Supporting Information

Metal-Free Minisci C–H Alkylation of Hydrazones Using Aldehydes : An Unexpected Route to Hydrazone-Containing Pyrimidine Derivatives

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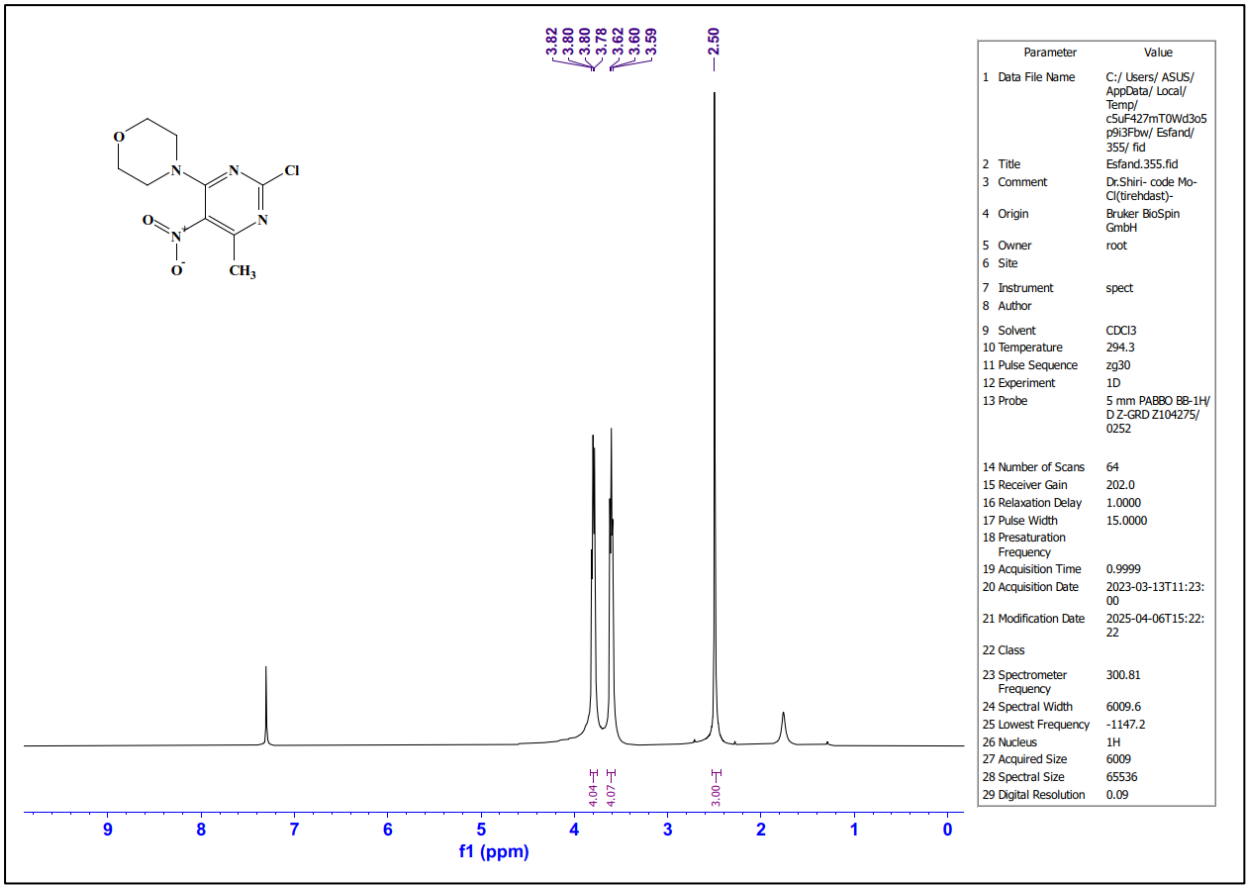

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8	Author	
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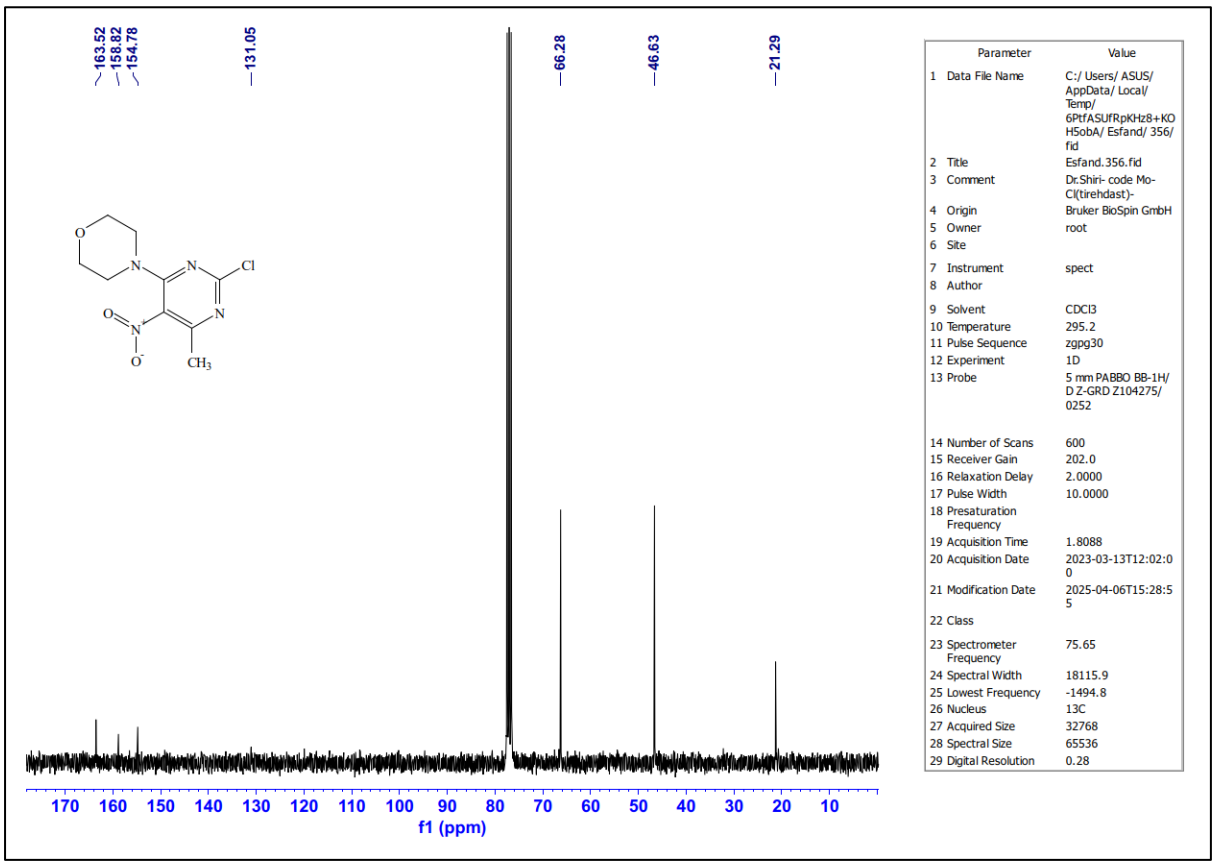
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(2)**



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5	Owner	root
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7	Instrument	spect
8	Author	
9	Solvent	CDCl3
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11	Pulse Sequence	zgpg30
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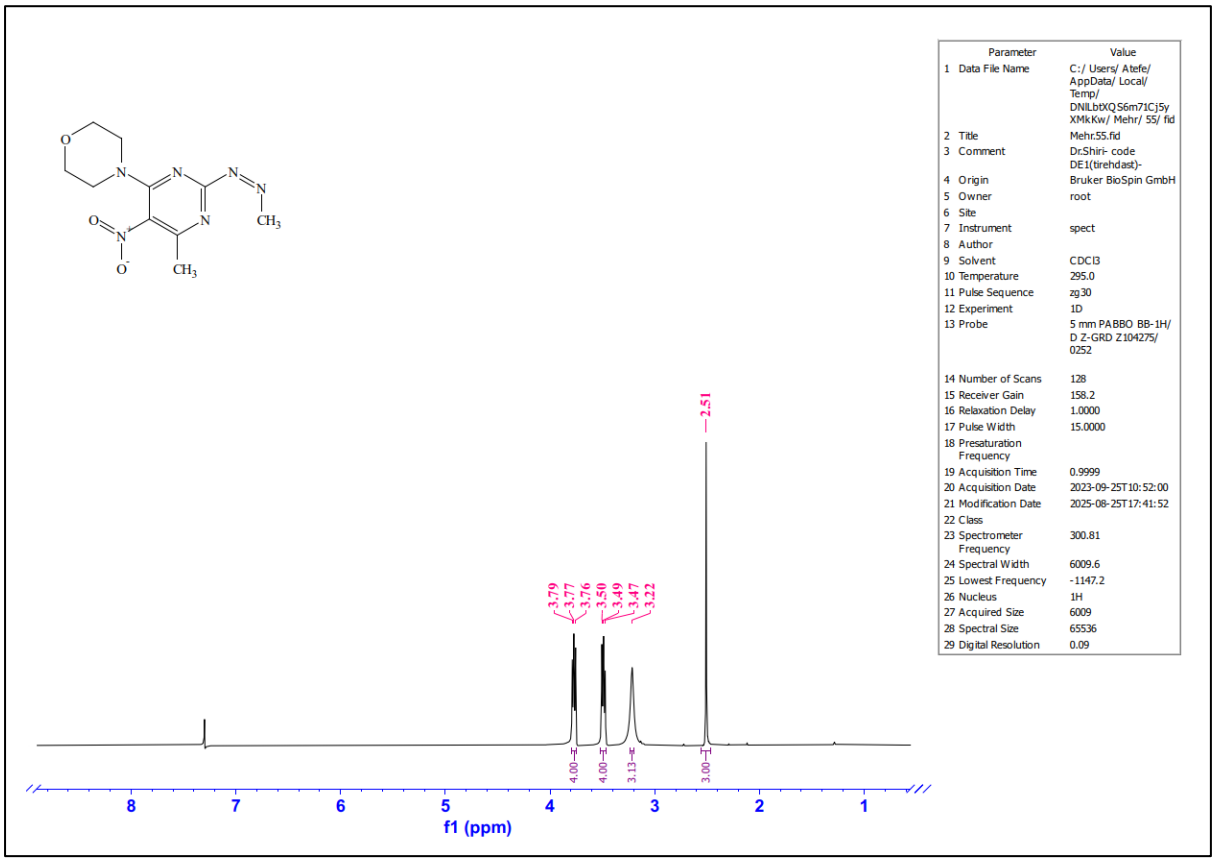
22	Class	
23	Spectrometer Frequency	75.65
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(3)**



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5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	CDCl3
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11	Pulse Sequence	zg30
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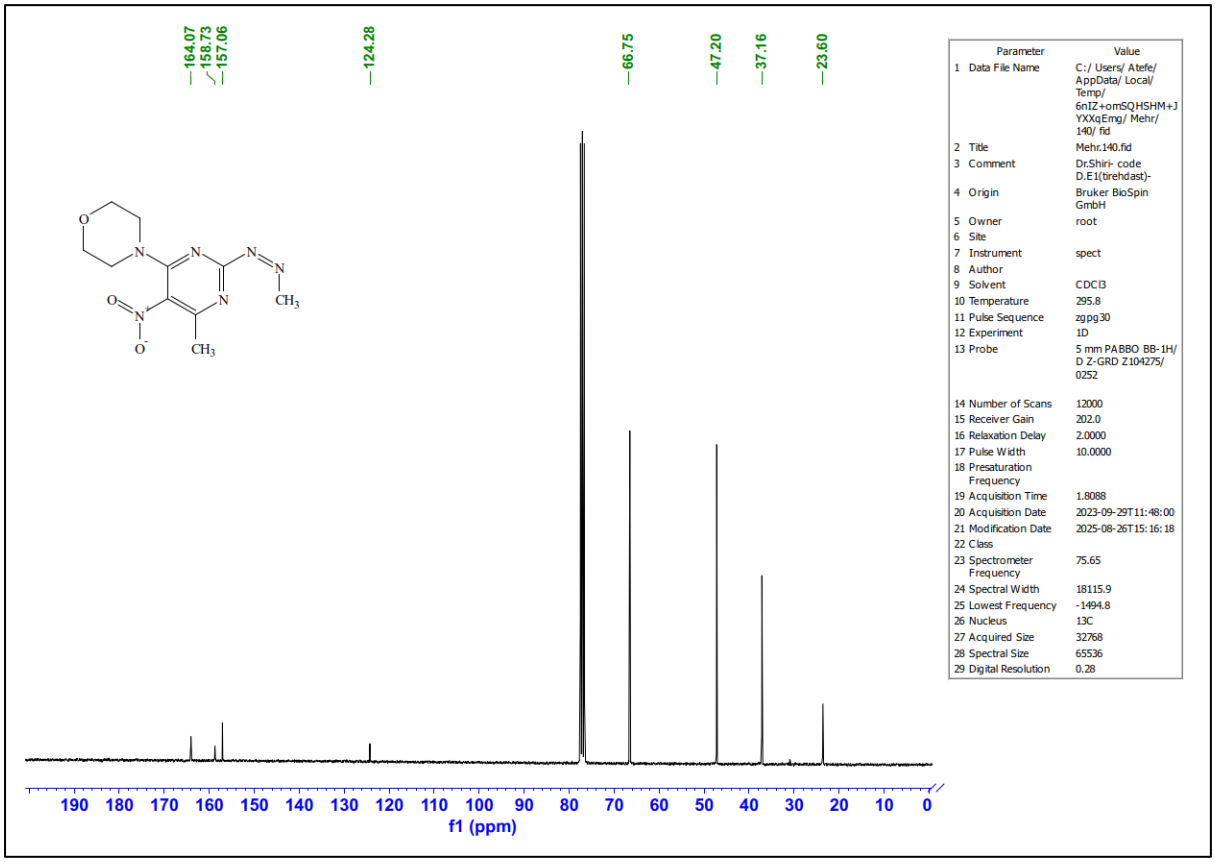
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	6009
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(3)**



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7	Instrument	spect
8	Author	
9	Solvent	CDCl3
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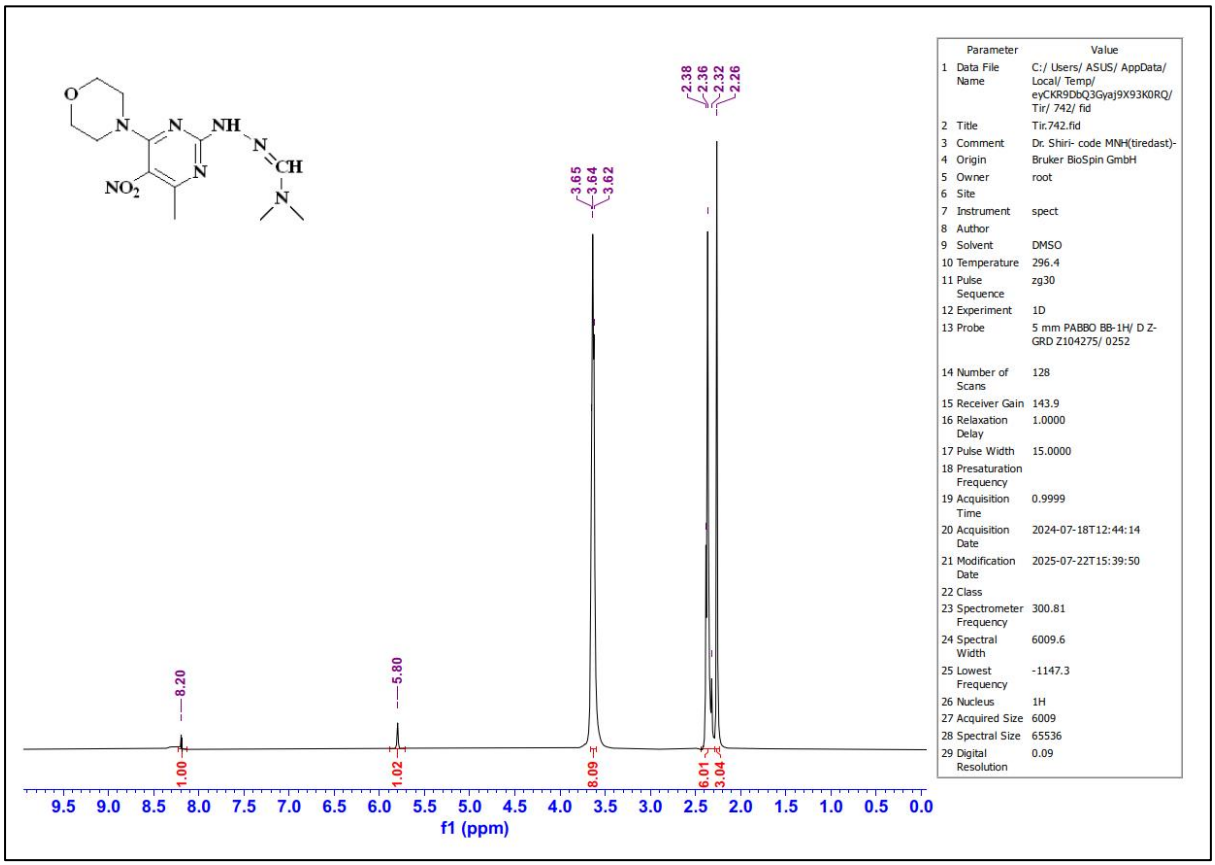
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(I)**



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9	Solvent	DMSO
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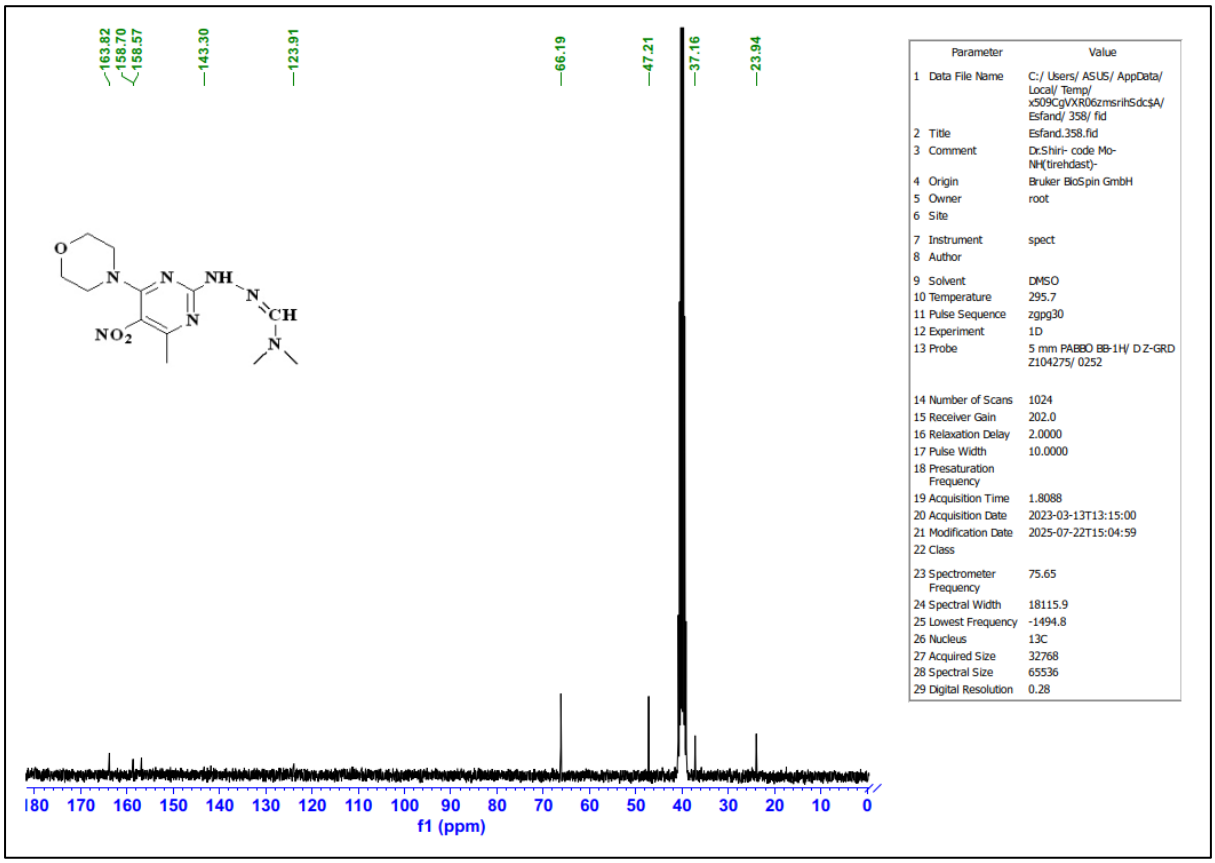
22	Class	
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.3
26	Nucleus	1H
27	Acquired Size	6009
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(I)**



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5 Owner	root
6 Site	
7 Instrument	spect
8 Author	
9 Solvent	DMSO
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12 Experiment	1D
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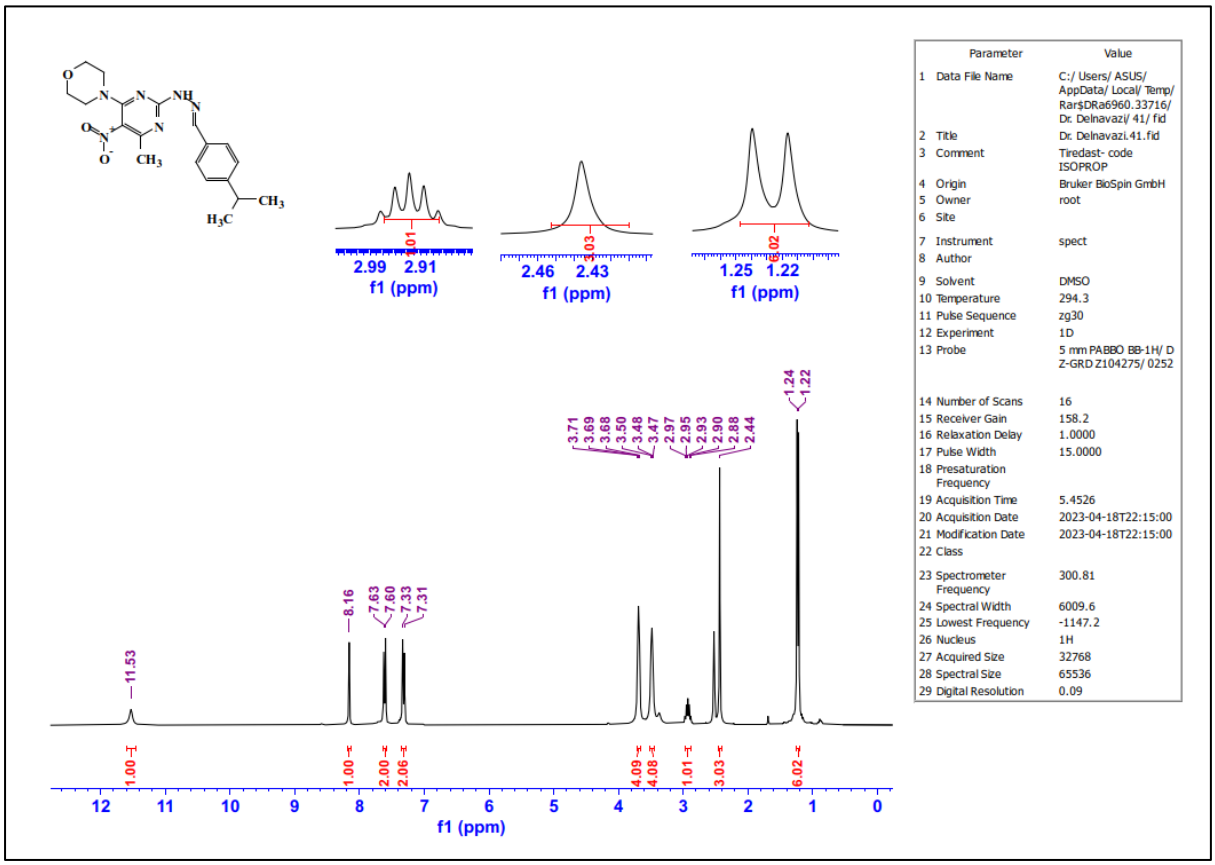
22 Class	
23 Spectrometer Frequency	75.65
24 Spectral Width	18115.9
25 Lowest Frequency	-1494.8
26 Nucleus	13C
27 Acquired Size	32768
28 Spectral Size	65536
29 Digital Resolution	0.28

^{1}H NMR spectrum of compound **(4a)**



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6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
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11	Pulse Sequence	zg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	16
15	Receiver Gain	158.2
16	Relaxation Delay	1.0000
17	Pulse Width	15.0000
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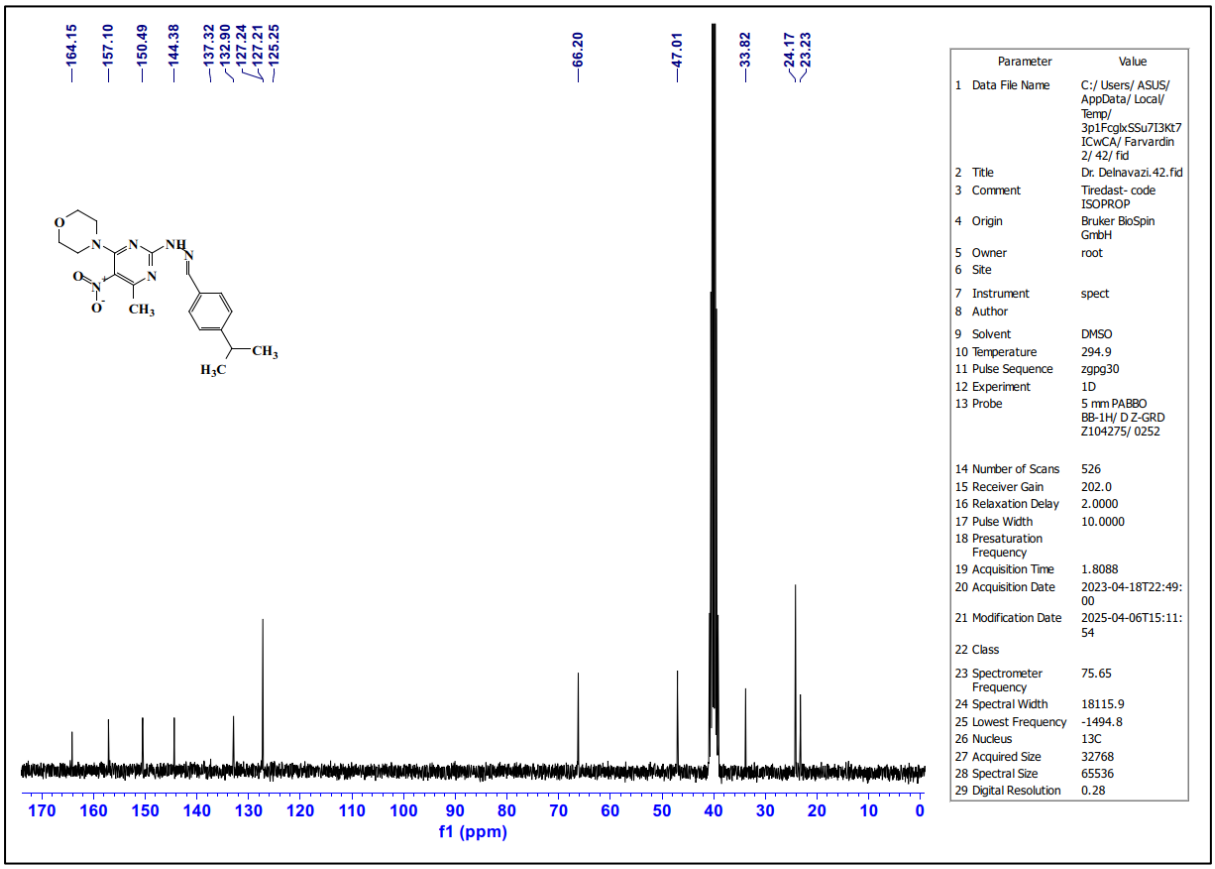
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4a)**



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5	Owner	root
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7	Instrument	spect
8	Author	
9	Solvent	DMSO
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12	Experiment	1D
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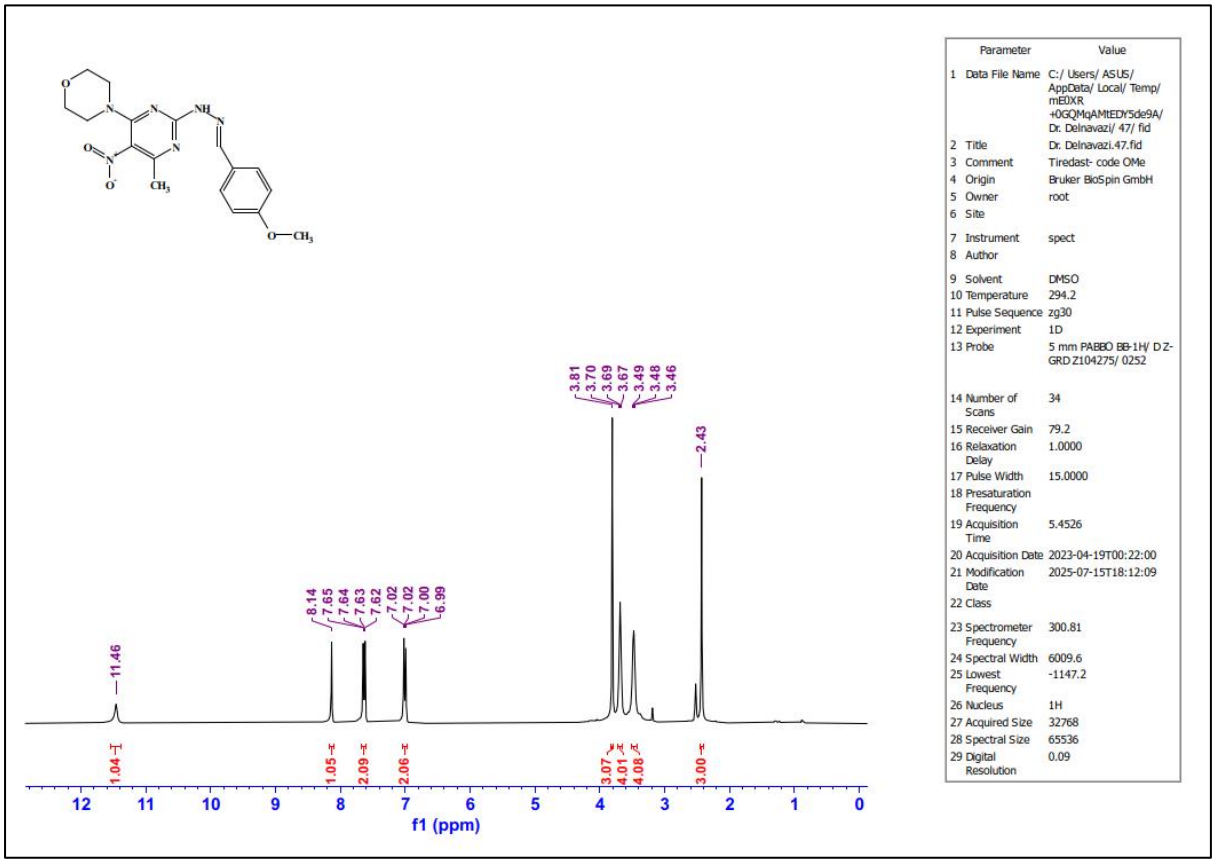
22	Class	
23	Spectrometer Frequency	75.65
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(4b)**



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5	Owner	root
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7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	294.2
11	Pulse Sequence	zg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	34
15	Receiver Gain	79.2
16	Relaxation Delay	1.0000
17	Pulse Width	15.0000
18	Presaturation Frequency	
19	Acquisition Time	5.4526
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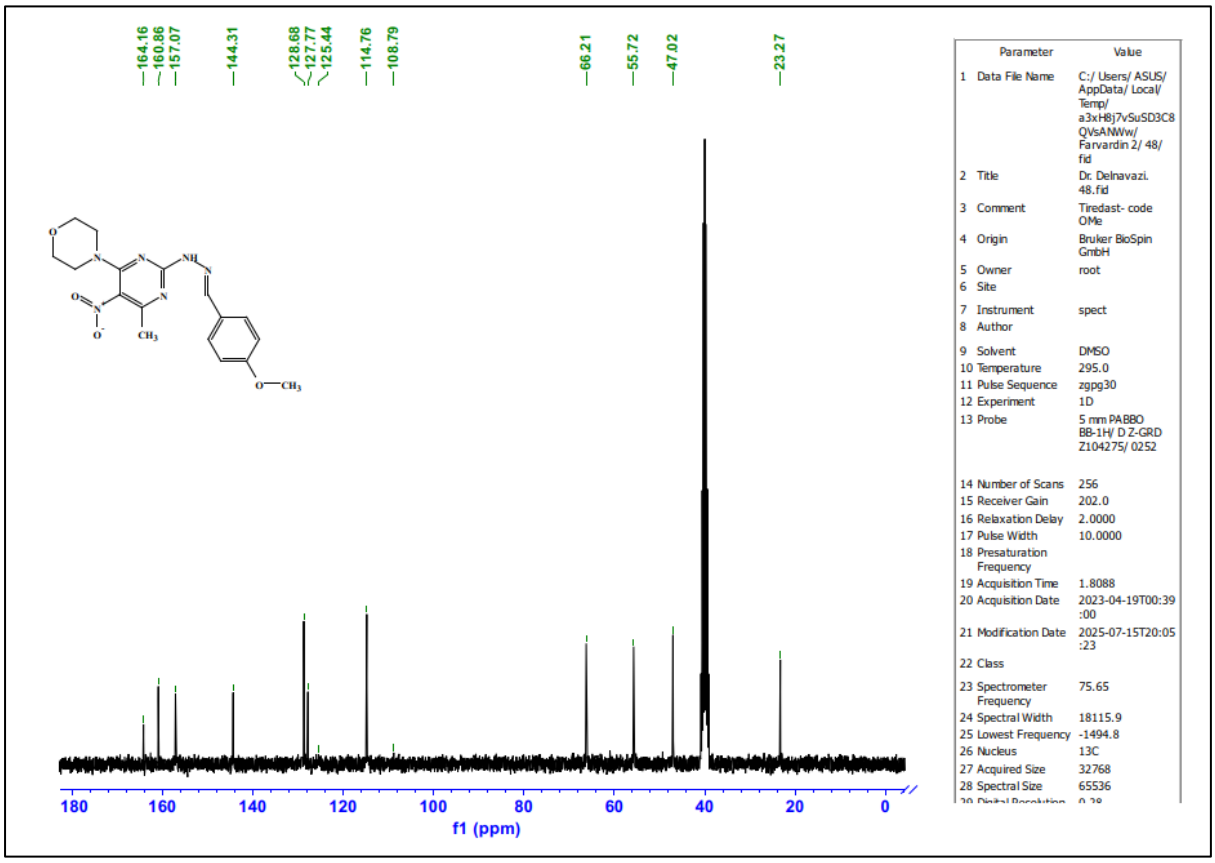
22	Class	
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4b)**



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6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
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11	Pulse Sequence	zgpg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
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17	Pulse Width	10.0000
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22	Class	
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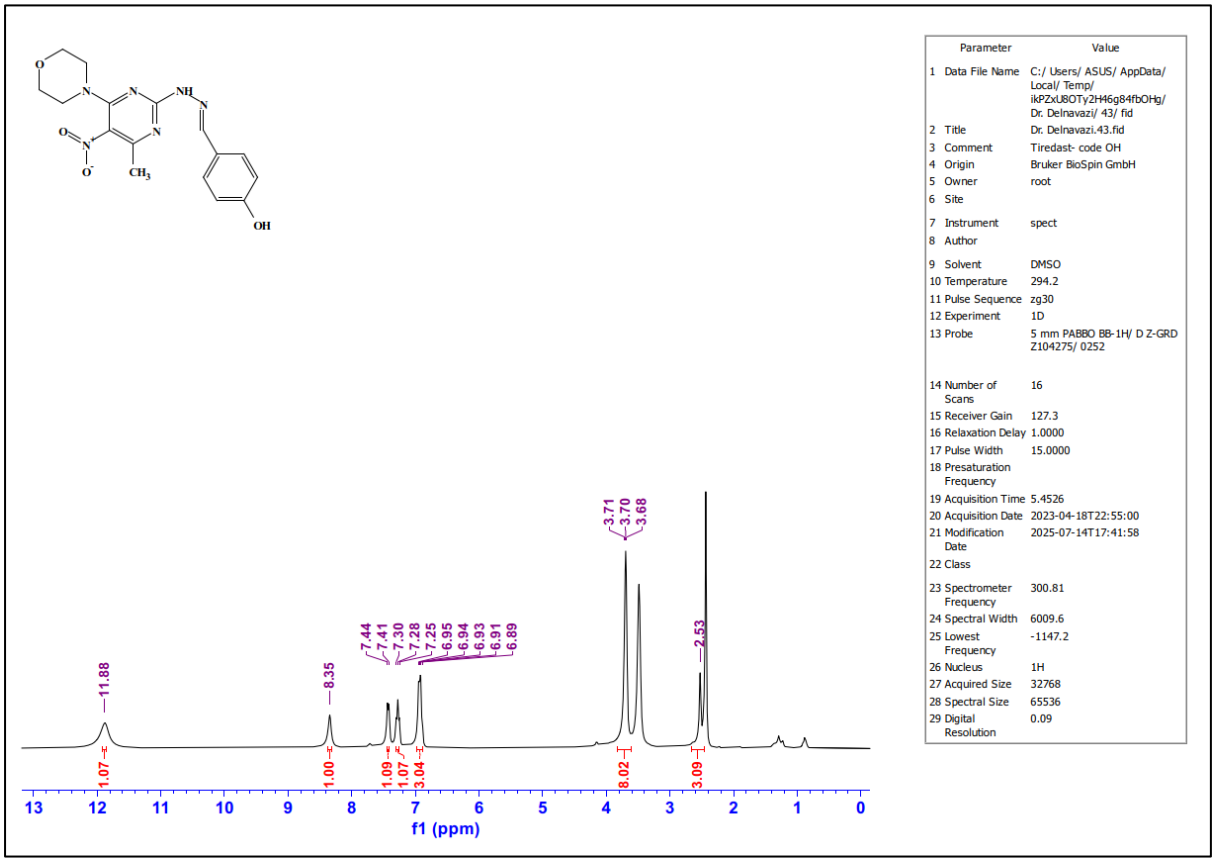
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536

^{1}H NMR spectrum of compound **(4c)**



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5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
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18	Presaturation Frequency	
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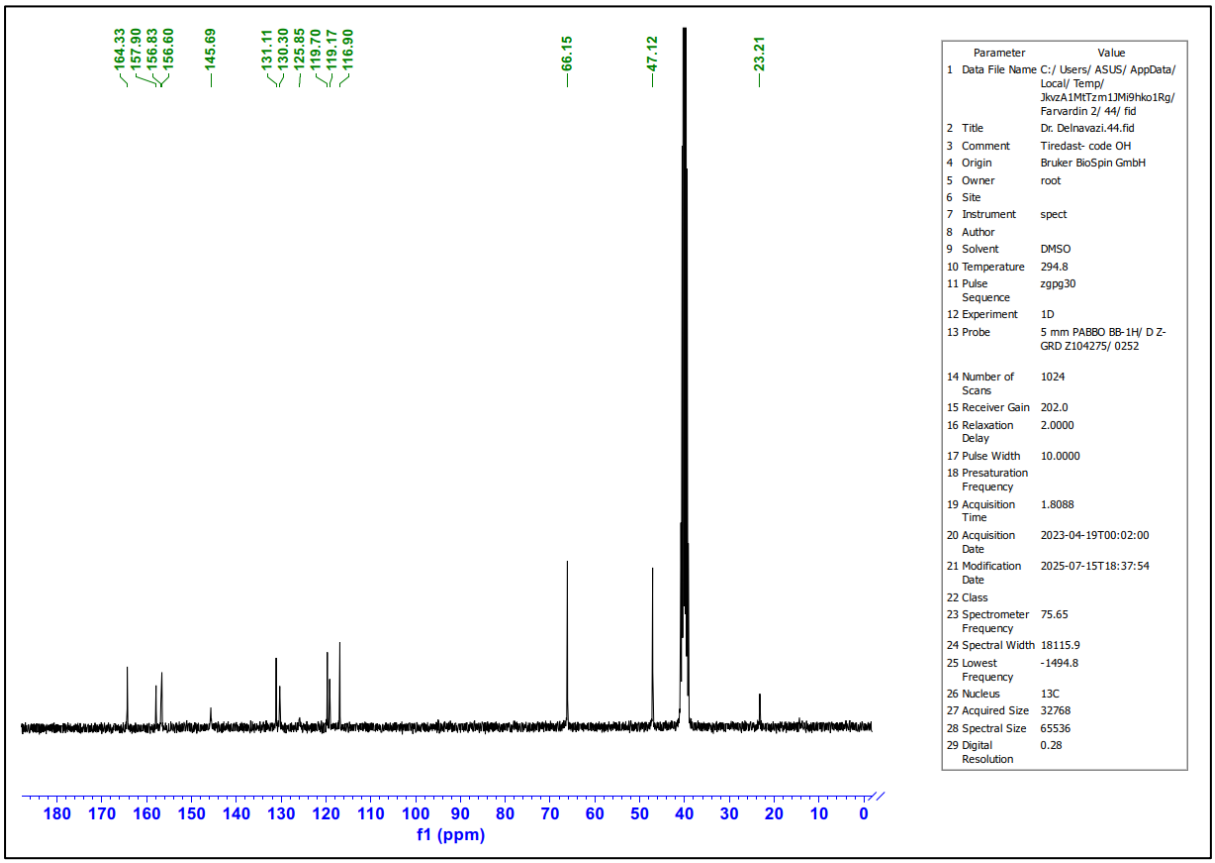
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4c)**



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7	Instrument	spect
8	Author	
9	Solvent	DMSO
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11	Pulse Sequence	zgpg30
12	Experiment	1D
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15	Receiver Gain	202.0
16	Relaxation Delay	2.0000
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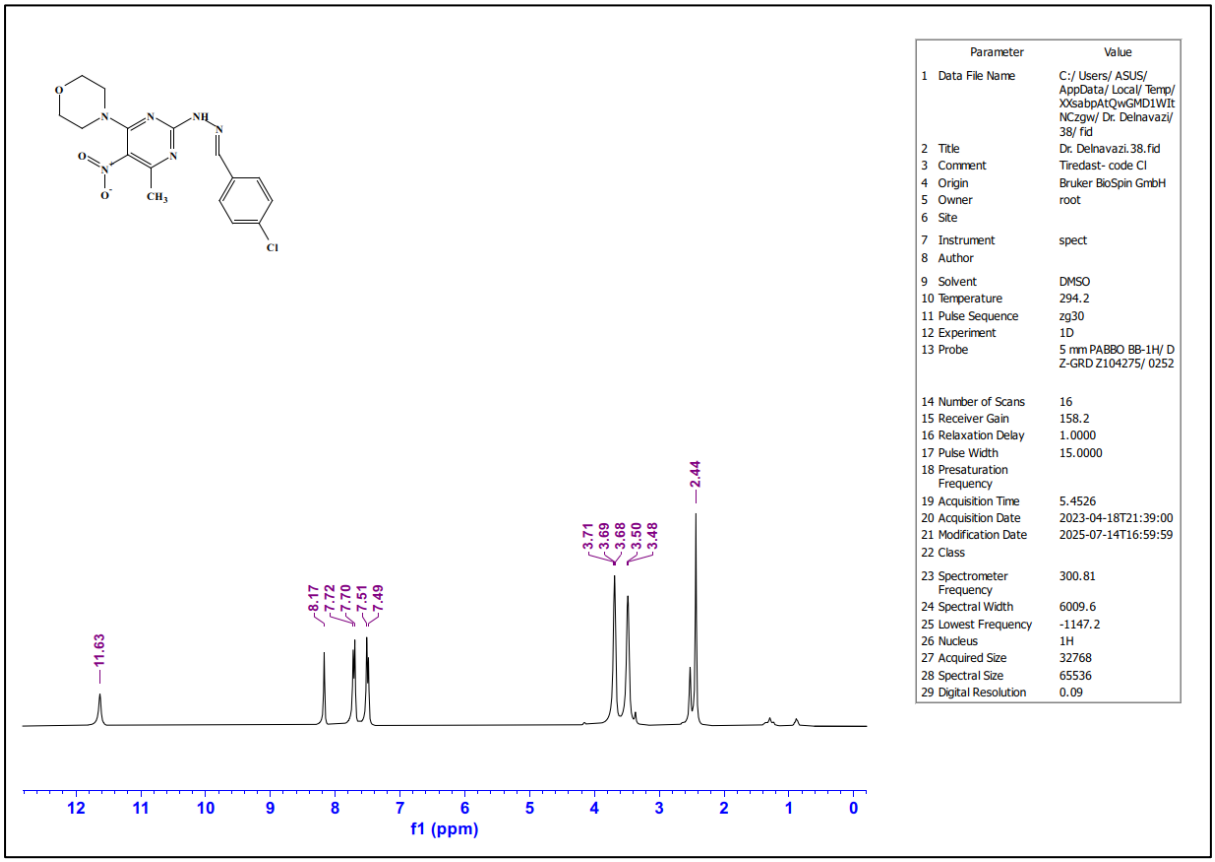
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(4d)**



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5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
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11	Pulse Sequence	zg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	16
15	Receiver Gain	158.2
16	Relaxation Delay	1.0000
17	Pulse Width	15.0000
18	Presaturation Frequency	
19	Acquisition Time	5.4526
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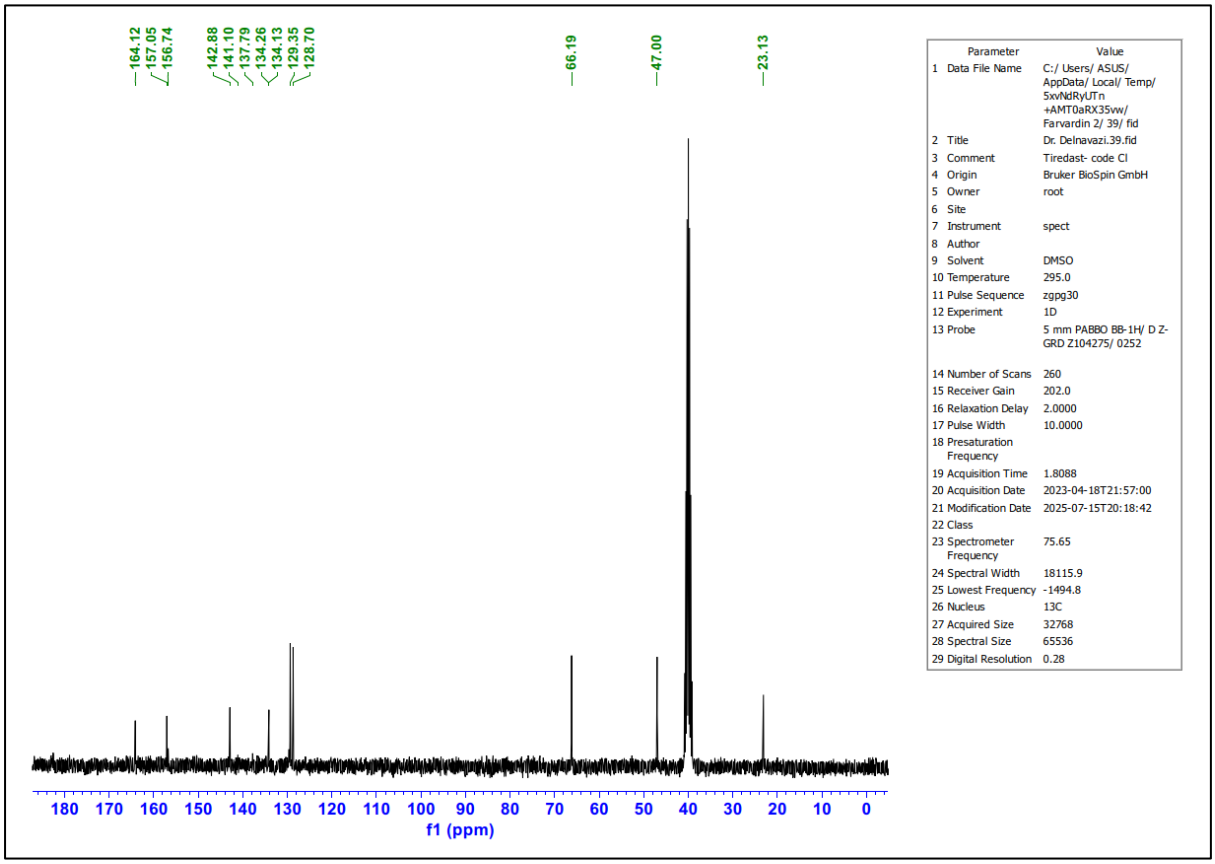
22	Class	
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4d)**



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4	Origin	Bruker BioSpin GmbH
5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	295.0
11	Pulse Sequence	zgpg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	260
15	Receiver Gain	202.0
16	Relaxation Delay	2.0000
17	Pulse Width	10.0000
18	Presaturation Frequency	
19	Acquisition Time	1.8088
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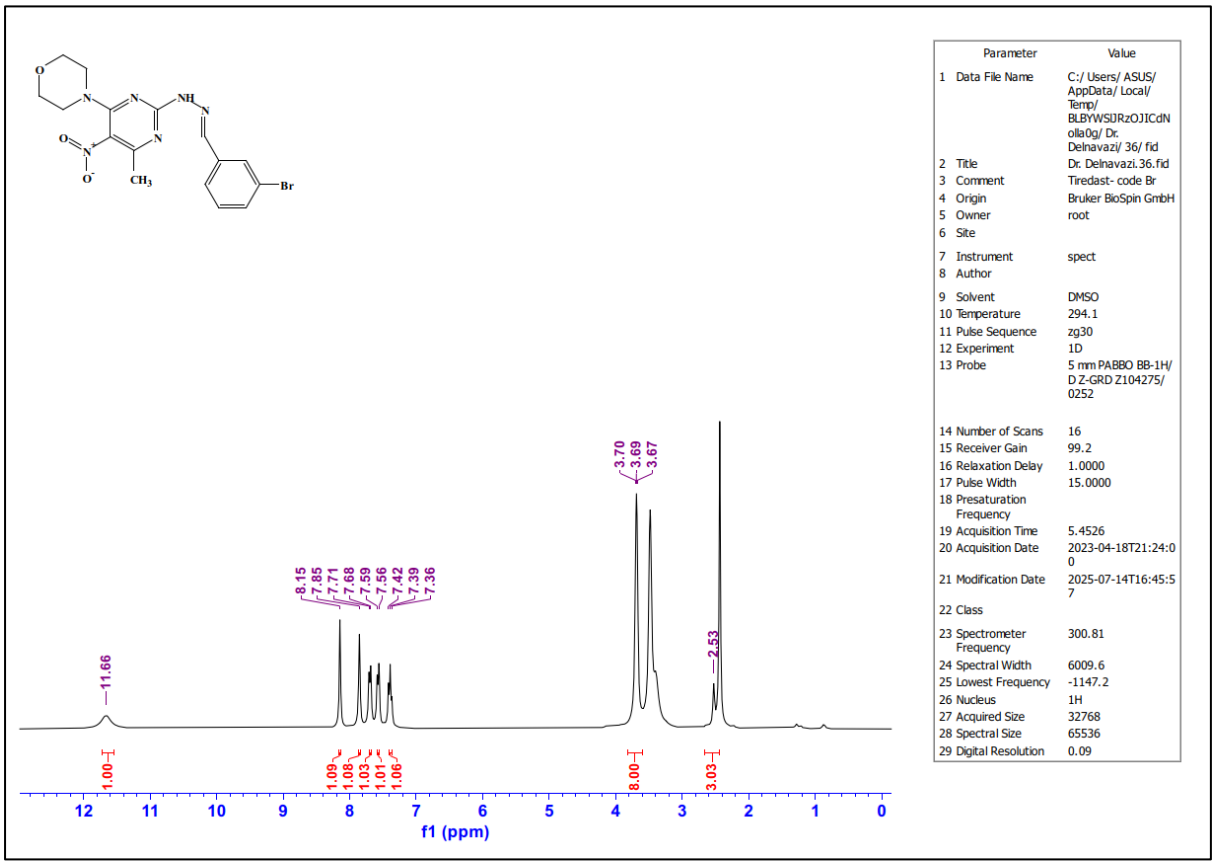
22	Class	
23	Spectrometer Frequency	75.65
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(4e)**



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7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	294.1
11	Pulse Sequence	zg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
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15	Receiver Gain	99.2
16	Relaxation Delay	1.0000
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18	Presaturation Frequency	
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22	Class	
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
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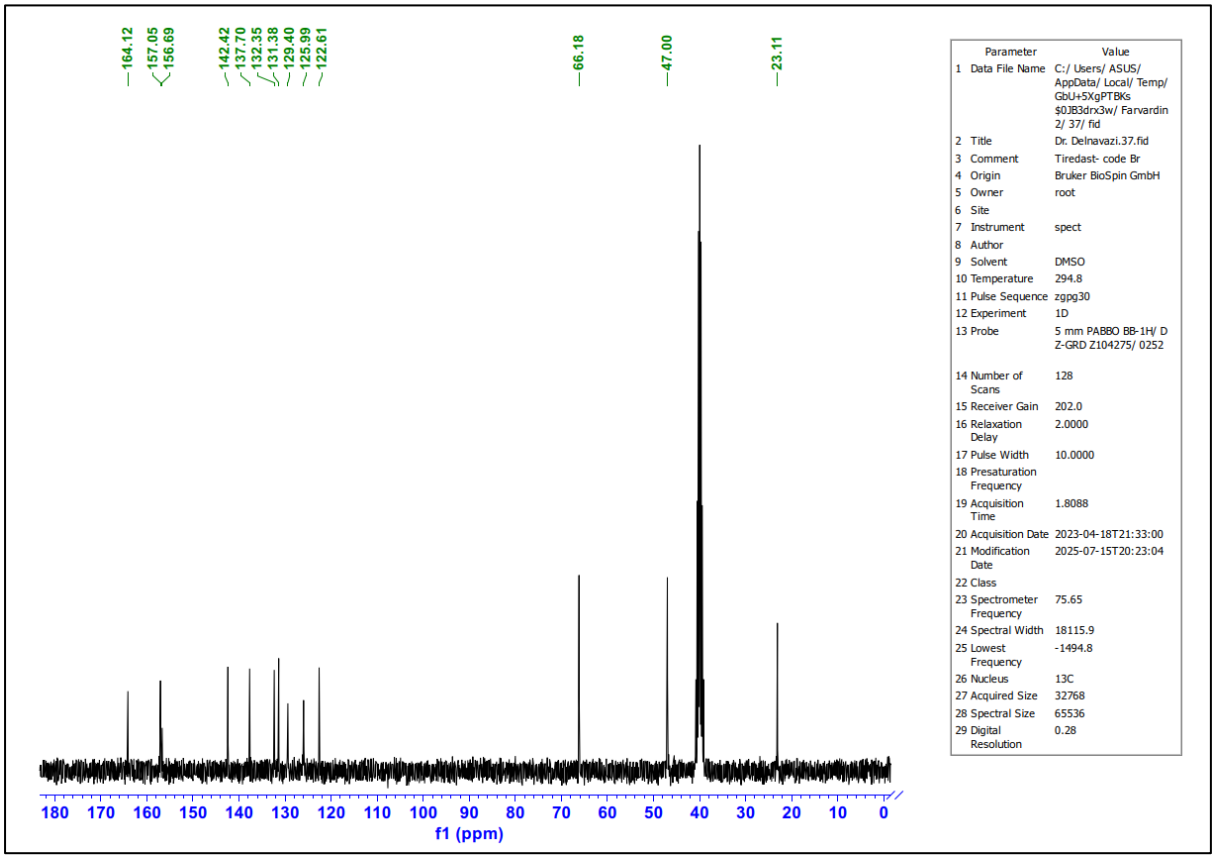
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4e)**



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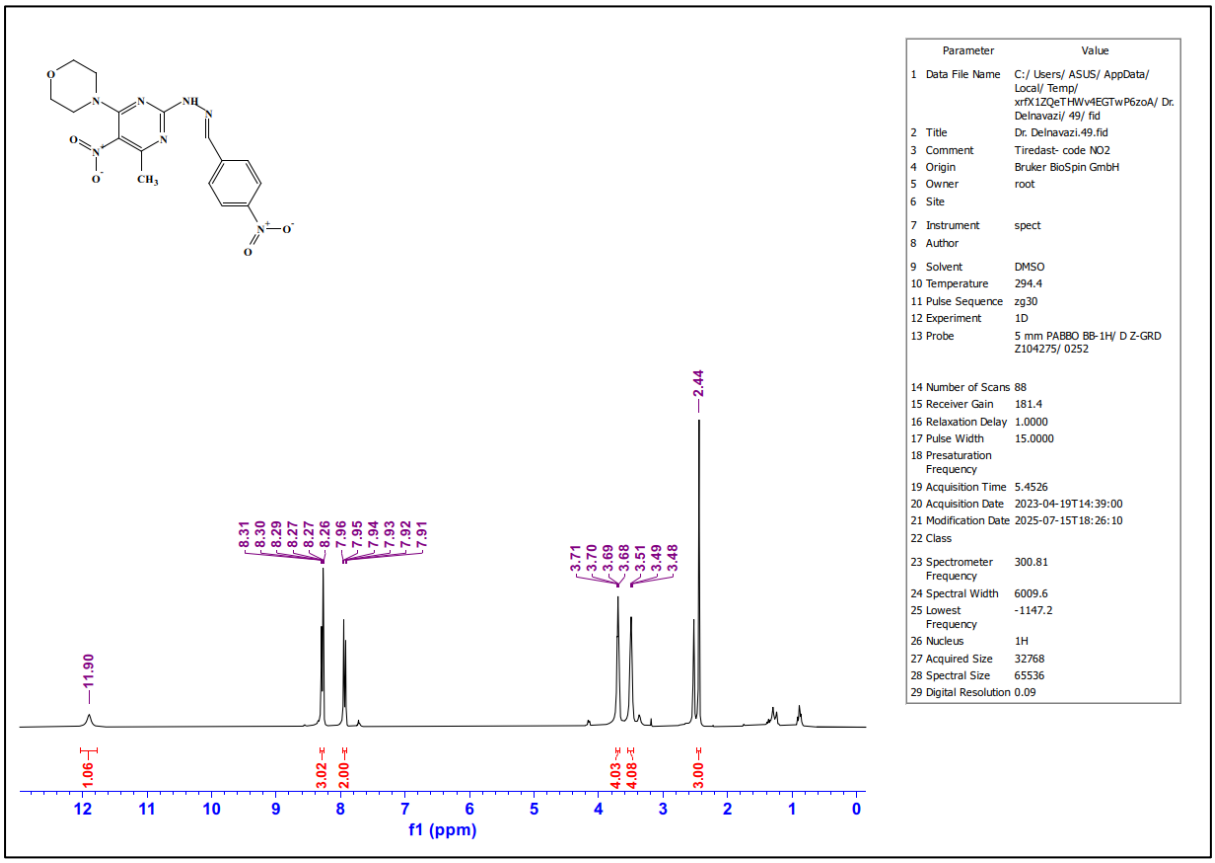
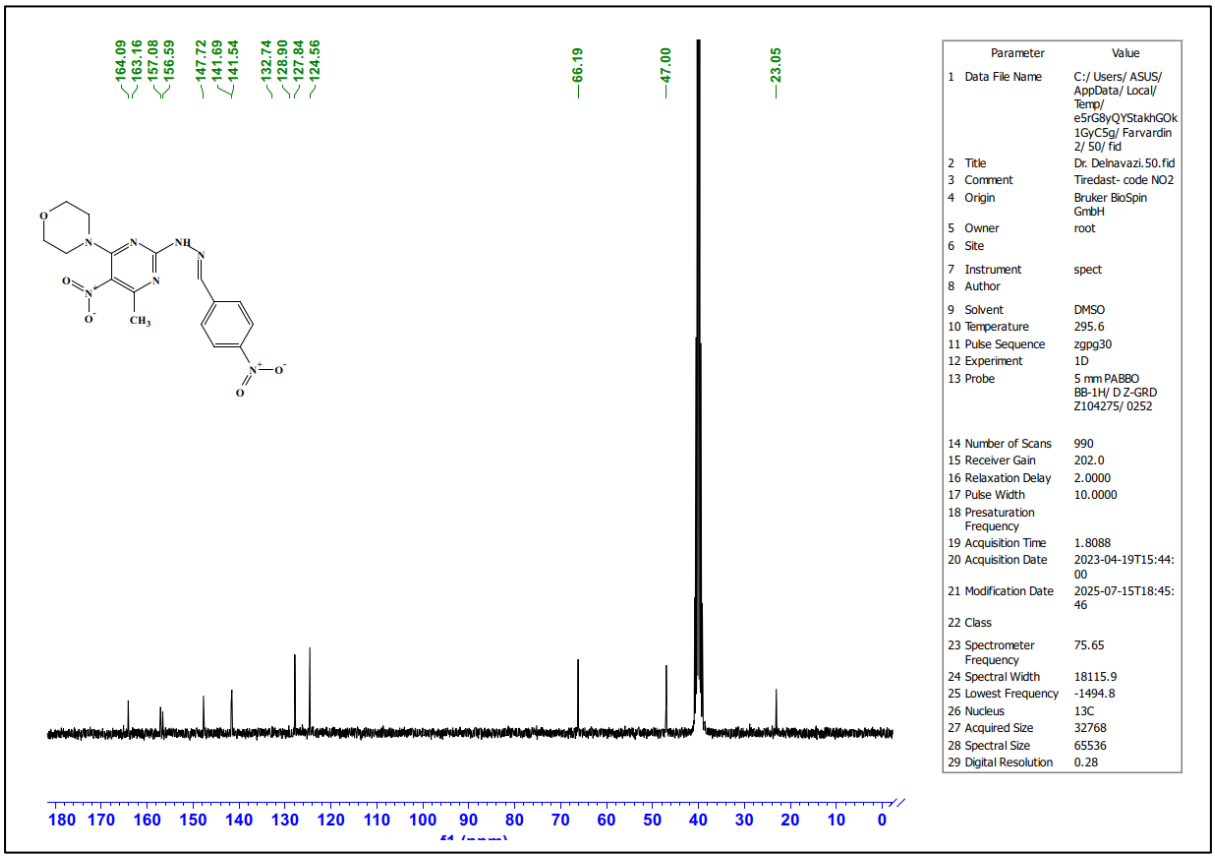
5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	294.8
11	Pulse Sequence	zgpg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	128
15	Receiver Gain	202.0
16	Relaxation Delay	2.0000
17	Pulse Width	10.0000
18	Presaturation Frequency	
19	Acquisition Time	1.8088
20	Acquisition Date	2023-04-18T21:33:00
21	Modification Date	2025-07-15T20:23:04
22	Class	
23	Spectrometer Frequency	75.65
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

^{1}H NMR spectrum of compound **(4f)**



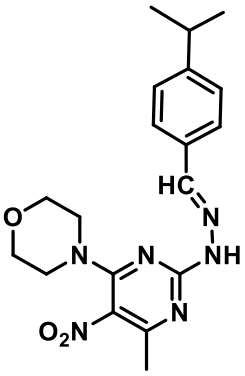
	Parameter	Value
1	Data File Name	C:/ Users/ ASUS/ AppData/ Local/ Temp/ xrfX1ZQeTHWv4EGTwP6zoA/ Dr. Delnavazi/ 49/ fid
2	Title	Dr. Delnavazi.49.fid
3	Comment	Tiredast- code NO2
4	Origin	Bruker BioSpin GmbH
5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	294.4
11	Pulse Sequence	zg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	88
15	Receiver Gain	181.4
16	Relaxation Delay	1.0000
17	Pulse Width	15.0000
18	Presaturation Frequency	
19	Acquisition Time	5.4526
20	Acquisition Date	2023-04-19T14:39:00
21	Modification Date	2025-07-15T18:26:10
22	Class	
23	Spectrometer Frequency	300.81
24	Spectral Width	6009.6
25	Lowest Frequency	-1147.2
26	Nucleus	1H
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.09

^{13}C NMR spectrum of compound **(4f)**

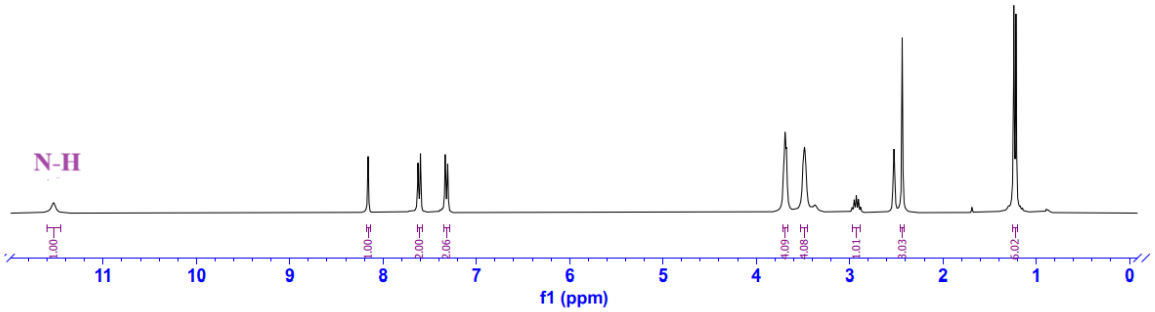


	Parameter	Value
1	Data File Name	C:/ Users/ ASUS/ AppData/ Local/ Temp/ e5rG8yQYStakhGOk 1GyC5g/ Farvardin 2/ 50/ fid
2	Title	Dr. Delnavazi.50.fid
3	Comment	Tiredast- code NO2
4	Origin	Bruker BioSpin GmbH
5	Owner	root
6	Site	
7	Instrument	spect
8	Author	
9	Solvent	DMSO
10	Temperature	295.6
11	Pulse Sequence	zgpg30
12	Experiment	1D
13	Probe	5 mm PABBO BB-1H/ D Z-GRD Z104275/ 0252
14	Number of Scans	990
15	Receiver Gain	202.0
16	Relaxation Delay	2.0000
17	Pulse Width	10.0000
18	Presaturation Frequency	
19	Acquisition Time	1.8088
20	Acquisition Date	2023-04-19T15:44:00
21	Modification Date	2025-07-15T18:45:46
22	Class	
23	Spectrometer Frequency	75.65
24	Spectral Width	18115.9
25	Lowest Frequency	-1494.8
26	Nucleus	13C
27	Acquired Size	32768
28	Spectral Size	65536
29	Digital Resolution	0.28

D2O-exchangeable spectrum of compound (**4a**)



Without D_2O



With D_2O