

Supplementary Material

Facile one-pot, three-component synthesis of novel fused 4*H*-pyrans incorporating 2-phenoxy-*N*-phenylacetamide core as novel hybrid molecules via Michael addition reaction

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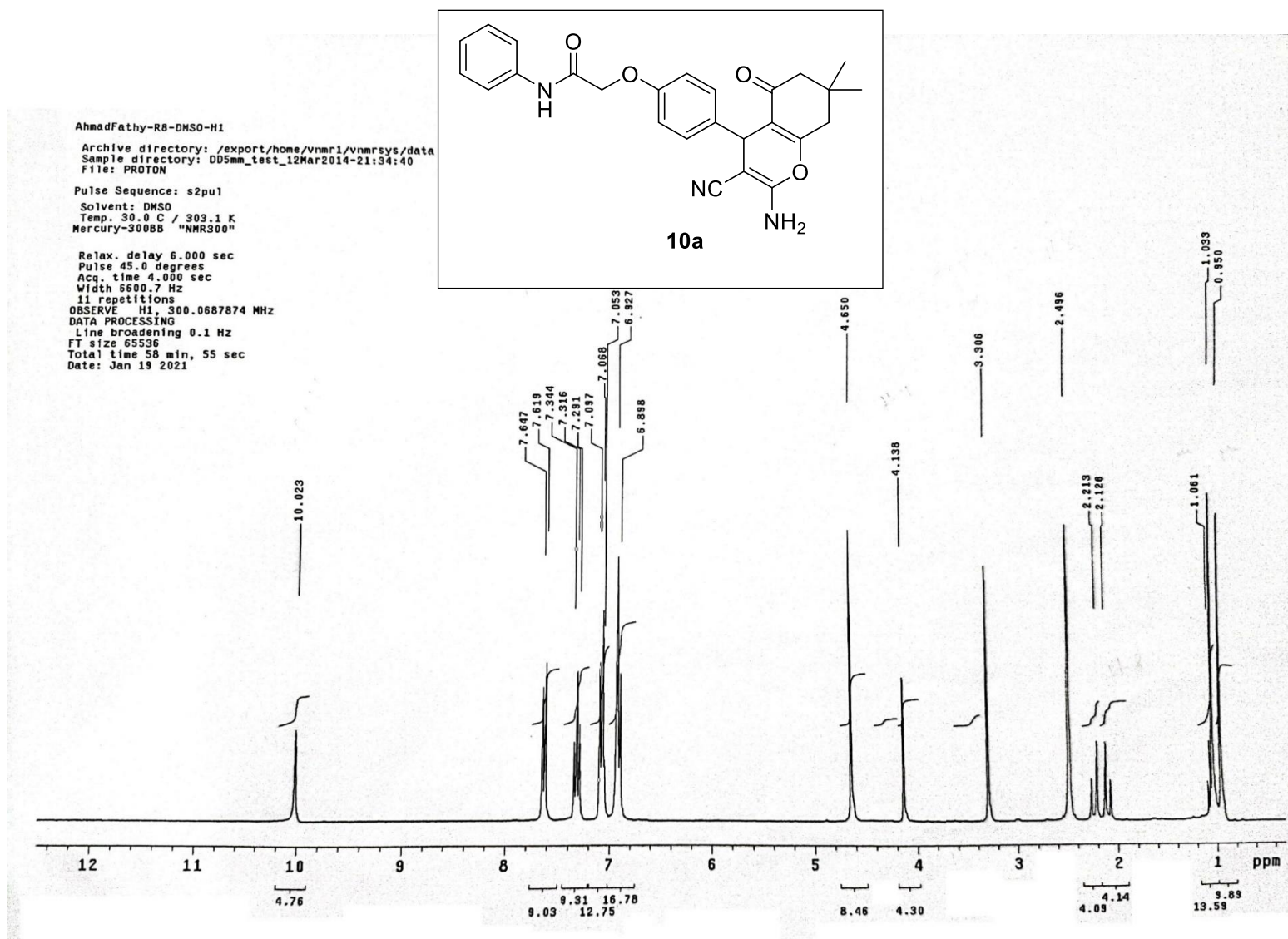
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¹H NMR of 2-(4-(2-Amino-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromen-4-yl)phenoxy)-N-phenylacetamide (10a)

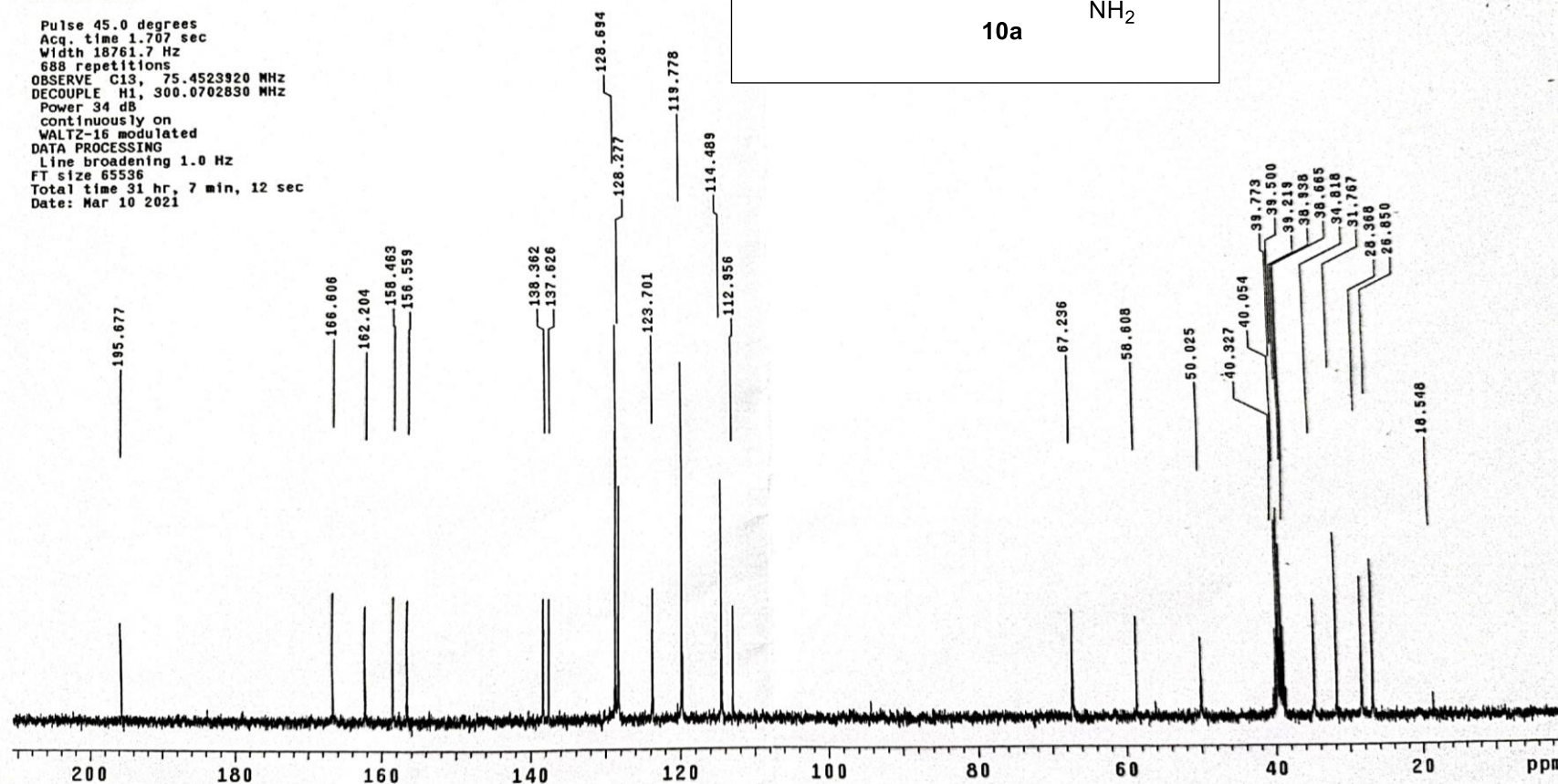
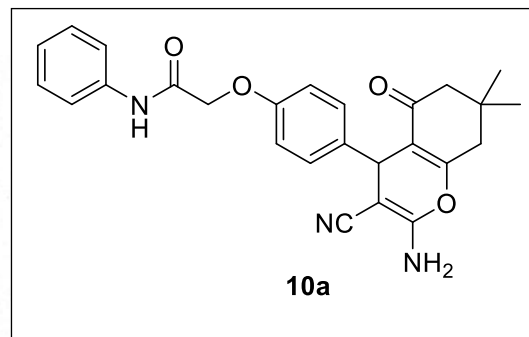
AhmedFathy-R8-DMSO-C13

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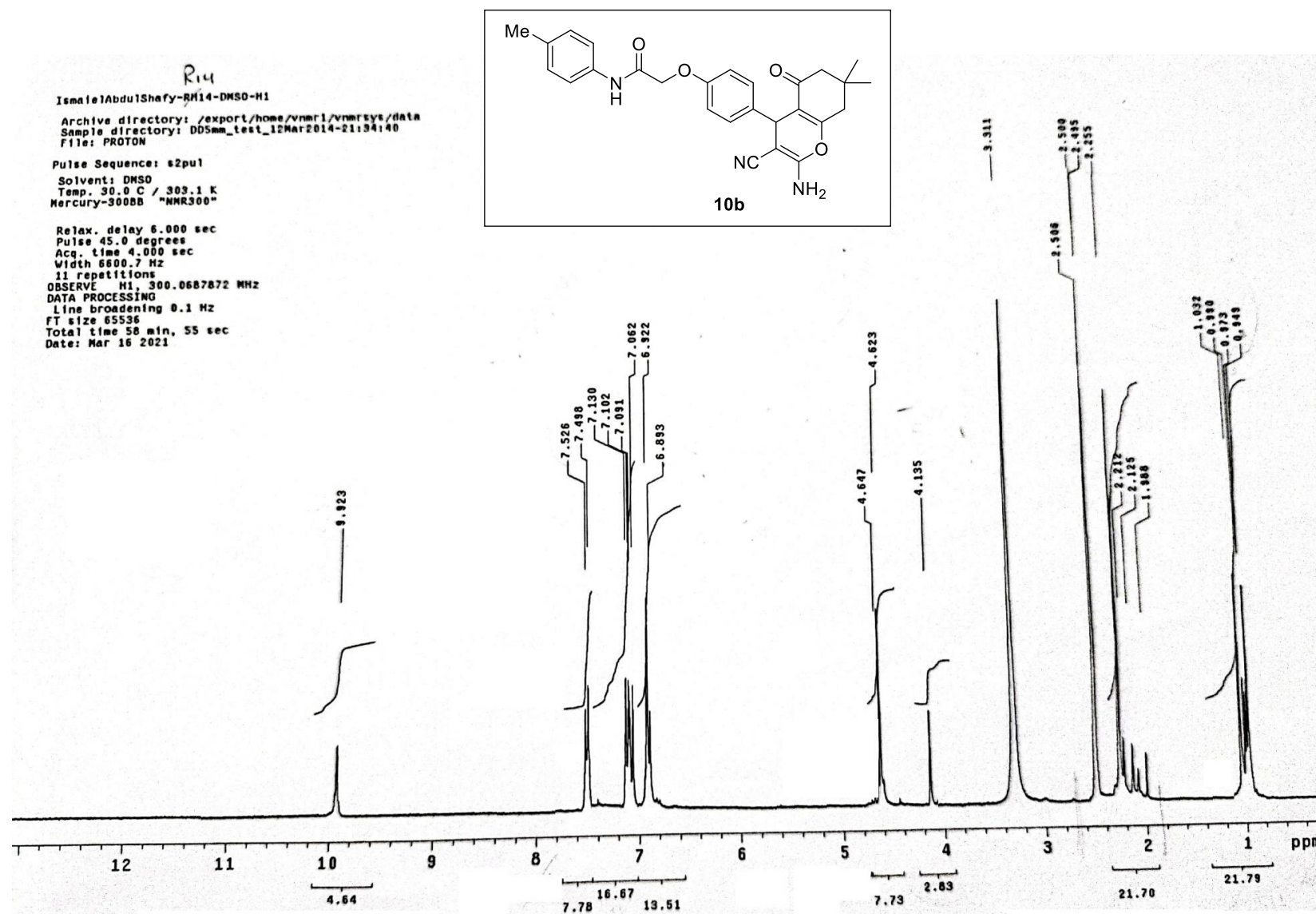
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Solvent: DMSO
Ambient temperature
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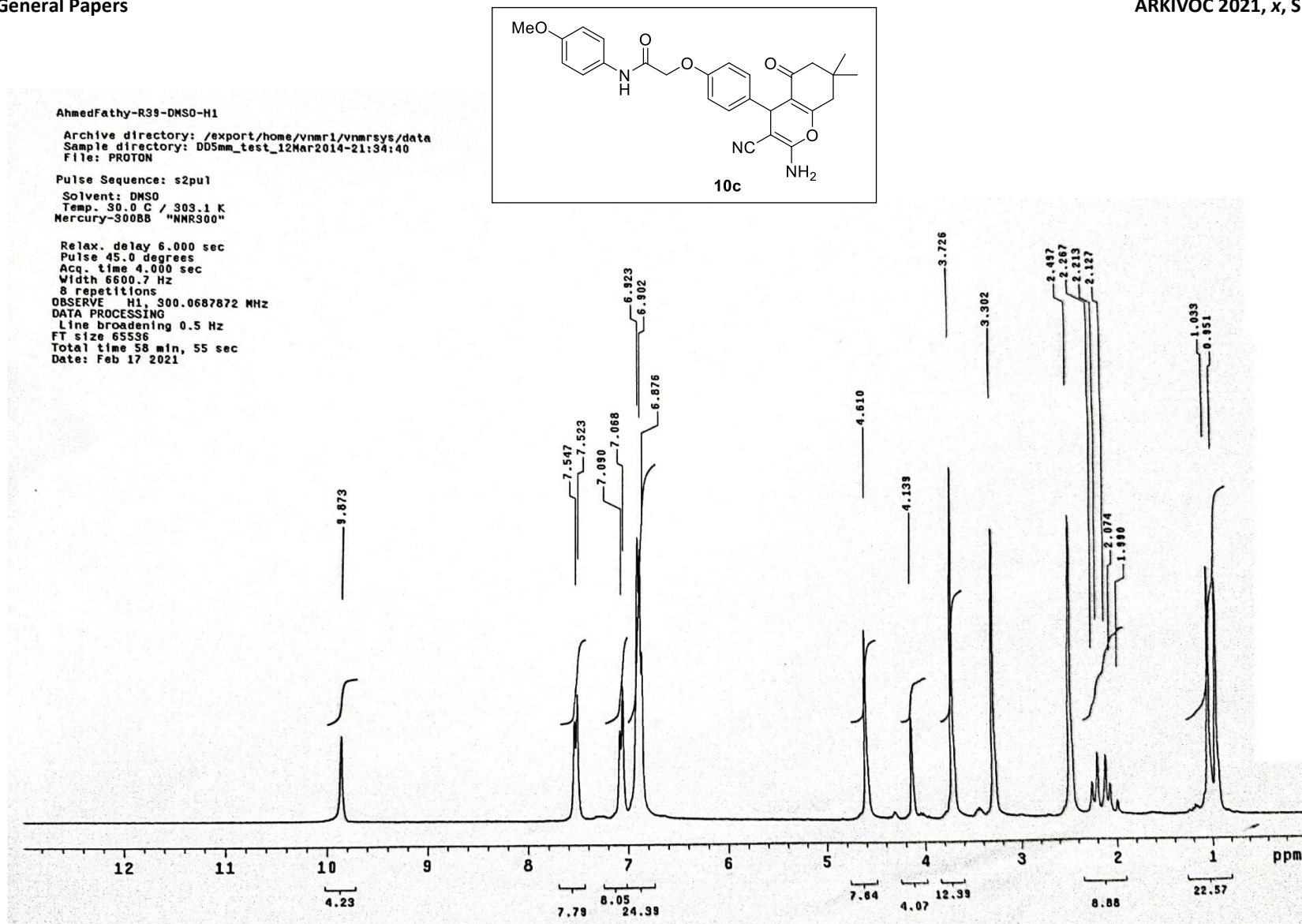
Pulse 45.0 degrees
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Width 18761.7 Hz
688 repetitions
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DECOUPLE H1, 300.0702830 MHz
Power 34 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 65536
Total time 31 hr, 7 min, 12 sec
Date: Mar 10 2021



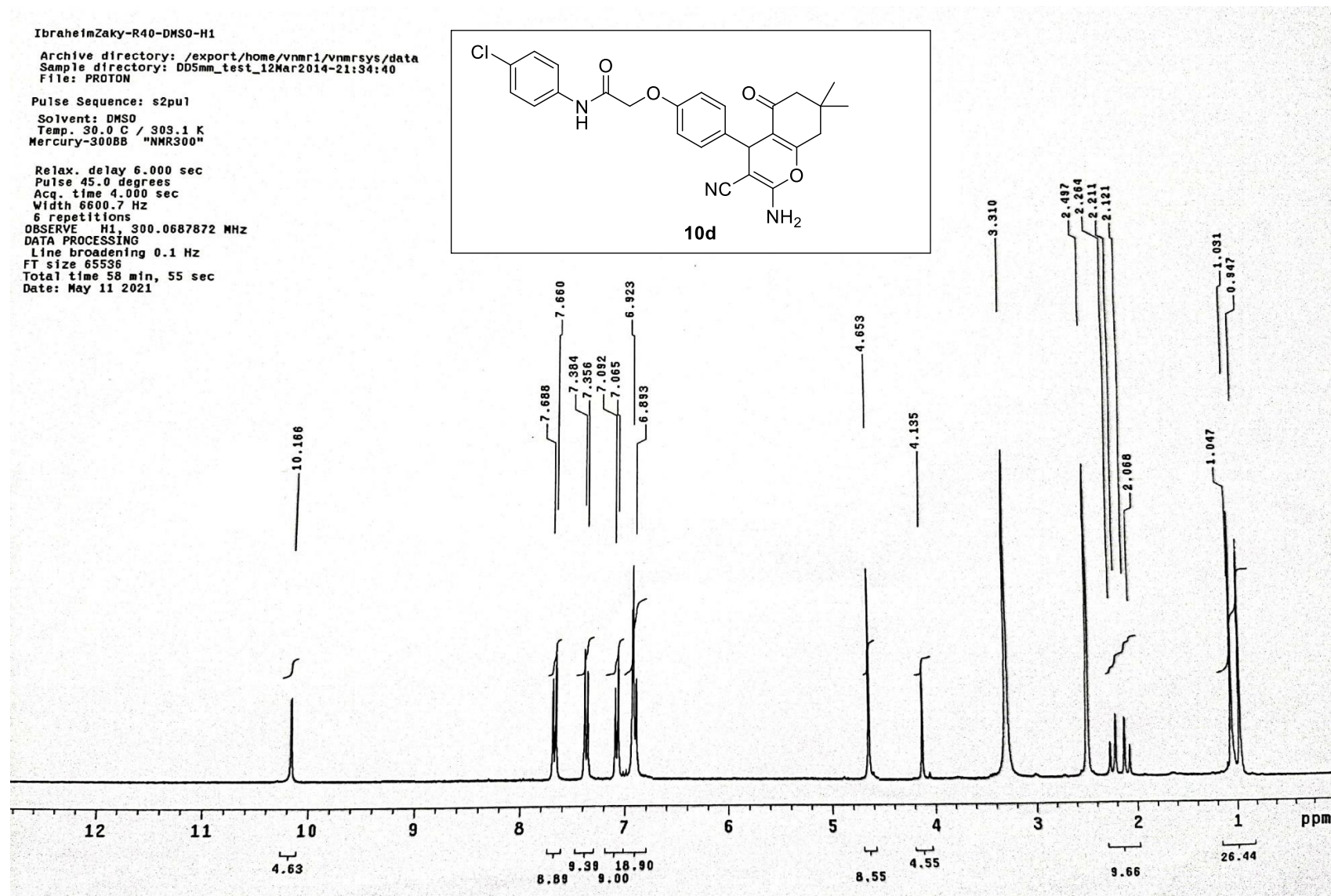
¹³C NMR of 2-(4-(2-Amino-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromen-4-yl)phenoxy)-N-phenylacetamide (10a)



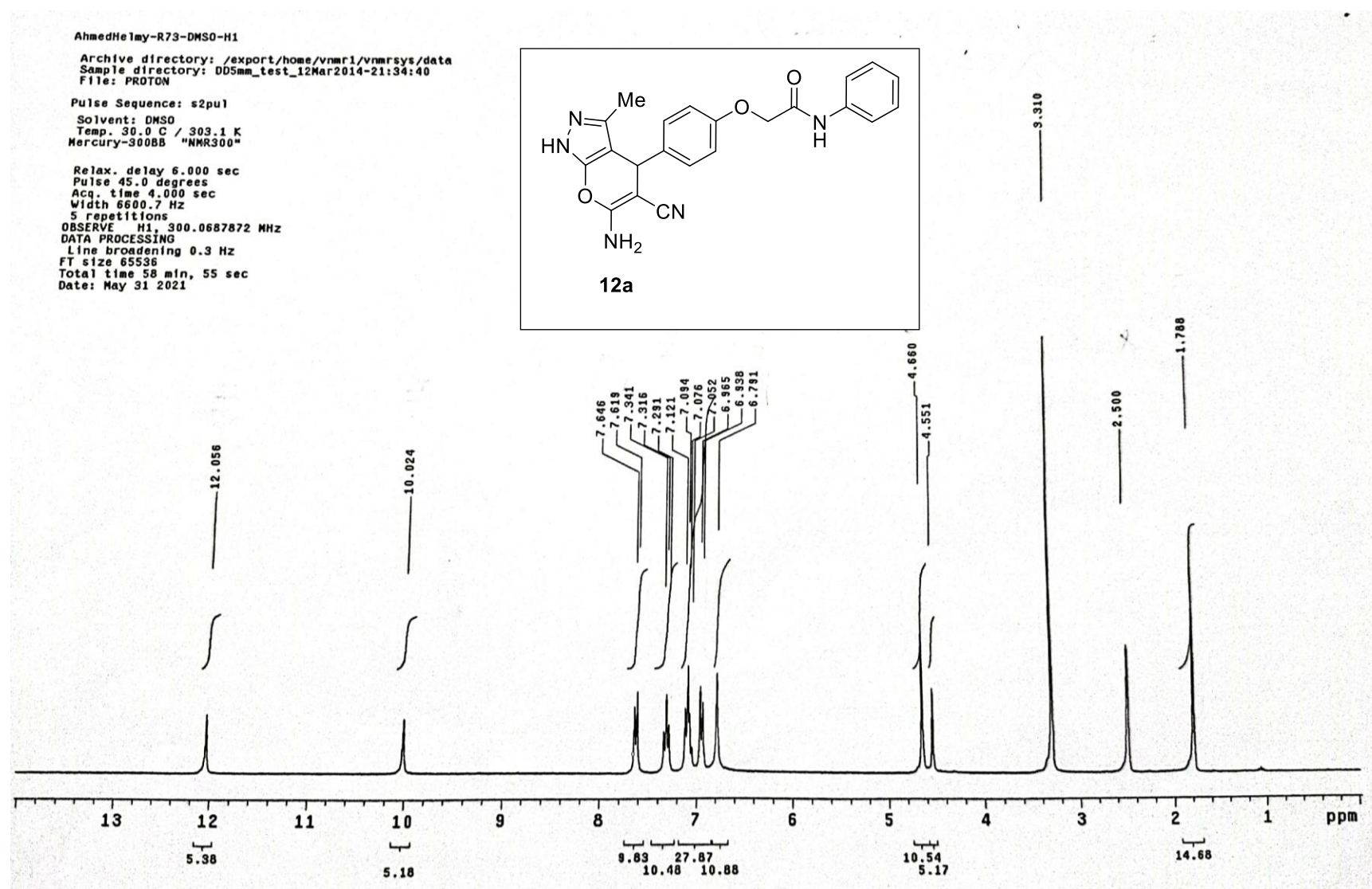
¹H NMR of 2-(4-(2-Amino-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromen-4-yl)phenoxy)-N-(p-tolyl)acetamide (10b)



¹H NMR of 2-(4-(2-Amino-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromen-4-yl)phenoxy)-N-(4-methoxyphenyl)acetamide (10c)



¹H NMR of 2-(4-(2-Amino-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromen-4-yl)phenoxy)-N-(4-chlorophenyl)acetamide (10d)



^1H NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-*N*-phenylacetamide (12a)

AhmadFathy-R75-DMSO-H1

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File: PROTON

Pulse Sequence: s2pul

Solvent: DMSO

Temp. 30.0 C / 303.1 K

Mercury-300BB "NMR300"

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Pulse 45.0 degrees

Acq. time 4.000 sec

Width 6600.7 Hz

10 repetitions

OBSERVE H1, 300.0687872 MHz

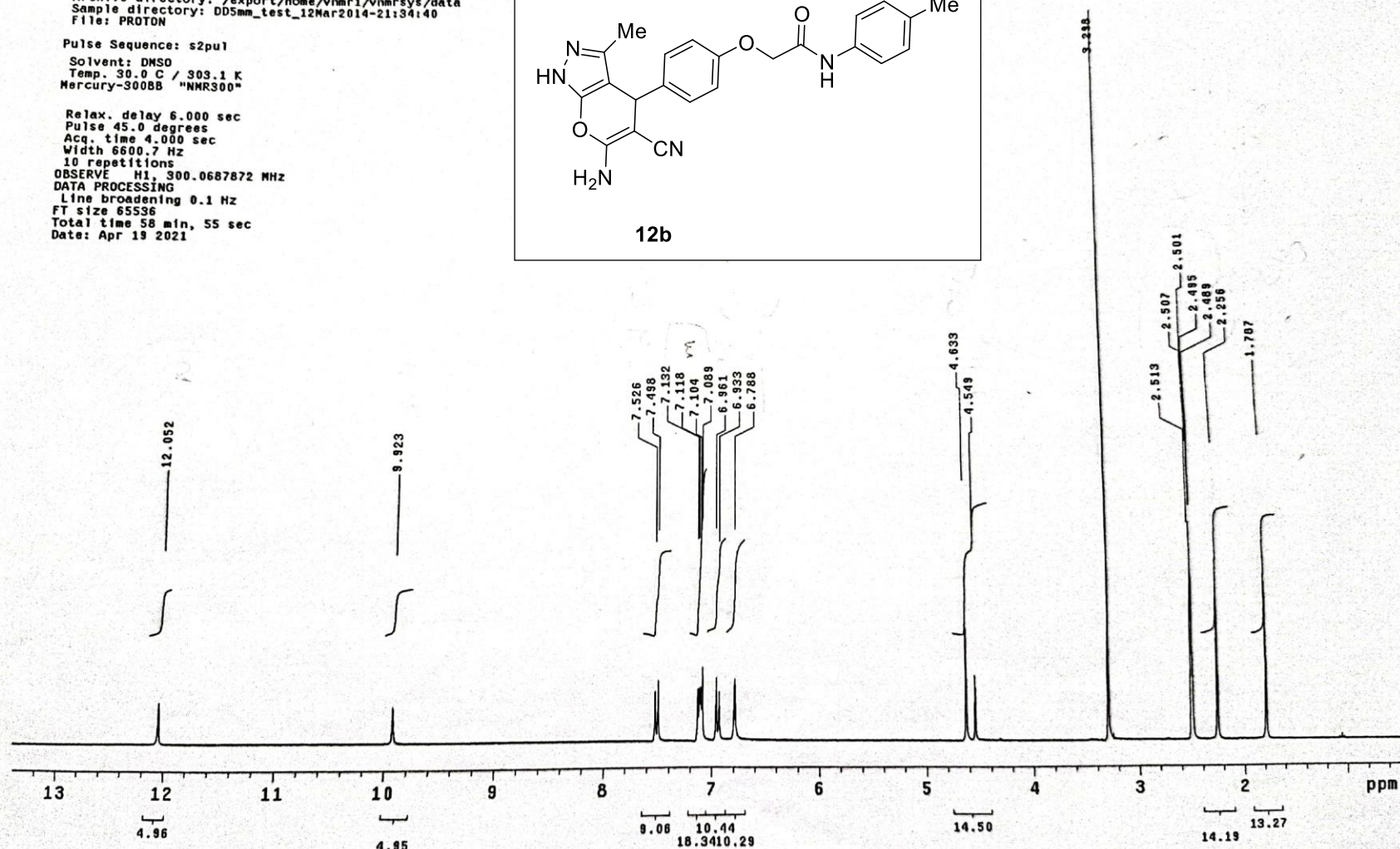
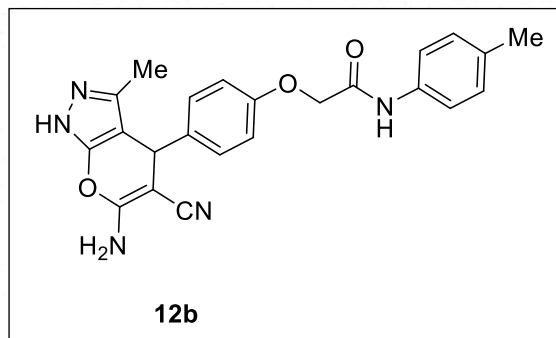
DATA PROCESSING

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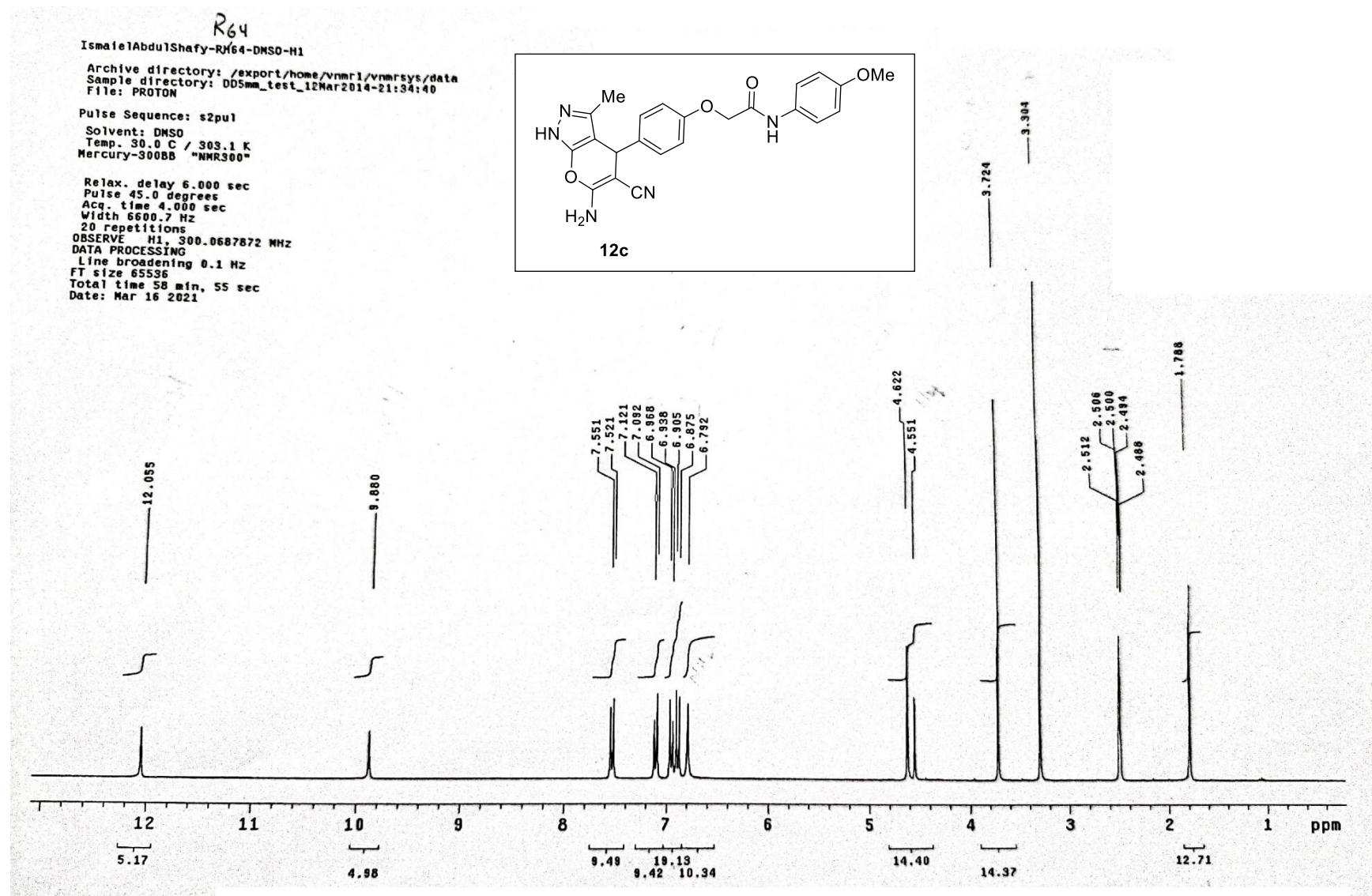
FT size 65536

Total time 58 min, 55 sec

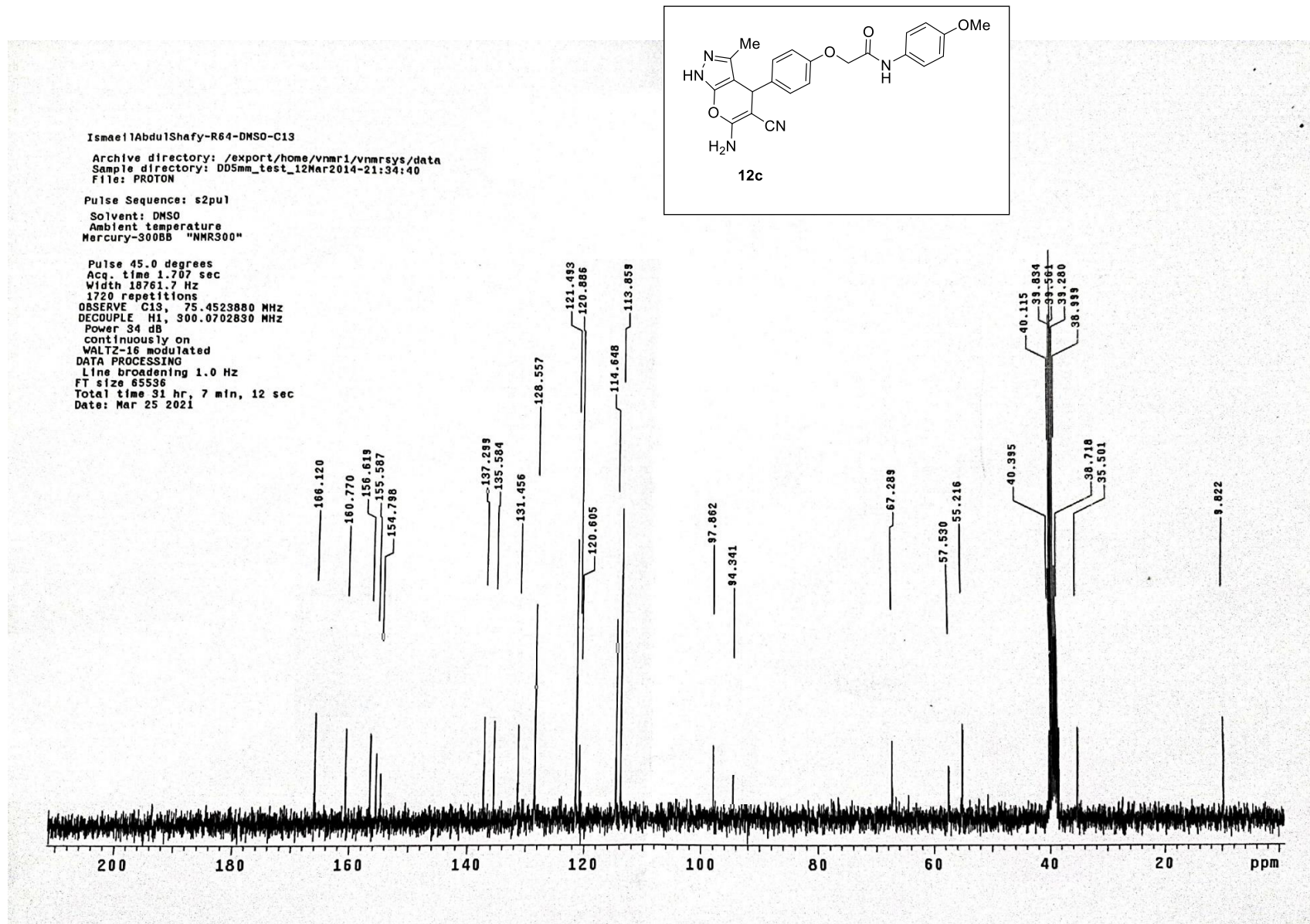
Date: Apr 19 2021



¹H NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-N-(p-tolyl)acetamide (12b)



¹H NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-N-(4-methoxyphenyl)acetamide (12c)



¹³C NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-N-(4-methoxyphenyl)acetamide (12c)

IbrahimZaky-R74-DMSO-H1

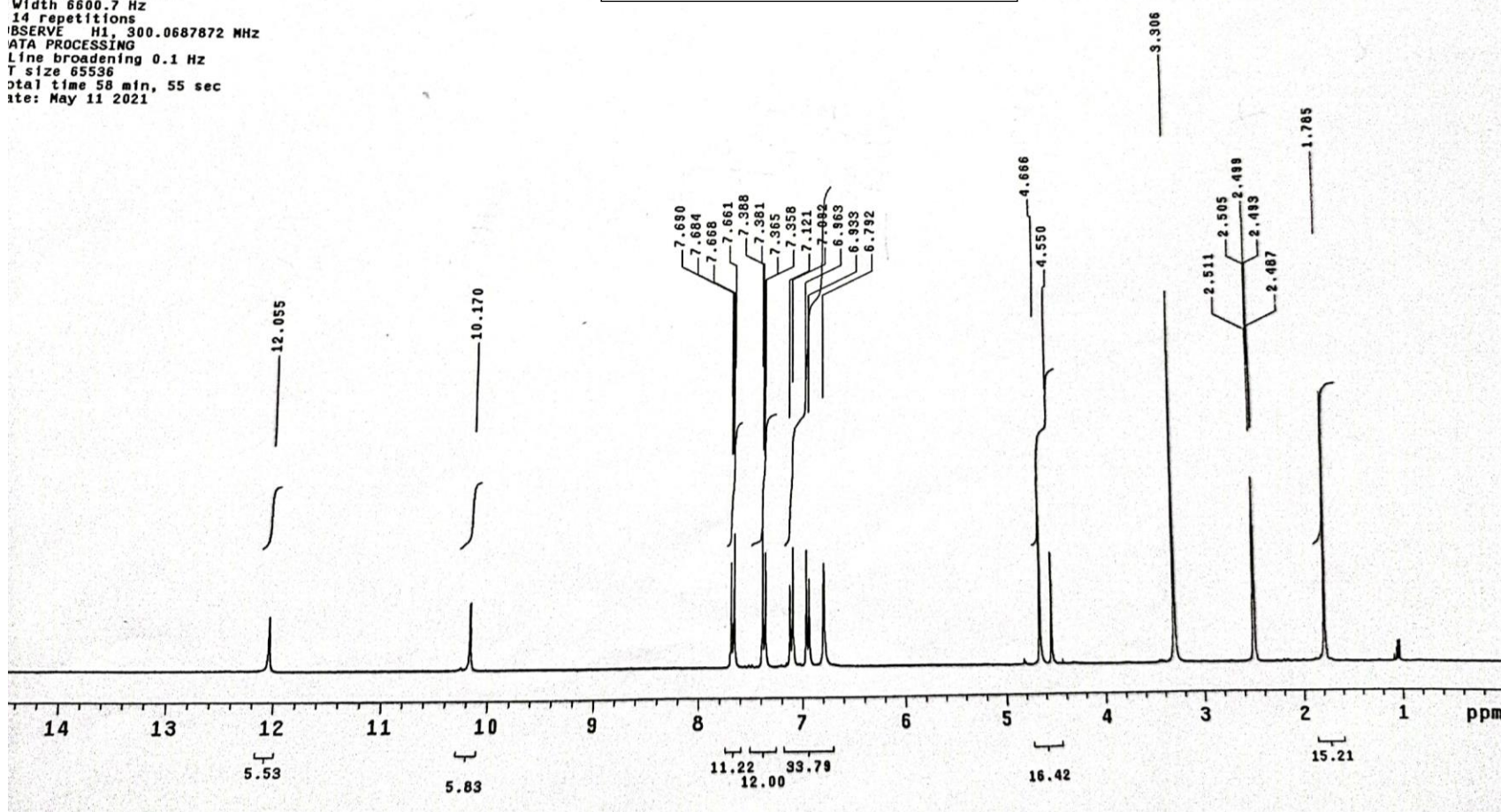
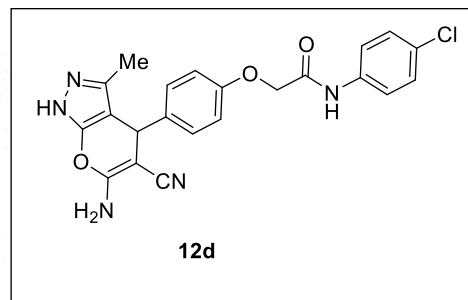
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File: PROTON

Pulse Sequence: s2pu1

Solvent: DMSO

Temp. 30.0 C / 303.1 K

Mercury-300BB "NMR300"

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Pulse 45.0 degrees
Acq. time 4.000 sec
Width 6600.7 Hz
14 repetitions
OBSERVE H1, 300.0687872 MHz
ATA PROCESSING
Line broadening 0.1 Hz
T size 65536
Total time 58 min, 55 sec
Date: May 11 2021

¹H NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-N-(4-chlorophenyl)acetamide (12d)

RanyaSamy-R74-DMSO-C13

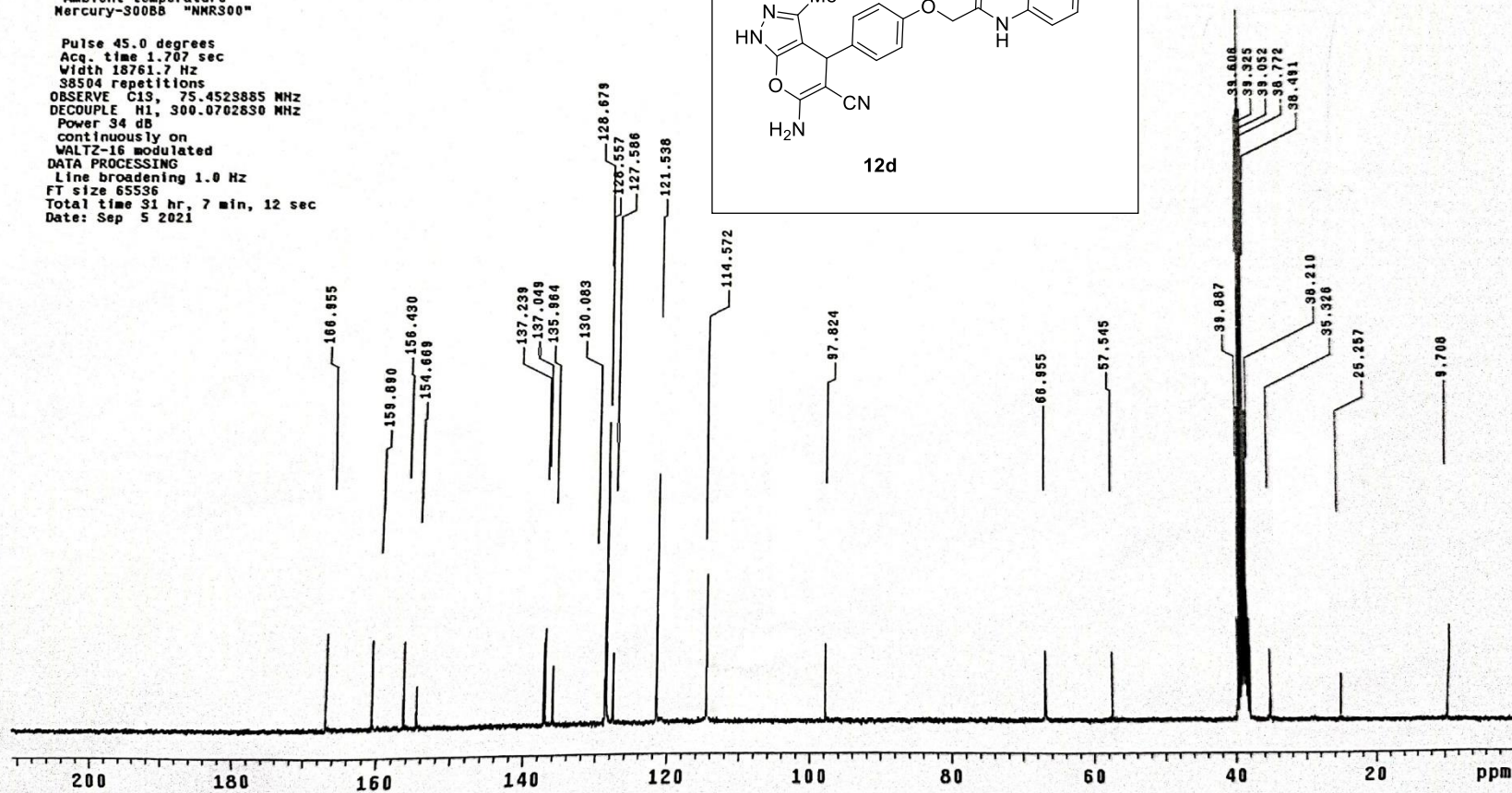
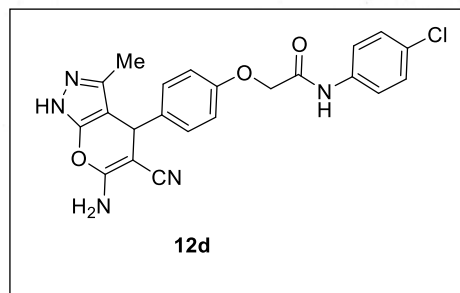
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Pulse Sequence: s2pu1

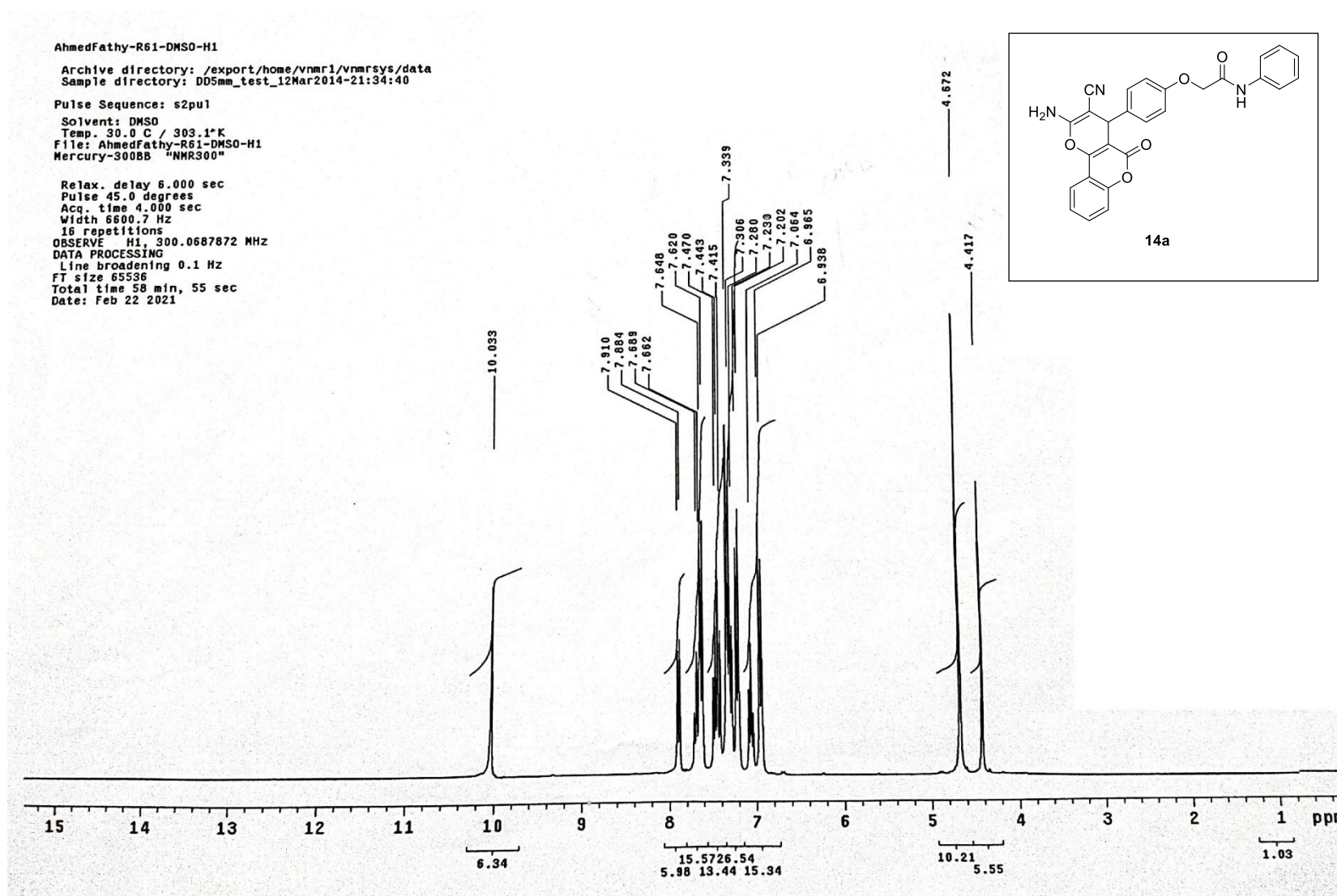
Solvent: DMSO

Ambient temperature
Mercury-300BB "NMR300"

Pulse 45.0 degrees
Acq. time 1.707 sec
Width 18761.7 Hz
38504 repetitions
OBSERVE C13, 75.4523885 MHz
DECOUPLE H1, 300.0702830 MHz
Power 34 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 1.0 Hz
FT size 65536
Total time 31 hr, 7 min, 12 sec
Date: Sep 5 2021



¹³C NMR of 2-(4-(6-Amino-5-cyano-3-methyl-1,4-dihydropyrano[2,3-c]pyrazol-4-yl)phenoxy)-N-(4-chlorophenyl)acetamide (12d)



¹H NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4*H*,5*H*-pyrano[3,2-*c*]chromen-4-yl)phenoxy)-*N*-phenylacetamide (14a)

IbraheimZaky-R57-DMSO-H1

Archive directory: /export/home/vnmr1/vnmrsys/data
Sample directory: DDSmm_test_12Mar2014-21:34:40
File: PROTON

Pulse Sequence: s2pul

Solvent: DMSO

Temp. 30.0 C / 303.1 K

Mercury-300BS "NMR300"

Relax. delay 6.000 sec

Pulse 45.0 degrees

Acq. time 4.000 sec

Width 6600.7 Hz

34 repetitions

OBSERVE H1, 300.0687872 MHz

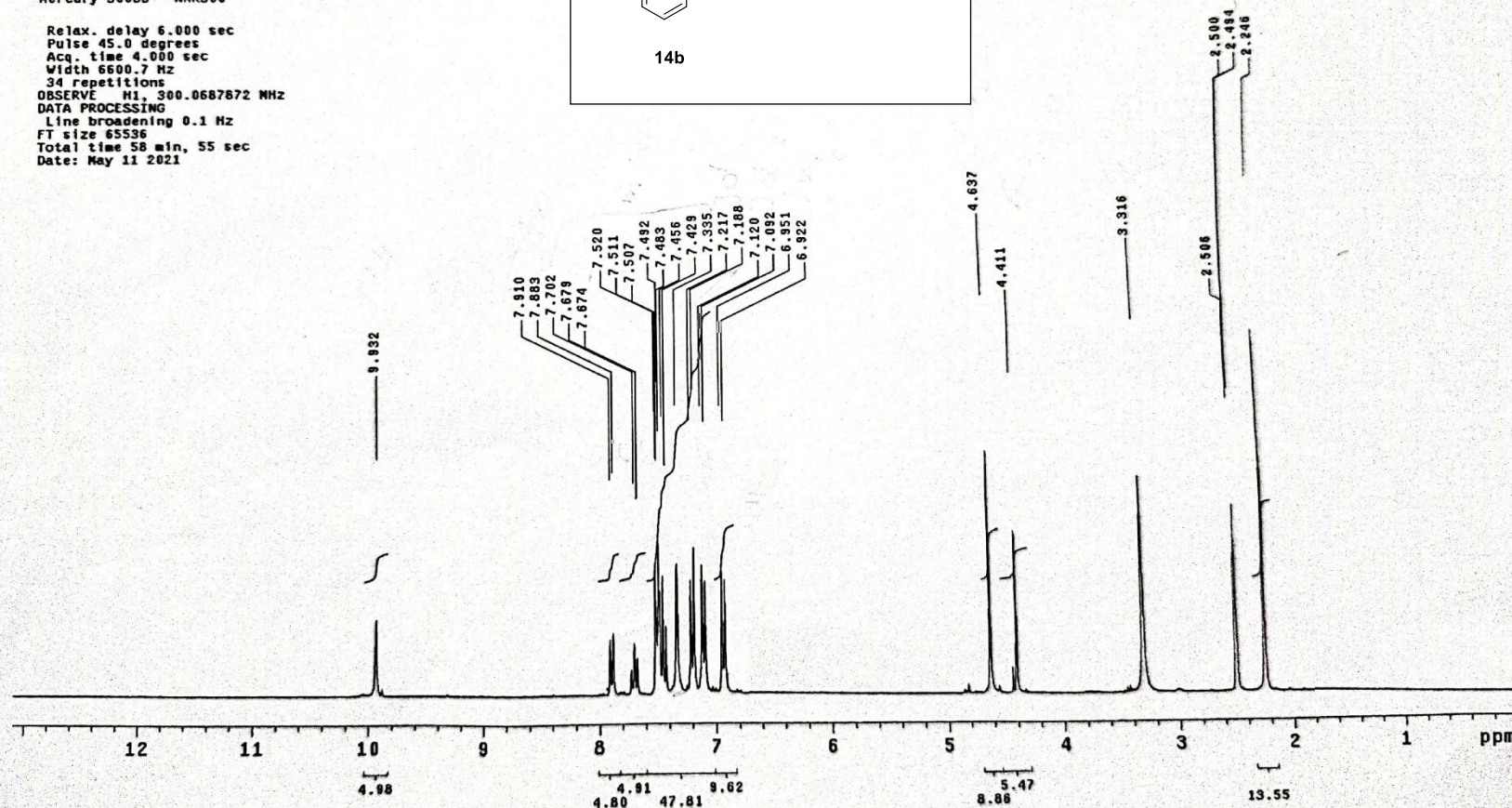
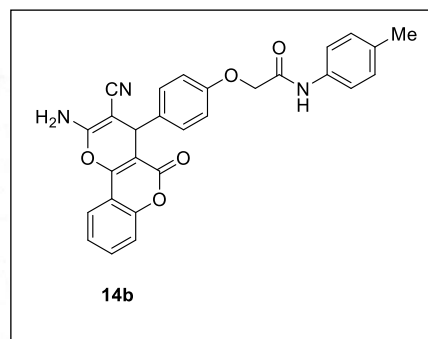
DATA PROCESSING

Line broadening 0.1 Hz

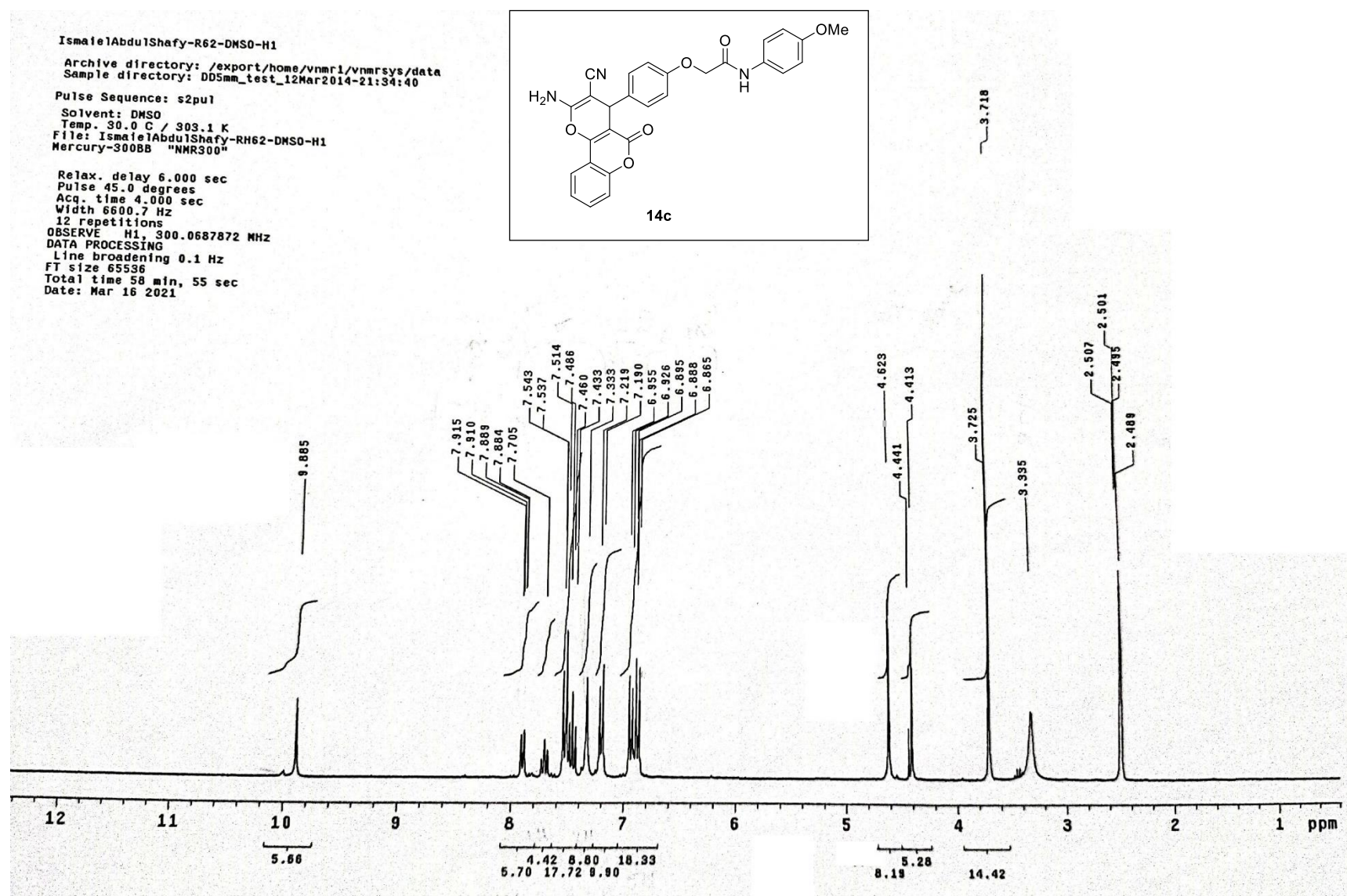
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Total time 58 min, 55 sec

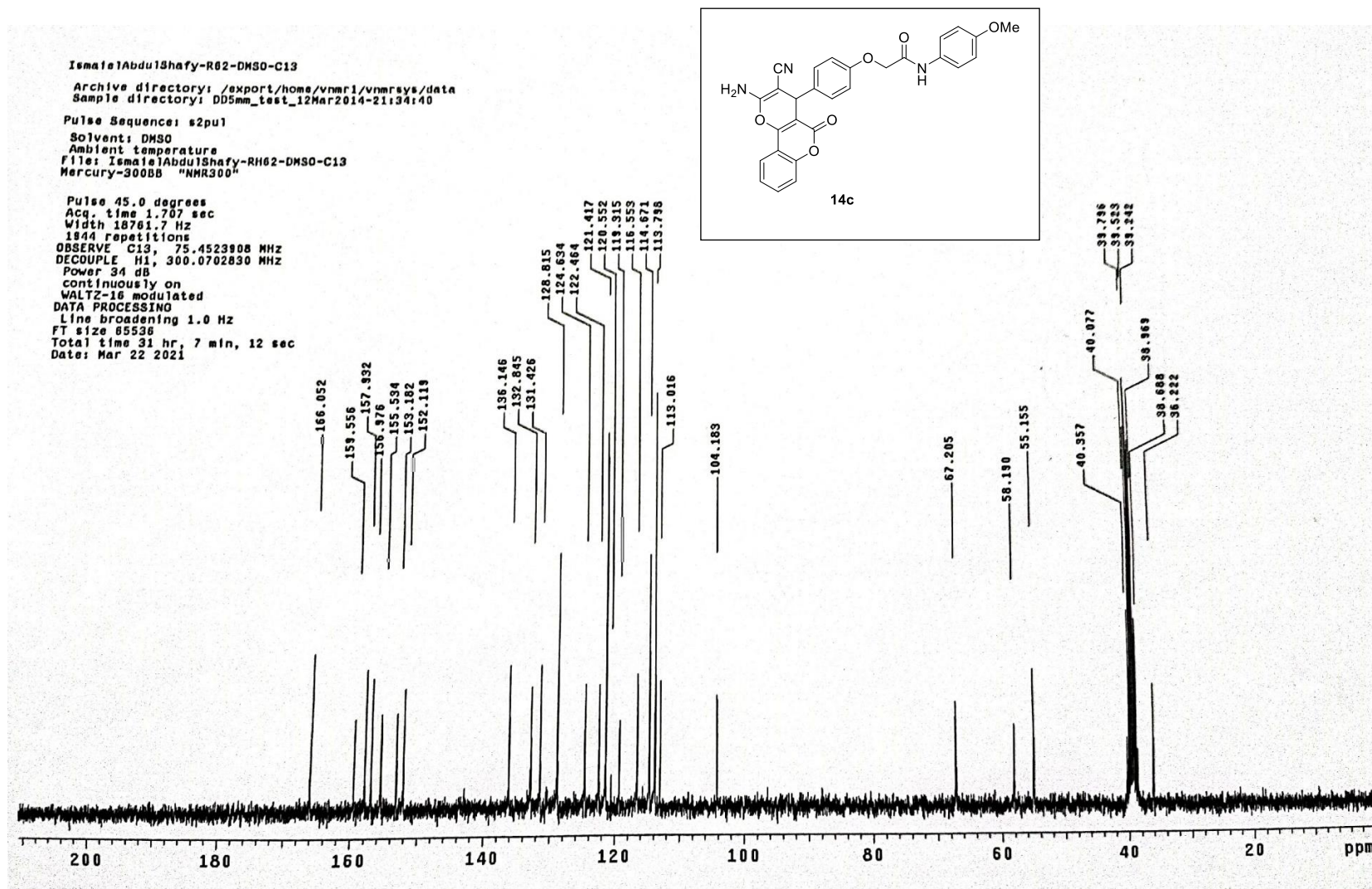
Date: May 11 2021



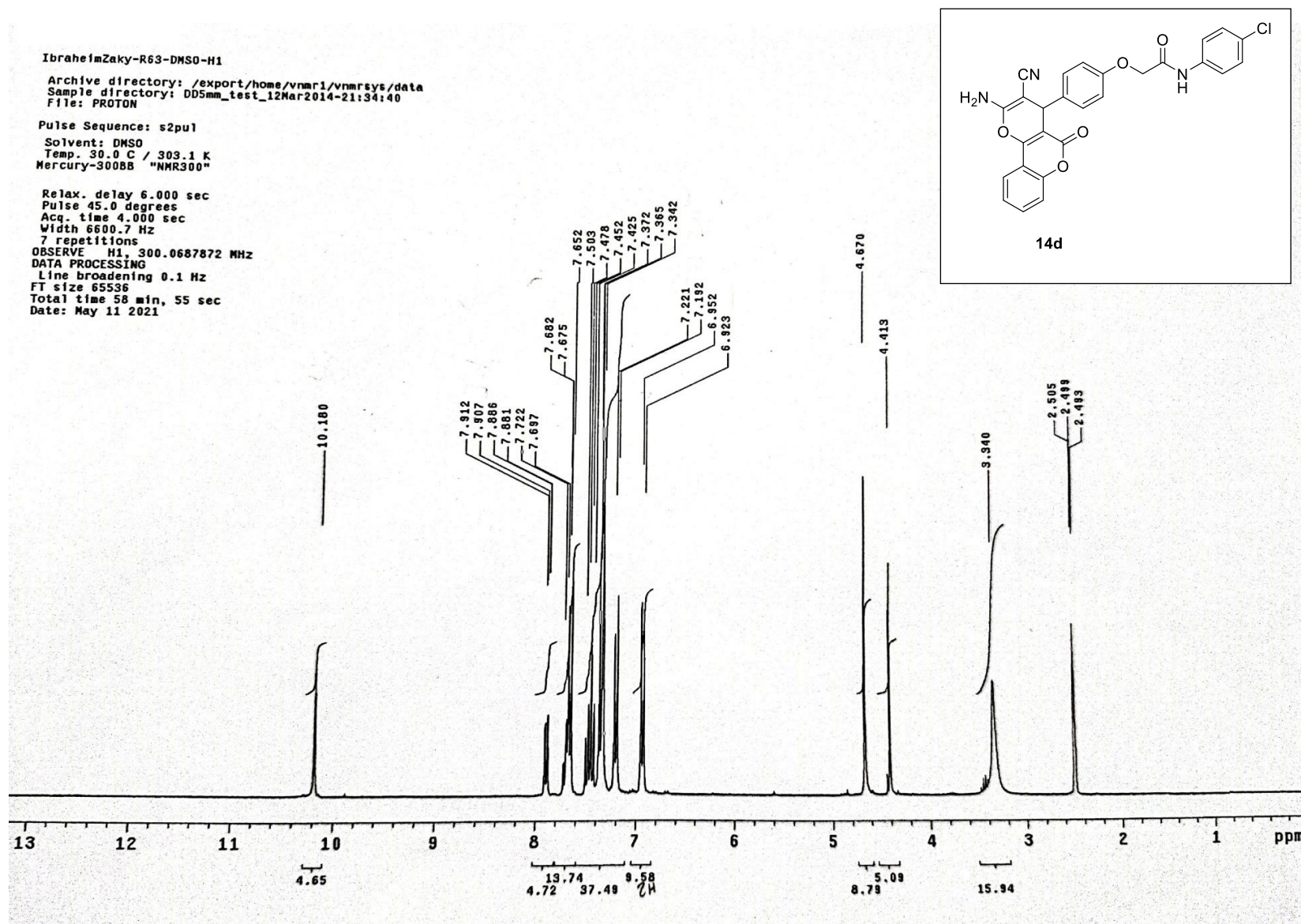
¹H NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4H,5H-pyrano[3,2-c]chromen-4-yl)phenoxy)-N-(p-tolyl)acetamide (14b)



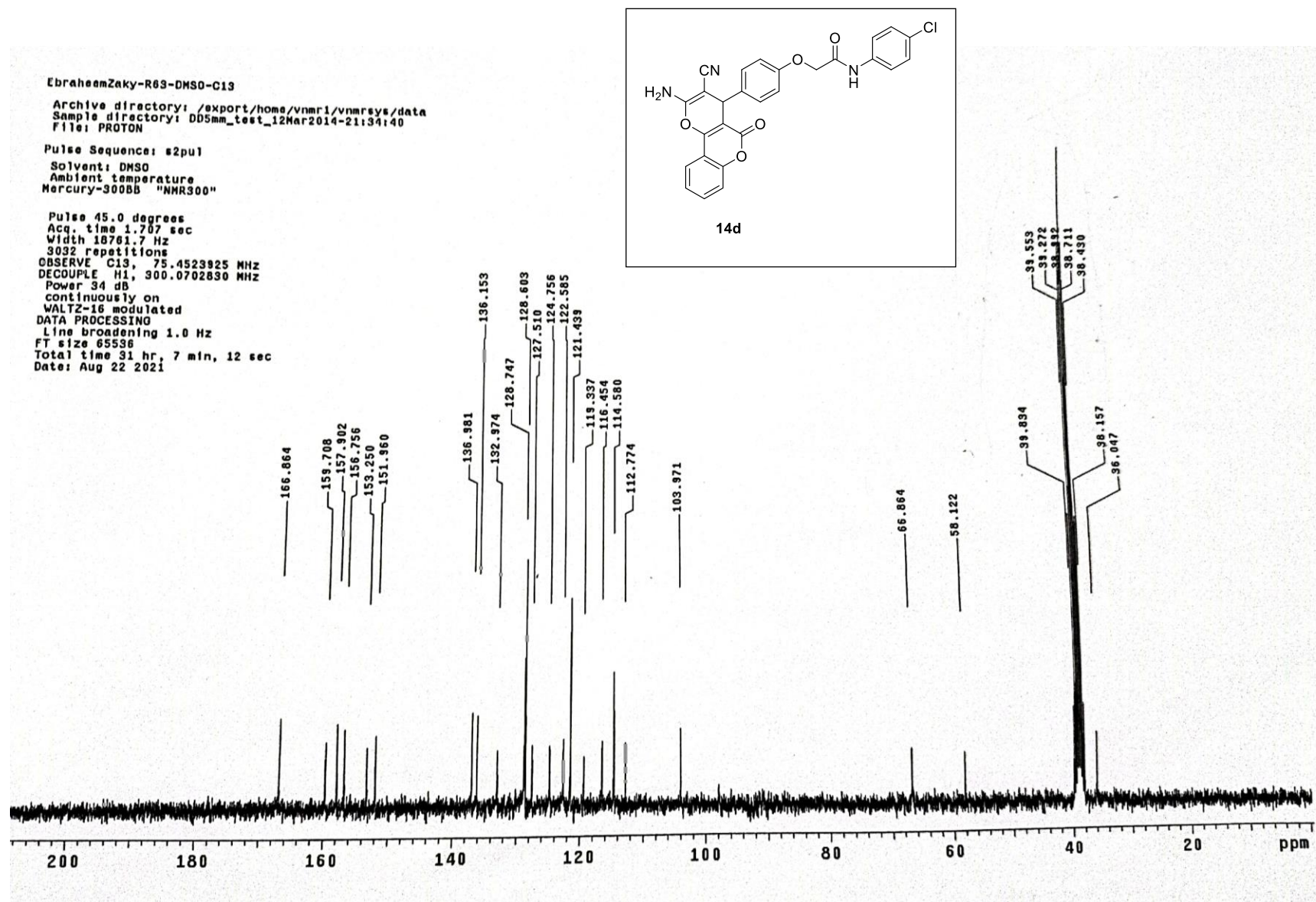
¹H NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4H,5H-pyrano[3,2-c]chromen-4-yl)phenoxy)-N-(4-methoxyphenyl)acetamide (**14c**)



¹³C NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4H,5H-pyrano[3,2-c]chromen-4-yl)phenoxy)-N-(4-methoxyphenyl)acetamide (14c)



¹H NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4H,5H-pyrano[3,2-c]chromen-4-yl)phenoxy)-N-(4-chlorophenyl)acetamide (14d)



¹³C NMR of 2-(4-(2-Amino-3-cyano-5-oxo-4H,5H-pyrano[3,2-c]chromen-4-yl)phenoxy)-N-(4-chlorophenyl)acetamide (14d)

AhmedHelmy-R77-DMSO-H1

Archive directory: /export/home/vnmr1/vnmrsys/data
Sample directory: DD5mm_test_12Mar2014-21:34:40
File: PROTON

Pulse Sequence: s2pu1

Solvent: DMSO

Temp. 30.0 C / 303.1 K

Mercury-300BB "NMR300"

Relax. delay 6.000 sec

Pulse 45.0 degrees

Acq. time 4.000 sec

Width 6600.7 Hz

9 repetitions

OBSERVE H1, 300.0687872 MHz

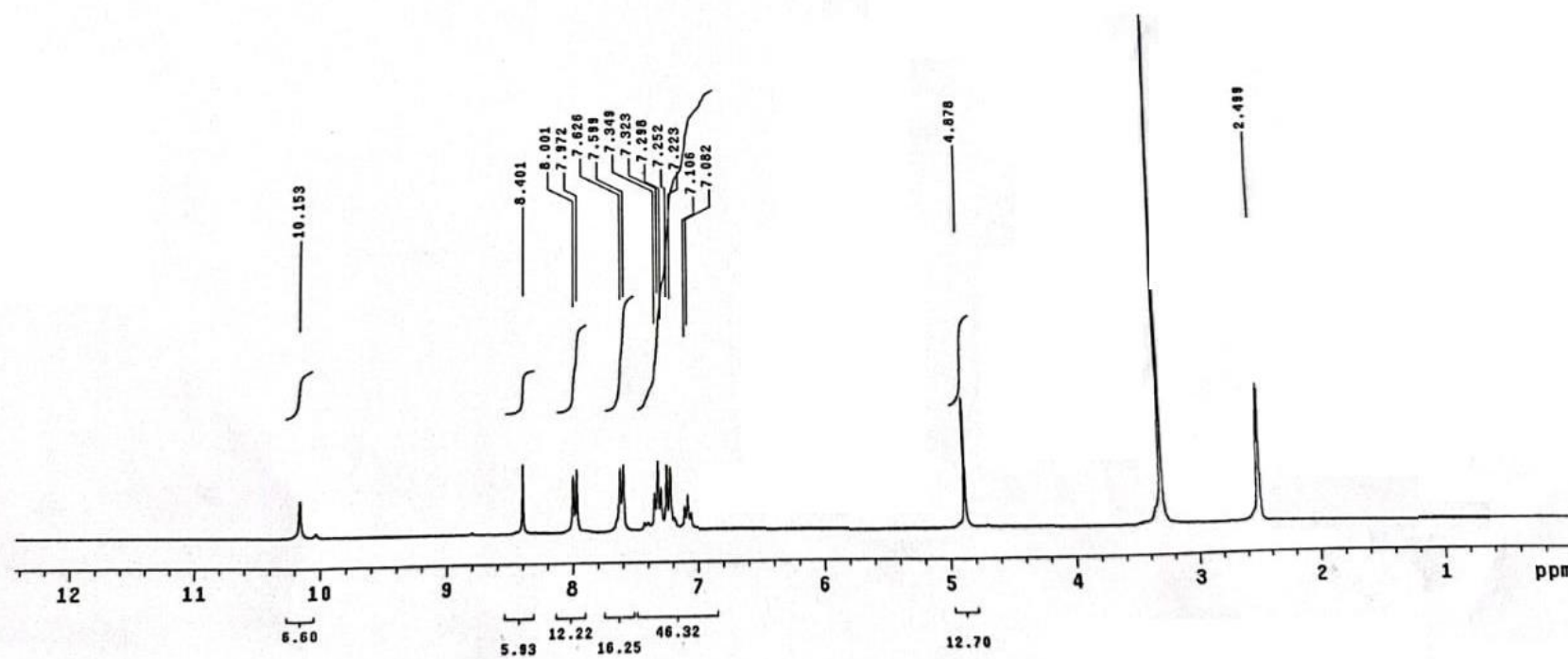
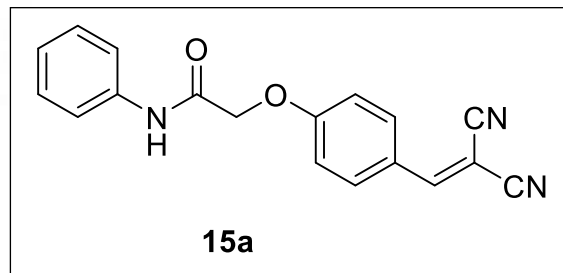
DATA PROCESSING

Line broadening 0.3 Hz

FT size 65536

Total time 58 min, 55 sec

Date: May 31 2021



¹H NMR of 2-(4-(2,2-Dicyanovinyl)phenoxy)-N-phenylacetamide (15a)

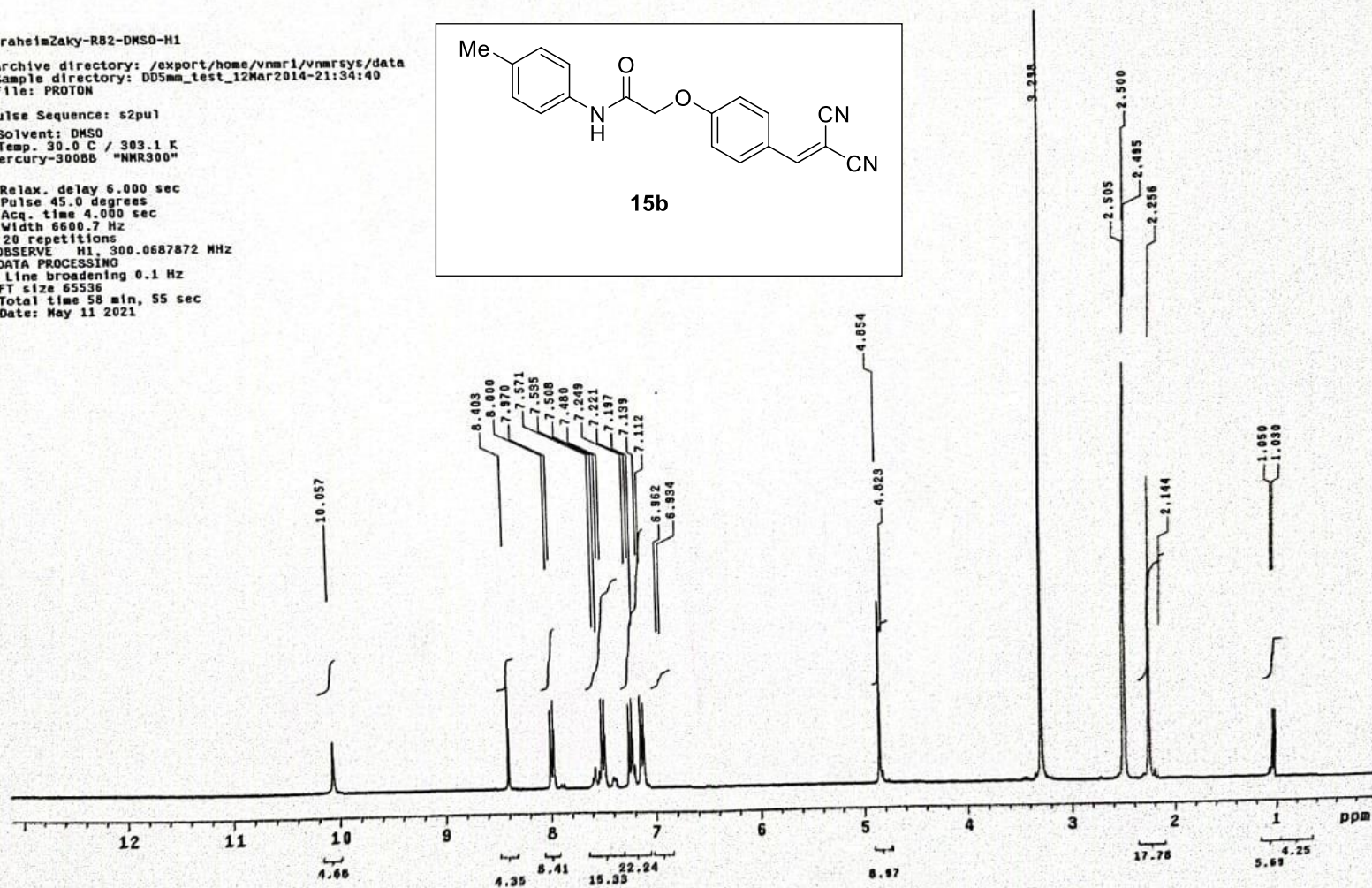
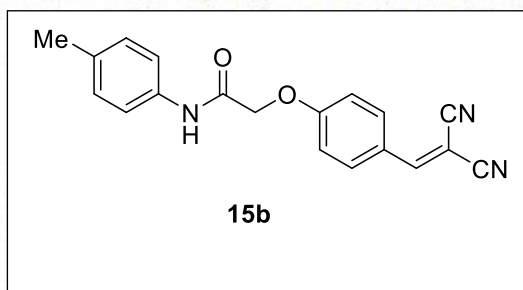
IbraheimZaky-R82-DMSO-H1

Archive directory: /export/home/vnmr1/vnmrsys/data
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File: PROTON

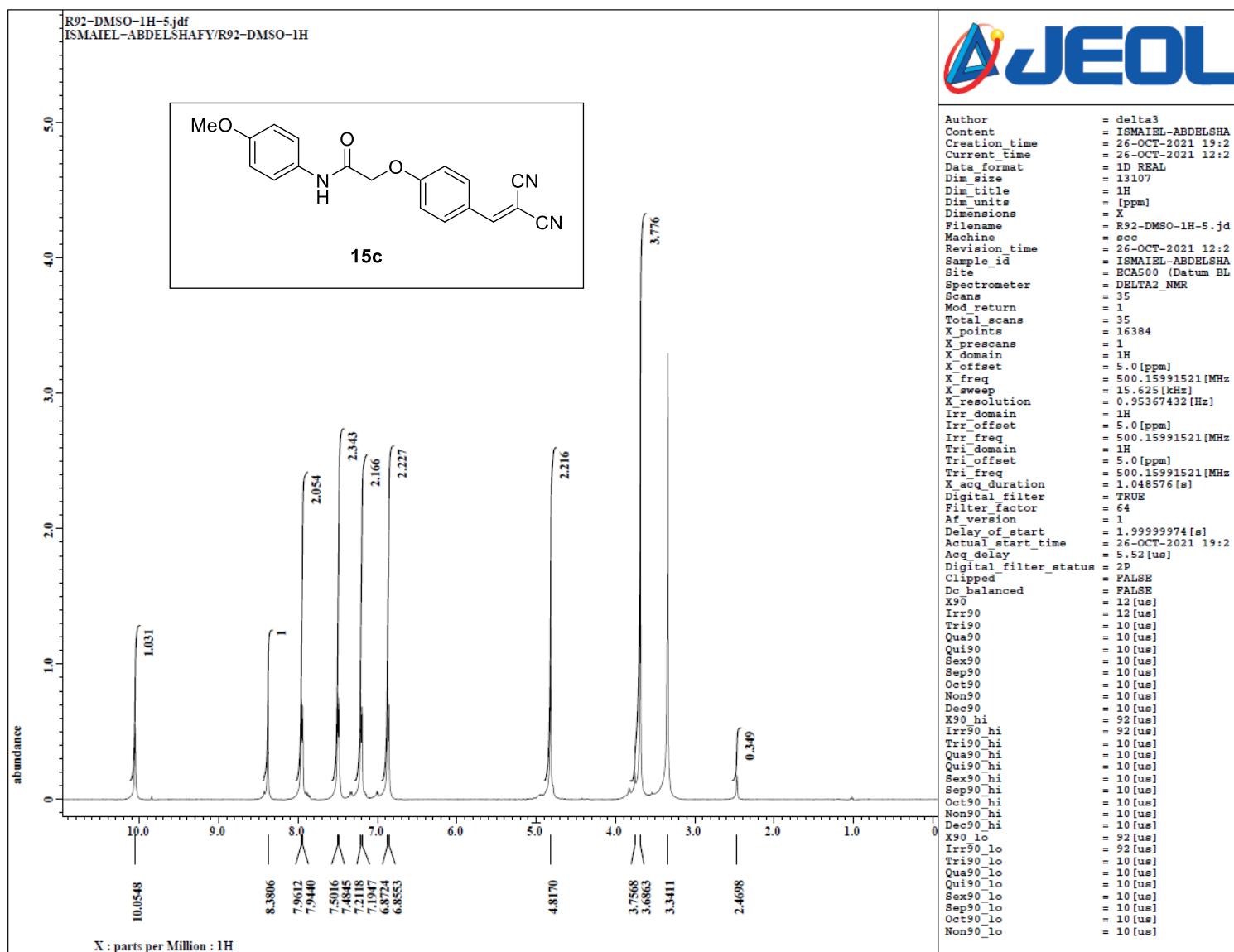
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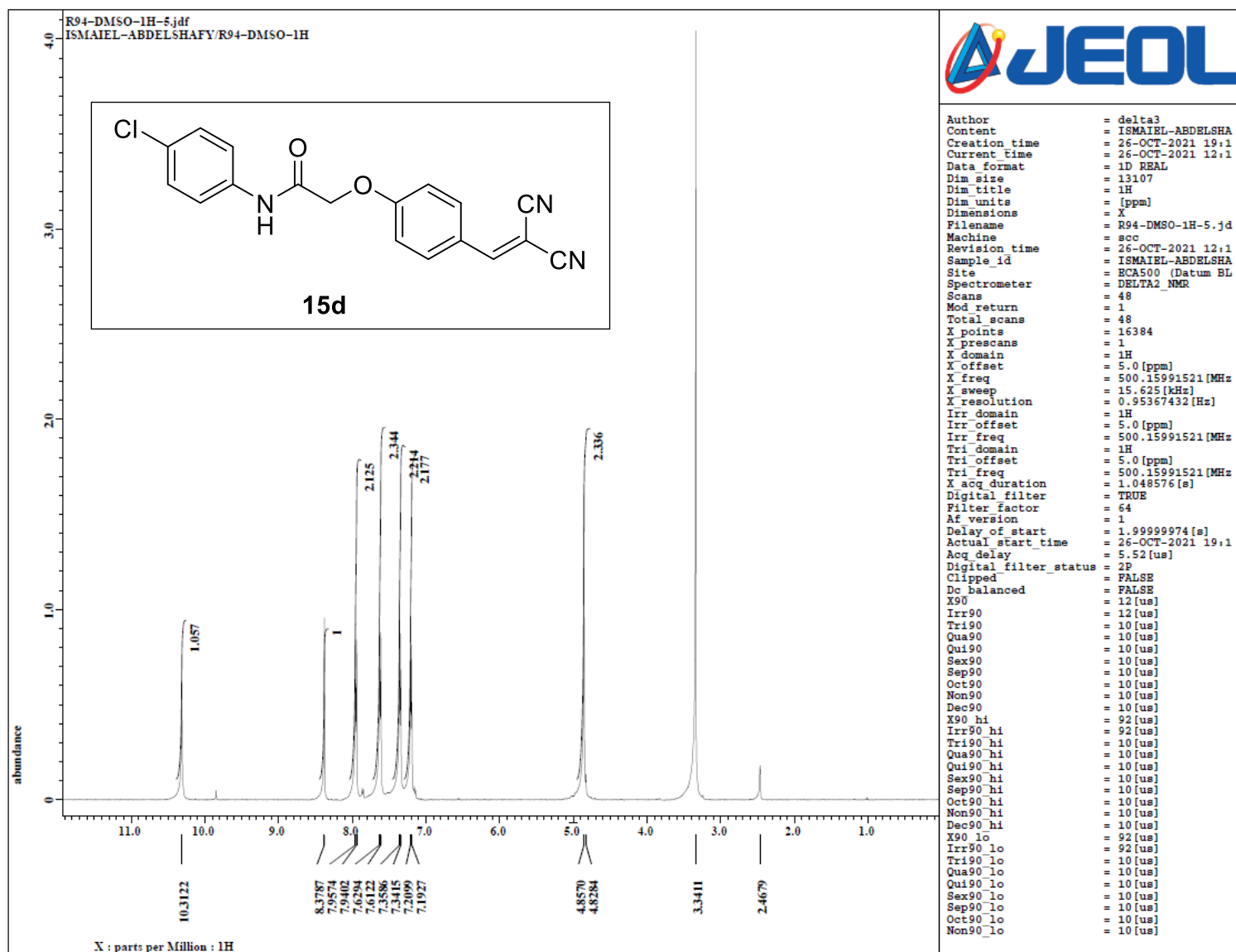
Solvent: DMSO
Temp. 30.0 C / 303.1 K
Mercury-300BB "NMR300"

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Pulse 45.0 degrees
Acq. time 4.000 sec
Width 6600.7 Hz
20 repetitions
OBSERVE H1, 300.068782 MHz
DATA PROCESSING
Line broadening 0.1 Hz
FT size 65536
Total time 58 min, 55 sec
Date: May 11 2021



¹H NMR of 2-(4-(2,2-Dicyanovinyl)phenoxy)-N-(p-tolyl)acetamide (15b)

¹H NMR of 2-(4-(2,2-dicyanovinyl)phenoxy)-N-(4-methoxyphenyl)acetamide (15c)

¹H NMR of *N*-(4-chlorophenyl)-2-(4-(2,2-dicyanovinyl)phenoxy)acetamide (**15d**)