359	46.5812	26.35482	46.58 ± 26.35
4l	0.56	0.55	0.53	28.20513	29.48718	32.05128	29.91453	17.10461	29.91 ± 17.10
4m	0.46	0.43	0.43	41.02564	44.87179	44.87179	43.58974	24.52556	43.59 ± 24.53
4n	0.53	0.54	0.54	32.05128	30.76923	30.76923	31.19658	17.77101	31.20 ± 17.77

Compounds	Absorbance			% Inhibition (300 µg/ml)			Mean	Std. Dev.	% Inhibition (300 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.54	0.53	0.53	30.76923	32.05128	32.05128	31.62393	0.740193	31.62 ± 0.74
4b	0.43	0.42	0.41	44.87179	46.15385	47.4359	46.15385	1.282051	46.15 ± 1.28
4c	0.45	0.47	0.46	42.30769	39.74359	41.02564	41.02564	1.282051	41.03 ± 1.28
4d	0.28	0.27	0.25	64.10256	65.38462	67.94872	65.81197	1.958366	65.81 ± 1.96
4e	0.52	0.51	0.54	33.33333	34.61538	30.76923	32.90598	1.958366	32.91 ± 1.96
4f	0.38	0.37	0.37	51.28205	52.5641	52.5641	52.13675	0.740193	52.14 ± 0.74
4g	0.5	0.51	0.52	35.89744	34.61538	33.33333	34.61538	1.282051	34.62 ± 1.28
4h	0.51	0.52	0.51	34.61538	33.33333	34.61538	34.18803	0.740193	34.19 ± 0.74
4i	0.44	0.43	0.46	43.58974	44.87179	41.02564	43.16239	1.958366	43.16 ± 1.96
4j	0.52	0.52	0.54	33.33333	33.33333	30.76923	32.47863	1.480385	32.48 ± 1.48
4k	0.4	0.42	0.41	48.71795	46.15385	47.4359	47.4359	1.282051	47.44 ± 1.28
4l	0.48	0.46	0.46	38.46154	41.02564	41.02564	40.17094	1.480385	40.17 ± 1.48
4m	0.42	0.42	0.43	46.15385	46.15385	44.87179	45.7265	0.740193	45.73 ± 0.74
4n	0.46	0.48	0.44	41.02564	38.46154	43.58974	41.02564	2.564103	41.03 ± 2.56

Compounds	Absorbance			% Inhibition (400 µg/ml)			Mean	Std. Dev.	% Inhibition (400 µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.43	0.54	0.53	44.87179	30.76923	32.05128	35.89744	7.798414	35.90 ± 7.80
4b	0.39	0.37	0.37	50	52.5641	52.5641	51.7094	1.480385	51.71 ± 1.48
4c	0.43	0.42	0.41	44.87179	46.15385	47.4359	46.15385	1.282051	46.15 ± 1.28
4d	0.22	0.24	0.21	71.79487	69.23077	73.07692	71.36752	1.958366	71.37 ± 1.96
4e	0.49	0.47	0.47	37.17949	39.74359	39.74359	38.88889	1.480385	38.89 ± 1.48
4f	0.24	0.22	0.28	69.23077	71.79487	64.10256	68.37607	3.916731	68.38 ± 3.92
4g	0.39	0.37	0.37	50	52.5641	52.5641	51.7094	1.480385	51.71 ± 1.48
4h	0.48	0.46	0.46	38.46154	41.02564	41.02564	40.17094	1.480385	40.17 ± 1.48
4i	0.41	0.39	0.43	47.4359	50	44.87179	47.4359	2.564103	47.44 ± 2.56
4j	0.48	0.46	0.43	38.46154	41.02564	44.87179	41.45299	3.226425	41.45 ± 3.23
4k	0.3	0.28	0.32	61.53846	64.10256	58.97436	61.53846	2.564103	61.54 ± 2.56
4l	0.46	0.44	0.44	41.02564	43.58974	43.58974	42.73504	1.480385	42.74 ± 1.48
4m	0.34	0.32	0.35	56.41026	58.97436	55.12821	56.83761	1.958366	56.84 ± 1.96
4n	0.49	0.47	0.48	37.17949	39.74359	38.46154	38.46154	1.282051	38.46 ± 1.28

Compounds	Absorbance			% Inhibition (500 µg/ml)			Mean	Std. Dev.	% Inhibition (500µg/ml)
	Set_1	Set_2	Set_3	Set_1	Set_2	Set_3			
4a	0.39	0.38	0.39	50	51.28205	50	50.42735	28.55574	50.43 ± 28.56
4b	0.32	0.31	0.32	58.97436	60.25641	58.97436	59.40171	33.8006	59.40 ± 33.80

4c	0.4	0.4	0.4	48.71795	48.71795	48.71795	48.71795	27.86751	48.72 ± 27.87
4d	0.11	0.1	0.1	85.89744	87.17949	87.17949	86.75214	49.80547	86.75 ± 49.81
4e	0.42	0.41	0.42	46.15385	47.4359	46.15385	46.5812	26.34671	46.58 ± 26.35
4f	0.19	0.18	0.18	75.64103	76.92308	76.92308	76.49573	43.82676	76.50 ± 43.83
4g	0.31	0.31	0.31	60.25641	60.25641	60.25641	60.25641	34.50038	60.26 ± 34.50
4h	0.42	0.43	0.42	46.15385	44.87179	46.15385	45.7265	26.35249	45.73 ± 26.35
4i	0.39	0.38	0.38	50	51.28205	51.28205	50.8547	28.99066	50.85 ± 28.99
4j	0.43	0.42	0.43	44.87179	46.15385	44.87179	45.29915	25.60652	45.30 ± 25.61
4k	0.24	0.23	0.24	69.23077	70.51282	69.23077	69.65812	39.73946	69.66 ± 39.74
4l	0.41	0.43	0.41	47.4359	44.87179	47.4359	46.5812	27.11	46.58 ± 27.11
4m	0.28	0.28	0.28	64.10256	64.10256	64.10256	64.10256	36.76715	64.10 ± 36.77
4n	0.44	0.43	0.43	43.58974	44.87179	44.87179	44.44444	25.27919	44.44 ± 25.28