Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.
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Synthesis, characterization and *in vitro* evaluation of novel enantiomerically-pure sulphonamide antimalarials

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Supplementary Information

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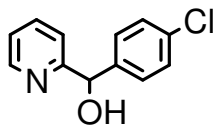
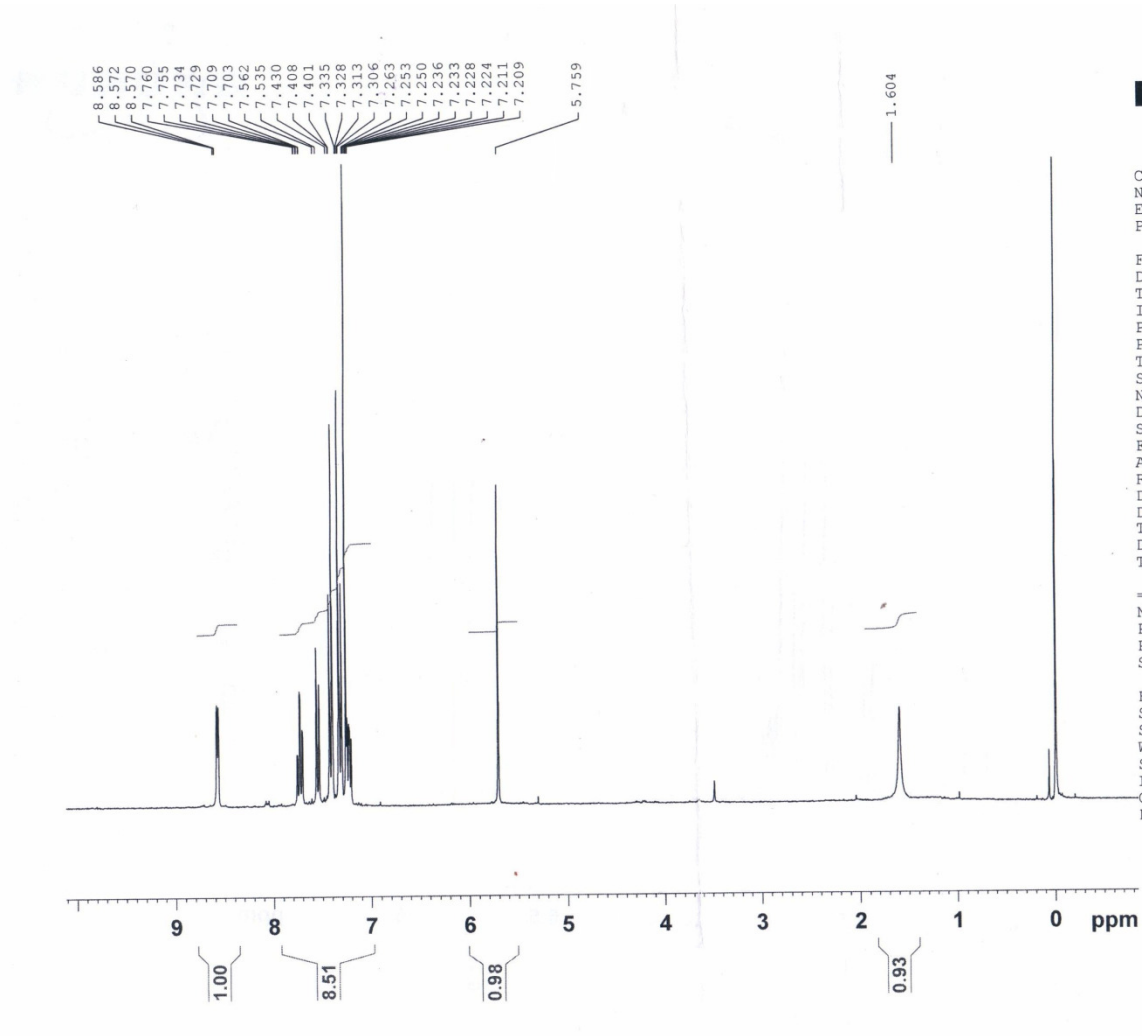


(4-chlorophenyl)methyl)(pyridine-2-yl)methanol (1): Yield (6g, 86%)1H-NMR (300 MHz, CDCl3) 8.58 (d, 1H), 8.57-7.20(m, 7H), 5.75 (s,1H), 1.60(s, 1H); LCMS (MM:ES+APCI) 220.3$(M+H)^+$; $C_{12}H_{10}ClNO$: C, 65.61; H, 4.59; N, 6.38; Found: C, 65.78; H, 4.69; N, 6.32;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7.408
7.401
7.335
7.328
7.313
7.306
7.263
7.253
7.250
7.236
7.233
7.228
7.224
7.211
7.209
5.759
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8
7
6
5
4
3
2
1
0
ppm
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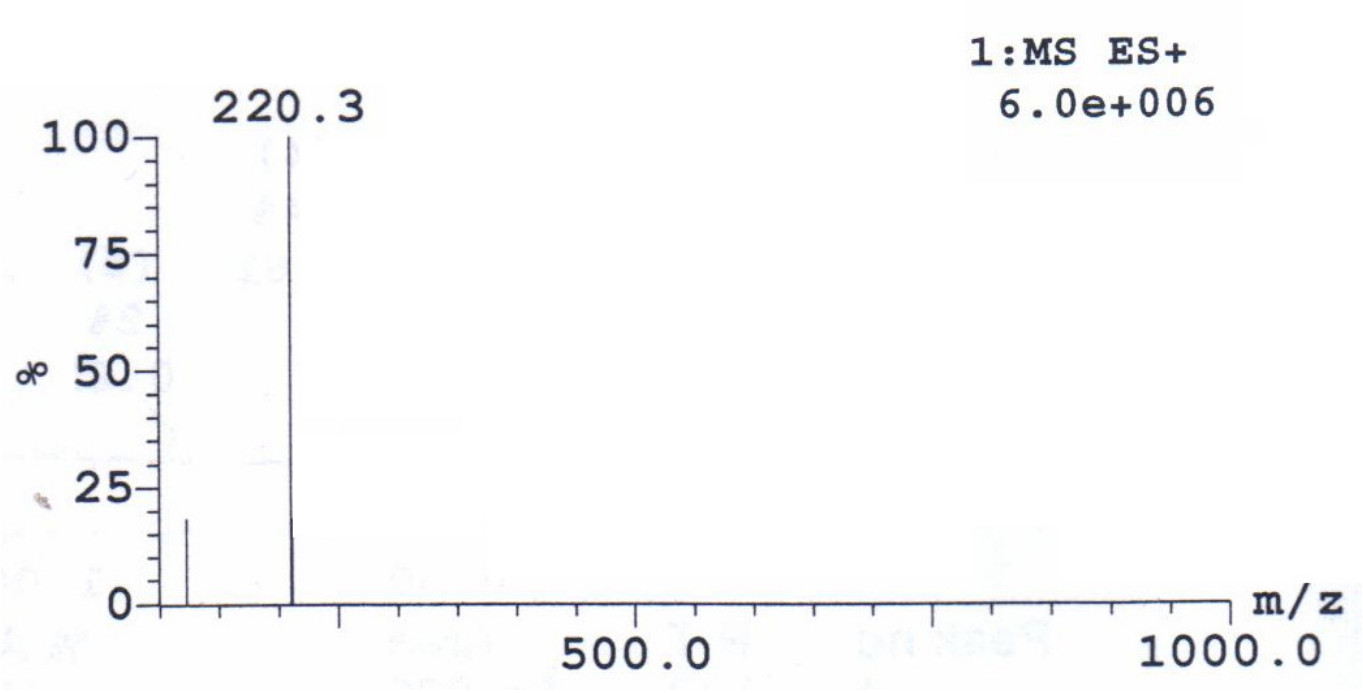
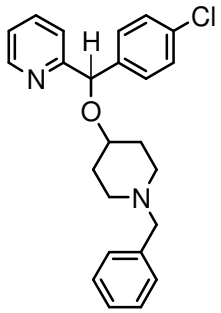
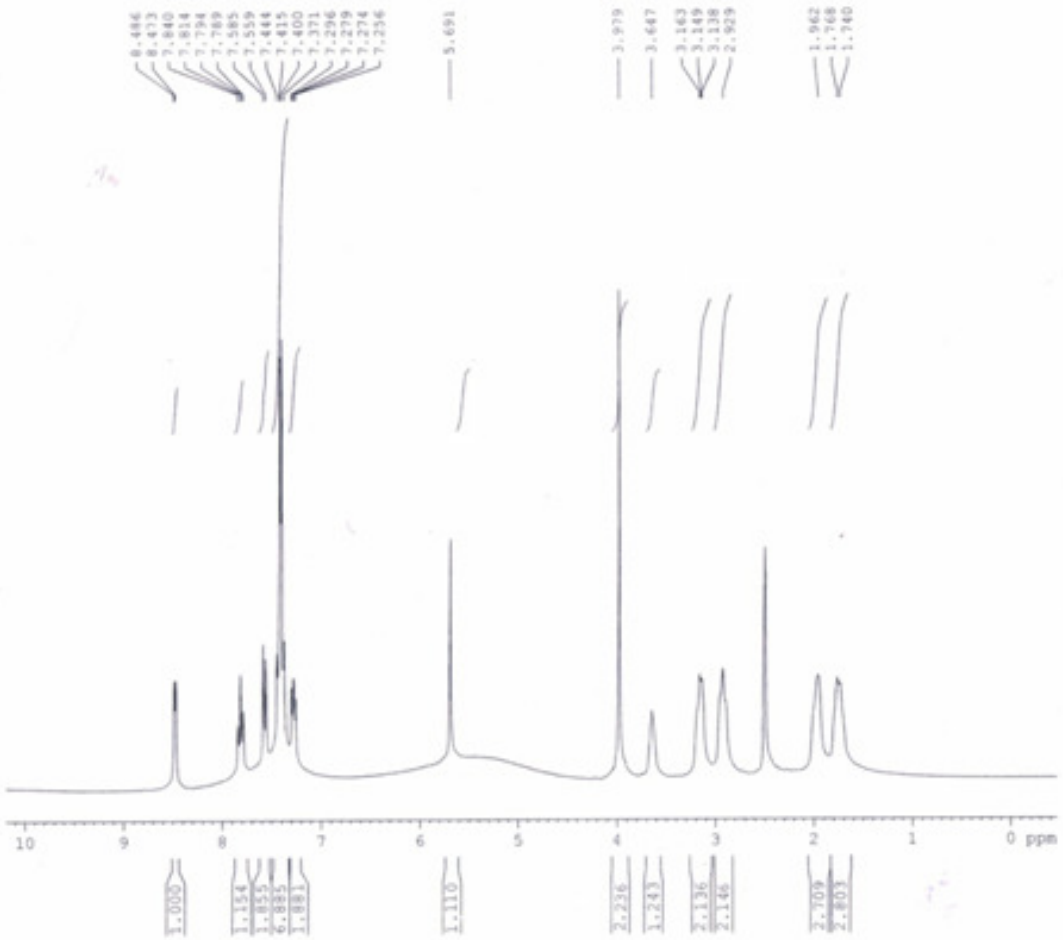
0.93





2-((1-benzylpiperidin-4-yloxy)(4-chlorophenyl)methyl)pyridine (3): Yield (8.1g, 90.8%).%) 1H-NMR (300 MHz, CDCl3) 8.48-7.25 (m, 13H), 5.69(s, 1H), 3.97 (s,2H), 3.64(m, 1H), 3.14(m, 2H), 2.92(m, 2H), 1.96(m, 2H), 1.74(m, 2H); LCMS (MM:ES+APCI) 394.4$(M+H)^+$; Anal.Calcd for $C_{24}H_{25}ClN_2O$: C 73.36; H 6.41; N 7.13; Found: C, 73.26; H, 6.45; N, 7.16;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7.296
7.279
7.274
7.256
5.691
3.979
3.647
3.163
3.149
3.138
2.929
1.962
1.768
1.740
10
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2.146
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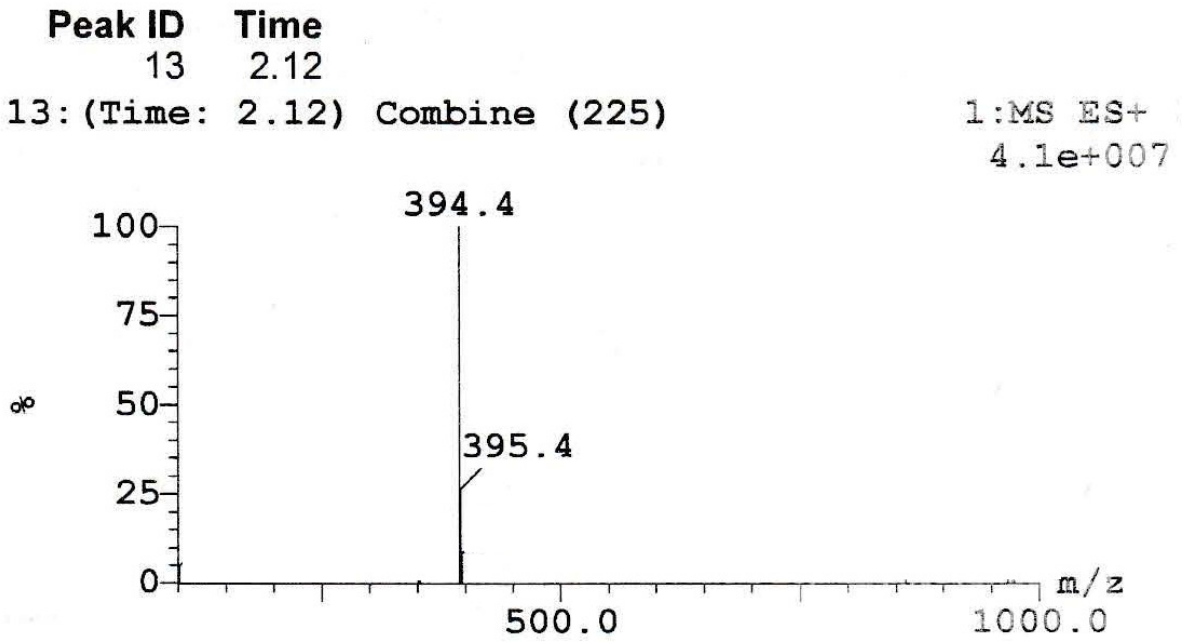
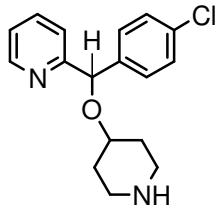
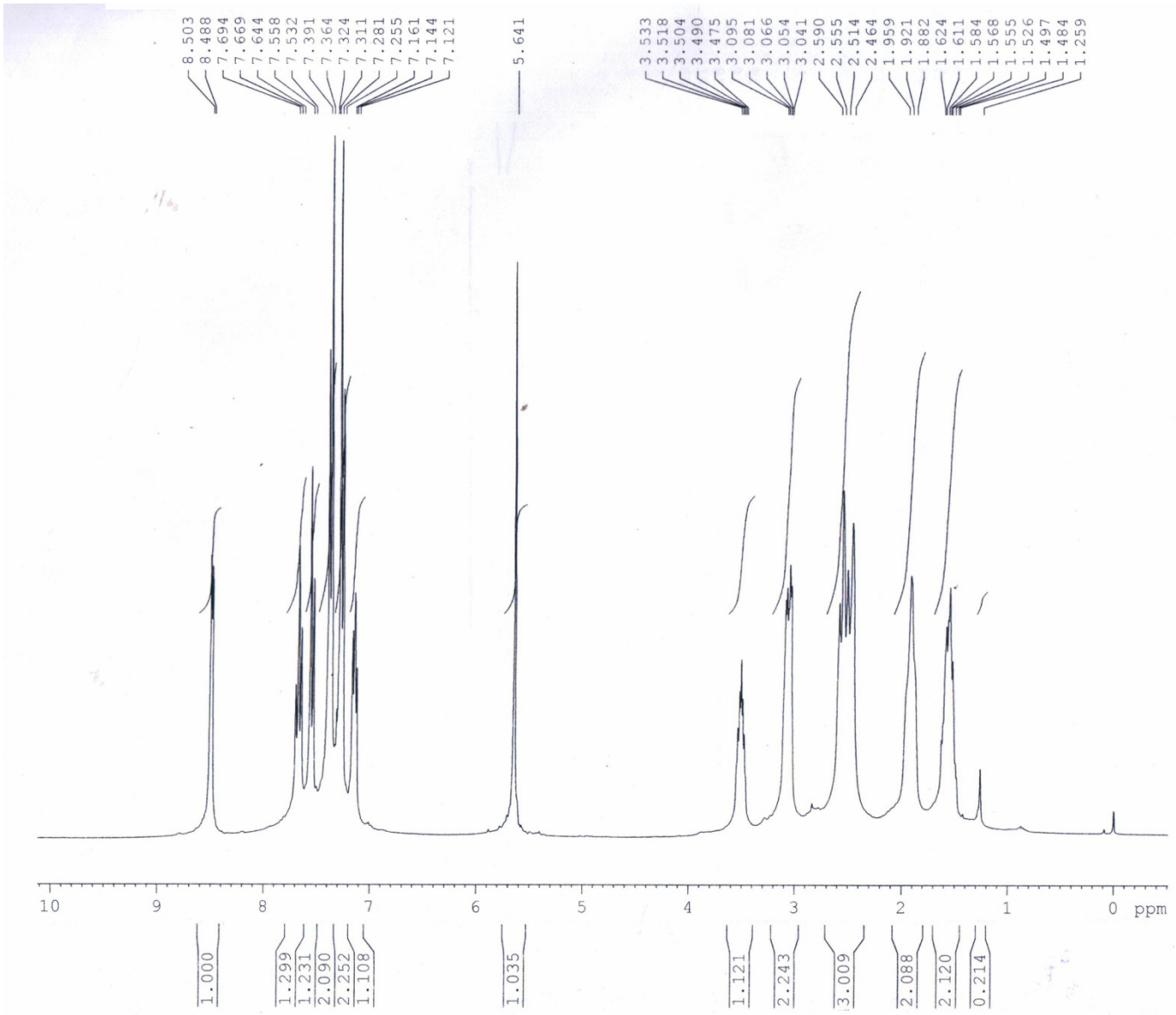
2.803





2-((4-chlorophenyl)(piperidin-4-yloxy)methyl)pyridine (4) : Yield (7.6 g, 94.5%).%) 1H-NMR (300 MHz, CDCl3) 8.50-7.12 (m, 8H), 5.64(s, 1H), 3.53 (m,1H), 3.09(m, 2H), 2.59-2.46(m,3H,-CH_2,-NH) 1.9(m, 2H), 1.6(m, 2H); 13C-NMR (75 MHz, CDCl3) 162.04, 148.82, 140.37, 136.94, 133.20, 128.48, 128.21, 122.46, 120.64, 80.59, 73.76, 44.17, 32.94, 32.91, 29.66 ; DEPT attached; LCMS (MM:ES+APCI) 303$(M+H)^+$; Chiral HPLC (%ee) 49.91:50.09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7.161
7.144
7.121
5.641
3.533
3.518
3.504
3.490
3.475
3.095
3.081
3.066
3.054
3.041
2.590
2.555
2.514
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1.568
1.555
1.526
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9
8
7
6
5
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3
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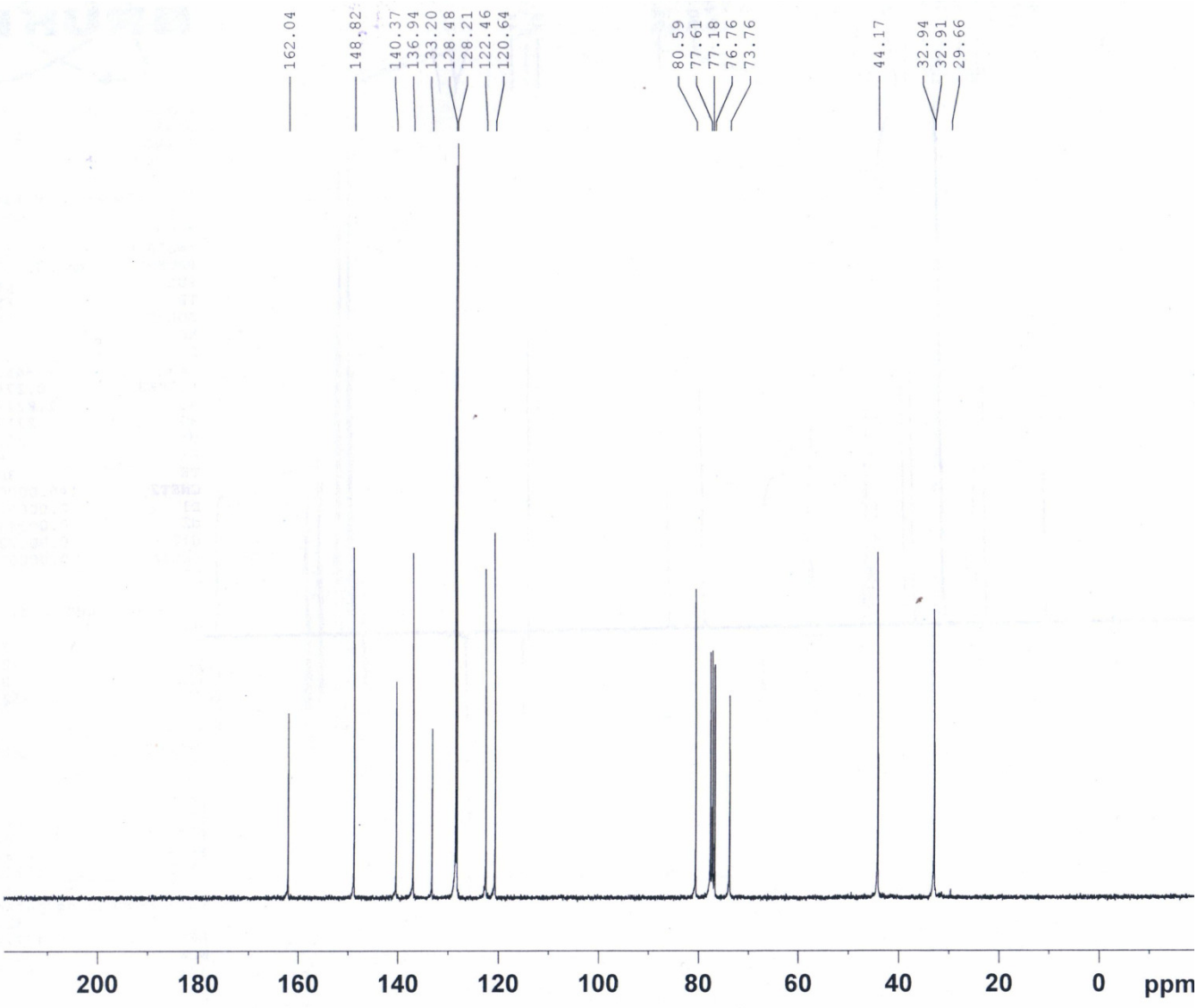
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77.61
77.18
76.76
73.76
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32.91
29.66
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140
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60
40
20
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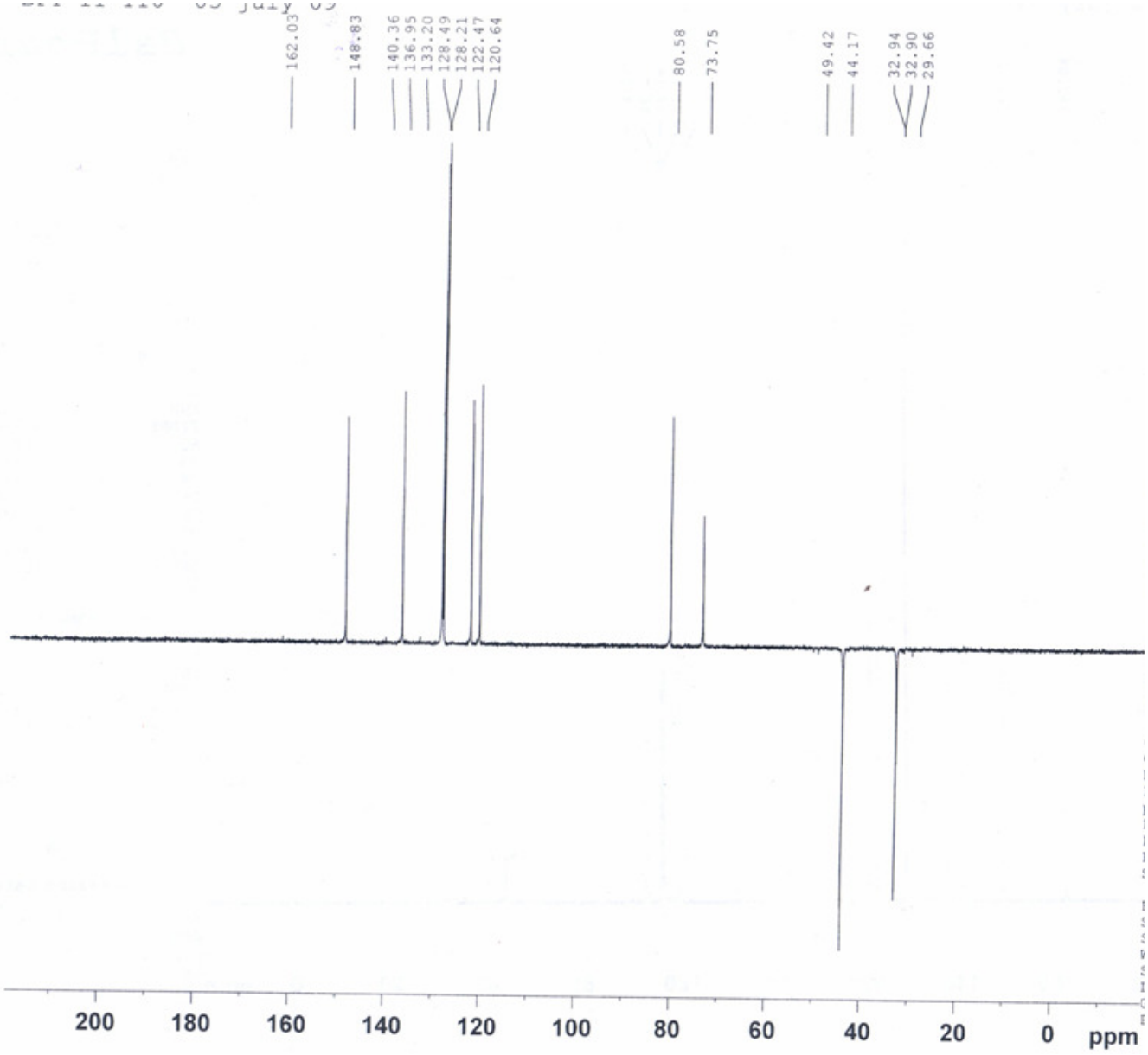
ppm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80.58
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32.90
29.66
200
180
160
140
120
100
80
60
40
20
0
ppm

Peak ID	Time
3	1.73

3:(Time: 1.73) Combine (183)

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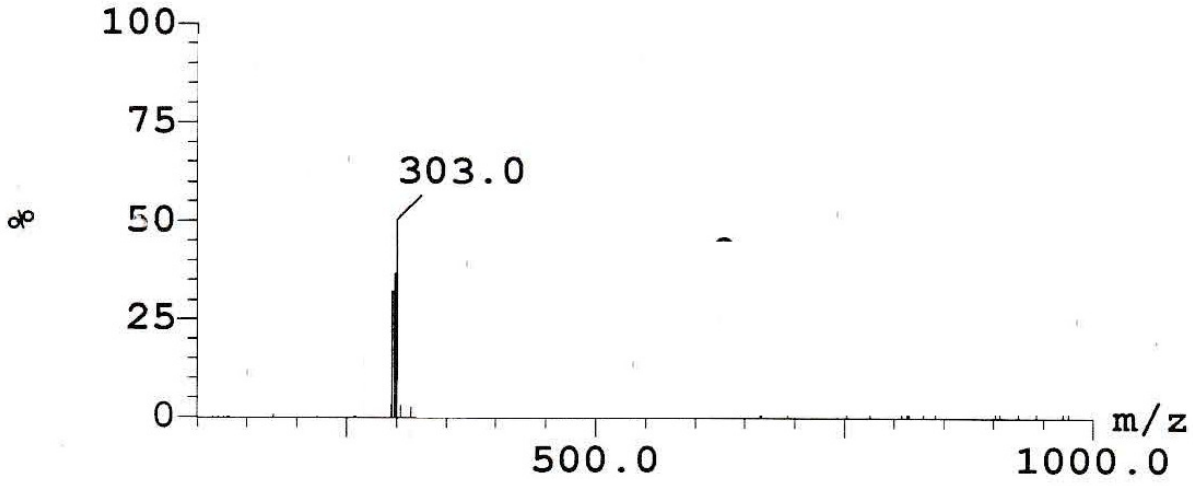
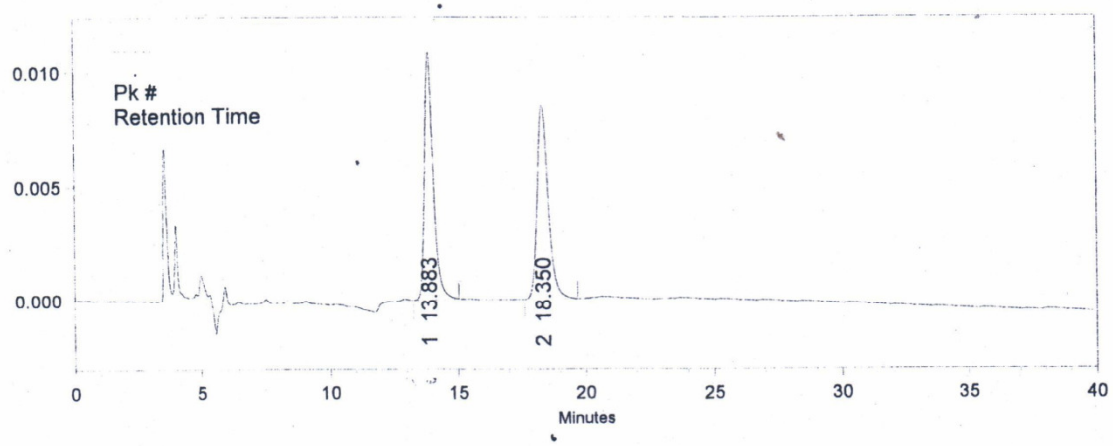
9.1e+004



Description:Mobile Phase :n-Hexane:IPA;EDA(90:10:0.1) Flow:1.0ml/min
Detector:220 nm column:CHI-004
Spl Prepn:20mg in 10ml with diluent(n-Hexane:Ethanol:DEA(50:50:0.1)



Detector A (260nm)

Pk #	Retention Time	Area	Area Percent
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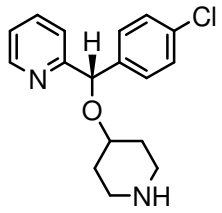
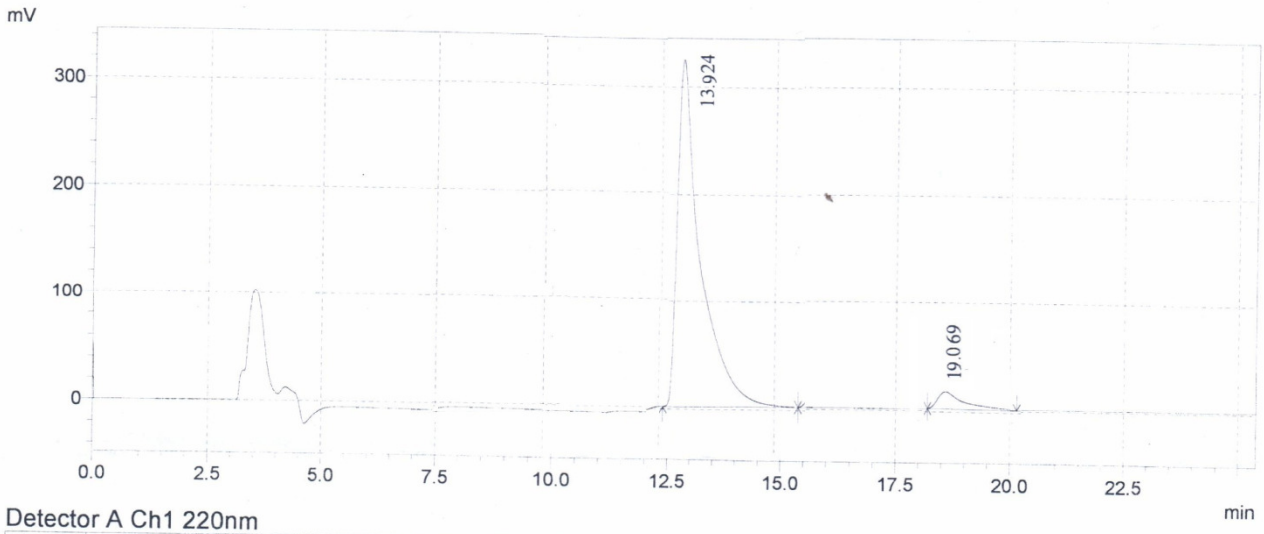
Totals		511005	100.00



(R)-(+)-2-((4-chlorophenyl)(piperidin-4-yloxy)methyl)pyridine (4a) : Yield (3.79g, 94.5%). Anal.Calcd for $C_{17}H_{19}ClN_2O$: C 67.43; H 6.32; N 9.25; Found: C, 67.49; H, 6.28; N, 9.29; Chiral HPLC (%ee) 98.4; $[\alpha]_D$= +11(C 0.05, MeOH);

Description:Mobile Phase :n-Hexane:IPA;EDA(90:10:0.1) Flow:1.0ml/min
Detector:220 nm column:CHI-004
Spl Prepn:20mg in 10ml with diluent(n-Hexane:Ethanol:DEA(50:50:0.1)



Detector A Ch1 220nm

Peak#	Ret. Time	Area	Height	Area %	Name
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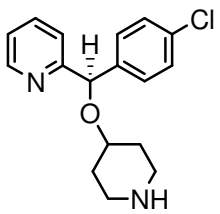
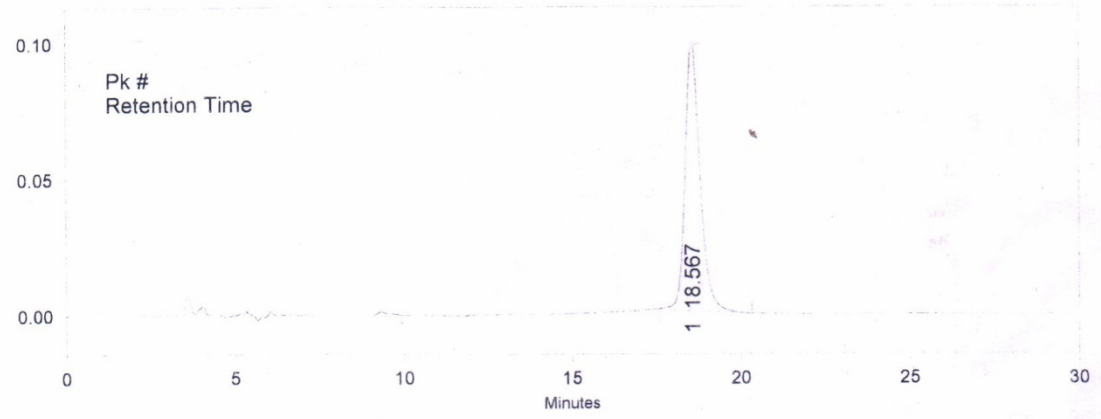


(S)-(-)-2-((4-chlorophenyl)(piperidin-4-yloxy)methyl)pyridine (4b) : Yield (3.85g, 95.5%) ; Anal.Calcd for $C_{17}H_{19}ClN_2O$: C 67.43; H 6.32; N 9.25; Found: C, 67.38; H, 6.37; N, 9.24; Chiral HPLC (%ee) 100; $[\alpha]_D$= -11(C 0.05, MeOH);

Sample Description: Mobile Phase(Hexane:IPA:EDA) 90:10:0.1
Flow rate:1.0ml/min Detector:220nm Column:CHI-004



Detector A (220nm)

Pk #	Retention Time	Area	Area Percent
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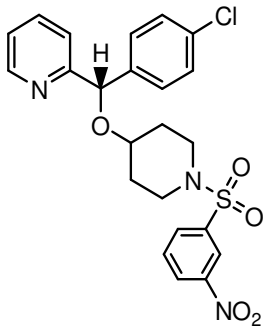
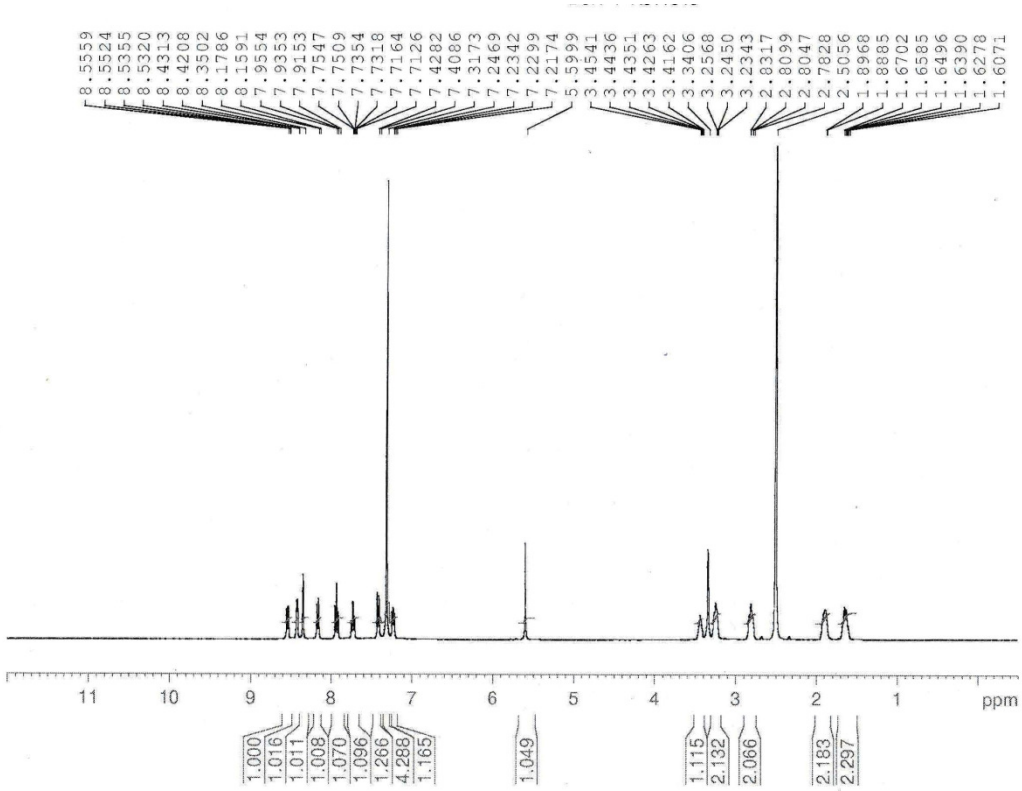
Totals		2968663	100.00



(R)-2-((4-chlorophenyl)((1-((3-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6a): Yield (270mg, 84.3%);Tan colored solid; 1H-NMR (400 MHz, DMSO-d_6) 8.55- 8.53(d,J=8.0Hz,1H), 8.43- 8.42(d, J=4.0Hz,1H), 8.35 (s,1H), 8.17- 8.15 (d,J=8.0Hz,1H), 7.95- 7.91(t,J=8.0Hz,1H),7.75-7.71(m,1H), 7.42-7.40(d,J=8.0Hz,1H),7.31-7.21(m, 5H), 5.59(s, 1H), 3.45-3.41(m, 1H), 3.25-3.23(m, 2H), 2.83- 2.78(m, 2H) 1.89- 1.88 (m, 2H) 1.67- 1.60 (m, 2H); 13C-NMR (DMSO-d_6);161.53, 149.29, 148.53, 140.98, 137.58, 137.51, 133.83, 132.45, 131.97, 129.11, 128.64, 128.18, 123.10, 122.43, 120.72, 80.18, 71.11, 43.74, 30.53, 30.38; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.63; H, 4.57; N, 8.65; Chiral HPLC (%ee) 99.9



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SOLVENT	DMSO
NS	128
DS	2
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FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	256
DW	60.800 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
TD0	1
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NUC1	1H
P1	12.80 usec
PL1	-2.00 dB
PL1W	15.00864029 W
SFO1	400.3124721 MHz
SI	32768
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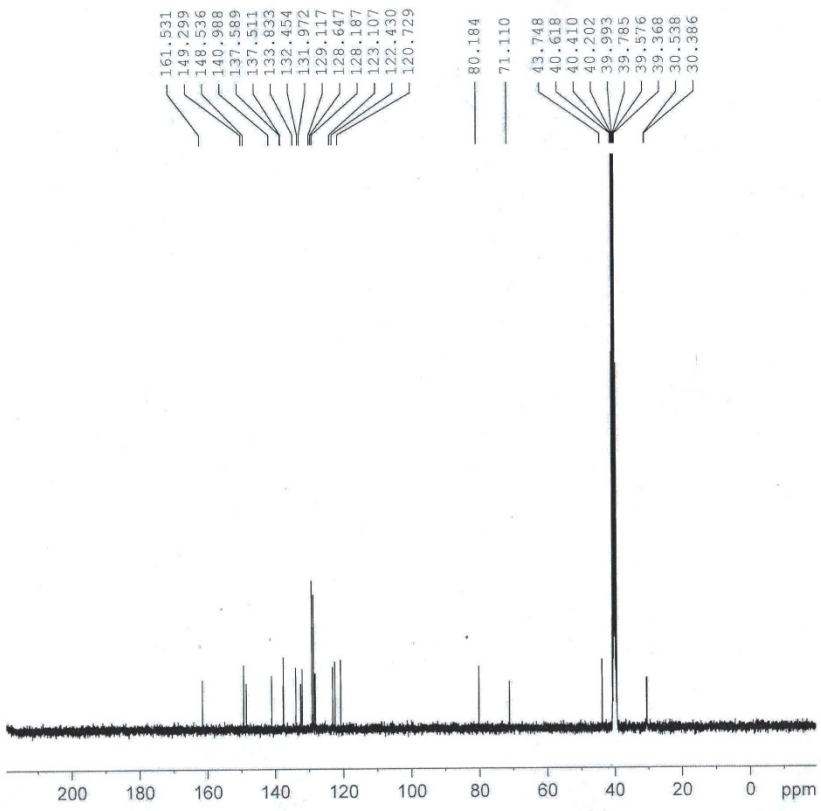
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

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Current Data Parameters
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PROCNO                 1

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TD                32768
SOLVENT            DMSO
NS                 2500
DS                    2
SWH          24038.461 Hz
FIDRES        0.733596 Hz
AQ            0.6816244 sec
RG                 28.5
DW               20.800 usec
DE                6.00 usec
TE               296.9 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
TD0                   1

========== CHANNEL f1 ========
NUC1                 13C
P1                  8.15 usec
PL1                -2.00 dB
SFO1        100.6839383 MHz

========== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2                -2.00 dB
PL12               13.30 dB
PL13               15.50 dB
SFO2        400.3746015 MHz

F2 - Processing parameters
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GB                    0
PC                 1.40
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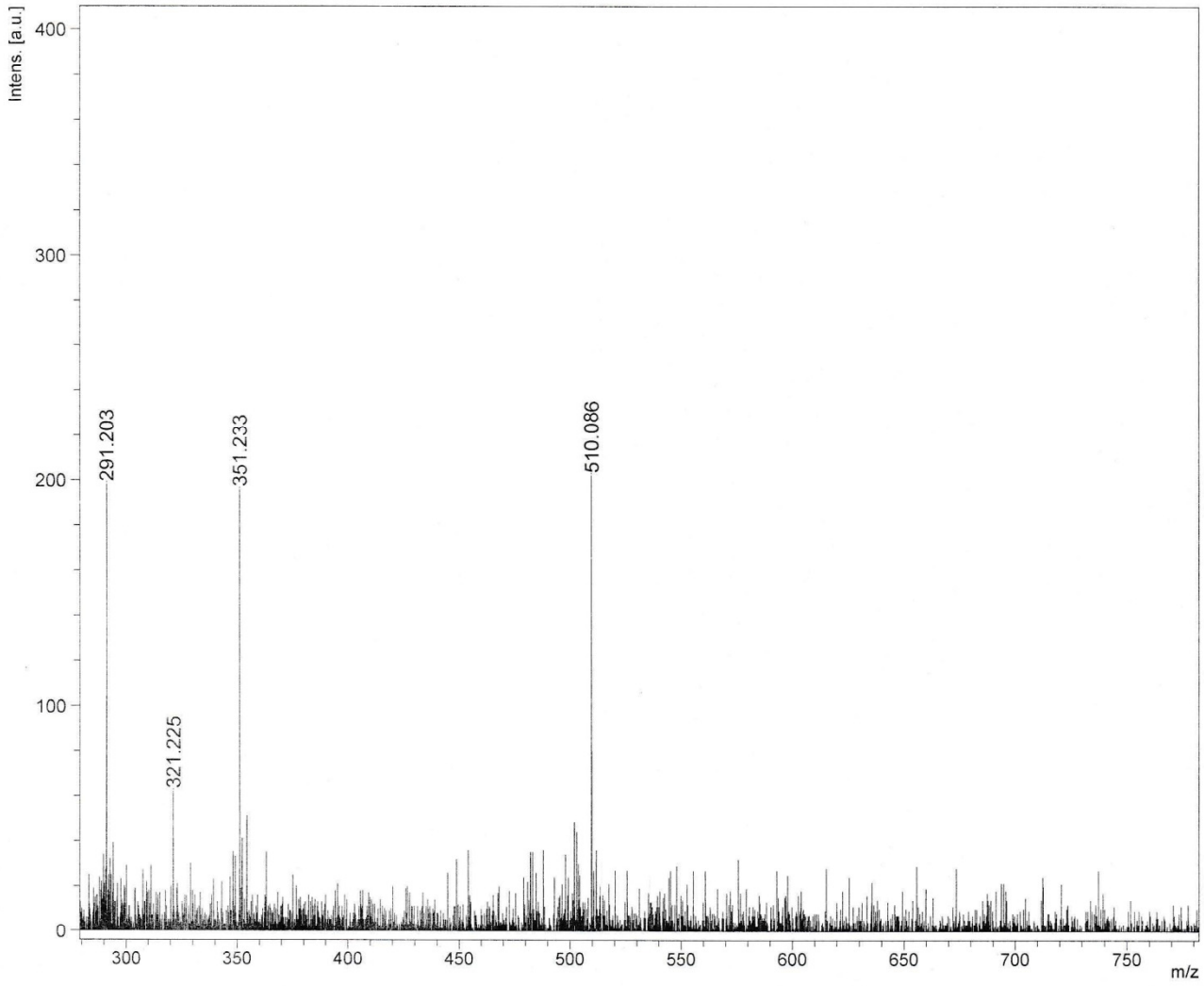
Comment 1

Comment 2



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Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

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Sample ID :
Data File Name : BSR-1
Method File Name : 8020TFAHEXET

Method information : Column:CHIRAL PAK IA(250x4.6)mm 5mic
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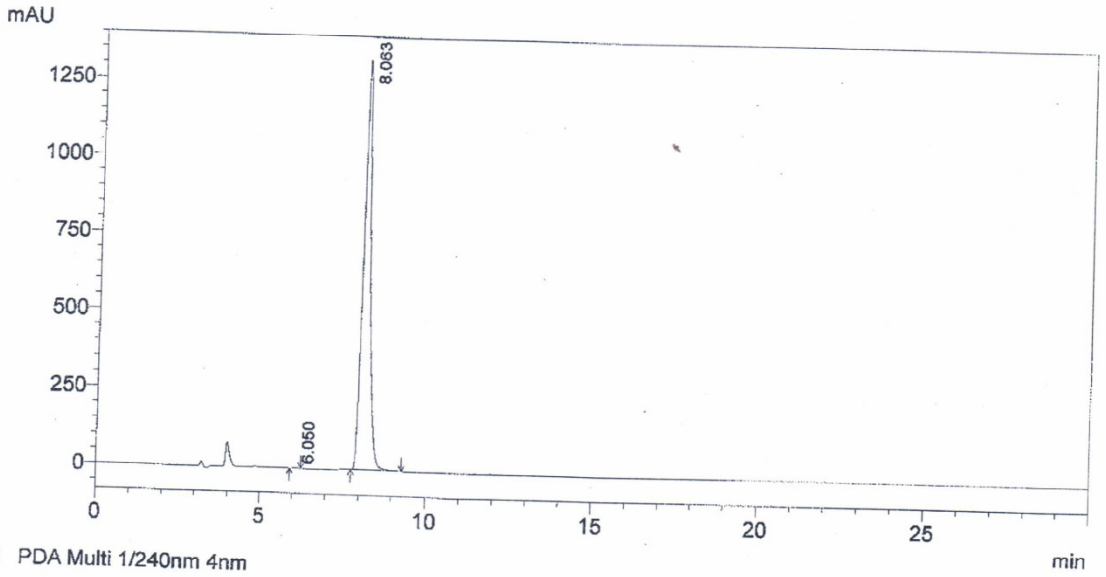
FLOW:1.0ml\min



1 PDA Multi 1/240nm 4nm

PDA Ch1 240nm 4nm

PeakTable

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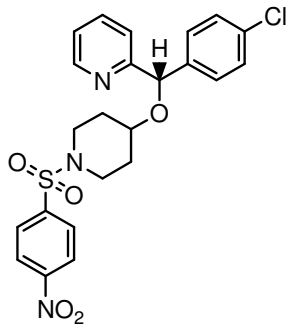
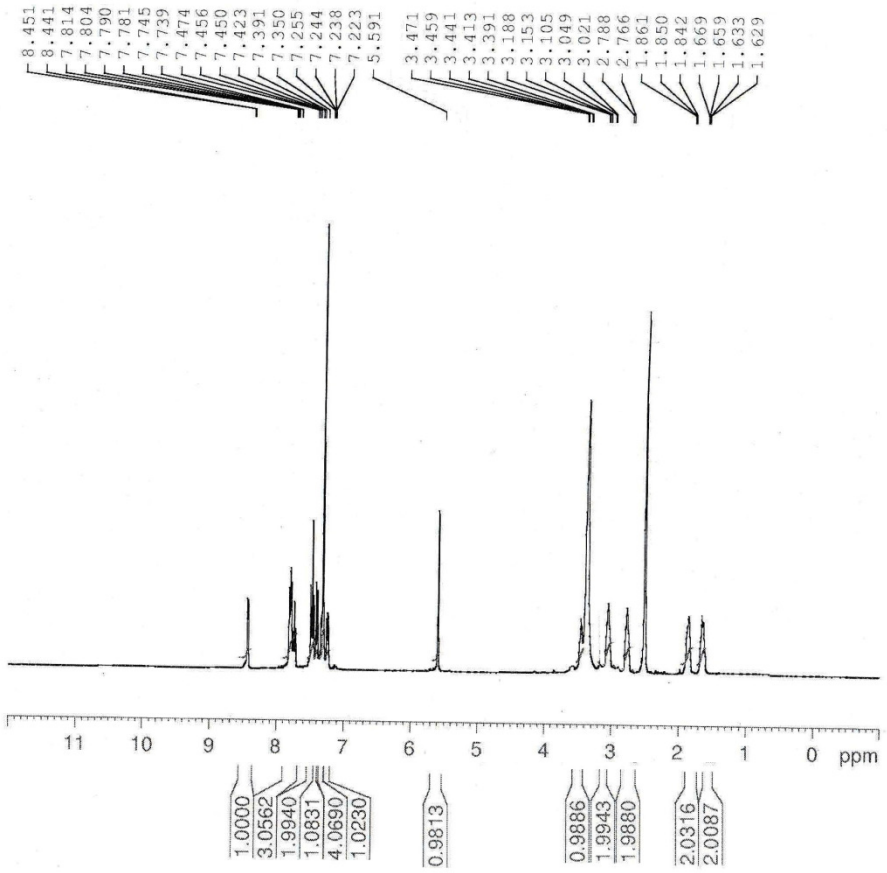


(R)-2-((4-chlorophenyl)((1-((4-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6b): Yield (287mg, 89.6%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.45- 8.44(d,J=4Hz,1H), 7.81- 7.73(m,3H), 7.45- 7.35 (m,7H), 7.25- 7.22(d,J=8.0Hz,1H), 5.59(s, 1H), 3.47- 3.39(m, 1H), 3.04- 3.02(m, 2H), 2.78- 2.76(m, 2H), 1.86- 1.84 (m, 2H), 1.66- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);161.67, 149.11, 148.63, 140.38, 137.58, 137.45, 133.13, 132.45, 132.09, 129.11, 128.64, 128.13, 123.39, 122.43, 120.12, 80.09, 71.01, 43.74, 30.50, 30.22; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.64; H, 4.53; N, 8.64; $[\alpha]_D$= -37.6(C 0.01, MeOH);



Current Data Parameters

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PROCNO	1

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DE	6.00 usec
TE	295.8 K
D1	2.00000000 sec
TD0	1

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F2 - Processing parameters

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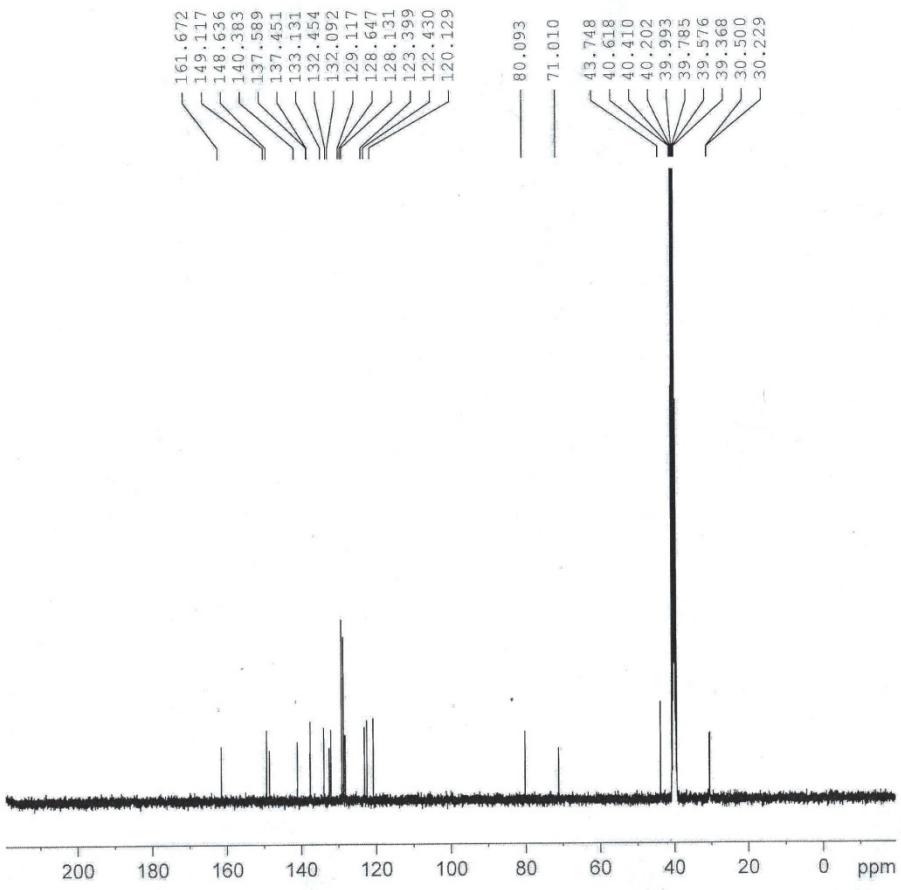


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PROCNO                       1

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TD                      32768
SOLVENT                   DMSO
NS                        2500
DS                           2
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FIDRES                0.733596 Hz
AQ                    0.6816244 sec
RG                         28.5
DW                       20.800 usec
DE                        6.00 usec
TE                       296.9 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
TD0                          1

======== CHANNEL f1 ========
NUC1                       13C
P1                        8.15 usec
PL1                      -2.00 dB
SFO1               100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                    80.00 usec
PL2                      -2.00 dB
PL12                     13.30 dB
PL13                     15.50 dB
SFO2               400.3746015 MHz

F2 - Processing parameters
SI                        32768
SF                 100.6738710 MHz
WDW                          EM
SSB                           0
LB                        1.00 Hz
GB                            0
PC                         1.40
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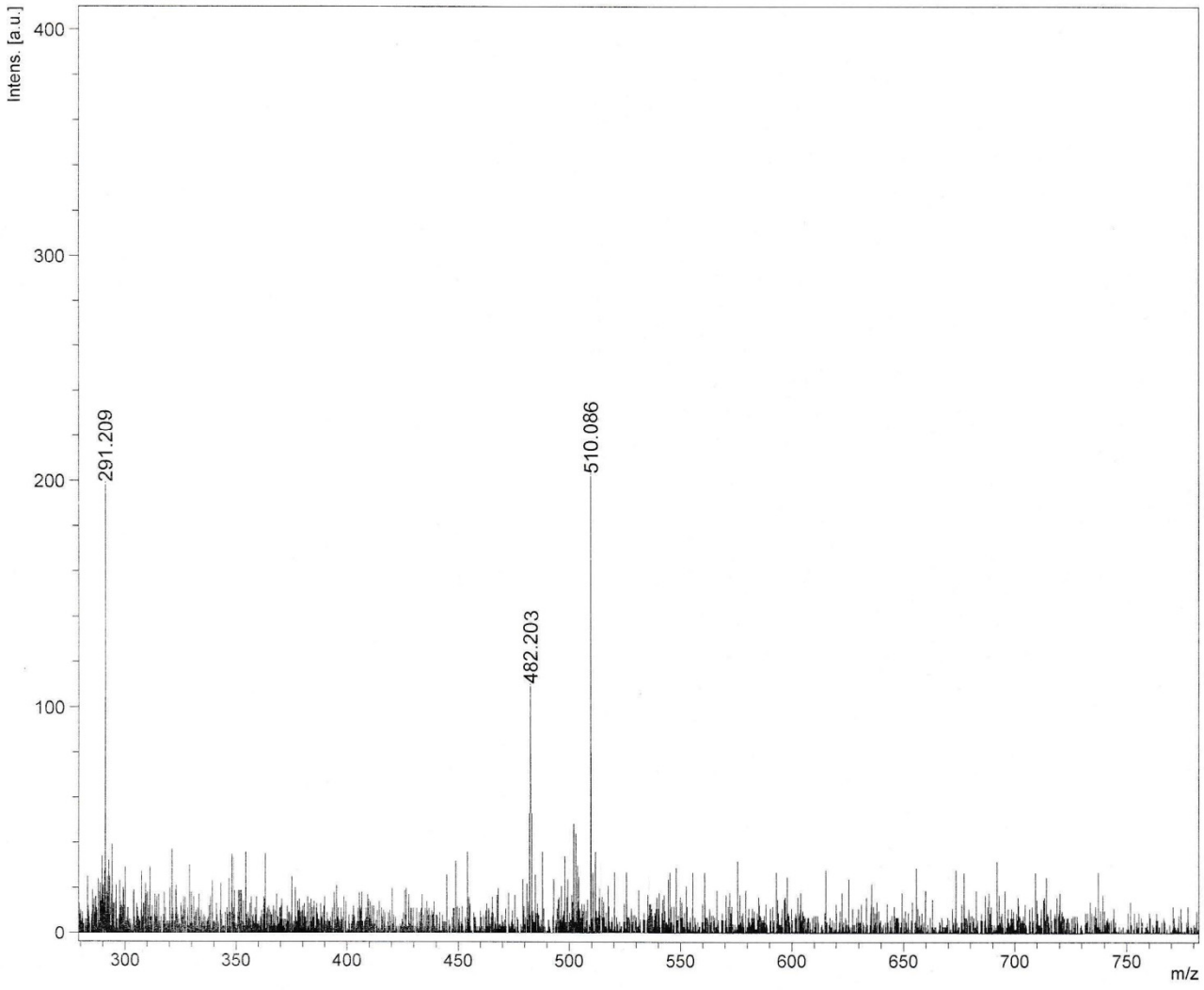
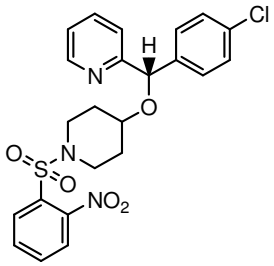
Comment 1

Comment 2

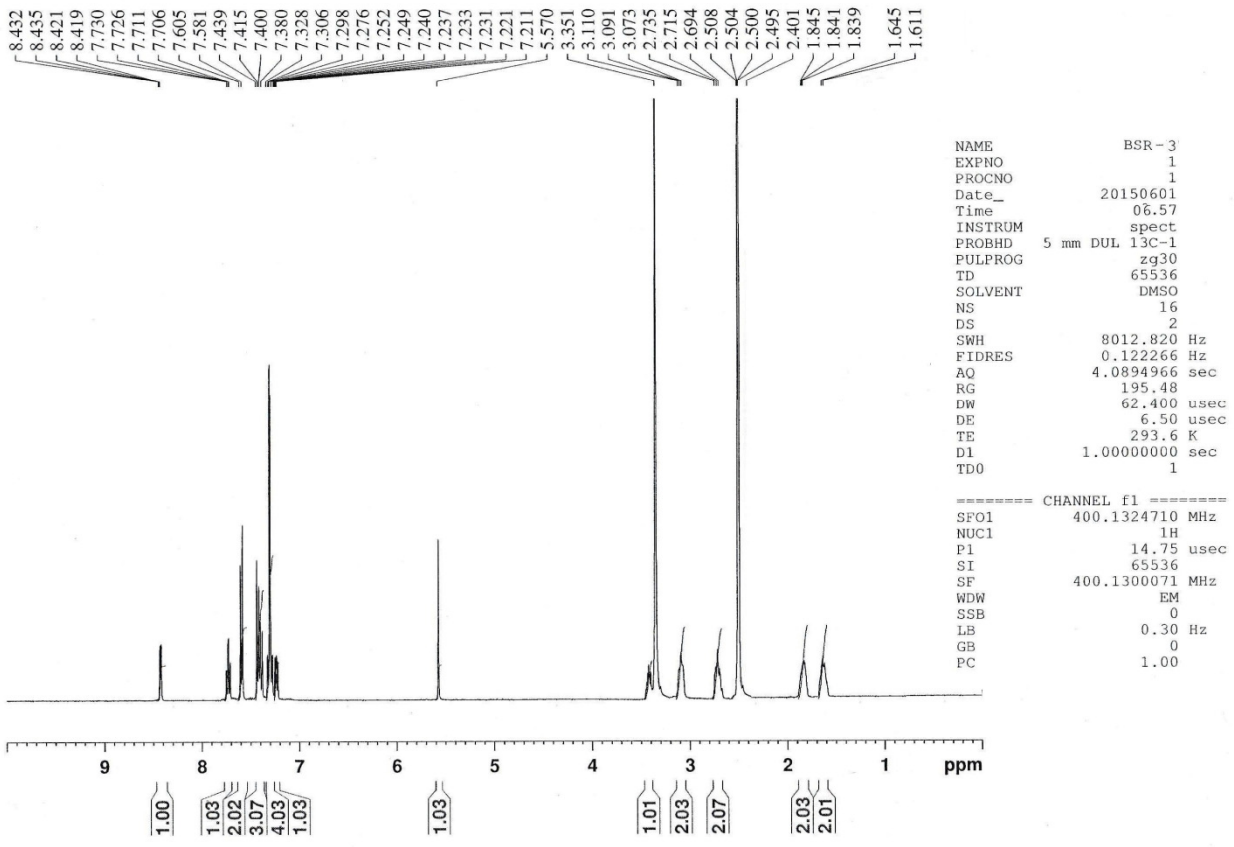


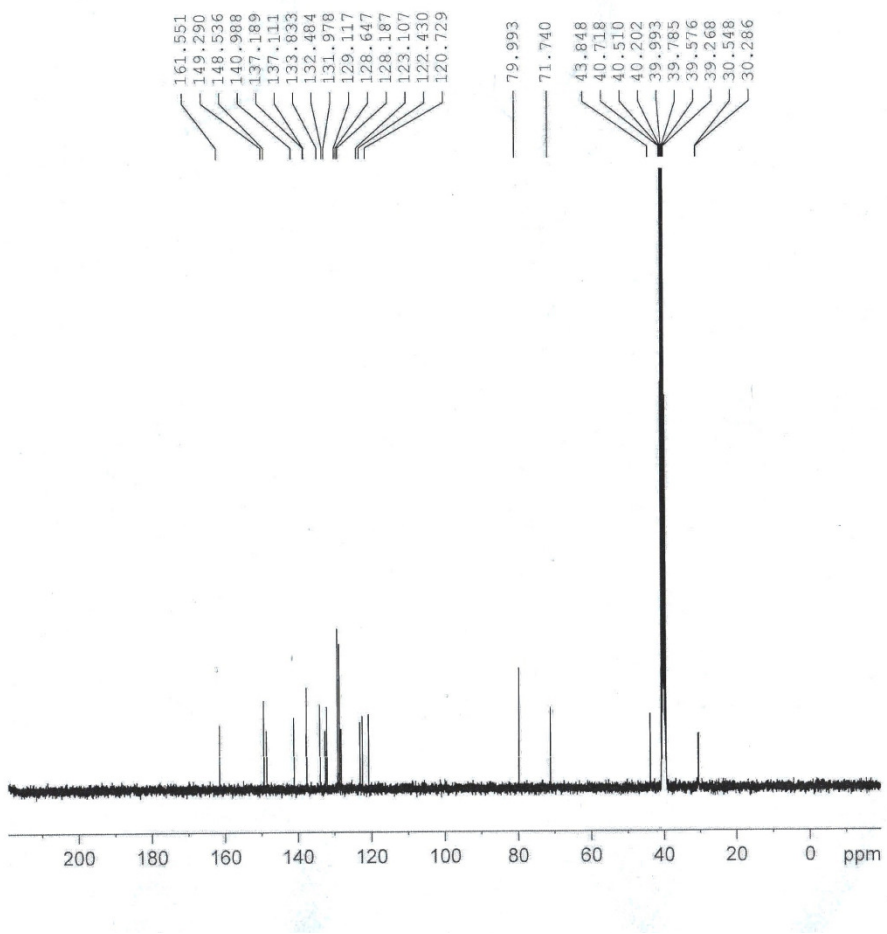
Acquisition Parameter

Date of acquisition	2015-06-16T10:17:00.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	



(R)-2-((4-chlorophenyl)((1-((2-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6c):Yield (267mg, 83.4%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.41(d,J=8Hz,1H), 7.73- 7.70(m,1H), 7.60- 7.58 (d,J=8.0Hz, 2H), 7.43- 7.32(m, 3H),7.30- 7.21 (m, 5H), 5.57(s, 1H), 3.35(m, 1H), 3.11- 3.07(m, 2H), 2.73- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.64- 1.61 (m, 2H); 13C-NMR (DMSO-d_6);161.55, 149.29, 148.53, 140.98, 137.18, 137.11, 133.83, 132.48, 131.97, 129.11, 128.64, 128.18, 123.10, 122.43, 120.72, 79.99, 71.74, 43.84, 30.54, 30.28; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.64; H, 4.55; N, 8.69; Chiral HPLC (%ee) 96.0

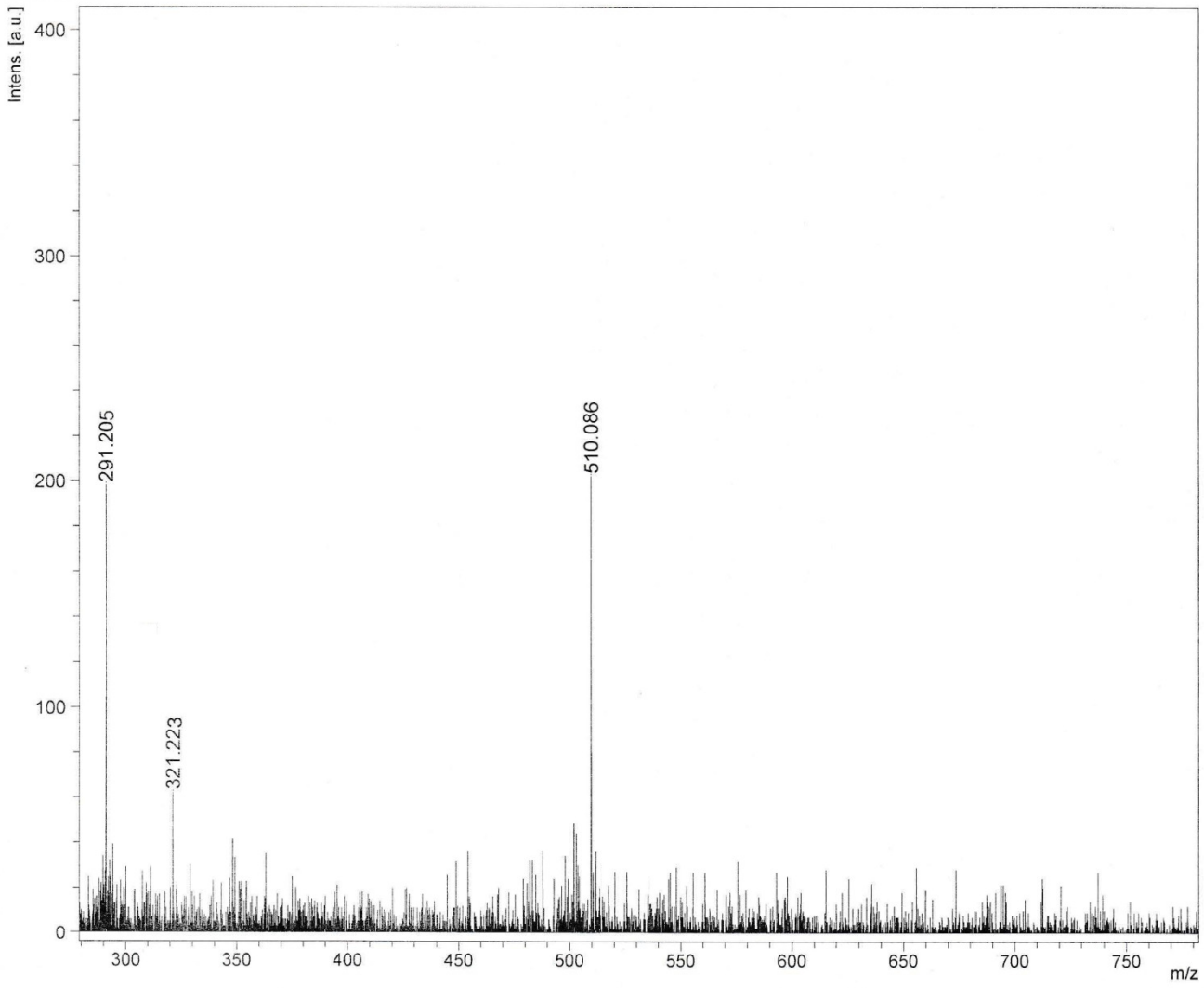





```
Current Data Parameters
NAME                  bsr3
EXPNO                    5
PROCNO                   2

F2 - Acquisition Parameters
Date_              20150604
Time                 06.31
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   32768
SOLVENT               DMSO
NS                    2500
DS                       2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6816244 sec
RG                    28.5
DW                20.800 usec
DE                 6.00 usec
TE                296.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                      1

======== CHANNEL f1 ========
NUC1                   13C
P1                  8.15 usec
PL1                -2.00 dB
SFO1         100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               13.30 dB
PL13               15.50 dB
SFO2         400.3746015 MHz

F2 - Processing parameters
SI                   32768
SF          100.6738710 MHz
WDW                    EM
SSB                     0
LB                 1.00 Hz
GB                      0
PC                   1.40
```

Comment 1

Comment 2

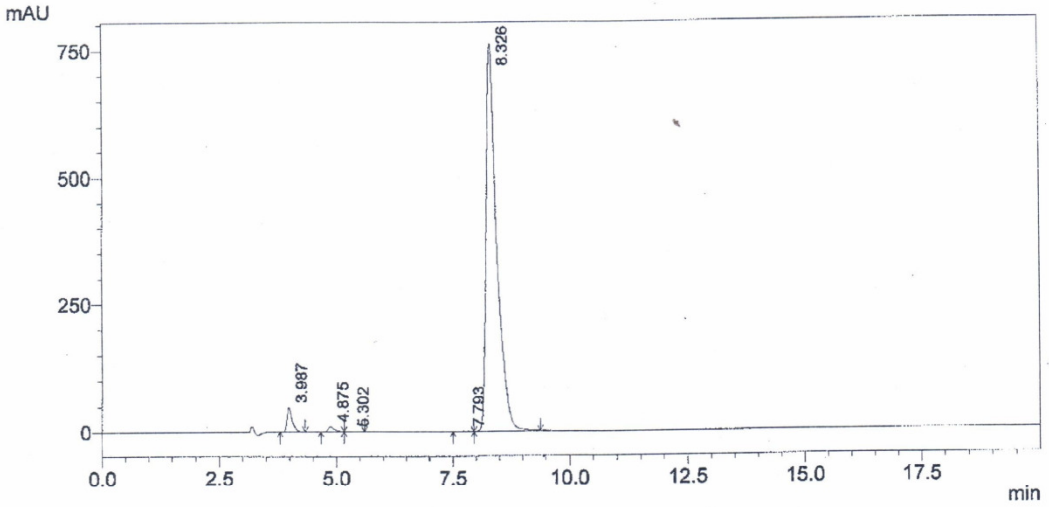


Acquisition Parameter

Date of acquisition	2015-06-16T15:05:30.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSR-3
Sample ID :
Data File Name : BSR-3
Method File Name : 2080TFAHEXET

Method information : Column:CHIRAL PAK IA(250x4.6)mm 5mic
Mobile phase'A':0.1%TFA IN HEXANE:ETHANOL(20:80)
FLOW:1.0ml\min

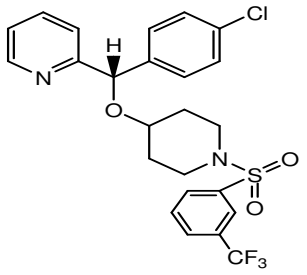


1 PDA Multi 1/240nm 4nm

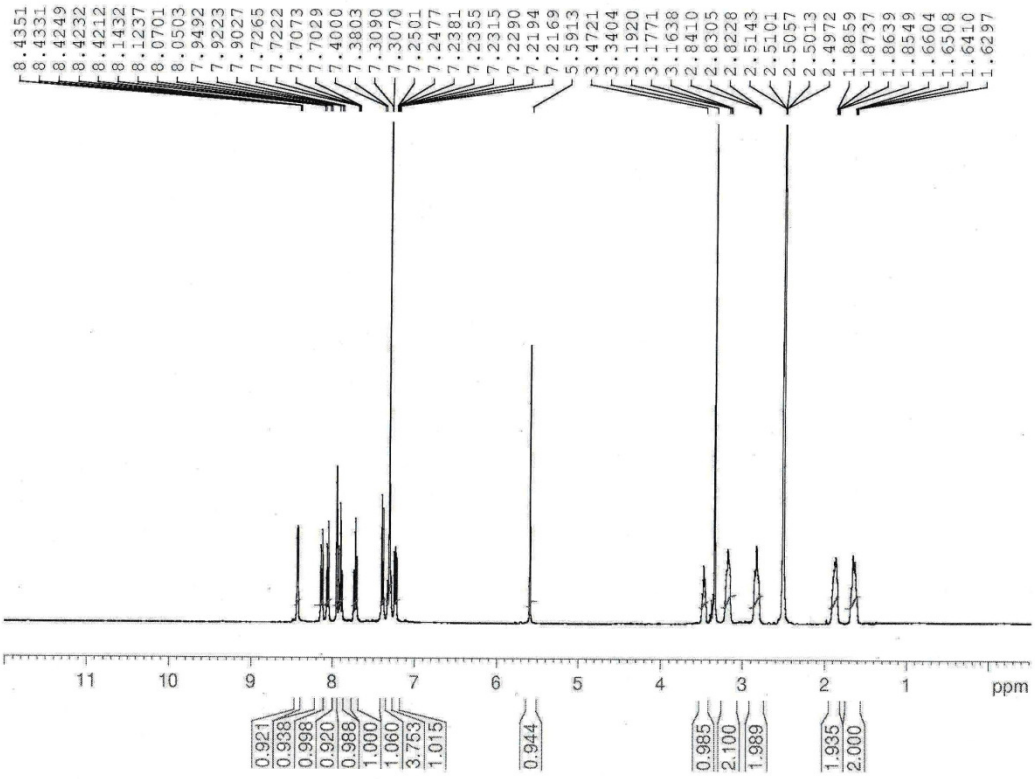
PeakTable

PDA Ch1 240nm 4nm

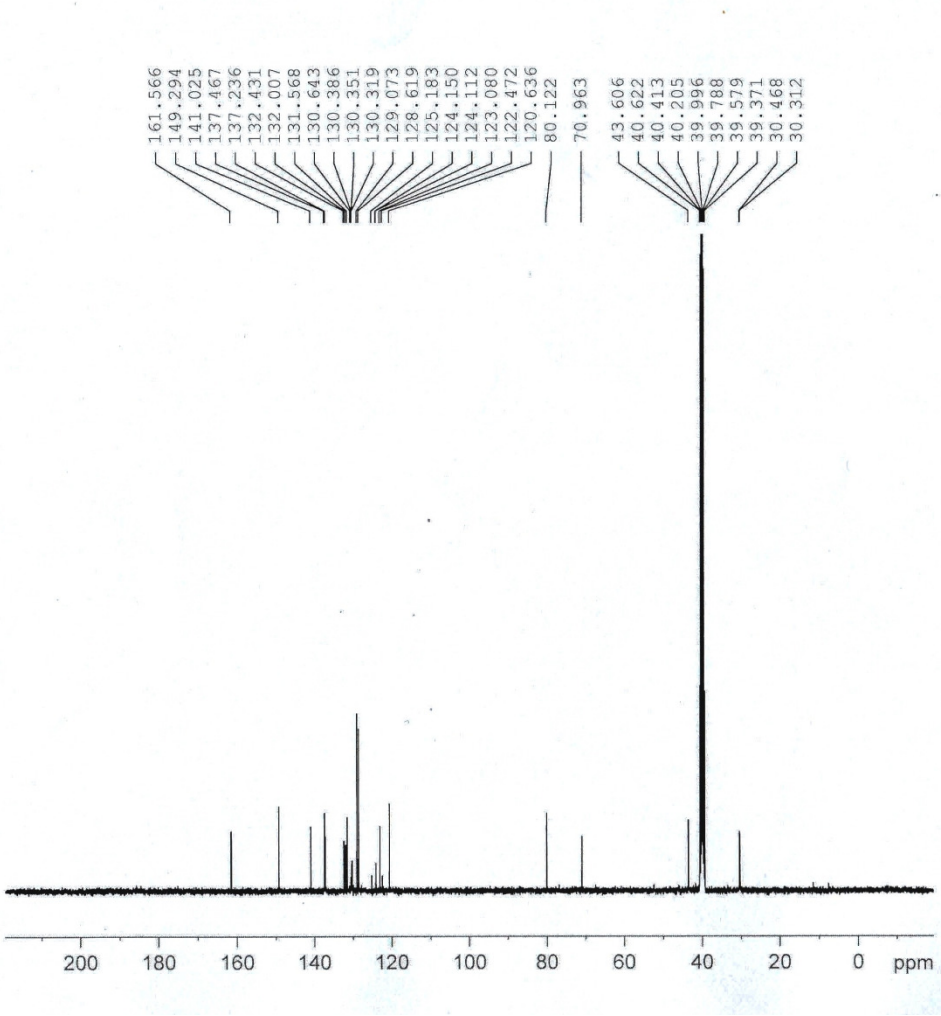
Peak#	Ret. Time	Area	Area %
1	3.987	367283	2.961
2	4.875	96834	0.781
3	5.302	10506	0.085
4	7.793	15967	0.129
5	8.326	11915030	96.045
Total		12405620	100.000



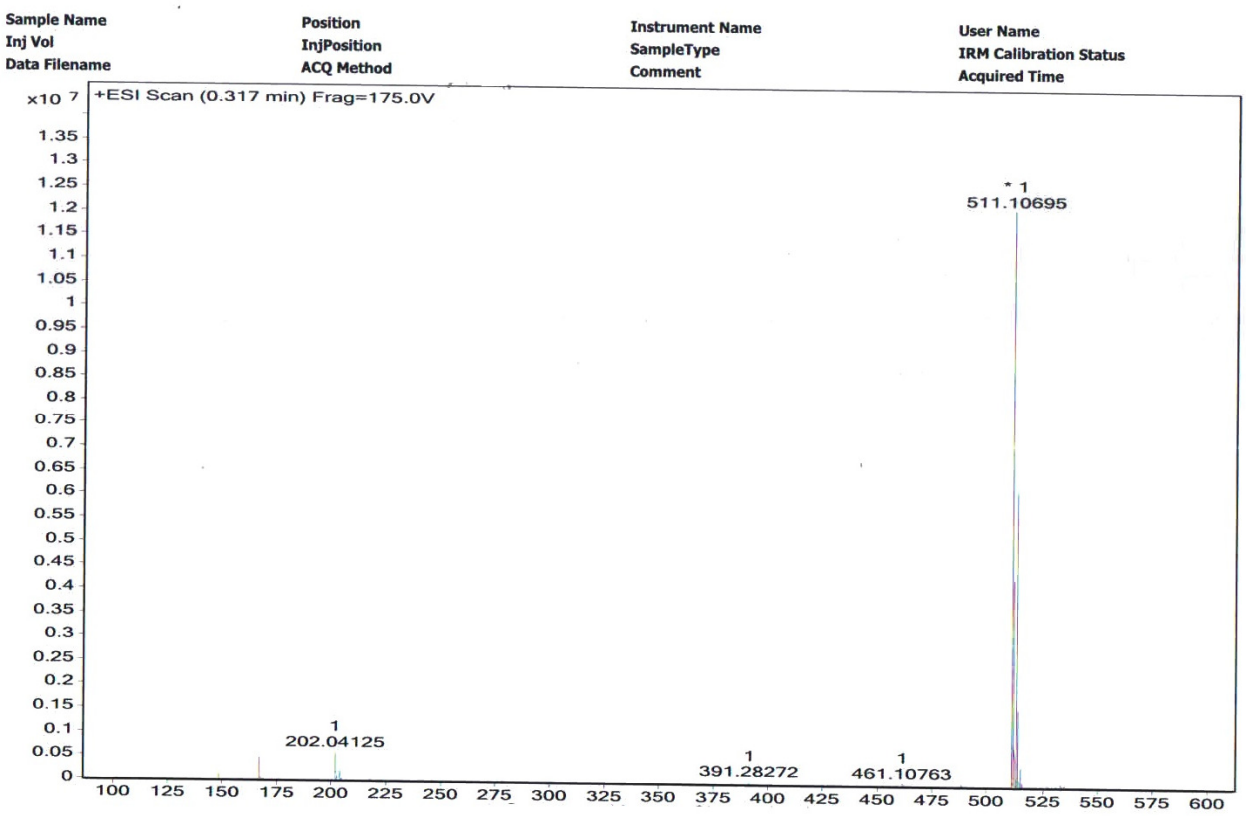
(R)-2-((4-chlorophenyl)((1-((3-(trifluoromethyl)phenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6d): Yield (290mg, 86.5%);Off-white solid;1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.42(d, J=4Hz,1H), 8.14- 8.12(d, J=8.0Hz, 1H), 8.07- 8.05(d, J=8.0Hz, 1H), 7.94- 7.90(m, 2H),7.72- 7.70 (m, 1H),7.40- 7.38(d, J=8Hz,1H),7.30- 7.21(m,5H), 5.59(s, 1H), 3.47(m, 1H), 3.19- 3.16(m, 2H), 2.84- 2.82(m, 2H), 1.88- 1.86 (m, 2H), 1.64- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);161.56, 149.29, 141.02, 137.46, 137.23, 132.43, 132.00, 131.56, 130.64, 130.38, 130.35, 130.31, 129.07, 128.61, 125.18, 124.15, 124.11, 123.08, 122.47, 120.63, 80.12, 70.96, 43.60, 30.46, 30.31; HRMS Calcd 511.107; Found: 511.1067(M+H) Anal.Calcd for $C_{24}H_{22}ClFN_3O_3S$: C 56.42; H 4.34; N 5.48; Found: C, 56.39; H, 4.37; N, 5.47; $[\alpha]_D$= -39.7(C 0.01, MeOH);

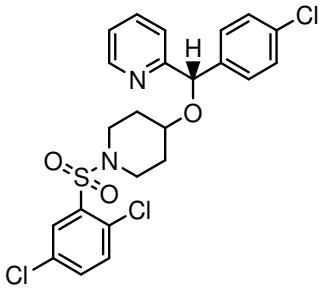


NAME	BSR-4-A311541
EXPNO	1
PROCNO	1
Date_	20150602
Time	21.38
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	128
DS	2
SWH	8223.685 Hz
FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	256
DW	60.800 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
TD0	1
======== CHANNEL f1 ========	
NUC1	1H
P1	12.80 usec
PL1	-2.00 dB
PL1W	15.00864029 W
SFO1	400.3124721 MHz
SI	32768
SF	400.3100000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

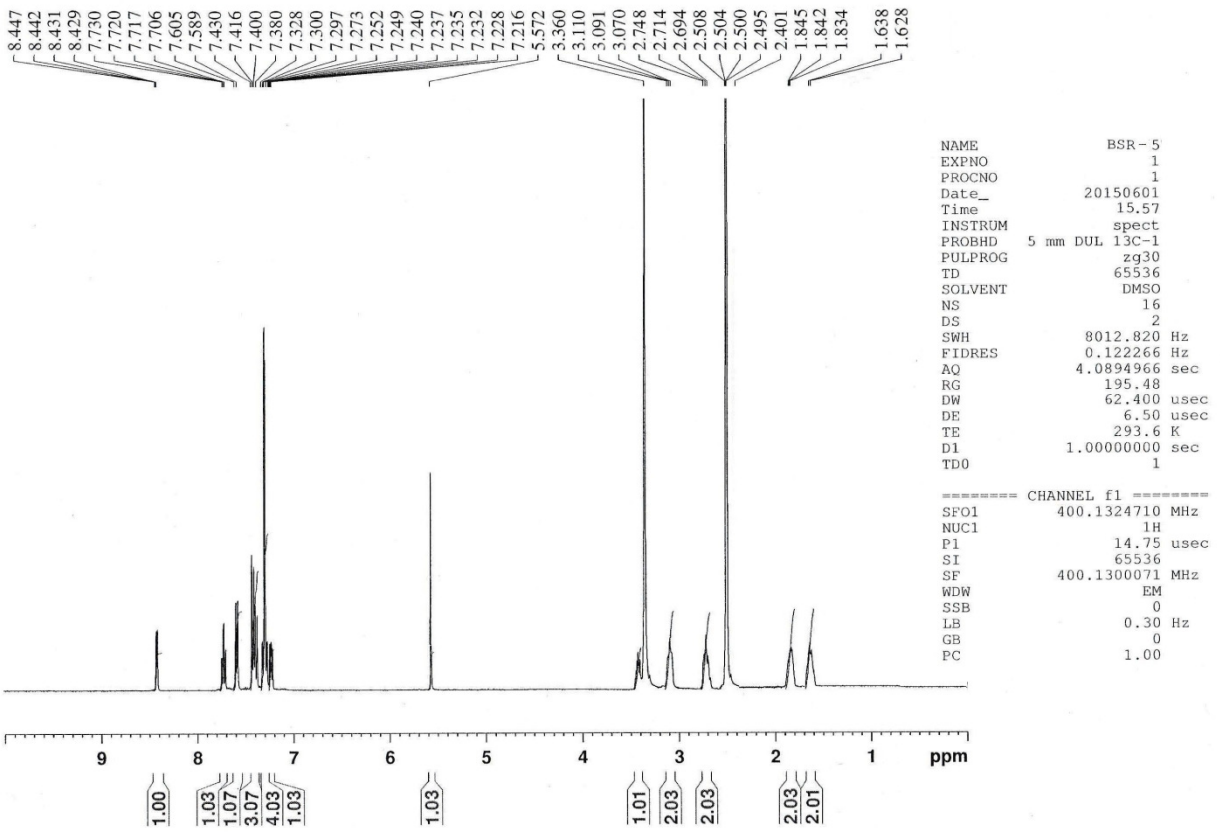


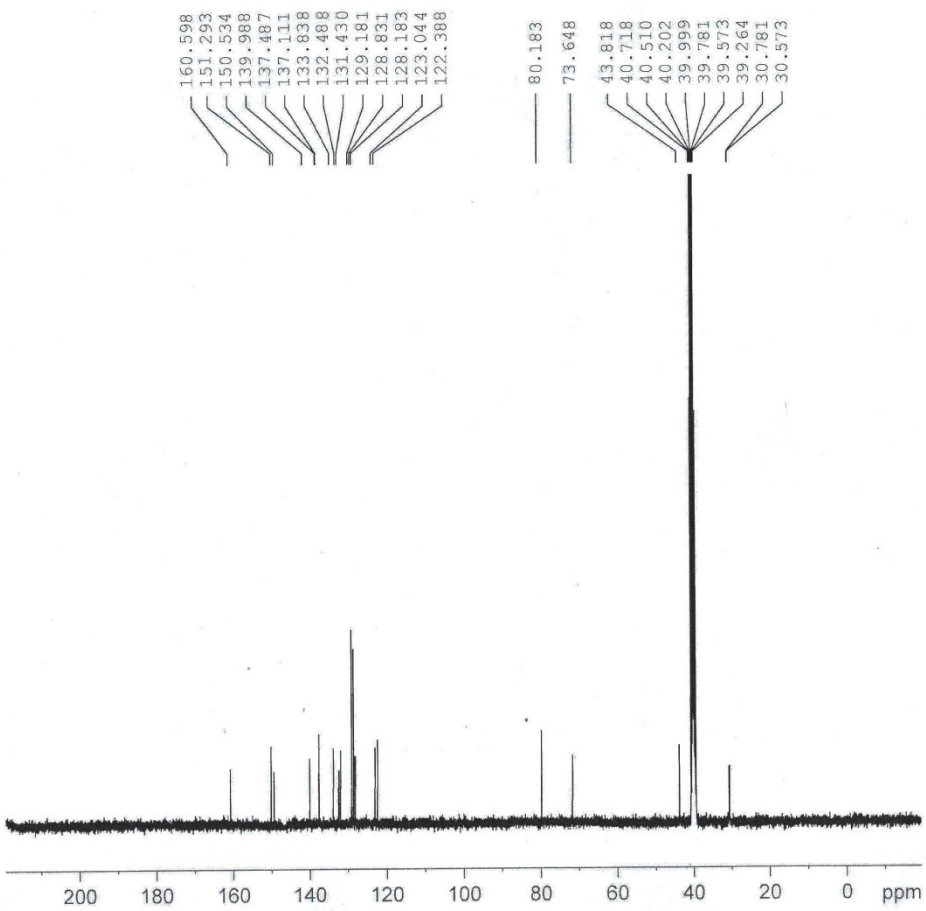

```
Current Data Parameters
NAME         bsr4-A311541
EXPNO                   2
PROCNO                  1

F2 - Acquisition Parameters
Date_           20150604
Time               23.32
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                32768
SOLVENT            DMSO
NS                 2500
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ            0.6816244 sec
RG                   32
DW                20.800 usec
DE                 6.00 usec
TE                296.9 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                  8.15 usec
PL1                -2.00 dB
SFO1         100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                  1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               13.30 dB
PL13               15.50 dB
SFO2         400.3746015 MHz

F2 - Processing parameters
SI                 32768
SF          100.6738710 MHz
WDW                   EM
SSB                    0
LB                  1.00 Hz
GB                     0
PC                  1.40
```


Sample Name
Inj Vol
Data Filename
Position
InjPosition
ACQ Method
Instrument Name
SampleType
Comment
User Name
IRM Calibration Status
Acquired Time
x10 7
+ESI Scan (0.317 min) Frag=175.0V
1.35
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600
* 1
511.10695
1
202.04125
1
391.28272
1
461.10763


Cl
H
N
O
O
S
N
O
Cl
Cl

(R)-2-((4-chlorophenyl)((1-((2,5-dichlorophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6e): Yield (296mg, 88.3%);Brown low melting solid; 1H-NMR (400 MHz, DMSO-d_6) 8.44- 8.42(d, J=8.0Hz,1H), 7.73- 7.70(m,1H), 7.60- 7.58 (d, J=8.0Hz, 1H), 7.43- 7.32(m, 3H),7.30- 7.21 (m, 5H), 5.57(s, 1H), 3.36(m, 1H), 3.11- 3.07(m, 2H), 2.74- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.63- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);160.59, 151.29, 150.53, 139.96, 137.48, 137.11, 133.83, 132.48, 131.43, 129.18, 128.83, 128.19, 123.04, 122.38, 80.18, 73.64, 43.81, 30.78, 30.57; HRMS Calcd 511.0417; Found: 511.0411(M+H); Anal.Calcd for $C_{23}H_{21}Cl_3N_2O_3S$: C 53.97; H 4.14; N 5.47; Found: C,53.94 ; H, 4.19; N, 5.50; Chiral HPLC (%ee) 98.7;



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Current Data Parameters
NAME                      bsr5
EXPNO                        5
PROCNO                       2

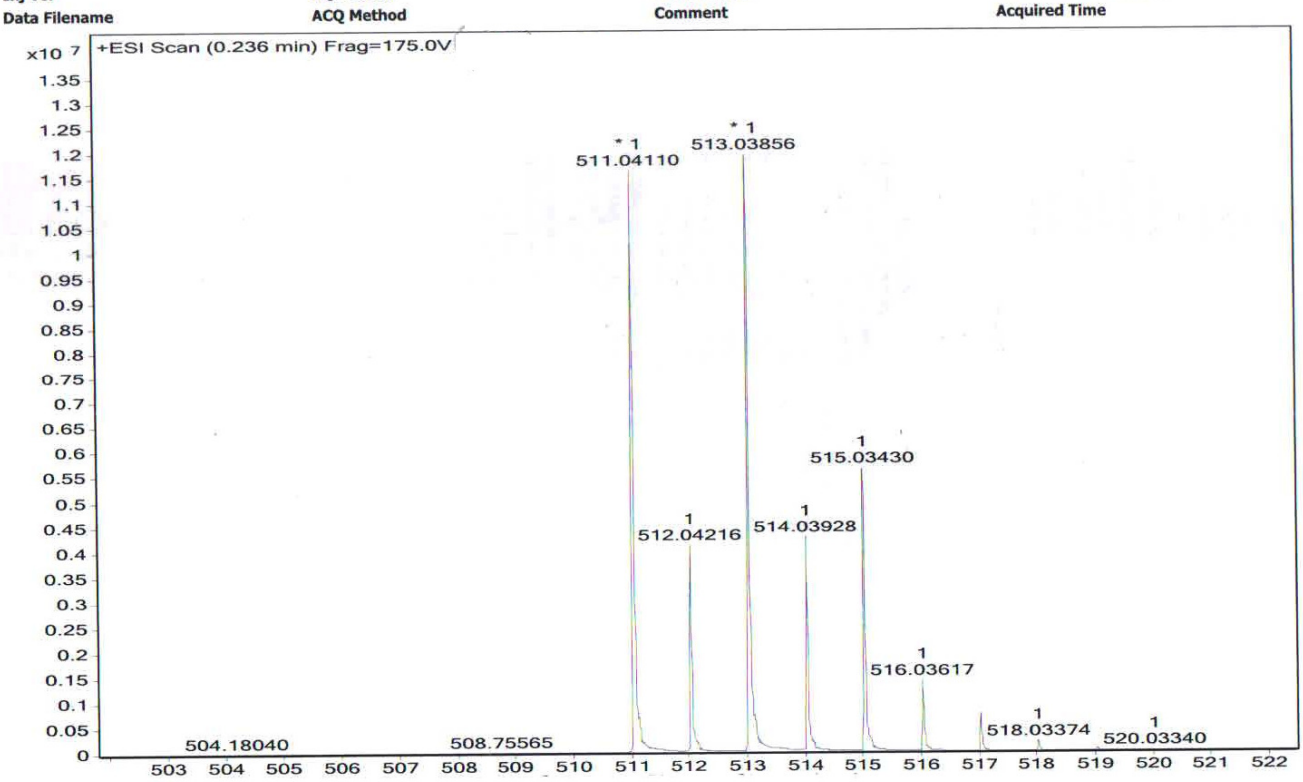
F2 - Acquisition Parameters
Date_                 20150604
Time                     06.31
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                      32768
SOLVENT                  DMSO
NS                       2500
DS                          2
SWH                24038.461 Hz
FIDRES              0.733596 Hz
AQ                  0.6816244 sec
RG                       28.5
DW                     20.800 usec
DE                      6.00 usec
TE                     296.9 K
D1                2.00000000 sec
d11               0.03000000 sec
DELTA             1.89999998 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       13C
P1                        8.15 usec
PL1                      -2.00 dB
SFO1             100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                   80.00 usec
PL2                      -2.00 dB
PL12                     13.30 dB
PL13                     15.50 dB
SFO2             400.3746015 MHz

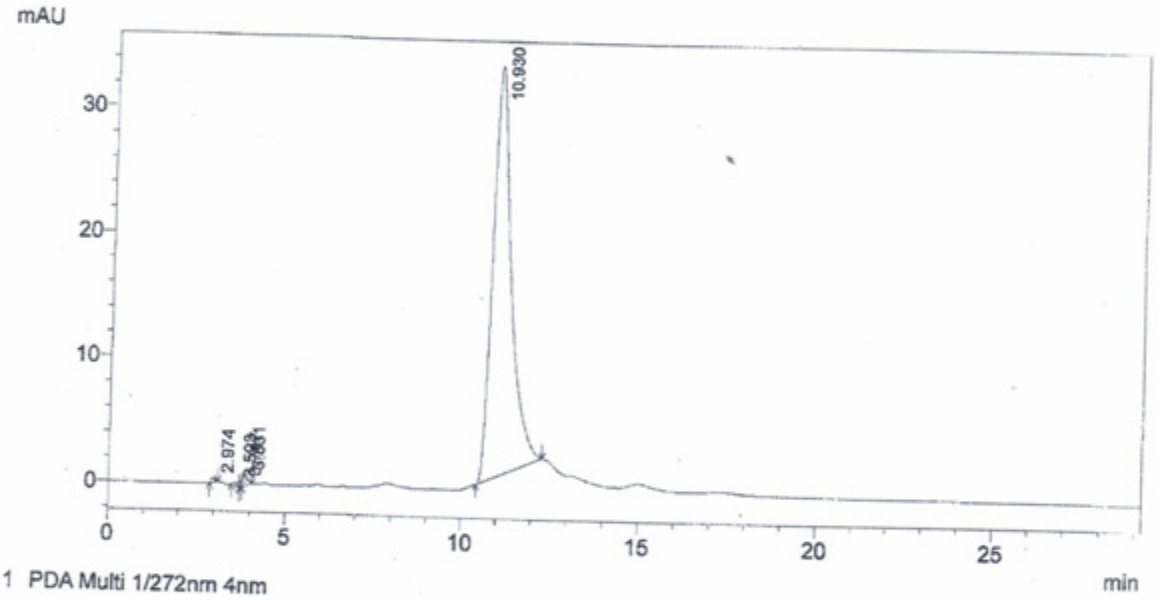
F2 - Processing parameters
SI                        32768
SF               100.6738710 MHz
WDW                          EM
SSB                           0
LB                         1.00 Hz
GB                            0
PC                         1.40
```

Sample Name	**Position**	**Instrument Name**	**User Name**
Inj Vol	**InjPosition**	**SampleType**	**IRM Calibration Status**
Data Filename	**ACQ Method**	**Comment**	**Acquired Time**



Sample Name :BSR-5
Sample ID :
Data File Name : BSR-5
Method File Name :2080TFAHEXET

Method Information :Column:CHIRAL PAK IA(250x4.6)mm 5mic
Mobile Phasee'A':0.1%TFA IN HEXANE:ETHANOL(20:80)
FLOW:1.0ml\min

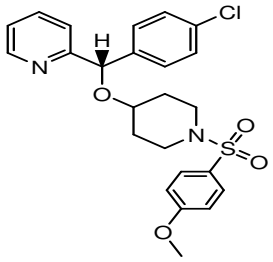


1 PDA Multi 1/272nm 4nm

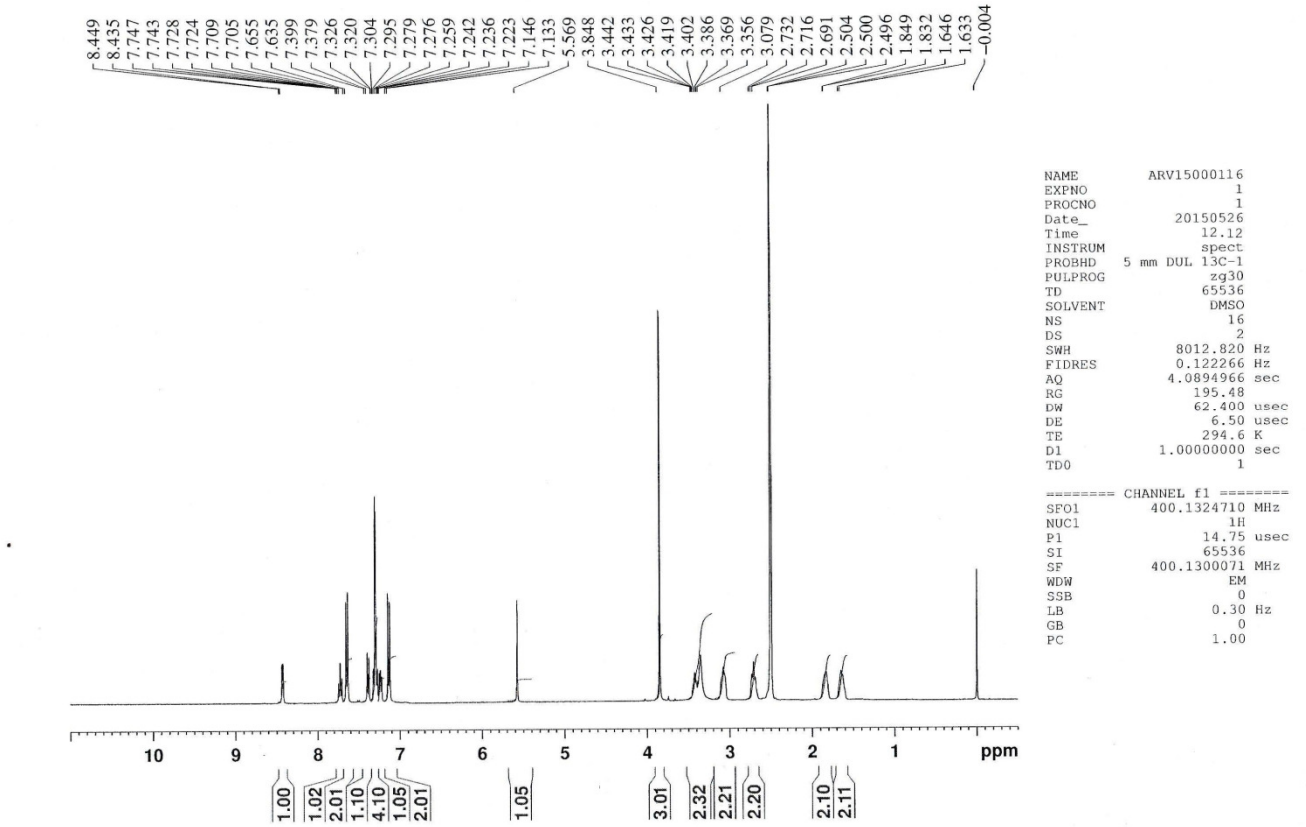
PeakTable

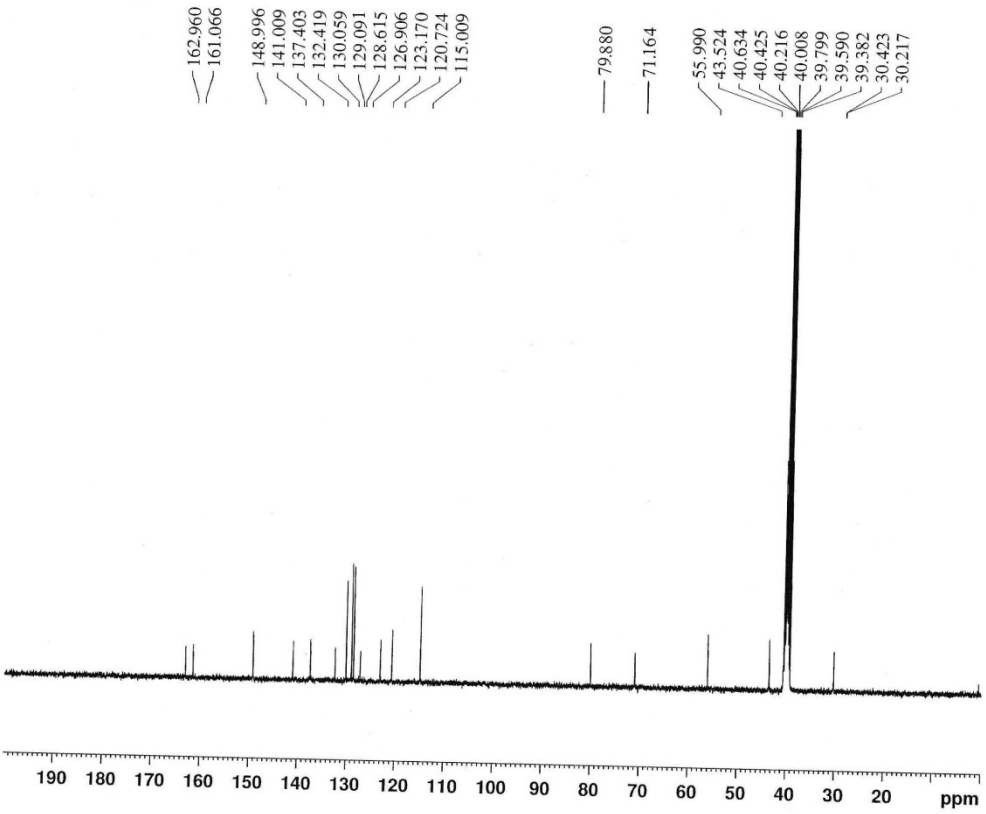
PDA Ch1 272nm 4nm

Peak#	Ret. Time	Area	Area %
1	2.974	3016	0.251
2	3.593	2560	0.213
3	3.747	1322	0.110
4	3.831	7519	0.626
5	10.930	1186140	98.799
Total		1200558	100.000



(R)-2-((4-chlorophenyl)((1-((4-methoxyphenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6f): Yield (260mg, 83.8%);Off-white solid; 1H-NMR (400 MHz, DMSO-d_6) 8.44- 8.43 (d,J=4Hz,1H), 7.74- 7.70(m,1H), 7.65- 7.63 (d,J=8.0Hz, 2H), 7.39- 7.37(d, J=8.0Hz, 1H),7.32- 7.22 (m, 5H), 7.14- 7.12(d, J=8.0Hz, 1H),5.56(s, 1H), 3.84 (s,3H), 3.44(m, 1H), 3.07(m, 2H), 2.73- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.64- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);162.96, 161.06, 148.99, 141.00, 137.40, 132.41, 130.05, 129.09, 128.61, 126.90, 123.17, 120.72, 115.00, 79.88, 71.16, 55.99, 43.52, 30.42, 30.21; HRMS Calcd 495.112; Found: 495.112 ($M+Na^+$); Anal.Calcd for $C_{24}H_{25}ClN_2O_4S$: C 60.94; H 5.33; N 5.92; Found: C, 60.98; H, 5.31; N, 5.96; $[\alpha]_D$= -40.5(C 0.01, MeOH);

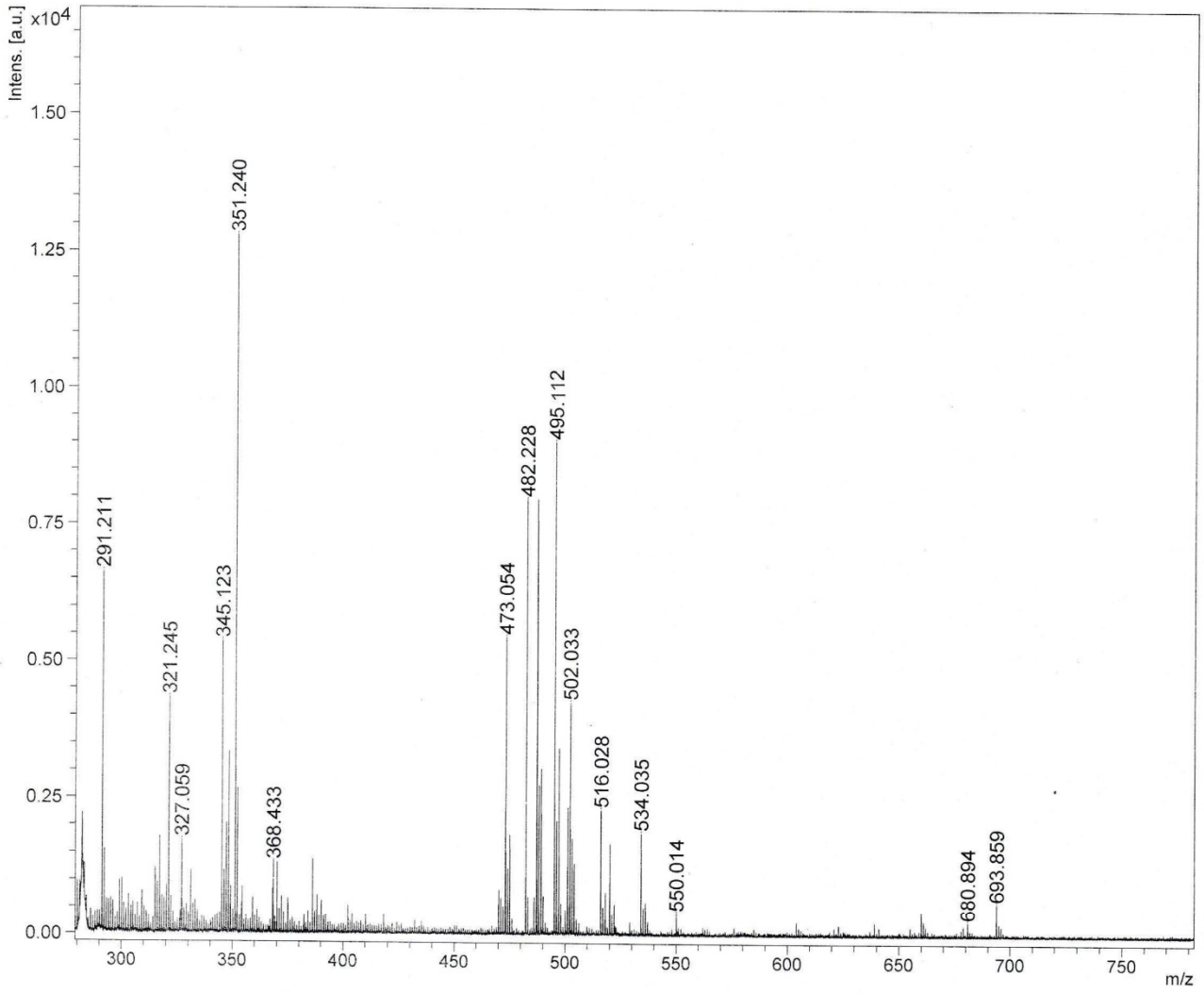




NAME	ARV15000116-13C
EXPNO	1
PROCNO	1
Date_	20150527
Time	0.11
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zgpg30
TD	65536
SOLVENT	DMSO
NS	2048
DS	4
SWH	28409.092 Hz
FIDRES	0.433488 Hz
AQ	1.1534836 sec
RG	195.48
DW	17.600 use
DE	6.50 use
TE	297.6 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
========	CHANNEL f1 =======
SFO1	100.6228293 MHz
NUC1	13C
P1	9.10 use
SI	32768
SF	100.6127685 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

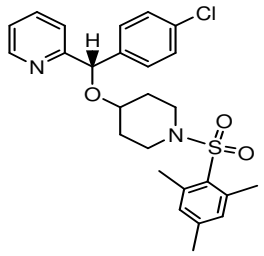
Comment 1

Comment 2

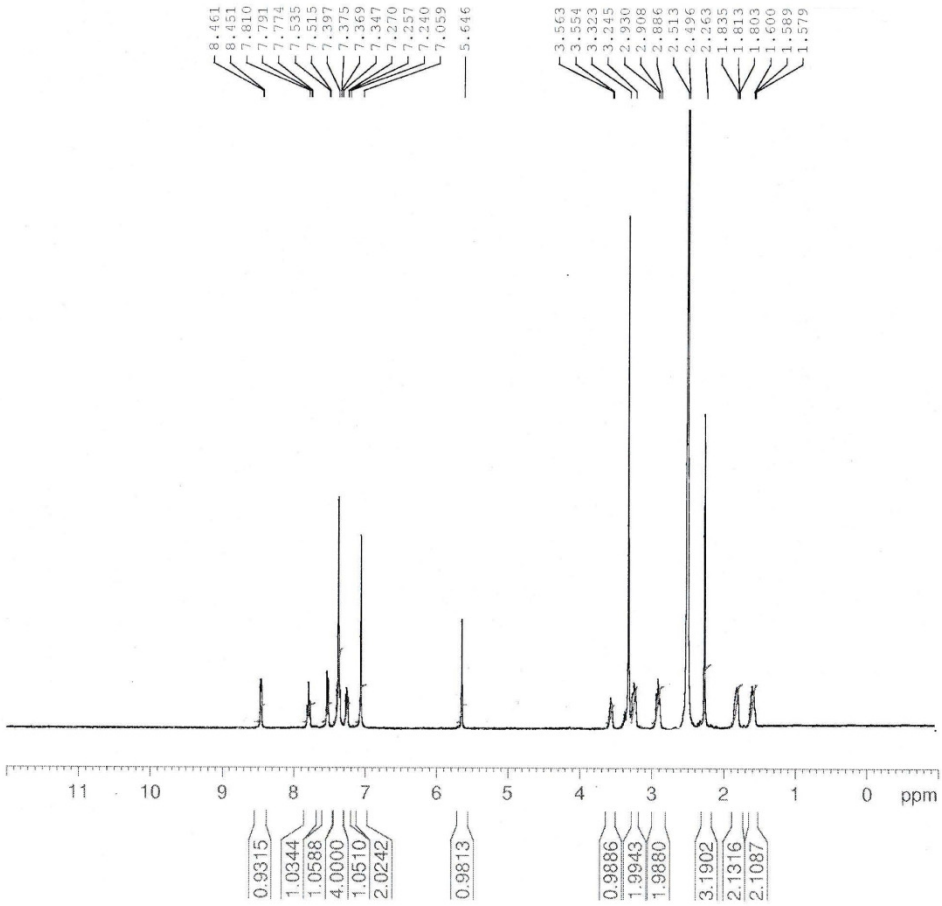


Acquisition Parameter

Date of acquisition	2015-06-16T11:17:01.734+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	



(R)-2-((4-chlorophenyl)((1-(mesitylsulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6g): Yield (280mg, 88%);White solid; 1H-NMR (400 MHz, DMSO-d_6) 8.46- 8.45(d,J=4Hz,1H), 7.81- 7.77(m,1H), 7.53- 7.51 (d,J=8.0Hz, 1H), 7.39- 7.34(m, 4H),7.27- 7.24 (m, 1H),7.05 (s, 2H), 5.64(s, 1H), 3.56(m, 1H), 3.32(s, 6H),3.24(m, 2H), 2.93- 2.88(m, 2H), 2.26 (s,3H), 1.83- 1.80 (m, 2H), 1.60- 1.57 (m, 2H); 13C-NMR (DMSO-d_6) 161.71, 149.32, 142.85, 141.17, 140.03, 137.60, 132.45, 132.31, 132.14, 129.16, 128.70, 120.80, 80.34, 71.79, 41.63, 30.68, 30.59, 22.76, 20.90; HRMS Calcd 507.148; Found: 507.148 ($M+Na^+$); Anal.Calcd for $C_{26}H_{29}ClN_2O_3S$: C 64.38; H 6.03; N 5.78; Found: C, 64.41; H, 6.01; N, 5.79;Chiral HPLC (%ee) 96.2;




```
Current Data Parameters
NAME                  A330923
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150623
Time                  10.28
INSTRUM               spect
PROBHD     5 mm PABBO BB-
PULPROG                zg30
TD                    32768
SOLVENT                DMSO
NS                        8
DS                        2
SWH                8389.262 Hz
FIDRES            0.256020 Hz
AQ                1.9530228 sec
RG                    406.4
DW                   59.600 usec
DE                    6.00 usec
TE                   297.3 K
D1                2.00000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       1H
P1                      13.20 usec
PL1                     -3.00 dB
SFO1           400.2338023 MHz

F2 - Processing parameters
SI                        32768
SF             400.2300000 MHz
WDW                        EM
SSB                         0
LB                       0.30 Hz
GB                          0
PC                       1.00
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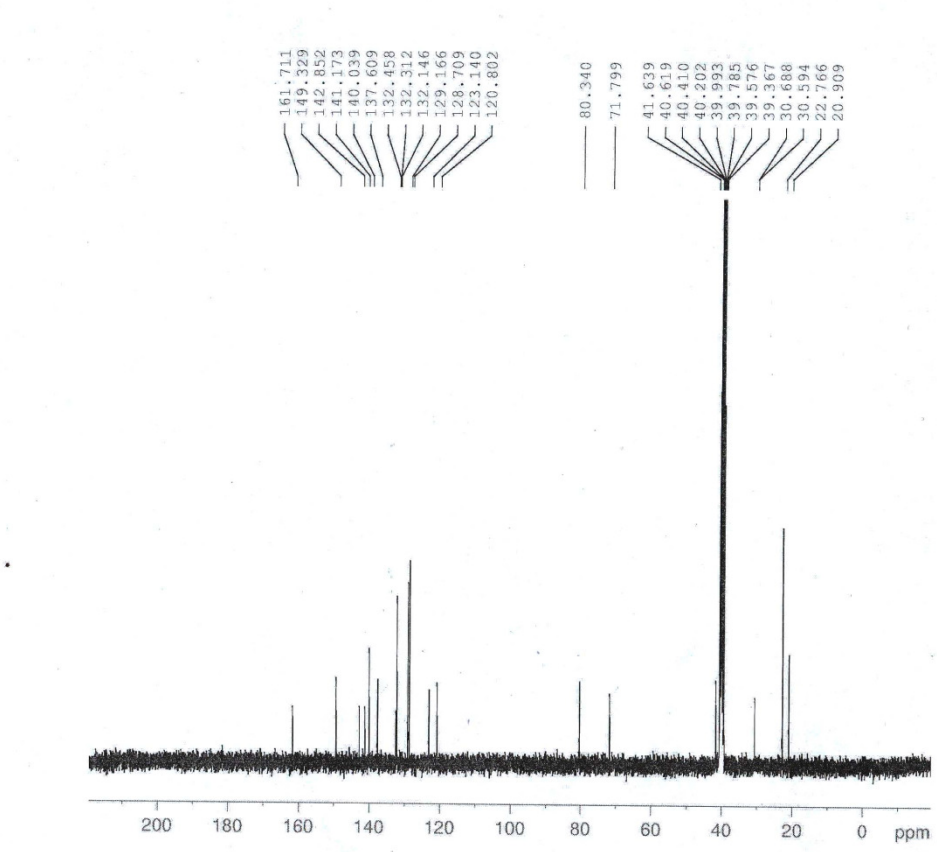


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Current Data Parameters
NAME                  A330923
EXPNO                       2
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150624
Time                   2.39
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   32768
SOLVENT                DMSO
NS                      1024
DS                         2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6816244 sec
RG                        32
DW                  20.800 usec
DE                   6.00 usec
TE                   296.7 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                        1

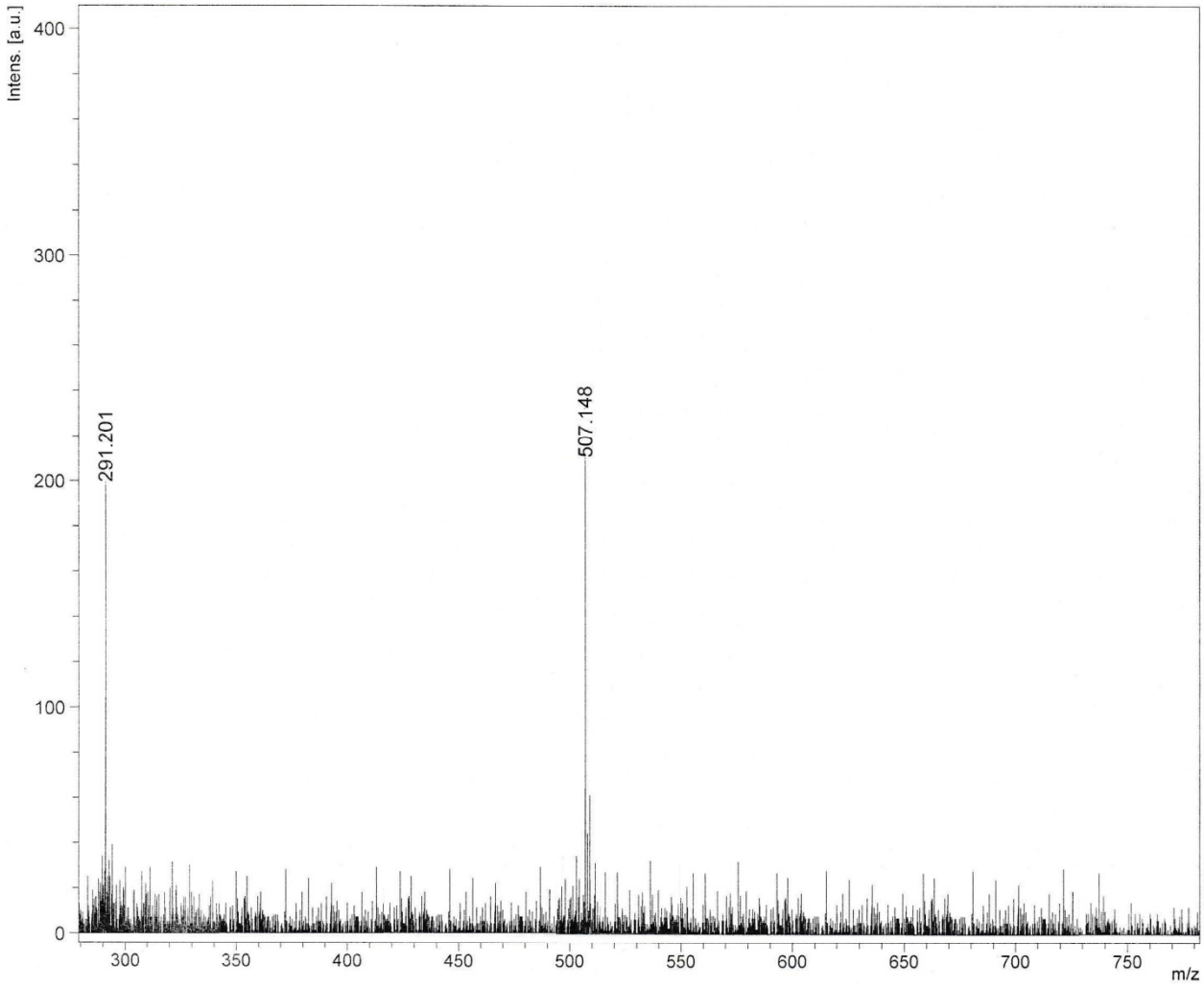
======== CHANNEL f1 ========
NUC1                     13C
P1                    8.15 usec
PL1                  -2.00 dB
SFO1           100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2              waltz16
NUC2                     1H
PCPD2                80.00 usec
PL2                  -2.00 dB
PL12                 13.30 dB
PL13                 15.50 dB
SFO2           400.3746015 MHz

F2 - Processing parameters
SI                       32768
SF             100.6738710 MHz
WDW                         EM
SSB                          0
LB                    1.00 Hz
GB                           0
PC                    1.40
```

Comment 1

Comment 2

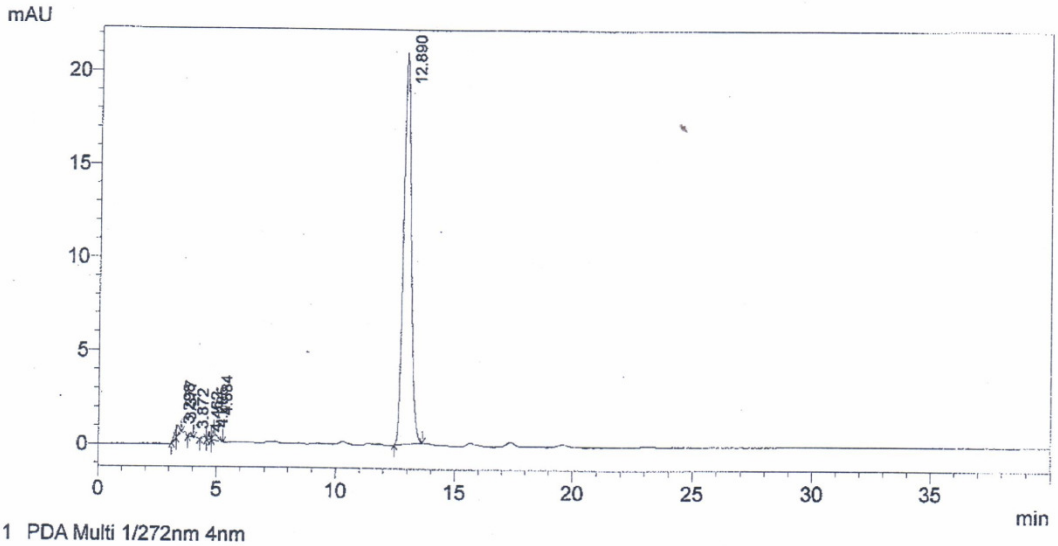


Acquisition Parameter

Date of acquisition	2015-06-16T11:15:20.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name :BSR-7
Sample ID :
Data File Name :BSR-7
Method File Name :2080TFAHEXET

Method information :Column:CHIRAL PAK IA(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(20:80)
FLOW:1.0ml\min

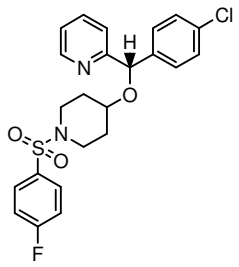


1 PDA Multi 1/272nm 4nm

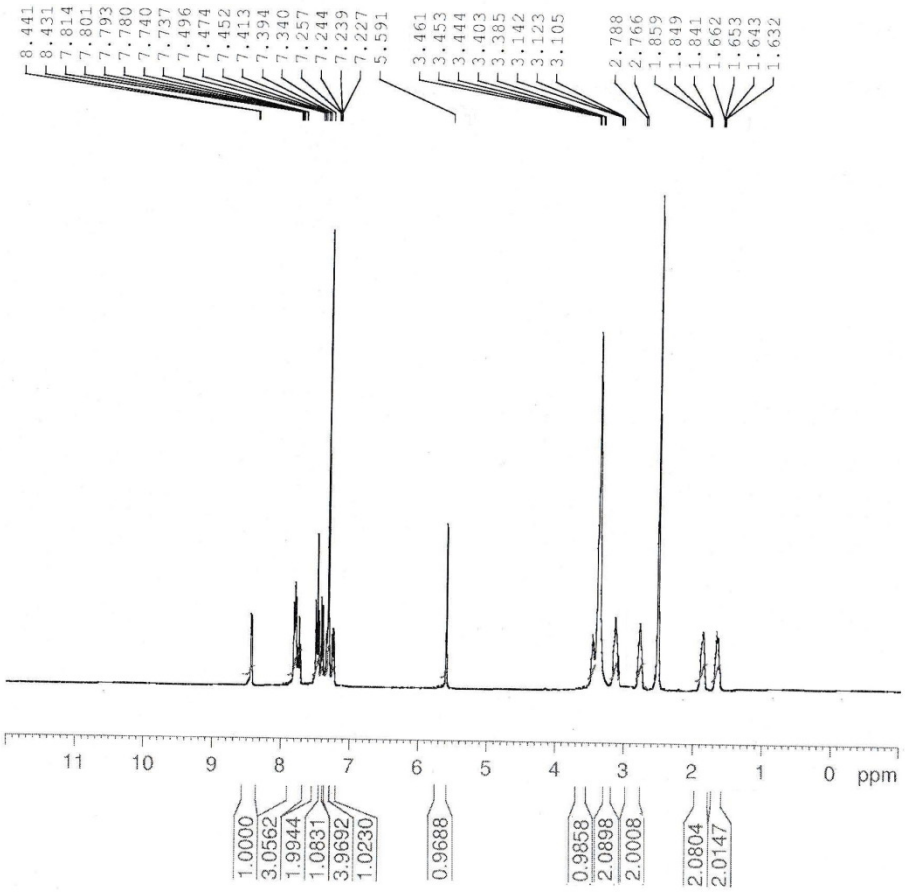
PeakTable

PDA Ch1 272nm 4nm

Peak#	Ret. Time	Area	Area %
1	3.298	2812	0.553
2	3.377	4583	0.902
3	3.872	1134	0.223
4	4.462	1089	0.214
5	4.685	2209	0.435
6	4.884	7083	1.394
7	12.890	489284	96.279
Total		508194	100.000



(R)-2-((4-chlorophenyl)((1-((4-fluorophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6h): Yield (268mg, 88.7%);Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.44- 8.43(d,J=4Hz,1H), 7.81- 7.73(m,3H), 7.49- 7.22 (m, 8H), 5.59(s, 1H), 3.46(m, 1H), 3.14- 3.10(m, 2H), 2.78- 2.76(m, 2H),1.85- 1.84 (m, 2H)1.66 1.63(m, 2H); 13C-NMR (DMSO-d_6)166.29, 163.80, 161.56, 149.30, 141.02, 137.48, 132.43, 132.16, 132.13, 131.03, 130.94, 129.09, 128.63, 123.10, 120.68, 117.10, 116.88, 80.11, 70.99, 43.57, 30.41, 30.29; HRMS Calcd 483.092; Found: 483.092 ($M+Na^+$); Anal.Calcd for $C_{23}H_{22}ClFN_2O_3S$: C 59.93; H 4.81; N 6.08; Found: C, 59.89; H, 4.77; N, 6.12; Chiral HPLC (%ee) 97.2;

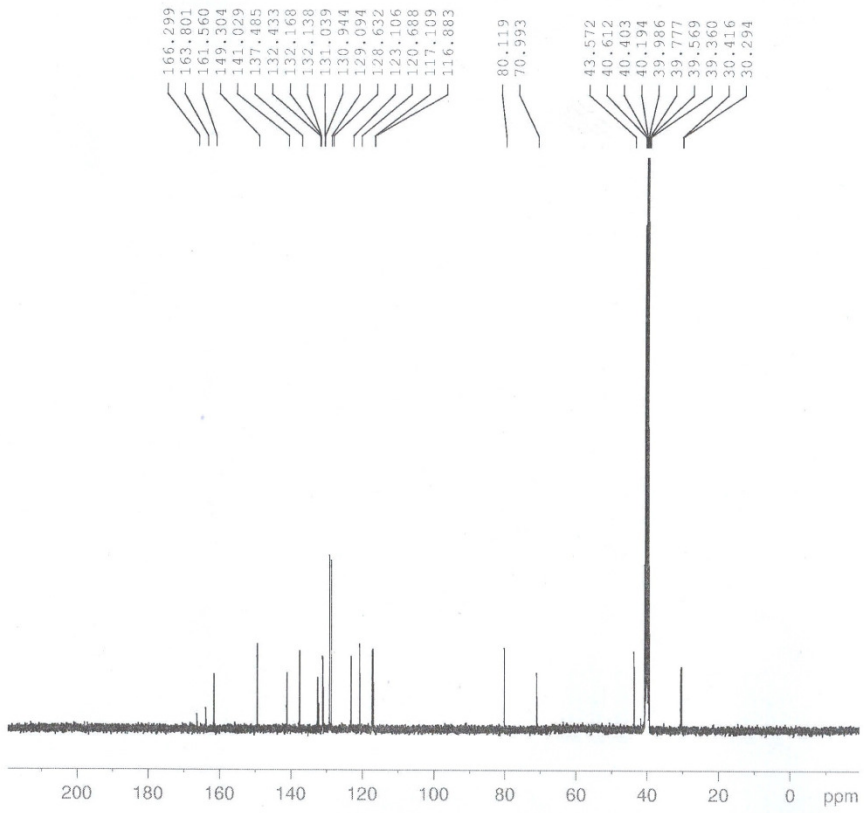



```
Current Data Parameters
NAME                  A330926
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150623
Time                  10.01
INSTRUM               spect
PROBHD     5 mm PABBO BB-
PULPROG               zg30
TD                   32768
SOLVENT               DMSO
NS                      16
DS                       2
SWH                8223.685 Hz
FIDRES             0.250967 Hz
AQ                 1.9923444 sec
RG                      144
DW                  60.800 usec
DE                   6.00 usec
TE                  295.8 K
D1                 2.00000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       1H
P1                      13.75 usec
PL1                     -2.00 dB
SFO1               400.3754725 MHz

F2 - Processing parameters
SI                       32768
SF                 400.3730000 MHz
WDW                        EM
SSB                         0
LB                       0.30 Hz
GB                          0
PC                       1.00
```




```
Current Data Parameters
NAME                  A330926
EXPNO                       2
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150624
Time                   1.47
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   32768
SOLVENT               DMSO
NS                    1024
DS                       2
SWH              24038.461 Hz
FIDRES           0.733596 Hz
AQ               0.6816244 sec
RG                      36
DW                20.800 usec
DE                 6.00 usec
TE                296.7 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                     1

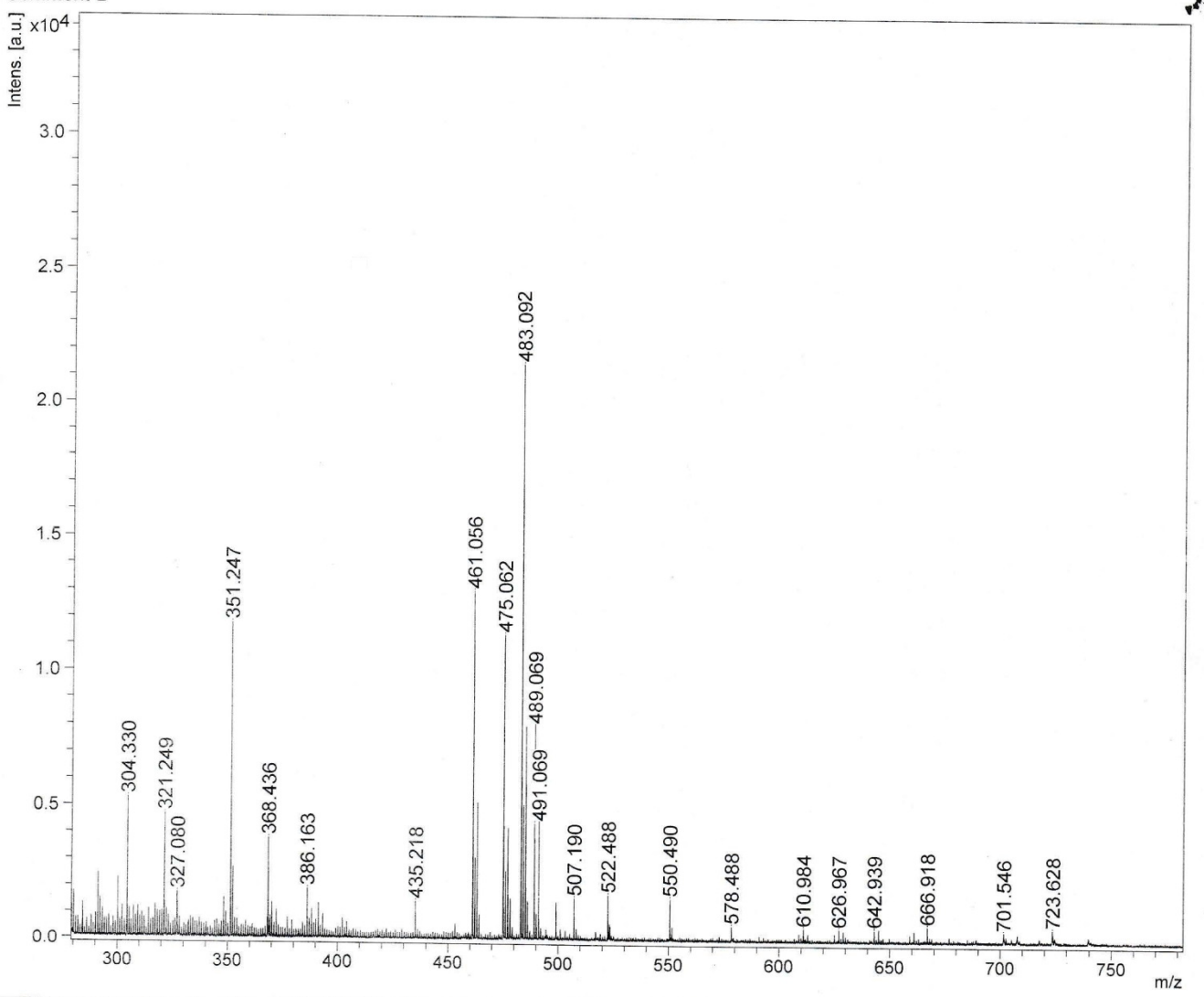
======== CHANNEL f1 ========
NUC1                   13C
P1                  8.15 usec
PL1                -2.00 dB
SFO1         100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
PCPD2              80.00 usec
PL2                -2.00 dB
PL12               13.30 dB
PL13               15.50 dB
SFO2         400.3746015 MHz

F2 - Processing parameters
SI                   32768
SF           100.6738710 MHz
WDW                    EM
SSB                     0
LB                 1.00 Hz
GB                      0
PC                   1.40
```

Comment 1

Comment 2

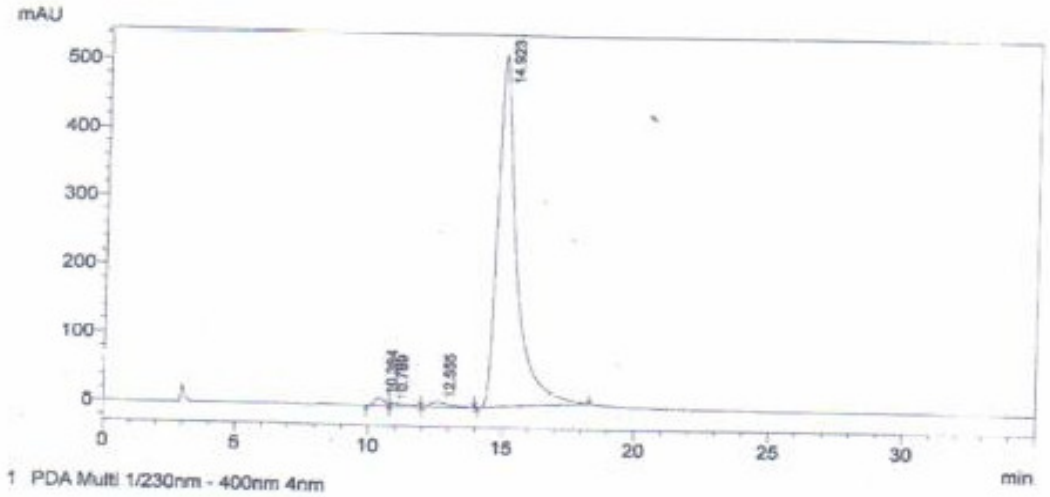


Acquisition Parameter

Date of acquisition	2015-06-16T11:16:43.171+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSR-8
Sample ID :
Data File Name : BSR- 8
Method File Name : 2080TFAHEXET

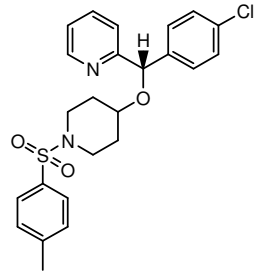
Method Information : Column:CHIRAL PAK IA(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(20:80)
FLOW:1.0ml\min



PDA Ch1 230nm - 400nm 4nm

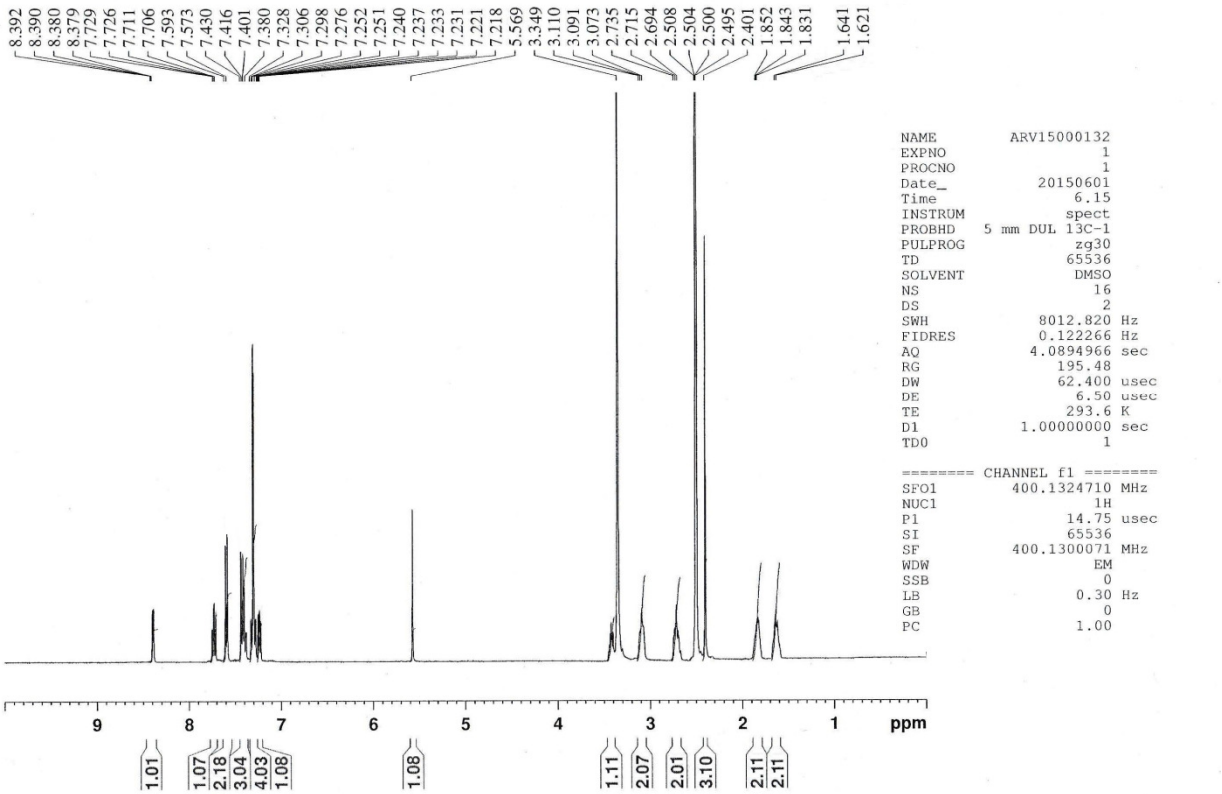
PeakTable

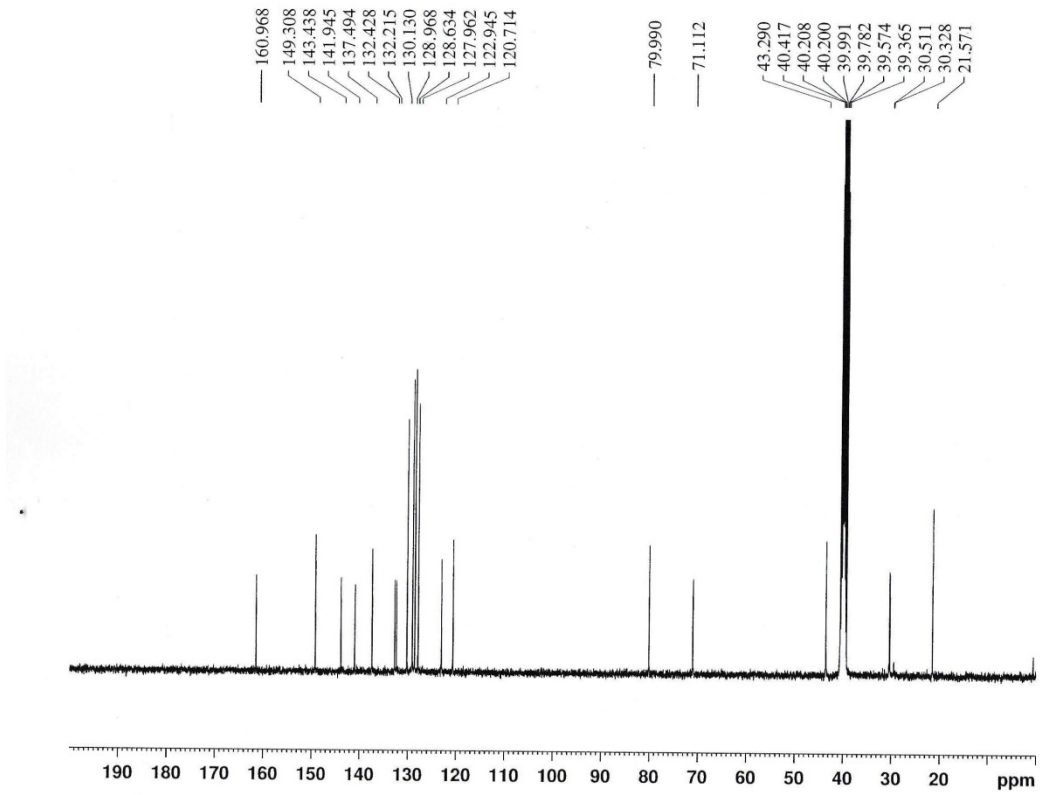
Peak#	Ret. Time	Area	Area %
1	10.384	300767	1.121
2	10.789	137043	0.511
3	12.555	311919	1.163
4	14.923	26070958	97.205
Total		26820686	100.000



(R)-2-((4-chlorophenyl)((1-tosylpiperidin-4-yl)oxy)methyl)pyridine (6i): Yield (254mg, 84.3%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.39- 8.37(d,J=8Hz,1H), 7.72- 7.70(m,1H), 7.59- 7.57

(d,J=8.0Hz, 2H), 7.43- 7.38(m, 3H),7.32- 7.21 (m, 5H), 5.56(s, 1H), 3.34(m, 1H), 3.11- 3.07(m, 2H), 2.73- 2.69(m, 2H), 2.40(s,3H), 1.85- 1.83(m, 2H), 1.64- 1.62 (m, 2H); 13C-NMR (DMSO-d_6)160.96, 149.30, 143.43, 141.94, 137.49, 132.42, 132.21, 130.13, 128.96, 128.63, 127.96, 122.94, 120.71, 79.99, 71.11, 43.29, 30.51, 30.32, 21.57; HRMS Calcd 479.117; Found: 479.117 ($M+Na^+$); Anal.Calcd for $C_{24}H_{25}ClN_2O_3S$: C 63.08; H 5.51; N 6.13; Found: C, 63.06; H, 5.48; N, 6.14; Chiral HPLC (%ee) 99;

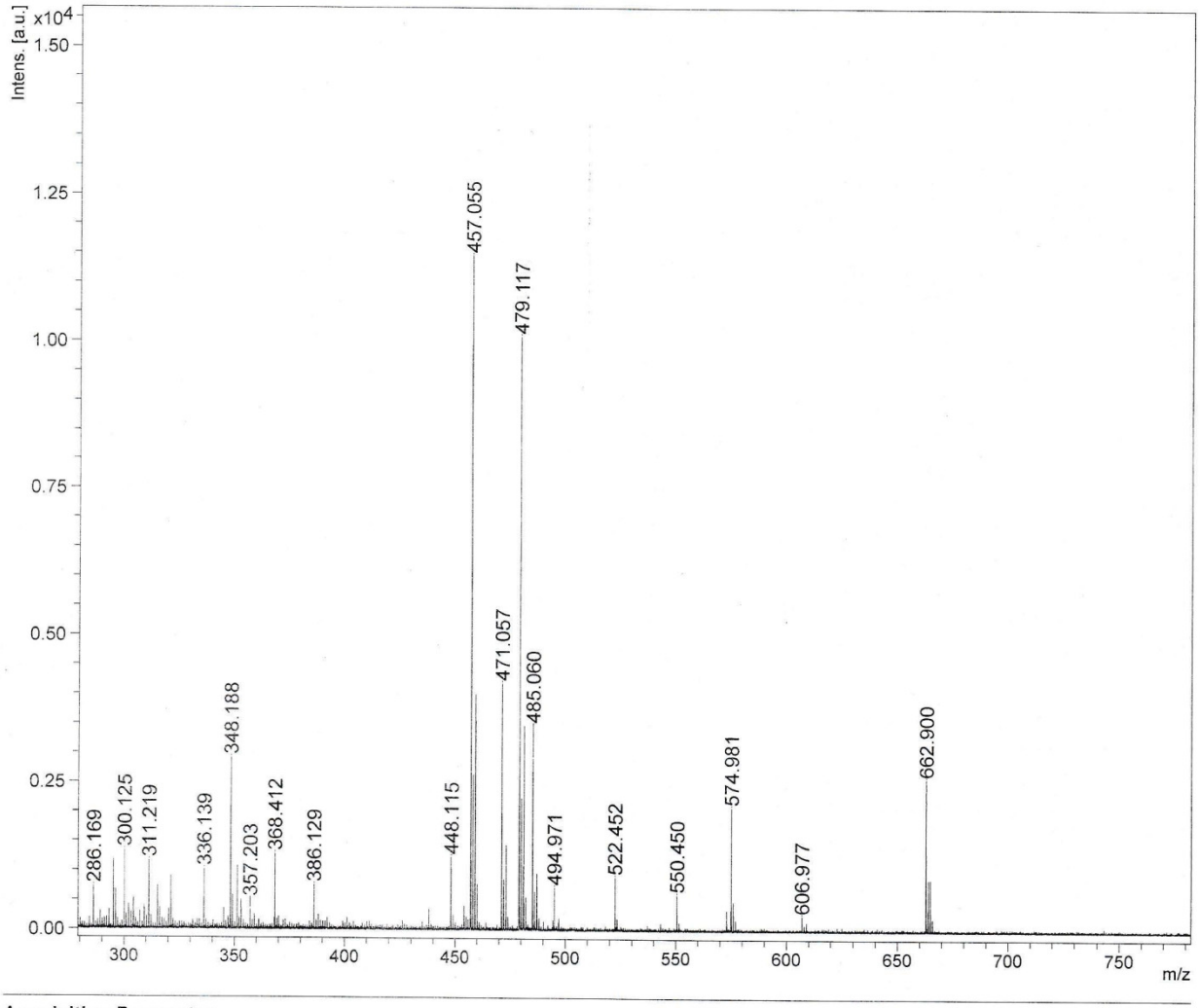




NAME	ARV15000132-13C
EXPNO	1
PROCNO	1
Date_	. 20150531
Time	1.05
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zgpg30
TD	65536
SOLVENT	DMSO
NS	5000
DS	4
SWH	28409.092 Hz
FIDRES	0.433488 Hz
AQ	1.1534836 sec
RG	195.48
DW	17.600 use
DE	6.50 use
TE	294.9 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
========	CHANNEL f1 =======
SFO1	100.6228293 MHz
NUC1	13C
P1	9.10 use
SI	32768
SF	100.6127685 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

Comment 1

Comment 2

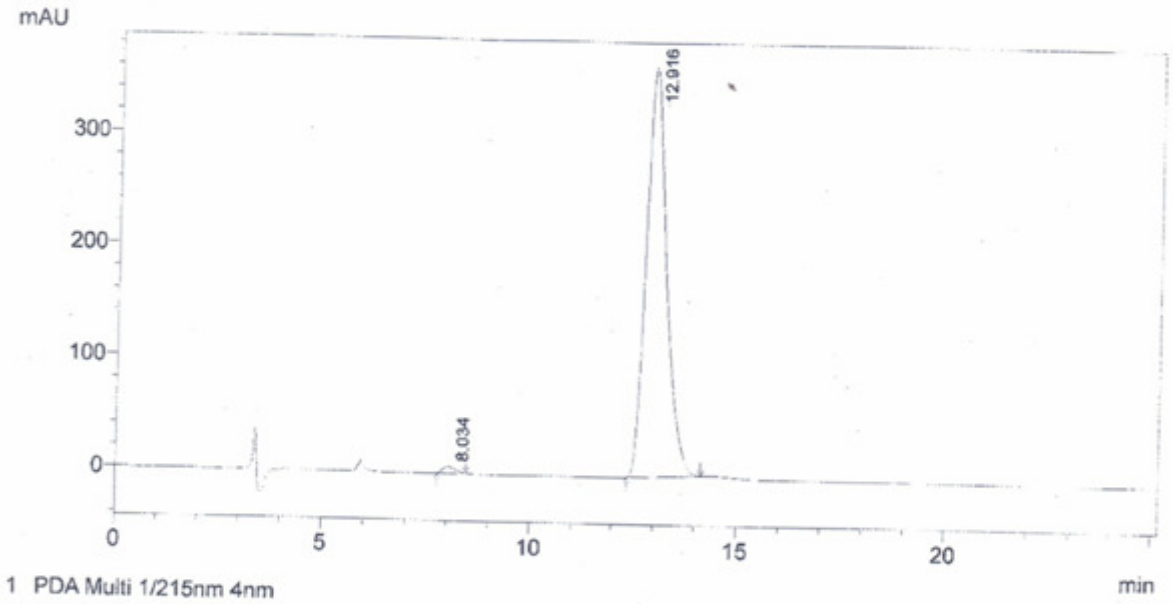


Acquisition Parameter

Date of acquisition	2015-06-16T11:16:12.984+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSR-9
Sample ID :
Data File Name : BSR-9
Method File Name : 5050TFA HEXET

Method information : Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(50:50)
Flow:1.0ml\min

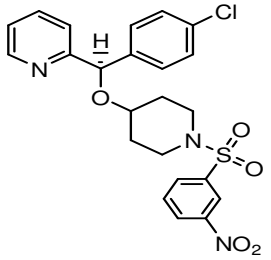


1 PDA Multi 1/215nm 4nm

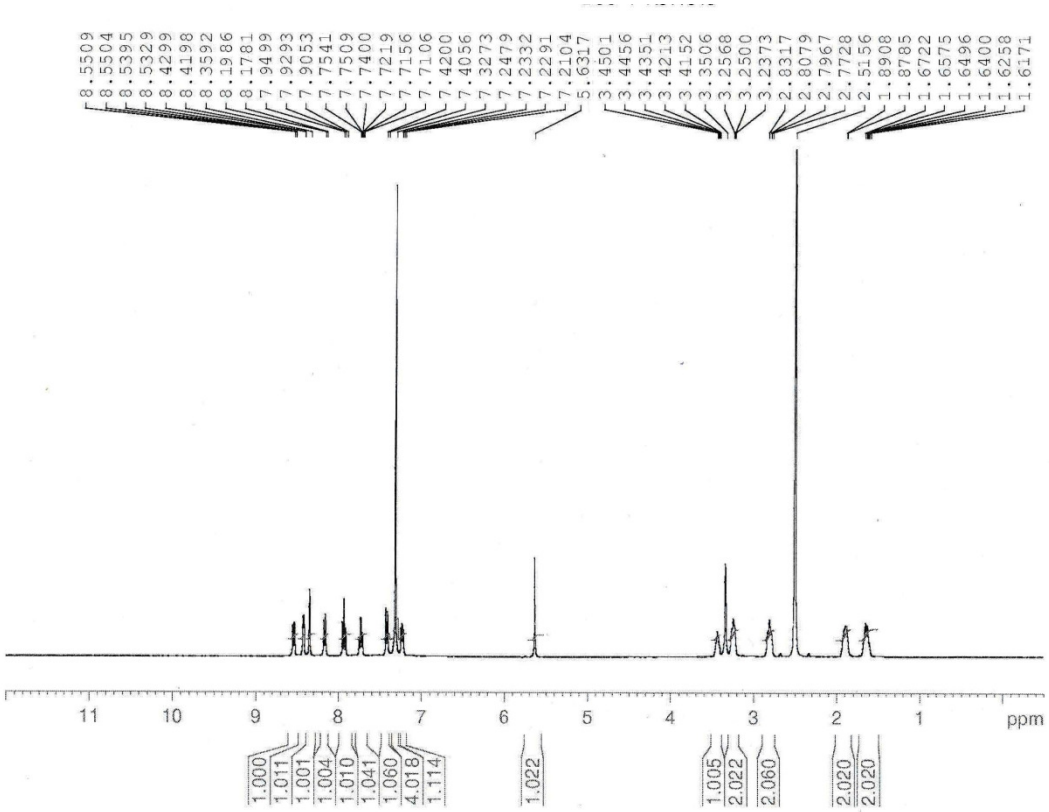
PeakTable

PDA Ch1 215nm 4nm

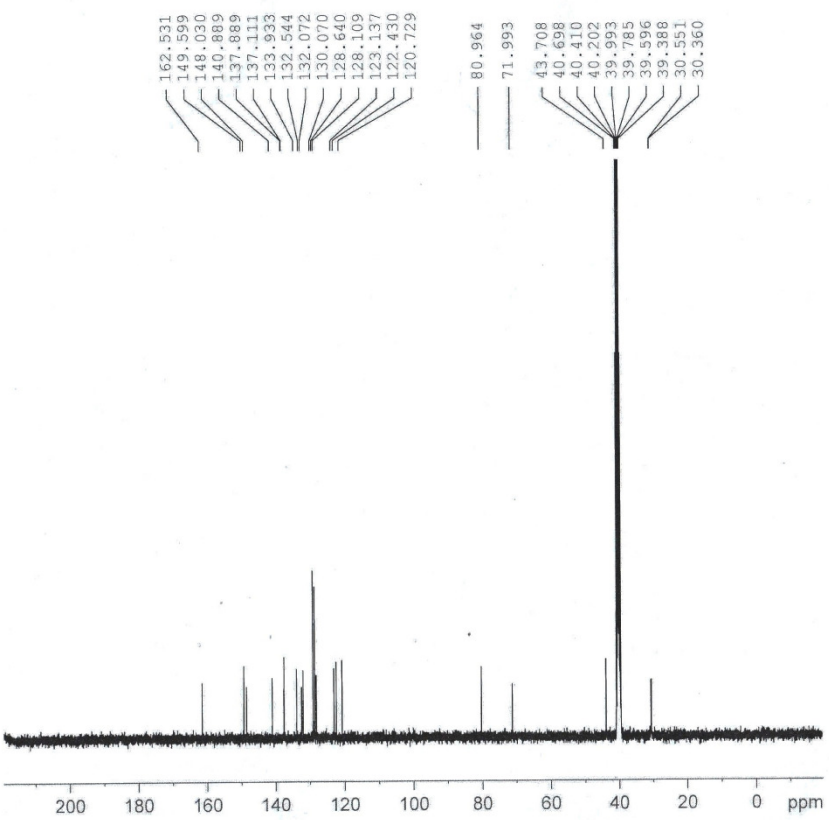
Peak#	Ret. Time	Area	Area %
1	8.034	121117	0.963
2	12.916	12455887	99.037
Total		12577005	100.000



(S)-2-((4-chlorophenyl)((1-((3-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6j): Yield (265mg, 82%); Tan colored solid; 1H-NMR (400 MHz, DMSO-d_6) 8.55- 8.53 (d,J=8.0Hz,1H), 8.42- 8.41(d, J=4.0Hz,1H), 8.35 (s,1H), 8.19- 8.17 (d,J=8.0Hz,1H), 7.94-7.90(t,J=8.0Hz,1H),7.75-7.71(m,1H), 7.42-7.40(d,J=8.0Hz,1H),7.32-7.21(m, 5H), 5.63(s, 1H), 3.45-3.41(m, 1H), 3.25-3.23(m, 2H), 2.83- 2.77(m, 2H) 1.89- 1.87 (m, 2H) 1.67- 1.61 (m, 2H); 13C-NMR (DMSO-d_6);162.53, 149.59, 148.03, 140.88, 137.88, 137.11, 133.93, 132.54, 132.07, 130.07, 128.64, 128.10, 123.13, 122.43, 120.72, 80.96, 71.99, 43.70, 30.55, 30.36; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.58; H, 4.57; N, 8.67; Chiral HPLC (%ee) 97.2



NAME	BSS-1-A311540
EXPNO	1
PROCNO	1
Date_	20150602
Time	21.20
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	128
DS	2
SWH	8223.685 Hz
FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	256
DW	60.800 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
TD0	1
======== CHANNEL f1 ========	
NUC1	1H
P1	12.80 usec
PL1	-2.00 dB
PL1W	15.00864029 W
SFO1	400.3124721 MHz
SI	32768
SF	400.3100000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00




```
Current Data Parameters
NAME        bss1-A311540
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20150604
Time              21.50
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                32768
SOLVENT             DMSO
NS                 2500
DS                    2
SWH           24038.461 Hz
FIDRES         0.733596 Hz
AQ             0.6816244 sec
RG                 28.5
DW               20.800 usec
DE                6.00 usec
TE               296.9 K
D1            2.00000000 sec
d11           0.03000000 sec
DELTA         1.89999998 sec
TD0                   1

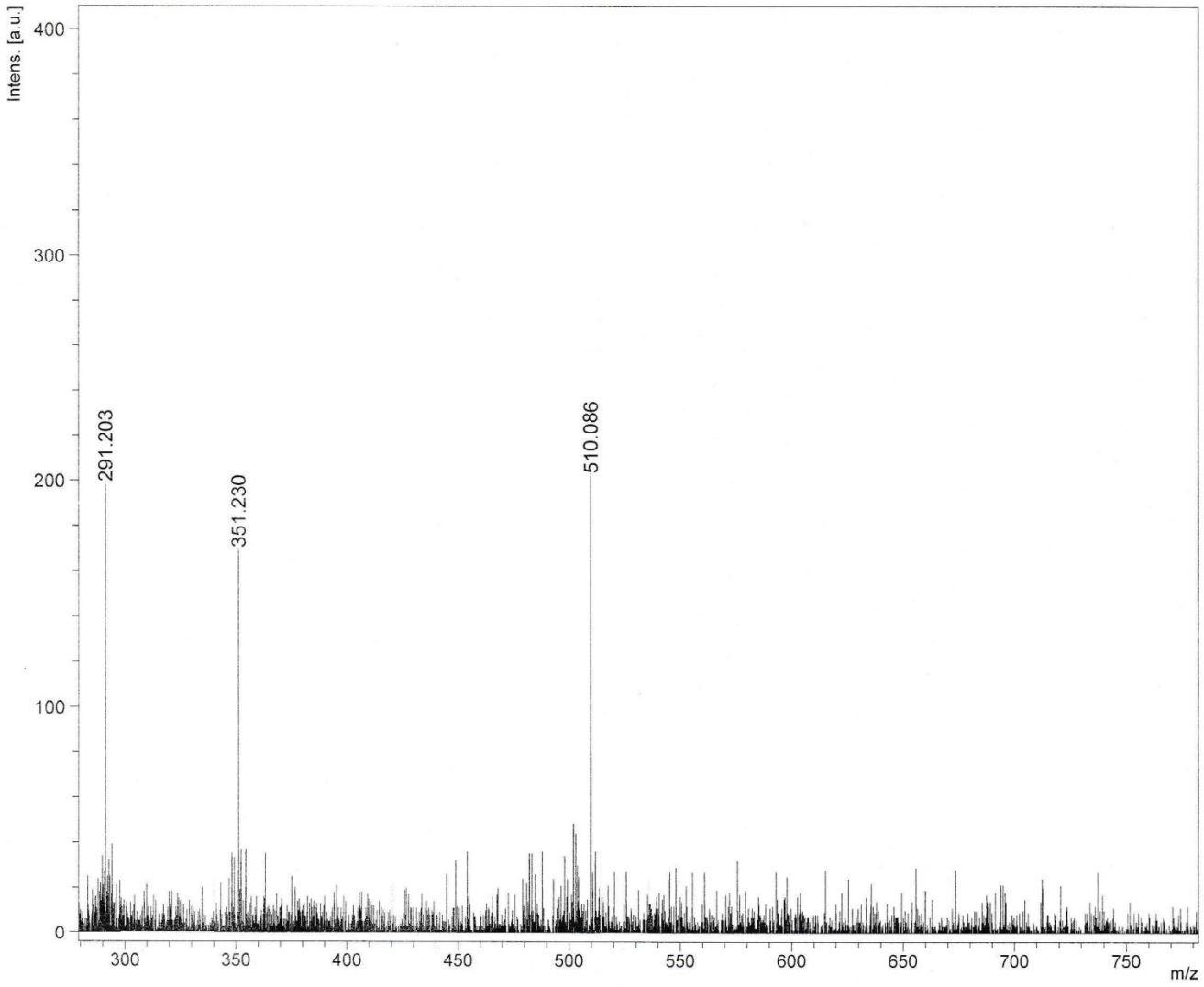
======== CHANNEL f1 ========
NUC1                 13C
P1                 8.15 usec
PL1               -2.00 dB
SFO1        100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                 1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              13.30 dB
PL13              15.50 dB
SFO2        400.3746015 MHz

F2 - Processing parameters
SI                32768
SF          100.6738710 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

Comment 1

Comment 2

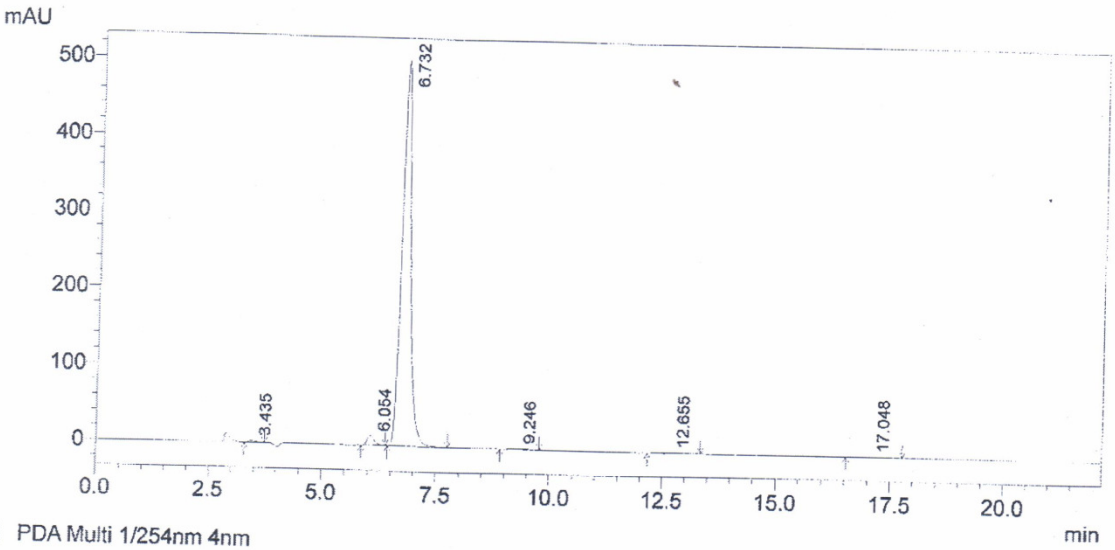


Acquisition Parameter

Date of acquisition	2015-06-16T11:05:30.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name :BSS-1
Sample ID :
Data File Name :BSS-1
Method File Name :7030TFAHEXET

Method information :Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase'A":0.1%TFA IN HEXANE:ETHANOL(7030)
Flow:1.0ml\min

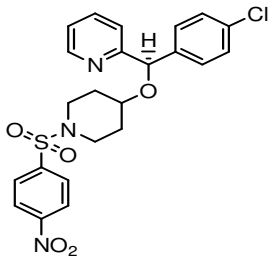


1 PDA Multi 1/254nm 4nm

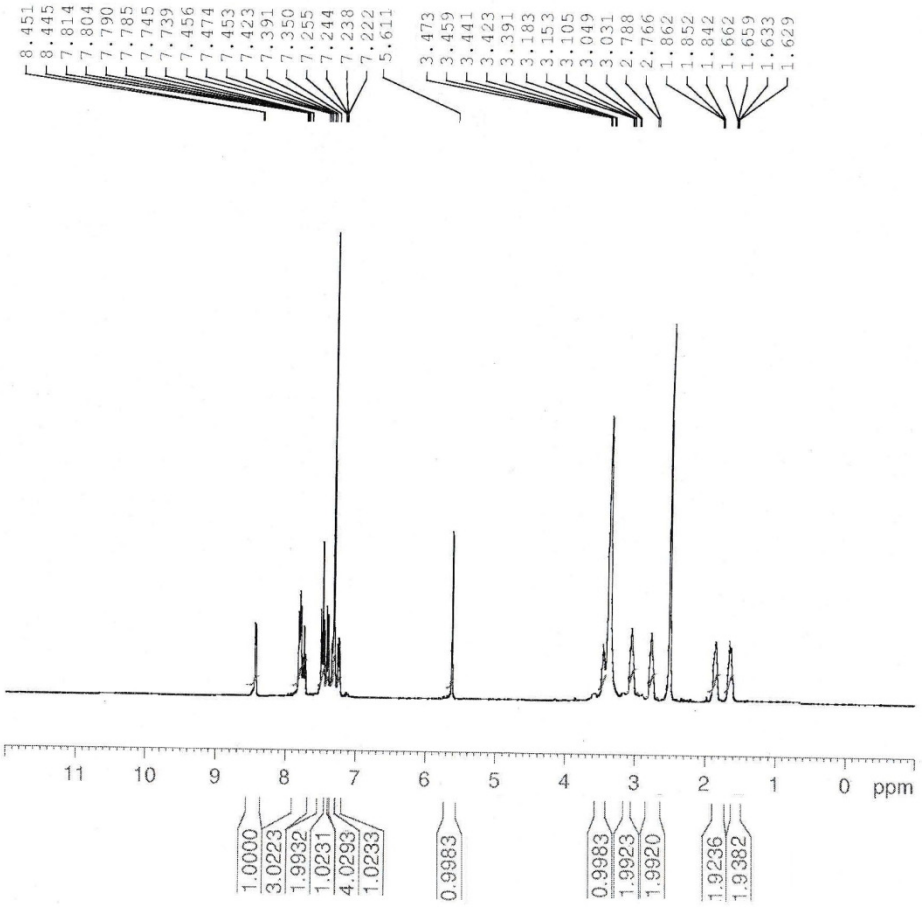
PeakTable

PDA Ch1 254nm 4nm

Peak#	Ret. Time	Area	Area %
1	3.435	23822	0.324
2	6.054	134780	1.832
3	6.732	7152513	97.237
4	9.246	21532	0.293
5	12.655	12621	0.172
6	17.048	10521	0.143
Total		7355789	100.000



(S)-2-((4-chlorophenyl)((1-((4-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6k): Yield (283mg, 88%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.45- 8.44(d,J=4Hz,1H), 7.81- 7.73(m,3H), 7.45- 7.35 (m,7H), 7.25- 7.22(d,J=8.0Hz,1H), 5.61(s, 1H), 3.47- 3.39(m, 1H), 3.04- 3.03(m, 2H), 2.78- 2.76(m, 2H), 1.86- 1.84 (m, 2H), 1.66- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);161.99, 148.99, 148.63, 140.93, 137.57, 137.47, 133.11, 132.45, 132.09, 129.11, 128.64, 128.13, 123.33, 122.44, 120.11, 80.99, 71.70, 43.75, 30.50, 30.22; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.68; H, 4.53; N, 8.69; $[\alpha]_D$= +37.6(C 0.01, MeOH);

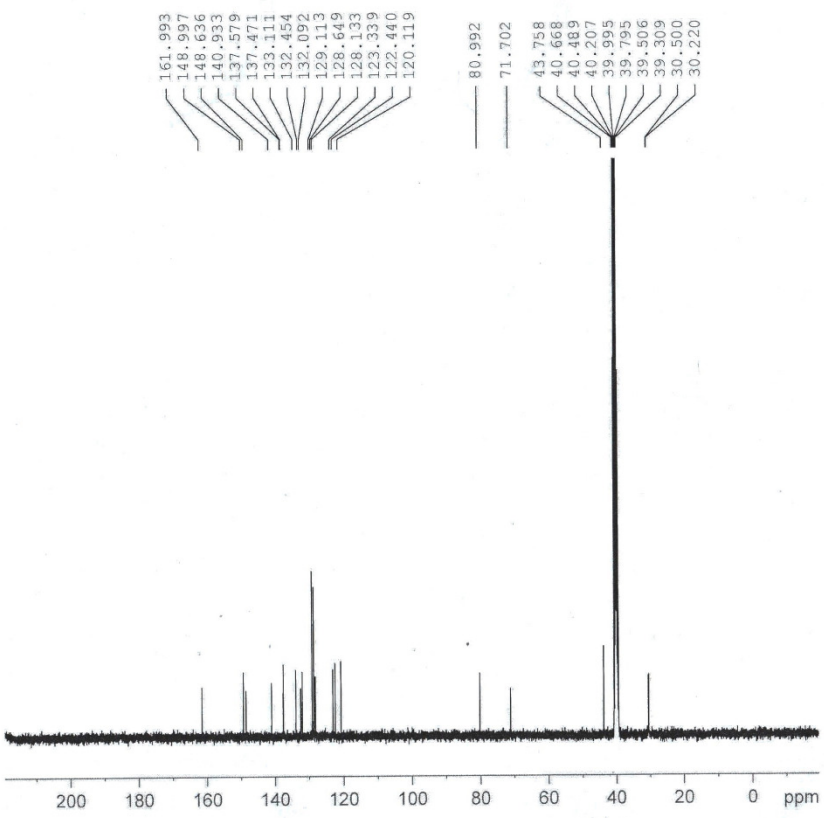


Current Data Parameters
NAME BSS-2
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20150623
Time 06.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 32768
SOLVENT DMSO
NS 16
DS 2
SWH 8223.685 Hz
FIDRES 0.250967 Hz
AQ 1.9923444 sec
RG 144
DW 60.800 usec
DE 6.00 usec
TE 295.8 K
D1 2.00000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 1H
P1 13.75 usec
PL1 -2.00 dB
SFO1 400.3754725 MHz

F2 - Processing parameters
SI 32768
SF 400.3730000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00




```
Current Data Parameters
NAME                  bss2
EXPNO                    2
PROCNO                   1

F2 - Acquisition Parameters
Date_              20150604
Time                 15.55
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG             zgpg30
TD                   32768
SOLVENT               DMSO
NS                    2500
DS                       2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6816244 sec
RG                    28.5
DW                  20.800 usec
DE                   6.00 usec
TE                  296.9 K
D1               2.00000000 sec
d11              0.03000000 sec
DELTA            1.89999998 sec
TD0                      1

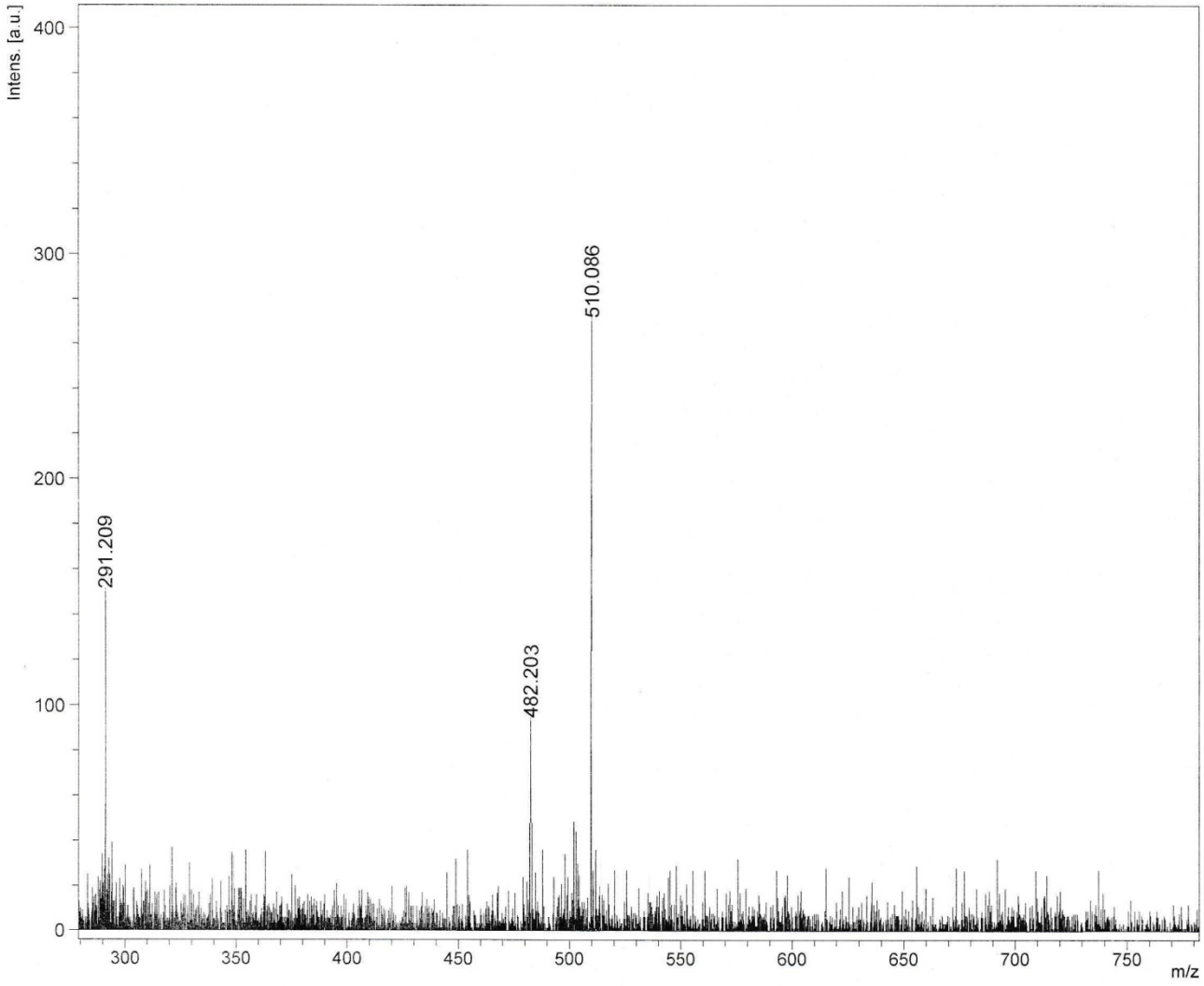
======== CHANNEL f1 ========
NUC1                   13C
P1                    8.15 usec
PL1                  -2.00 dB
SFO1          100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                   1H
PCPD2                80.00 usec
PL2                  -2.00 dB
PL12                 13.30 dB
PL13                 15.50 dB
SFO2          400.3746015 MHz

F2 - Processing parameters
SI                    32768
SF            100.6738710 MHz
WDW                      EM
SSB                       0
LB                    1.00 Hz
GB                        0
PC                    1.40
```

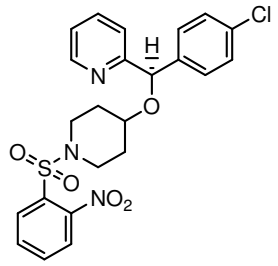
Comment 1

Comment 2

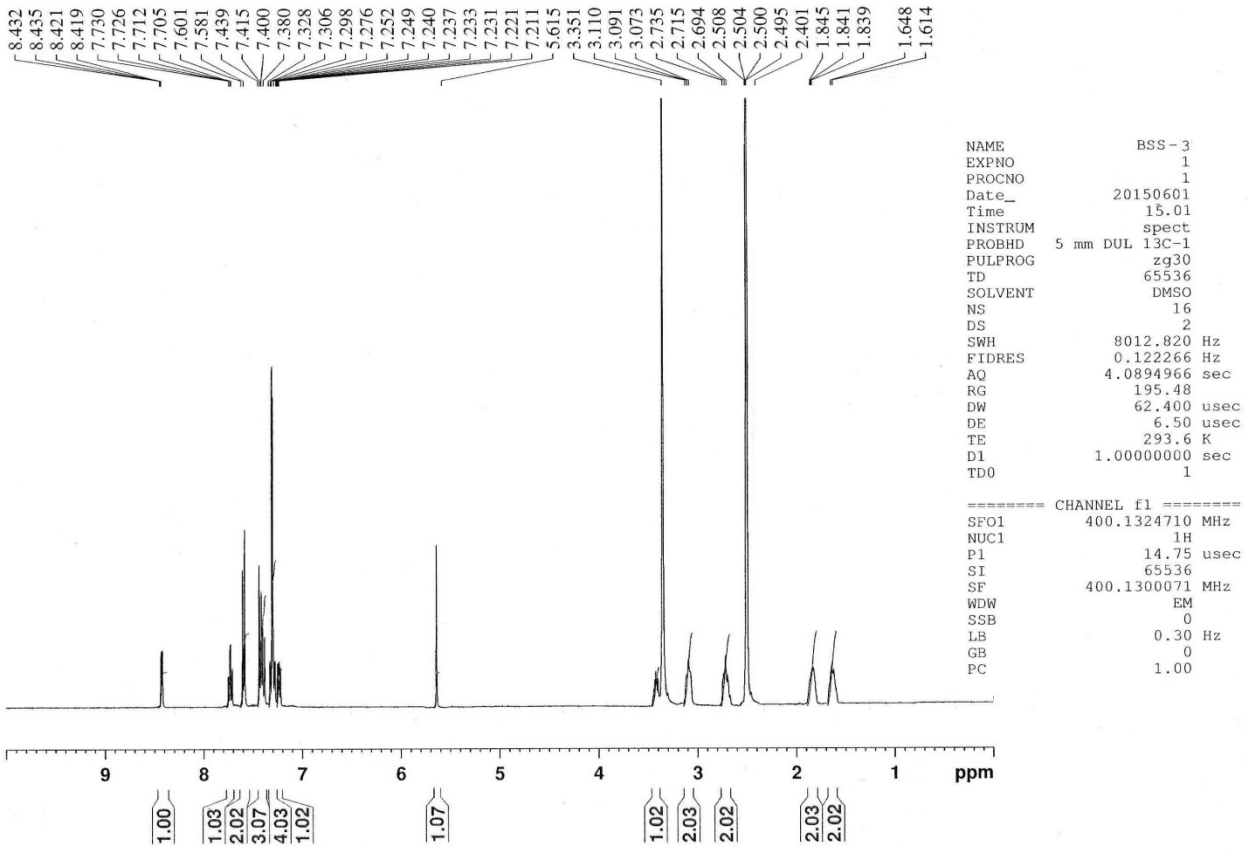


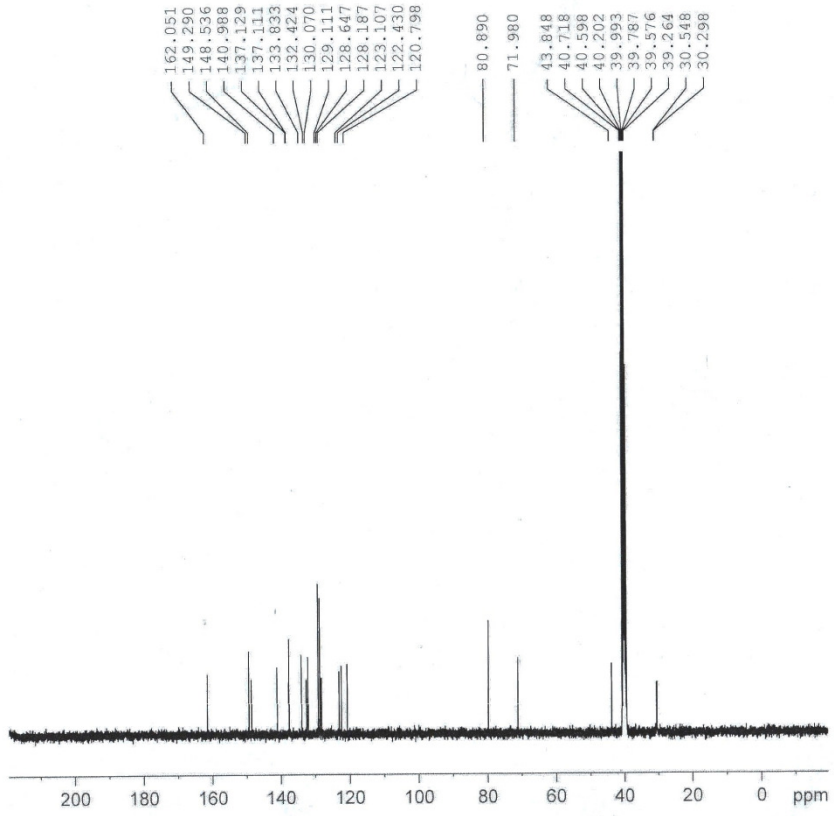
Acquisition Parameter

Date of acquisition	2015-06-16T10:17:50.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	



(S)-2-((4-chlorophenyl)((1-((2-nitrophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6l): Yield (273mg, 85%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.41(d,J=8Hz,1H), 7.73- 7.70(m,1H), 7.60- 7.58 (d,J=8.0Hz, 2H), 7.43- 7.32(m, 3H),7.30- 7.21 (m, 5H), 5.61(s, 1H), 3.35(m, 1H), 3.11- 3.07(m, 2H), 2.73- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.64- 1.61 (m, 2H); 13C-NMR (DMSO-d_6);162.05, 149.29, 148.53, 140.98, 137.12, 137.11, 133.83, 132.42, 130.07, 129.11, 128.64, 128.18, 123.10, 122.43, 120.79, 80.89, 71.98, 43.84, 30.54, 30.29; HRMS Calcd 510.086; Found: 510.086(M+Na^+); Anal.Calcd for $C_{23}H_{22}ClN_3O_5S$: C 56.61; H 4.54; N 8.67; Found: C, 56.56; H, 4.59; N, 8.71; Chiral HPLC (%ee) 97.6;






```
Current Data Parameters
NAME                  bss3
EXPNO                    5
PROCNO                   2

F2 - Acquisition Parameters
Date_              20150604
Time                 06.40
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG            zgpg30
TD                  32768
SOLVENT               DMSO
NS                    2500
DS                       2
SWH            24038.461 Hz
FIDRES          0.733596 Hz
AQ              0.6816244 sec
RG                    28.5
DW                20.800 usec
DE                 6.00 usec
TE                296.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                      1

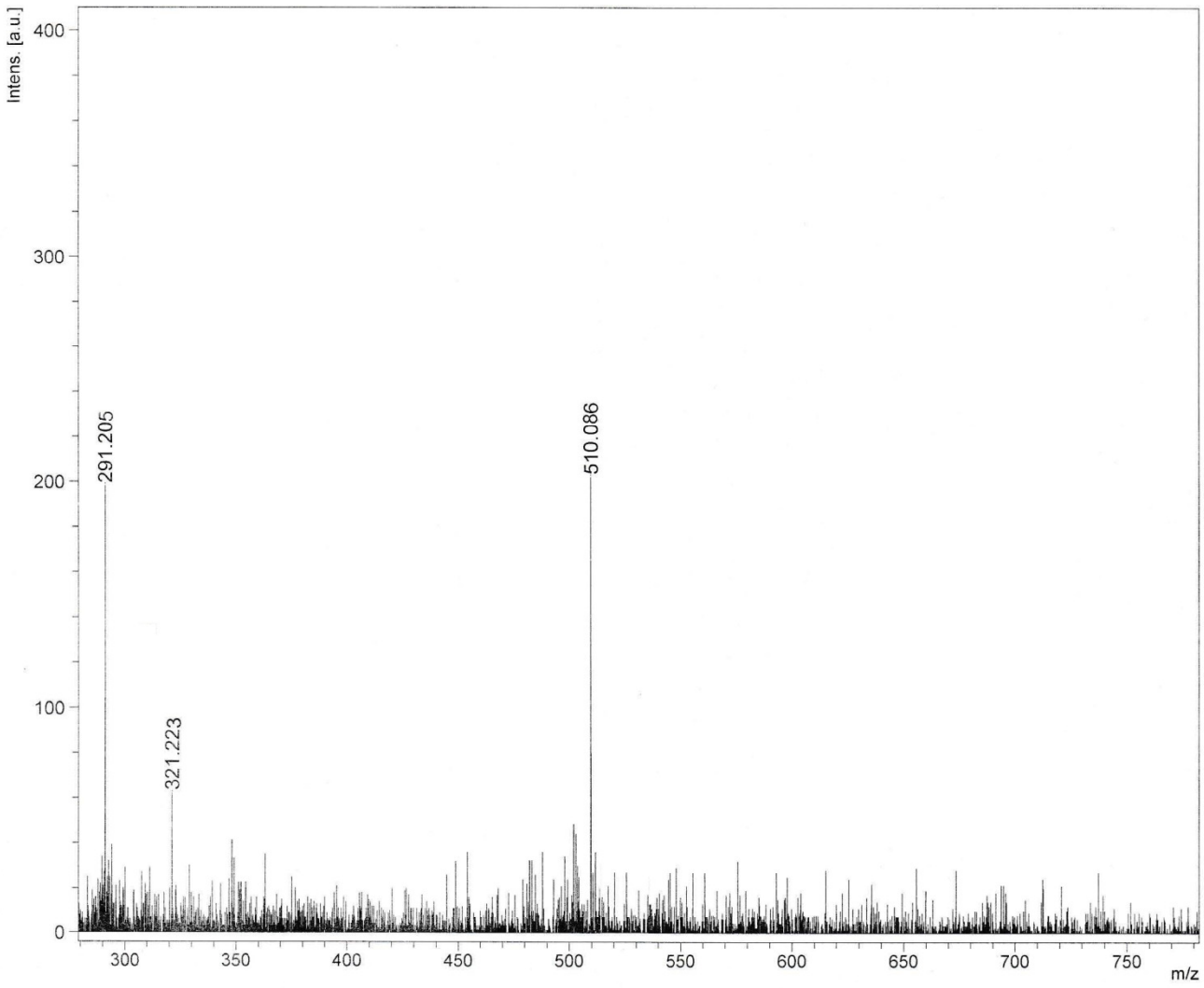
======== CHANNEL f1 ========
NUC1                  13C
P1                 8.15 usec
PL1               -2.00 dB
SFO1         100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              13.30 dB
PL13              15.50 dB
SFO2         400.3746015 MHz

F2 - Processing parameters
SI                   32768
SF           100.6738710 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```

Comment 1

Comment 2

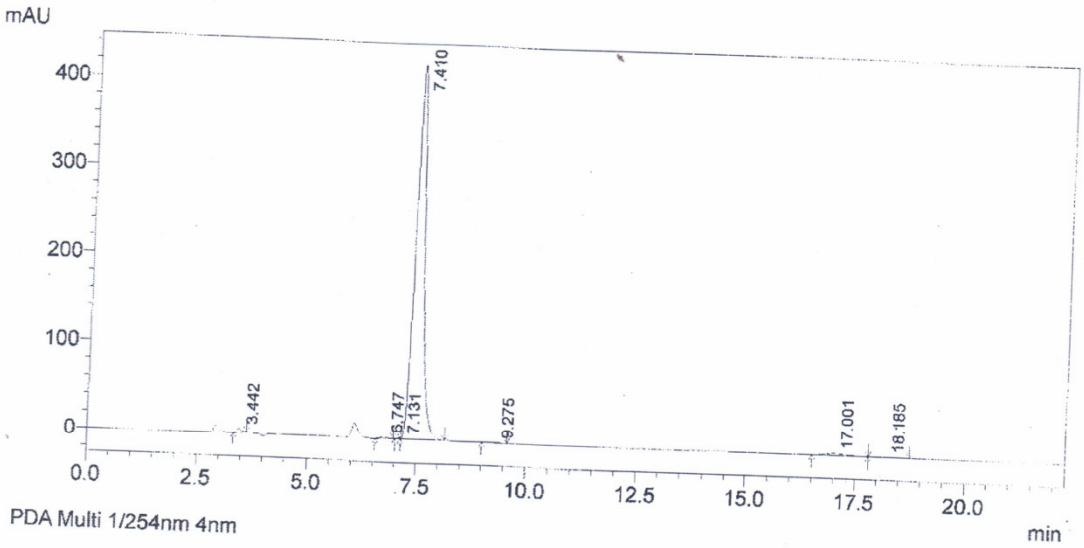


Acquisition Parameter

Date of acquisition	2015-06-16T15:05:30.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSS-3
Sample ID :
Data File Name : BSS-3
Method File Name : 7030TFAHEXET

Method information : Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(70:30)
Flow:1.0ml\min

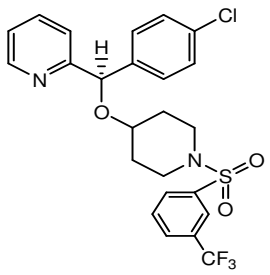


1 PDA Multi 1/254nm 4nm

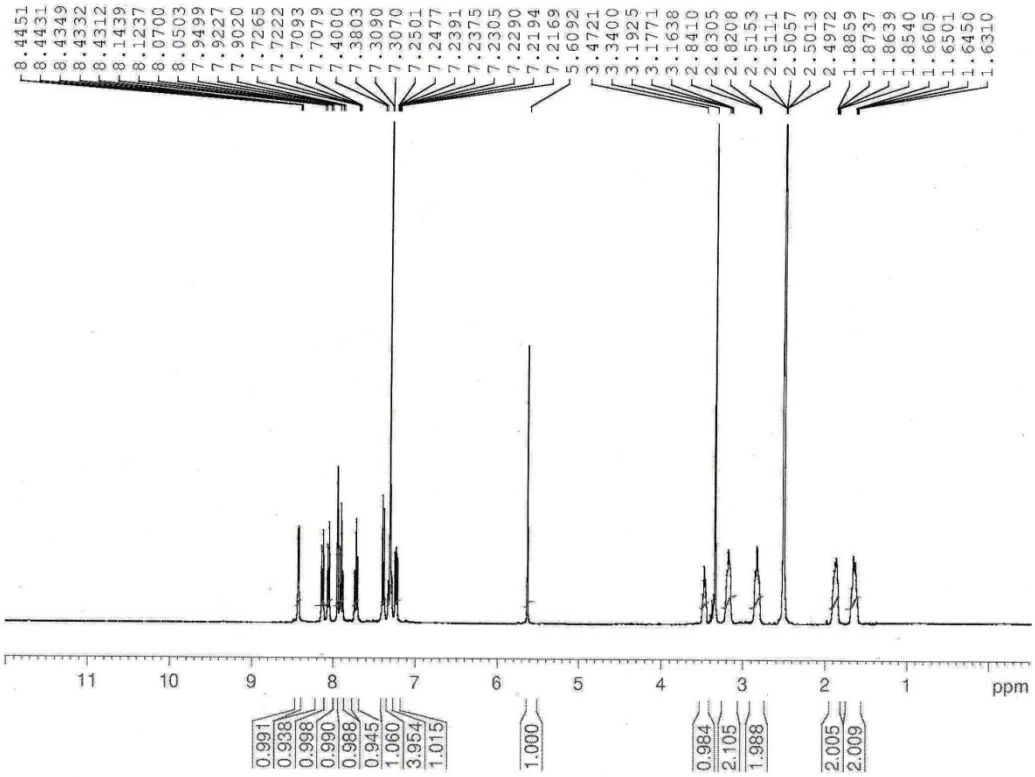
PDA Ch1 254nm 4nm

PeakTable

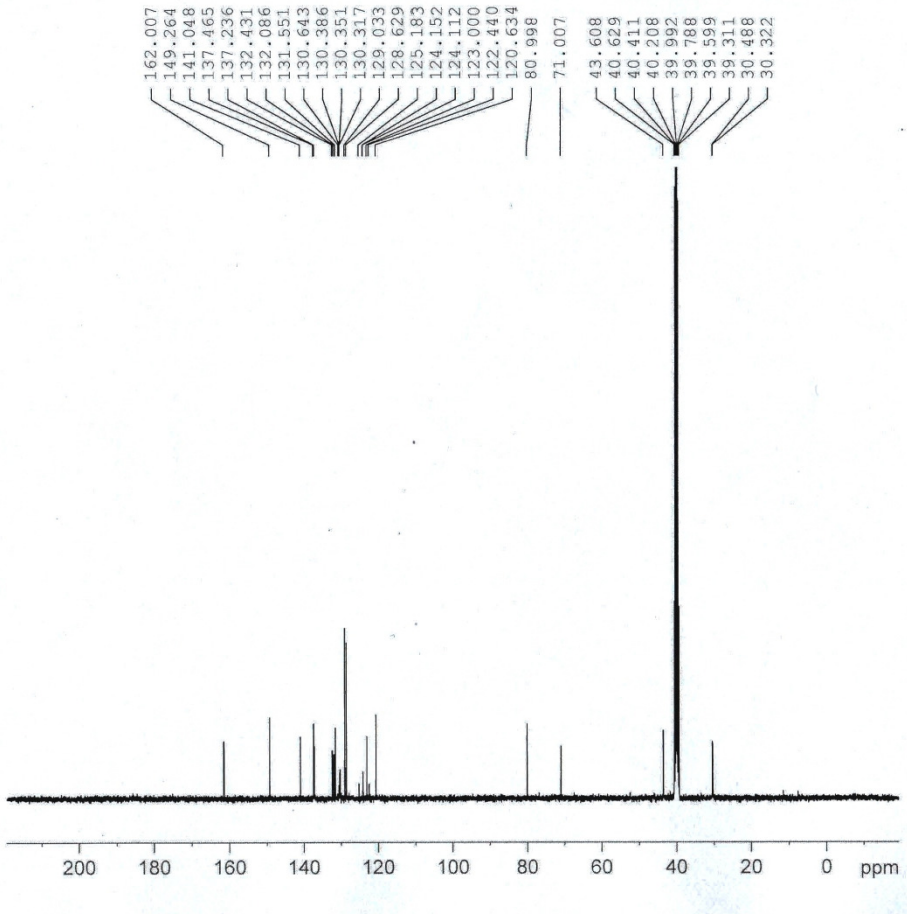
Peak#	Ret. Time	Area	Area %
1	3.442	31464	0.491
2	6.747	20743	0.323
3	7.131	5832	0.091
4	7.410	6261080	97.624
5	9.275	3344	0.052
6	17.001	82553	1.287
7	18.185	8473	0.132
Total		6413489	100.000



(S)-2-((4-chlorophenyl)((1-((3-(trifluoromethyl)phenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6m): Yield (288mg, 86%); Off-white solid;1H-NMR (400 MHz, DMSO-d_6) 8.44- 8.43(d, J=4Hz,1H), 8.14- 8.12(d, J=8.0Hz, 1H), 8.07- 8.05(d, J=8.0Hz, 1H), 7.94- 7.90(m, 2H),7.72- 7.70 (m, 1H),7.40- 7.38(d, J=8.0Hz,1H),7.30- 7.21(m,5H), 5.60(s, 1H), 3.47(m, 1H), 3.19- 3.16(m, 2H), 2.84- 2.82(m, 2H), 1.88- 1.86 (m, 2H), 1.66- 1.63 (m, 2H); 13C-NMR (DMSO-d_6);162.00, 149.26, 141.04, 137.46, 137.23, 132.43, 132.08, 131.55, 130.64, 130.38, 130.35, 130.31, 129.03, 128.62, 125.18, 124.15, 124.11, 123.00, 122.44, 120.63, 80.99, 71.00, 43.60, 30.48, 30.32; ; HRMS Calcd 511.107; Found: 511.1067(M+H) ; Anal.Calcd for $C_{24}H_{22}ClFN_3O_3S$: C 56.42; H 4.34; N 5.48; Found: C, 56.47; H, 4.33; N, 5.52; $[\alpha]_D$= +39.7(C 0.01, MeOH);



NAME	BSS-4-A311541
EXPNO	1
PROCNO	1
Date_	20150602
Time	23.22
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	128
DS	2
SWH	8223.685 Hz
FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	256
DW	60.800 usec
DE	6.50 usec
TE	300.0 K
D1	2.00000000 sec
TD0	1
======== CHANNEL f1 ========	
NUC1	1H
P1	12.80 usec
PL1	-2.00 dB
PL1W	15.00864029 W
SFO1	400.3124721 MHz
SI	32768
SF	400.3100000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00



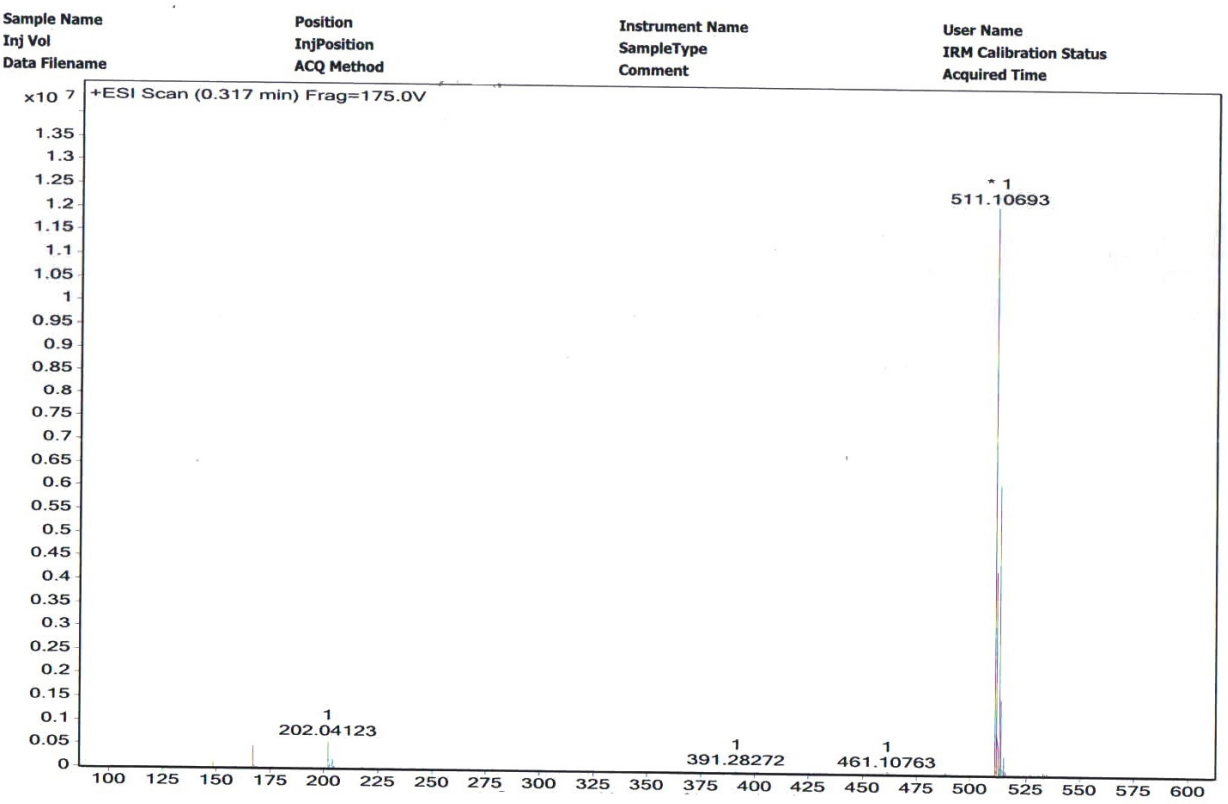

```
Current Data Parameters
NAME        bss4-A311541
EXPNO                  2
PROCNO                 1

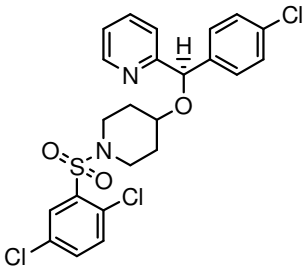
F2 - Acquisition Parameters
Date_           20150604
Time               03.27
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG          zgpg30
TD                32768
SOLVENT            DMSO
NS                 2500
DS                    2
SWH          24038.461 Hz
FIDRES        0.733596 Hz
AQ           0.6816244 sec
RG                   32
DW              20.800 usec
DE               6.00 usec
TE              296.9 K
D1           2.00000000 sec
d11          0.03000000 sec
DELTA        1.89999998 sec
TD0                   1

======== CHANNEL f1 ========
NUC1                 13C
P1                8.15 usec
PL1              -2.00 dB
SFO1        100.6839383 MHz

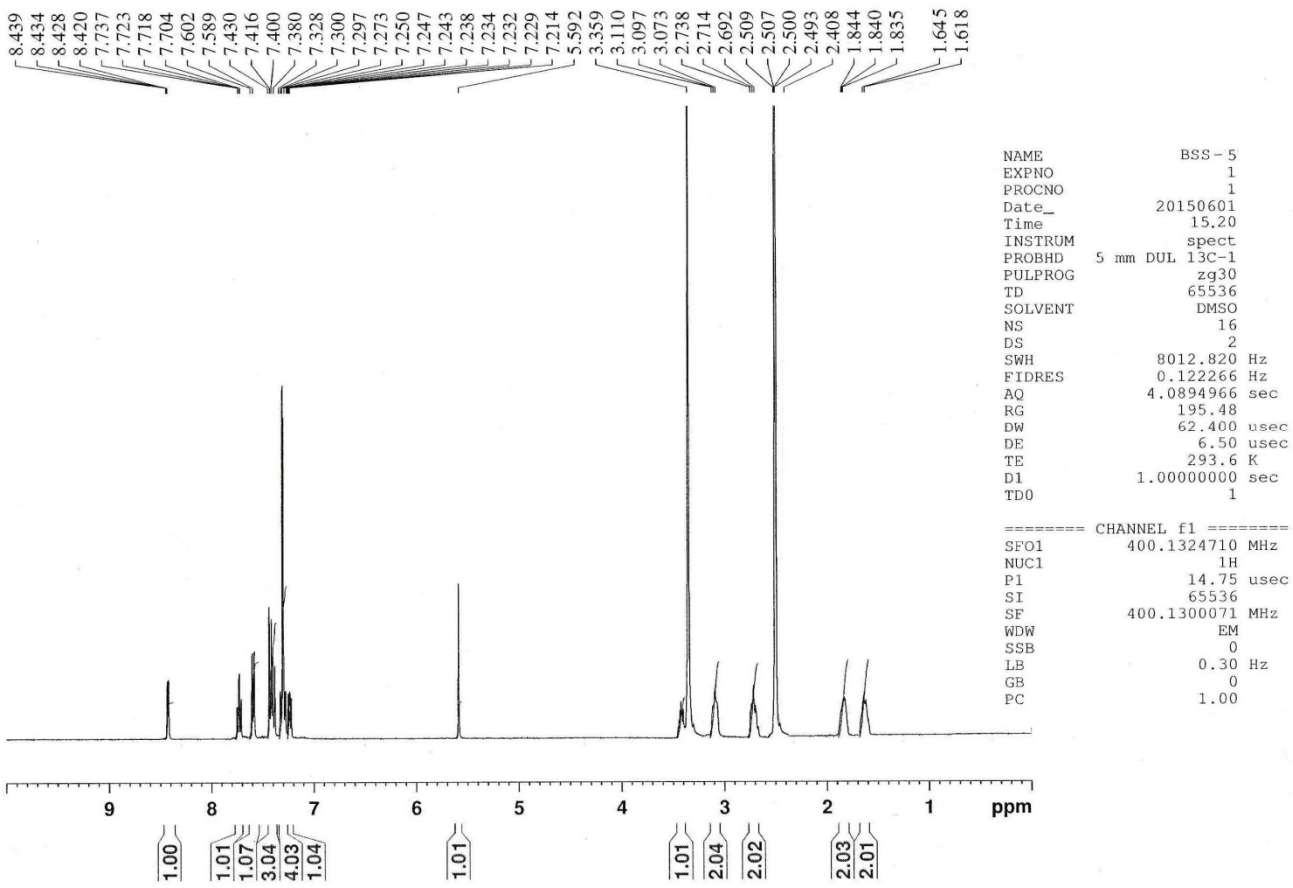
======== CHANNEL f2 ========
CPDPRG2          waltz16
NUC2                 1H
PCPD2            80.00 usec
PL2              -2.00 dB
PL12             13.30 dB
PL13             15.50 dB
SFO2        400.3746015 MHz

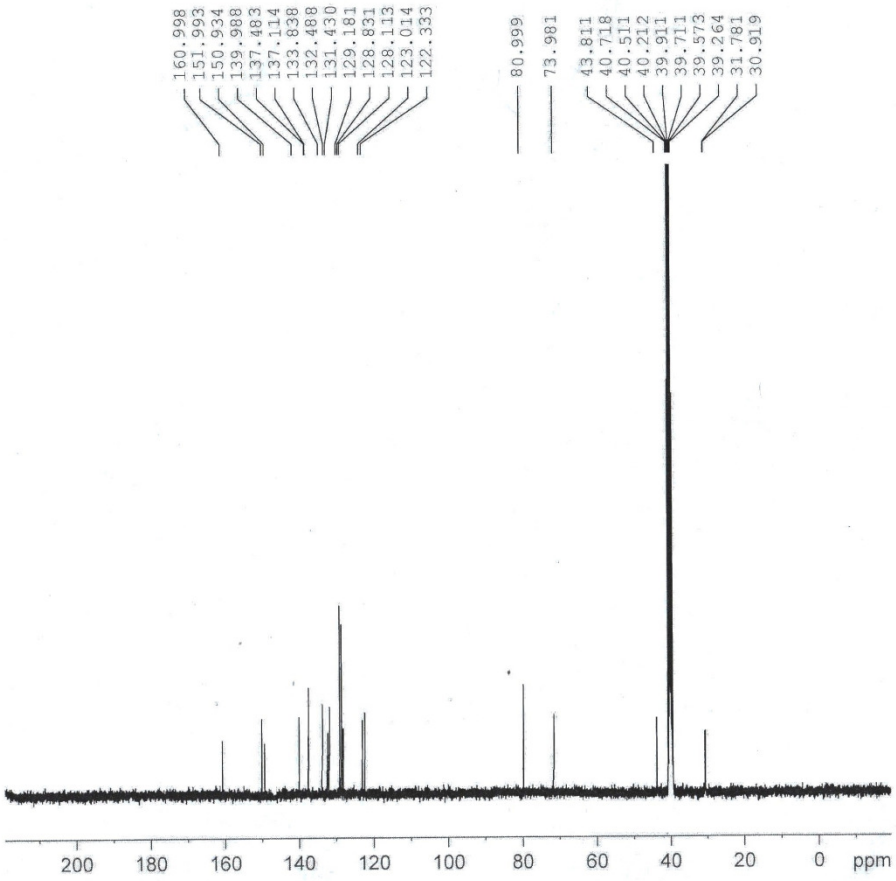
F2 - Processing parameters
SI                32768
SF          100.6738710 MHz
WDW                  EM
SSB                   0
LB                 1.00 Hz
GB                    0
PC                 1.40
```





(S)-2-((4-chlorophenyl)((1-((2,5-dichlorophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6n): Yield (291mg, 87%); Brown low melting solid; 1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.42(d, J=8.0Hz,1H), 7.73- 7.70(m,1H), 7.60- 7.58 (d, J=8.0Hz, 1H), 7.43- 7.32(m, 3H),7.30- 7.21 (m, 5H), 5.59(s, 1H), 3.35(m, 1H), 3.11- 3.07(m, 2H), 2.73- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.64- 1.61 (m, 2H); 13C-NMR (DMSO-d_6);160.99, 151.99, 150.93, 139.98, 137.48, 137.11, 133.83, 132.48, 131.43, 129.18, 128.83, 128.11, 123.01, 122.33, 80.99, 73.98, 43.81, 30.78, 30.91; HRMS Calcd 511.0417; Found: 511.0411(M+H); Anal.Calcd for $C_{23}H_{21}Cl_3N_2O_3S$: C 53.97; H 4.14; N 5.47; Found: C,53.93 ; H, 4.16; N, 5.56; Chiral HPLC (%ee) 98;


8.439
8.434
8.428
8.420
7.737
7.723
7.718
7.704
7.602
7.589
7.430
7.416
7.400
7.380
7.328
7.300
7.297
7.273
7.250
7.247
7.243
7.238
7.234
7.232
7.229
7.214
5.592
3.359
3.110
3.097
3.073
2.738
2.714
2.692
2.509
2.507
2.500
2.493
2.408
1.844
1.840
1.835
1.645
1.618
NAME BSS-5
EXPNO 1
PROCNO 1
Date_ 20150601
Time 15.20
INSTRUM spect
PROBHD 5 mm DUL 13C-1
PULPROG zg30
TD 65536
SOLVENT DMSO
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 195.48
DW 62.400 usec
DE 6.50 usec
TE 293.6 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
SFO1 400.1324710 MHz
NUC1 1H
P1 14.75 usec
SI 65536
SF 400.1300071 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9
8
7
6
5
4
3
2
1
ppm
1.00
1.01
1.07
3.04
4.03
1.04
1.01
1.01
2.04
2.02
2.03
2.01




```
Current Data Parameters
NAME                  bss5
EXPNO                    5
PROCNO                   2

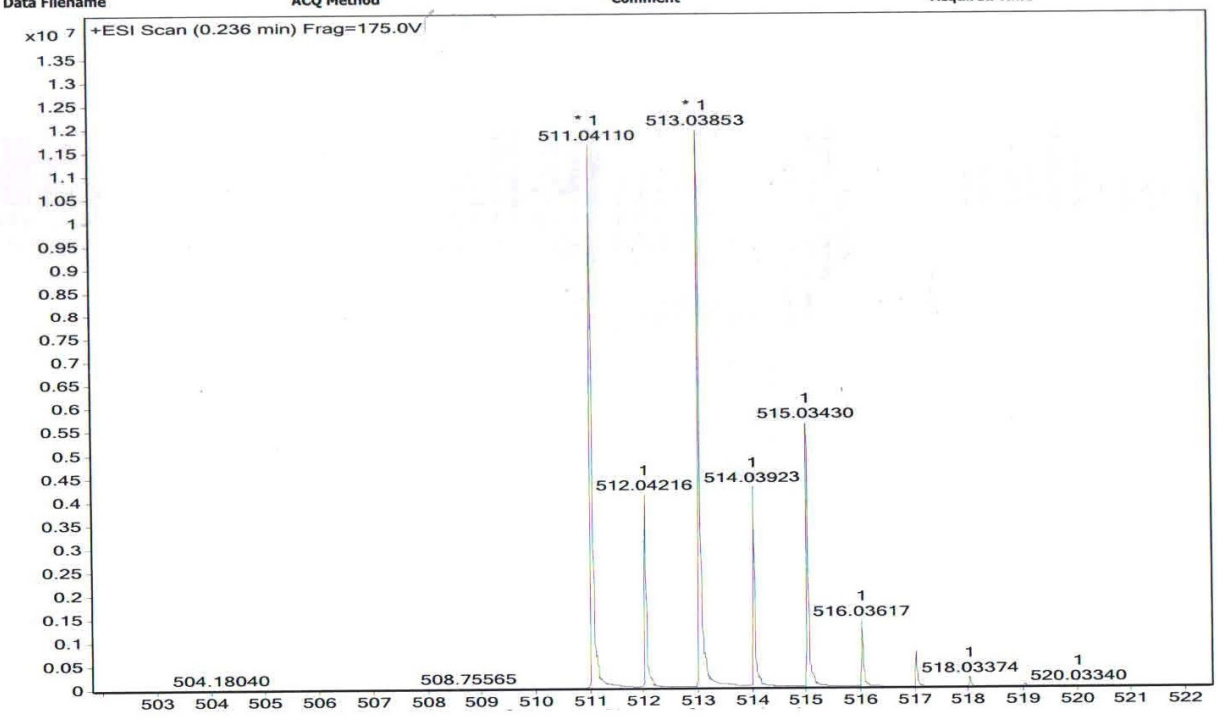
F2 - Acquisition Parameters
Date_              20150604
Time                 00.25
INSTRUM              spect
PROBHD    5 mm PABBO BB-
PULPROG             zgpg30
TD                   32768
SOLVENT                DMSO
NS                     2500
DS                        2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6816244 sec
RG                     28.5
DW                   20.800 usec
DE                    6.00 usec
TE                   296.9 K
D1             2.00000000 sec
d11            0.03000000 sec
DELTA          1.89999998 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                    13C
P1                    8.15 usec
PL1                  -2.00 dB
SFO1         100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2            waltz16
NUC2                    1H
PCPD2                80.00 usec
PL2                  -2.00 dB
PL12                 13.30 dB
PL13                 15.50 dB
SFO2         400.3746015 MHz

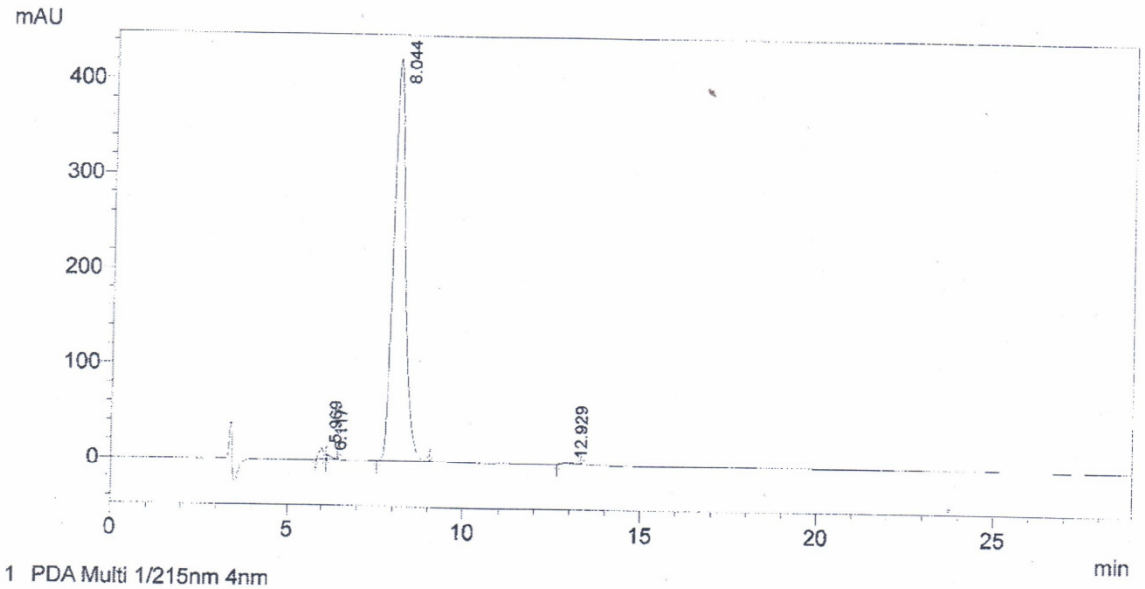
F2 - Processing parameters
SI                   32768
SF           100.6738710 MHz
WDW                     EM
SSB                      0
LB                    1.00 Hz
GB                       0
PC                    1.40
```

Sample Name	**Position**	**Instrument Name**	**User Name**
Inj Vol	**InjPosition**	**SampleType**	**IRM Calibration Status**
Data Filename	**ACQ Method**	**Comment**	**Acquired Time**



Sample Name :BSS-5
Sample ID :
Data File Name :BSS-5
Method File Name :5050TFAHEXET

Method information :Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase:0.1%TFA IN HEXANE:ETHANOL(50:50)
Flow:1.0ml\min

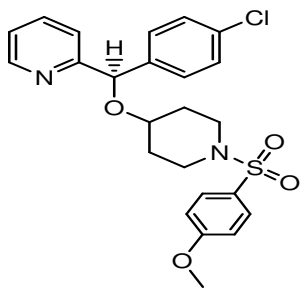


1 PDA Multi 1/215nm 4nm

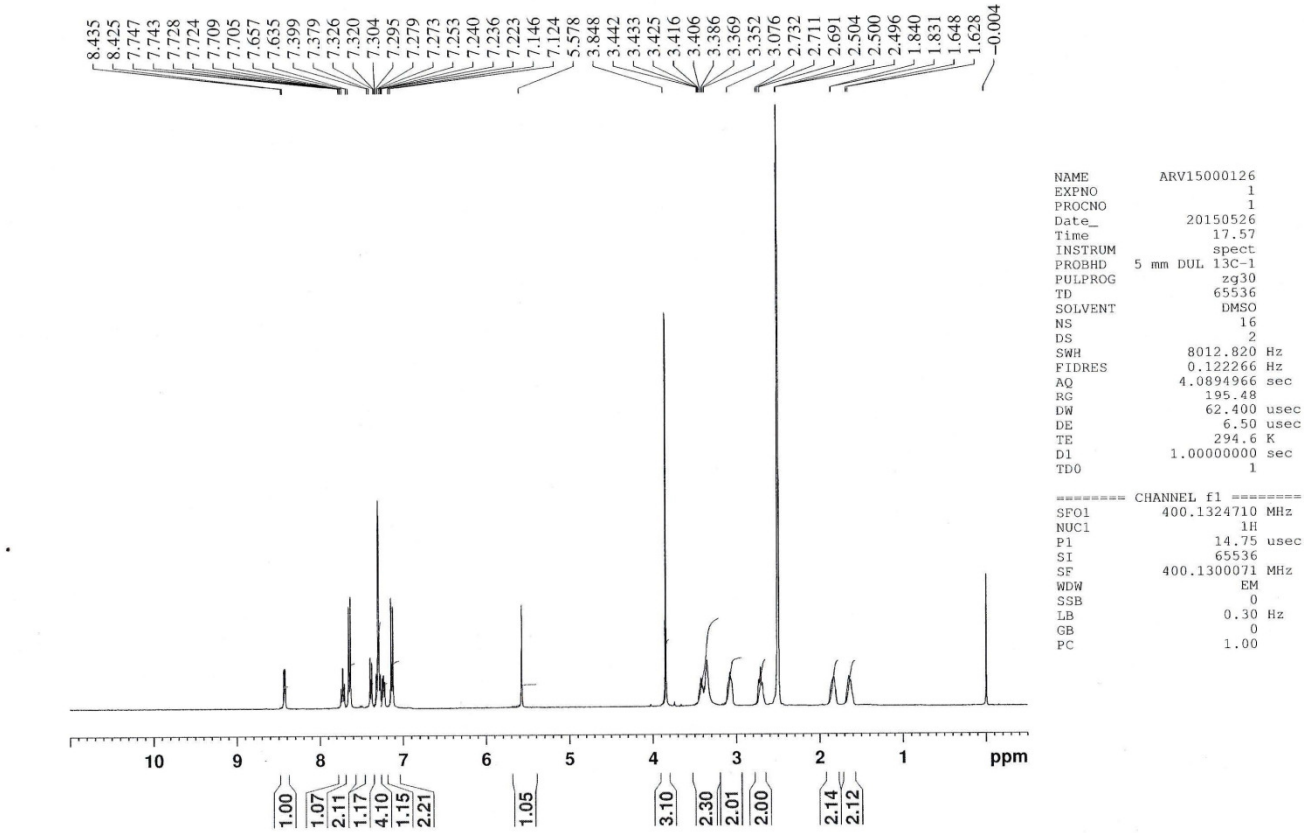
PeakTable

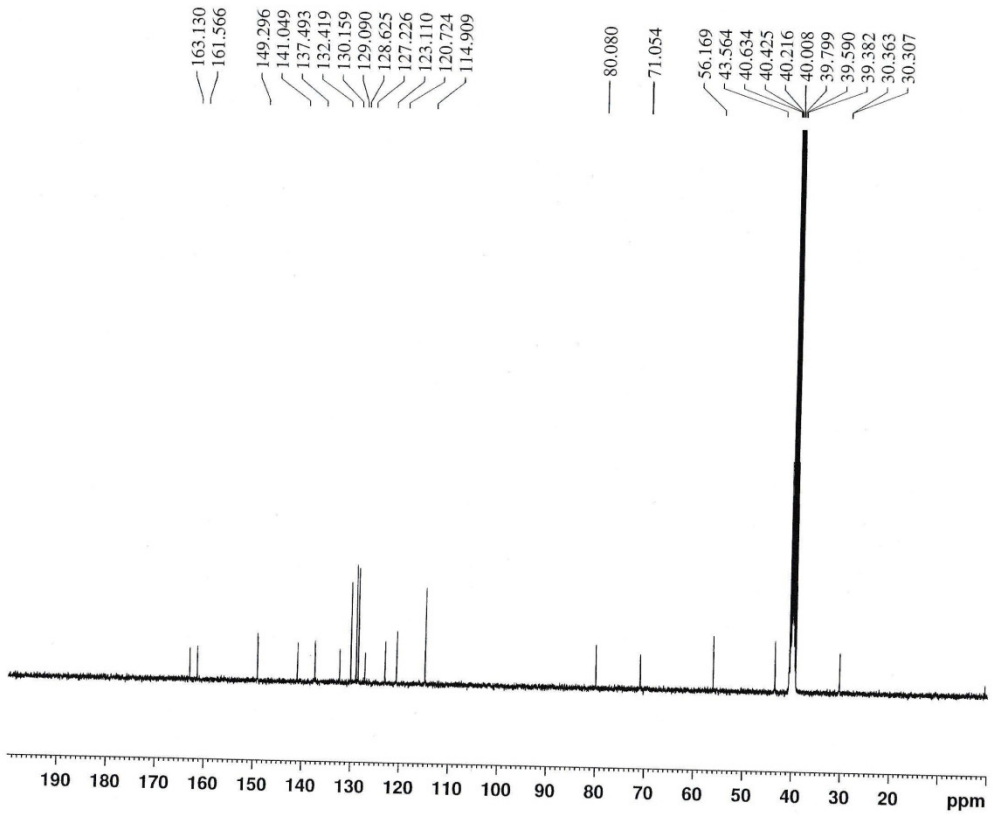
PDA Ch1 215nm 4nm

Peak#	Ret. Time	Area	Area %
1	5.969	121594	1.204
2	6.117	37066	0.367
3	8.044	9902501	98.040
4	12.929	39304	0.389
Total		10100465	100.000



(S)-2-((4-chlorophenyl)((1-((4-methoxyphenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6o): Yield (266mg, 86%); Off-white solid; 1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.42 (d,J=4Hz,1H), 7.74- 7.70(m,1H), 7.65- 7.63 (d,J=8.0Hz, 2H), 7.39- 7.37(d, J=8.0Hz, 1H),7.32- 7.22 (m, 5H), 7.14- 7.12(d, J=8.0Hz, 1H),5.57(s, 1H), 3.84 (s,3H), 3.44(m, 1H), 3.07(m, 2H), 2.73- 2.69(m, 2H), 1.84- 1.83 (m, 2H), 1.64- 1.62 (m, 2H); 13C-NMR (DMSO-d_6);163.13, 161.56, 149.29, 141.04, 137.49, 132.41, 130.15, 129.09, 128.62, 127.22, 123.11, 120.72, 114.90, 80.08, 71.05, 56.16, 43.56, 30.36, 30.30; HRMS Calcd 495.112; Found: 495.112($M+Na^+$); Anal.Calcd for $C_{24}H_{25}ClN_2O_4S$: C 60.94; H 5.33; N 5.92; Found: C, 60.91; H, 5.37; N, 5.95; $[\alpha]_D$= +40.5(C 0.01, MeOH);

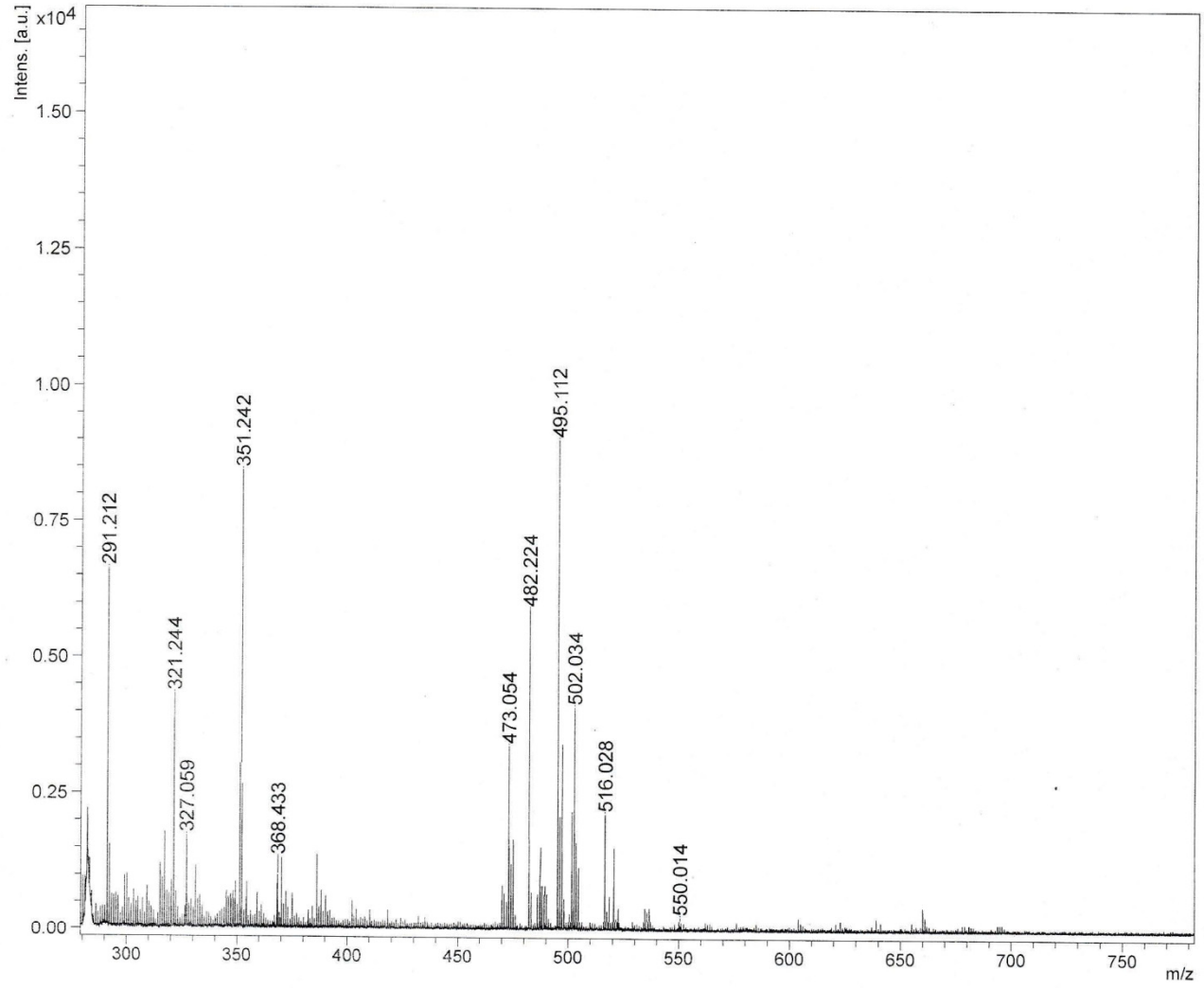




NAME	ARV15000126-13C
EXPNO	1
PROCNO	1
Date_	20150527
Time	0.11
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zgpg30
TD	65536
SOLVENT	DMSO
NS	2048
DS	4
SWH	28409.092 Hz
FIDRES	0.433488 Hz
AQ	1.1534836 sec
RG	195.48
DW	17.600 use
DE	6.50 use
TE	297.6 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
========	CHANNEL f1 =======
SFO1	100.6228293 MHz
NUC1	13C
P1	9.10 use
SI	32768
SF	100.6127685 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

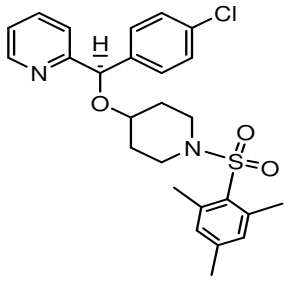
Comment 1

Comment 2

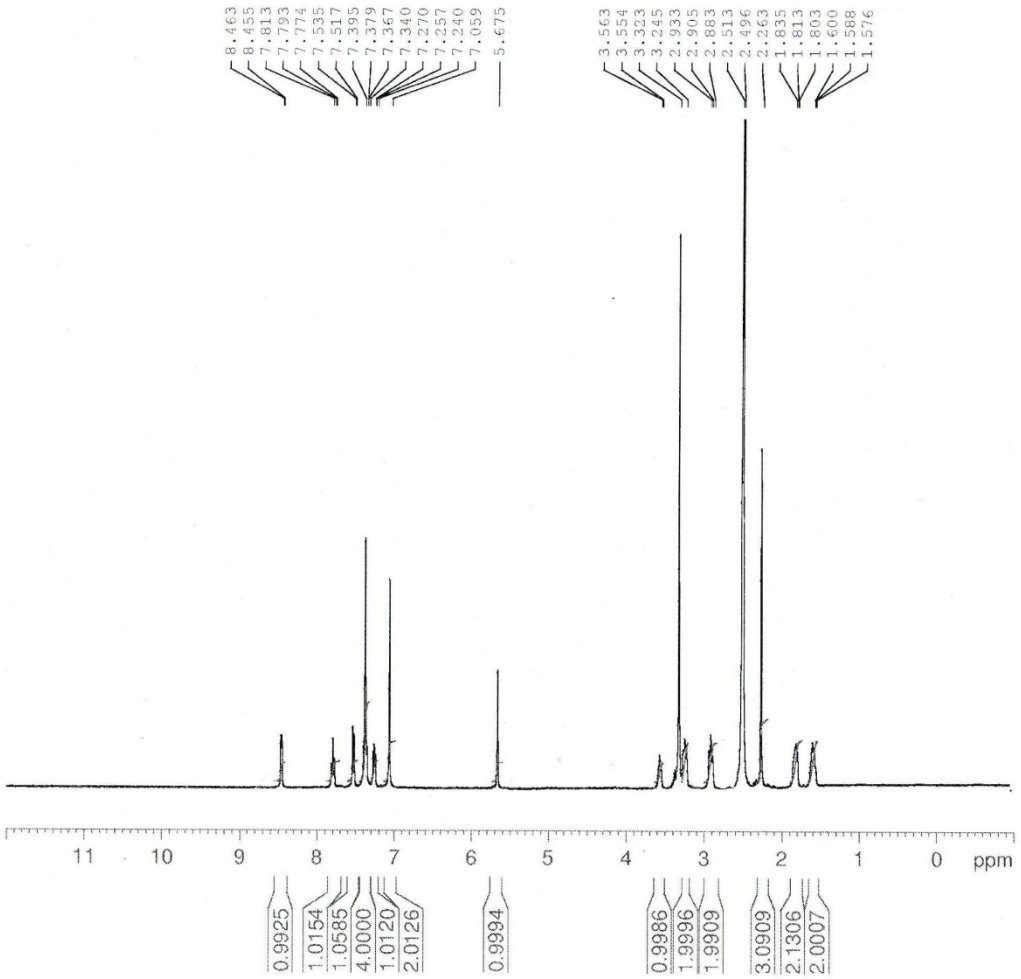


Acquisition Parameter

Date of acquisition	2015-06-16T11:05:15.734+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	



(S)-2-((4-chlorophenyl)((1-(mesitylsulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6p) : Yield (281mg, 88.5%); White solid; 1H-NMR (400 MHz, DMSO-d_6) 8.46- 8.45(d,J=4Hz,1H), 7.81- 7.77(m,1H), 7.53- 7.51 (d,J=8.0Hz, 1H), 7.39- 7.34(m, 4H),7.27- 7.24 (m, 1H),7.05 (s, 2H), 5.67(s, 1H), 3.56(m, 1H), 3.32(s, 6H),3.24(m, 2H), 2.93- 2.88(m, 2H), 2.26 (s,3H), 1.83- 1.80 (m, 2H), 1.60- 1.57 (m, 2H); 13C-NMR (DMSO-d_6) 160.03, 149.85, 142.14, 141.17, 140.03, 137.17, 132.45, 132.31, 132.16, 129.16, 128.60, 120.80, 80.99, 71.99, 41.63, 30.62, 30.53, 22.75, 20.96; HRMS Calcd 507.148; Found: 507.148 ($M+Na^+$); Anal.Calcd for $C_{26}H_{29}ClN_2O_3S$: C 64.38; H 6.03; N 5.78; Found: C, 64.42; H, 5.99; N, 5.81; Chiral HPLC (%ee) 97.1;

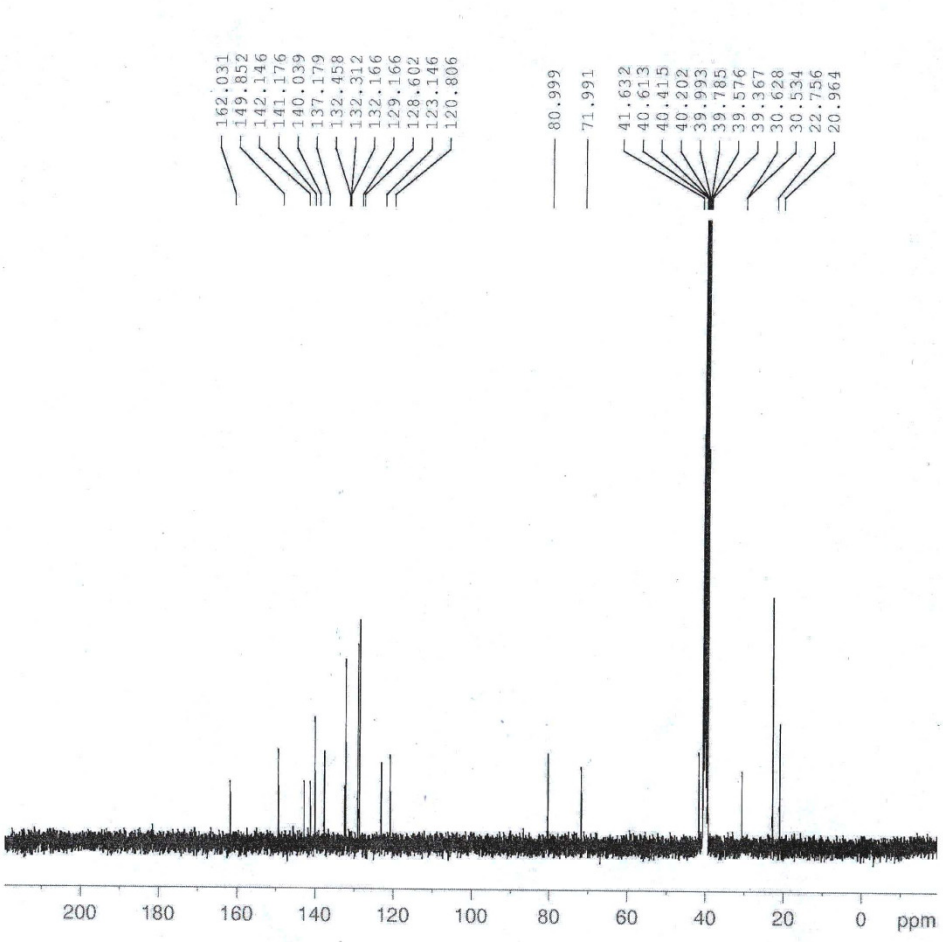



```
Current Data Parameters
NAME                  A330922
EXPNO                       1
PROCNO                      1

F2 - Acquisition Parameters
Date_                20150623
Time                    12.20
INSTRUM                  spect
PROBHD    5 mm PABBO BB-
PULPROG                  zg30
TD                      32768
SOLVENT                  DMSO
NS                          8
DS                          2
SWH                8389.262 Hz
FIDRES             0.256020 Hz
AQ                 1.9530228 sec
RG                      406.4
DW                     59.600 usec
DE                      6.00 usec
TE                     297.3 K
D1                2.00000000 sec
TD0                         1

======== CHANNEL f1 ========
NUC1                       1H
P1                      13.20 usec
PL1                     -3.00 dB
SFO1           400.2338023 MHz

F2 - Processing parameters
SI                      32768
SF             400.2300000 MHz
WDW                        EM
SSB                         0
LB                       0.30 Hz
GB                          0
PC                       1.00
```




```
Current Data Parameters
NAME                  A330922
EXPNO                       2
PROCNO                      1

F2 - Acquisition Parameters
Date_              20150624
Time                  10.39
INSTRUM               spect
PROBHD    5 mm PABBO BB-
PULPROG               zgpg30
TD                    32768
SOLVENT               DMSO
NS                    1024
DS                    2
SWH               24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6816244 sec
RG                    32
DW                20.800 usec
DE                6.00 usec
TE                296.7 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                   1

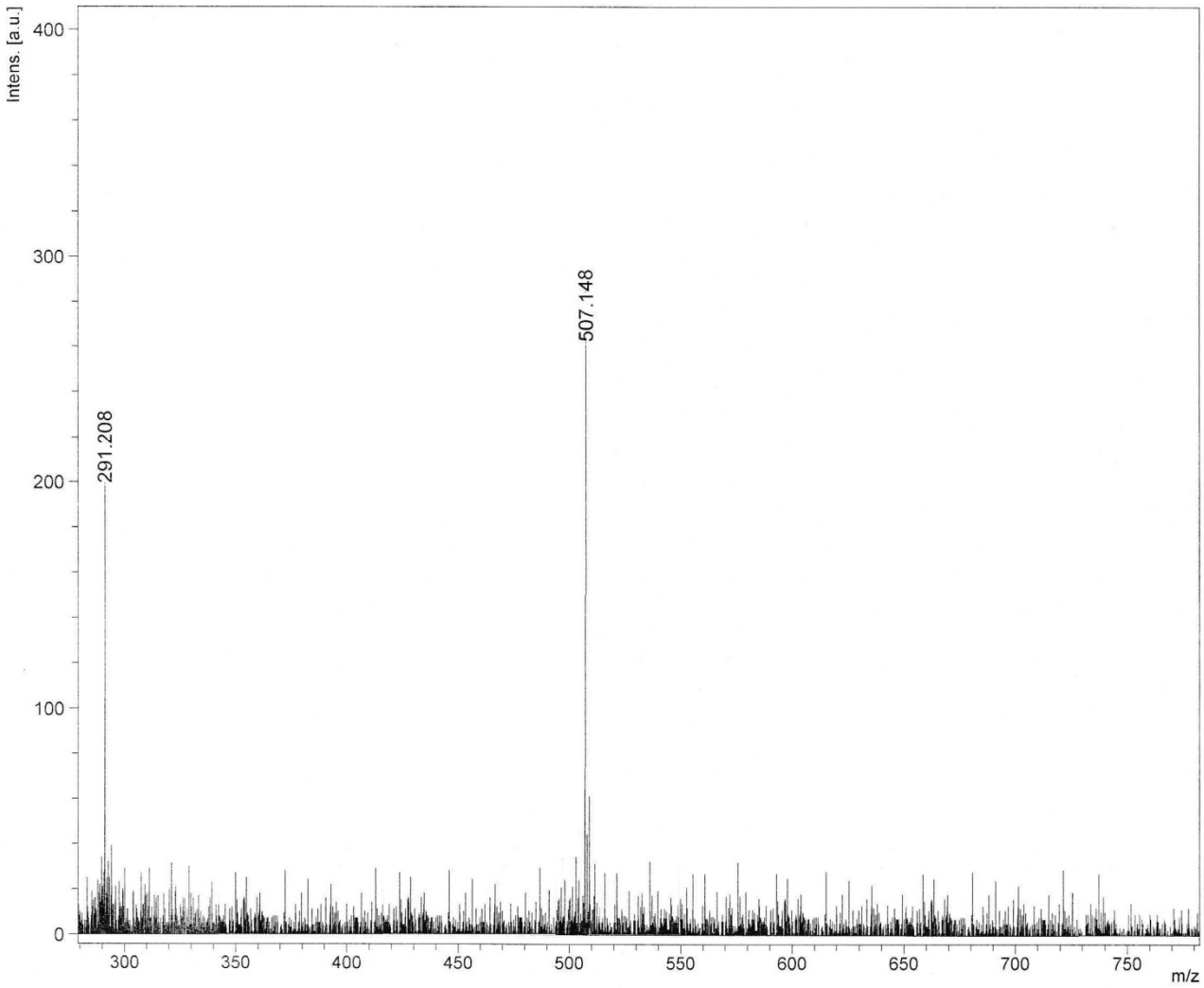
======== CHANNEL f1 ========
NUC1                  13C
P1                8.15 usec
PL1               -2.00 dB
SFO1          100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2           waltz16
NUC2                  1H
PCPD2             80.00 usec
PL2               -2.00 dB
PL12              13.30 dB
PL13              15.50 dB
SFO2          400.3746015 MHz

F2 - Processing parameters
SI                    32768
SF            100.6738710 MHz
WDW                   EM
SSB                   0
LB                1.00 Hz
GB                    0
PC                1.40
```

Comment 1

Comment 2

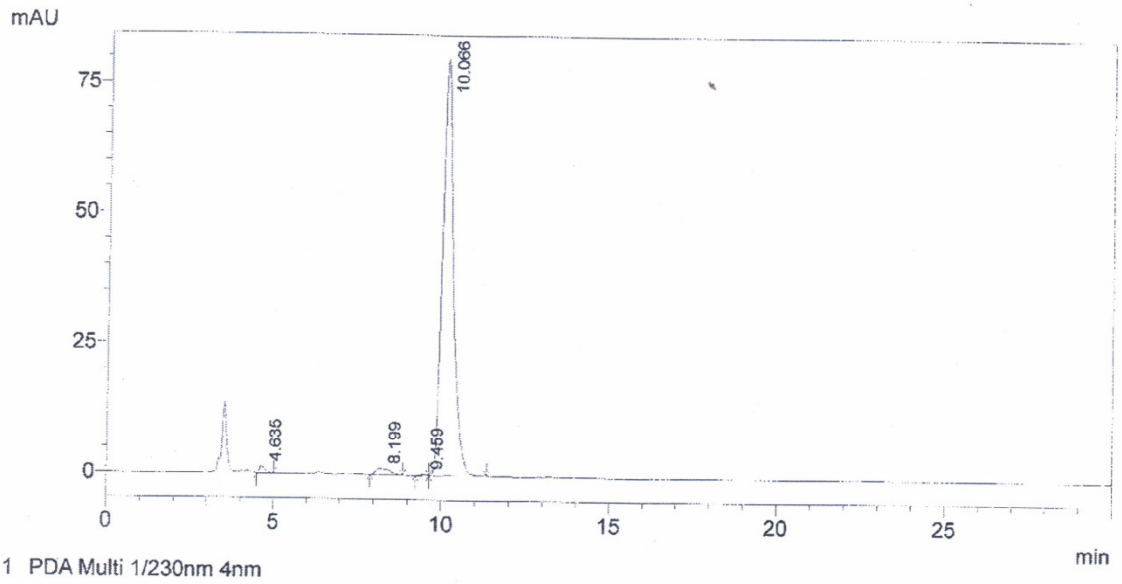


Acquisition Parameter

Date of acquisition	2015-06-16T11:30:20.921+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSS-7
Sample ID :
Data File Name : BSS-7
Method File Name : 5050TFAHEXET

Method information : Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(50:50
Flow:1.0ml\min

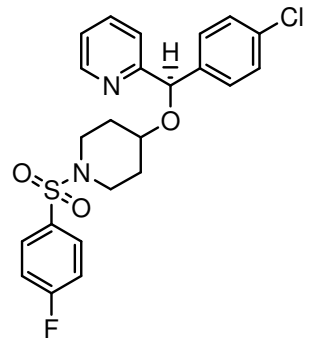


1 PDA Multi 1/230nm 4nm

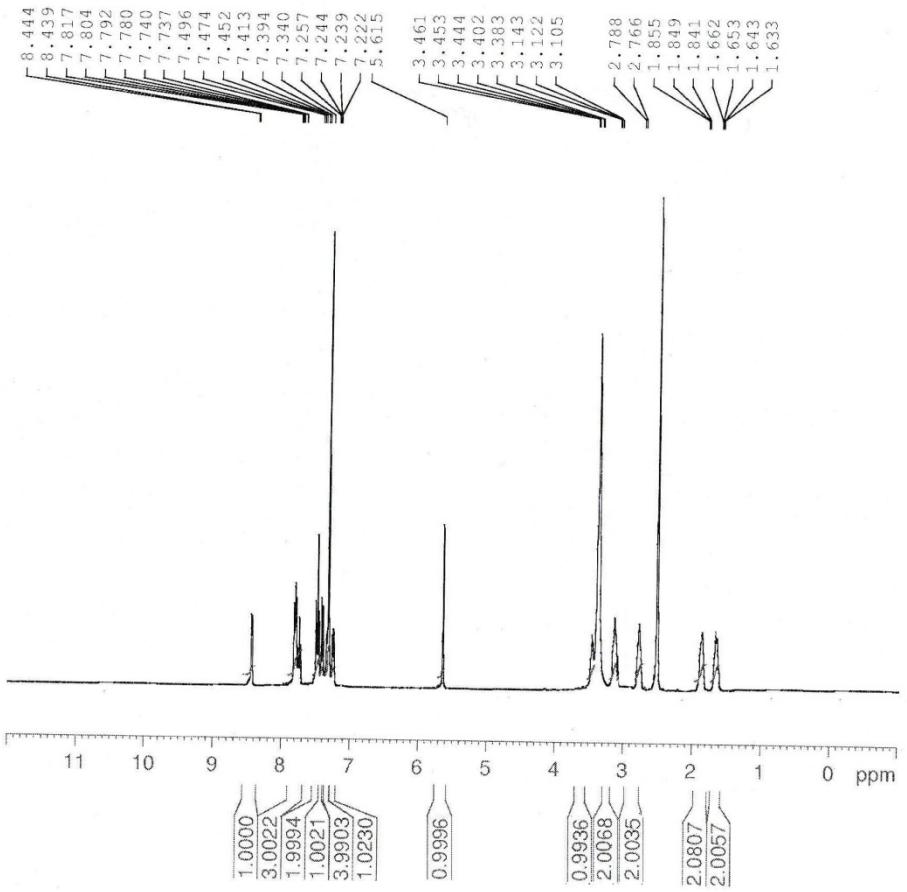
PeakTable

PDA Ch1 230nm 4nm

Peak#	Ret. Time	Area	Area %
1	4.635	14694	0.792
2	8.199	34798	1.876
3	9.459	3668	0.198
4	10.066	1801333	97.133
Total		1854493	100.000



(S)-2-((4-chlorophenyl)((1-((4-fluorophenyl)sulfonyl)piperidin-4-yl)oxy)methyl)pyridine (6q): Yield (259mg, 86%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.44- 8.43(d,J=4Hz,1H), 7.81-7.73(m,3H), 7.49- 7.22 (m, 8H), 5.61(s, 1H), 3.46(m, 1H), 3.14- 3.10(m, 2H), 2.78- 2.76(m, 2H),1.85- 1.84 (m, 2H)1.66 1.63(m, 2H); 13C-NMR (DMSO-d_6)166.39, 163.83, 161.54, 149.34, 141.01, 137.48, 132.43, 132.16, 132.13, 131.03, 130.94, 129.04, 128.61, 123.10, 120.48, 117.40, 116.18, 80.94, 71.03, 43.57, 30.46, 30.31; HRMS Calcd 483.092; Found: 483.092 ($M+Na^+$); Anal.Calcd for $C_{23}H_{22}ClFN_2O_3S$: C 59.93; H 4.81; N 6.08; Found: C, 59.85; H, 4.87; N, 6.11; Chiral HPLC (%ee) 98.9;



Current Data Parameters

NAME	A330966
EXPNO	1
PROCNO	1

F2 - Acquisition Parameters

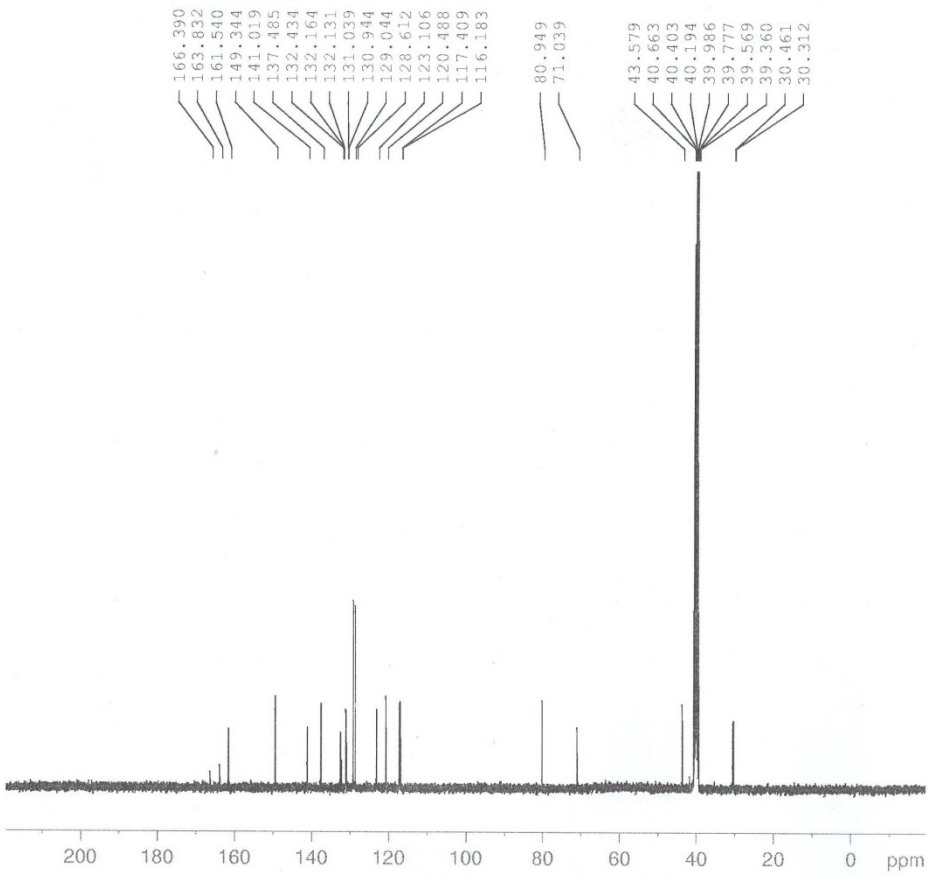
Date_	20150623
Time	12.21
INSTRUM	spect
PROBHD	5 mm PABBO BB-
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	16
DS	2
SWH	8223.685 Hz
FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	144
DW	60.800 usec
DE	6.00 usec
TE	295.8 K
D1	2.00000000 sec
TD0	1

======== CHANNEL f1 ========

NUC1	1H
P1	13.75 usec
PL1	-2.00 dB
SFO1	400.3754725 MHz

F2 - Processing parameters

SI	32768
SF	400.3730000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00




```
Current Data Parameters
NAME                 A330966
EXPNO                      2
PROCNO                     1

F2 - Acquisition Parameters
Date_              20150624
Time                   6.30
INSTRUM                spect
PROBHD    5 mm PABBO BB-
PULPROG                zgpg30
TD                     32768
SOLVENT                DMSO
NS                     1024
DS                        2
SWH              24038.461 Hz
FIDRES            0.733596 Hz
AQ                0.6816244 sec
RG                       36
DW                  20.800 usec
DE                   6.00 usec
TE                  296.7 K
D1              2.00000000 sec
d11             0.03000000 sec
DELTA           1.89999998 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                    13C
P1                    8.15 usec
PL1                  -2.00 dB
SFO1          100.6839383 MHz

======== CHANNEL f2 ========
CPDPRG2             waltz16
NUC2                    1H
PCPD2                80.00 usec
PL2                  -2.00 dB
PL12                 13.30 dB
PL13                 15.50 dB
SFO2          400.3746015 MHz

F2 - Processing parameters
SI                     32768
SF            100.6738710 MHz
WDW                    EM
SSB                     0
LB                   1.00 Hz
GB                      0
PC                   1.40
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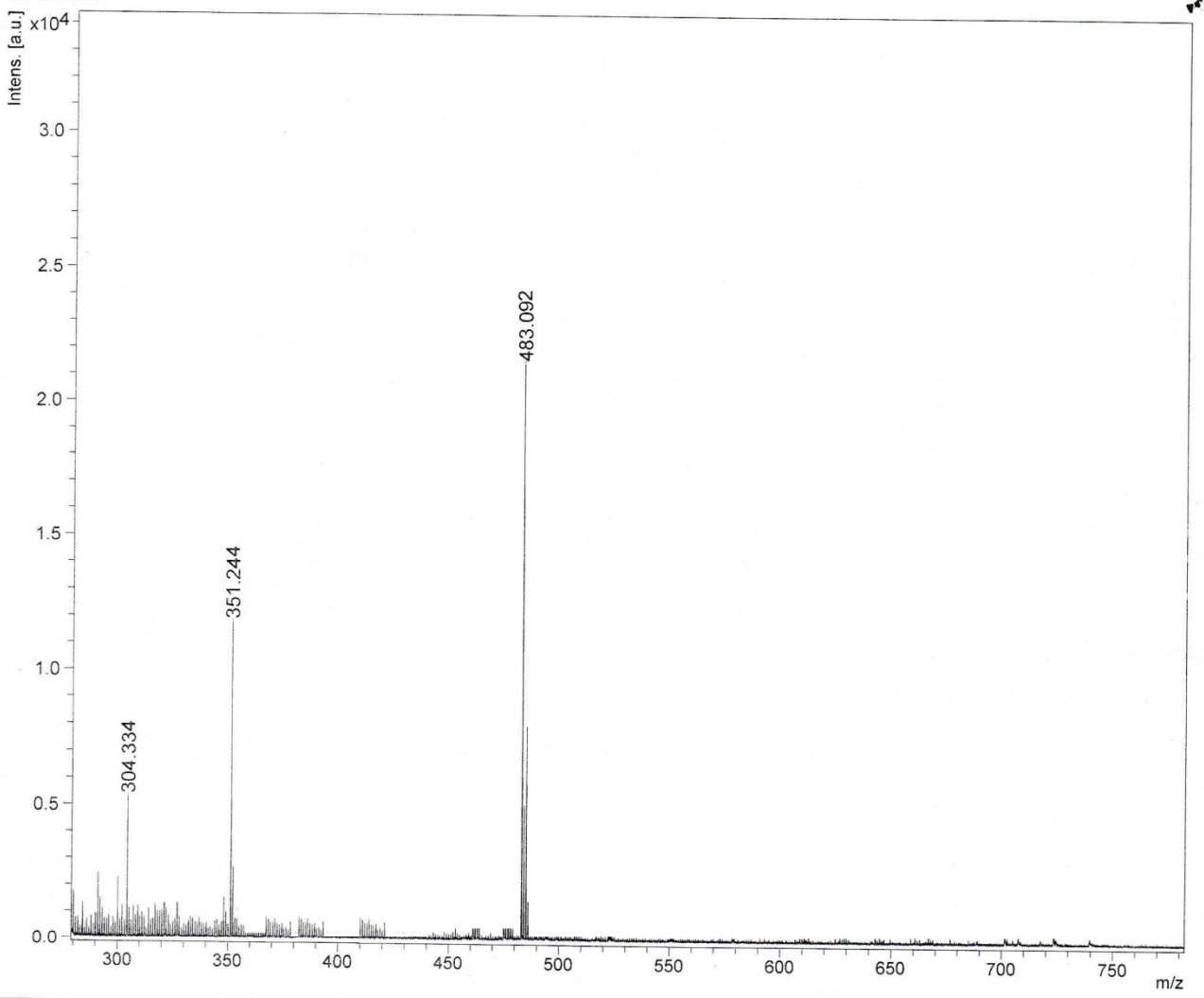
Comment 1

Comment 2

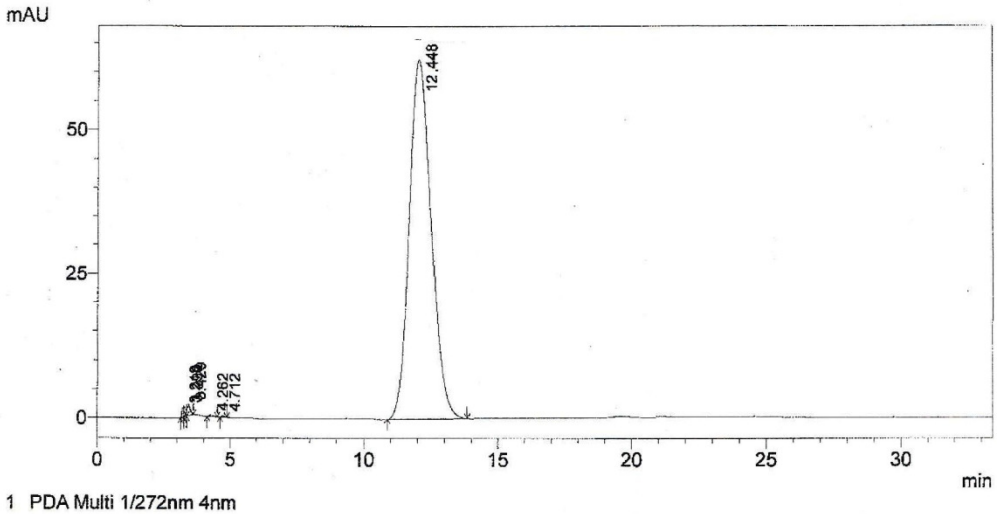


Acquisition Parameter

Date of acquisition	2015-06-16T11:16:16.171+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name :BSS-8
Sample ID :
Data File Name :BSS-8
Method File Name :2080TFAHEXET

Method information :Column:CHIRAL PAK IA(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL(20:80)
FLOW:1.0ml\min

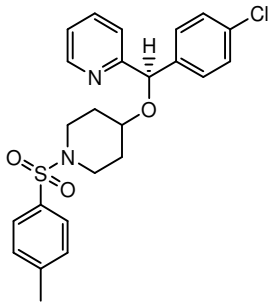


1 PDA Multi 1/272nm 4nm

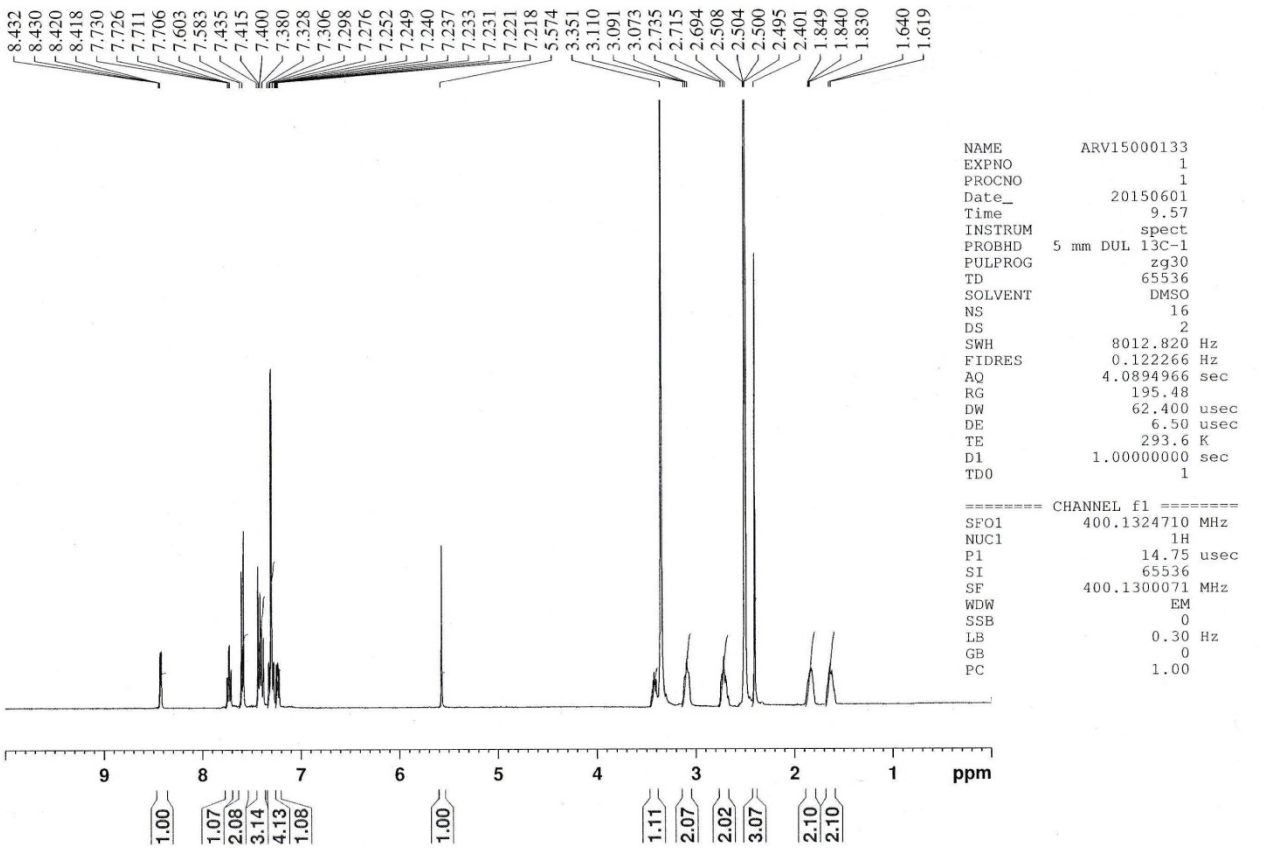
PeakTable

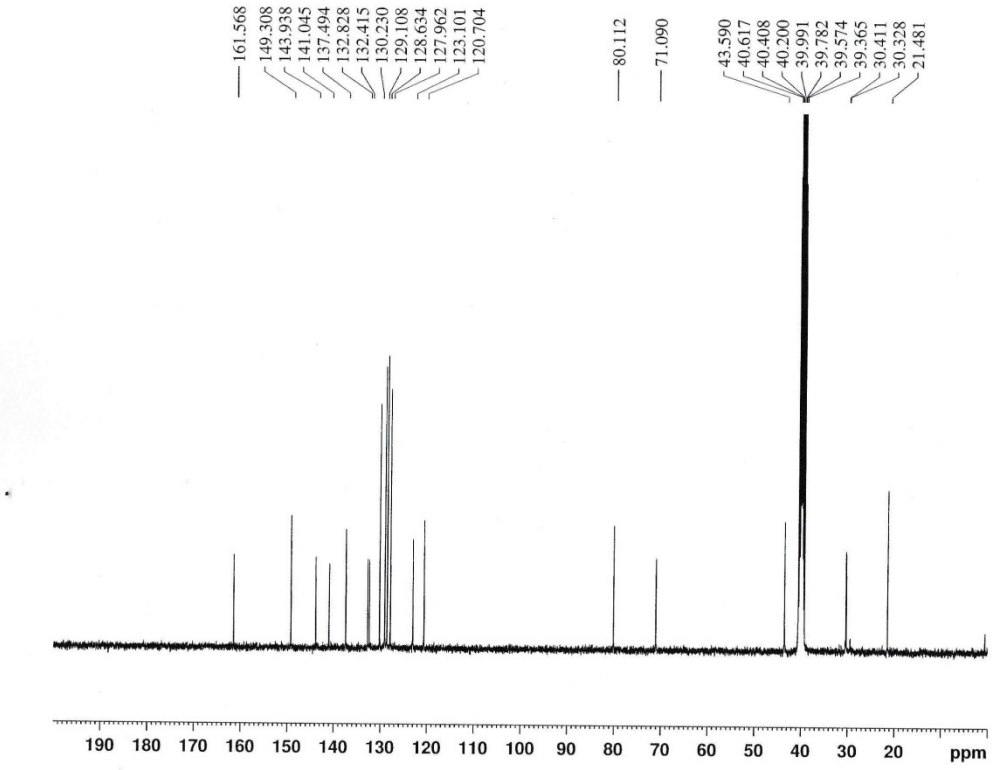
PDA Ch1 272nm 4nm

Peak#	Ret. Time	Area	Area %
1	3.218	8391	0.232
2	3.299	9448	0.261
3	3.429	14155	0.392
4	4.262	2836	0.078
5	4.712	1750	0.048
6	12.448	3577012	98.988
Total		3613591	100.000



(S)-2-((4-chlorophenyl)((1-tosylpiperidin-4-yl)oxy)methyl)pyridine (6r): Yield (263mg, 87.3%); Tan coloured solid; 1H-NMR (400 MHz, DMSO-d_6) 8.43- 8.41(d,J=8Hz,1H), 7.73- 7.70(m,1H), 7.60- 7.58 (d,J=8.0Hz, 2H), 7.43- 7.38(m, 3H),7.32- 7.21 (m, 5H), 5.57(s, 1H), 3.35(m, 1H), 3.11- 3.07(m, 2H), 2.73- 2.69(m, 2H), 2.40(s,3H), 1.84- 1.83(m, 2H), 1.64- 1.61 (m, 2H); 13C-NMR (DMSO-d_6)161.56, 149.30, 143.93, 141.04, 137.49, 132.82, 132.41, 130.23, 129.10, 128.63, 127.96, 123.10, 120.70, 80.11, 71.09, 43.29, 30.41, 30.32, 21.48; HRMS Calcd 479.117; Found: 479.117($M+Na^+$); Anal.Calcd for $C_{24}H_{25}ClN_2O_3S$: C 63.08; H 5.51; N 6.13; Found: C, 63.11; H, 5.55; N, 6.09; Chiral HPLC (%ee) 97.5;

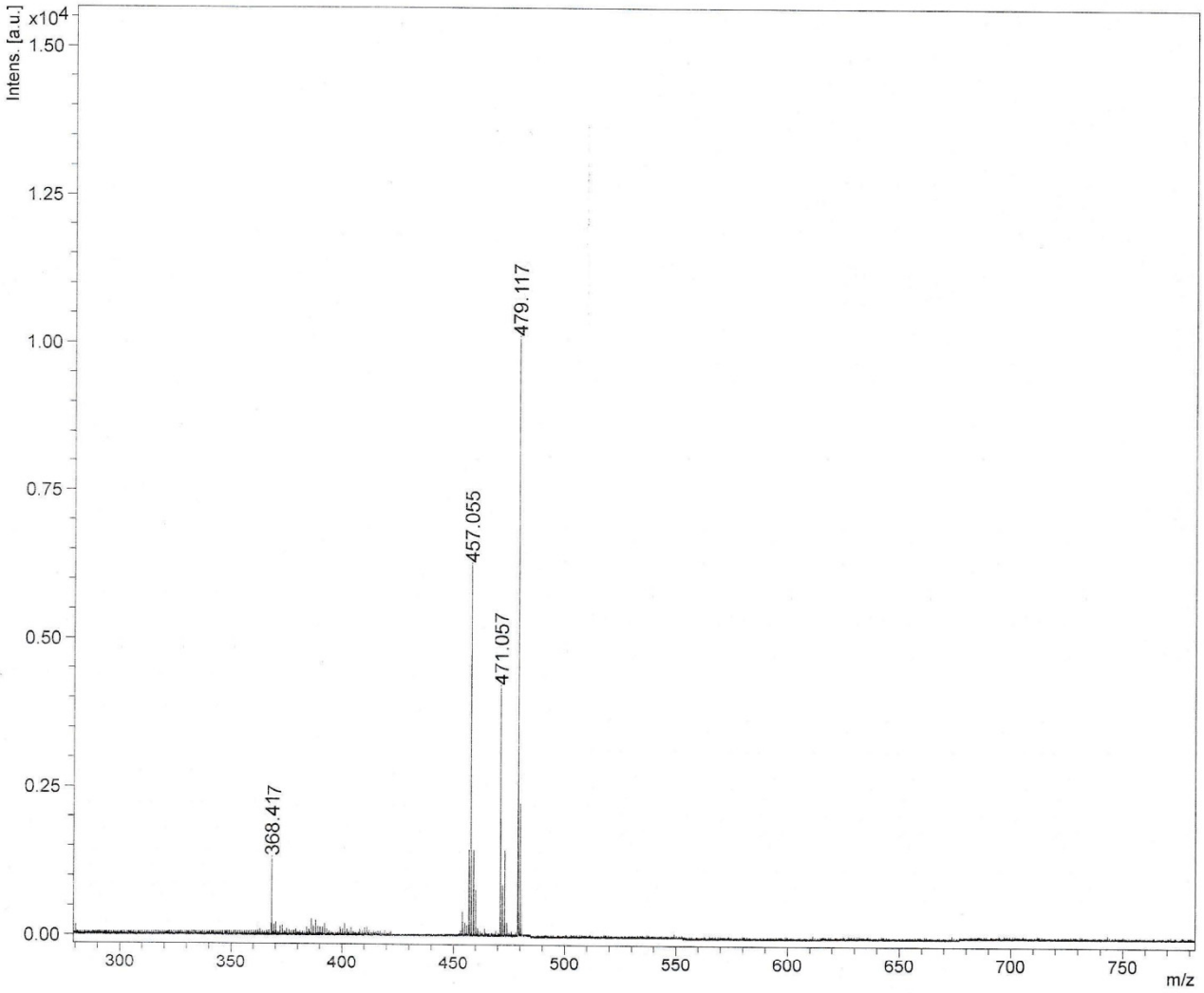




NAME	ARV15000133-13C
EXPNO	1
PROCNO	1
Date_	. 20150531
Time	4.10
INSTRUM	spect
PROBHD	5 mm DUL 13C-1
PULPROG	zgpg30
TD	65536
SOLVENT	DMSO
NS	5000
DS	4
SWH	28409.092 Hz
FIDRES	0.433488 Hz
AQ	1.1534836 sec
RG	195.48
DW	17.600 use
DE	6.50 use
TE	294.9 K
D1	2.00000000 sec
D11	0.03000000 sec
TD0	1
========	CHANNEL f1 =======
SFO1	100.6228293 MHz
NUC1	13C
P1	9.10 use
SI	32768
SF	100.6127685 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

Comment 1

Comment 2

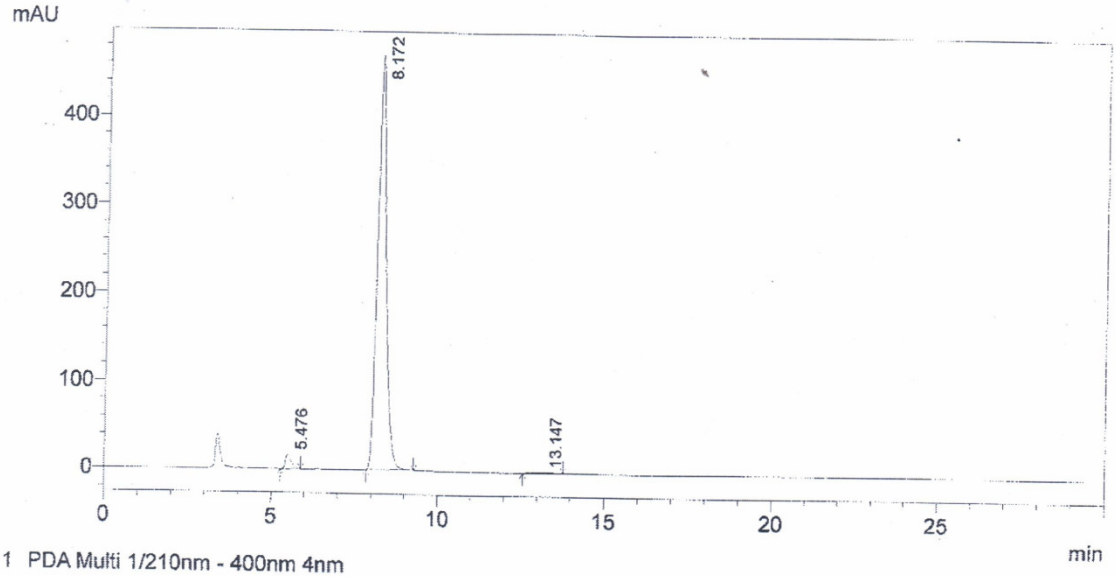


Acquisition Parameter

Date of acquisition	2015-06-16T11:00:12.984+05:30
Acquisition method name	D:\Methods\flexControlMethods\RP_PepMix.par
Aquisition operation mode	Reflector
Voltage polarity	POS
Number of shots	200
Name of spectrum used for calibration	
Calibration reference list used	

Sample Name : BSS-9
Sample ID :
Data File Name : BSS-9
Method File Name : 5050TFAHEXET

Method information : Column:CHIRAL PAK IC(250x4.6)mm 5mic
Mobile Phase'A':0.1%TFA IN HEXANE:ETHANOL (50:50)
Flow:1.0ml\min



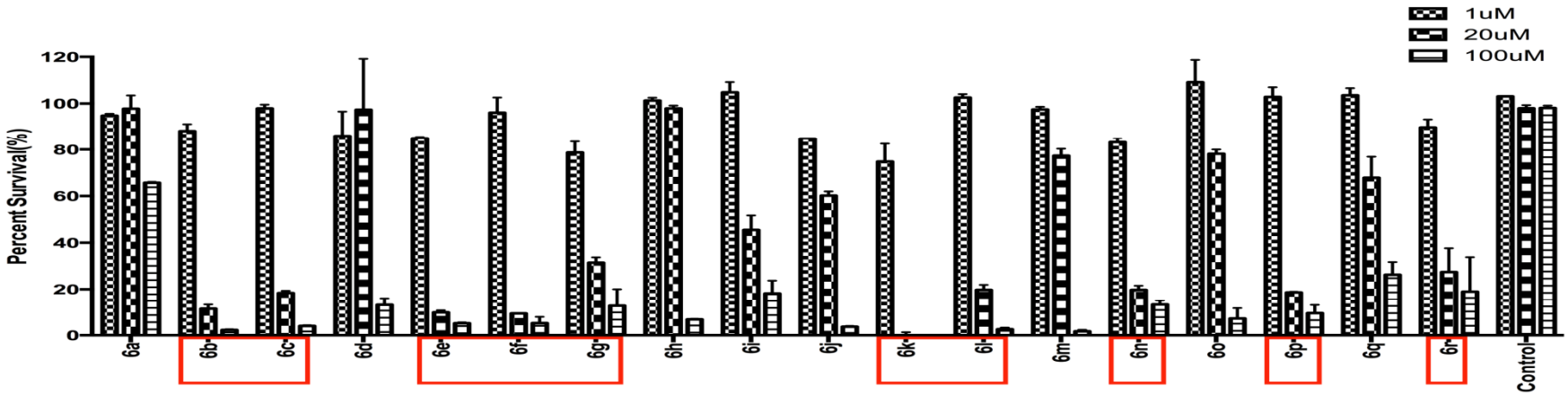
1 PDA Multi 1/210nm - 400nm 4nm

PeakTable

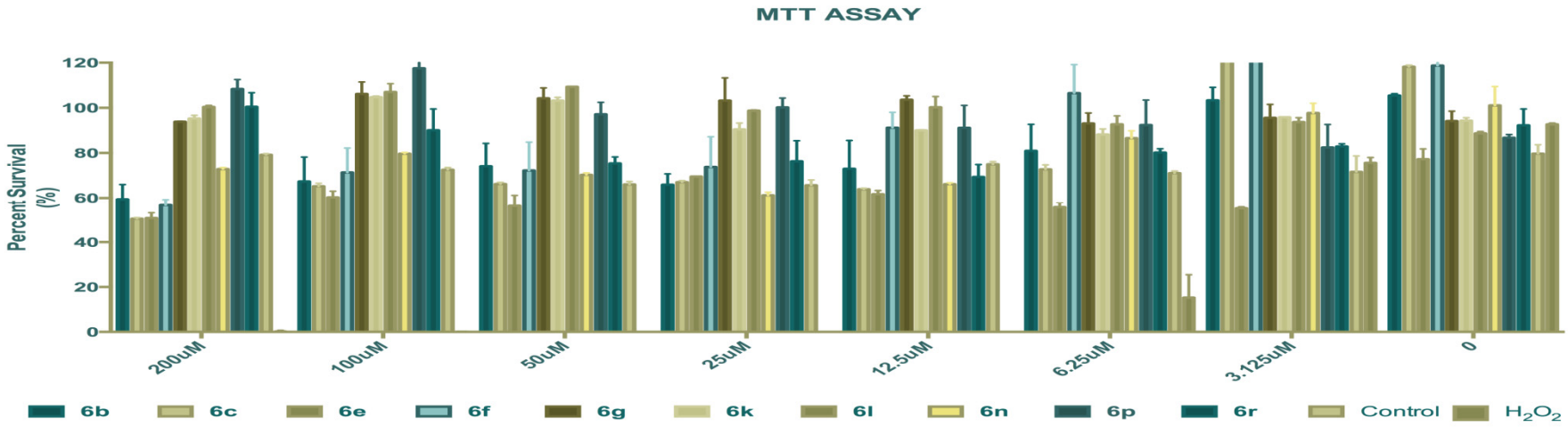
PDA Ch1 210nm - 400nm 4nm

Peak#	Ret. Time	Area	Area %
1	5.476	196597	2.207
2	8.172	8690456	97.554
3	13.147	21315	0.239
Total		8908368	100.000

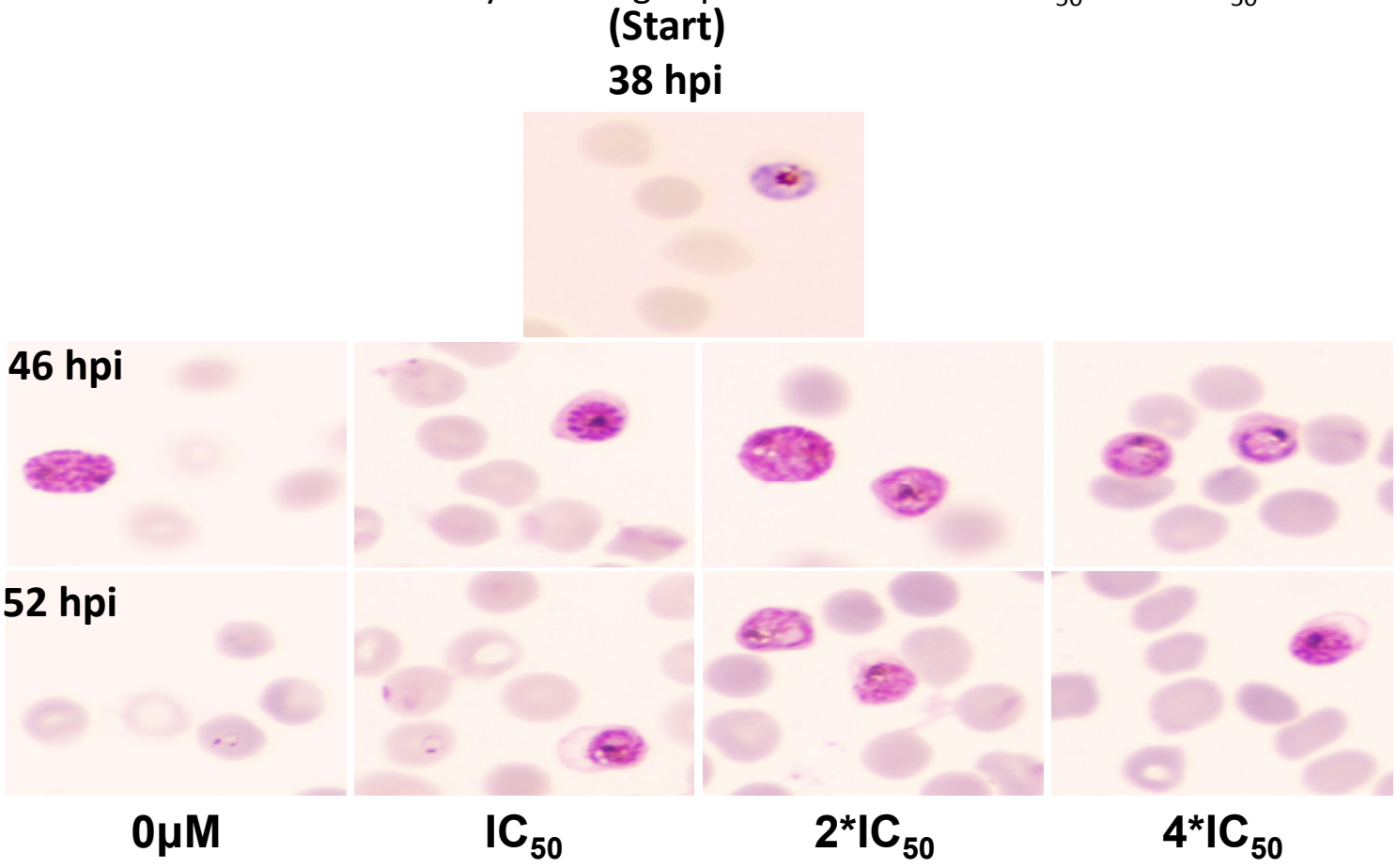
Supplemental Figure S2: Inhibitory activity of title compounds against *P. falciparum*



Supplemental Figure S3: Cytotoxicity studies of anti-malarial compounds against MDCK cells



Supplemental Figure S4: Microscopic images of Giemsa-stained parasites treated with 6n at 38hpi, 46hpi and 52 hpi at varying concentrations. DMSO-treated parasites developed normally into multinucleated schizonts (46hpi), egressed and invaded to form new ring-stage parasites (52hpi). Parassites treated with 6n failed to mature ultimately resulting in parasite death at 2*IC_{50} and 4*IC_{50} concentrations.



Supplementary Figure S5: ***In vivo*** **efficacy of the most effective compound 6n on** ***P. yoelii infected*** **BALB/c mice model.**