

Supporting information for:

Strecker-derived methodology for library synthesis of *N*-acylated α -aminonitriles

Pedro Gonçalves¹, Anke Peeraer¹, Yves Adriaenssens¹, Lara Zonnekeijn¹, Philippe Franck², Bert U. W. Maes², Koen Augustyns¹, and Pieter Van Der Veken^{1,*}

¹Laboratory of Medicinal Chemistry, University of Antwerp, Universiteitsplein 1, 2610 Wilrijk, Belgium

²Organic Synthesis, Department of Chemistry, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium

*Corresponding author: pieter.vanderveken@uantwerpen.be

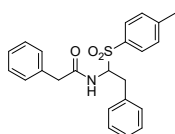
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Examples of unstable 4-tolylsulfonyl adducts

The compounds were prepared using the same protocol as described in *general method (A)* for *synthesis of phenyl-N-(3-phenyl-1-tosylpropyl)acetamide*. But we were unable to purify them and could only confirm the presence of the compound with UPLC-MS for **(S1)** or NMR for **(S2)**. In these two cases, change of color was associated with degradation.

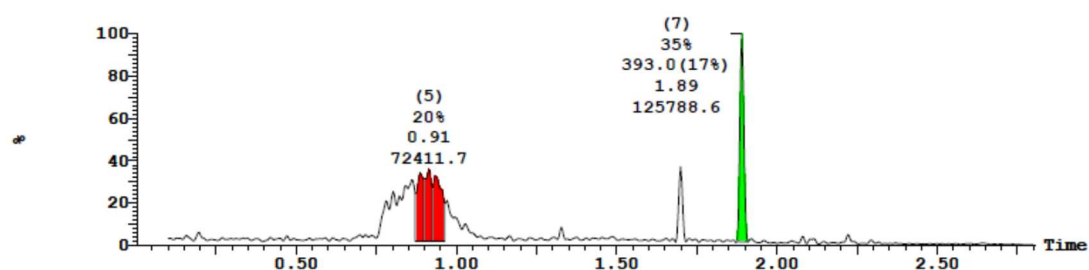
Compound **(S1)**



Sample 1 Vial 2:65 ID GQ-2018-001-1-FR018 File GQ-2018-001-1-FR018 Date 07-Mar-2018 Time 11:28:49 Description

1: MS ES+ :BPI Smooth (SG, 2x2)

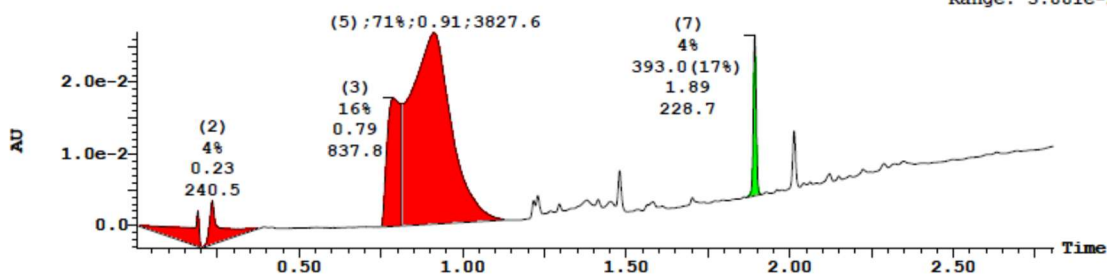
8.9e+006



3: UV Detector: TIC

2.69e-2

Range: 3.001e-2



Sample Report (continued):

Peak ID	Compound	Time	Mass Found
7	Tentative	1.89	394.00,416.00

7: (Time: 1.89) Combine (491:497-(485:487+502:504))

1:MS ES+

4.7e+006

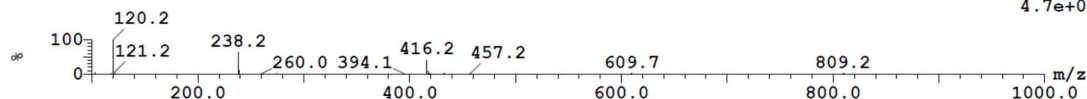
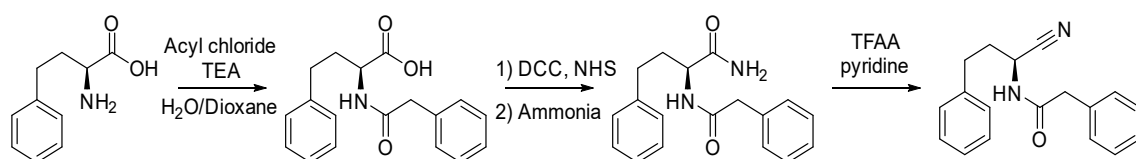


Figure S.1 – Chromatogram of compound **(S1)** after flash chromatography

Supercritical chiral chromatography



Scheme S.1 – Synthetic scheme for the synthesis of chiral standard

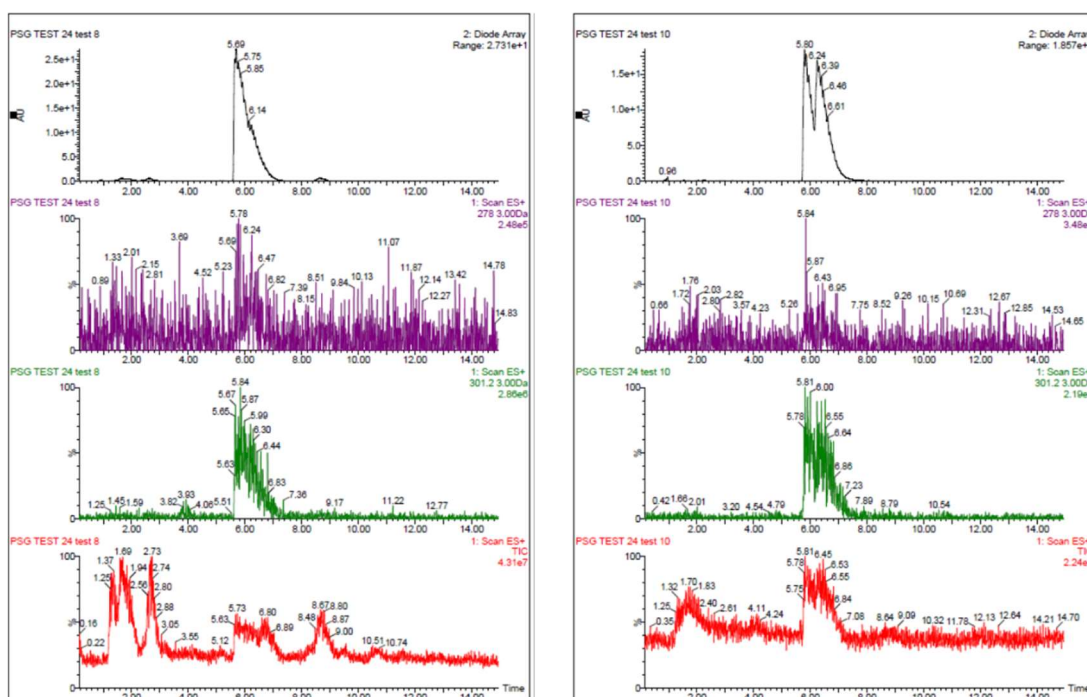


Figure S.3 – SFC chromatograms: chiral standard (left) and compound **(11)** (right)

Chiral HPLC chromatograms

Despite the peak having different shapes the area under the curve is the same.

Compound (9)

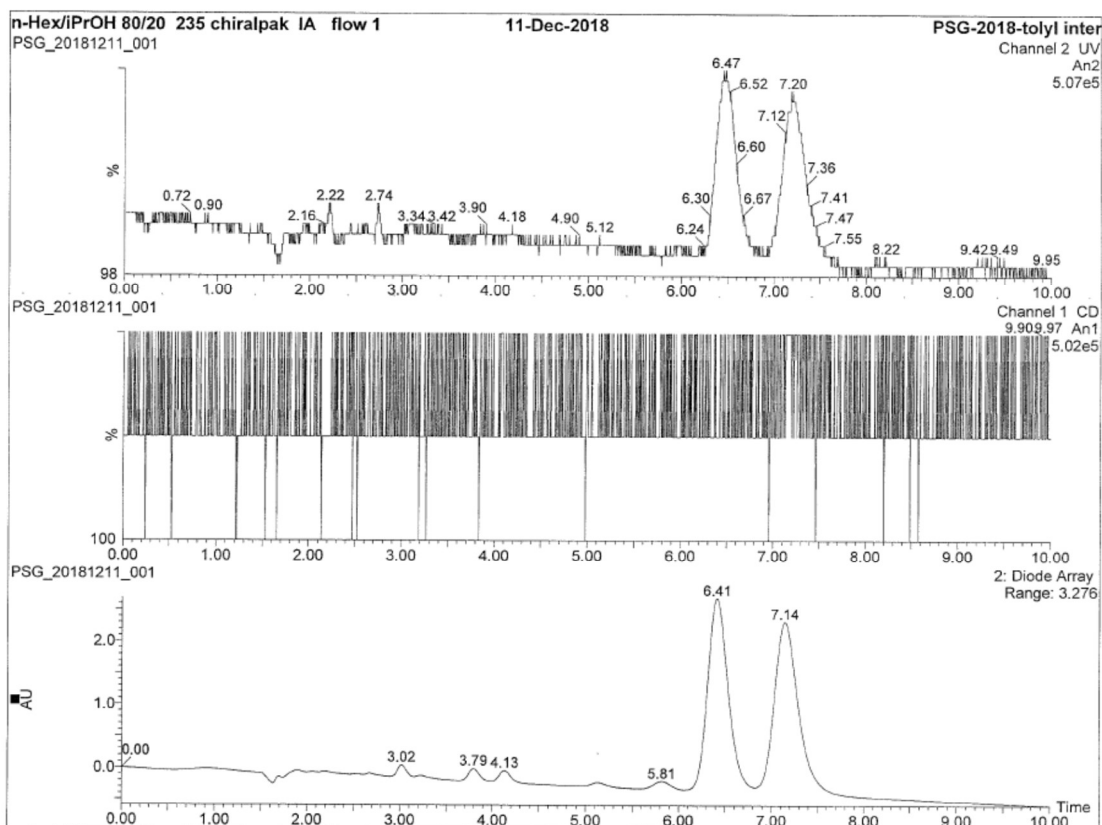


Figure S.4 – Chromatogram from chiral HPLC for compound (9)

Compound (11)

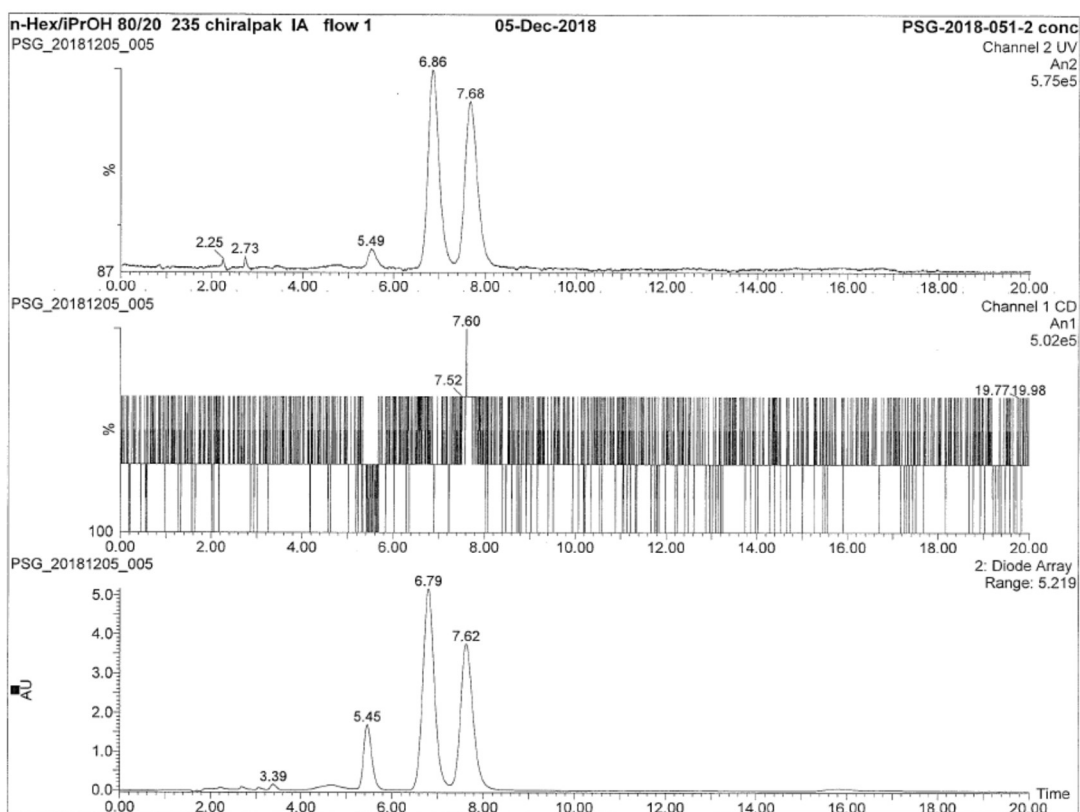


Figure S.5 – Chromatogram from chiral HPLC for compound (11). Normal reaction conditions.

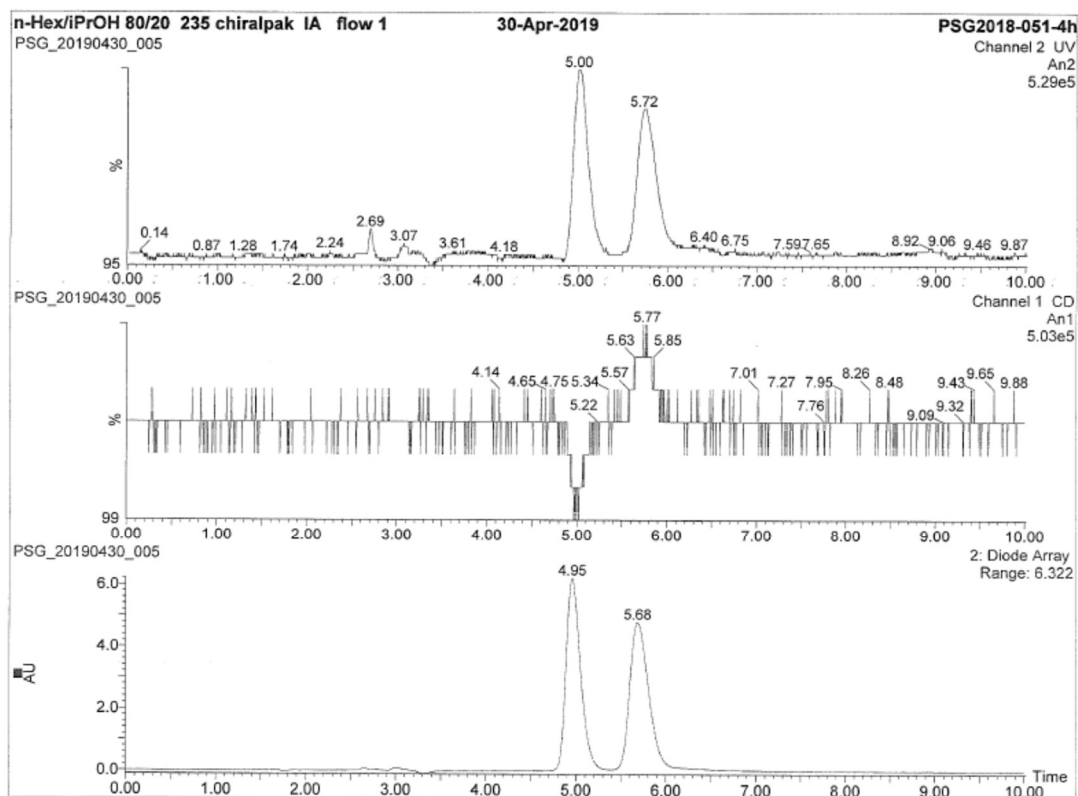


Figure S.6 – Chromatogram from chiral HPLC for compound (11). Attempt to induce enantioselectivity by adding quinine with KCN and maintaining reaction at -10°C.

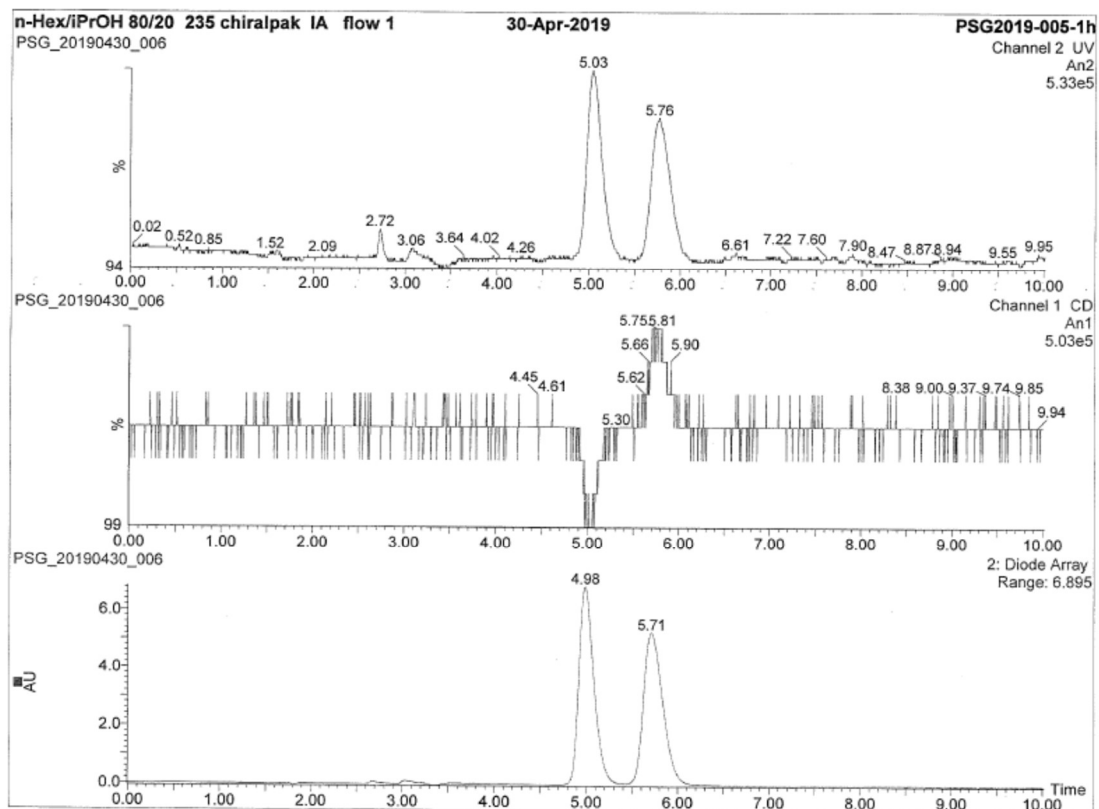


Figure S.7 – Chromatogram from chiral HPLC for compound **(11)**. Attempt to induce enantioselectivity by adding quinine at beginning and maintaining reaction at room temperature. This reaction did not produce any product when performed at -10°C from beginning until the end.

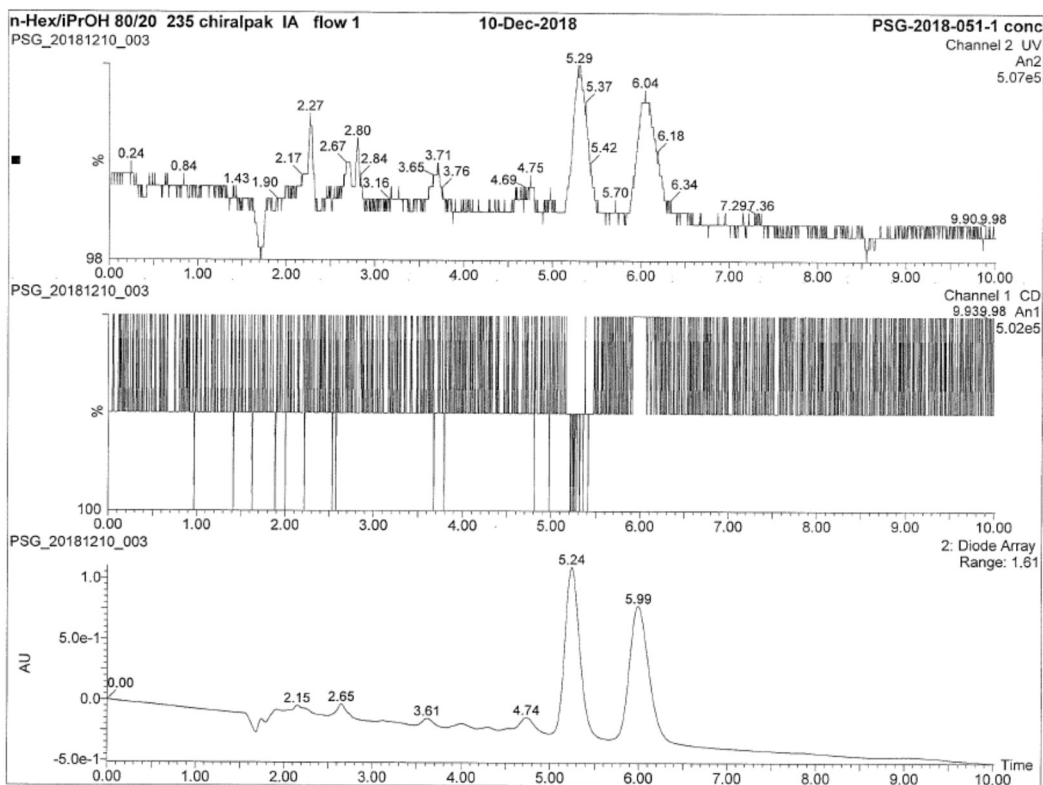


Figure S.8 – Chromatogram from chiral HPLC for compound **(11)**. The sample used is from the experiment with methanesulfonic acid.

Compound (13)

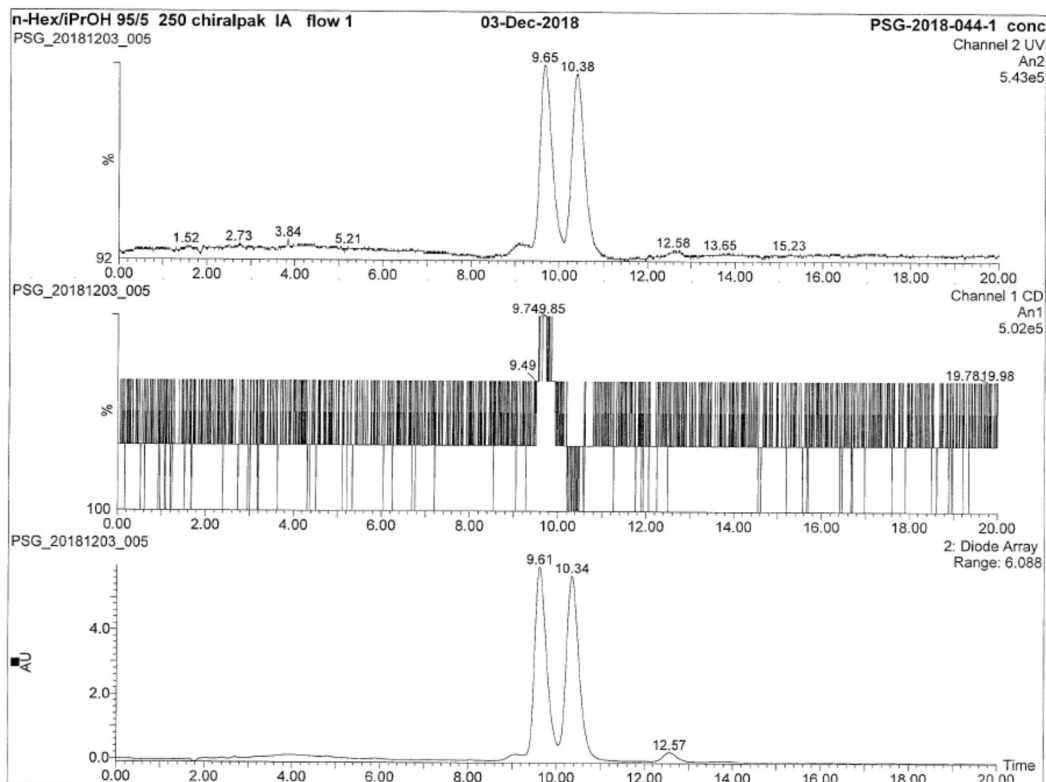


Figure S.9 – Chromatogram from chiral HPLC for compound **(13)**.

Compound (21)

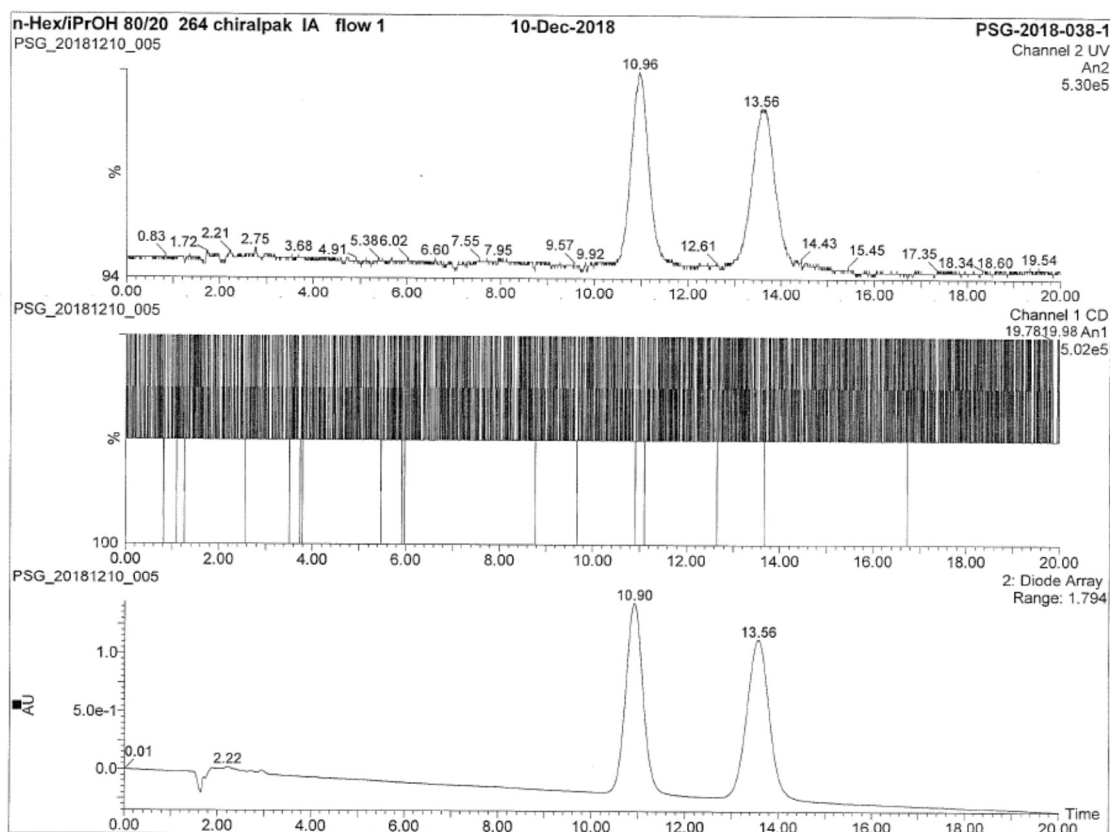


Figure S.10 – Chromatogram from chiral HPLC for compound (21).

LC-MS screening

In order to screen a considerable number of conditions, the initial target-molecule was compound (11) which allows following the product formation with UPLC-MS. A calibration curve was performed for each method, the longer method was only used when there was peak overlap.

Calibration curve:

- Generic method, 13 concentrations in triplicate, $R^2 = 0,9933$, measured in a random order. Method: 0-0.15 minutes: 95% H₂O+FA 0.1% 5% ACN+FA 0.1%; (gradient); 2-2.25 minutes: 100% H₂O+FA 0.1%; 0.7 mL/min

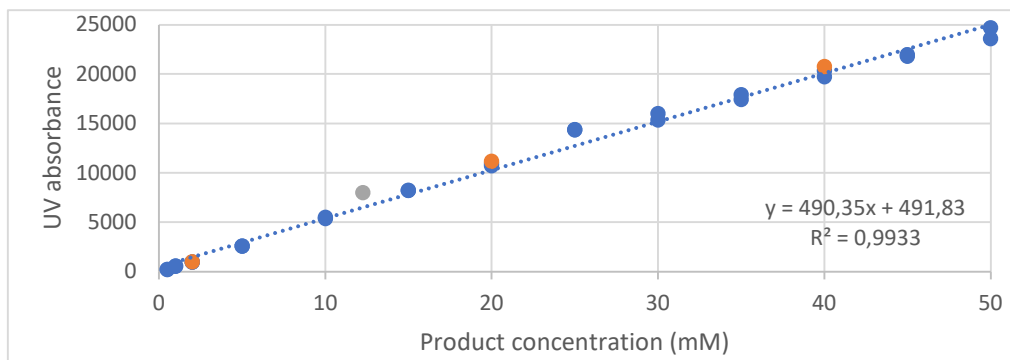


Figure S.11 – Calibration curve for generic method on the UPLC-MS system. Prepared samples ran during working hours (blue), night (orange), and reaction mixture with known concentration (gray)

- Purity method, 13 concentrations in duplicate, $R^2 = 0,9948$, measured in a random order. Method: 0-0.15 minutes: 95% H₂O+FA 0.1% 5% ACN+FA 0.1%; (gradient); 5-5.25 minutes: 100% H₂O+FA 0.1%

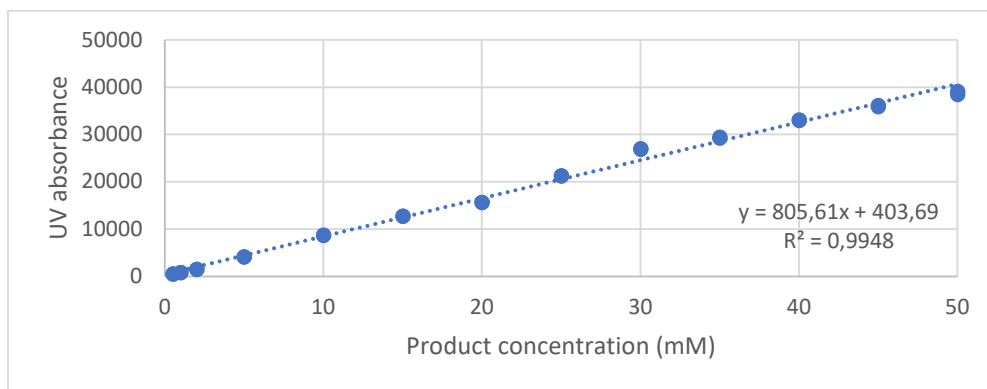


Figure S.12 – Calibration curve for purity method on the UPLC-MS system. Prepared samples ran during working hours.

NMR spectra

Compound (9)

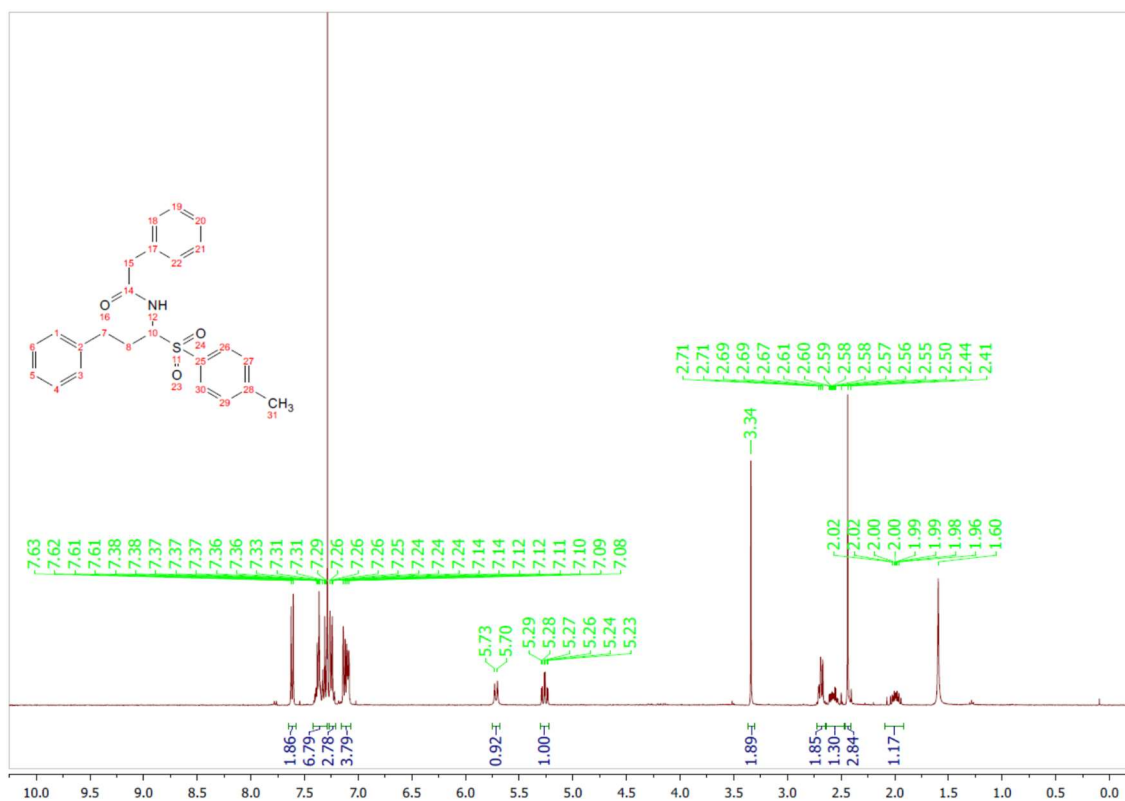


Figure S.13 – ¹H NMR compound (9) in CDCl₃.

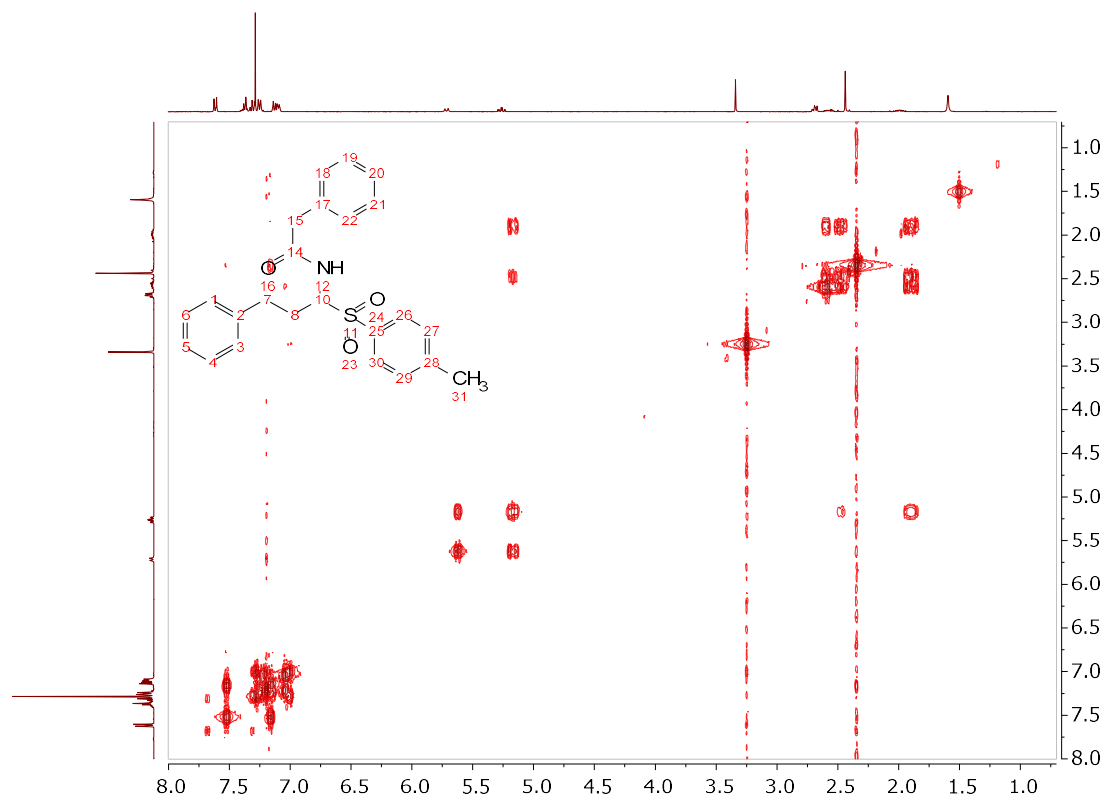
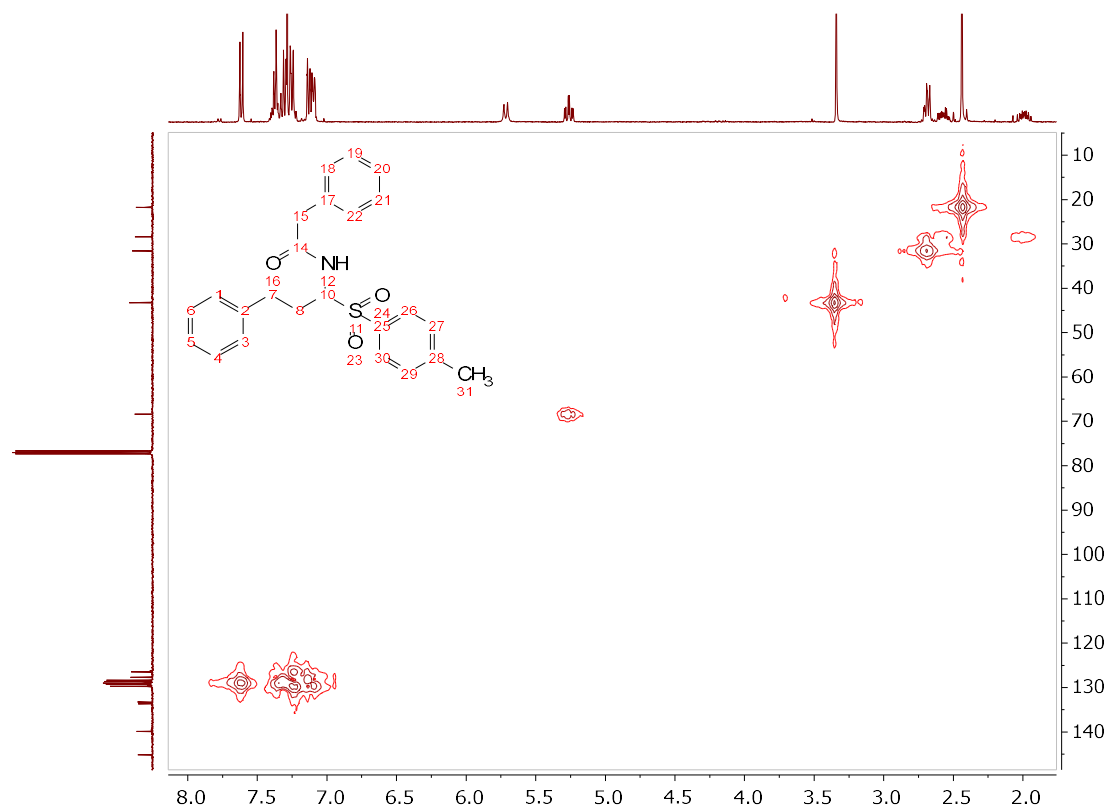
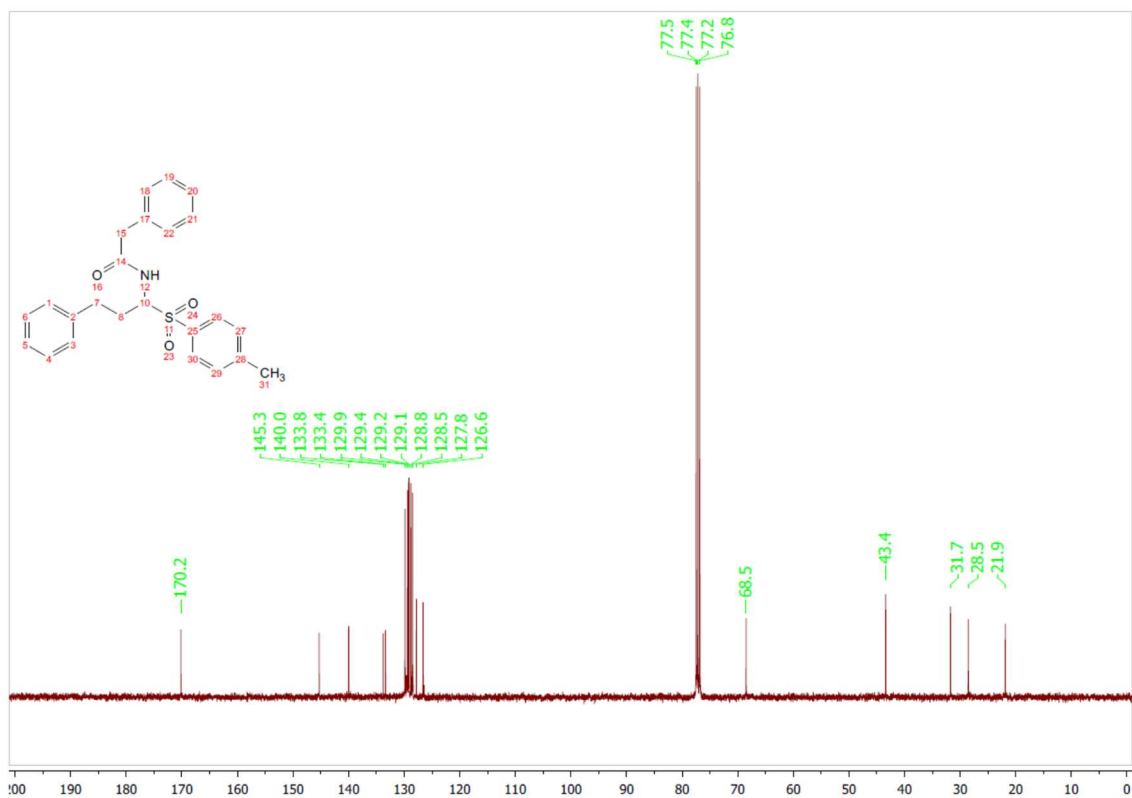


Figure S.14 – COSY compound (9) in CDCl₃.



Compound (11)

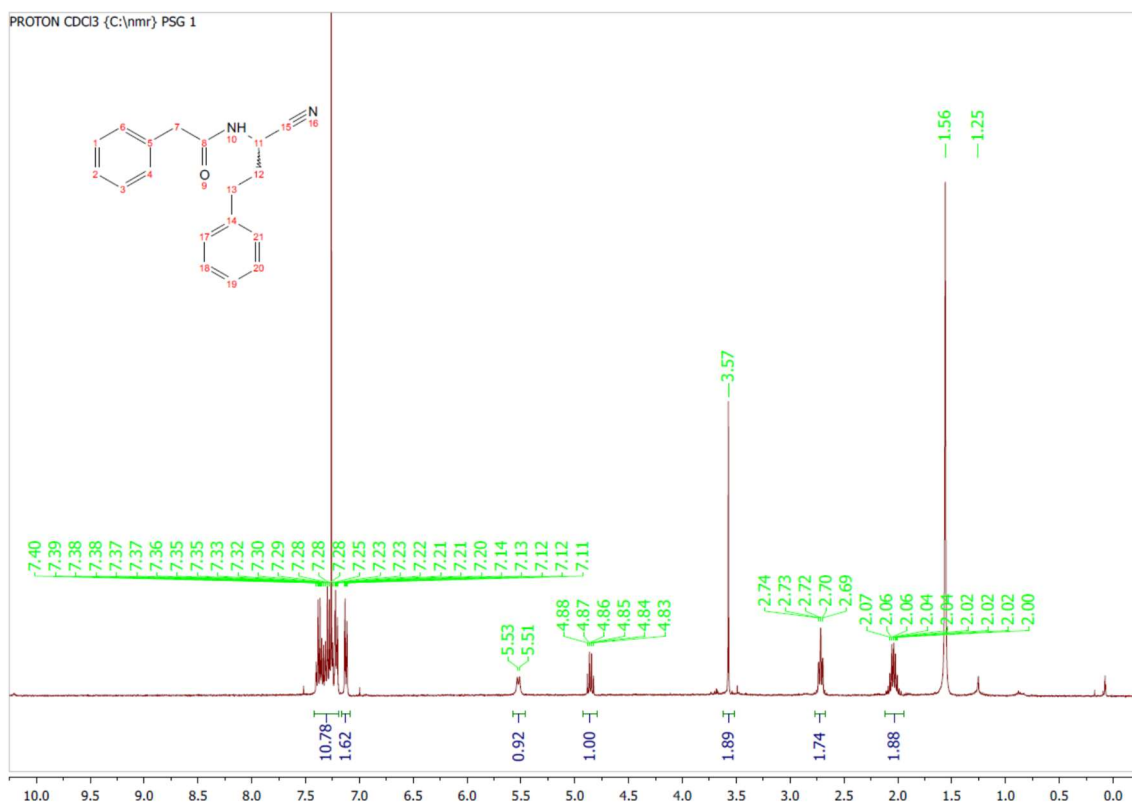


Figure S.17 – ¹H NMR compound (11) in CDCl₃.

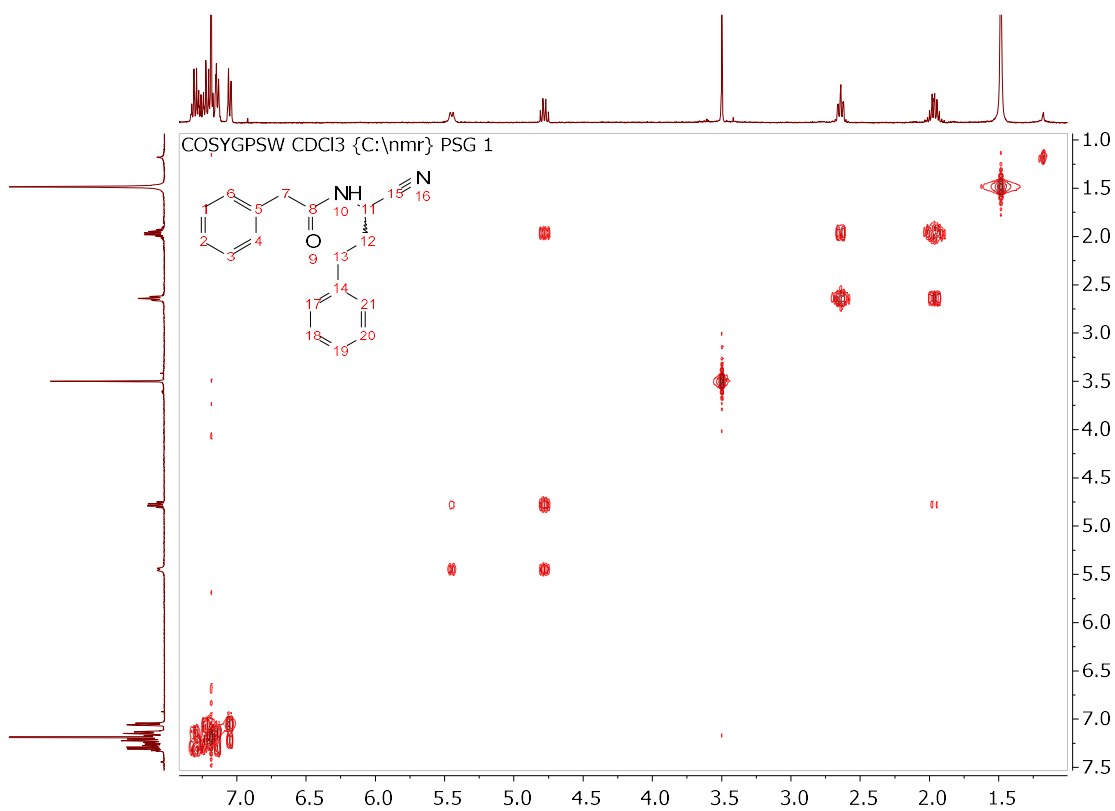


Figure S.18 – COSY compound (11) in CDCl₃.

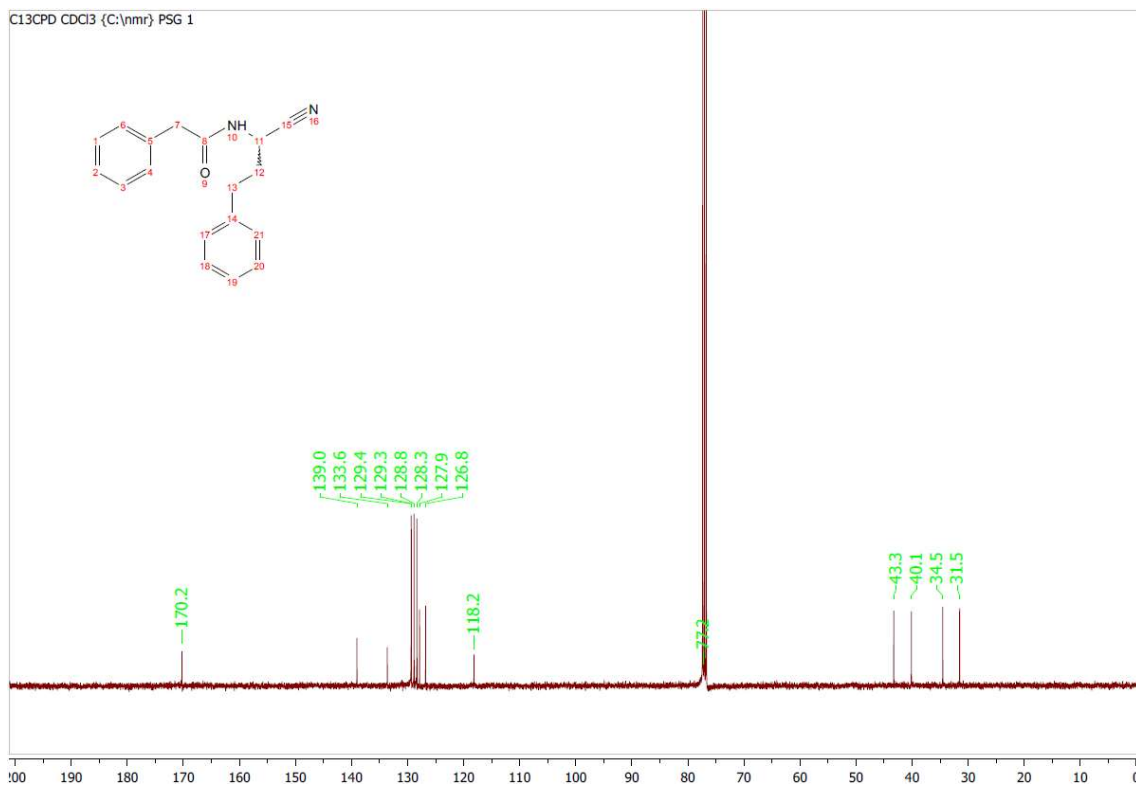


Figure S.19 – CPD compound (11) in CDCl₃.

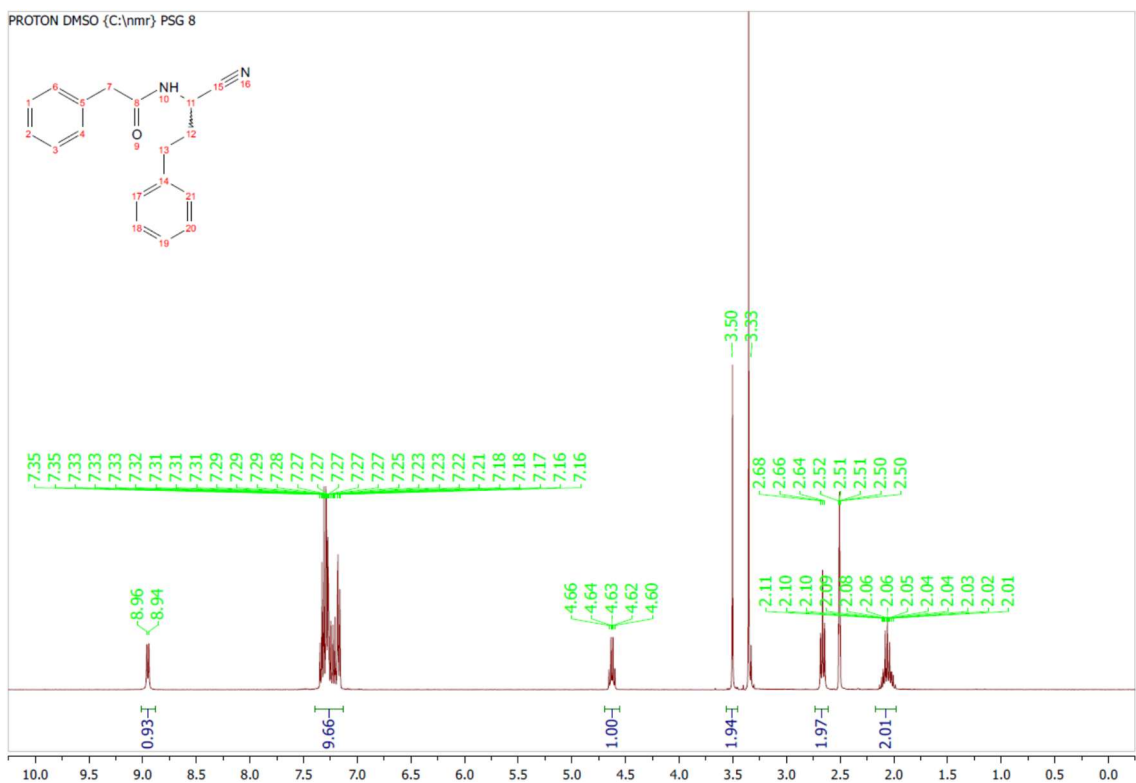


Figure S.20 – HNMR compound (11) in DMSO-d₆.

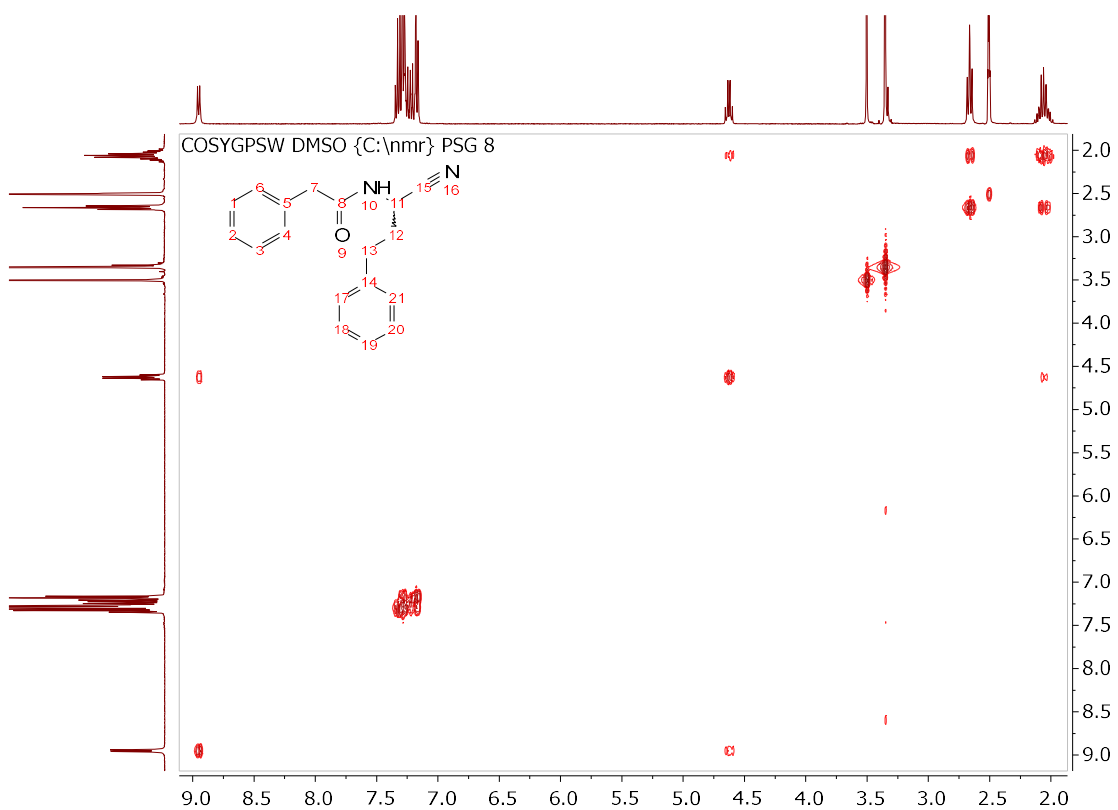


Figure S.21 – HNMR compound (11) in DMSO-d6.

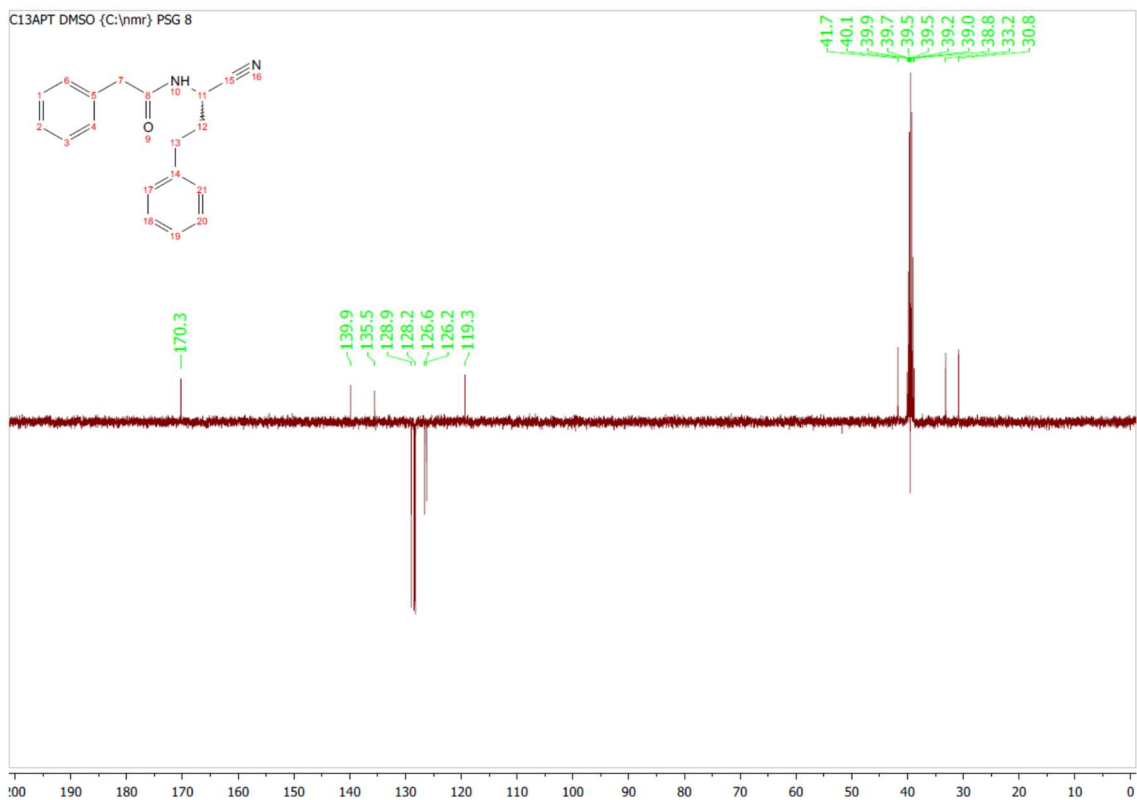


Figure S.22 – APT compound (11) in DMSO-d6.

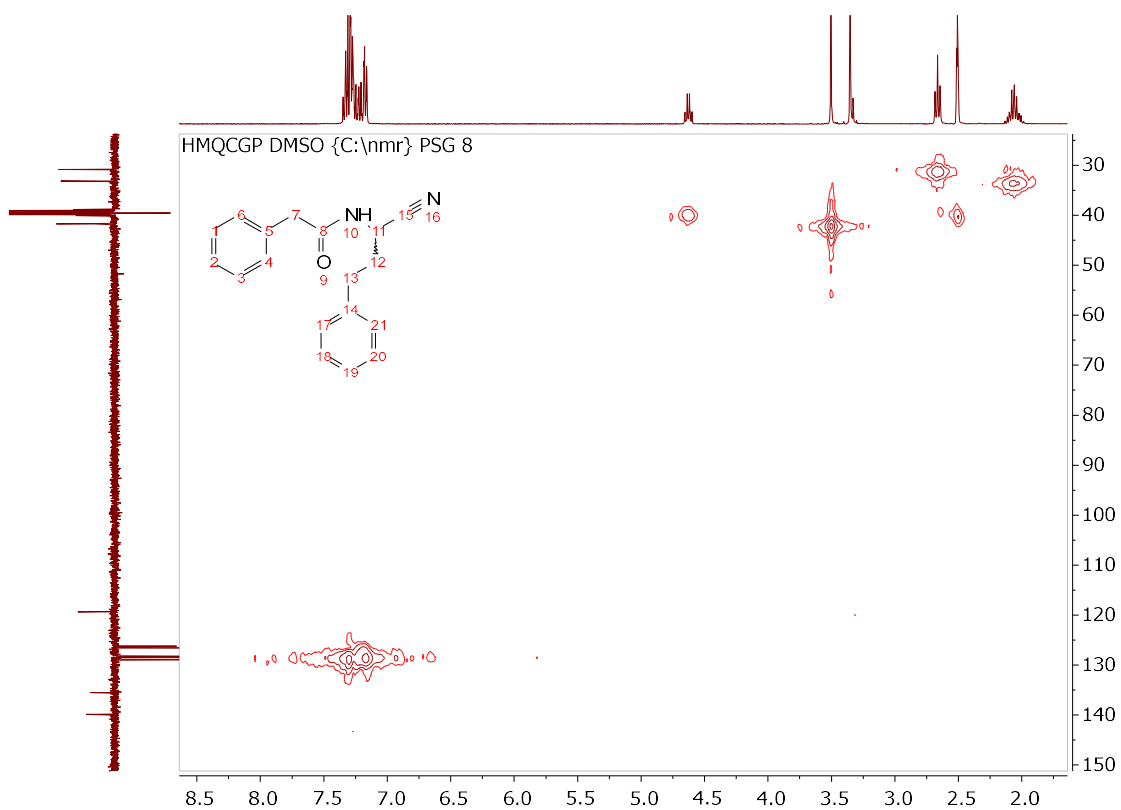


Figure S.23 – HMQC compound (11) in DMSO-d6.

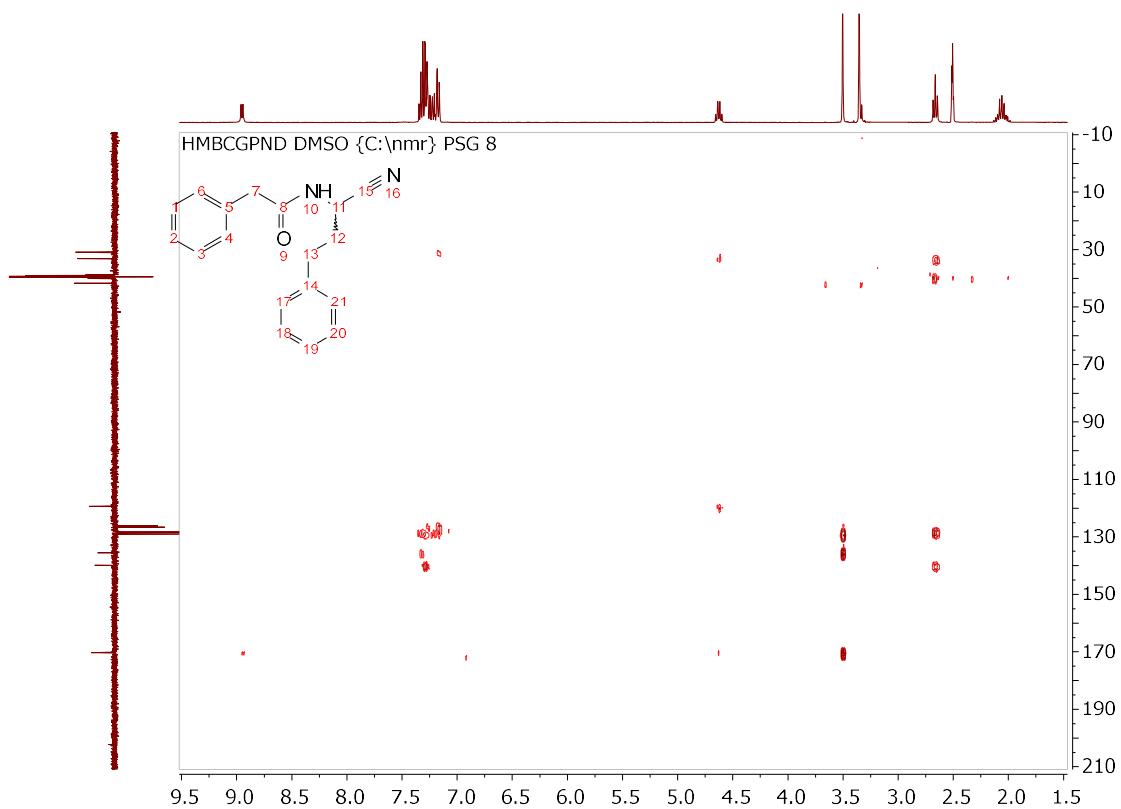


Figure S.24 – HMBC compound (11) in DMSO-d6.

Compound (12)

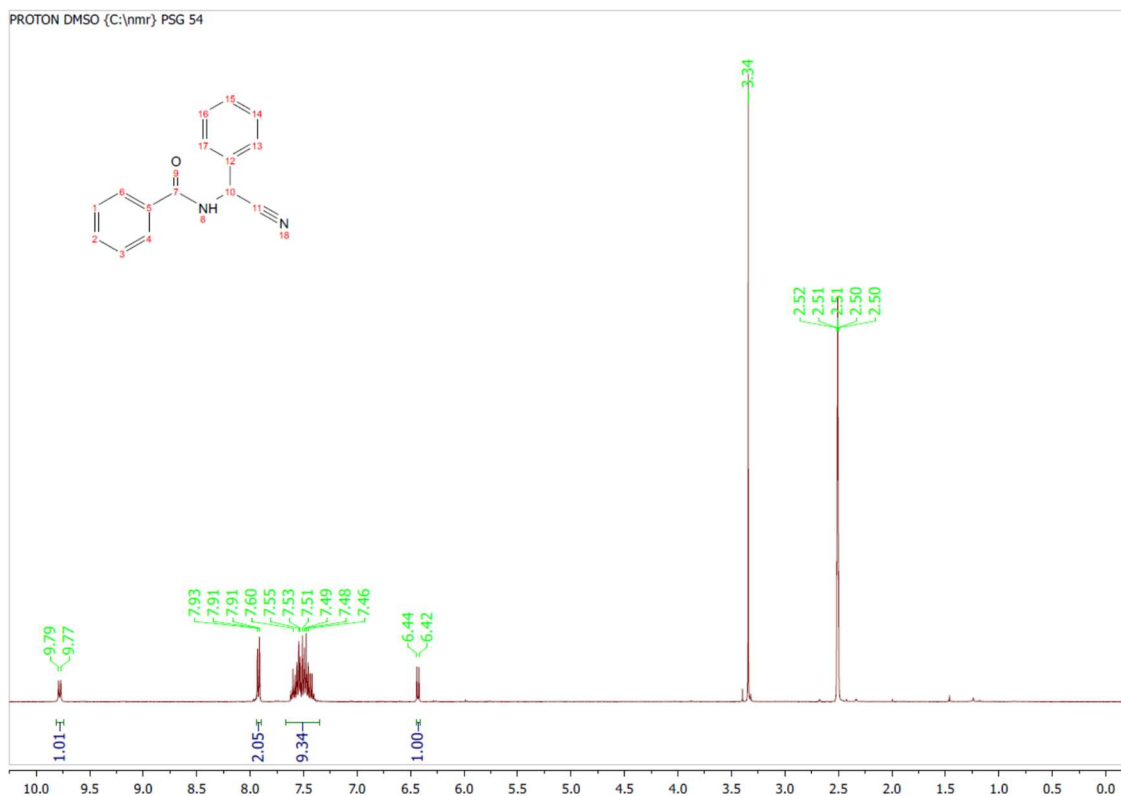


Figure S.25 – ^1H NMR compound (12) in DMSO- d_6 .

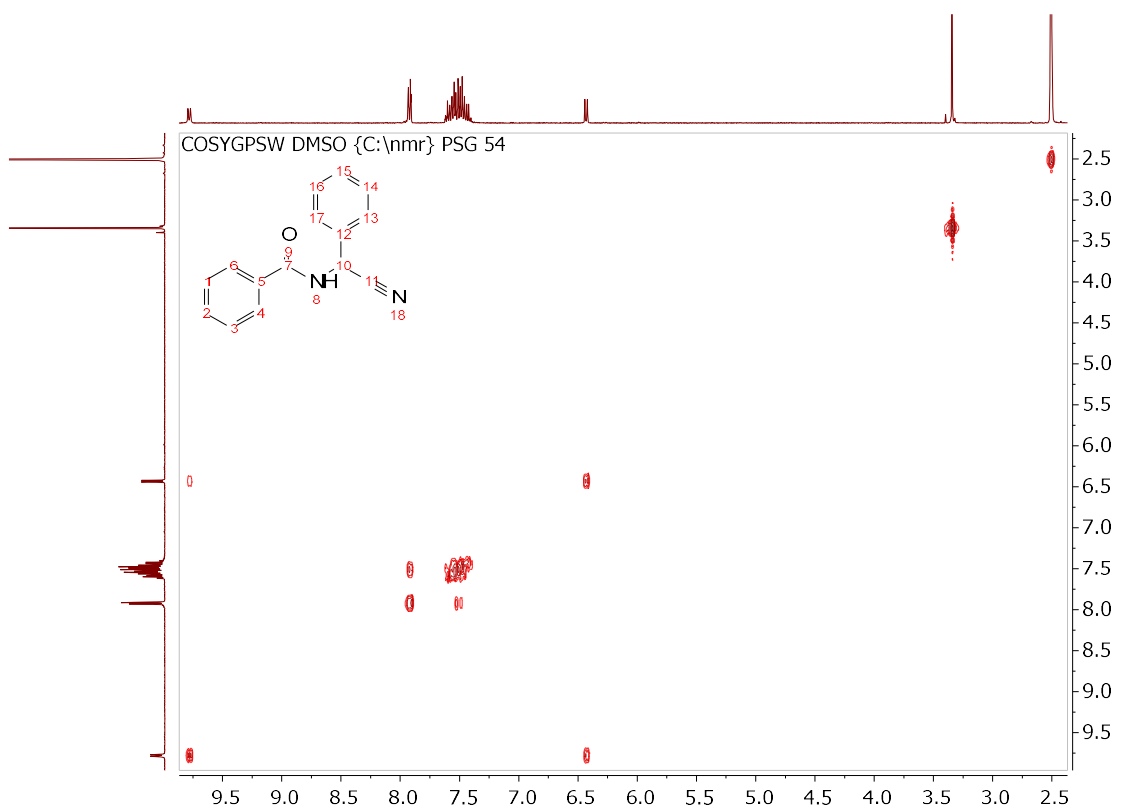


Figure S.26 – COSY compound (12) in DMSO- d_6 .

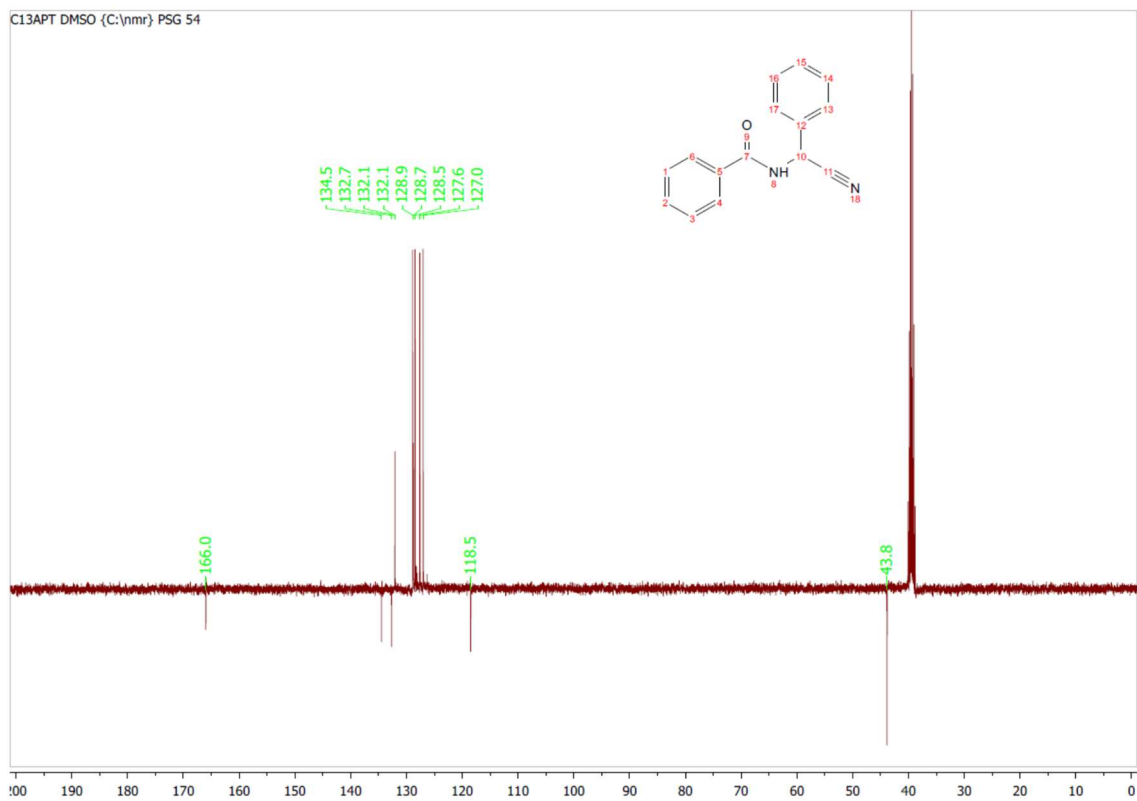


Figure S.27 – APT compound (12) in DMSO-d6.

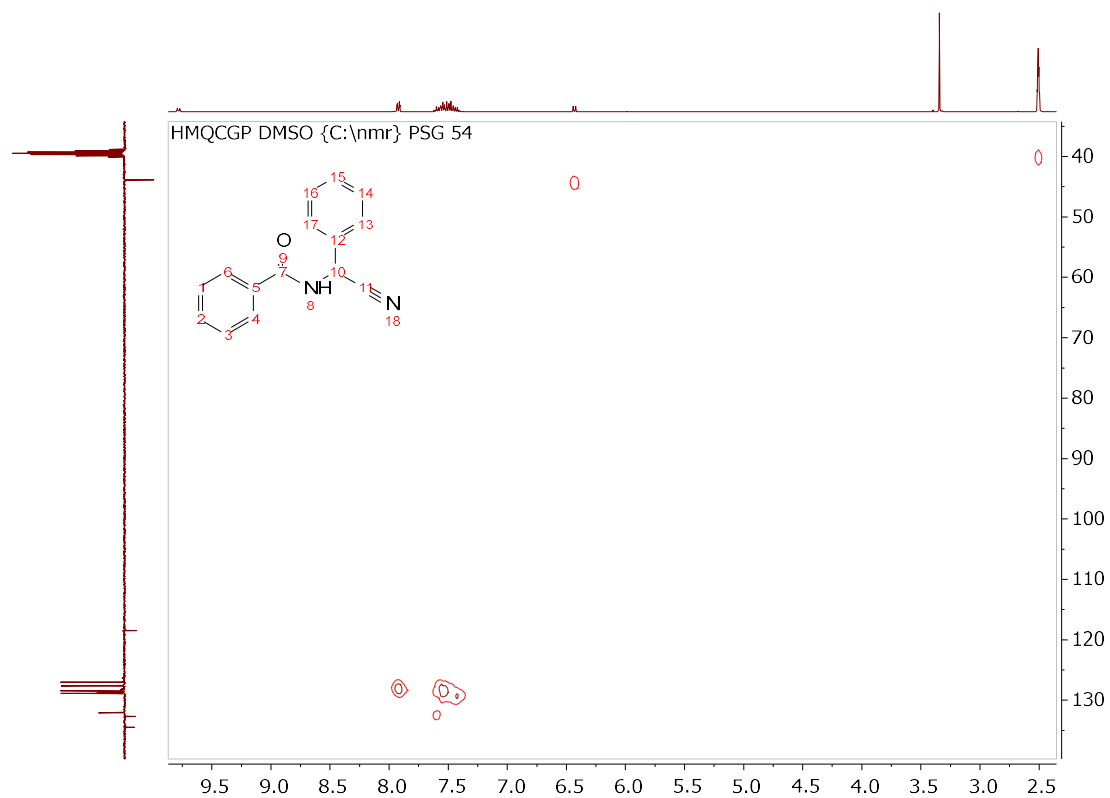


Figure S.28 – HMQC compound (12) in DMSO-d6.

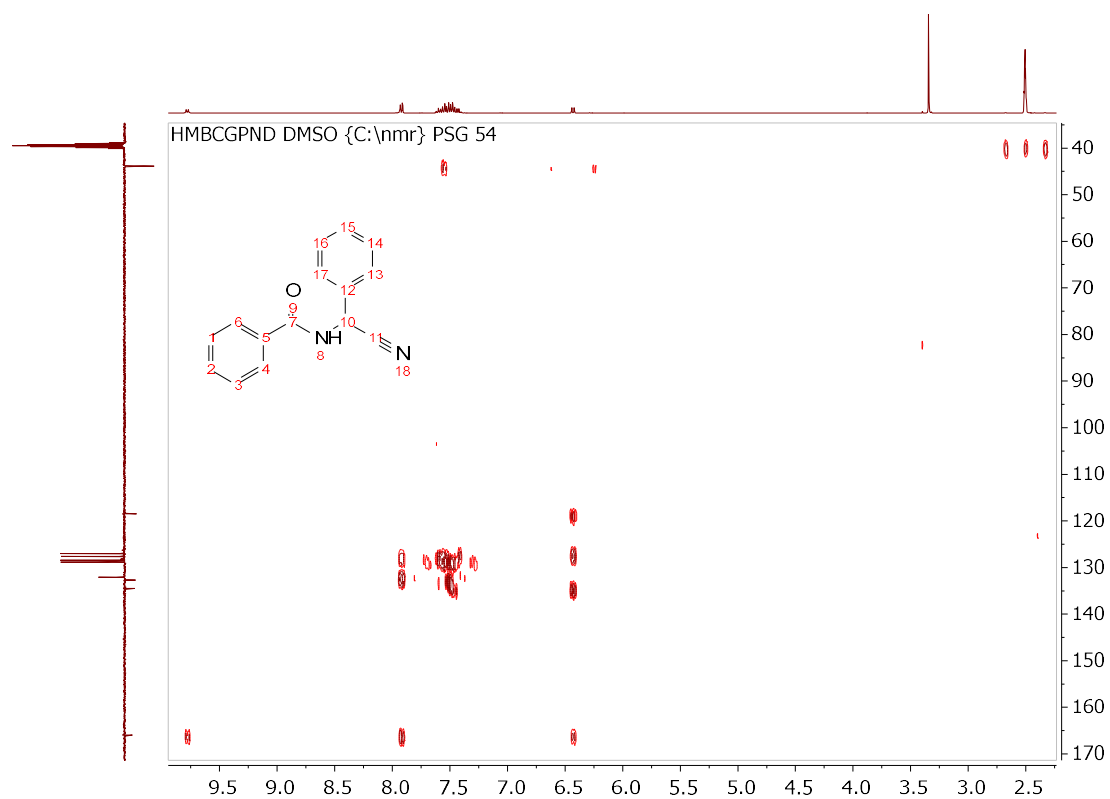


Figure S.29 – HMBC compound **(12)** in DMSO-d₆.

Compound **(13)**

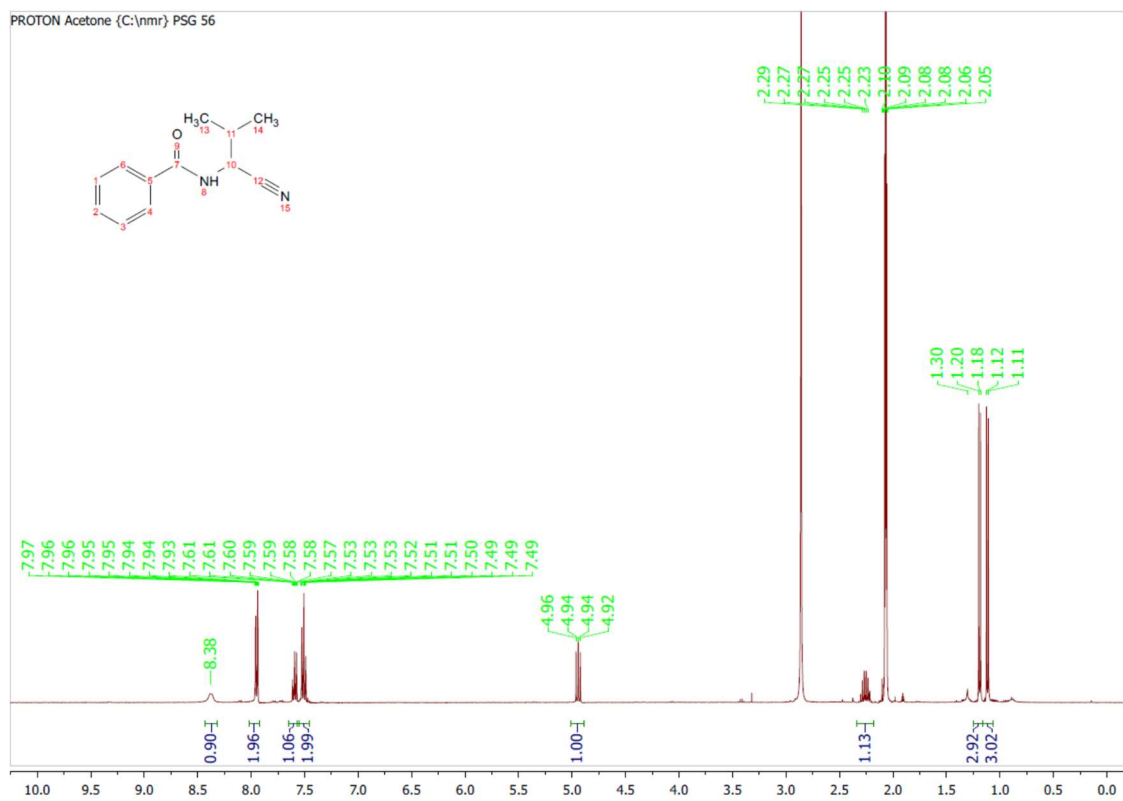


Figure S.30 – HNMR compound **(13)** in Acetone-d₆.

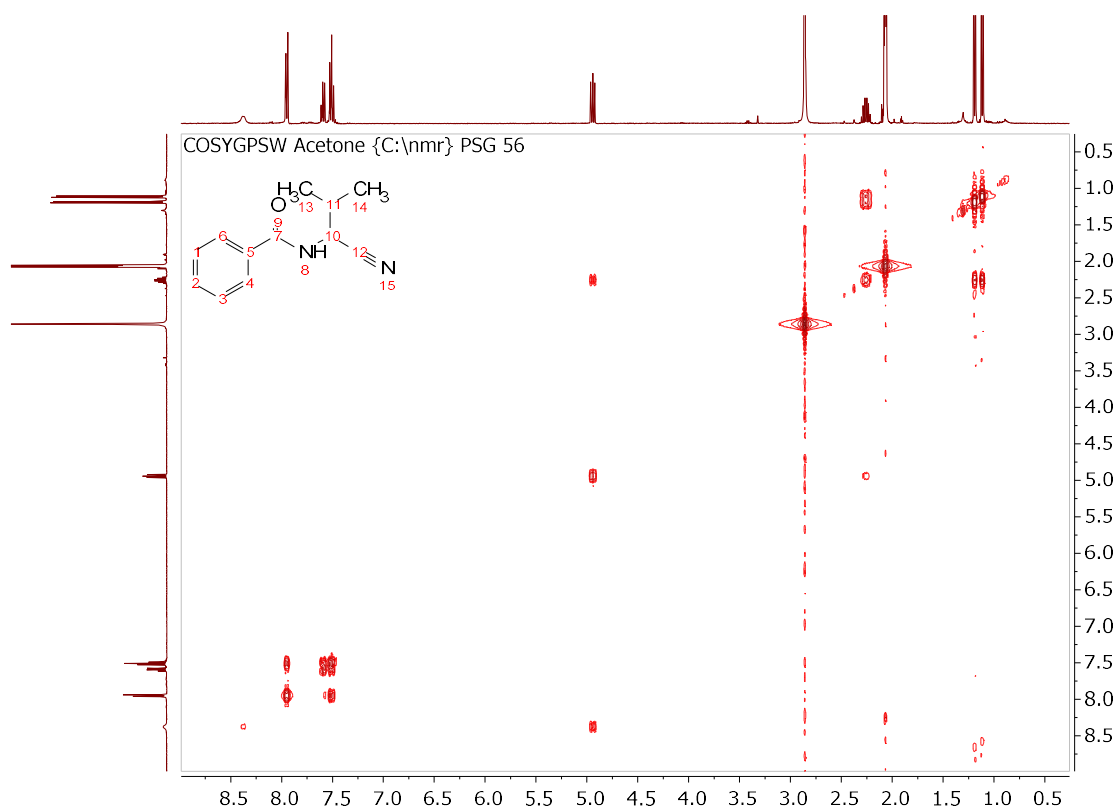


Figure S.31 – COSY compound (**13**) in Acetone-d₆.

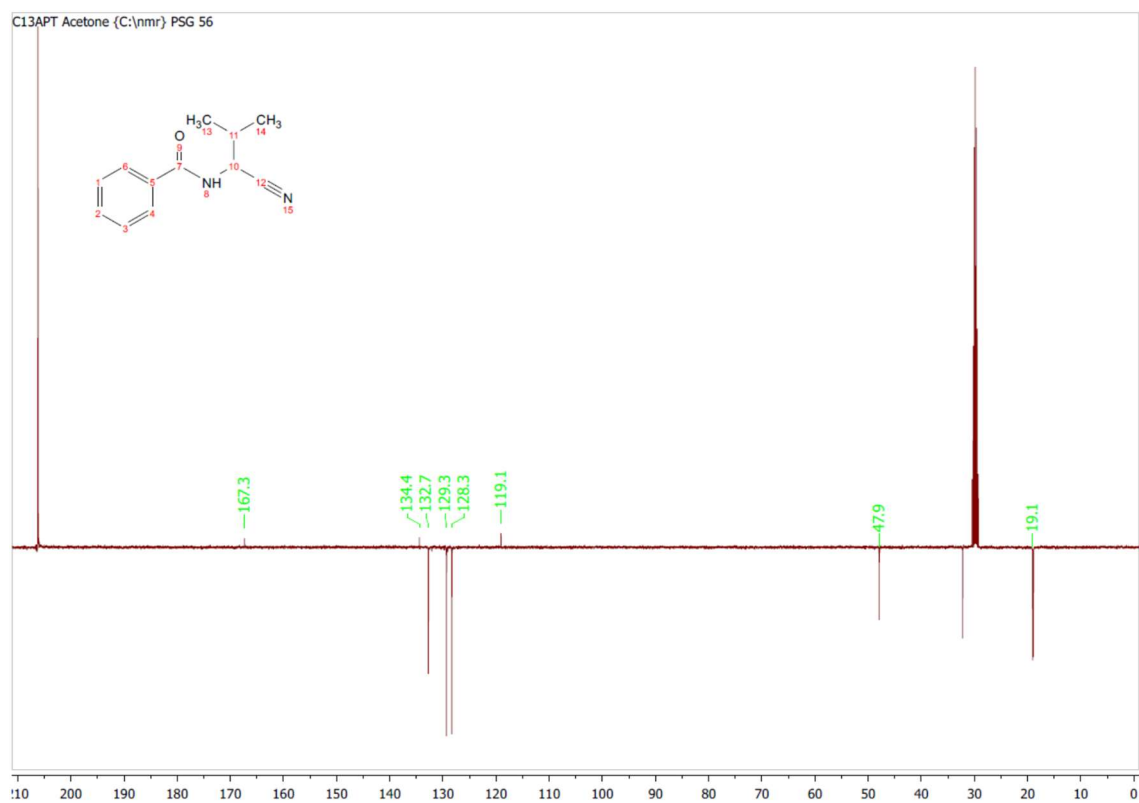


Figure S.32 – APT compound (**13**) in Acetone-d₆.

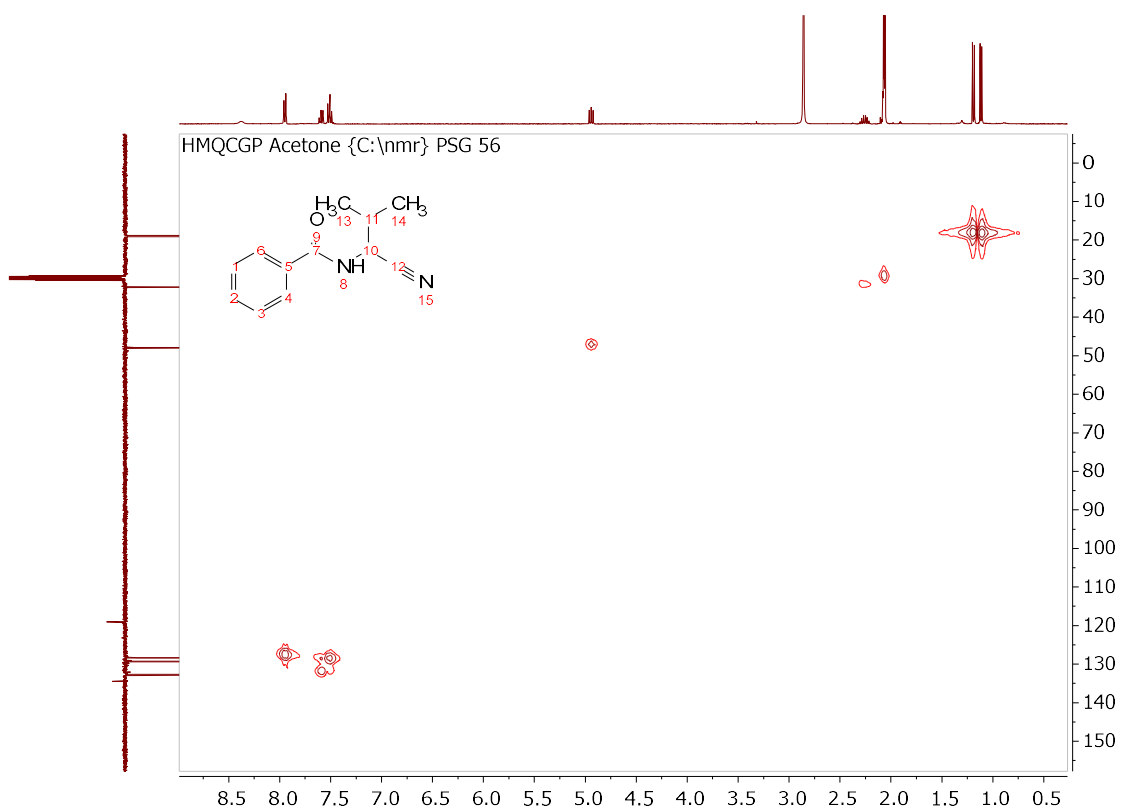


Figure S.33 – HMQC compound (13) in Acetone-d6.

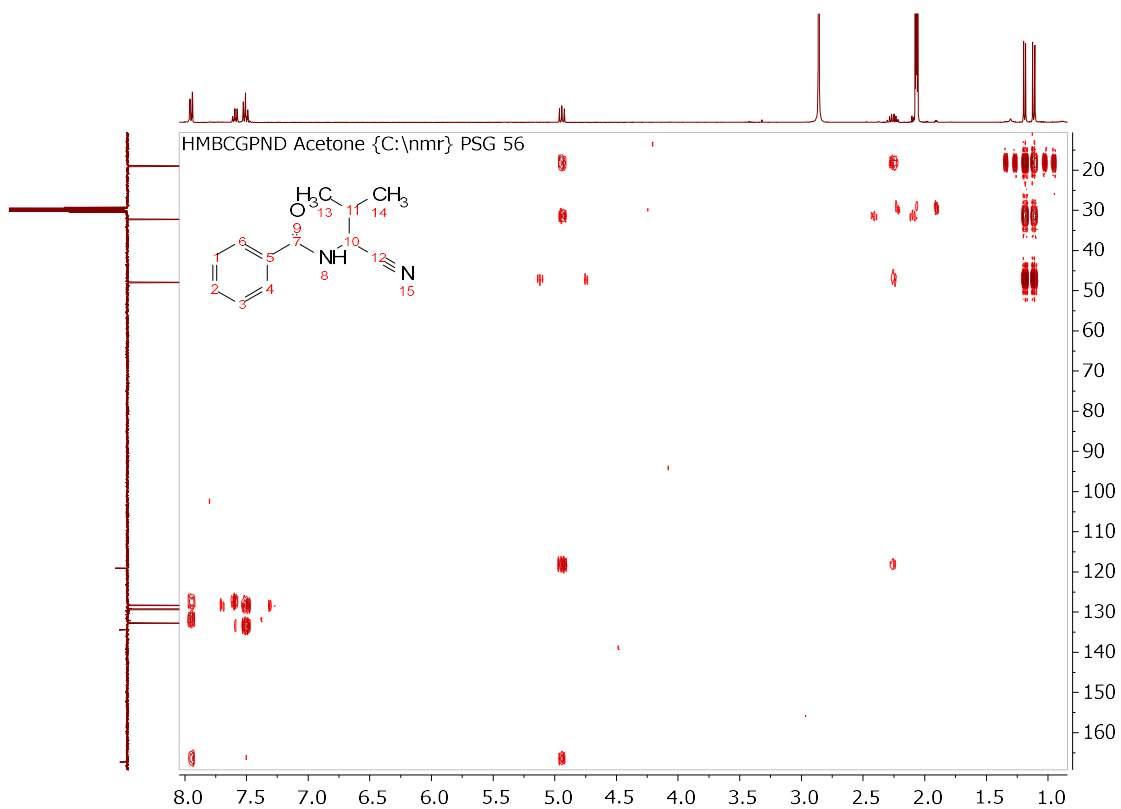


Figure S.34 – HMBC compound (13) in Acetone-d6.

Compound (14)

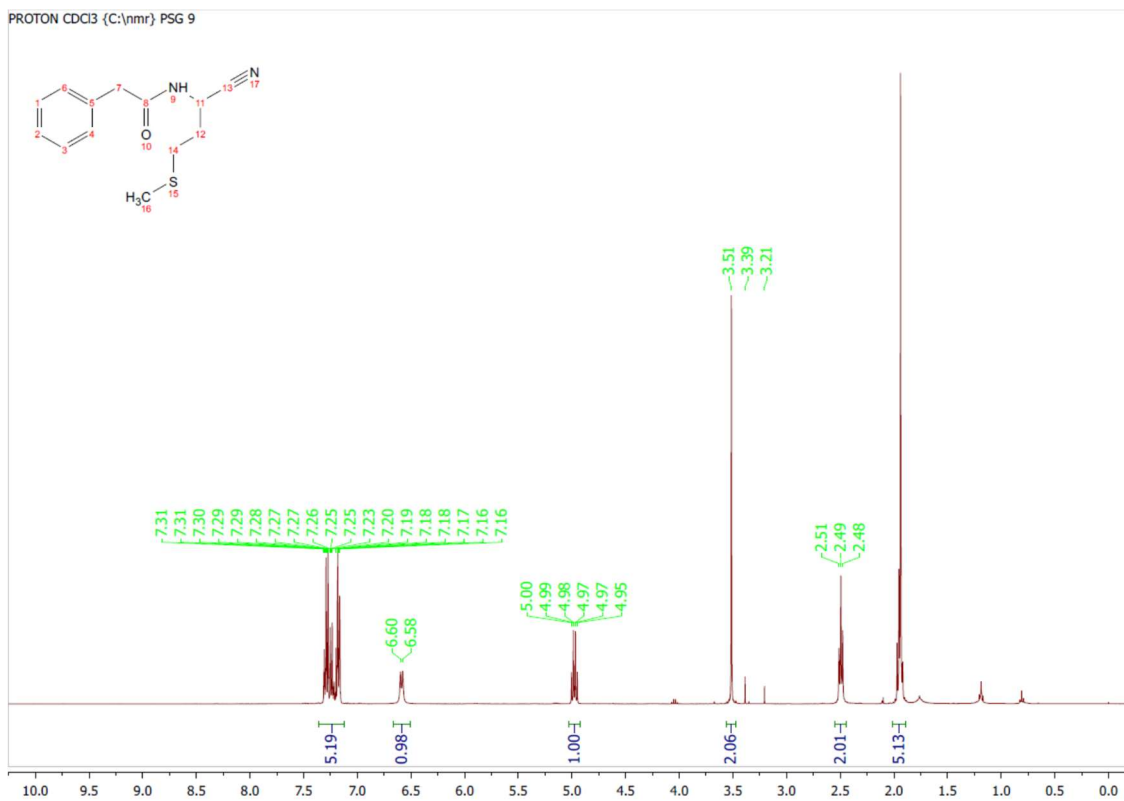


Figure S.35 – ¹H NMR compound (14) in CDCl₃.

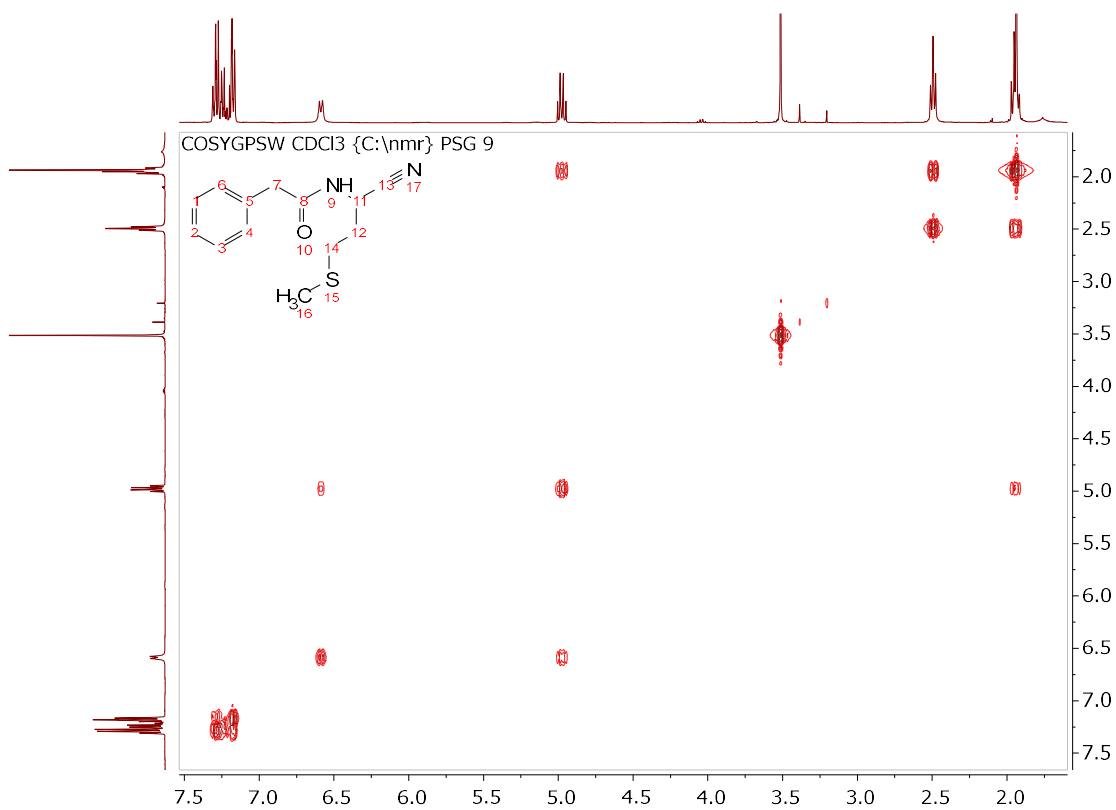


Figure S.36 – COSY compound (14) in CDCl₃.

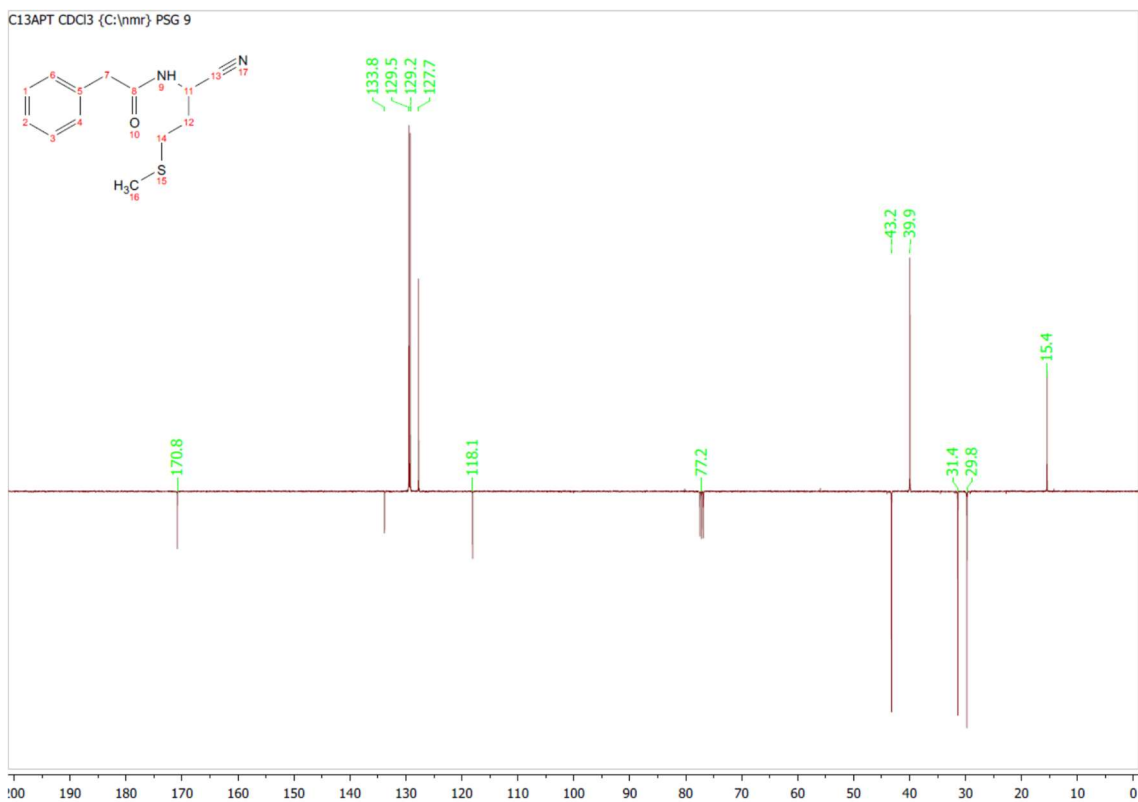


Figure S.37 – APT compound (**14**) in CDCl₃.

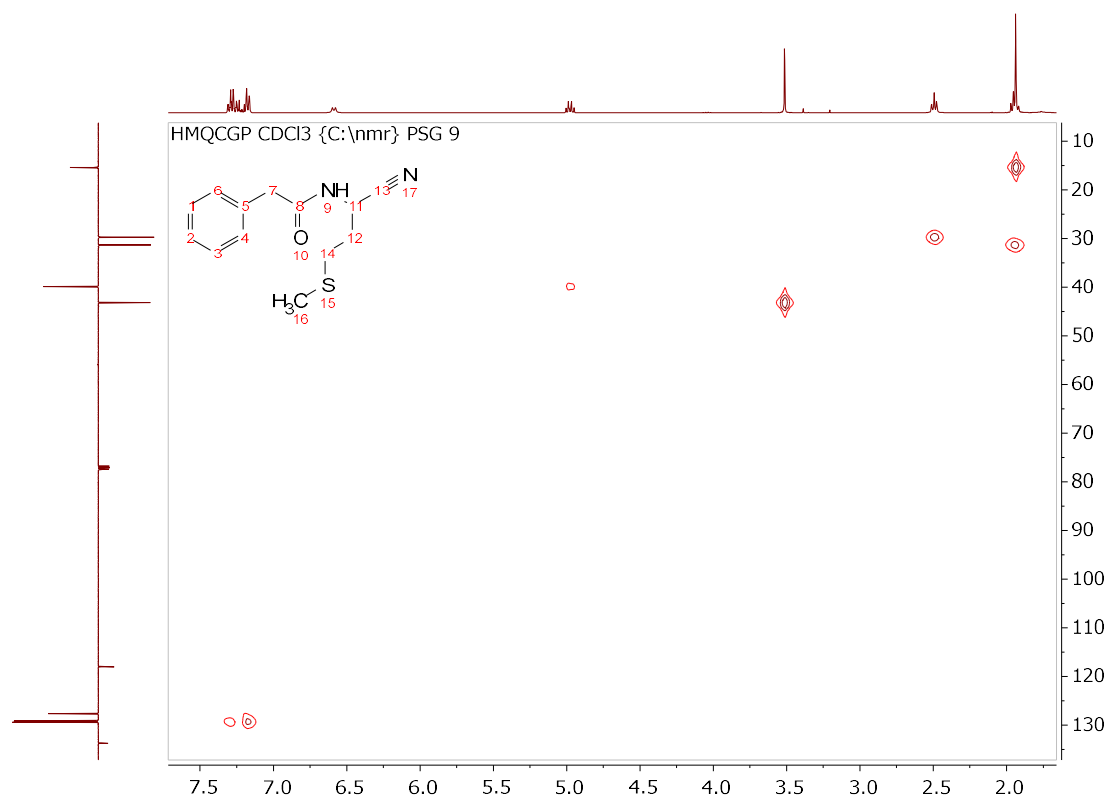


Figure S.38 – HMQC compound (**14**) in CDCl₃.

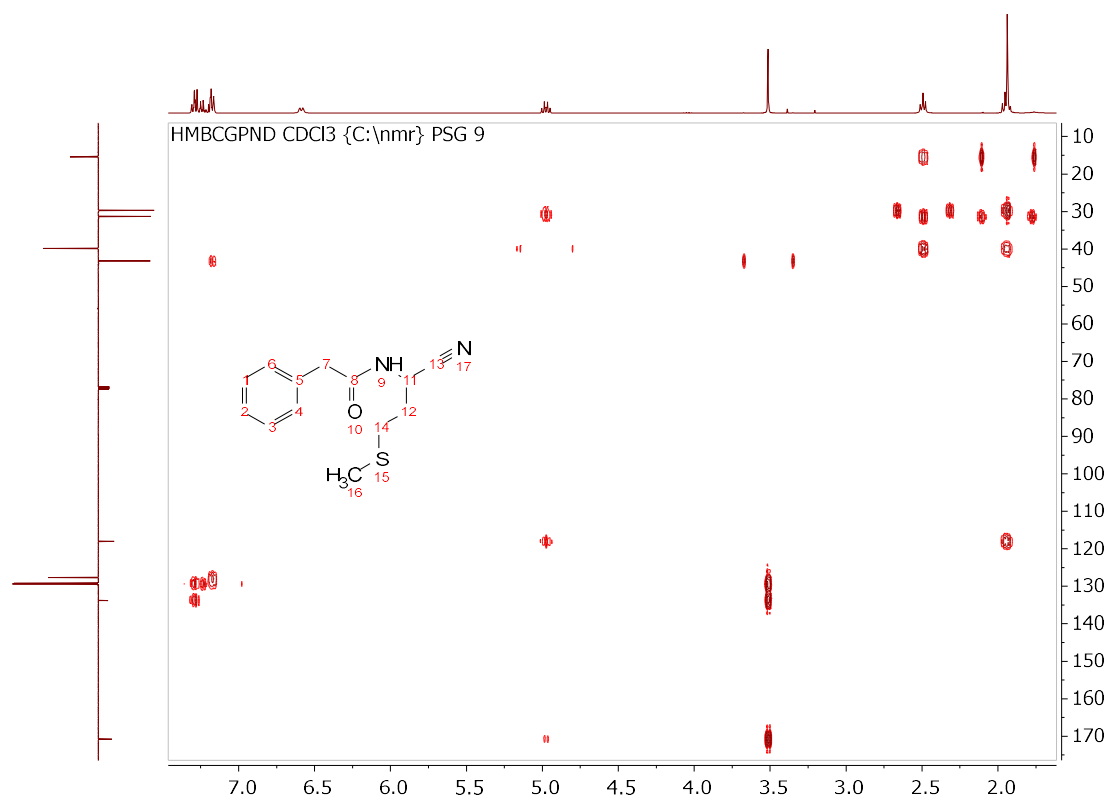


Figure S.39 – HMBC compound (14) in CDCl₃.

Compound (15)

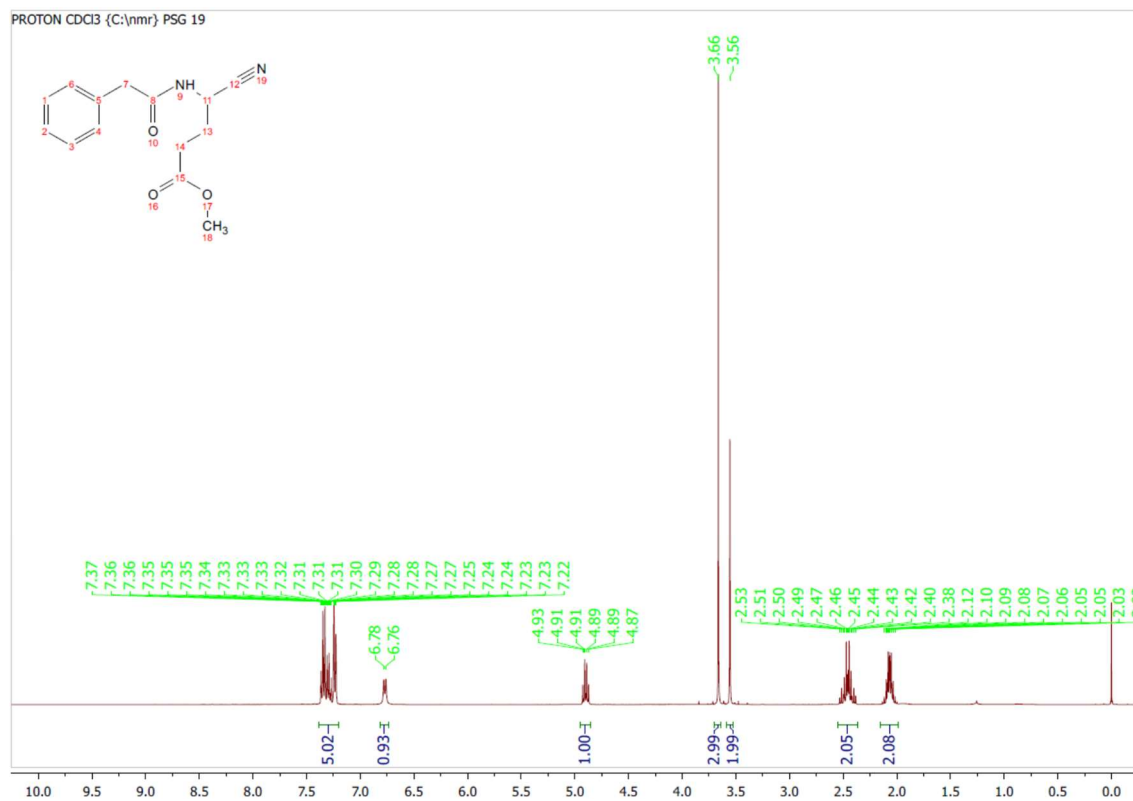


Figure S.40 – ¹H NMR compound (15) in CDCl₃.

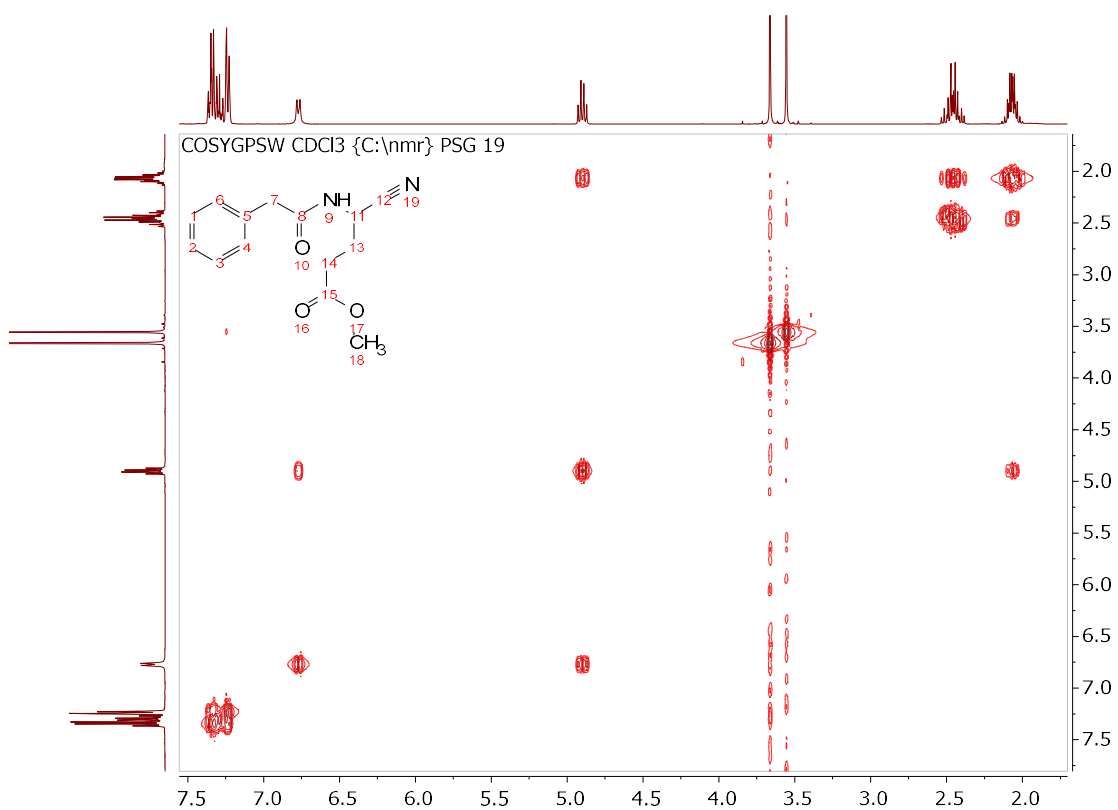


Figure S.41 – COSY compound (15) in CDCl₃.

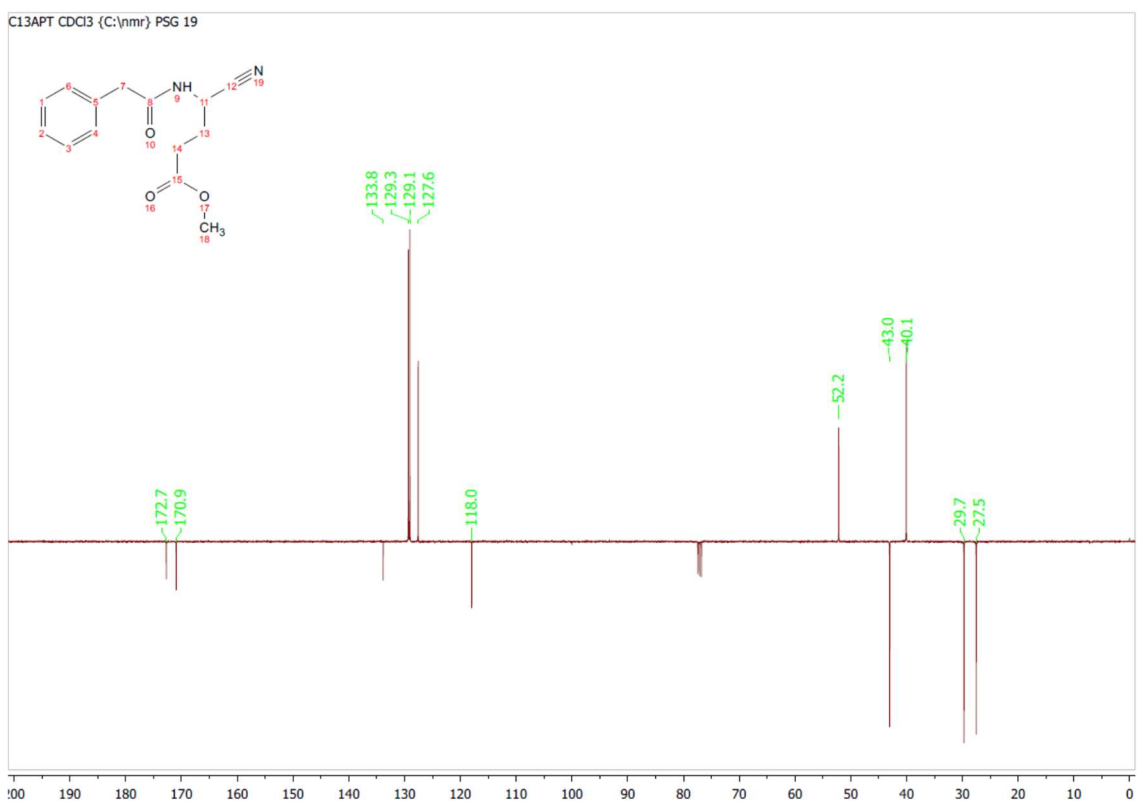


Figure S.42 – APT compound (15) in CDCl₃.

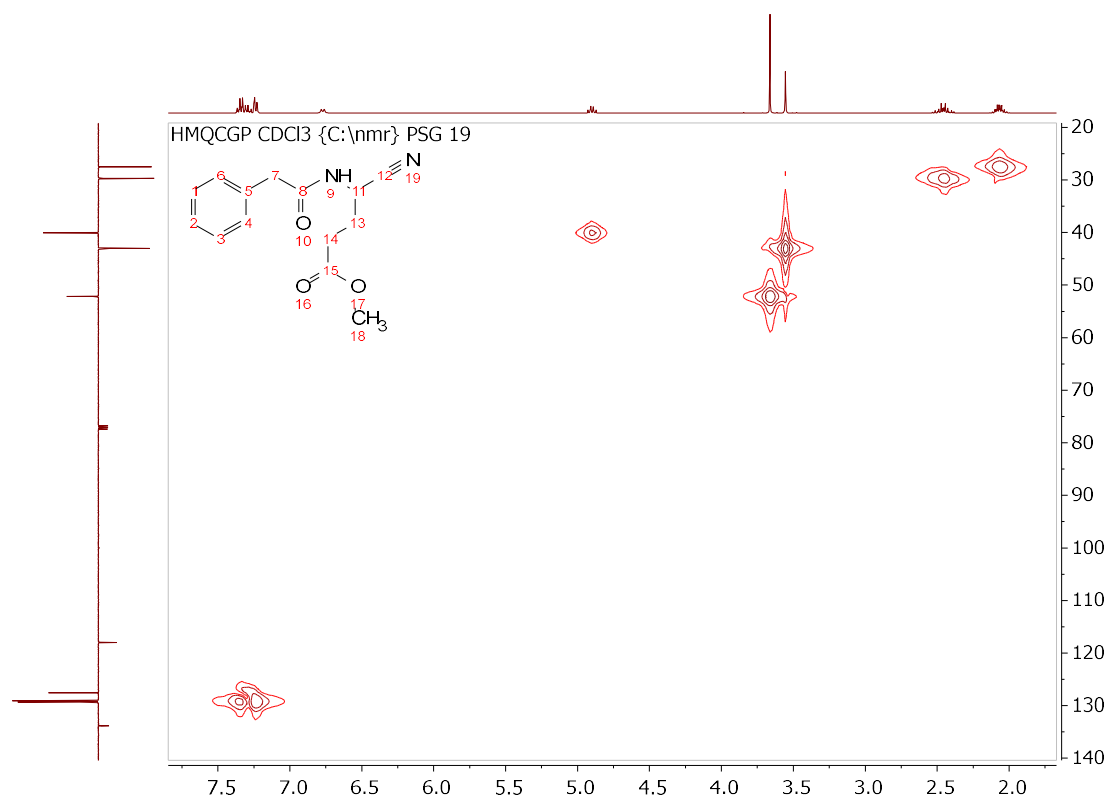


Figure S.43 – HMQC compound (15) in CDCl₃.

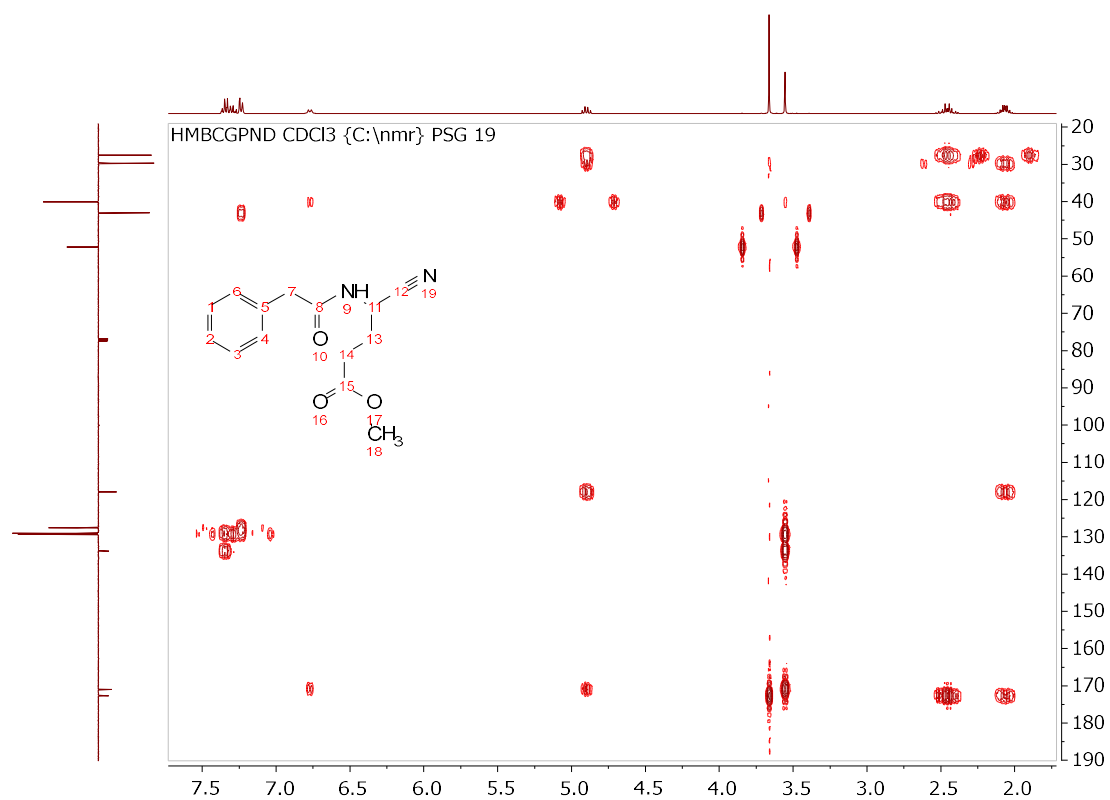
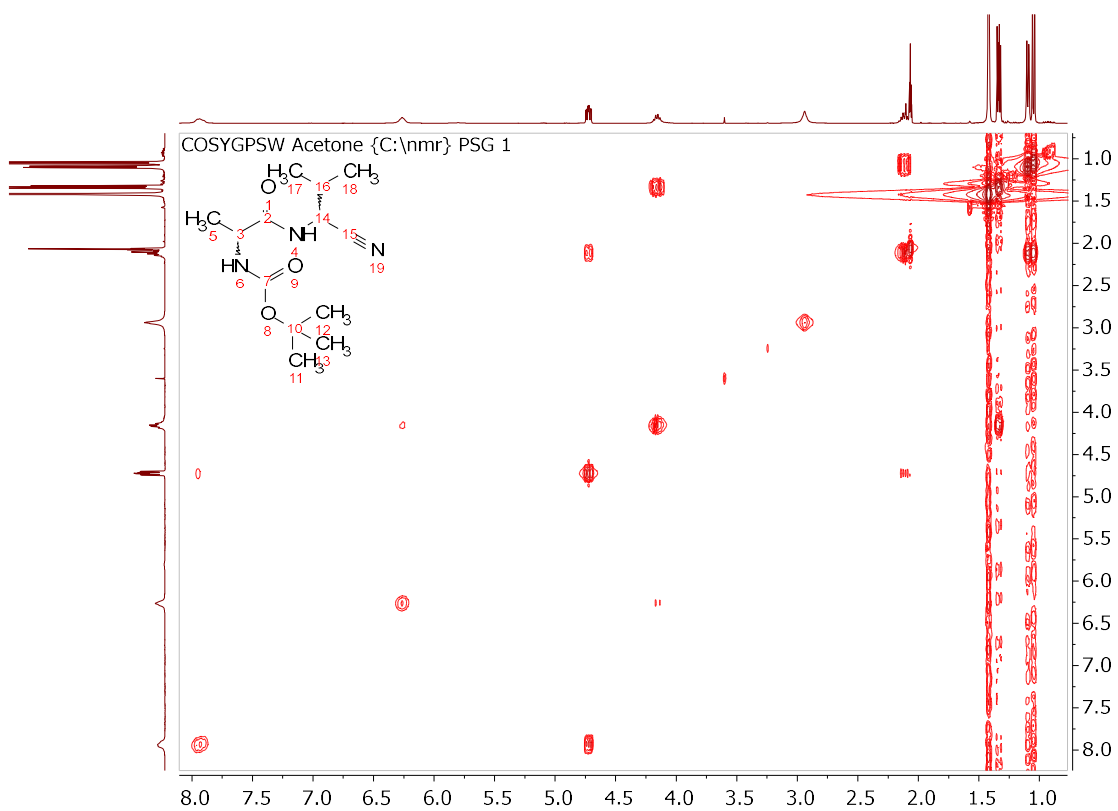
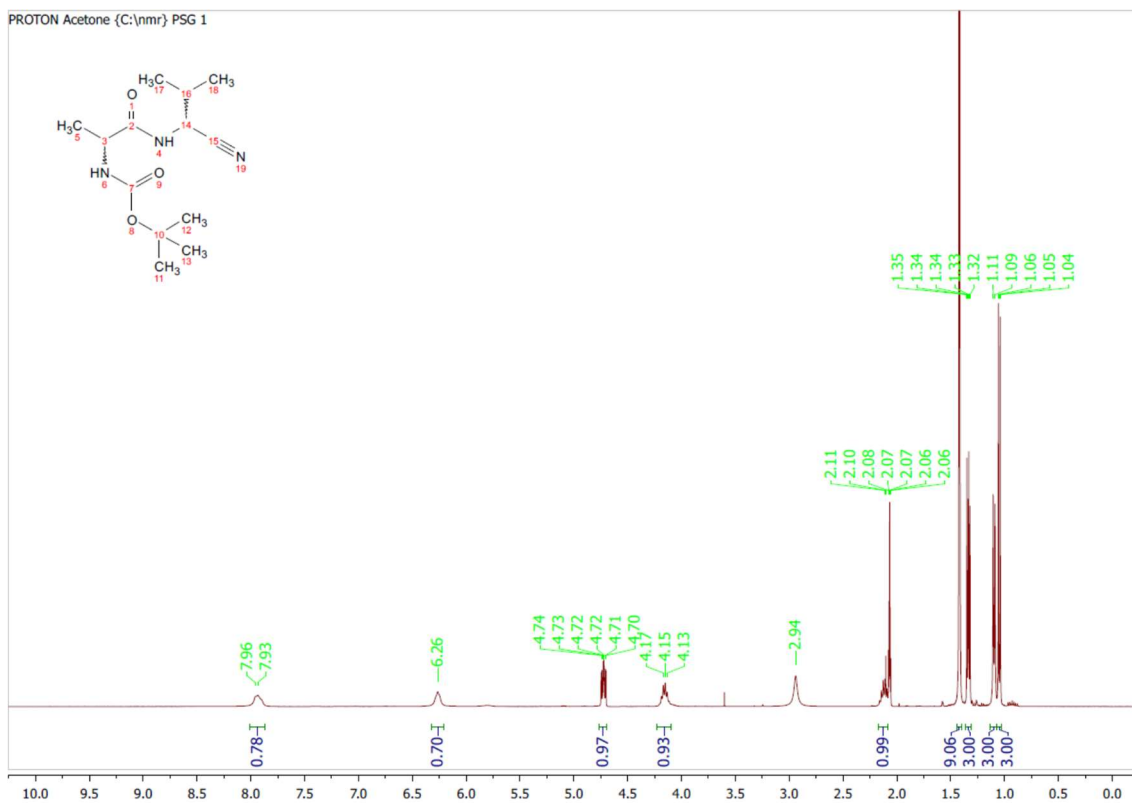
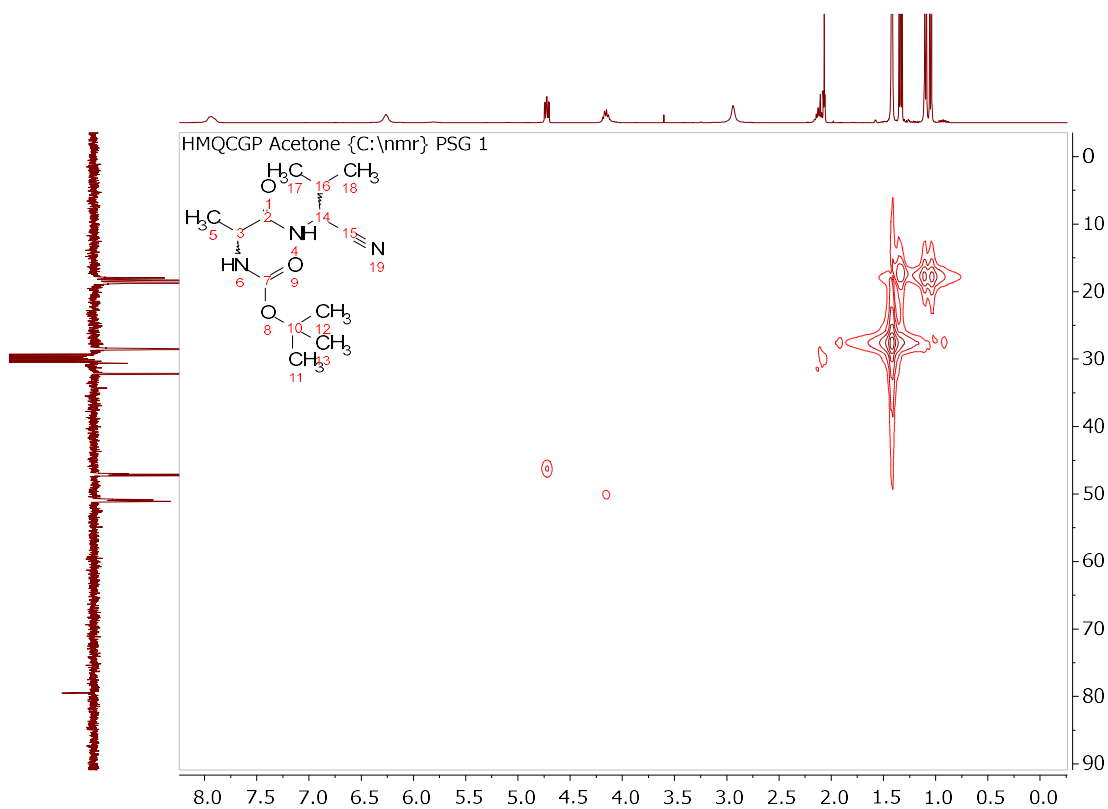
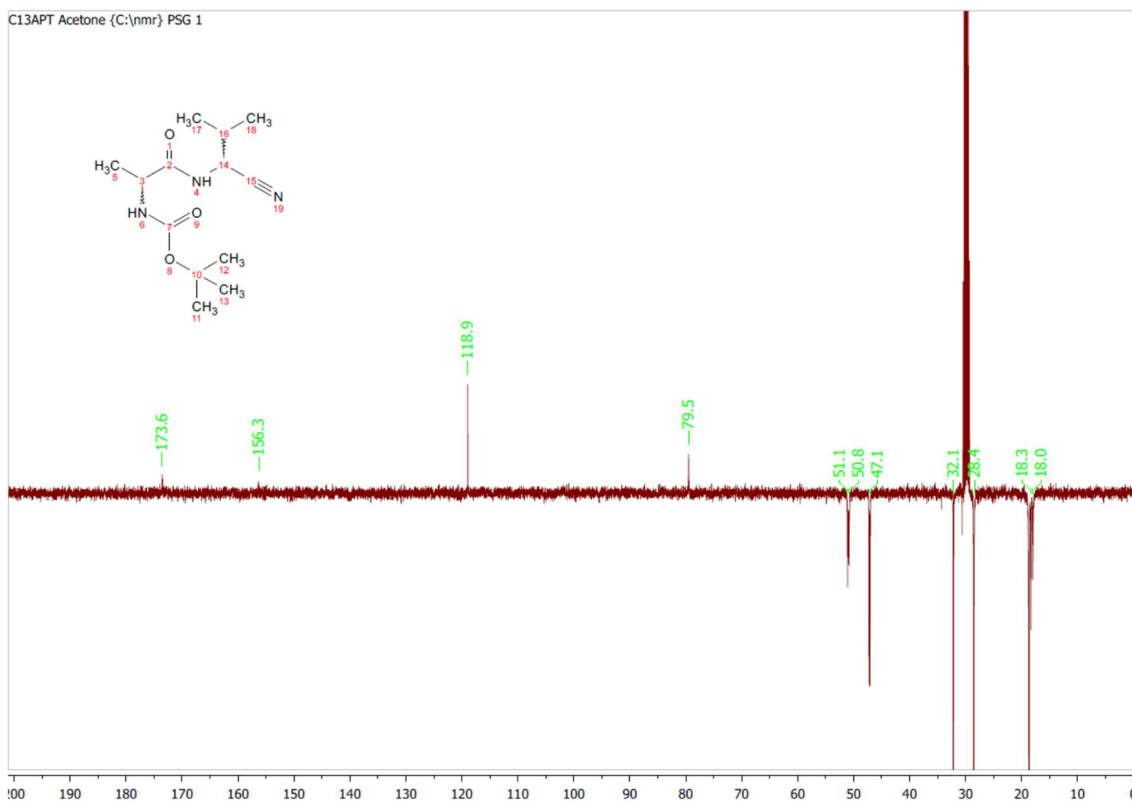


Figure S.44 – HMBC compound (15) in CDCl₃.

Compound (16)





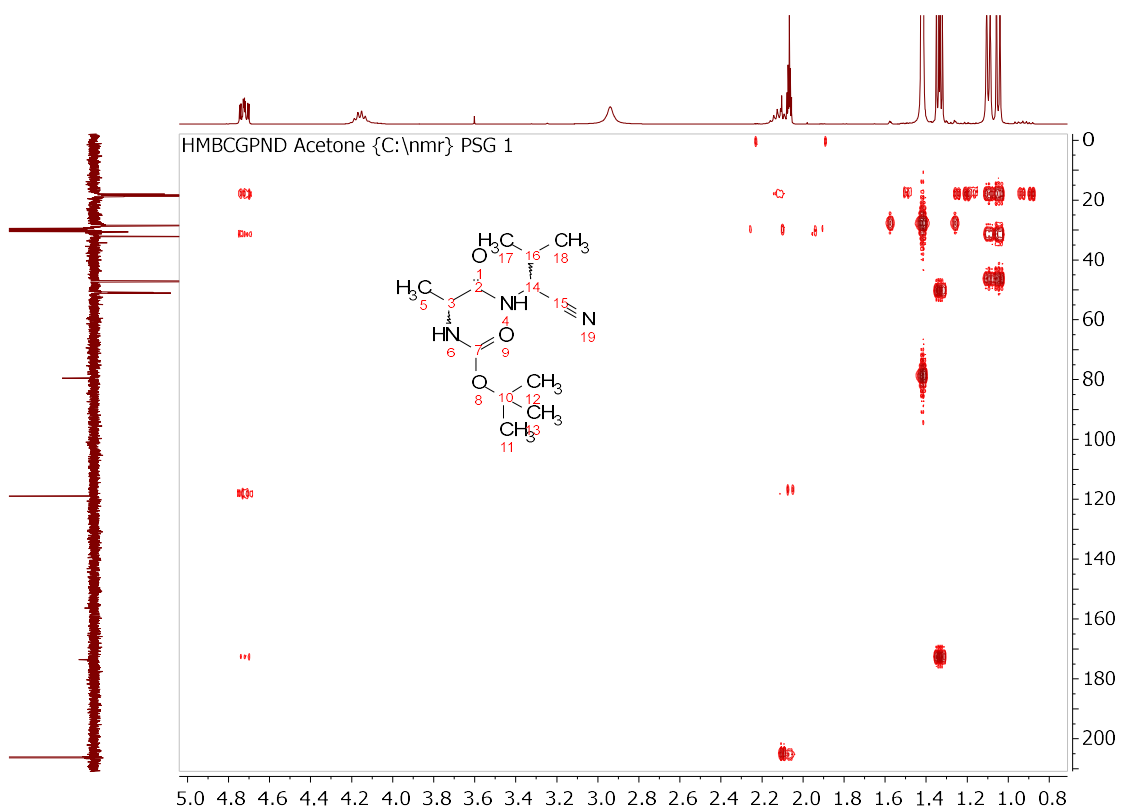


Figure S.49 – HMBC compound **(16)** in Acetone-d₆.

Compound **(17)**

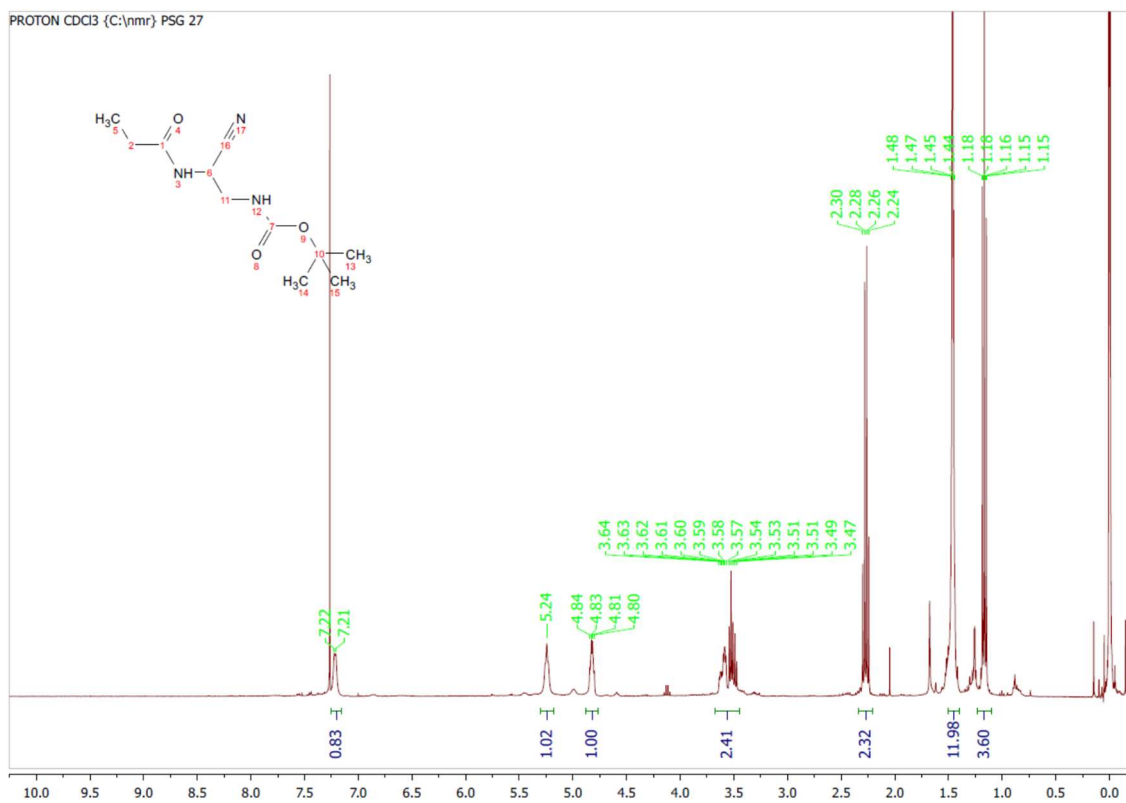


Figure S.50 – ¹H NMR compound **(17)** in CDCl₃.

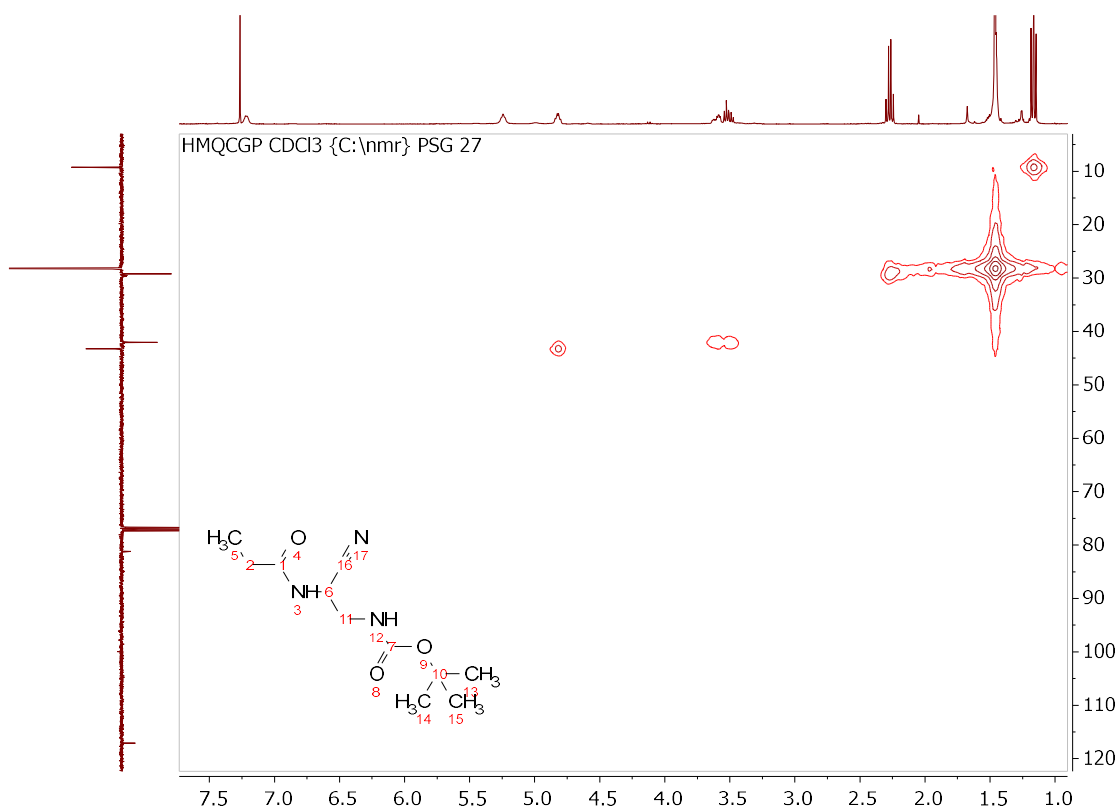


Figure S.53 – HMBC compound **(17)** in CDCl₃.

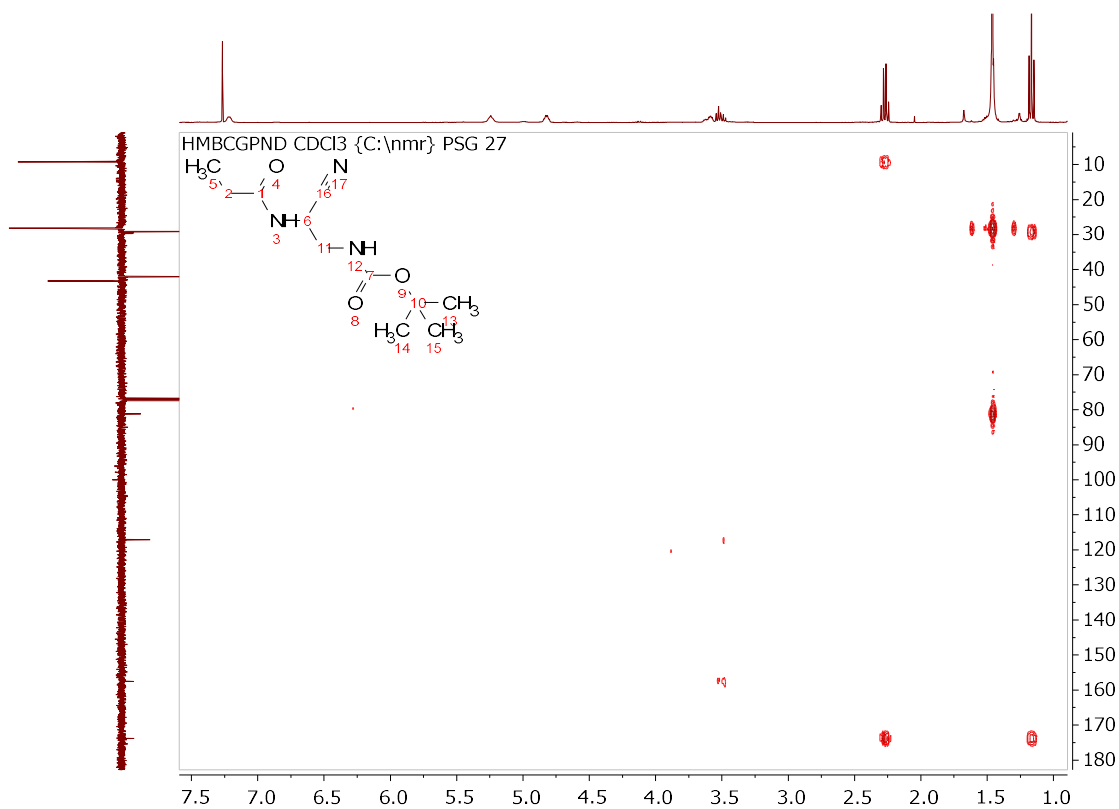


Figure S.54 – HMBC compound **(17)** in CDCl₃.

Compound (18)

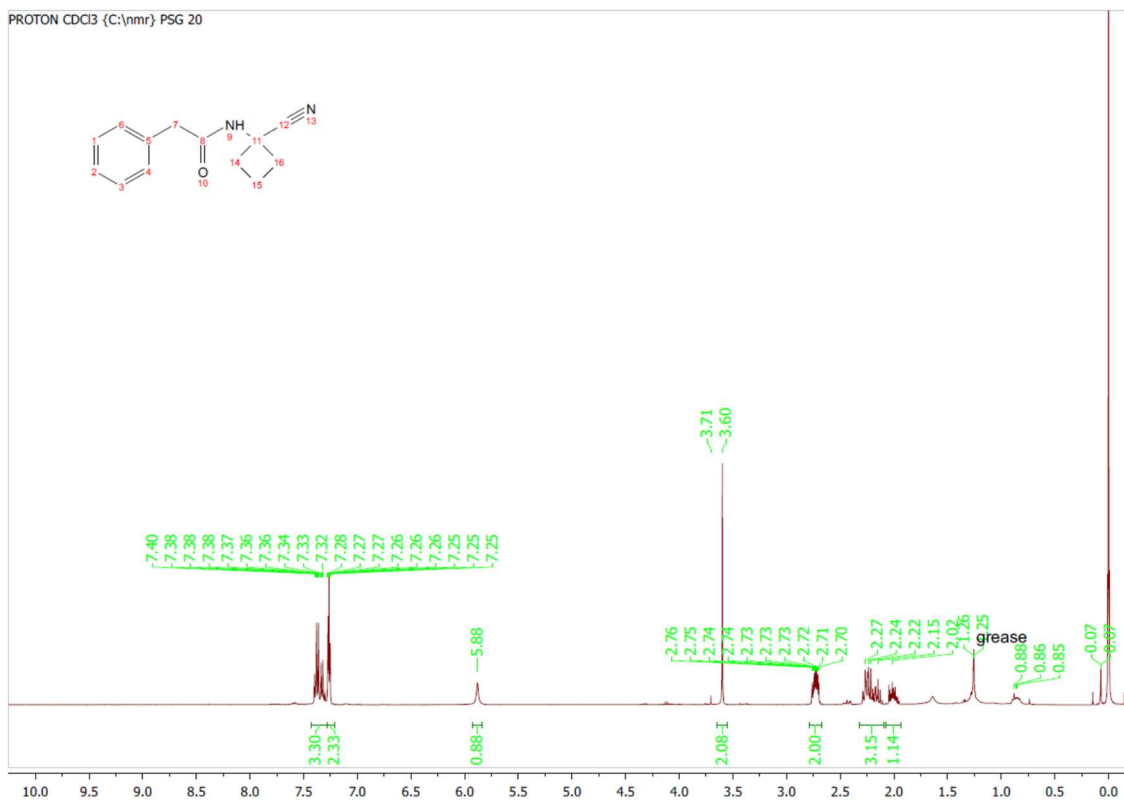


Figure S.55 – ¹H NMR compound (18) in CDCl₃.

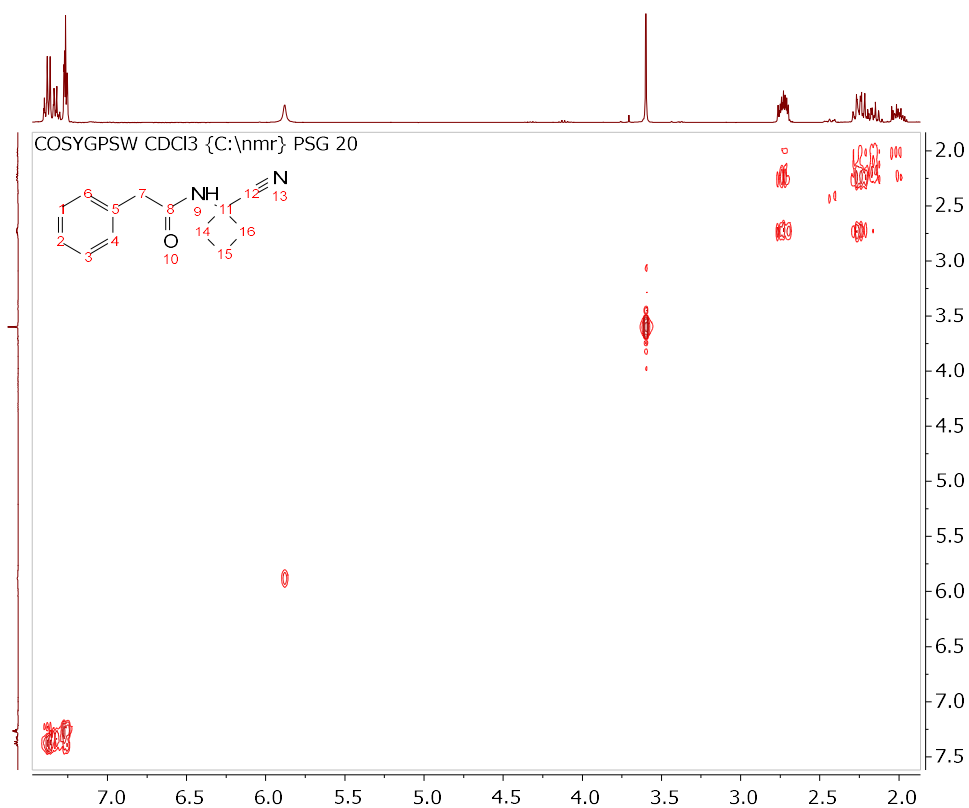


Figure S.56 – COSY compound (18) in CDCl₃.

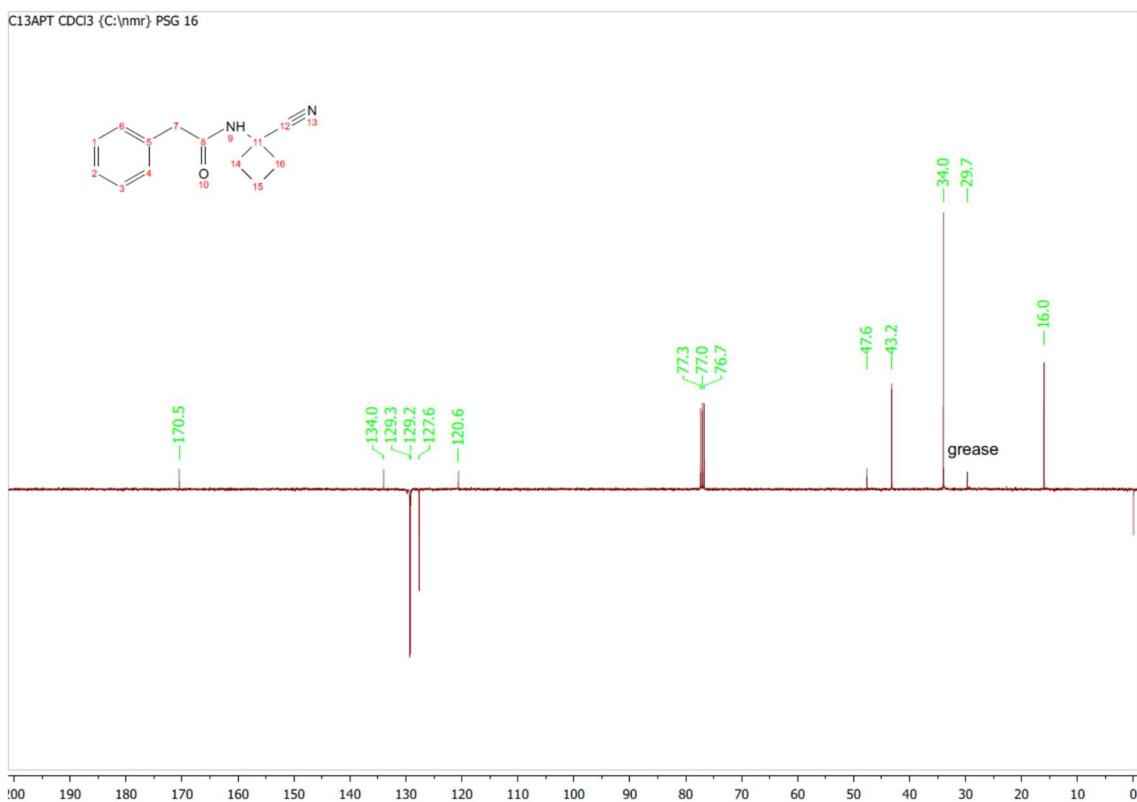


Figure S.57 – APT compound **(18)** in CDCl₃.

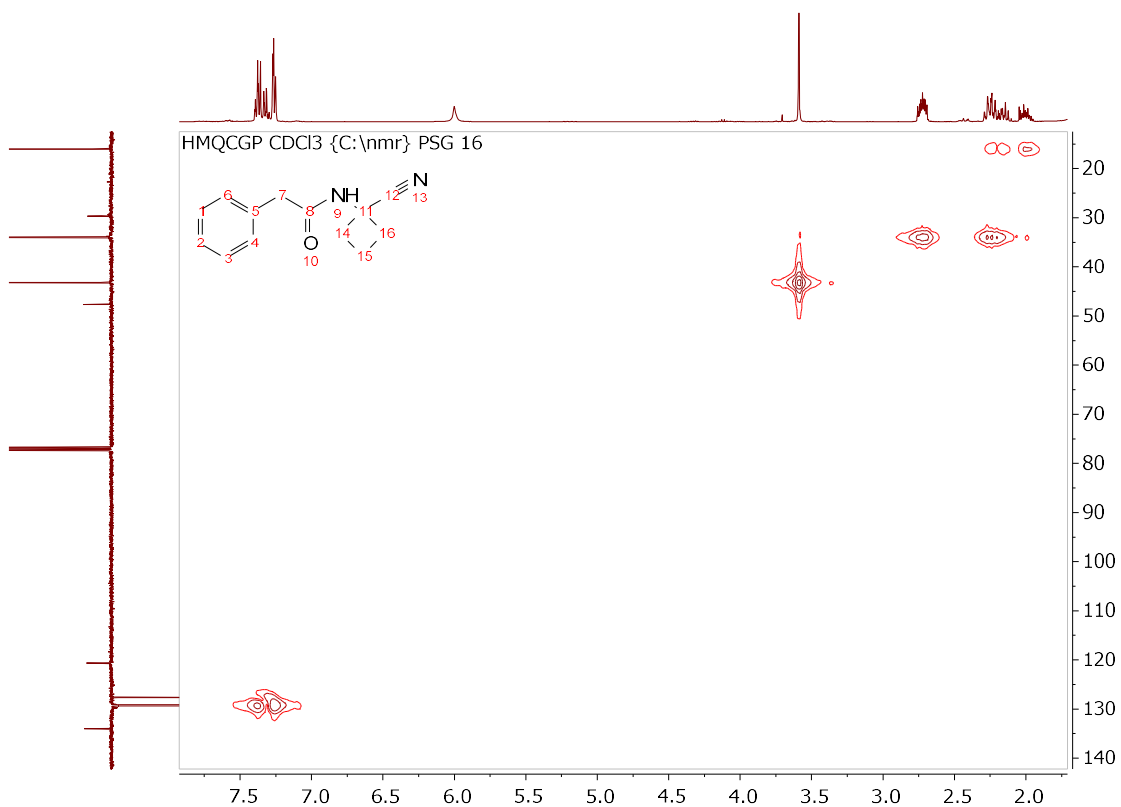


Figure S.58 – HMQC compound **(18)** in CDCl₃.

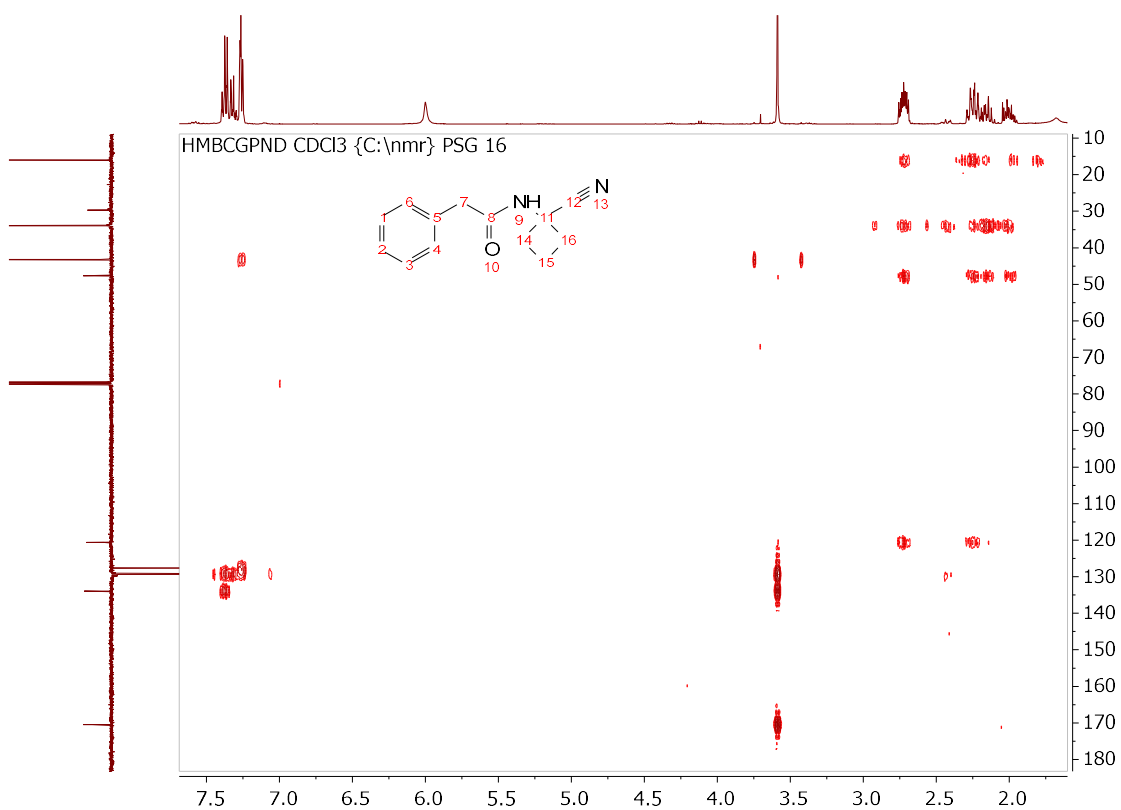


Figure S.59 – HMBC compound (18) in CDCl₃.

Compound (19)

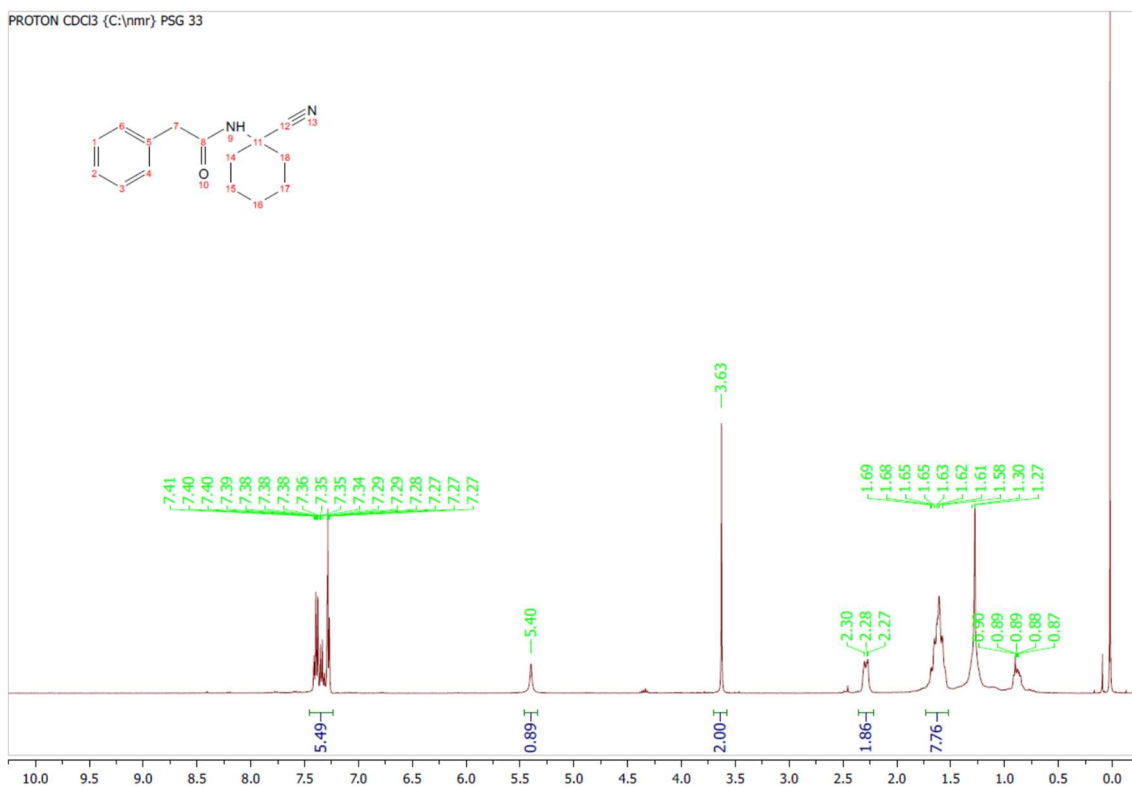


Figure S.60 – ¹H NMR compound (19) in CDCl₃.

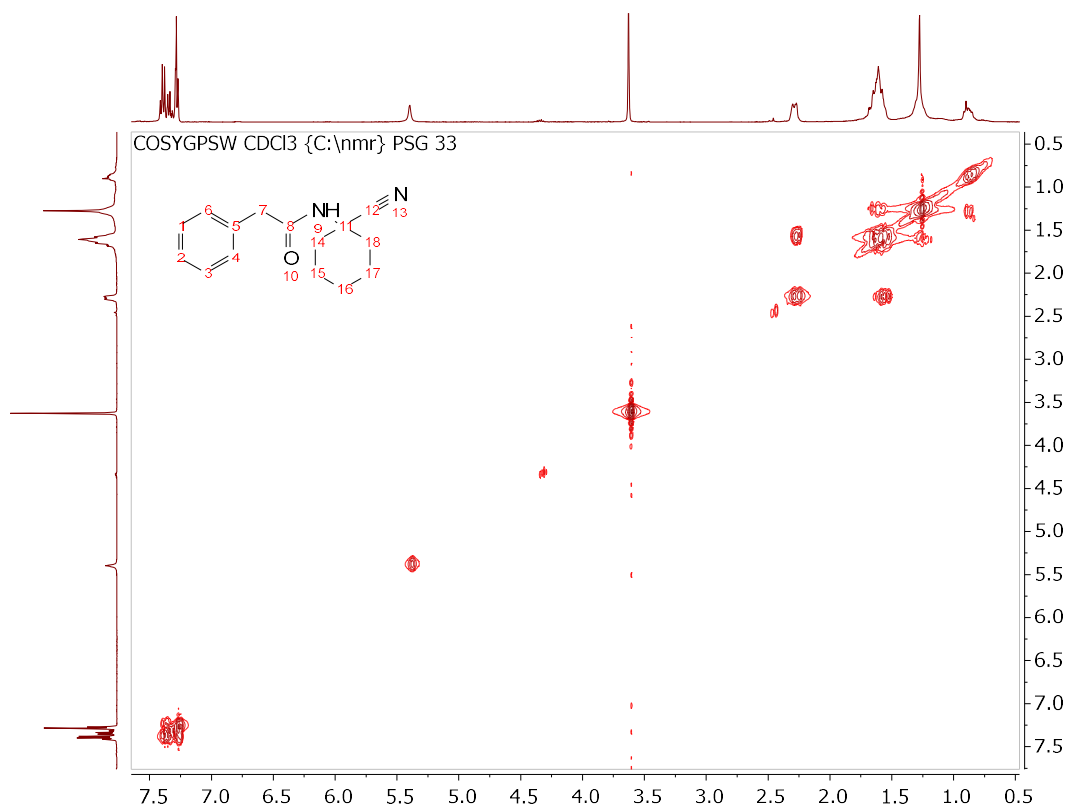


Figure S.61 – COSY compound (19) in CDCl₃.

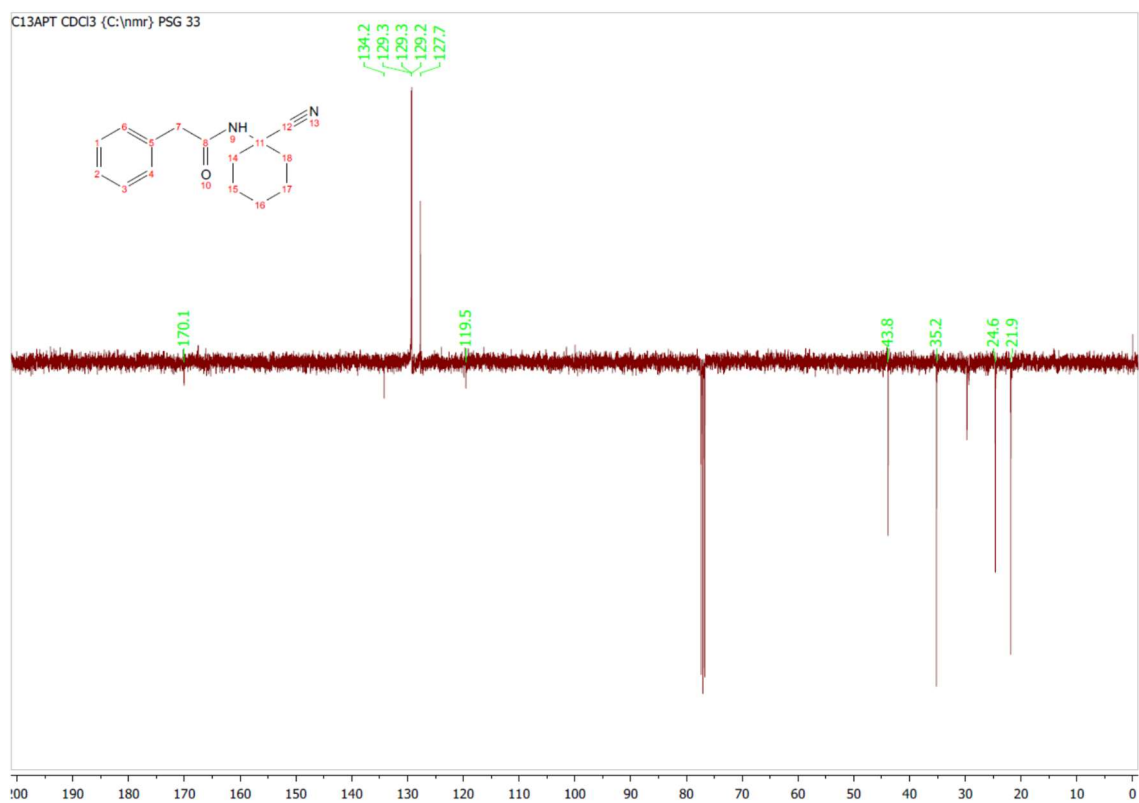


Figure S.62 – APT compound (19) in CDCl₃.

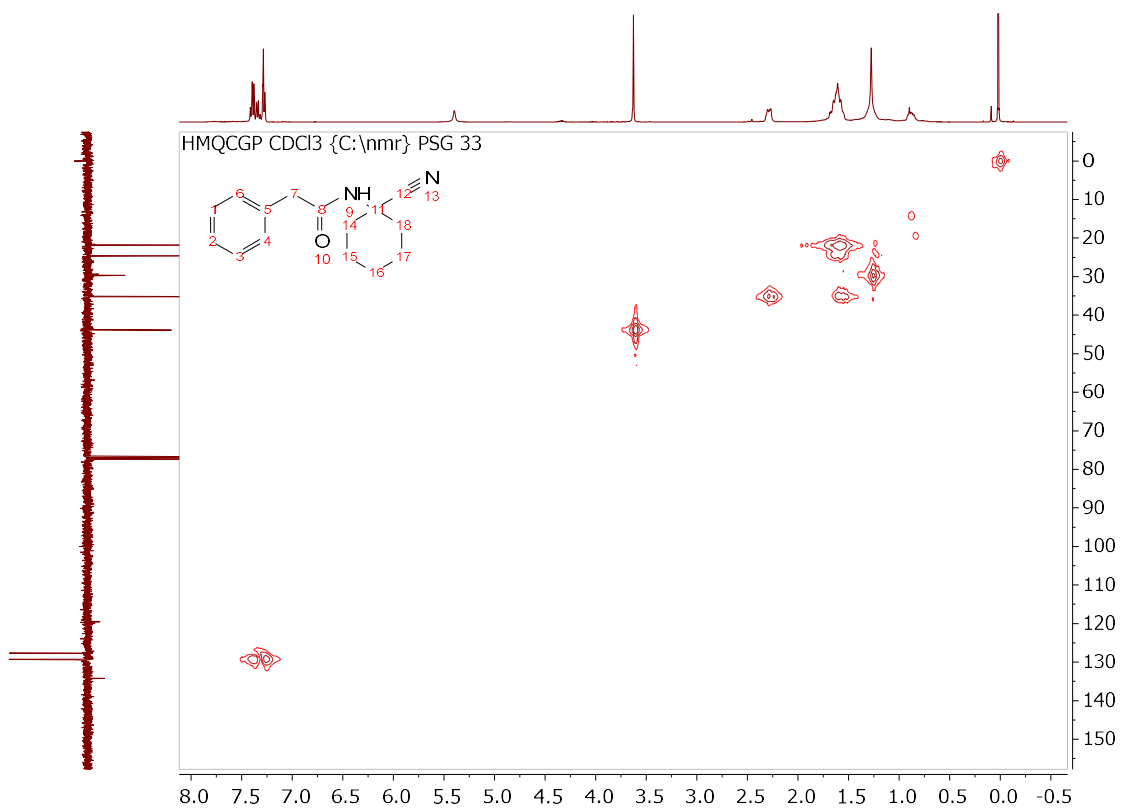


Figure S.63 – HMQC compound (19) in CDCl₃.

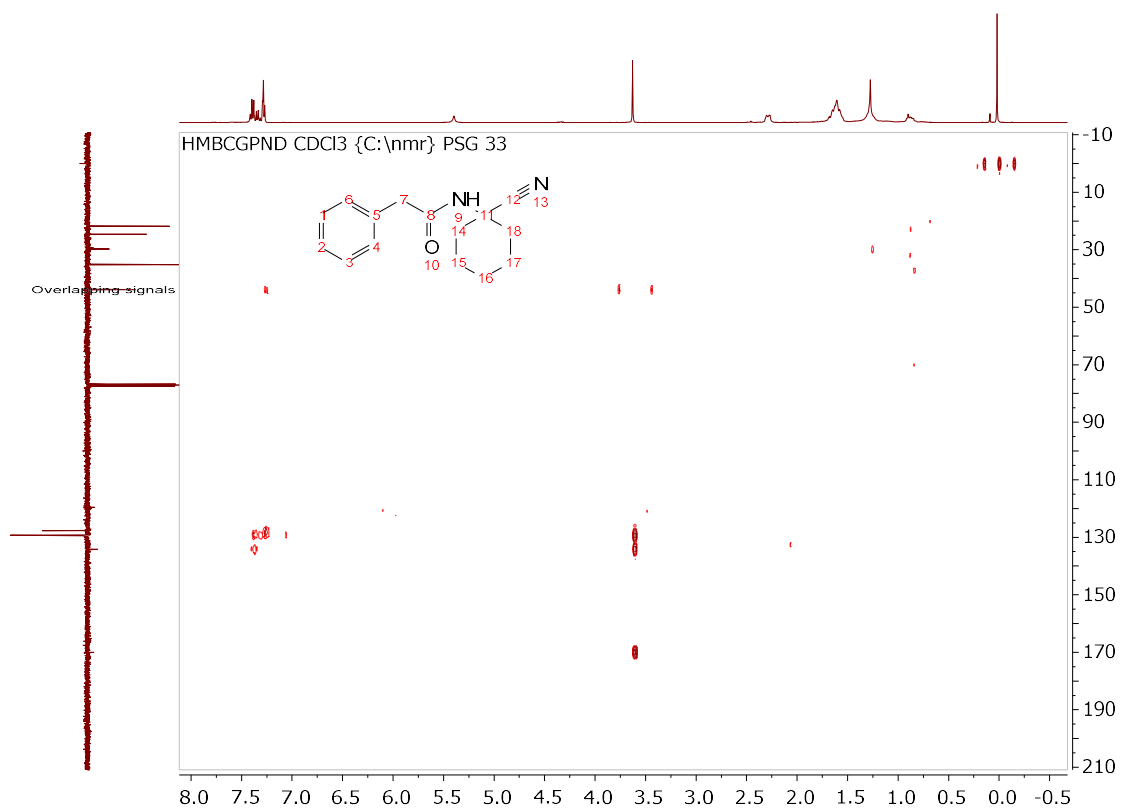
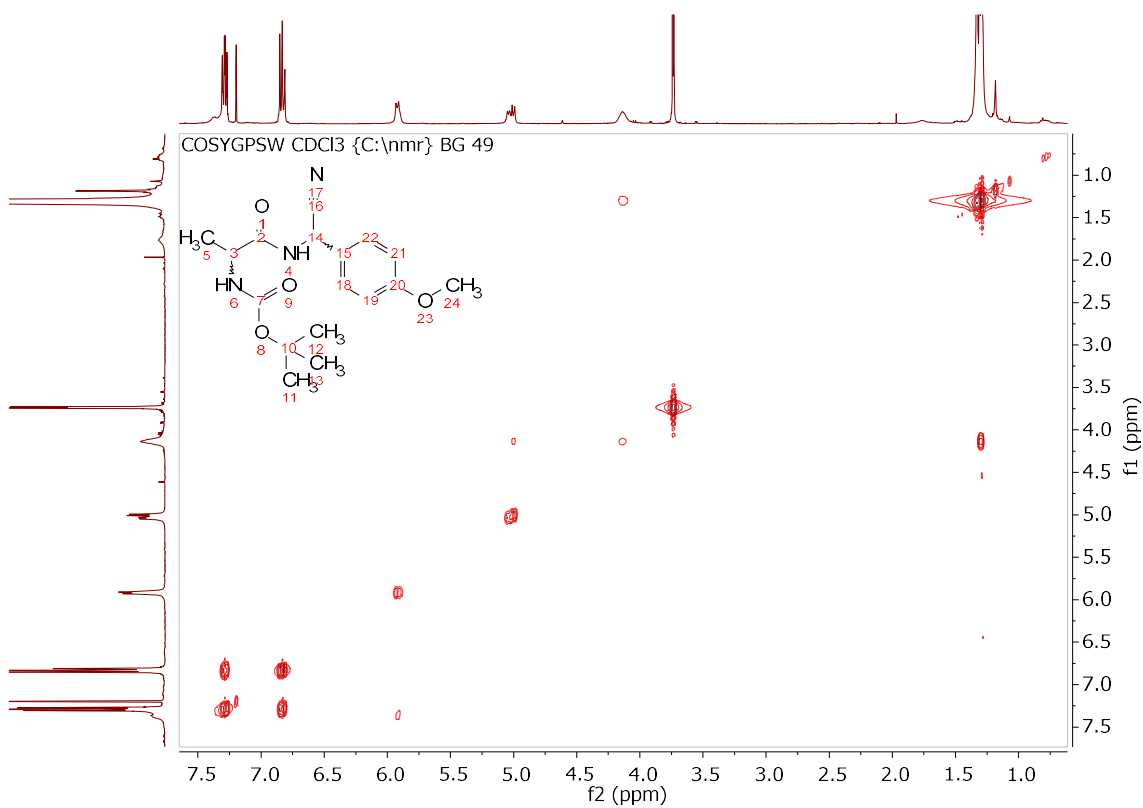
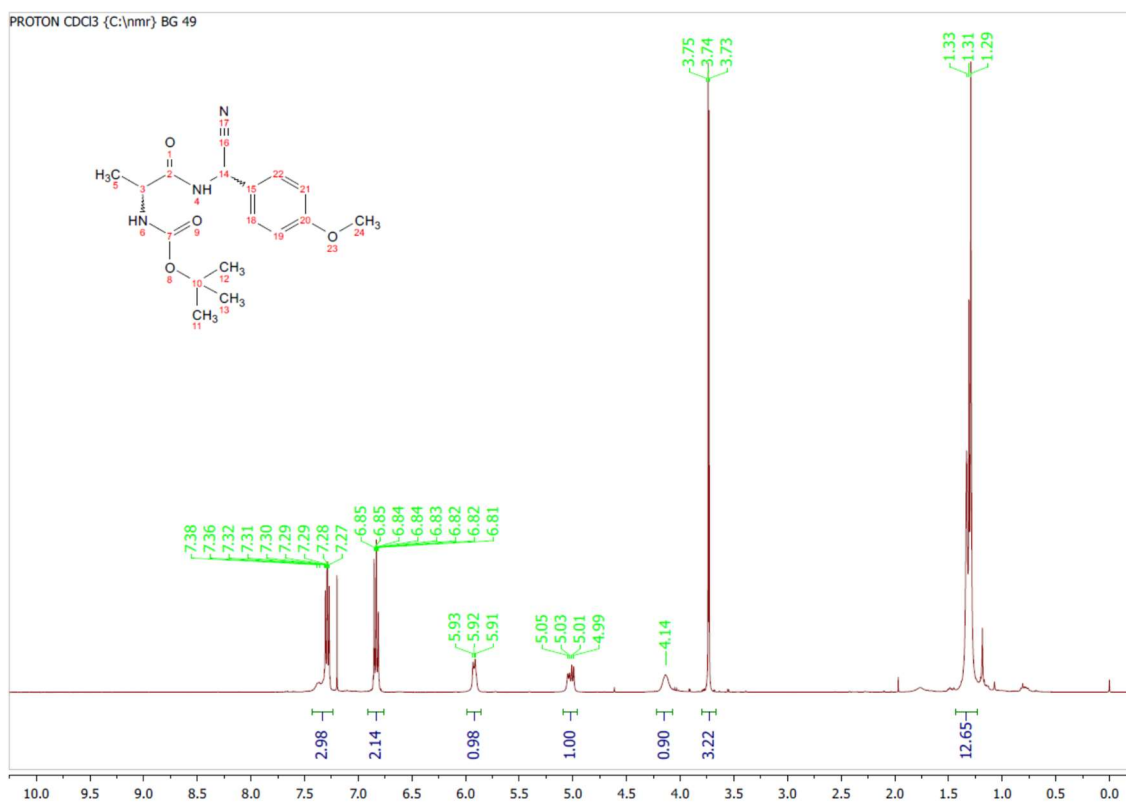
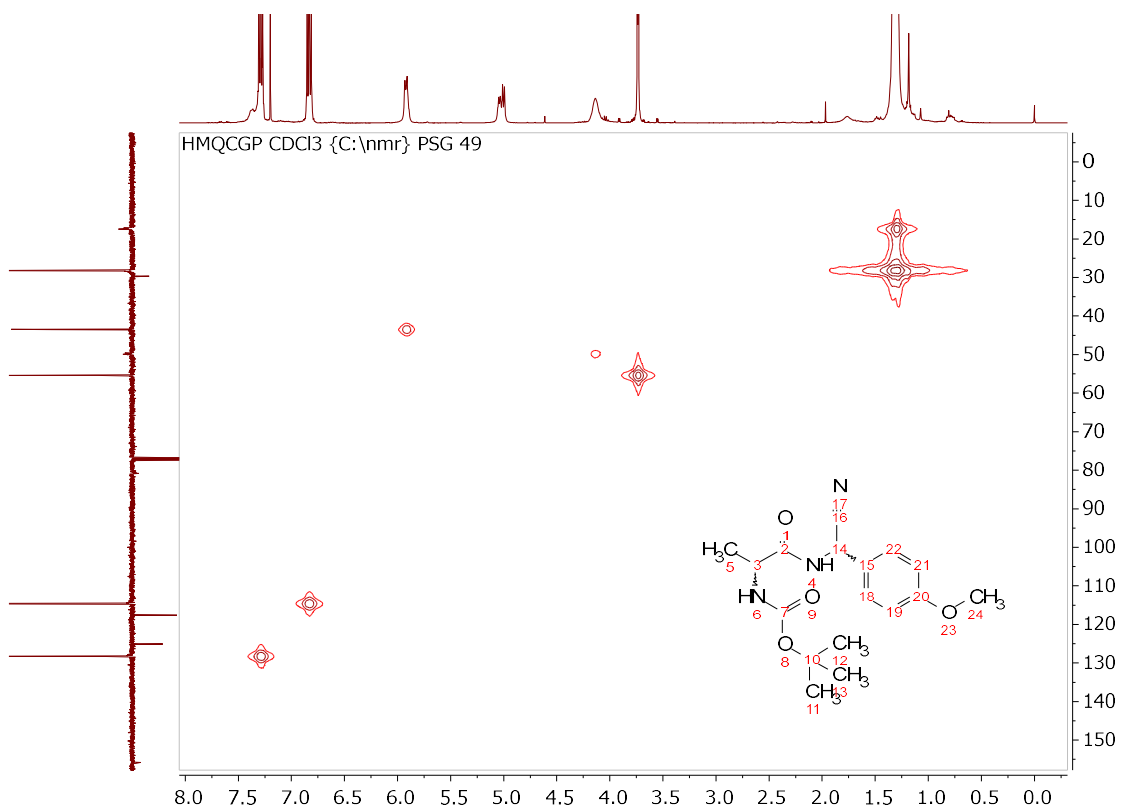
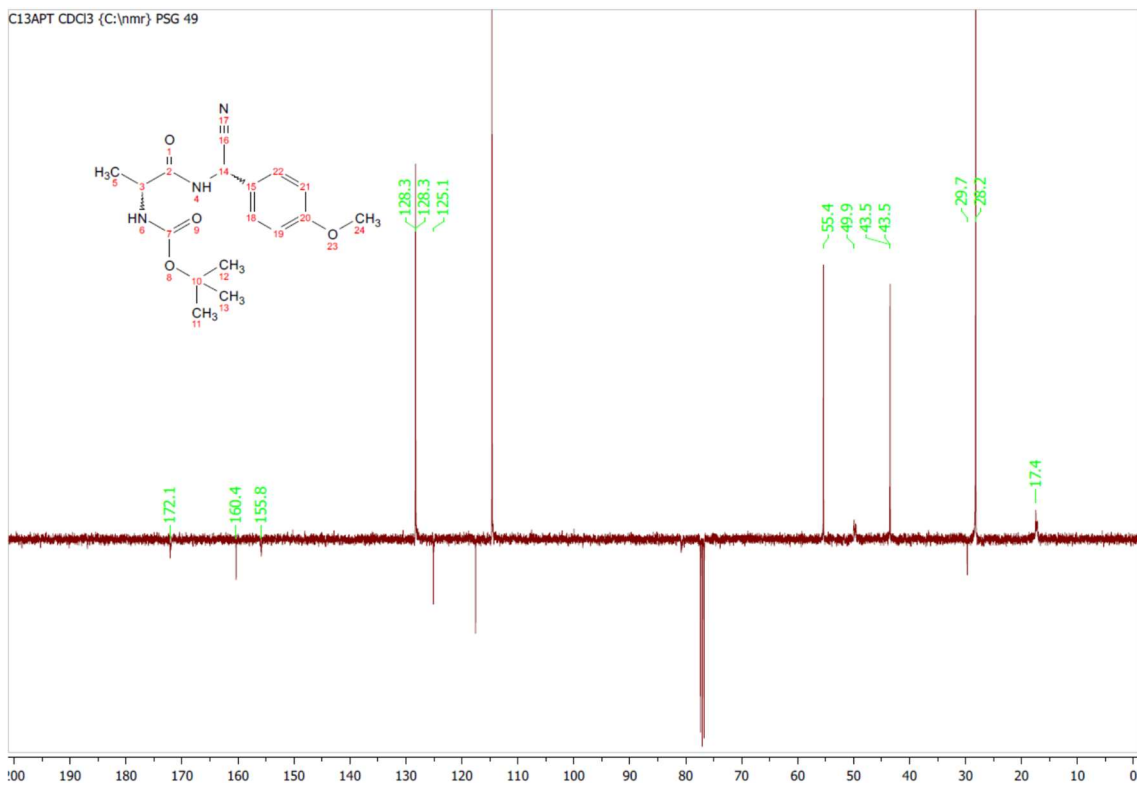


Figure S.64 – HMBC compound (19) in CDCl₃.

Compound (20)





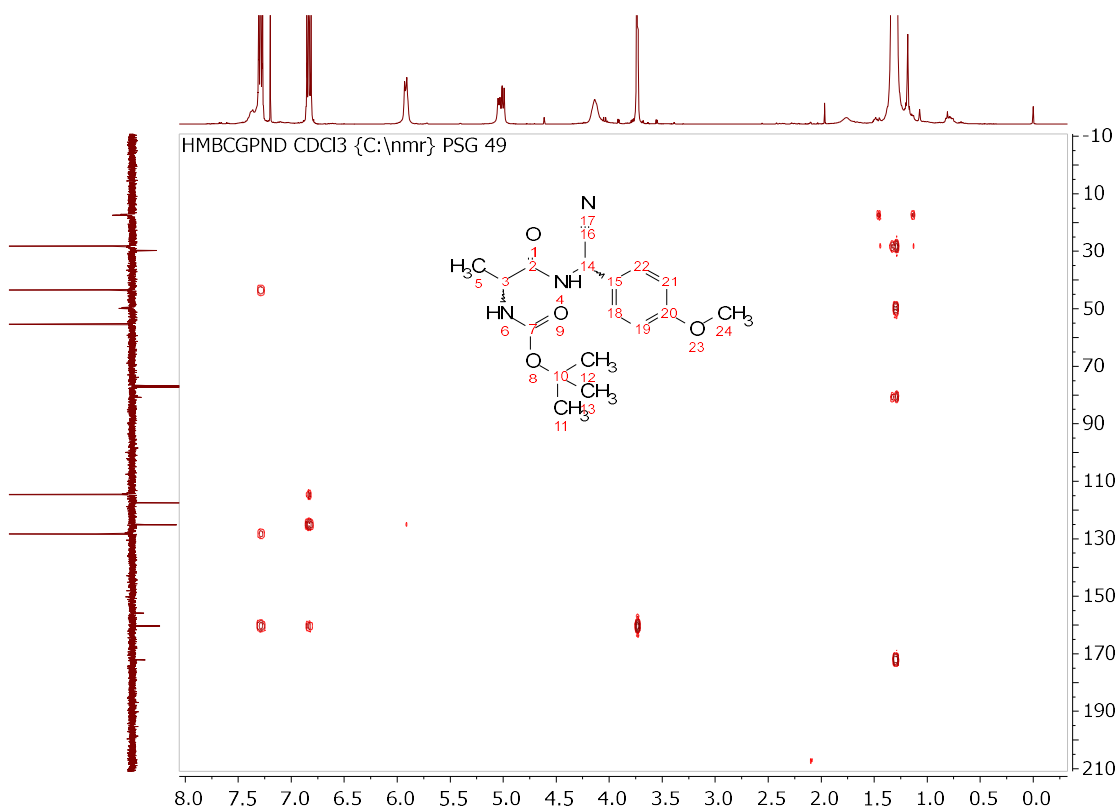


Figure S.69 – HMBC compound (20) in CDCl₃.

Compound (21)

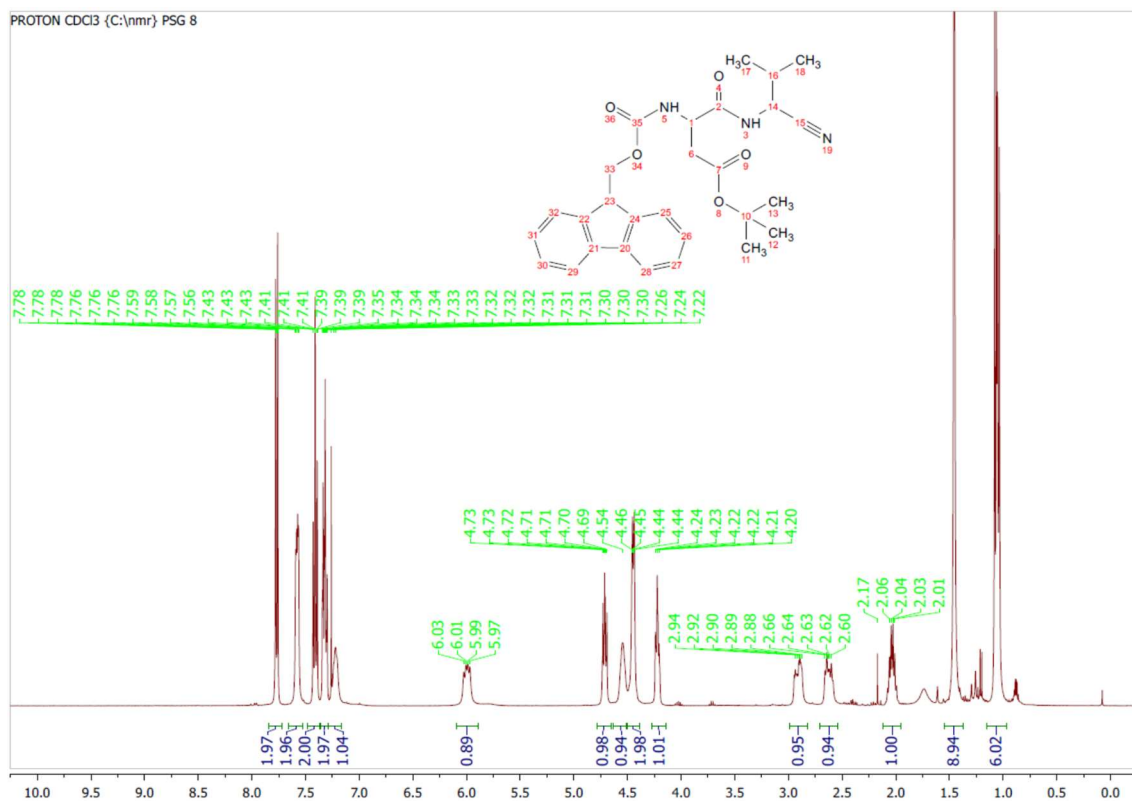


Figure S.70 – ¹H NMR compound (21) in CDCl₃.

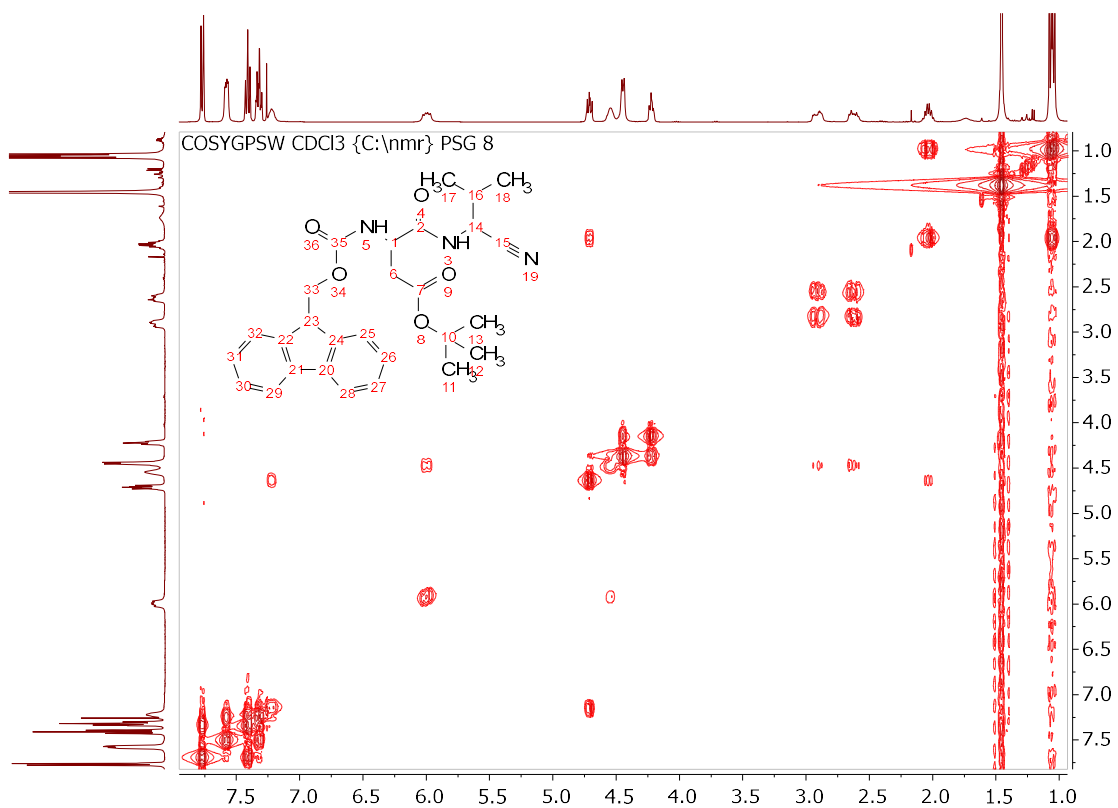


Figure S.71 – COSY compound (21) in CDCl₃.

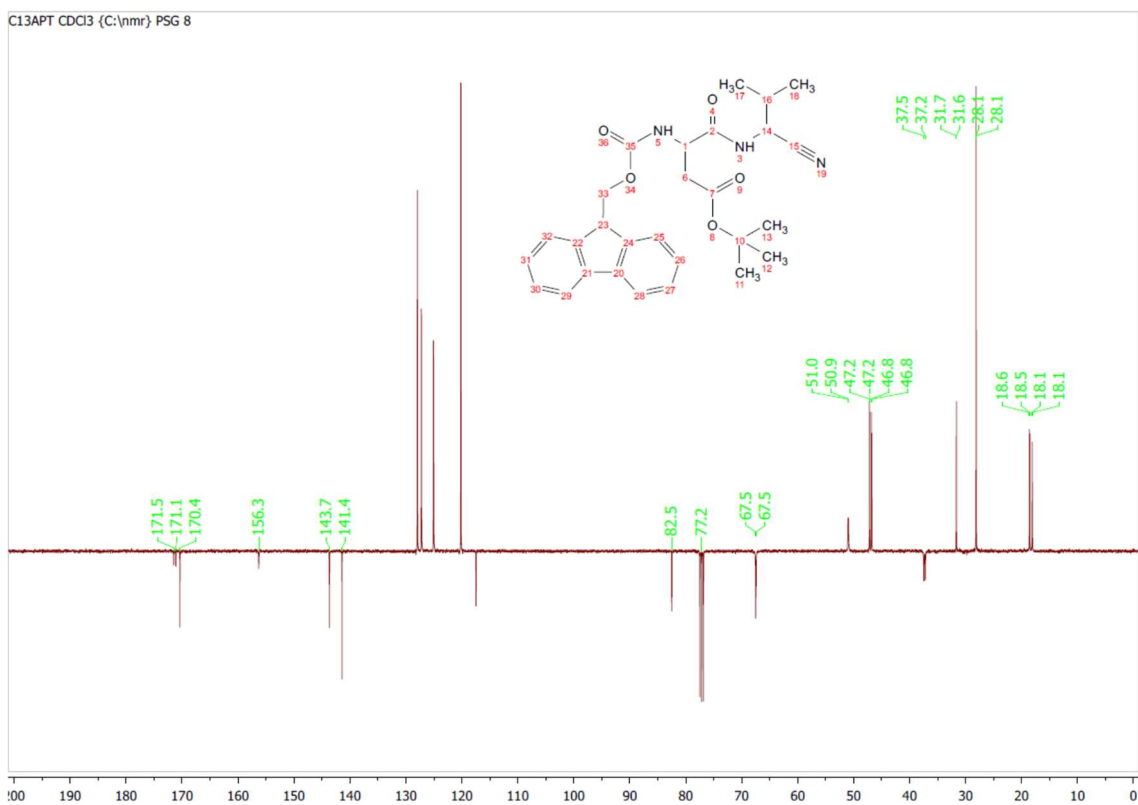


Figure S.72 – APT compound (21) in CDCl₃.

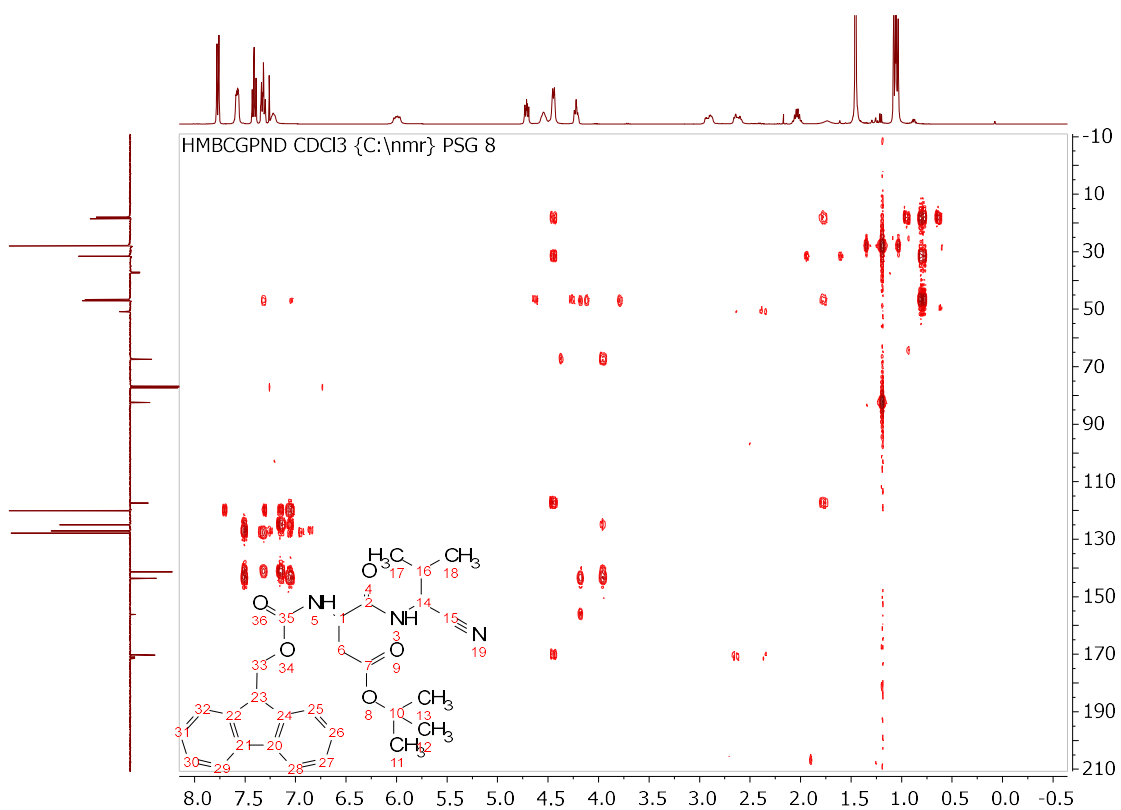


Figure S.73 – HMQC compound (21) in CDCl₃.

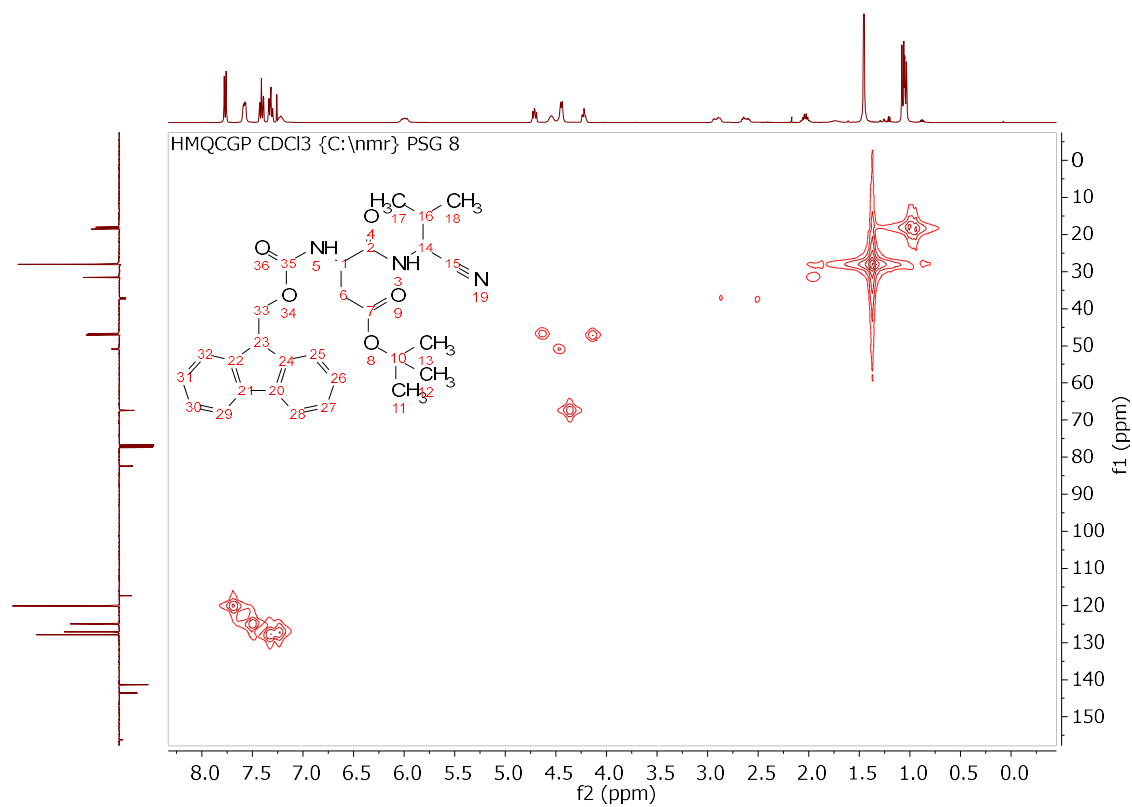
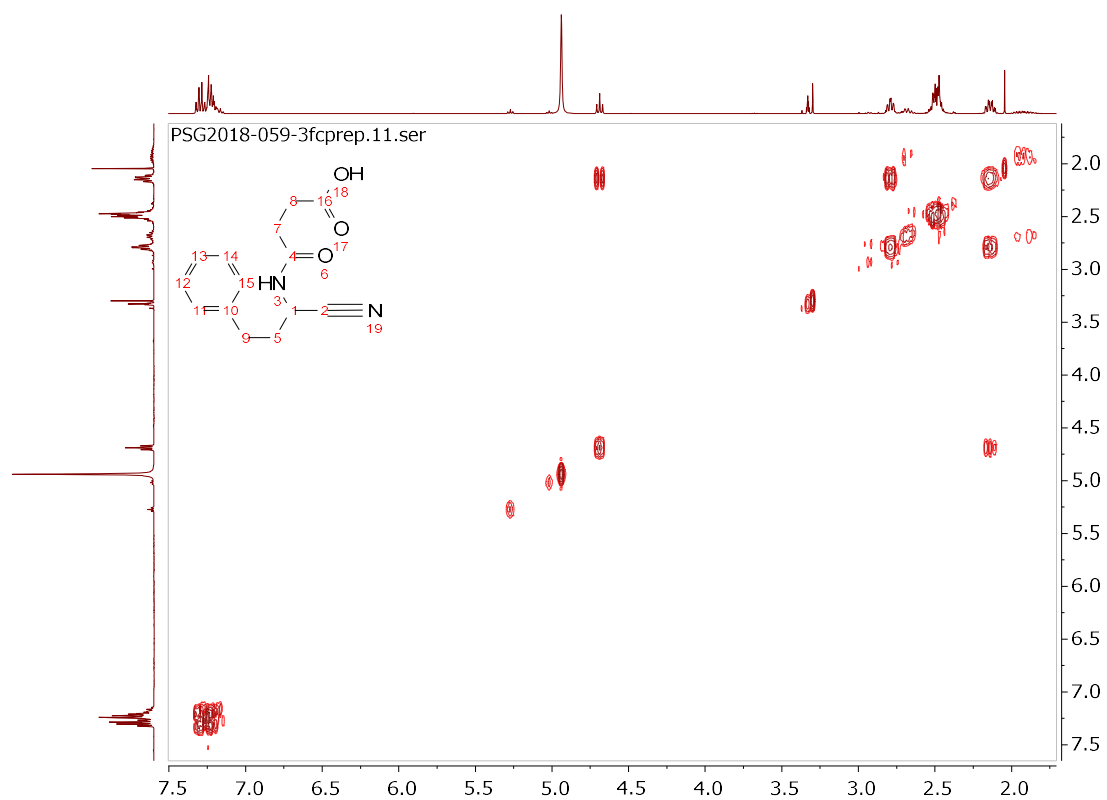
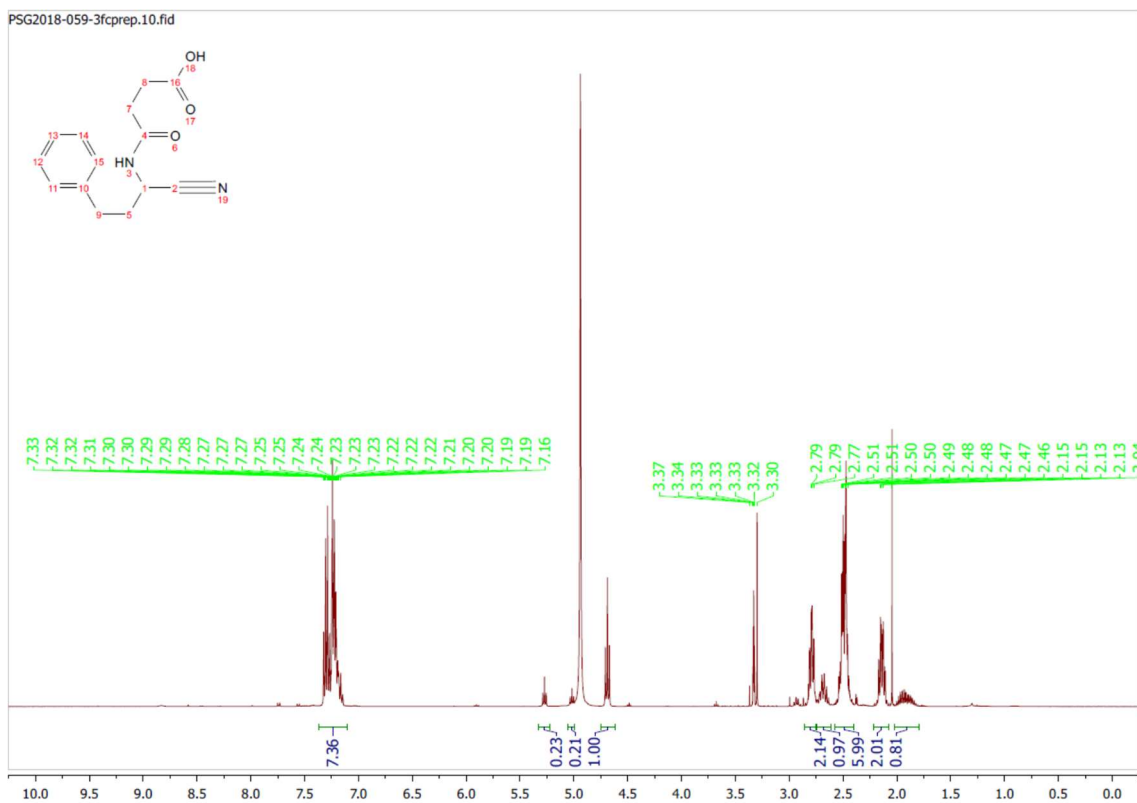
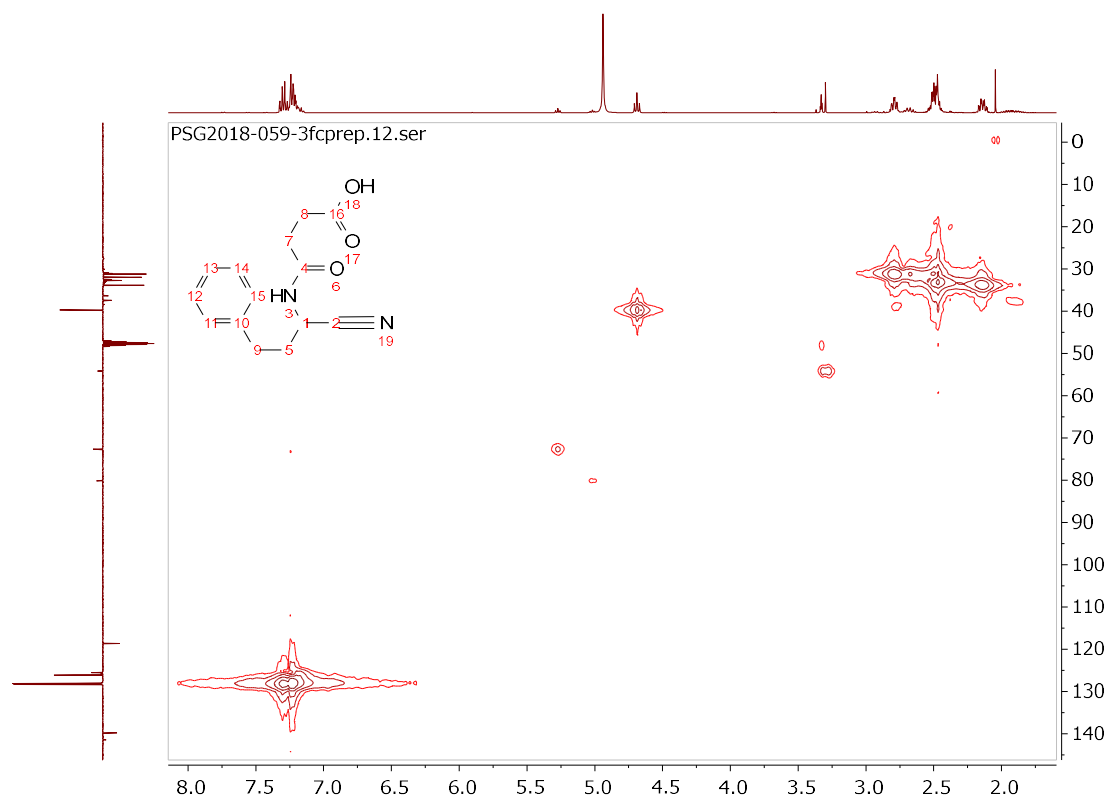
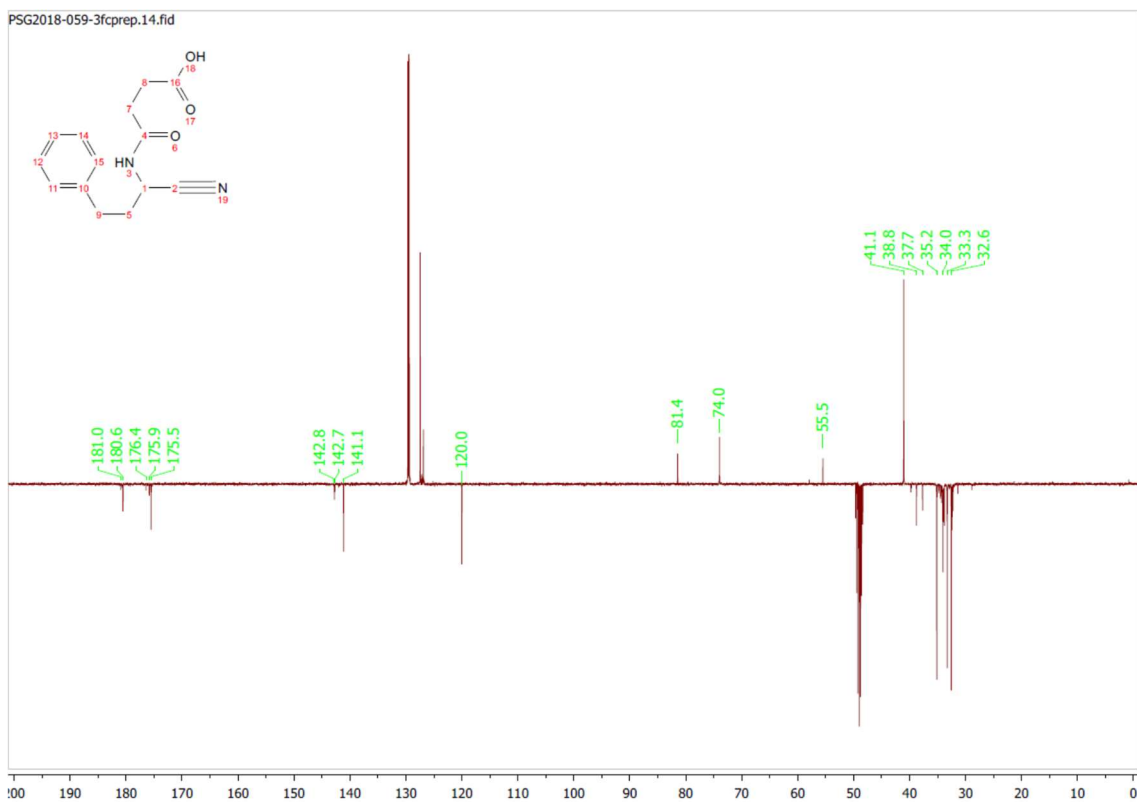


Figure S.74 – HMBC compound (21) in CDCl₃.

Compound (22)





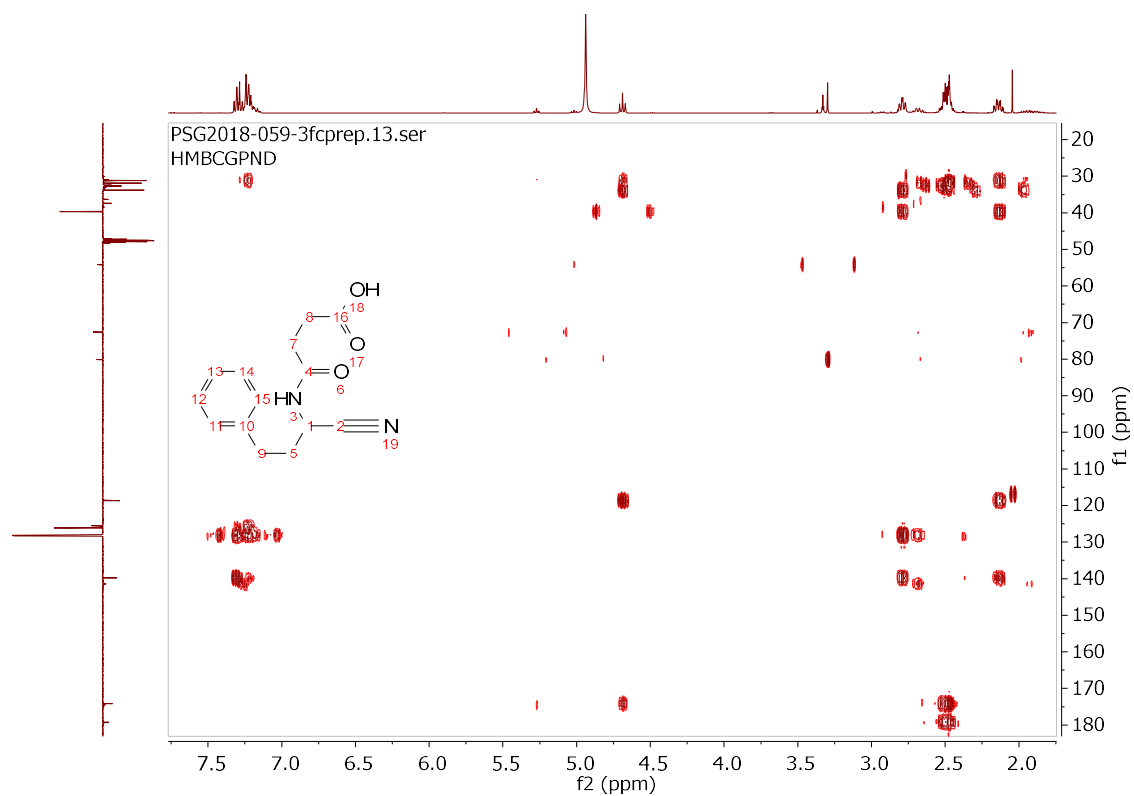


Figure S.79 – HMBC compound **(22)** in MeOD-d4.

Compound **(23)**

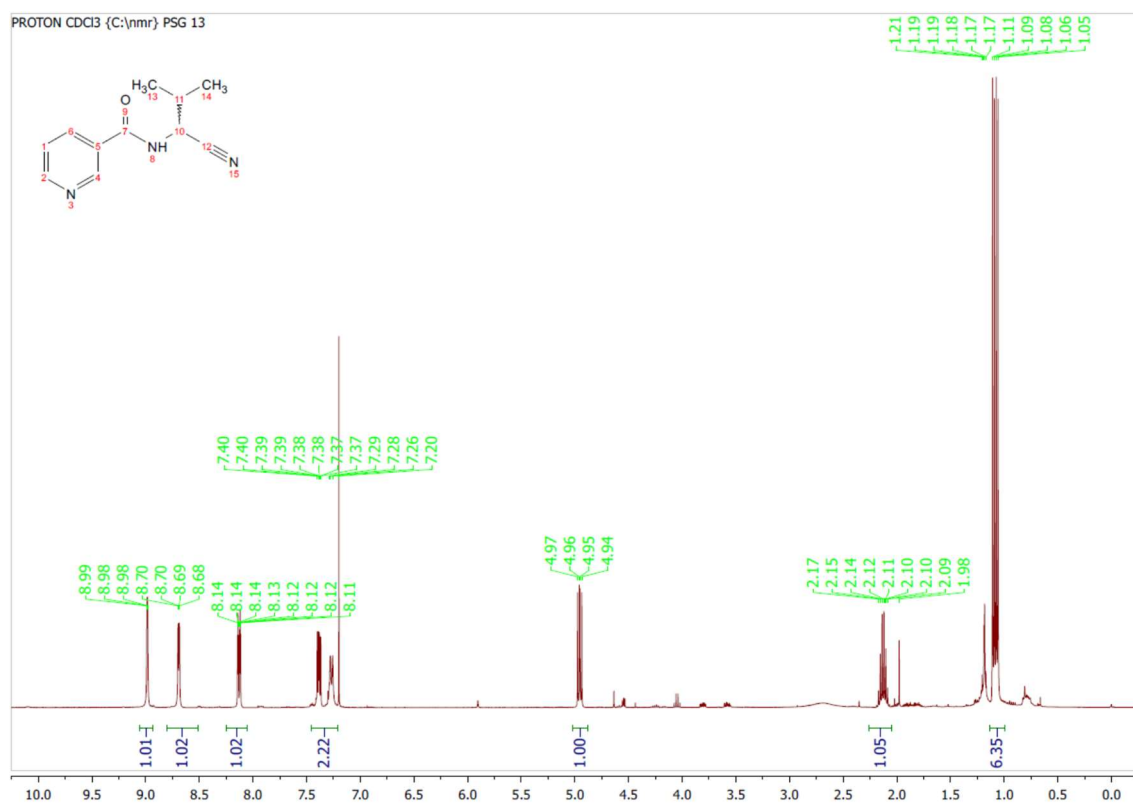


Figure S.80 – ¹H NMR compound **(23)** in CDCl₃.

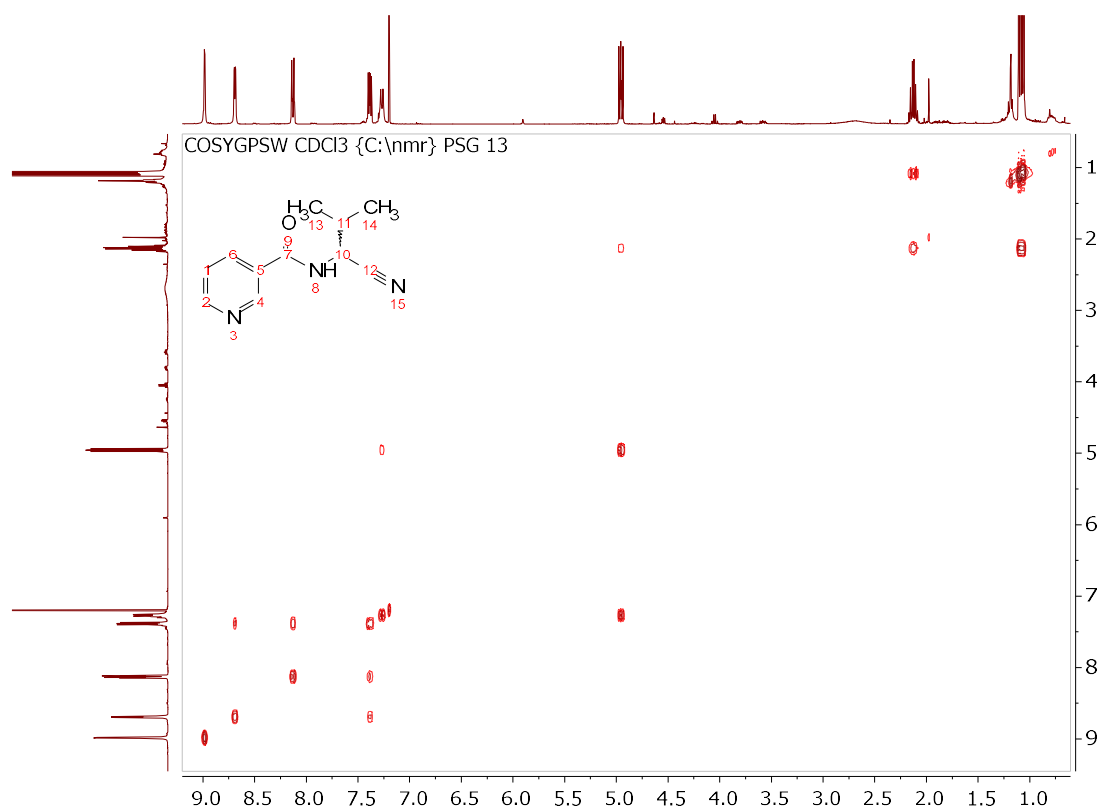


Figure S.81 – COSY compound **(23)** in CDCl₃.

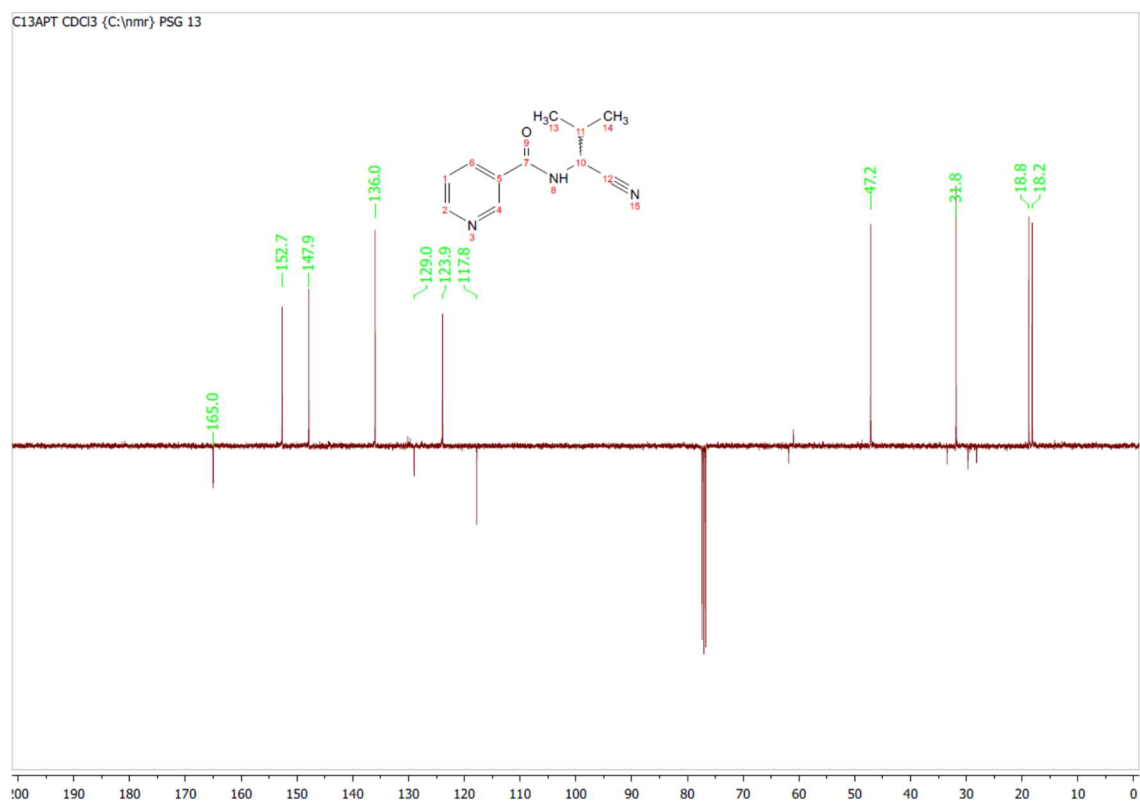


Figure S.82 – APT compound **(23)** in CDCl₃.

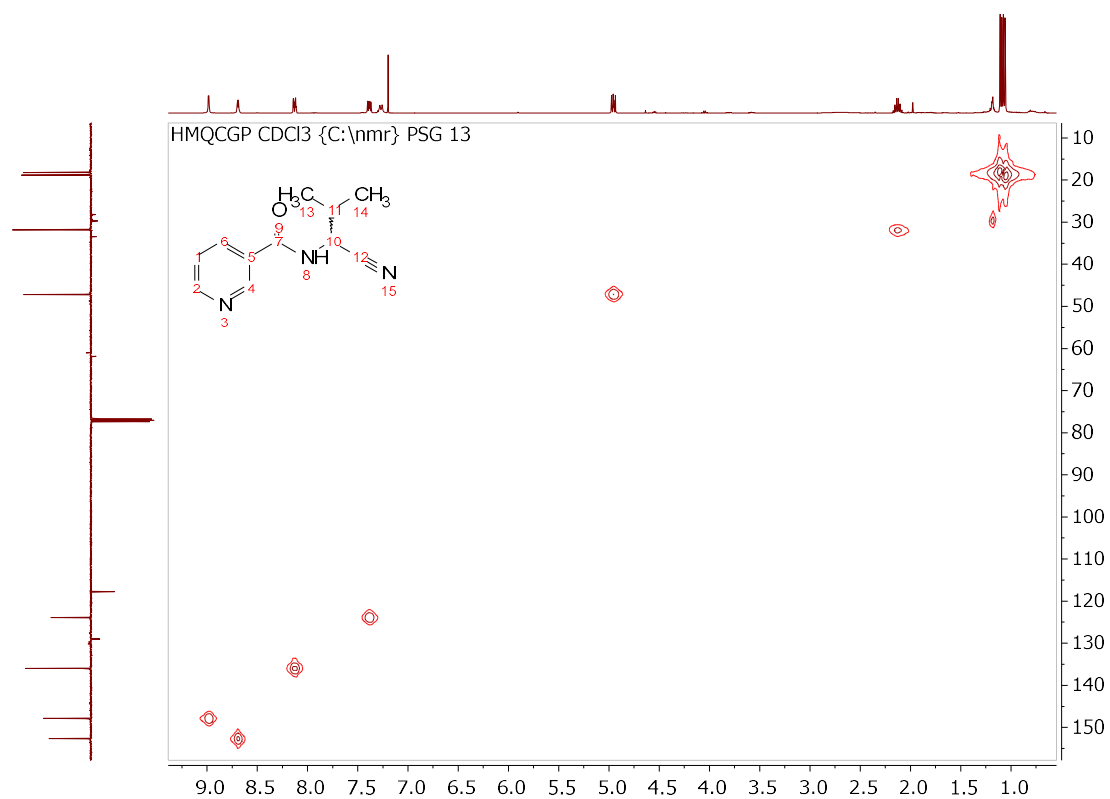


Figure S.83 – HMBC compound **(23)** in CDCl₃.

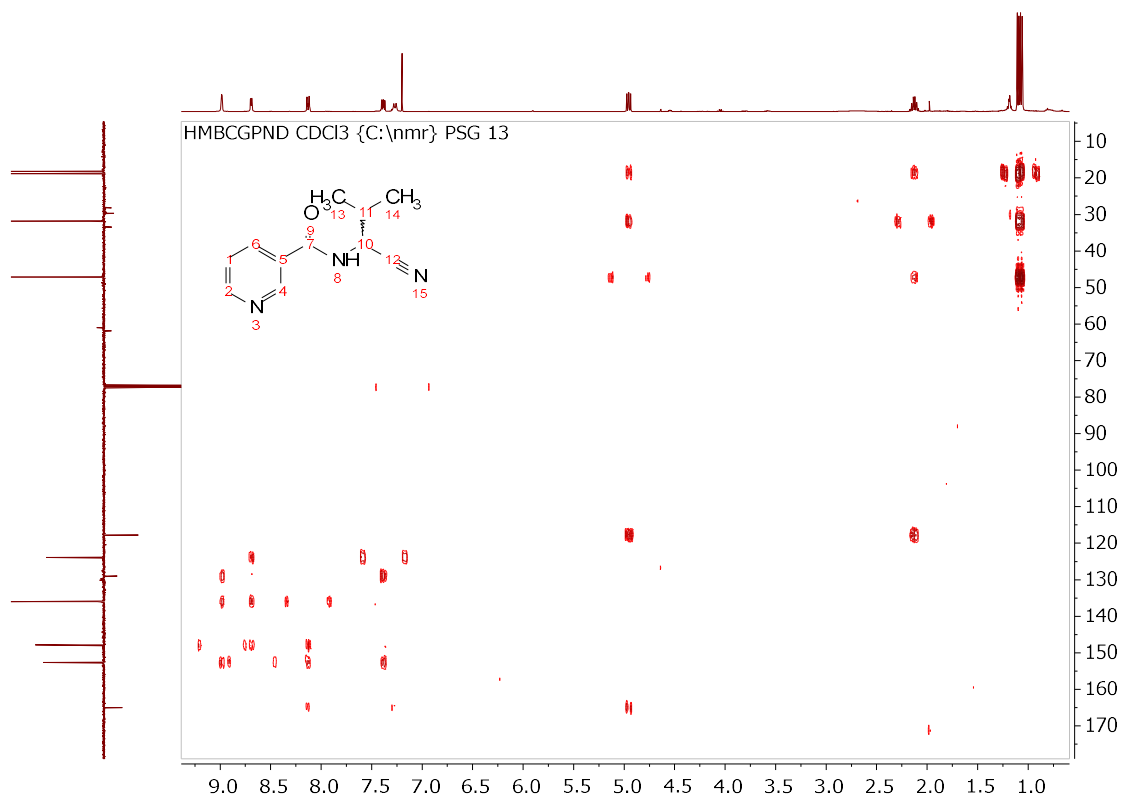


Figure S.84 – HMBC compound **(23)** in CDCl₃.

Compound **(24)**

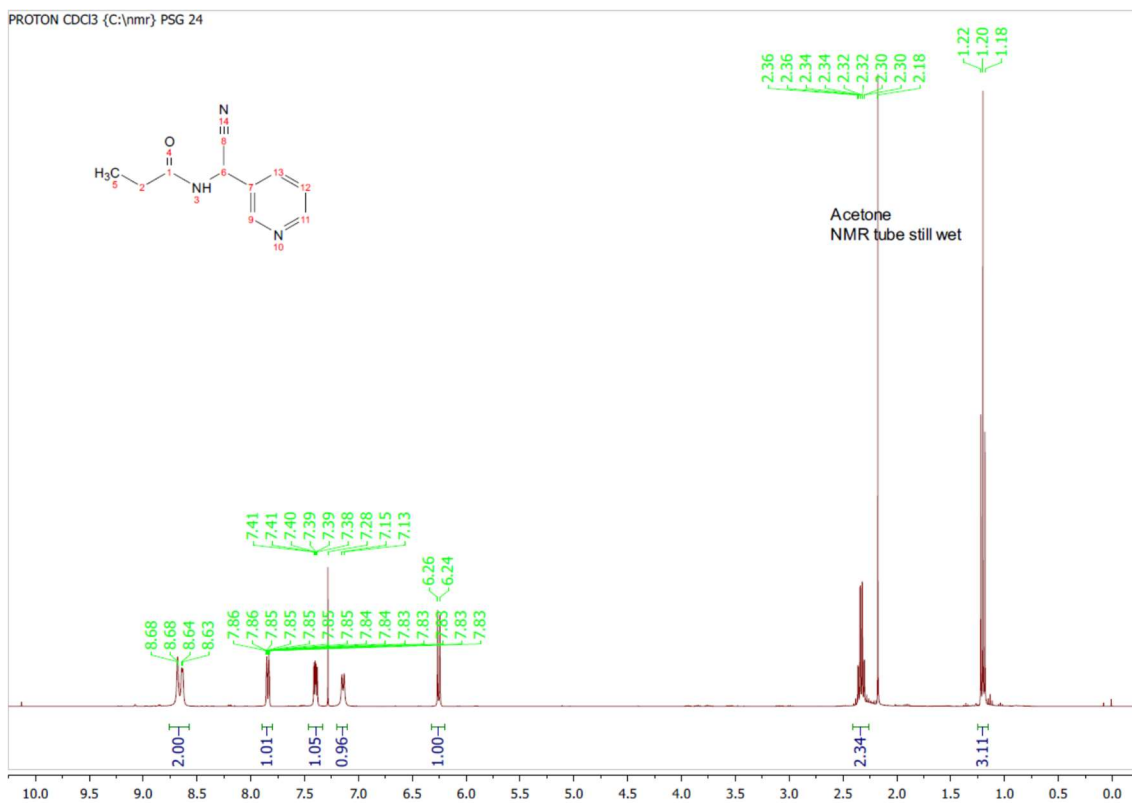


Figure S.85 – ¹H NMR compound **(24)** in CDCl₃.

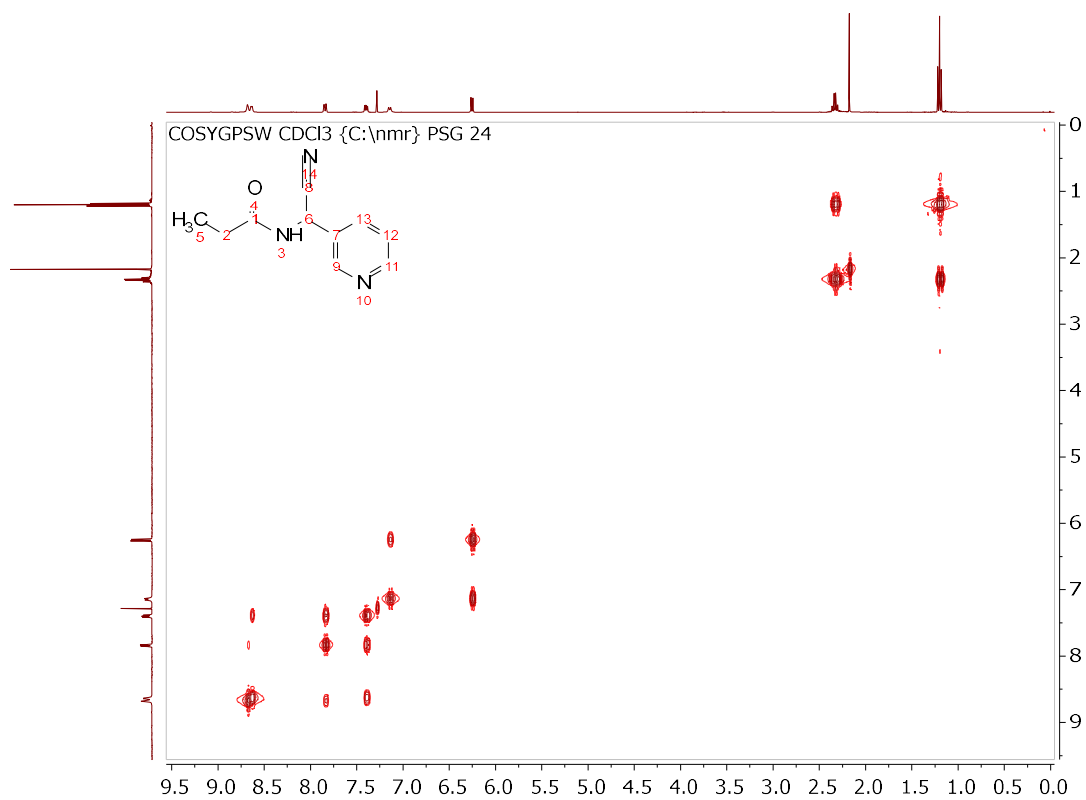


Figure S.86 – COSY compound **(24)** in CDCl₃.

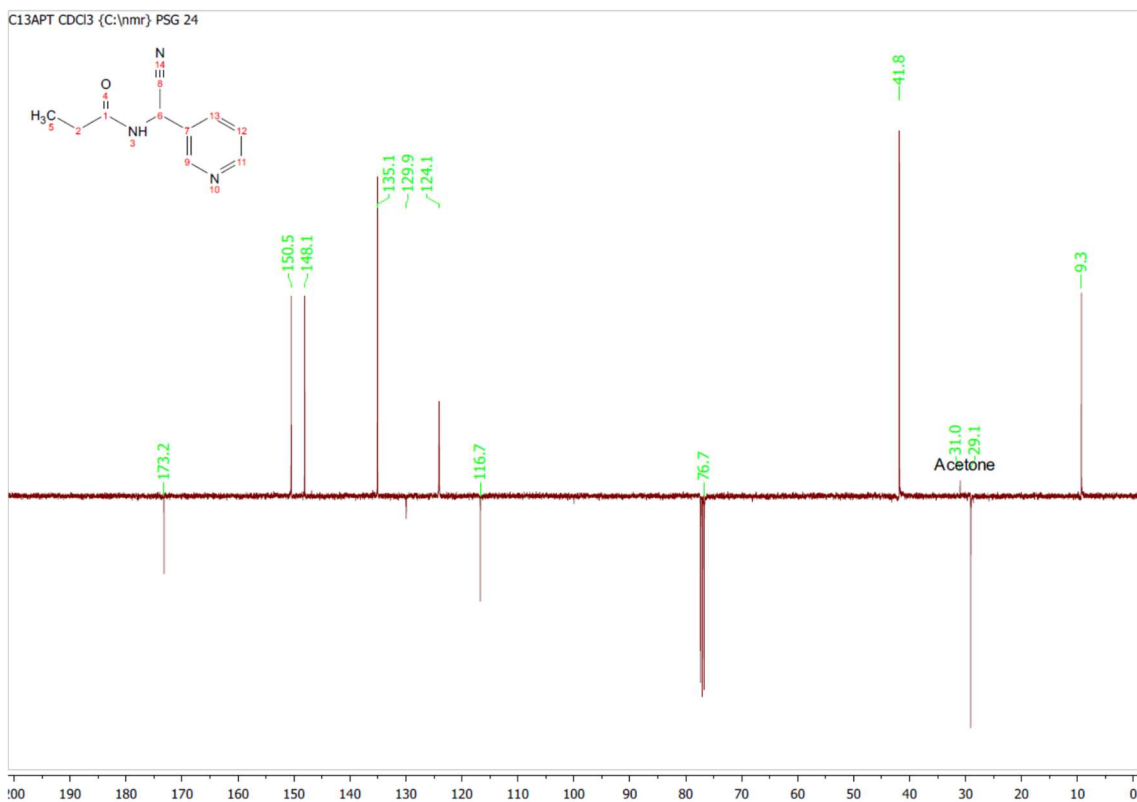


Figure S.87 – APT compound **(24)** in CDCl₃.

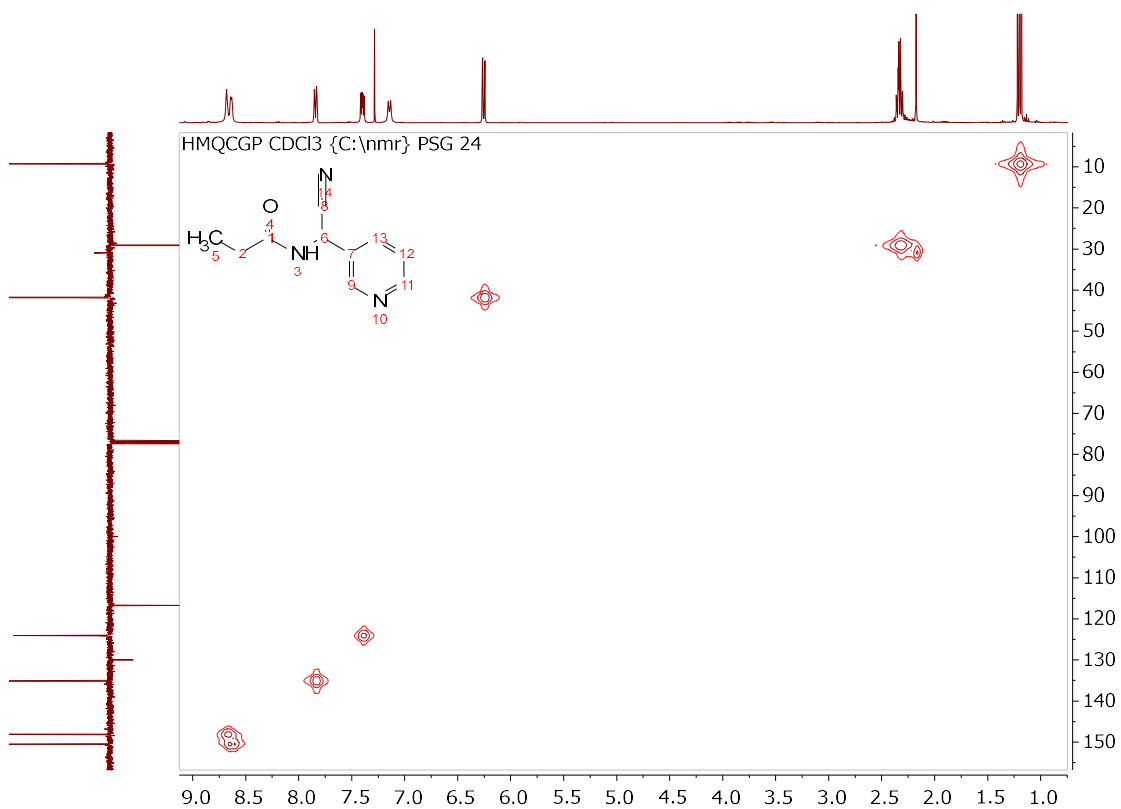


Figure S.88 – HMQC compound **(24)** in CDCl₃.

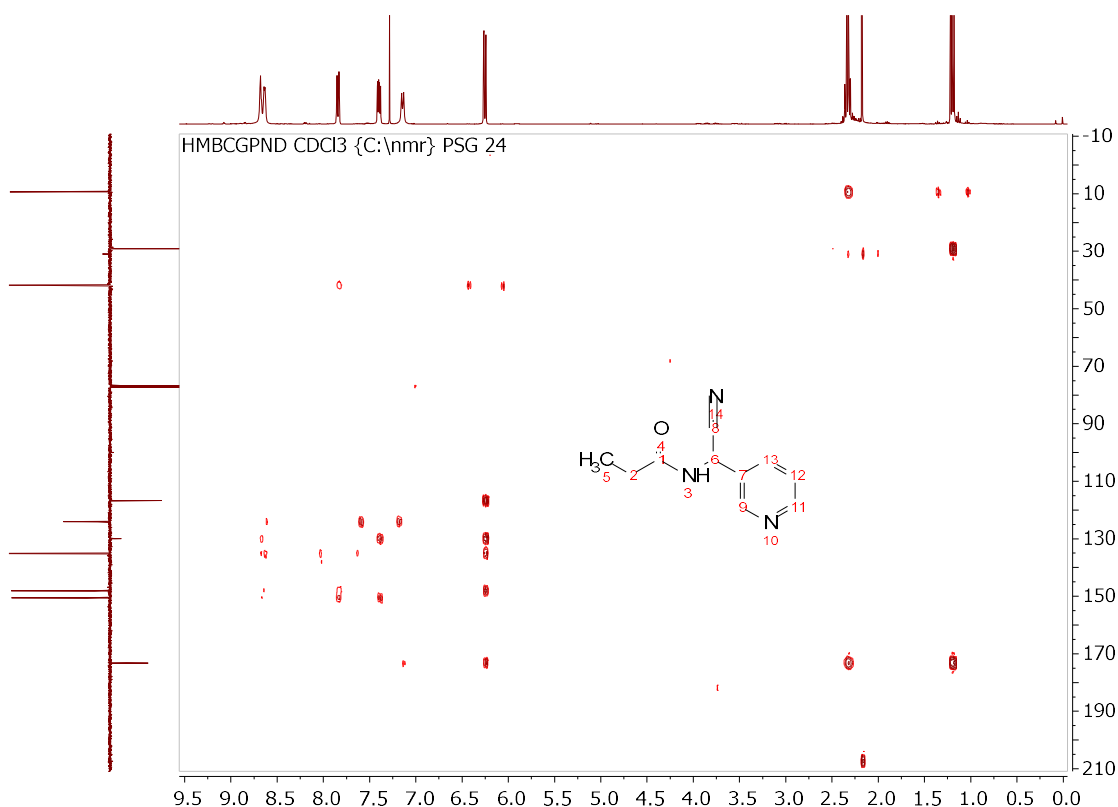


Figure S.89 – HMBC compound (**24**) in CDCl₃.

HRMS

The samples were used as delivered. 10µl of each sample was injected using the CapLC system (Waters, Manchester, UK) and electrosprayed using a standard electrospray source. Samples were injected with an interval of 3 minutes. Positive ion mode accurate mass spectra were acquired using a Q-TOF II instrument (Waters, Manchester, UK). The MS was calibrated prior to use with a 0.1% H₃PO₄ solution.

The spectra were lock mass corrected using the know mass of the nearest H₃PO₄ cluster or a known background ion.

Analytes were detected as protonated molecule unless stated otherwise. The measured masses, best fitting elemental composition and corresponding calculated monoisotopic masses are given in the attached spectra. All measured masses are within a difference of 5ppm compared to the calculated mass unless specified otherwise. The presented MS data does allow to calculate the elemental composition of the analytes, but does not decide on structure or purity of the samples.

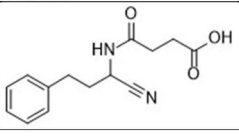
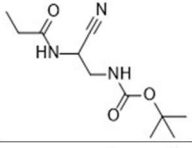
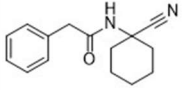
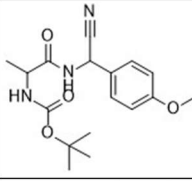
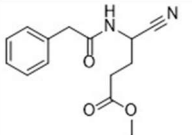
Accurate mass sample submission list																					
Name: Pedro Santos Gonçalves																					
Data file(s): GVH_20190603_15.raw																					
sample Cod	C	H	N	O	Mol weight	(M+H)+	(M+Na)+	Structure	(M+H)+		(M+Na)+										
									measured	error (ppm)	measured	error (ppm)									
PSG2018-059	14	16	2	3	260,116092	261,1234	283,105312				-1000000,00	-1000000,00									
	15	20	2	4	292,142307	293,1496	315,131527	+ Methanol	293,1502	2,11	315,1330	4,67									
PSG2018-058-1	11	19	3	3	241,142641	242,1499	264,131861		242,1505	2,41	264,1328	3,55									
PSG2018-061	15	18	2	1	242,141913	243,1492	265,131133		243,1502	4,16	265,1335	8,93									
PSG2018-050-1	17	23	3	4	333,168856	334,1761	356,158076		334,1774	3,80	356,1597	4,56									
PSG2018-055-1iso	14	16	2	3	260,116092	261,1234	283,105312		261,1236	0,89	283,1066	4,55									

Table S.2 – Results from HRMS analysis (2 of 3)

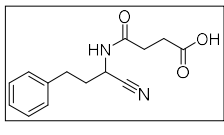
Accurate mass sample submission list																					
Name: Pedro Gonçalves																					
Data file(s): GVH_20191115_03.raw																					
GVH_20191129_05.raw																					
sample Cod	C	H	N	O	F	Cl	Br	I	S	P	Mol weight	(M+H)+	(M+Na)+	Structure	(M+H)+						
															measured	error (ppm)					
PSG2018-058-3fcprep	14	16	2	3							260,116092	261,1234	283,105312		261,1241	2,81					

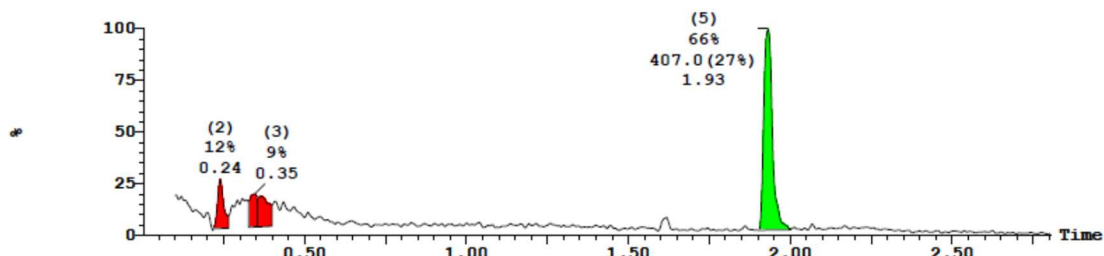
Table S.3 – Results from HRMS analysis (3 of 3)

LC-MS Chromatograms

Sample 1 Vial 2:13 ID PSG2016-009-fc-w File PSG2016-009-fc-w Date 06-Jan-2017 Time 16:09:53 Description

1: MS ES+ :BPI Smooth (SG, 2x2)

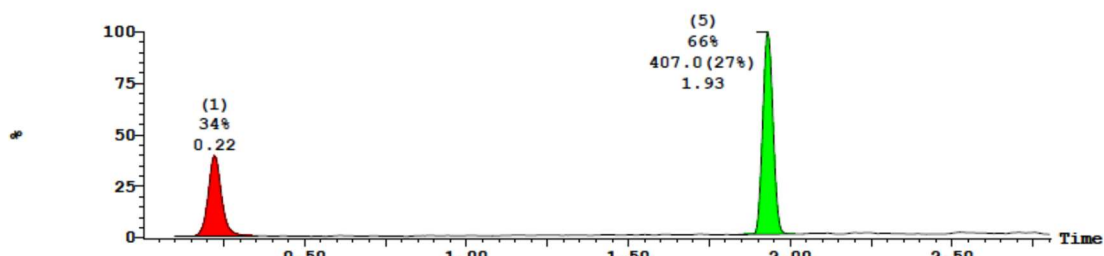
1.2e+007



Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
2		0.24	6e+004	11.69	0	3e+006	
3		0.35	5e+004	8.88	0	2e+006	
4		0.37	7e+004	13.06	0	2e+006	
5	Found	1.93	3e+005	66.37	0	1e+007	407.00

2: MS ES- :BPI Smooth (Mn, 2x3)

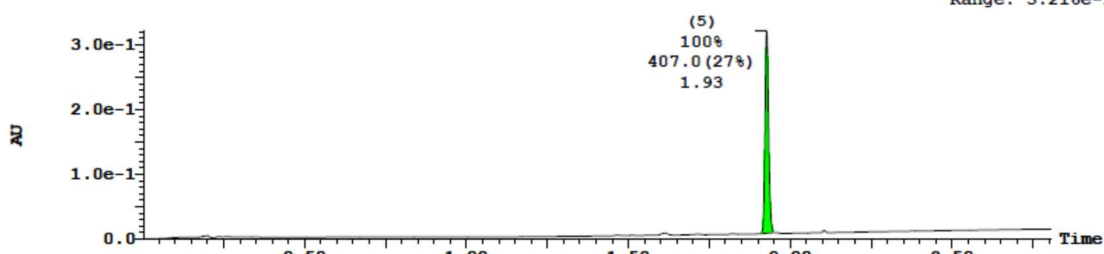
5.9e+006



Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
1		0.22	1e+005	34.29	0	2e+006	
5	Found	1.93	2e+005	65.71	0	6e+006	407.00

3: UV Detector: TIC

3.216e-1
Range: 3.216e-1

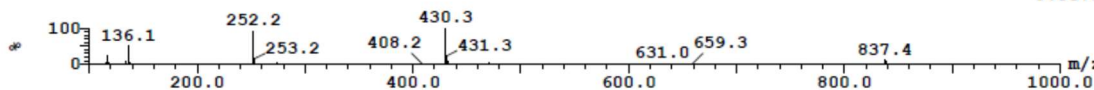


Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
5	Found	1.93	4e+003	100.00	0	3e+005	407.00

Peak ID Compound Time Mass Found

5 Found 1.93 408.00,430.00

1:MS ES+
9.5e+006



Peak ID Compound Time Mass Found

5 Found 1.93

2:MS ES-
6.4e+006

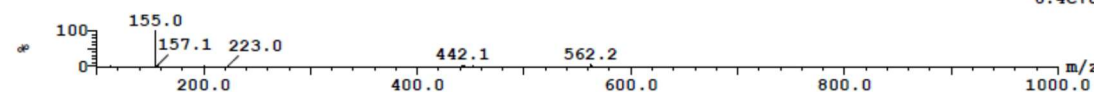
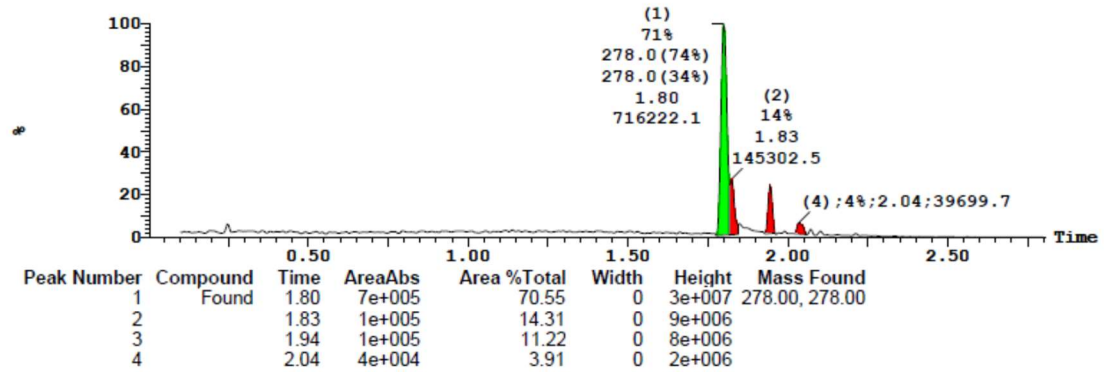


Figure S.90 – Details of UPLC-MS report of compound (9) using generic method.

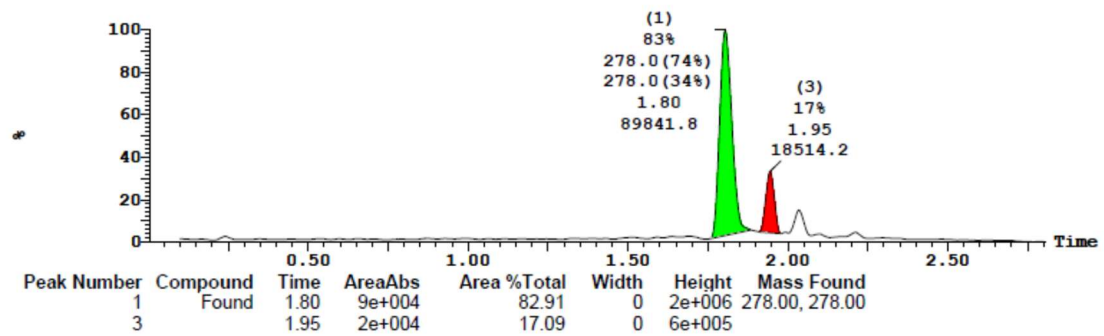
1: MS ES+ :BPI Smooth (SG, 2x2)

3.4e+007



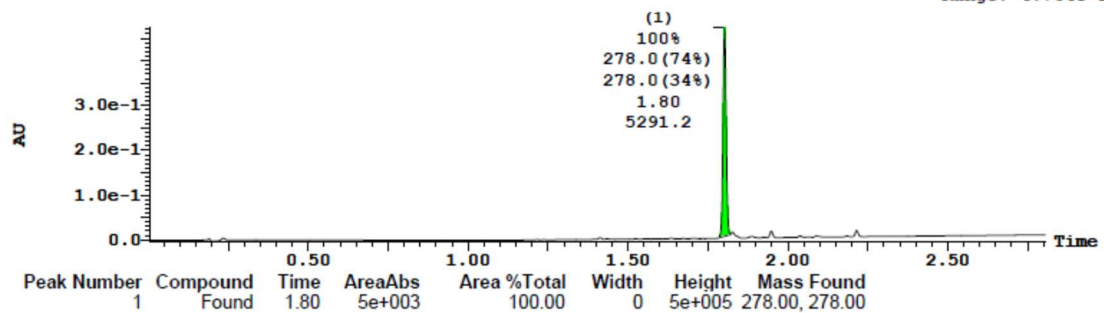
2: MS ES- :BPI Smooth (Mn, 2x3)

2.1e+006



3: UV Detector: TIC

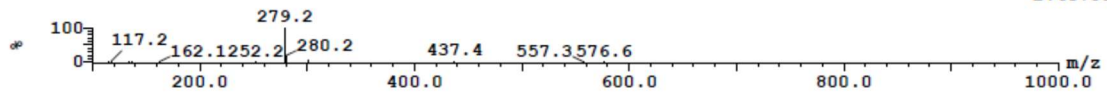
4.731e-1
Range: 4.764e-1



Peak ID Compound Time Mass Found
1 Found 1.80 279.00,301.00

1: (Time: 1.80) Combine (468:474- (460:463+478:481))

1:MS ES+
2.4e+007



Peak ID Compound Time Mass Found
1 Found 1.80 277.00

1: (Time: 1.80) Combine (468:473- (460:462+478:480))

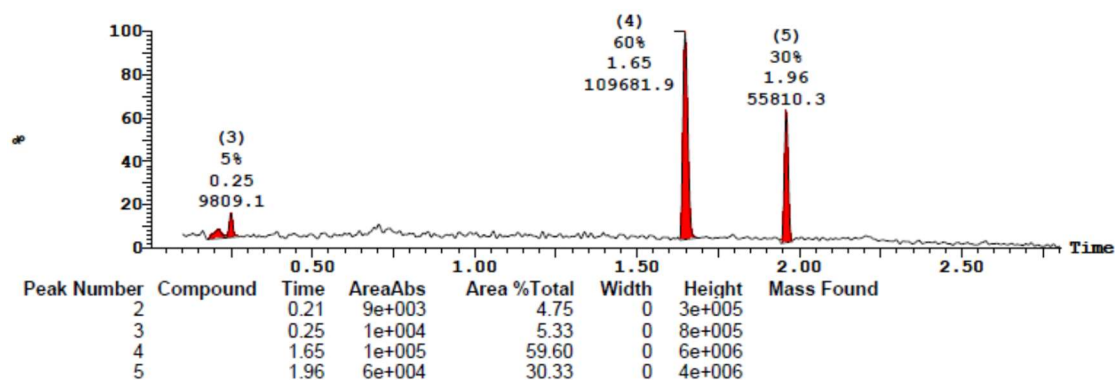
2:MS ES-
2.4e+006



Figure S.91 – Details of UPLC-MS report of compound (11) using generic method.

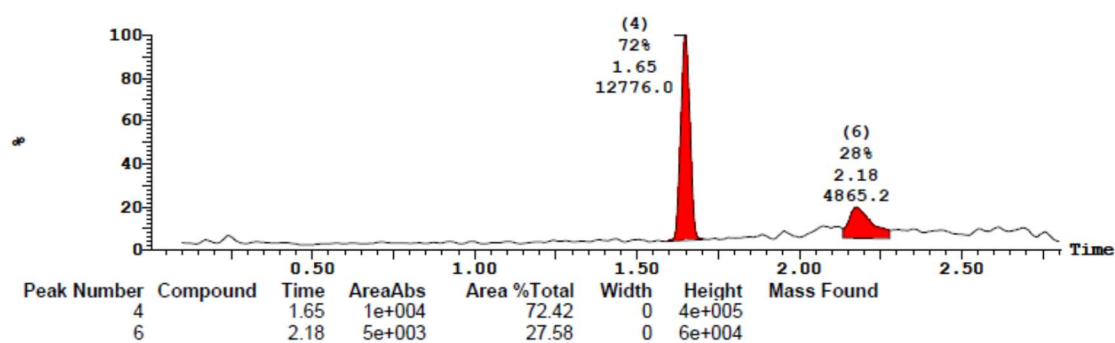
1: MS ES+ :BPI Smooth (SG, 2x2)

6.6e+006



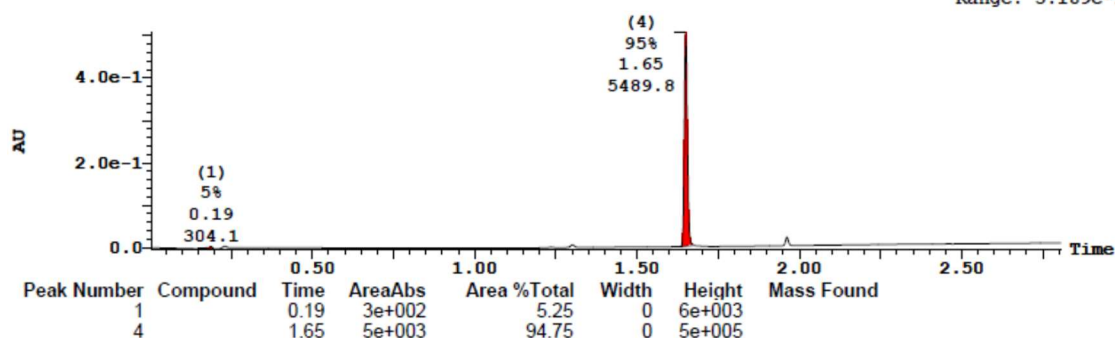
2: MS ES- :BPI Smooth (Mn, 2x3)

4.1e+005



3: UV Detector: TIC

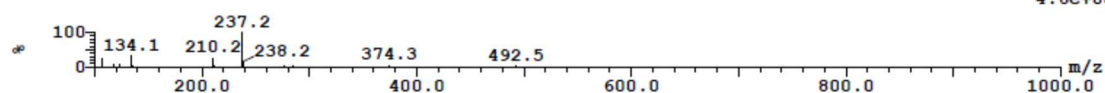
5.074e-1
Range: 5.109e-1



Peak ID Compound Time Mass Found
4 1.65

4: (Time: 1.65) Combine (429:434-(421:424+441:444))

1: MS ES+
4.6e+006



Peak ID Compound Time Mass Found
4 1.65

4: (Time: 1.65) Combine (428:433-(421:423+440:443))

2: MS ES-
5.2e+005

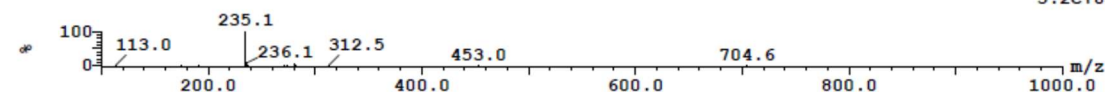
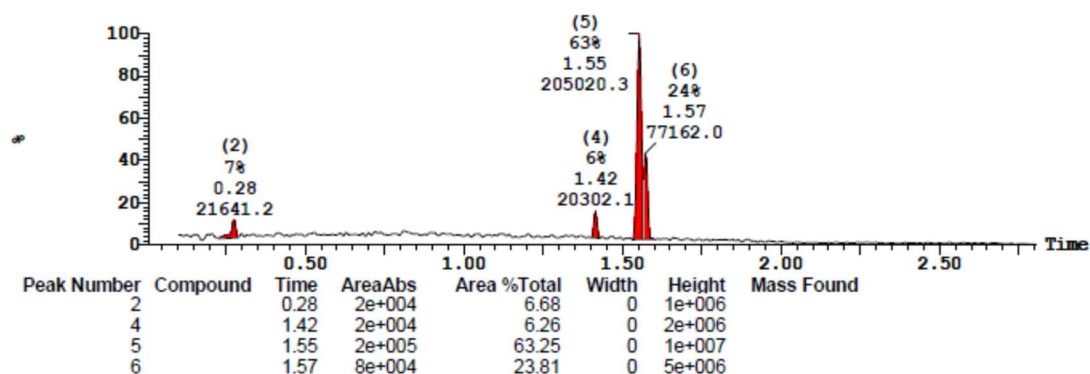


Figure S.92 – Details of UPLC-MS report of compound (12) using generic method.

Sample 1 Vial 2:33 ID PSG2018-044-1fr13 File PSG2018-044-1fr13 Date 13-Sep-2018 Time 11:34:03 Description

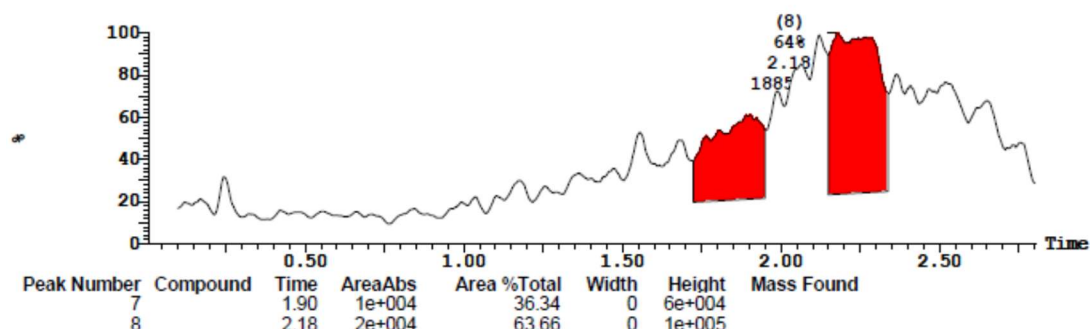
1: MS ES+ :BPI Smooth (SG, 2x2)

1.3e+007



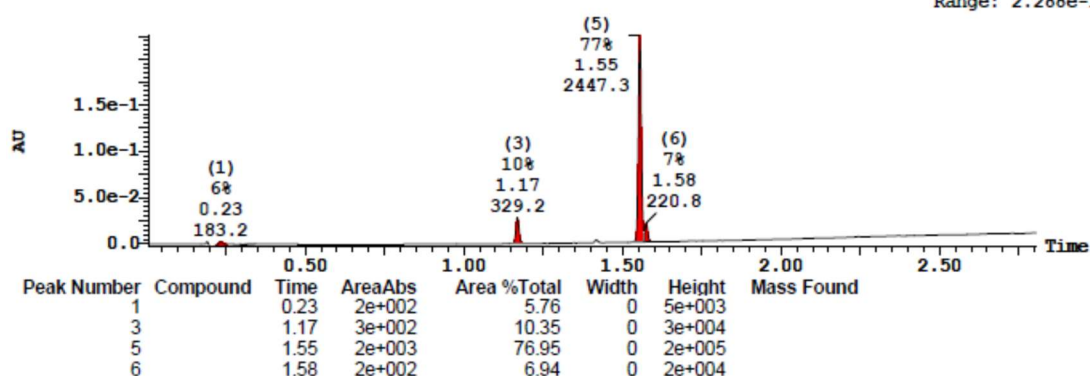
2: MS ES- :BPI Smooth (Mn, 2x3)

1.4e+005



3: UV Detector: TIC

2.258e-1
Range: 2.288e-1



Peak ID Compound Time Mass Found

5: (Time: 1.55) Combine (404:409-(394:397+413:415))

1:MS ES+
8.7e+006



5: (Time: 1.55) Combine (403:409-(394:396+412:415))

2:MS ES-
4.7e+004

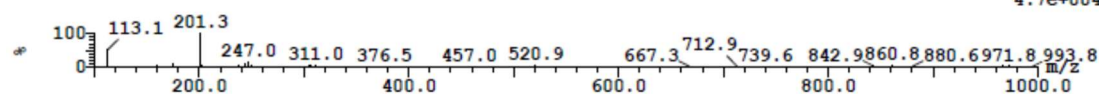
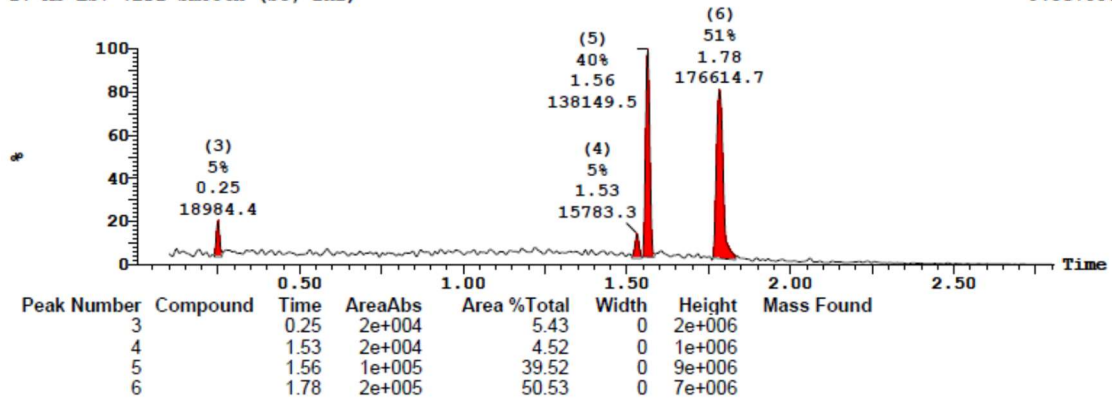


Figure S.93 – Details of UPLC-MS report of compound (13) using generic method.

Sample 1 Vial 1:30 ID PSG2018-056-1nmr File PSG2018-056-1nmr Date 09-Nov-2018 Time 14:26:29 Description

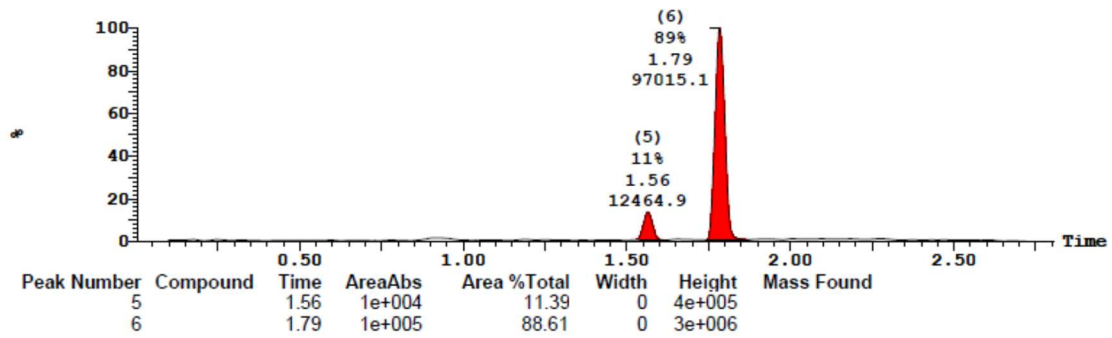
1: MS ES+ :BPI Smooth (SG, 2x2)

9.5e+006



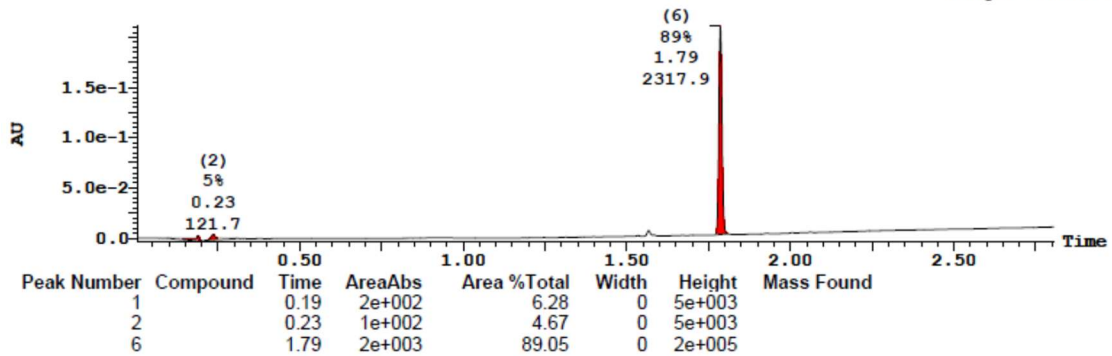
2: MS ES- :BPI Smooth (Mn, 2x3)

2.8e+006



3: UV Detector: TIC

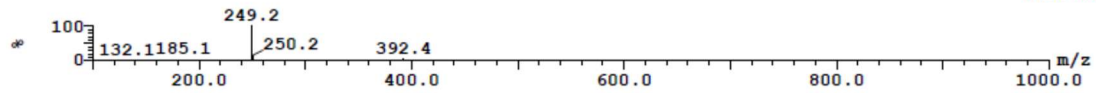
2.11e-1
Range: 2.142e-1



Peak ID Compound Time Mass Found
5 1.56

5: (Time: 1.56) Combine (406:412- (400:402+417:419))

1: MS ES+
5.3e+006



Peak ID Compound Time Mass Found
6 1.78

6: (Time: 1.79) Combine (464:469- (456:459+475:478))

1: MS ES+
6.2e+006

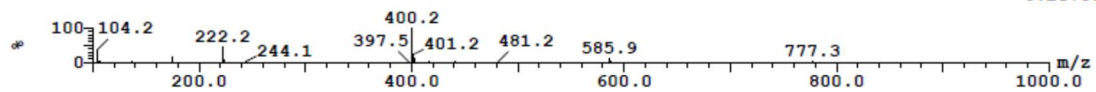


Figure S.94 – Details of UPLC-MS report of compound (14) using generic method.

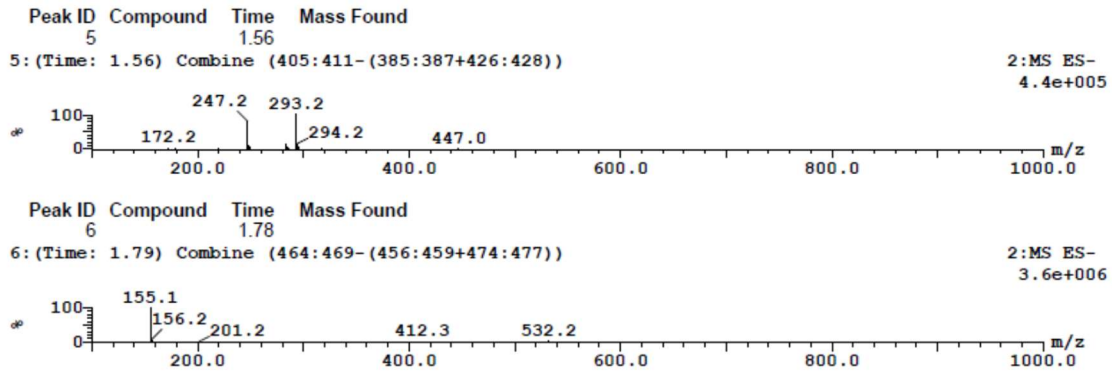


Figure S.95 – Details of UPLC-MS report of compound (14) using generic method (continued).

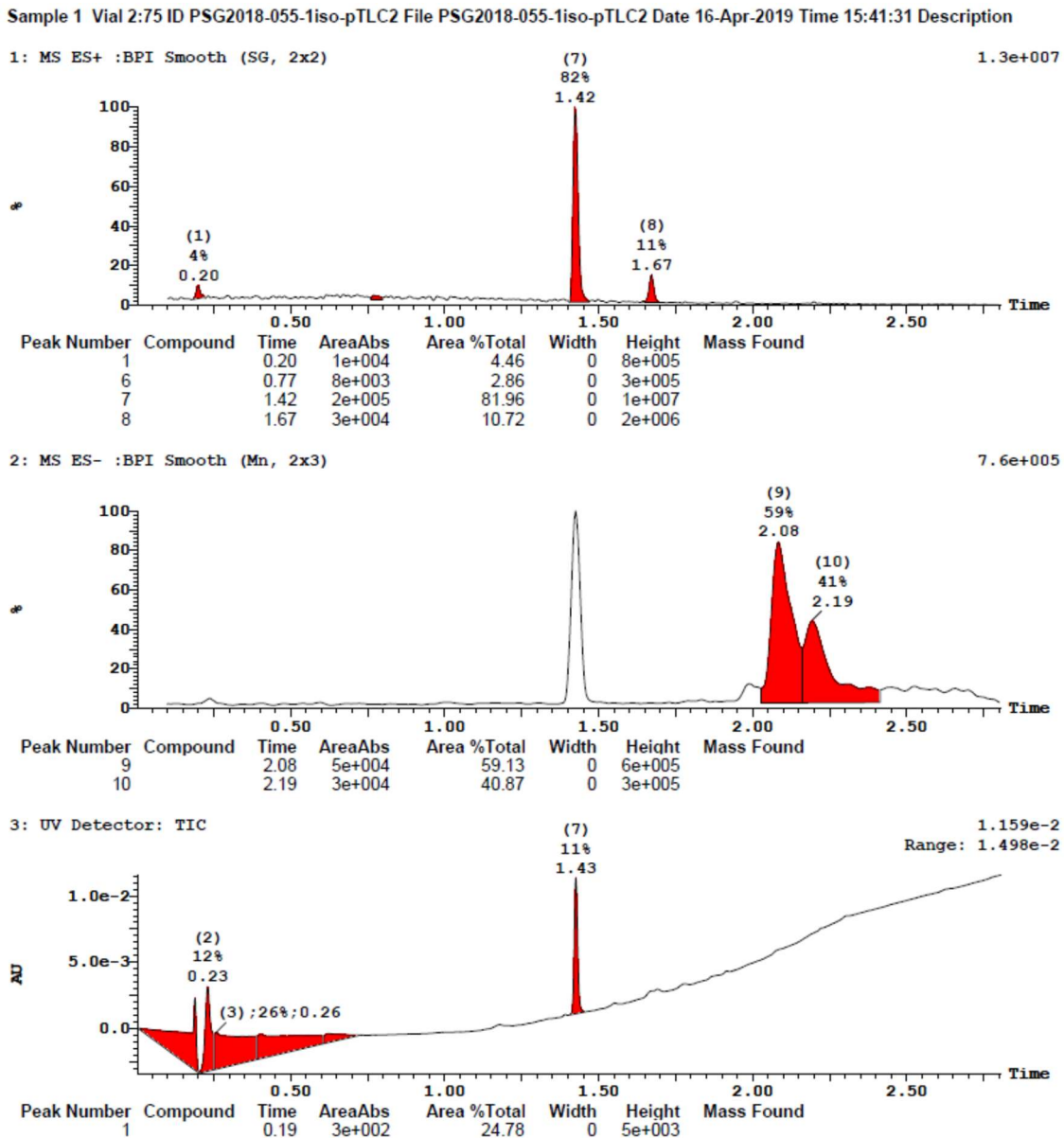


Figure S.96 – Details of UPLC-MS report of compound (15) using generic method; peaks number 9 and 10 are present in every run when the sample is diluted or does not produce strong MS signals.

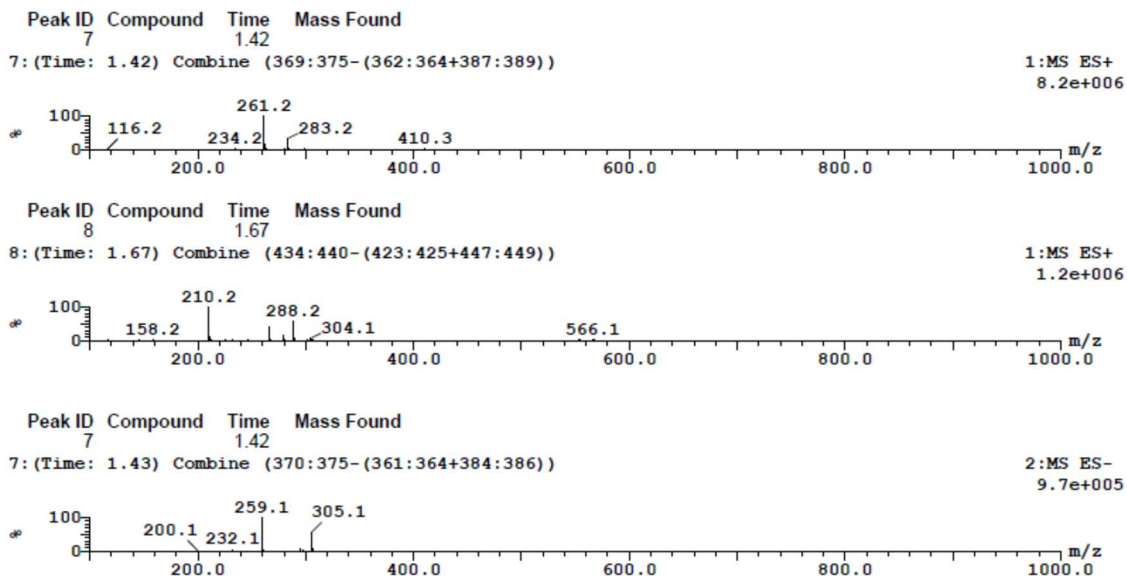
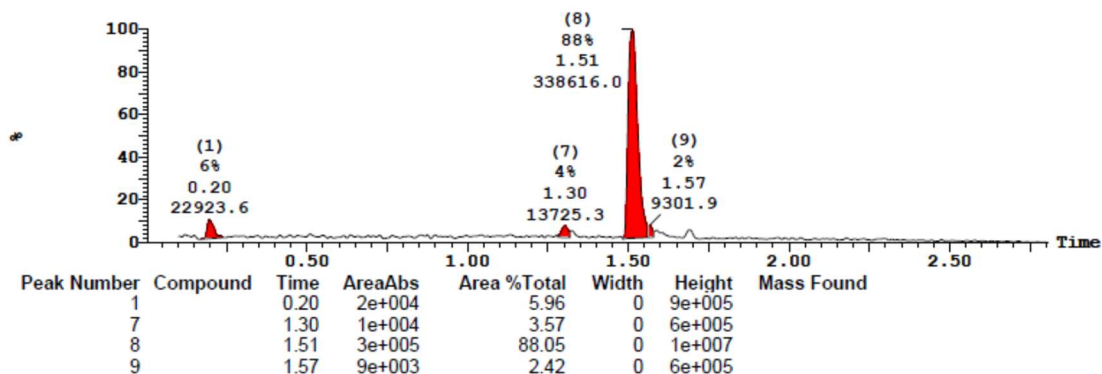


Figure S.97 – Details of UPLC-MS report of compound (15) using generic method (continued).

Sample 1 Vial 2:36 ID PSG-brnmr1 File PSG-brnmr1 Date 21-Nov-2018 Time 10:38:27 Description

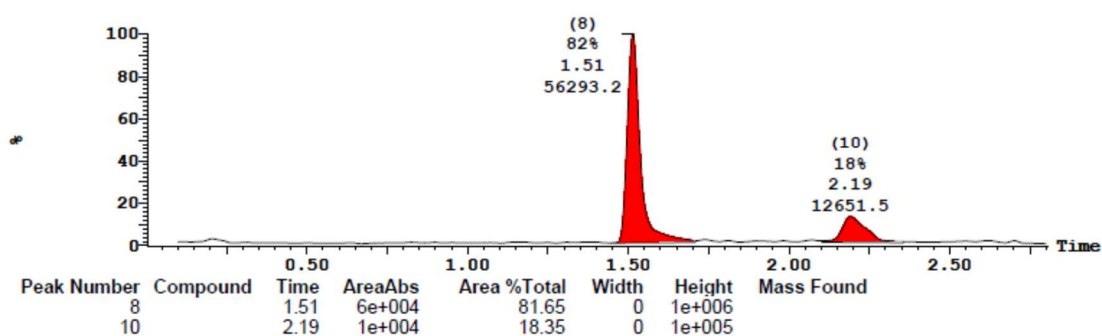
1: MS ES+ :BPI Smooth (SG, 2x2)

1.0e+007



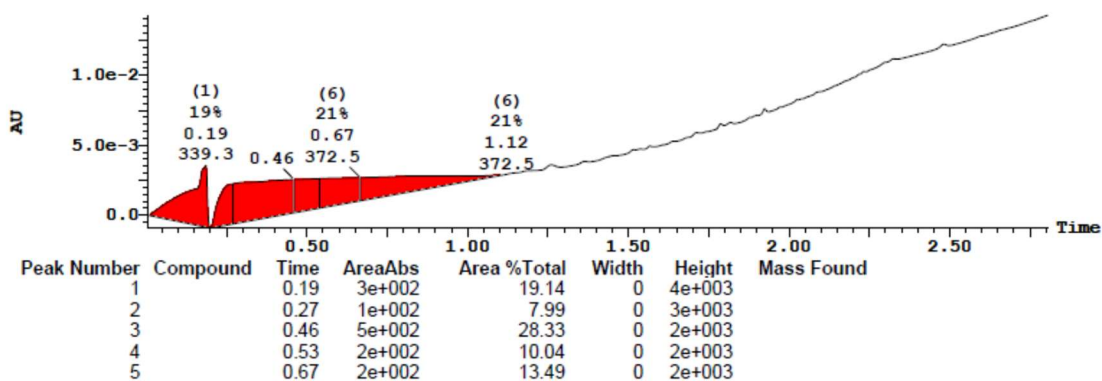
2: MS ES- :BPI Smooth (Mn, 2x3)

1.2e+006



3: UV Detector: TIC

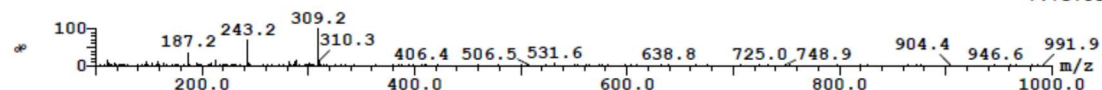
1.429e-2
Range: 1.521e-2



Peak ID Compound Time Mass Found

9: (Time: 1.57) Combine (407:413- (403:405+416:418))

1:MS ES+
7.7e+004



Peak ID Compound Time Mass Found

8: (Time: 1.51) Combine (392:398- (372:374+449:451))

2:MS ES-
1.3e+006

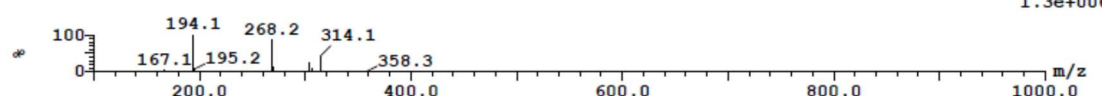
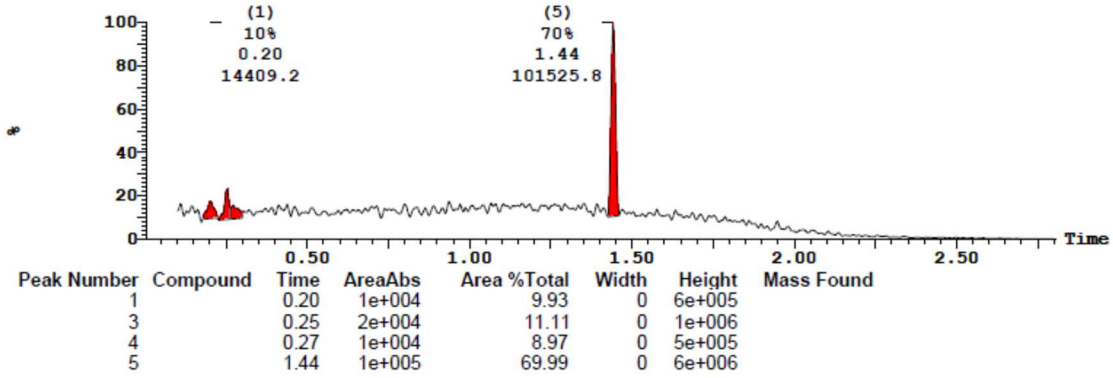


Figure S.98 – Details of UPLC-MS report of compound (16) using generic method; peak 10 is present in every run when the sample is diluted or does not produce strong MS signals.

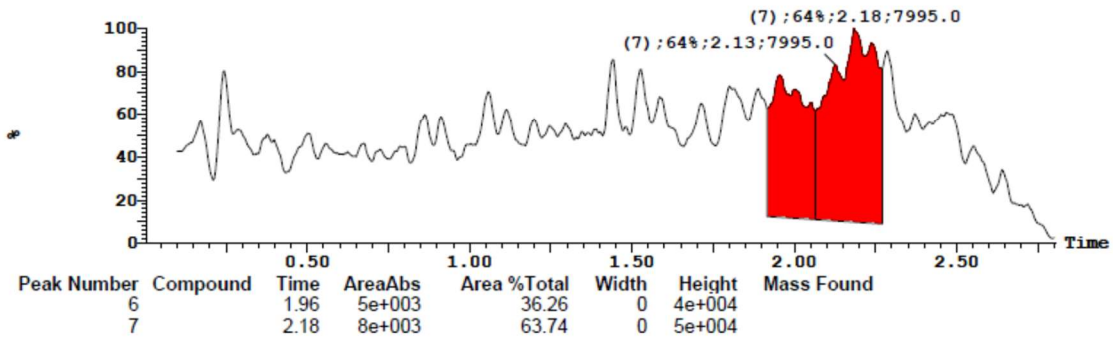
1: MS ES+ :BPI Smooth (SG, 2x2)

7.2e+006



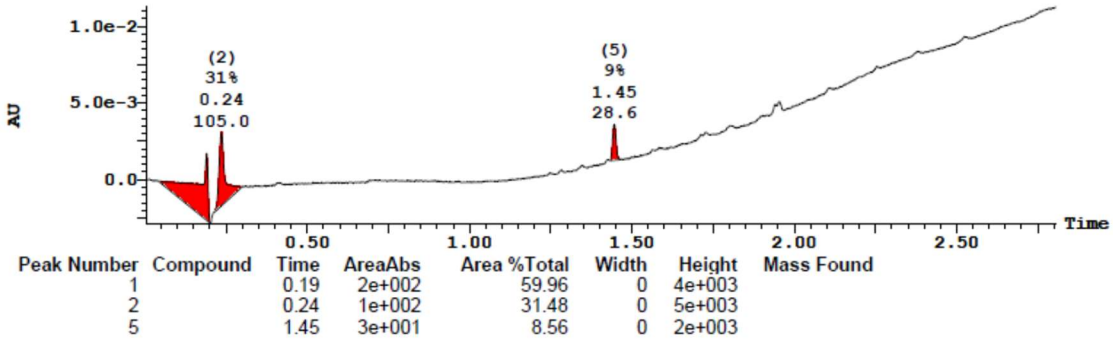
2: MS ES- :BPI Smooth (Mn, 2x3)

5.3e+004



3: UV Detector: TIC

1.126e-2
Range: 1.411e-2



Peak ID Compound Time Mass Found
5 1.44

5: (Time: 1.44) Combine (374:380-(368:370+385:387))

1: MS ES+
4.4e+006



Peak ID Compound Time Mass Found
5 1.44

5: (Time: 1.45) Combine (375:380-(369:372+385:387))

2: MS ES-
4.6e+004

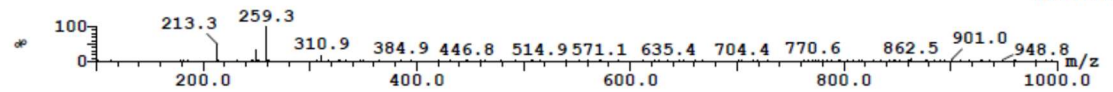
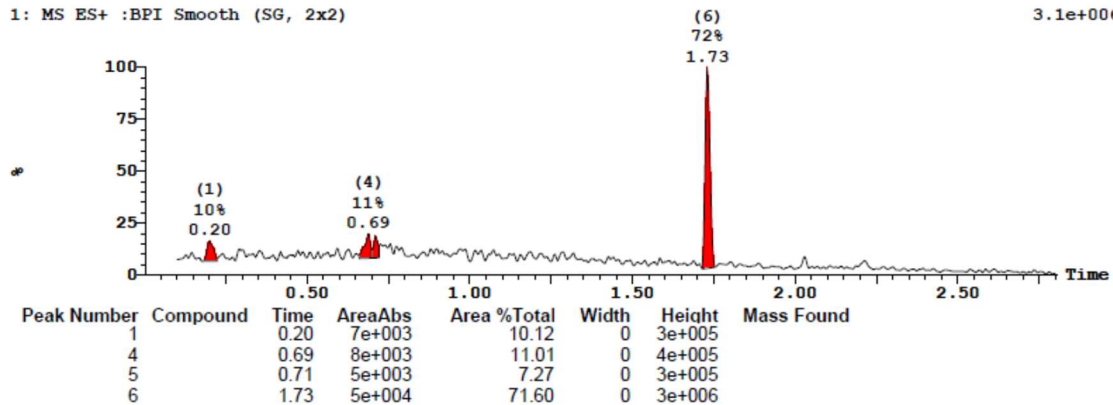


Figure S.99 – Details of UPLC-MS report of compound (18) using generic method.

Sample 1 Vial 1:34 ID PSG2018-061-1fr11 File PSG2018-061-1fr11 Date 08-Jan-2019 Time 16:15:26 Description

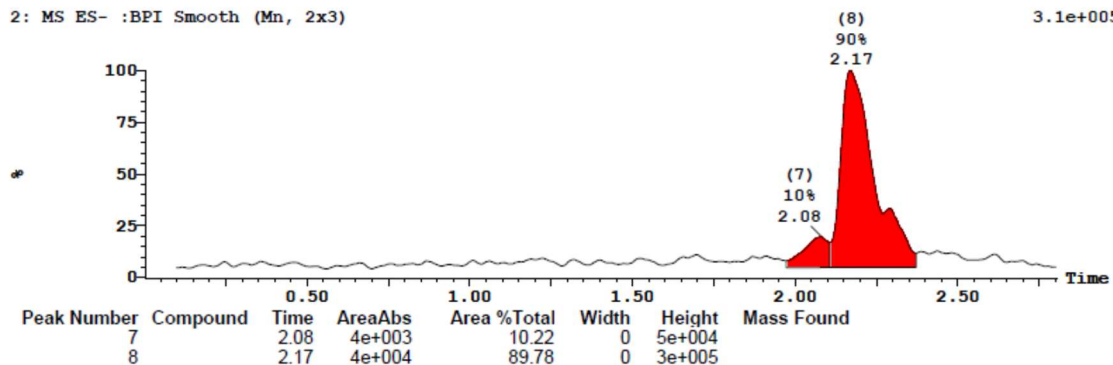
1: MS ES+ :BPI Smooth (SG, 2x2)

3.1e+006



2: MS ES- :BPI Smooth (Mn, 2x3)

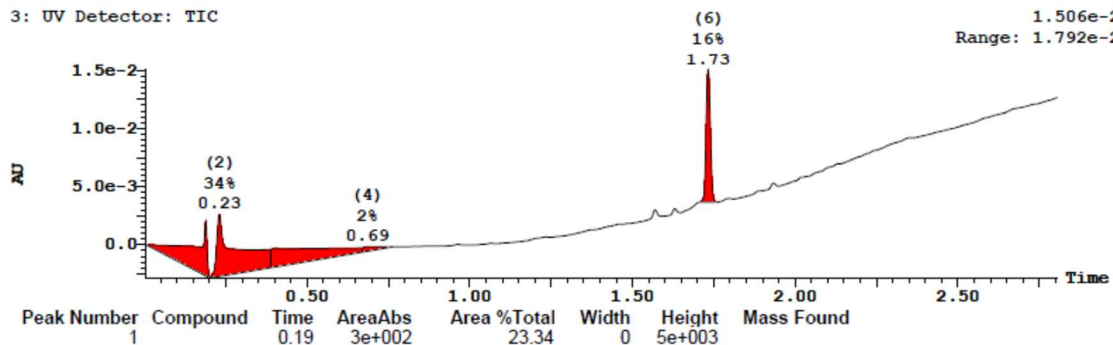
3.1e+005



3: UV Detector: TIC

1.506e-2

Range: 1.792e-2



Peak ID Compound Time Mass Found

6 1.73

6: (Time: 1.73) Combine (449:455-(443:445+461:463))

1:MS ES+
1.9e+006

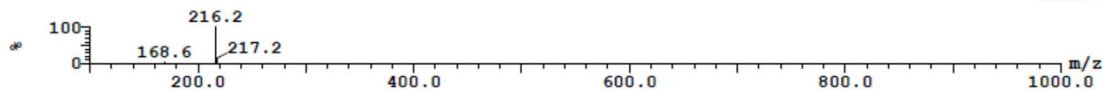
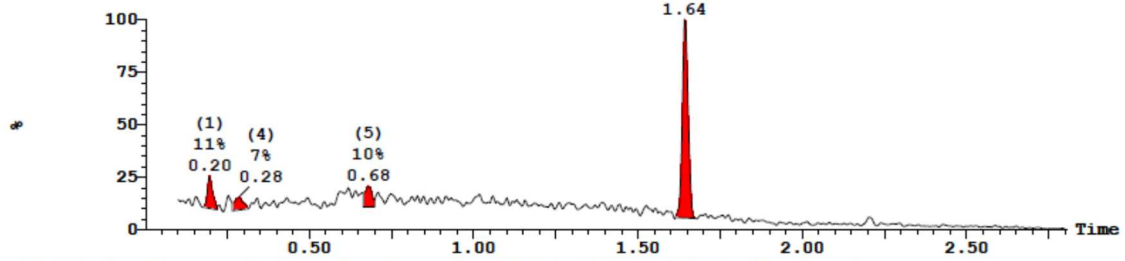


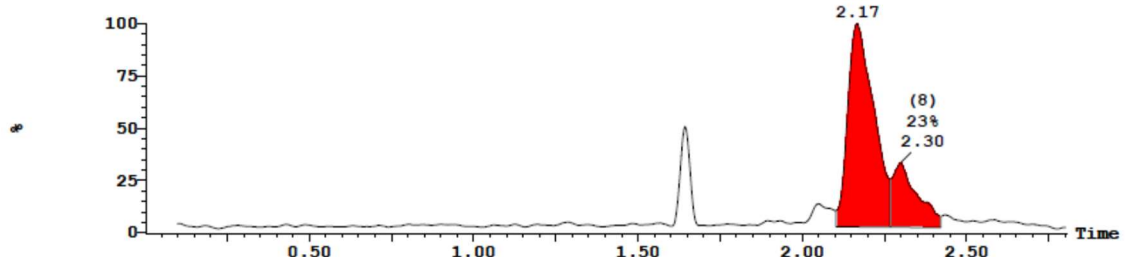
Figure S.100 – Details of UPLC-MS report of compound (19) using generic method; peak 7 and 8 is present in every run when the sample is diluted or does not produce strong MS signals.

Sample 1 Vial 2:96 ID PSG2018-050-3prepTLC3 File PSG2018-050-3prepTLC3 Date 06-Feb-2019 Time 14:22:35 Description

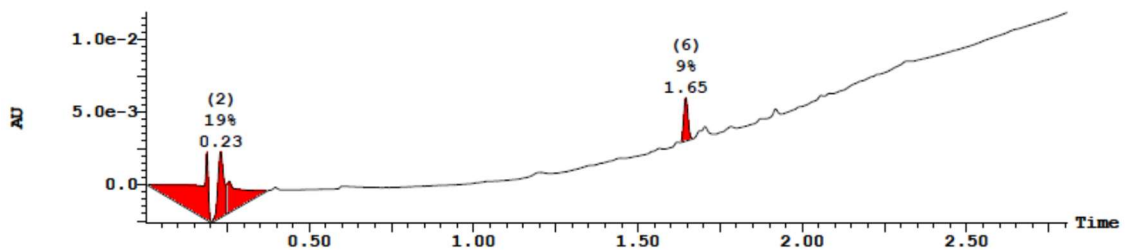
1: MS ES+ :BPI Smooth (SG, 2x2) 5.0e+006



2: MS ES- :BPI Smooth (Mn, 2x3) 7.6e+005



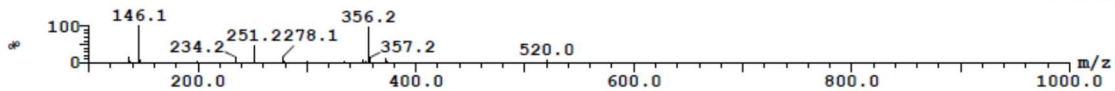
3: UV Detector: TIC



Peak ID Compound Time Mass Found

6: (Time: 1.64) Combine (426:432-(417:419+441:443))

1:MS ES+
3.3e+006



Peak ID Compound Time Mass Found

6: (Time: 1.65) Combine (427:432-(420:422+438:440))

2:MS ES-
5.0e+005

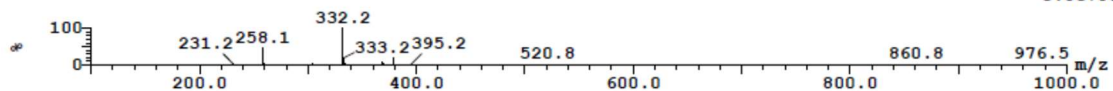
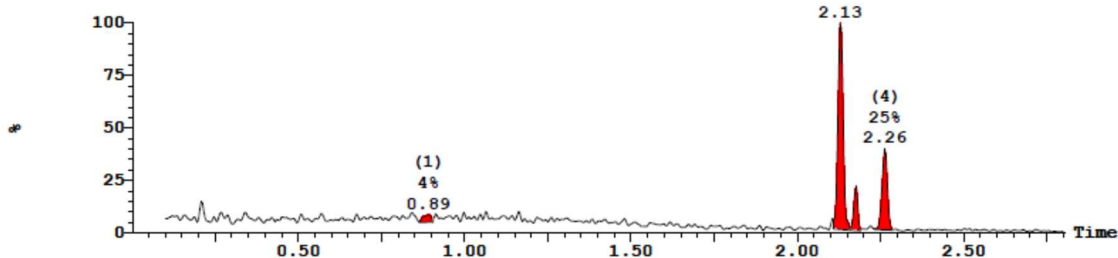


Figure S.101 – Details of UPLC-MS report of compound (20) using generic method; peak 7 and 8 are present in every run when the sample is diluted or does not produce strong MS signals.

Sample 1 Vial 2:28 ID PSG2018-031-1pTLCfr40-45 File PSG2018-031-1pTLCfr40-45 Date 07-Jun-2018 Time 16:31:44 Description

1: MS ES+ :BPI Smooth (SG, 2x2)

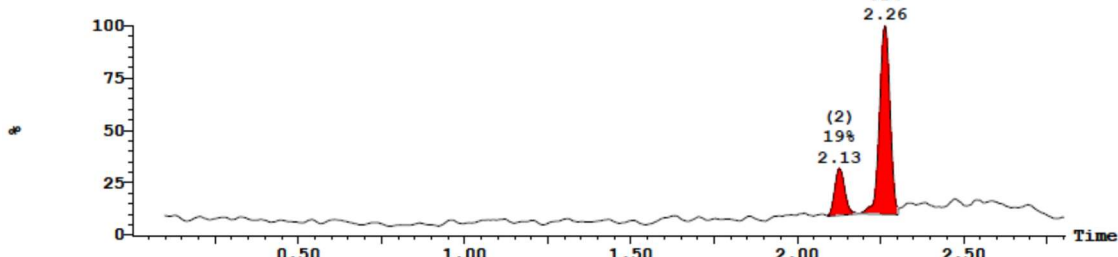
4.6e+006



Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
1		0.89	5e+003	3.69	0	2e+005	
2		2.13	8e+004	61.51	0	5e+006	
3		2.18	1e+004	10.18	0	1e+006	
4		2.26	3e+004	24.62	0	2e+006	

2: MS ES- :BPI Smooth (Mn, 2x3)

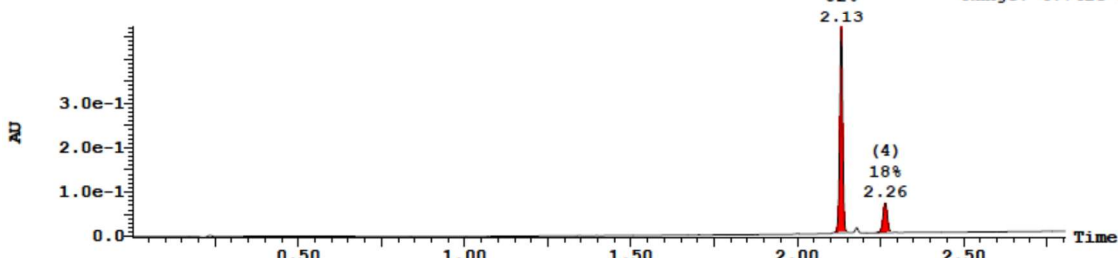
3.2e+005



Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
2		2.13	2e+003	19.16	0	7e+004	
4		2.26	1e+004	80.84	0	3e+005	

3: UV Detector: TIC

4.72e-1
Range: 4.742e-1

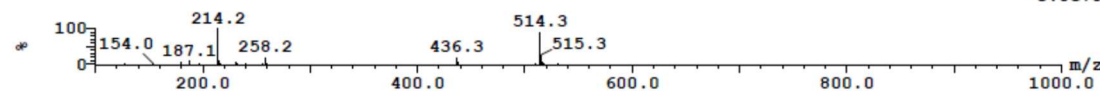


Peak Number	Compound	Time	AreaAbs	Area %Total	Width	Height	Mass Found
2		2.13	5e+003	82.33	0	5e+005	

PeakID Compound Time Mass Found
2 2.13

2: (Time: 2.13) Combine (555:560-(547:549+565:567))

1:MS ES+
3.0e+006



4: (Time: 2.26) Combine (588:594-(578:580+600:602))

1:MS ES+
1.2e+006

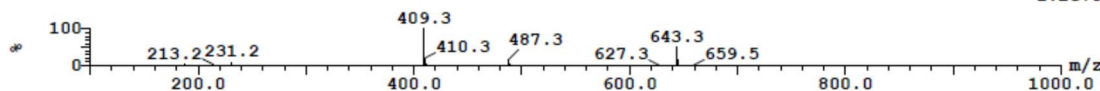
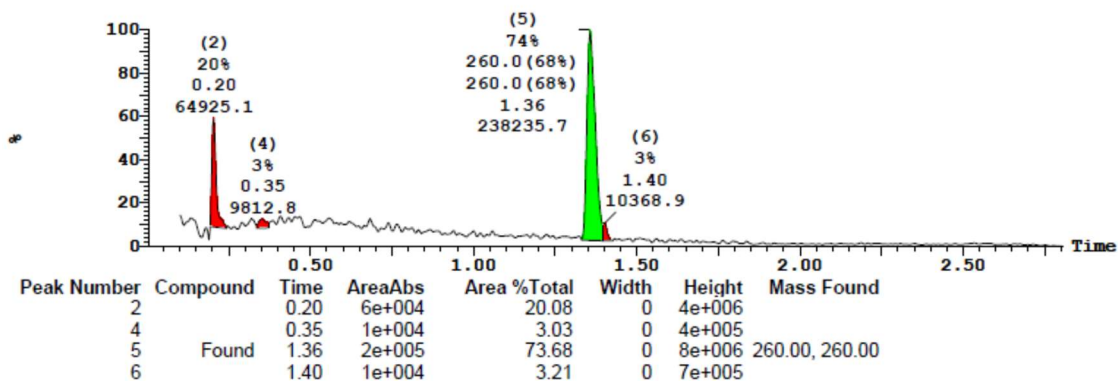


Figure S.102 – Details of UPLC-MS report of compound (21) using generic method.

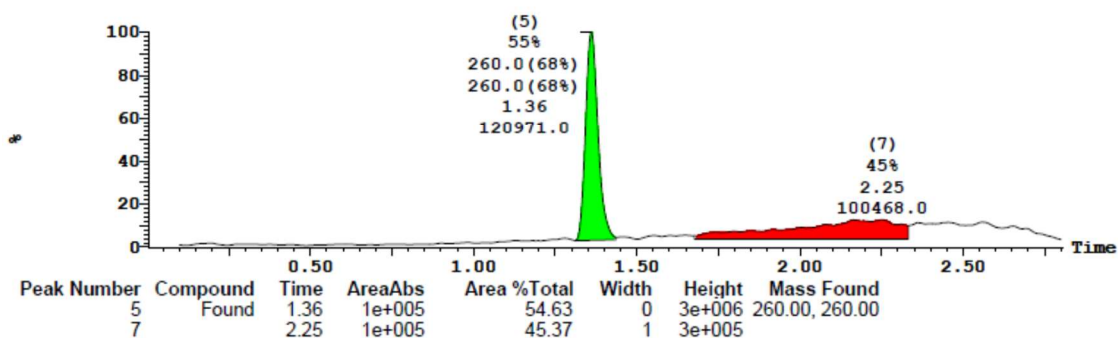
1: MS ES+ :BPI Smooth (SG, 2x2)

8.3e+006



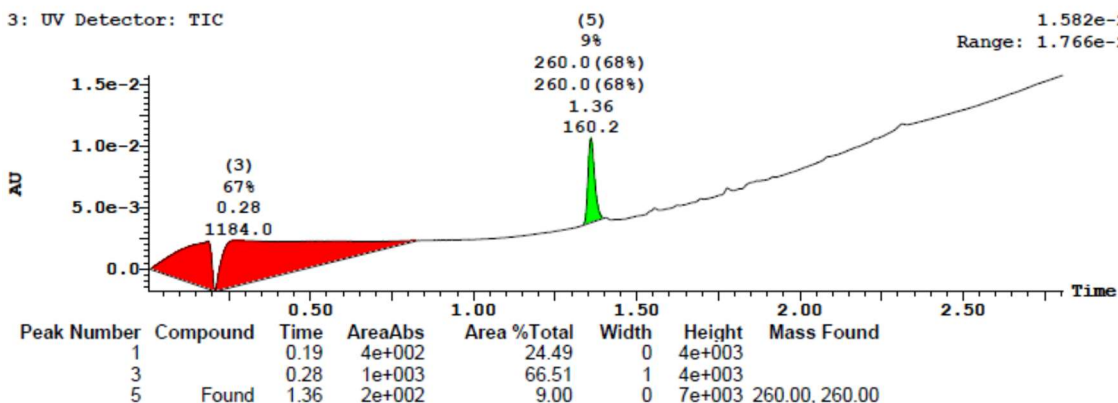
2: MS ES- :BPI Smooth (Mn, 2x3)

2.8e+006



3: UV Detector: TIC

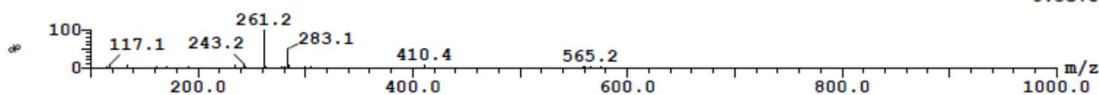
1.582e-2
Range: 1.766e-2



Peak ID Compound Time Mass Found
5 Found 1.36 261.00,283.00

5: (Time: 1.36) Combine (352:358-(343:345+368:370))

1:MS ES+
6.5e+006



Peak ID Compound Time Mass Found
5 Found 1.36 259.00

5: (Time: 1.36) Combine (353:359-(337:339+378:380))

2:MS ES-
3.1e+006

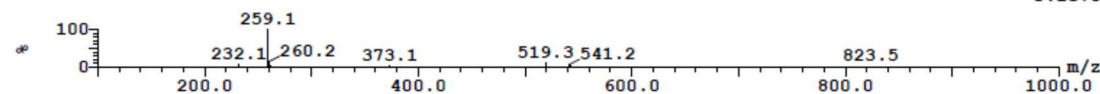
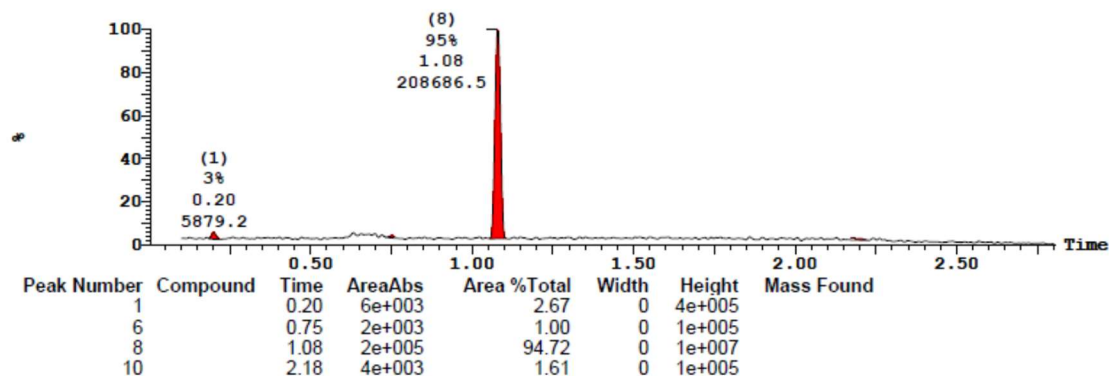


Figure S.103 – Details of UPLC-MS report of compound (22) using generic method.

Sample 1 Vial 1:64 ID PSG2018-049-2fr12 File PSG2018-049-2fr12 Date 11-Dec-2018 Time 10:18:05 Description

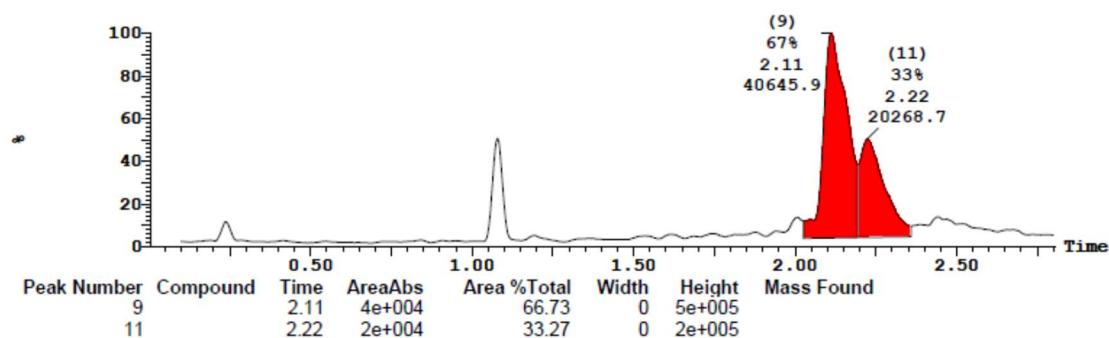
1: MS ES+ :BPI Smooth (SG, 2x2)

1.1e+007



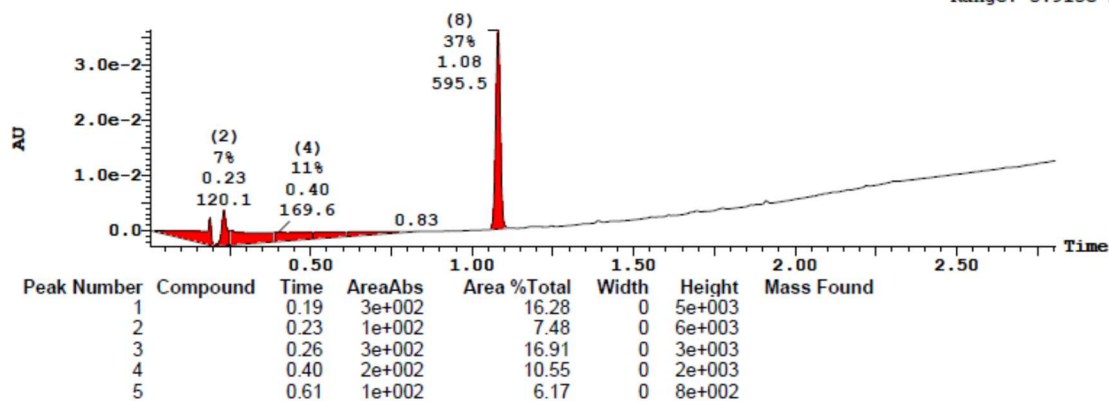
2: MS ES- :BPI Smooth (Mn, 2x3)

5.0e+005



3: UV Detector: TIC

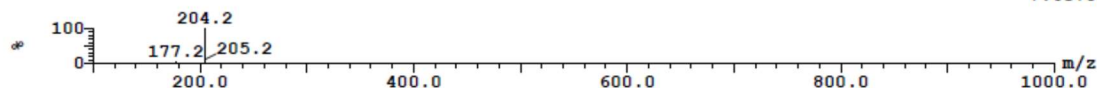
3.631e-2
Range: 3.913e-2



Peak ID Compound Time Mass Found

8 (Time: 1.08) Combine (279:285- (271:273+292:294))

1:MS ES+
7.6e+006



Peak ID Compound Time Mass Found

8 (Time: 1.08) Combine (280:285- (269:272+294:296))

2:MS ES-
3.1e+005

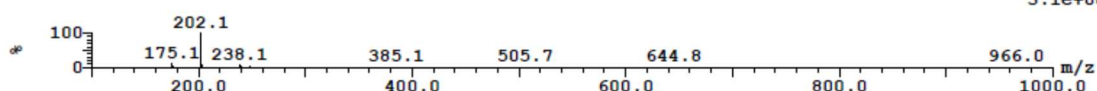
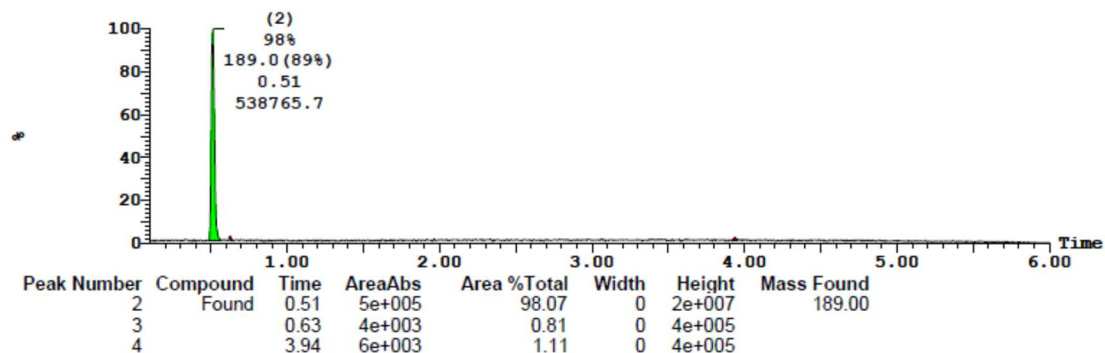


Figure S.104 – Details of UPLC-MS report of compound (23) using generic method; peak 9 and 11 is present in every run when the sample is diluted or does not produce strong MS signals.

Sample 1 Vial 2:28 ID PSG2018-053-2fr17 File PSG2018-053-2fr17 Date 19-Dec-2018 Time 14:27:33 Description

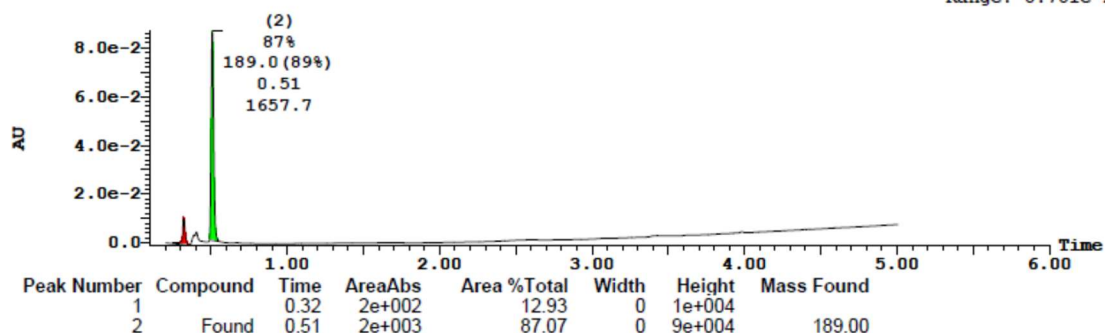
1: MS ES+ :BPI Smooth (SG, 2x2)

2.3e+007



2: UV Detector: TIC

8.682e-2
Range: 8.781e-2



Peak ID Compound Time Mass Found

2: (Time: 0.51) Combine (241:251-(224:229+279:284))

1:MS ES+
1.9e+007

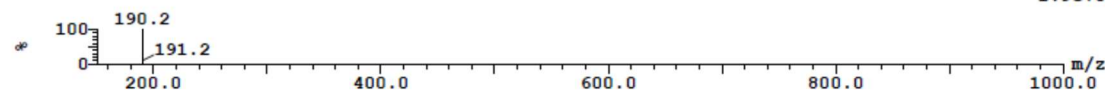


Figure S.105 – Details of UPLC-MS report of compound (23) using purity method.

FT-IR Chromatograms for Selected Compounds

Note: the nitrile band is apparently missing (low signal-to-noise ratio) for some compounds; this phenomenon is common with ATR FT-IR (these spectra acquired with a Bruker Alpha Platinum ATR apparatus), due to the high absorbance of diamond in that region (see for example: Larkin, P. J. *Instrumentation and Sampling Methods. In Infrared and Raman Spectroscopy; Second Edition, Elsevier: Amsterdam, 2018; pp 29–61*).

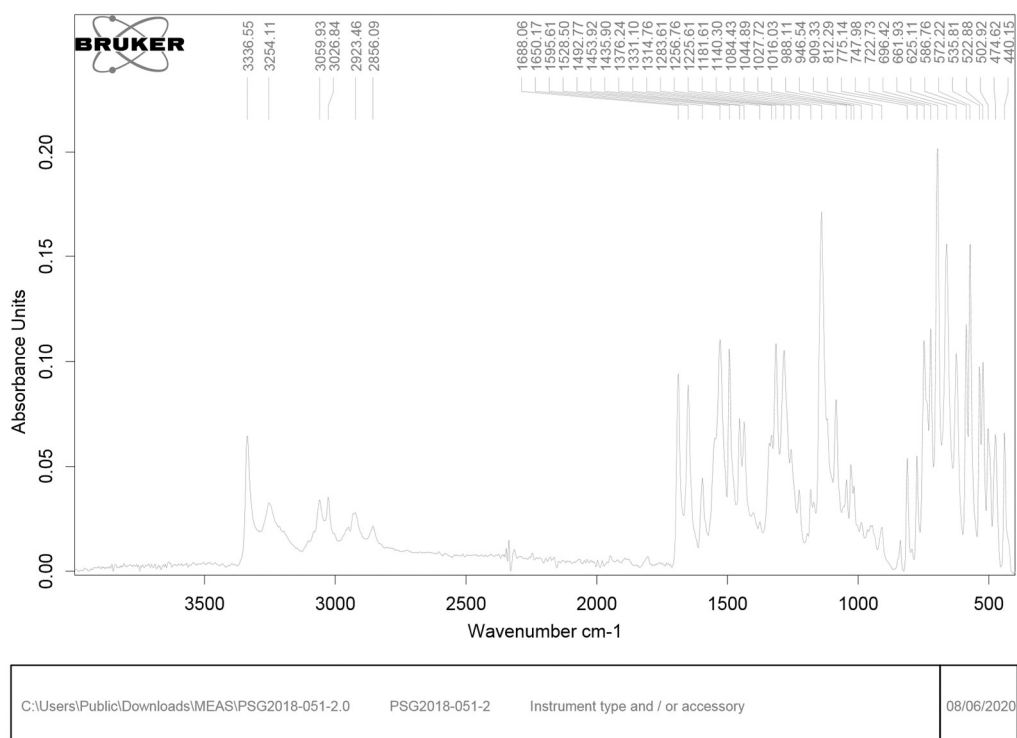


Figure S.106 – FT-IR spectra of compound (11)

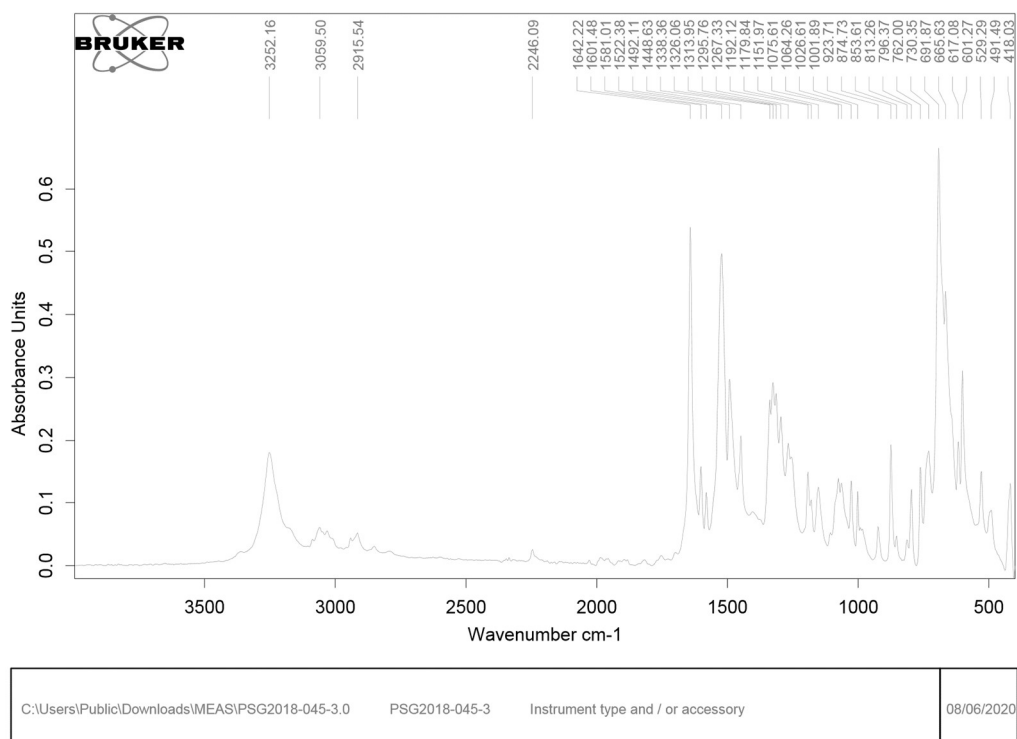


Figure S.107 – FT-IR spectra of compound (12)

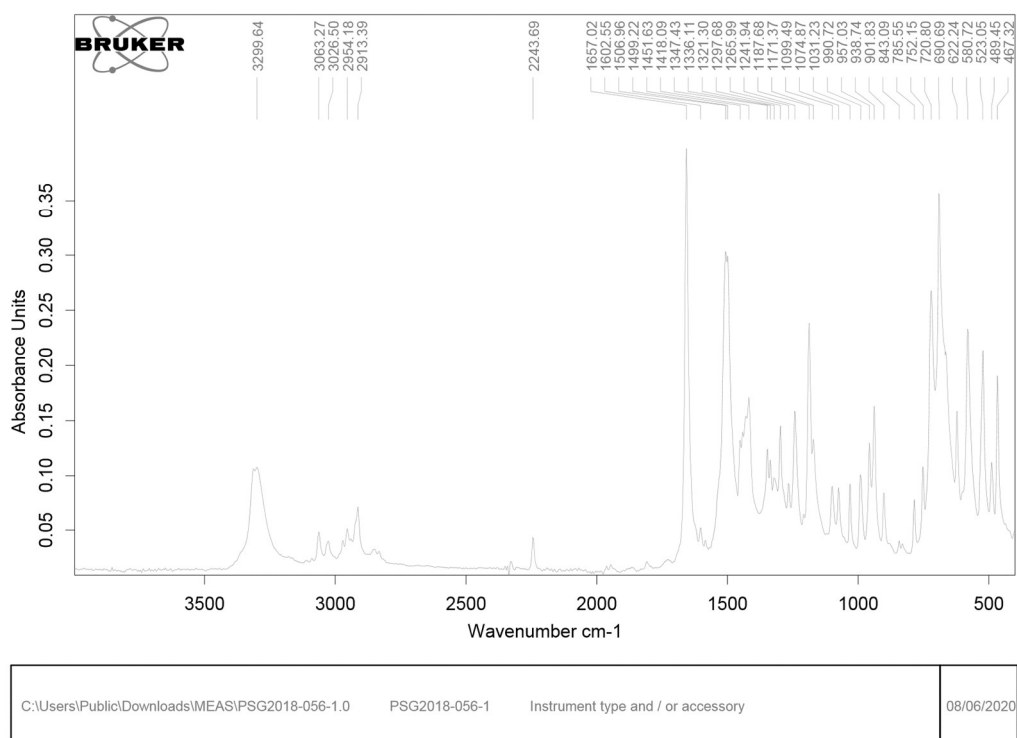


Figure S.108 – FT-IR spectra of compound (14)

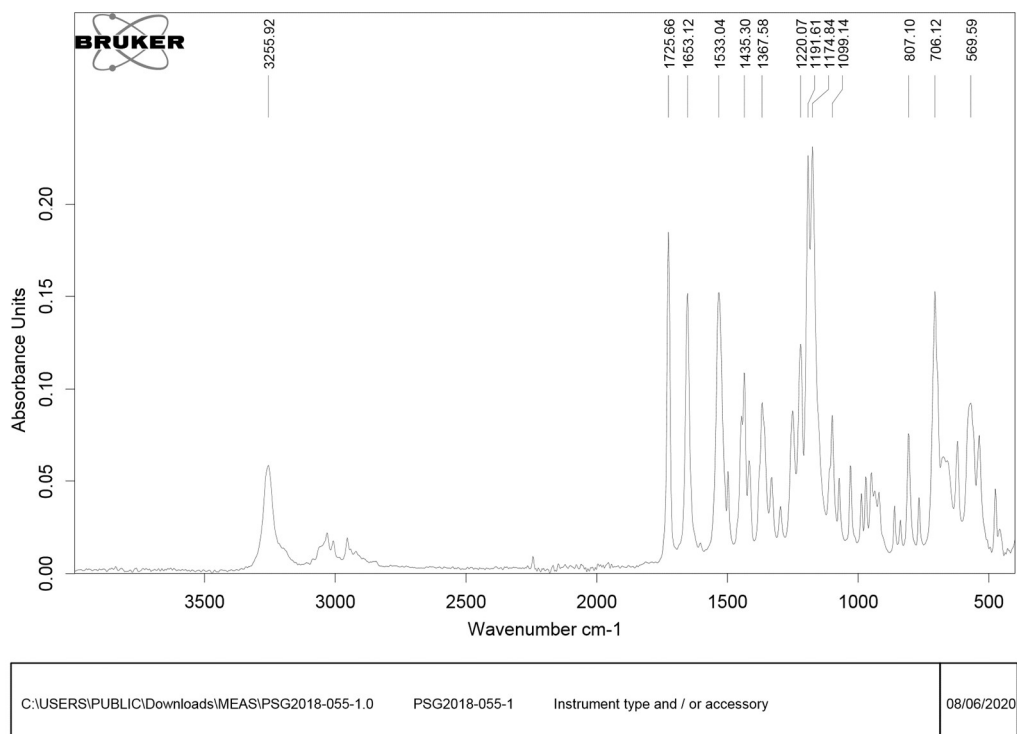


Figure S.109 – FT-IR spectra of compound (15)

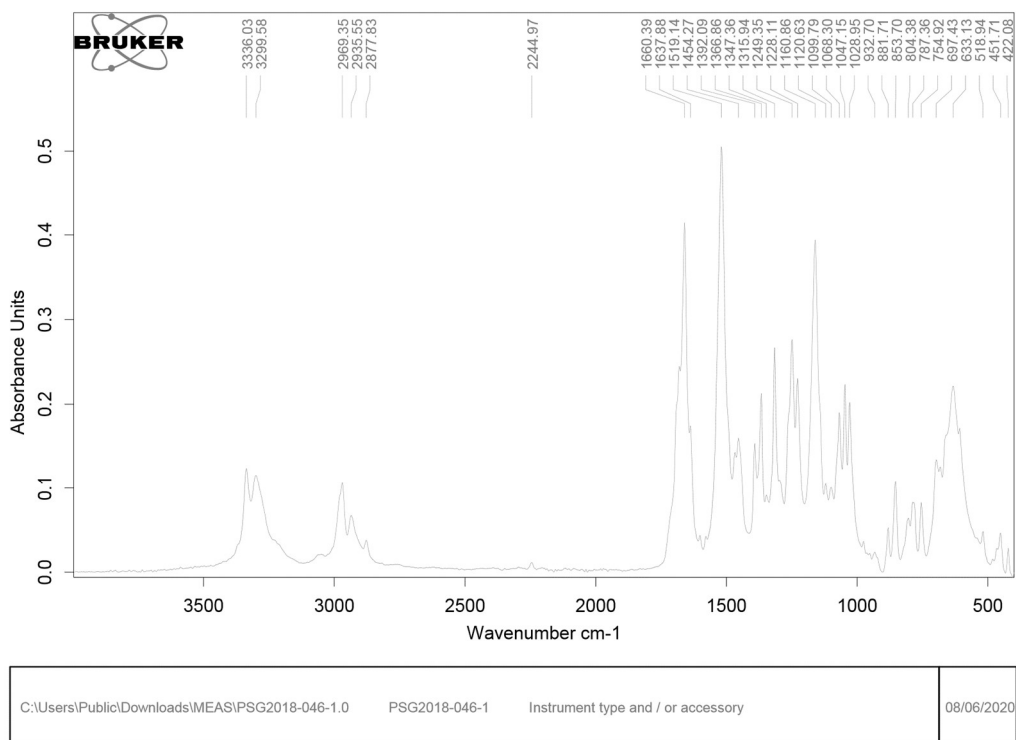


Figure S.110 – FT-IR spectra of compound (16)

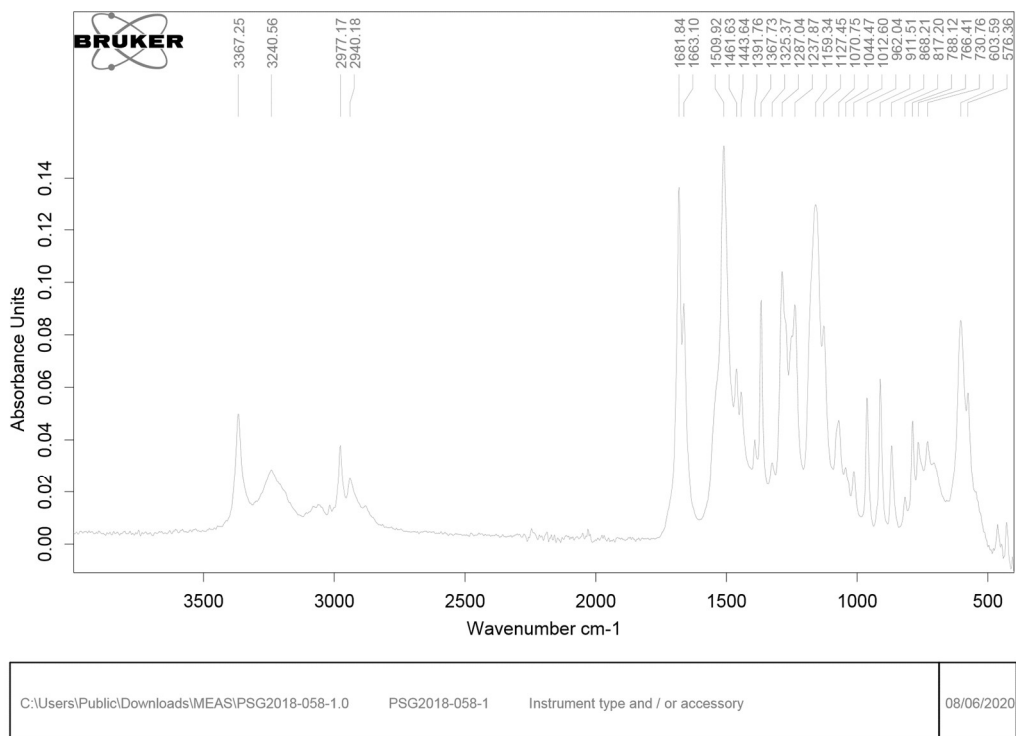


Figure S.111 – FT-IR spectra of compound (17)

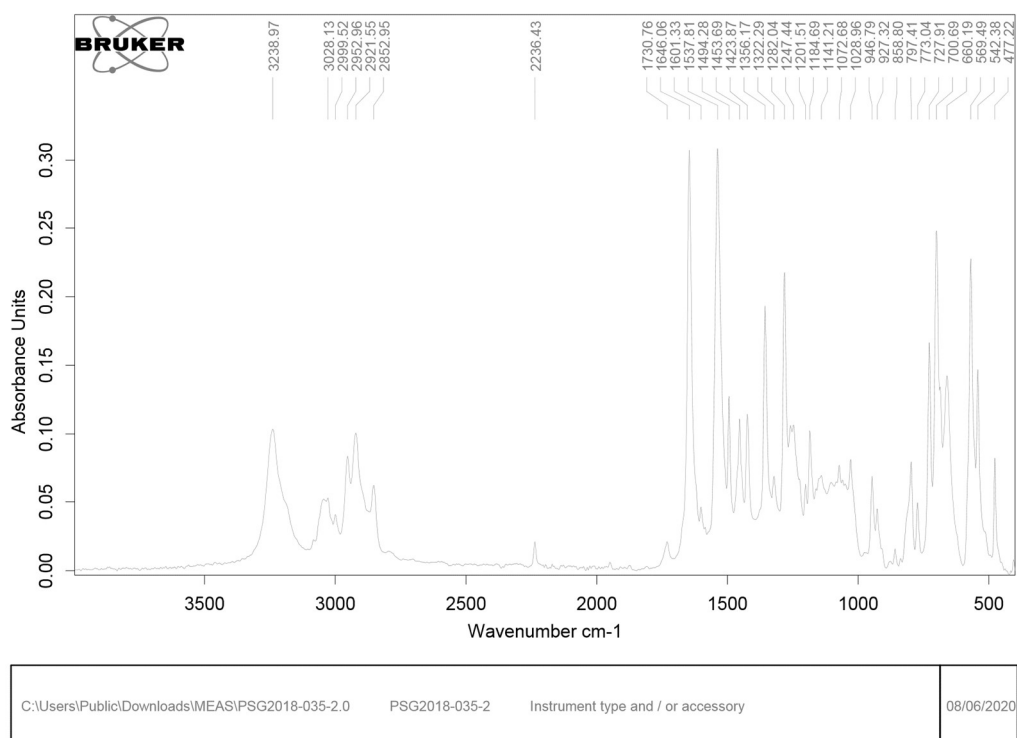


Figure S.112 – FT-IR spectra of compound (18)

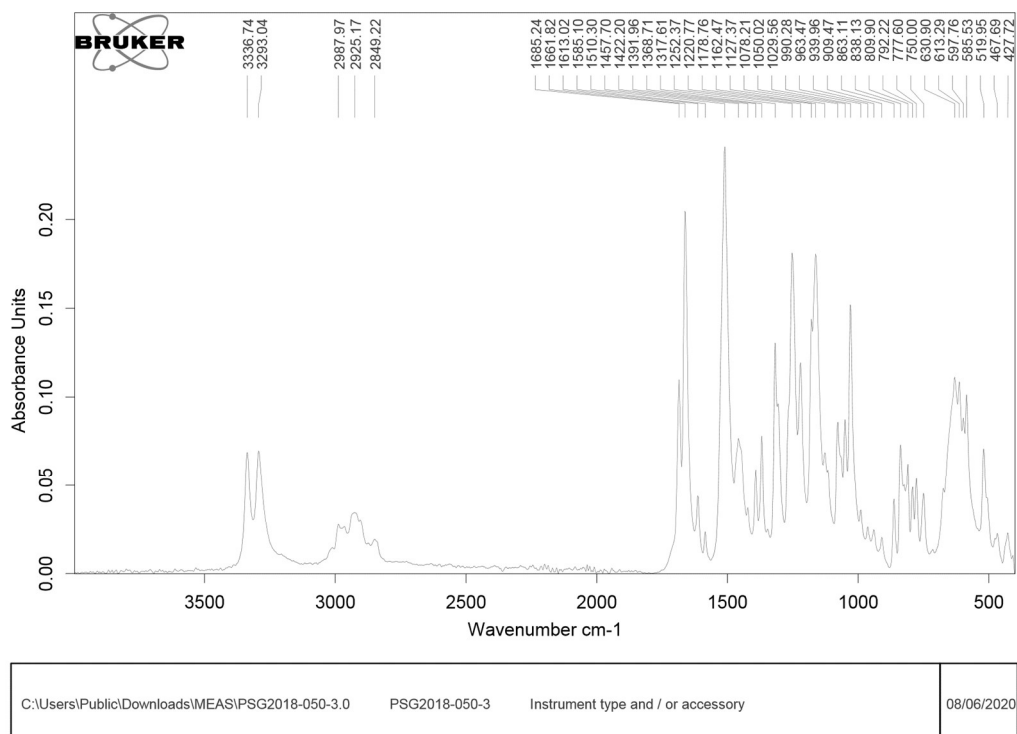


Figure S.113 – FT-IR spectra of compound (20)

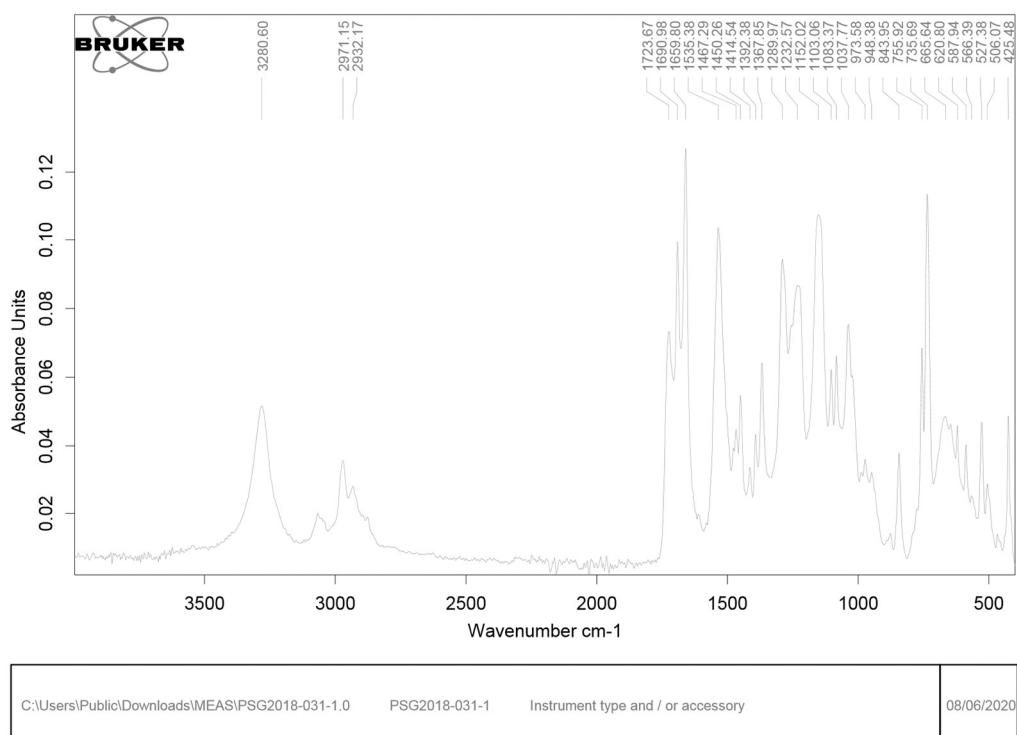


Figure S.114 – FT-IR spectra of compound (21)

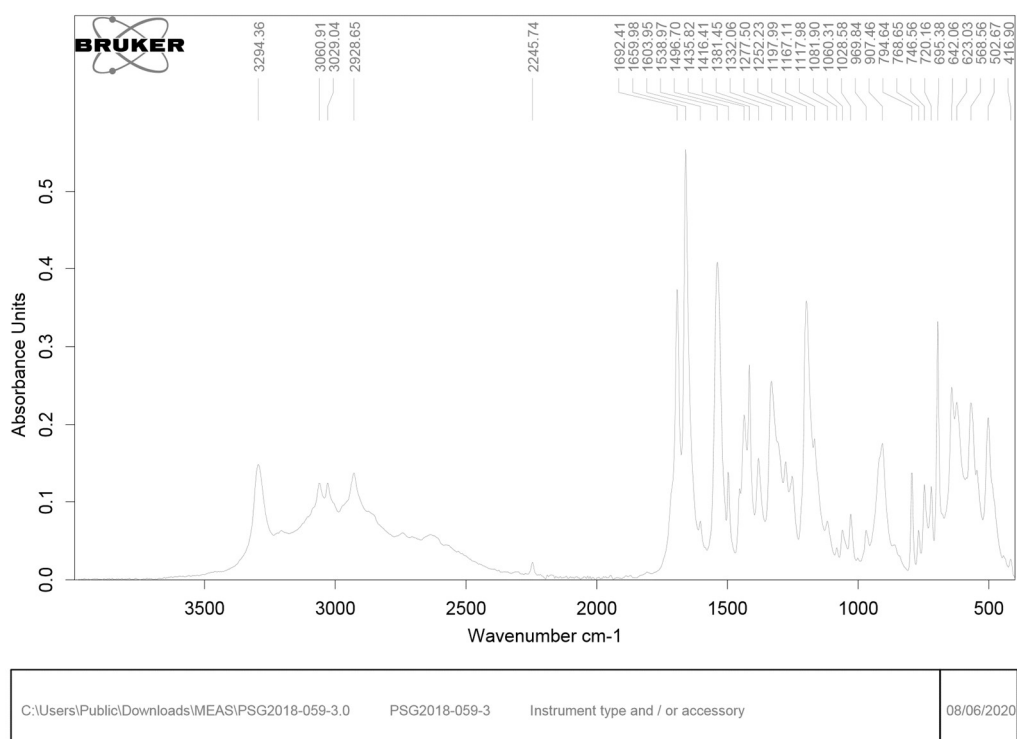


Figure S.115 – FT-IR spectra of compound (22)