

Supplementary Material

Discovery of novel biphenyl carboxylic acid derivatives as potent URAT1 inhibitors

Xianxin Hou, Yongcheng Wang, Yajun Yang and Zhiyan Xiao*

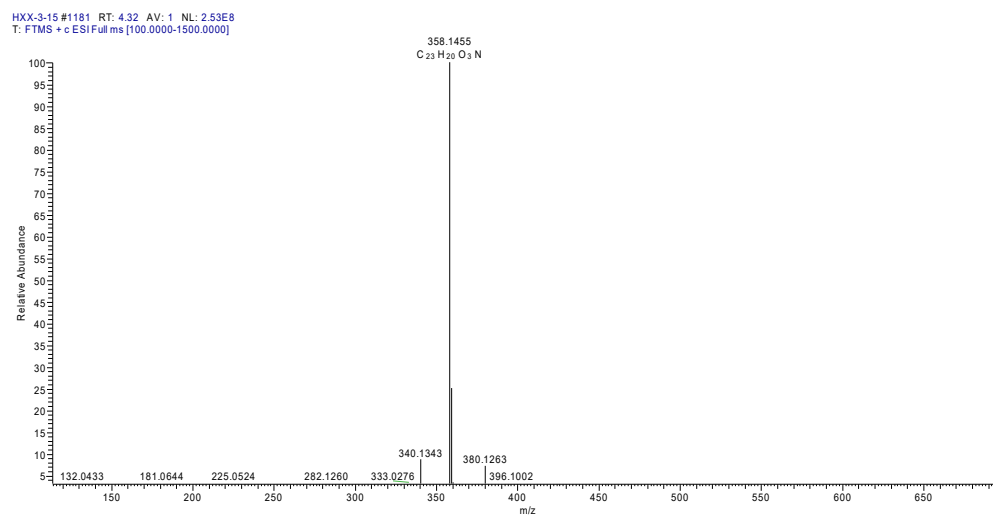
*Beijing Key Laboratory of Active Substance Discovery and Druggability Evaluation,
Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union
Medical College, Beijing 100050, China*

*Correspondence: xiaoz@imm.ac.cn

Spectral data, including HR-ESI-MS, ^1H -NMR and ^{13}C -NMR, for the target compounds are provided herein.

Compound A1:

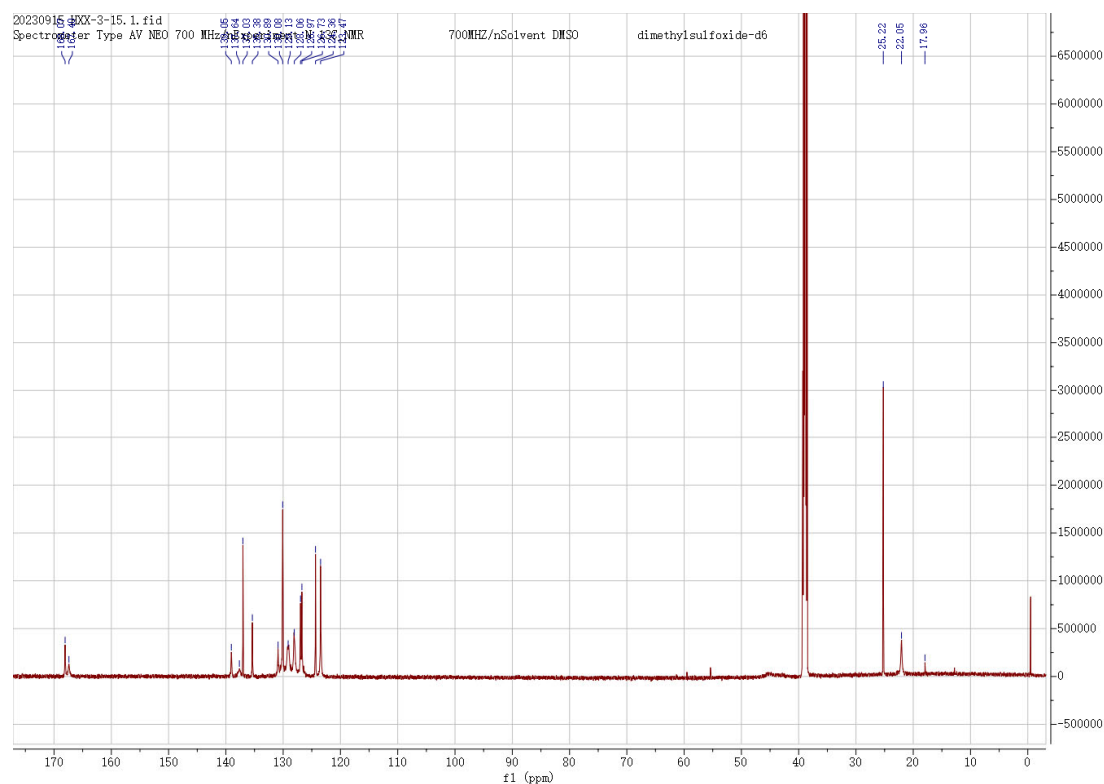
HR-ESI-MS:



^1H -NMR:



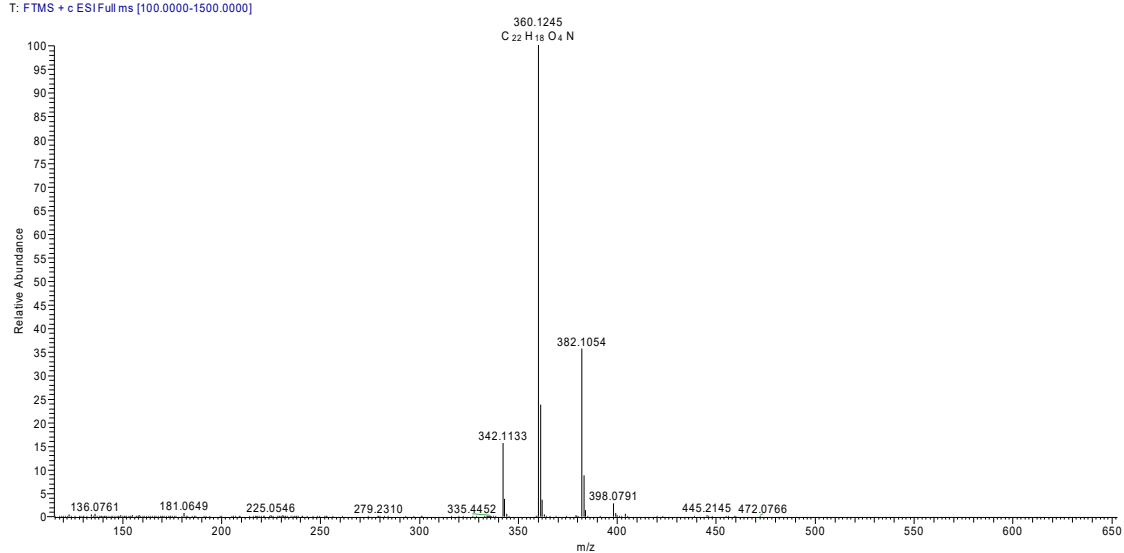
^{13}C -NMR:

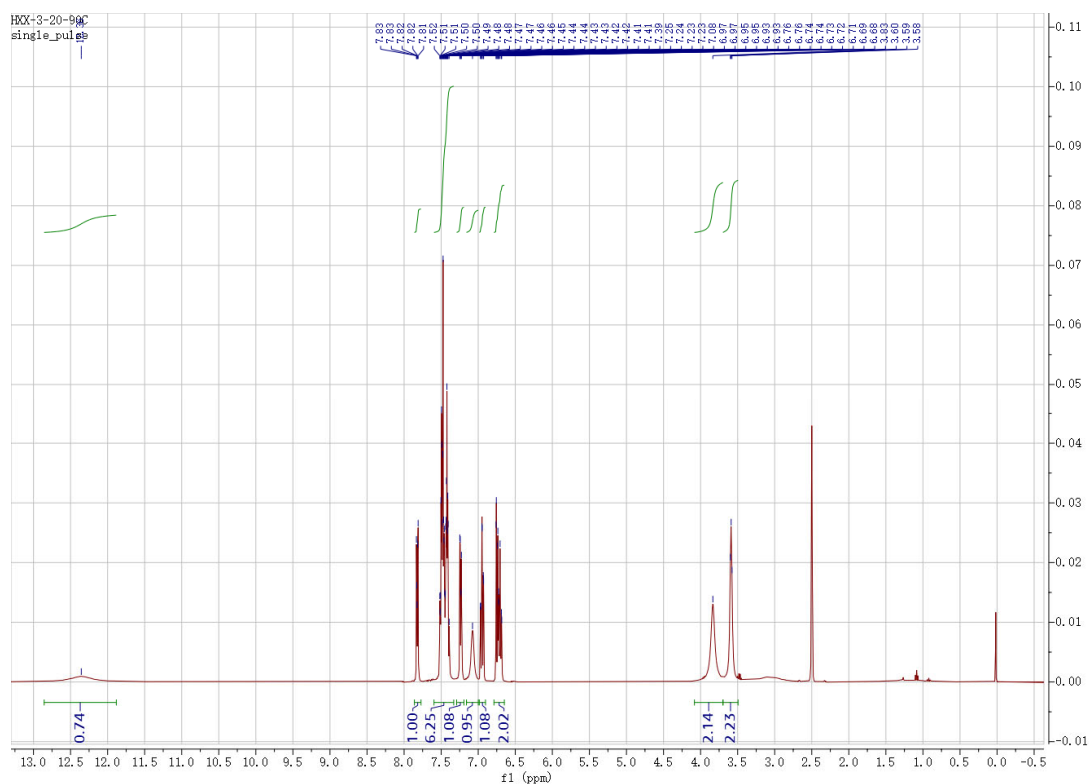


Compound A2:

HR-ESI-MS:

HXX-3-20 #1104 RT: 4.10 AV: 1 NL: 6.72E7
T: FTMS + c ESI Full ms [100.0000-1500.0000]

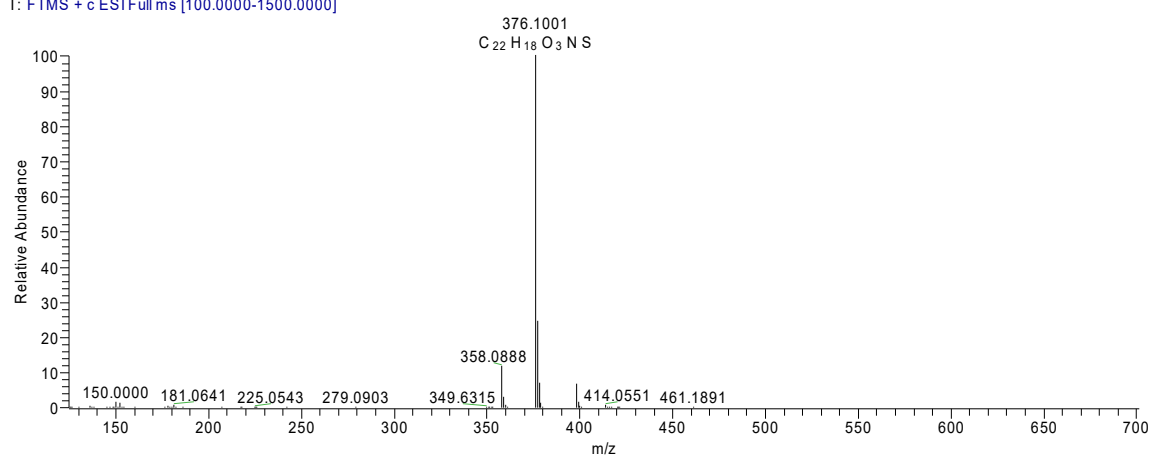


¹H-NMR:

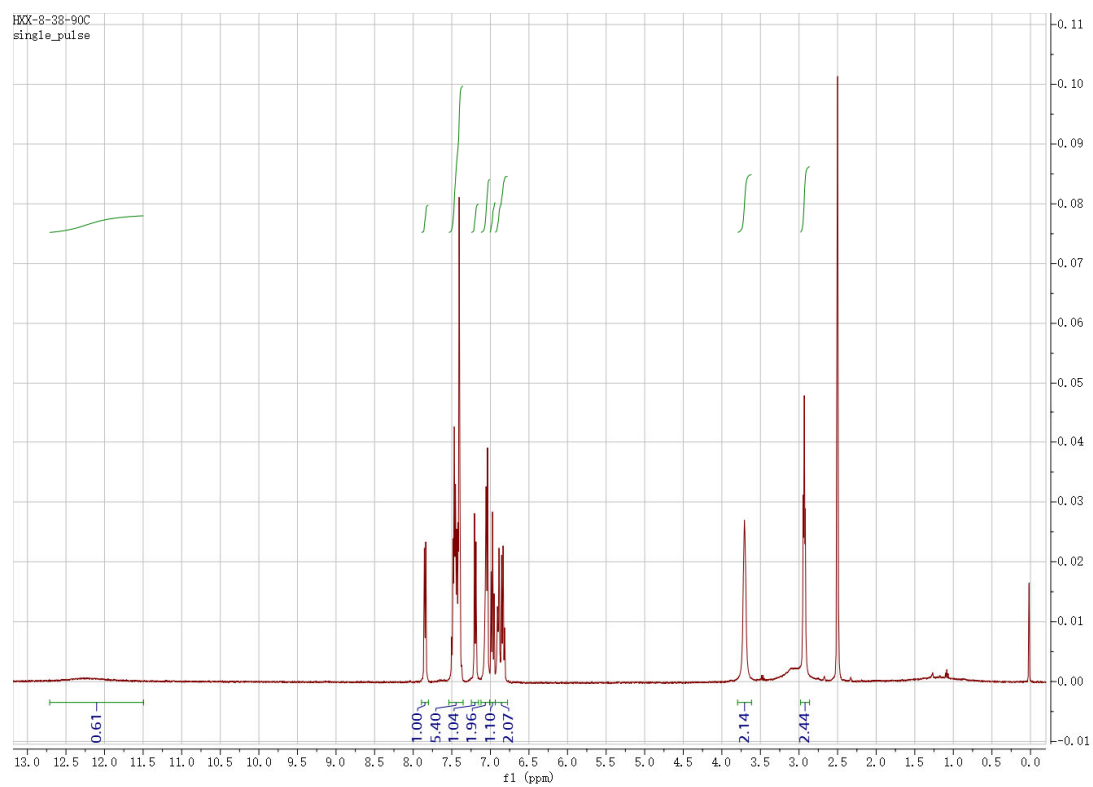
Compound A3:

HR-ESI-MS:

HXX-8-38 #1171 RT: 4.23 AV: 1 NL: 1.74E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]

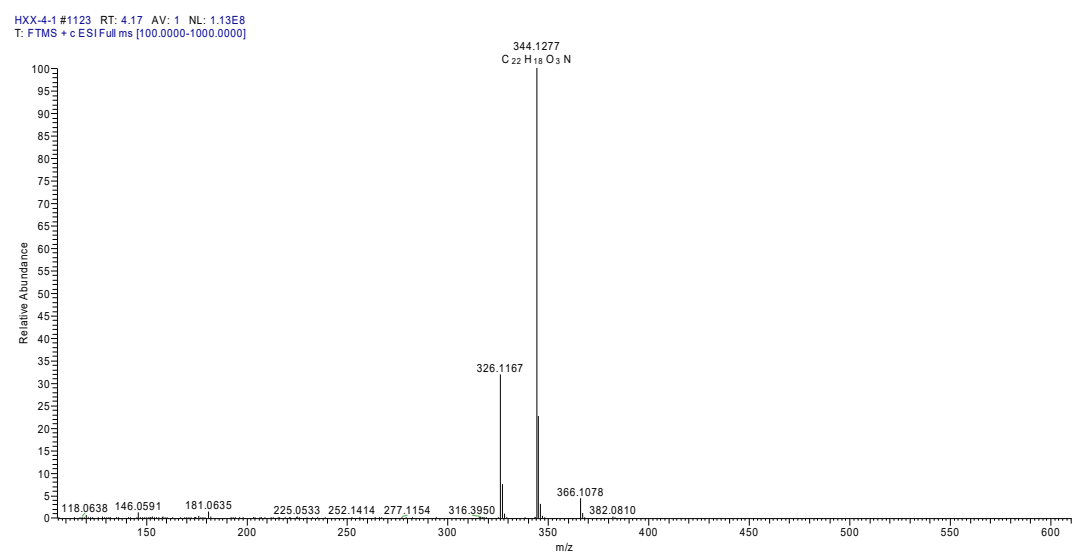


^1H -NMR:

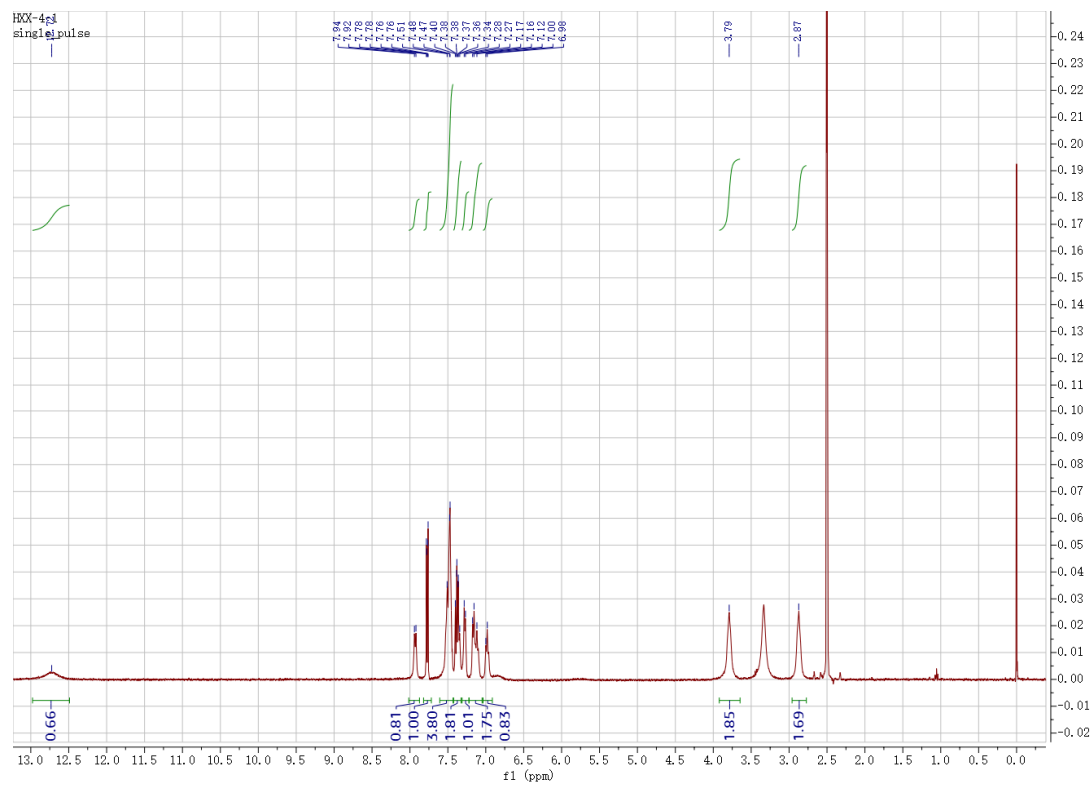


Compound A4:

HR-ESI-MS:



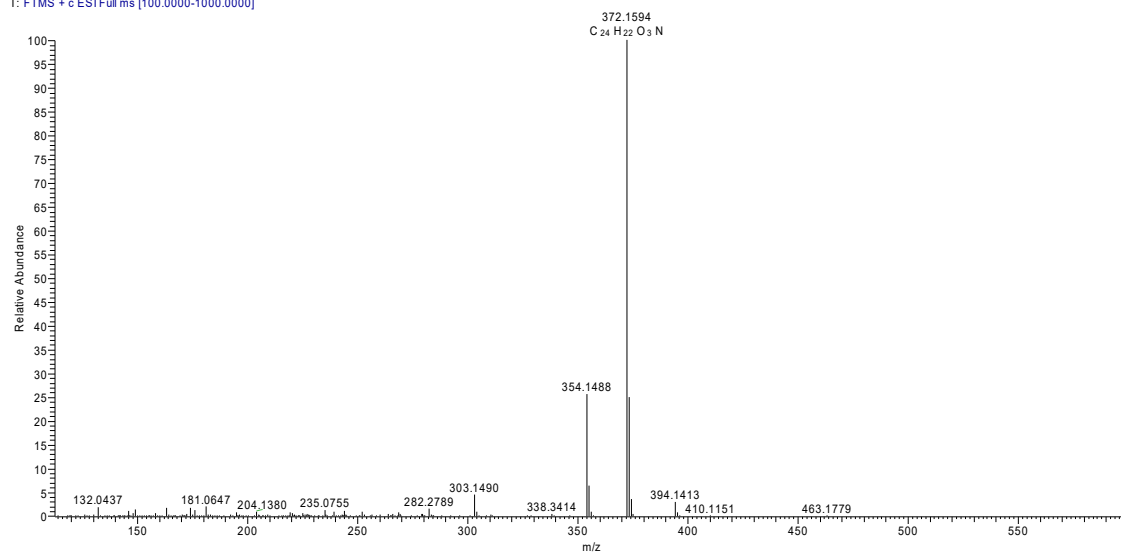
^1H -NMR:



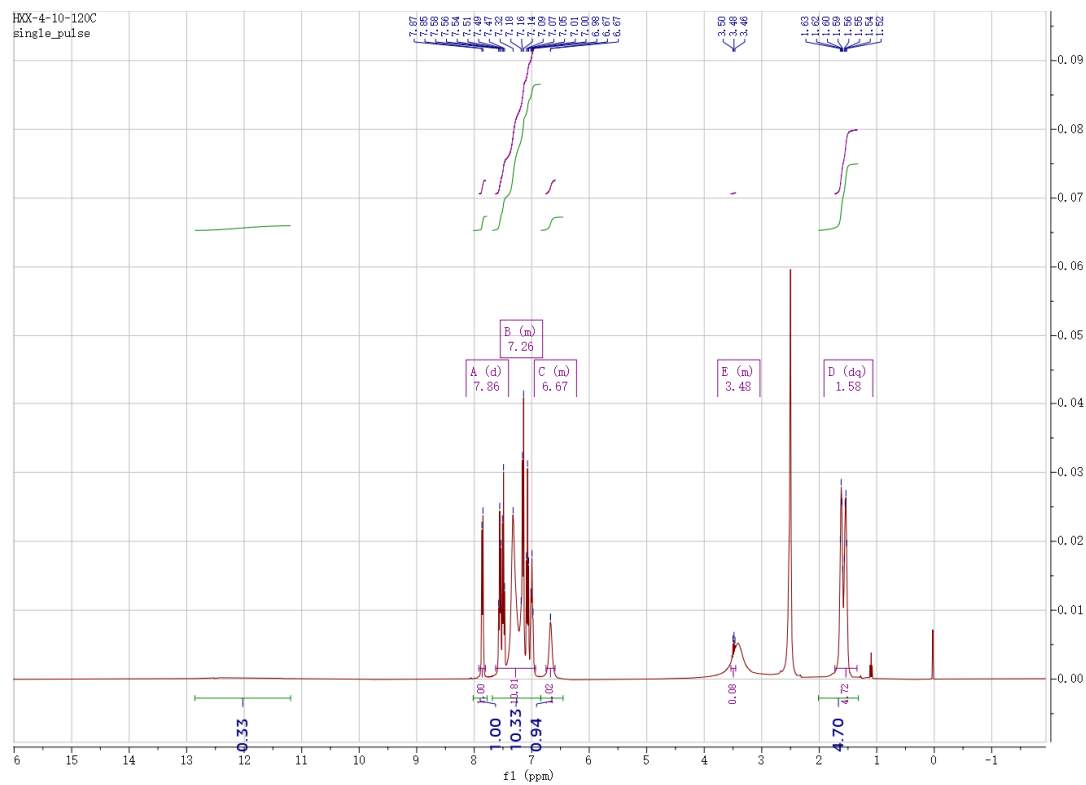
Compound A5:

HR-ESI-MS:

HXX-4-10 #1204 RT: 4.47 AV: 1 NL: 9.53E6
T: FTMS + c ESI Full ms [100.0000-1000.0000]



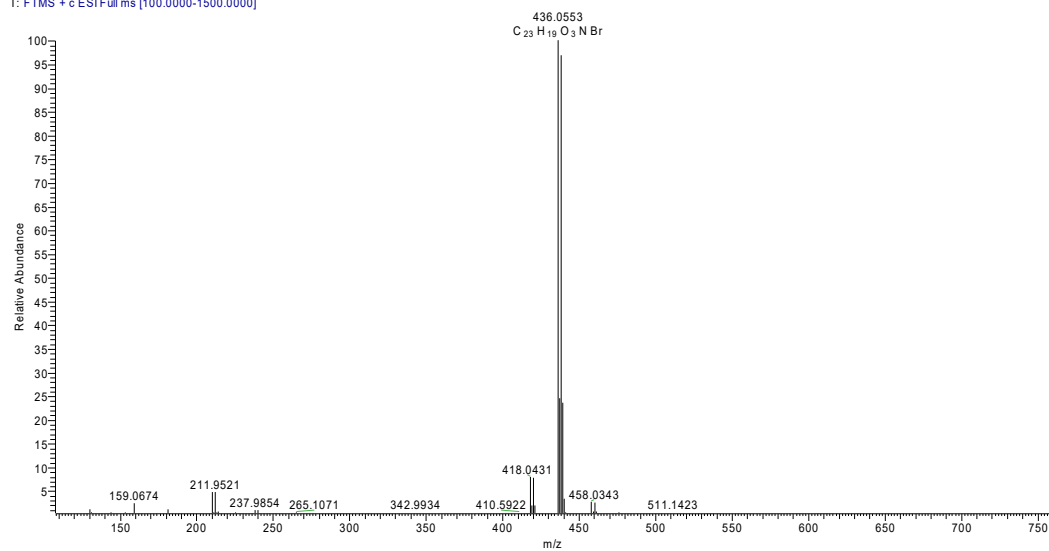
^1H -NMR:



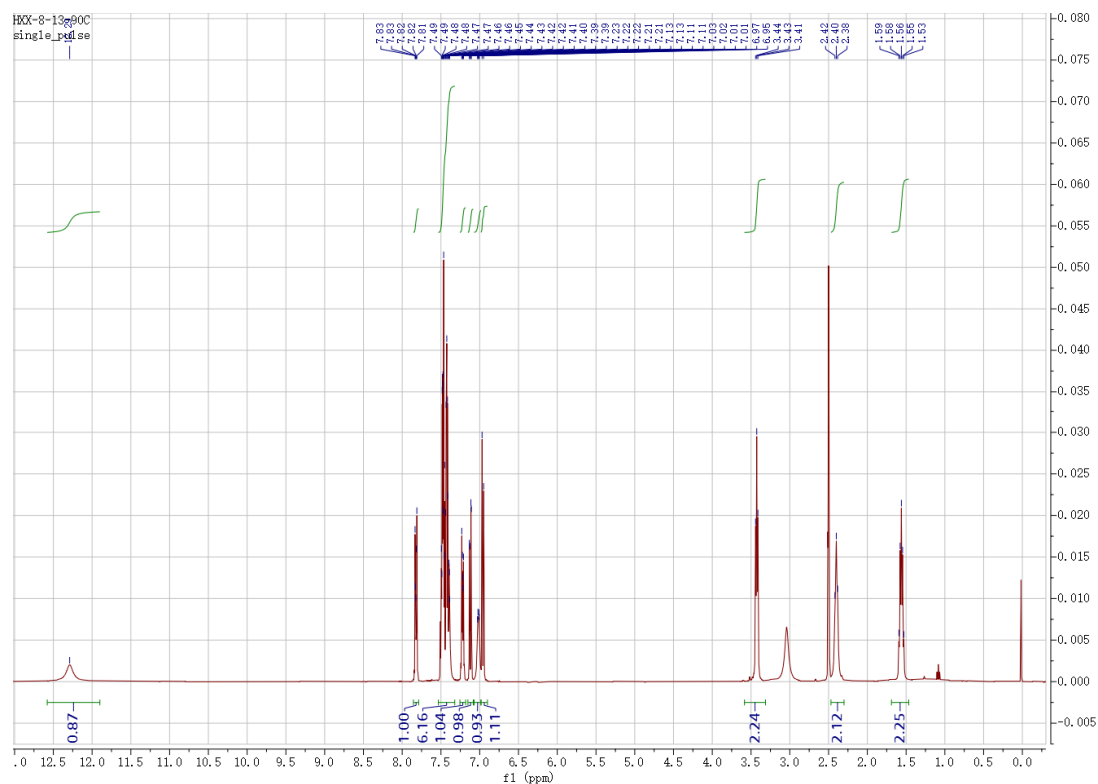
Compound A6:

HR-ESI-MS:

HXX-8-13 #1341 RT: 4.54 AV: 1 NL: 1.18E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



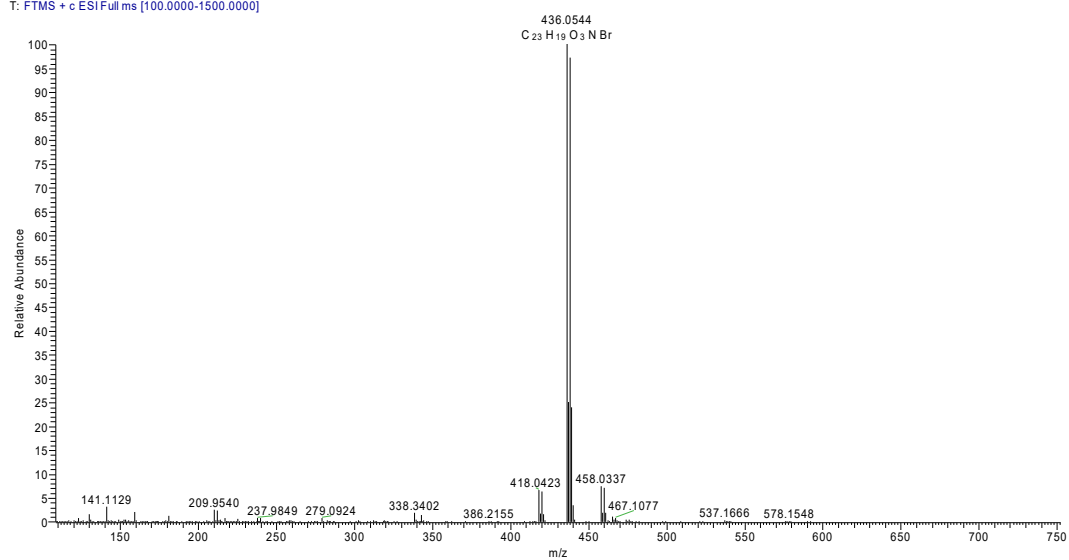
^1H -NMR:



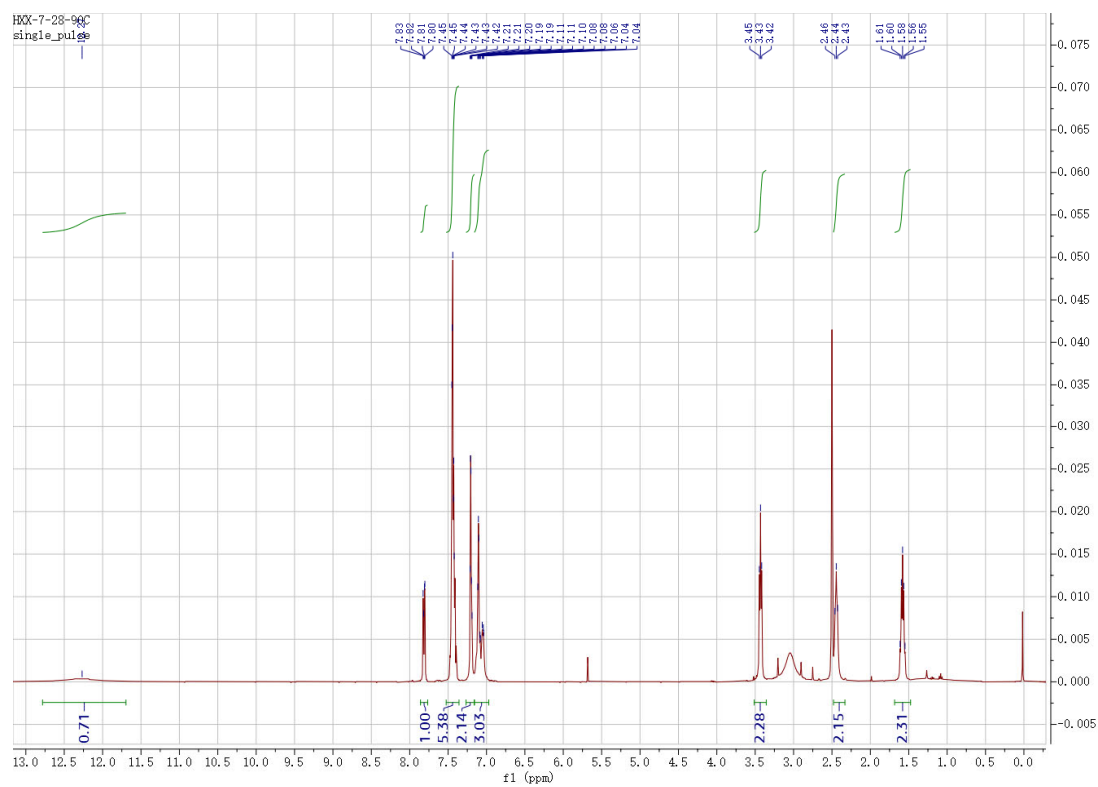
Compound A7:

HR-ESI-MS:

HNX-7-28 210426170200 #1330 RT: 4.59 AV: 1 NL: 4.54E8
T: FTMS + c ESIFull ms [100.0000-1500.0000]



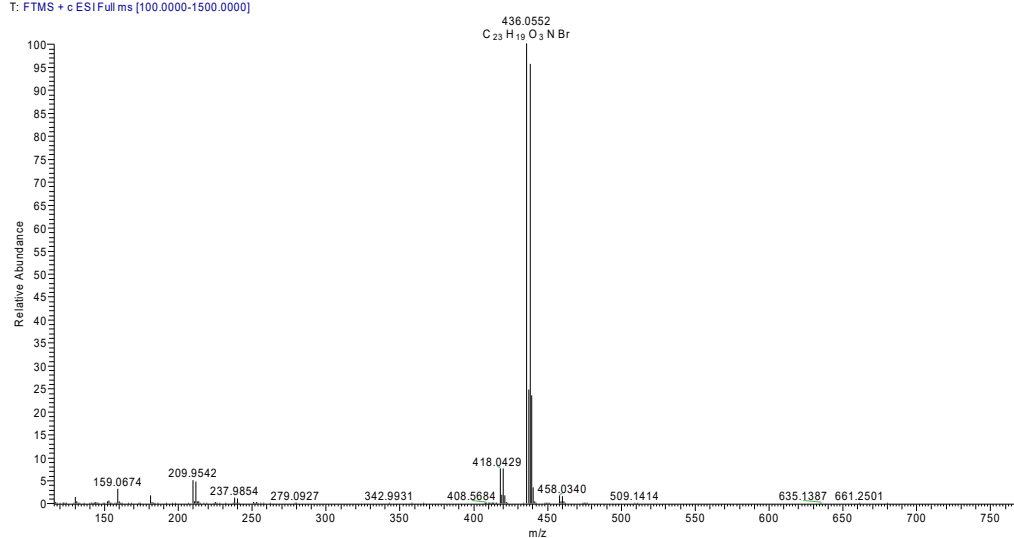
^1H -NMR:



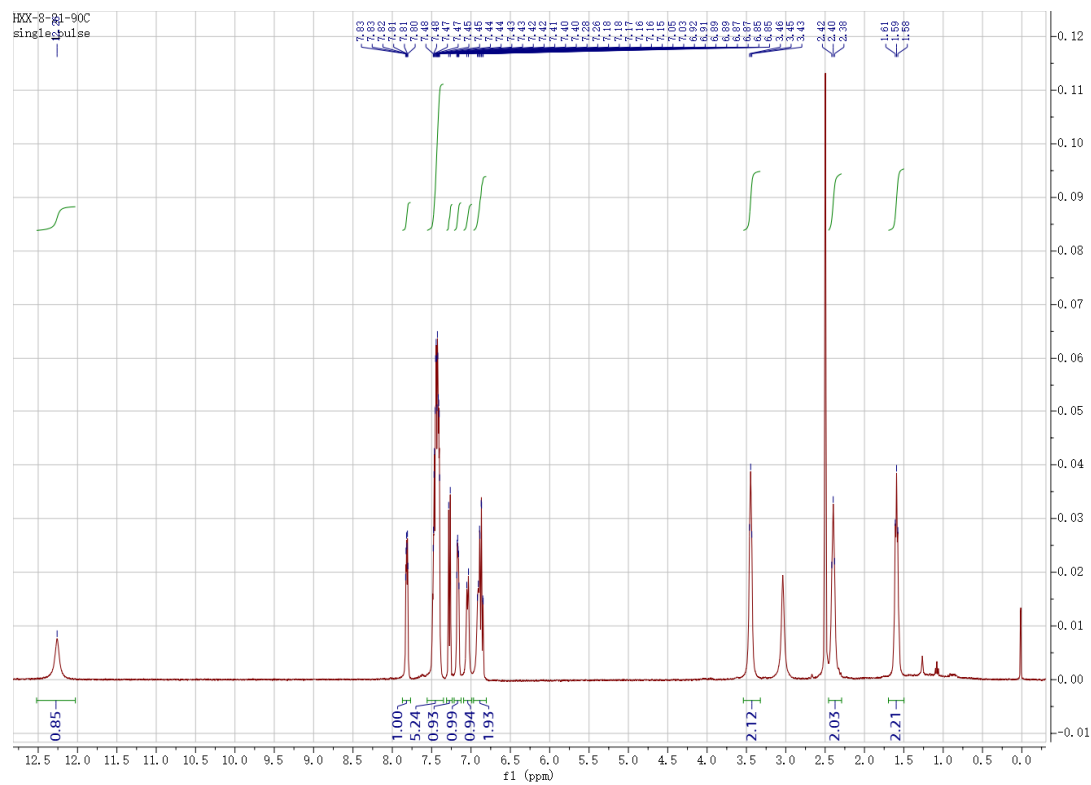
Compound A8:

HR-ESI-MS:

HXX-8-21 #1392 RT: 4.58 AV: 1 NL: 1.61E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



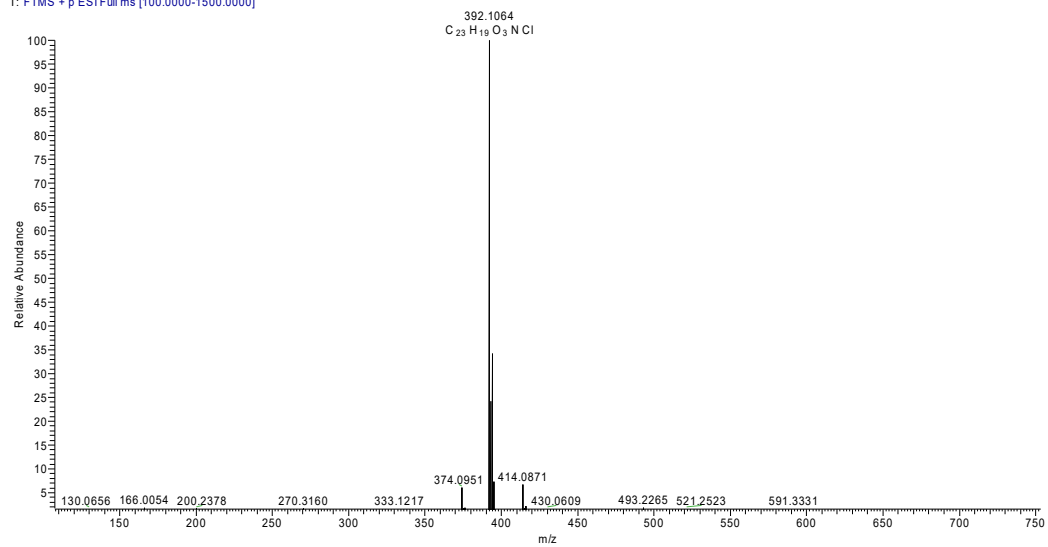
^1H -NMR:



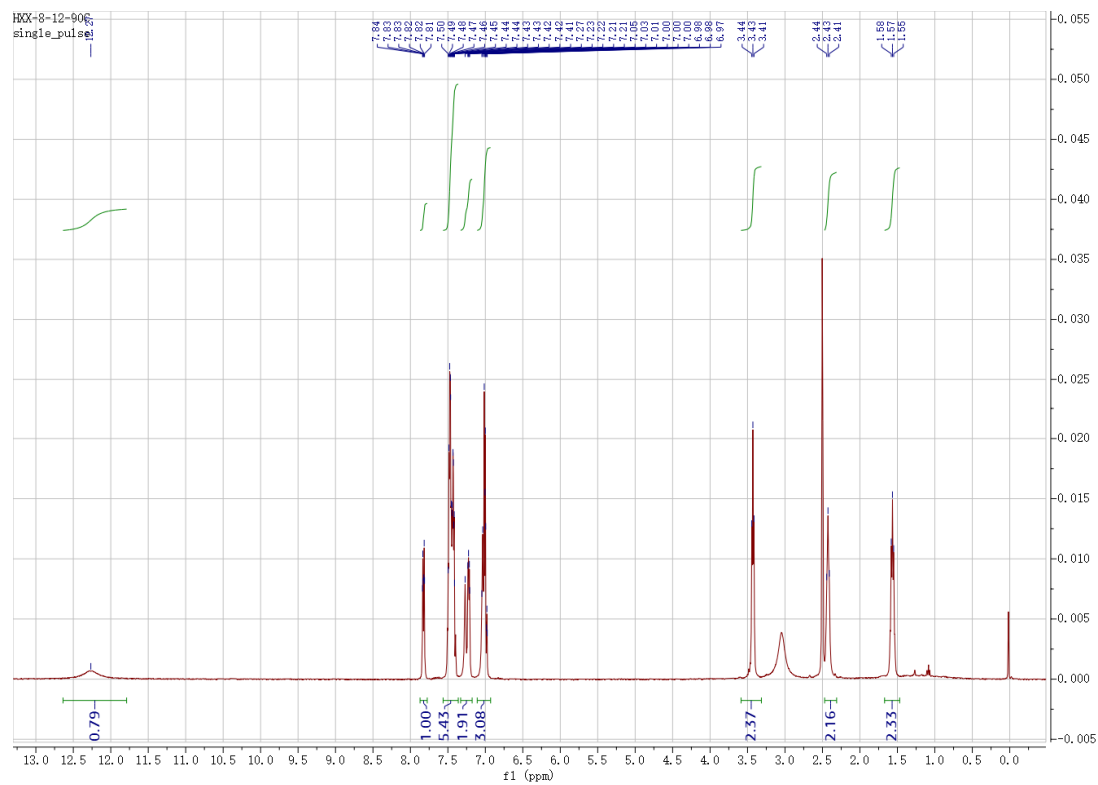
Compound A9:

HR-ESI-MS:

HXX-8-12 #52 RT: 0.34 AV: 1 NL: 1.70E7
T: FTMS + p ESI Full ms [100.0000-1500.0000]



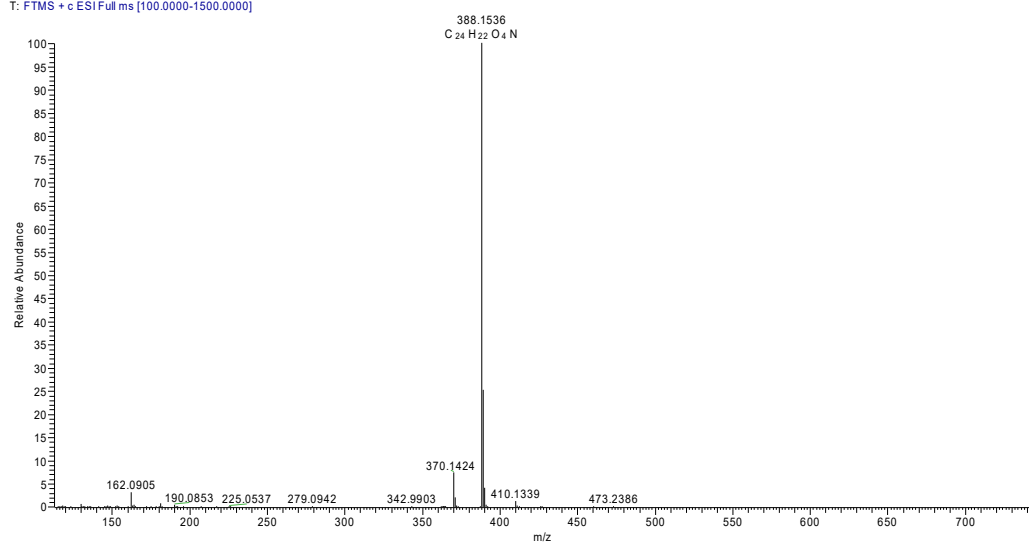
^1H -NMR:



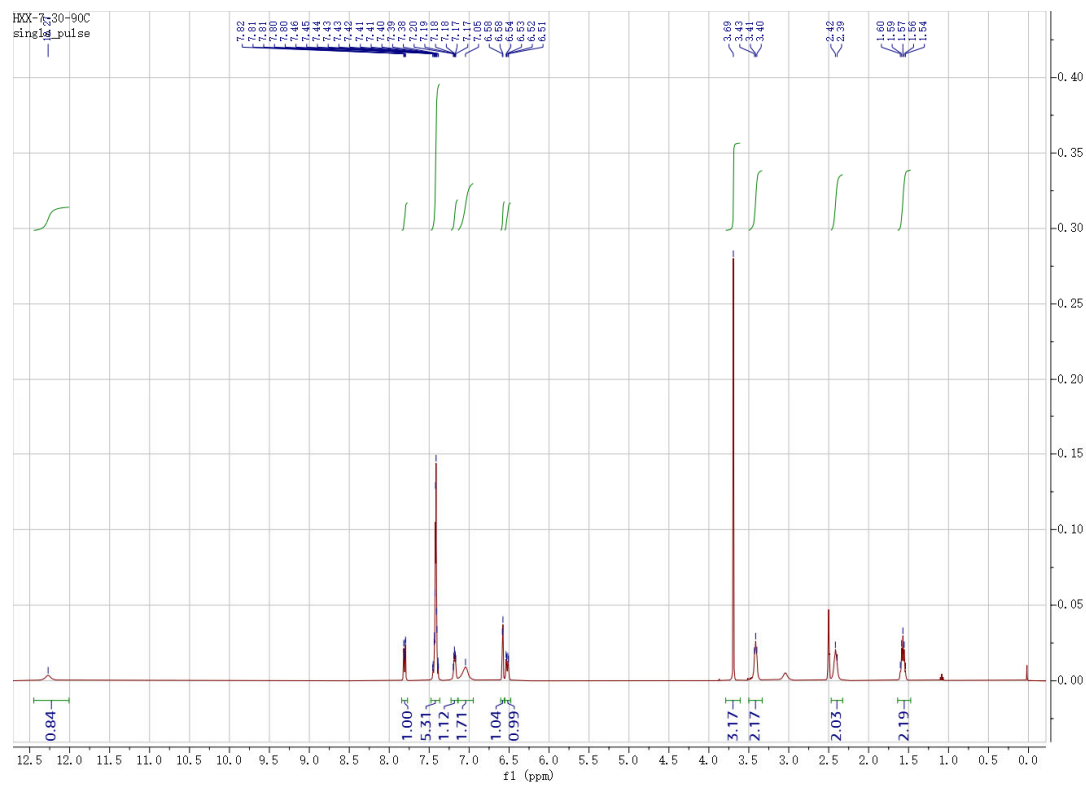
Compound A10:

HR-ESI-MS:

HXX-7-30_210426171036 #1303 RT: 4.18 AV: 1 NL: 4.81E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



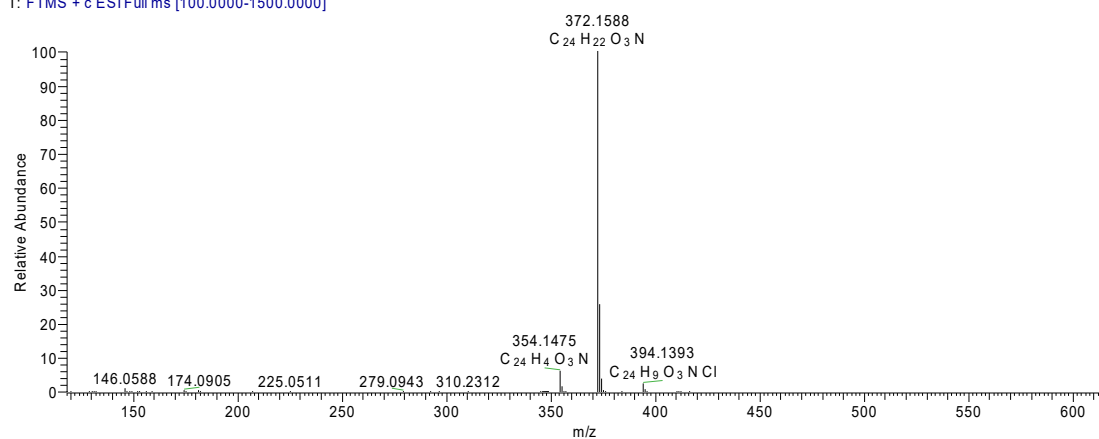
^1H -NMR:



Compound A11:

HR-ESI-MS:

HXX-8-26 #1335 RT: 4.46 AV: 1 NL: 2.90E9
T: FTMS + c ESIFull ms [100.0000-1500.0000]



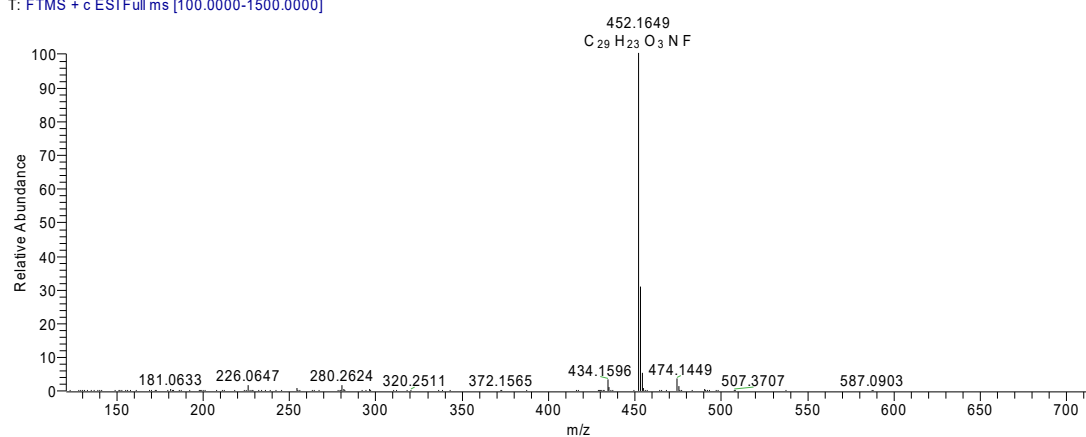
^1H -NMR:



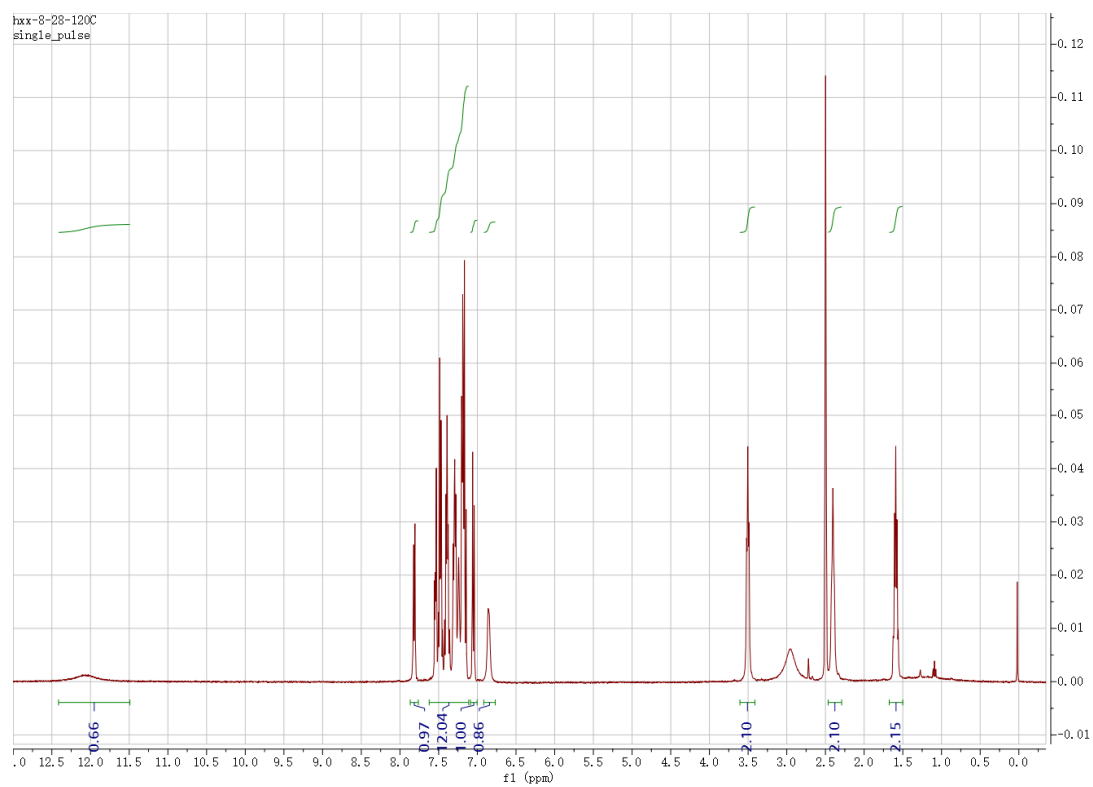
Compound A12:

HR-ESI-MS:

HXX-8-28_210517162059 #1356 RT: 4.87 AV: 1 NL: 1.04E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



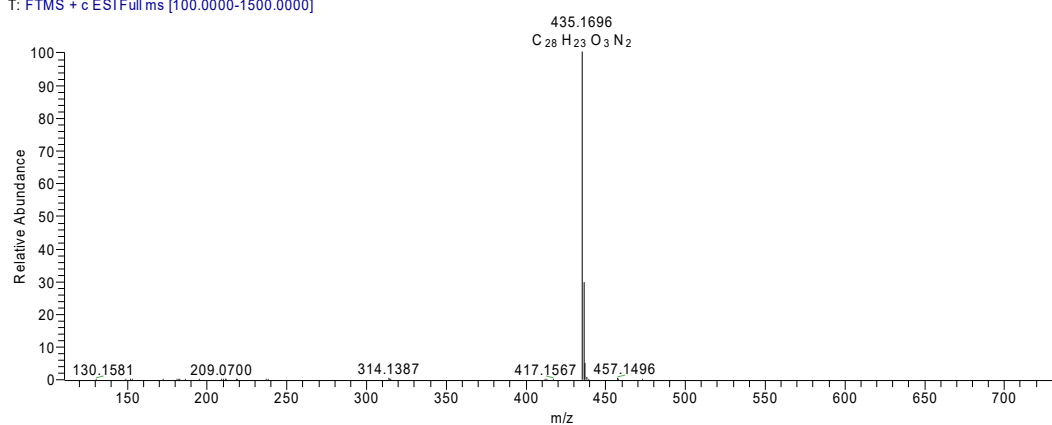
^1H -NMR:



Compound A13:

HR-ESI-MS:

HXX-8-33 #848 RT: 3.03 AV: 1 NL: 3.61E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



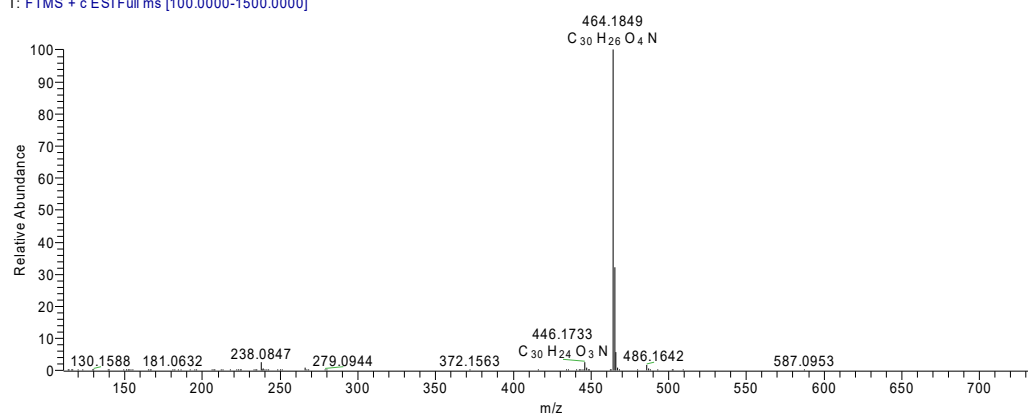
^1H -NMR:



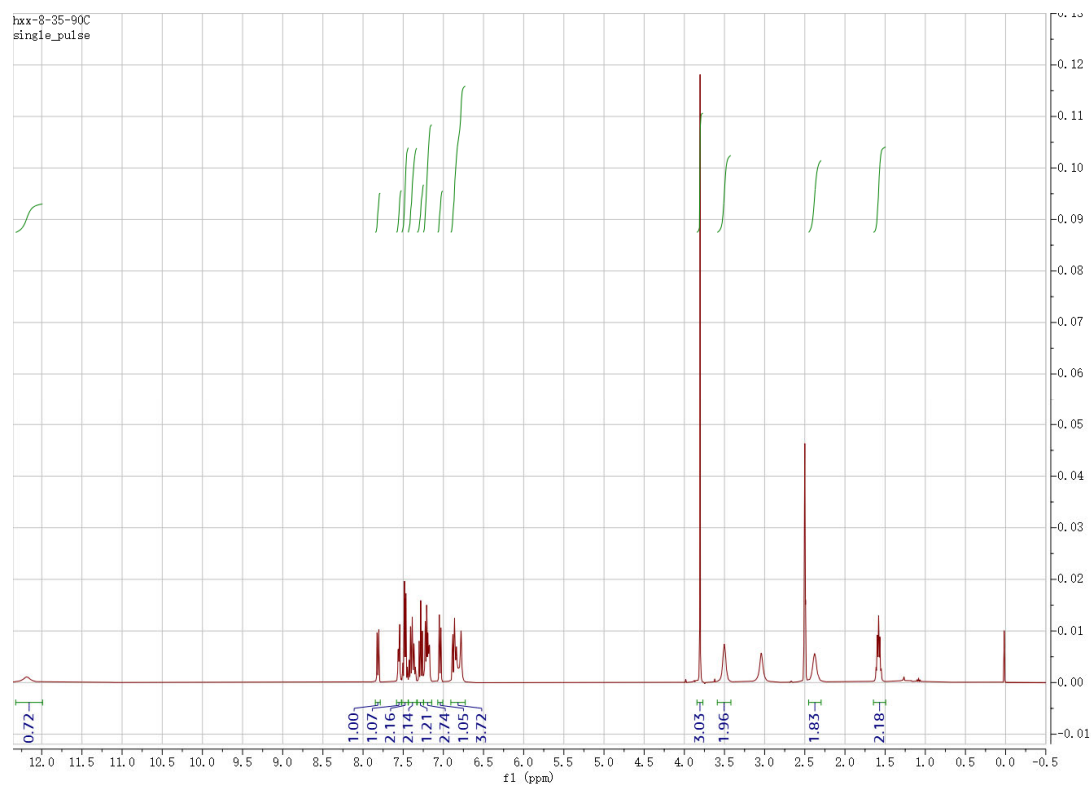
Compound A14:

HR-ESI-MS:

HXX-8-35 #1332 RT: 4.80 AV: 1 NL: 1.44E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



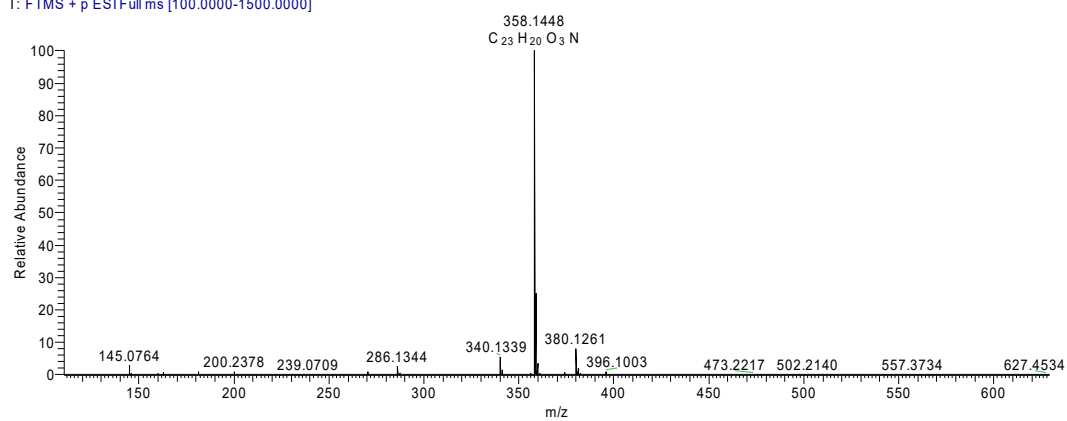
¹H-NMR:



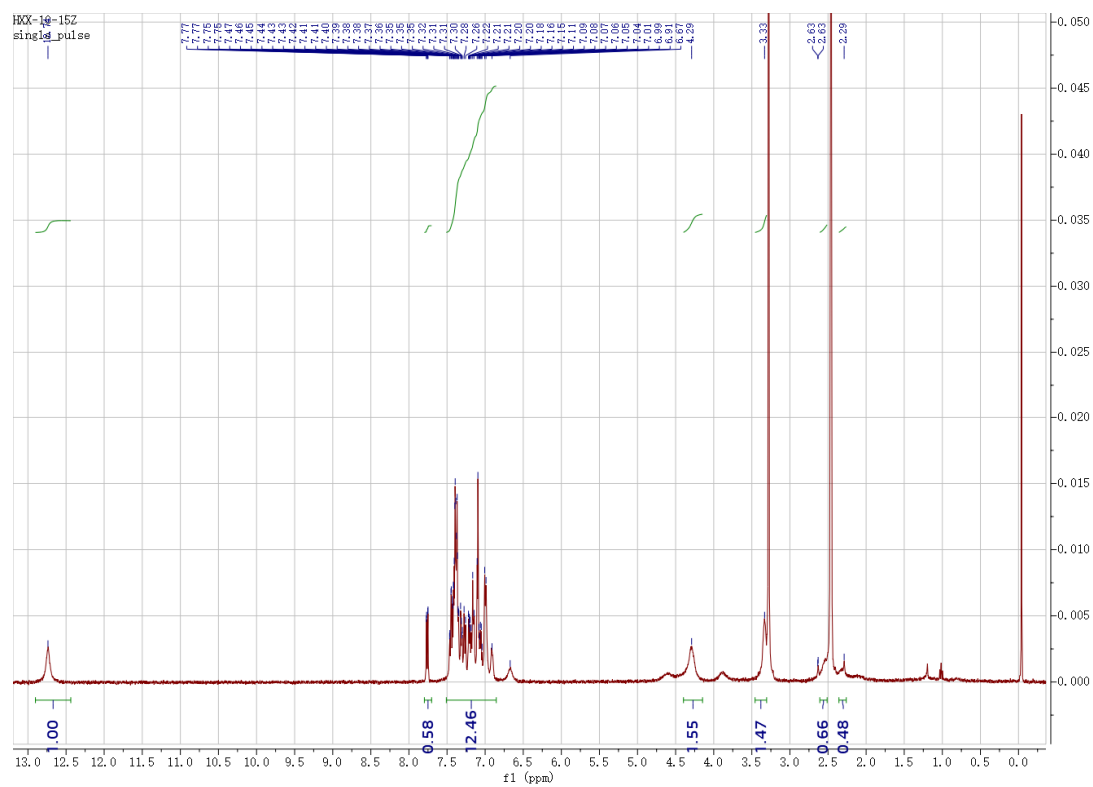
Compound A15:

HR-ESI-MS:

HXX-10-15 #48 RT: 0.31 AV: 1 NL: 1.35E7
T: FTMS + p ESI Full ms [100.0000-1500.0000]



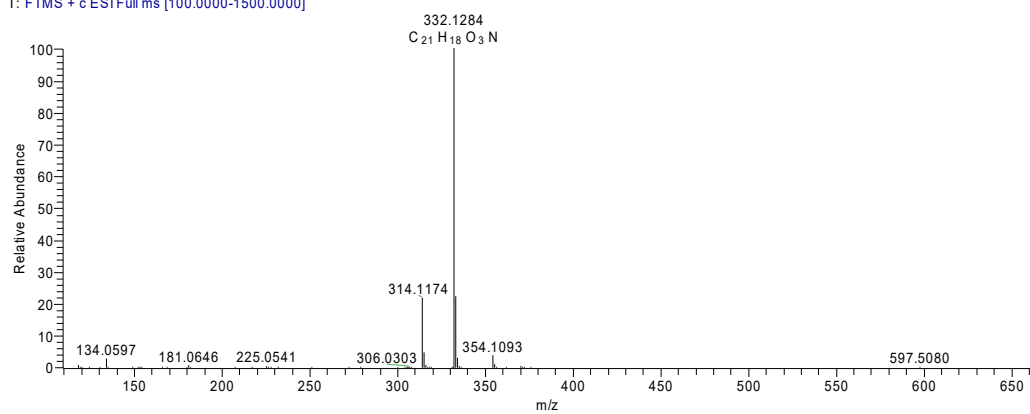
^1H -NMR:



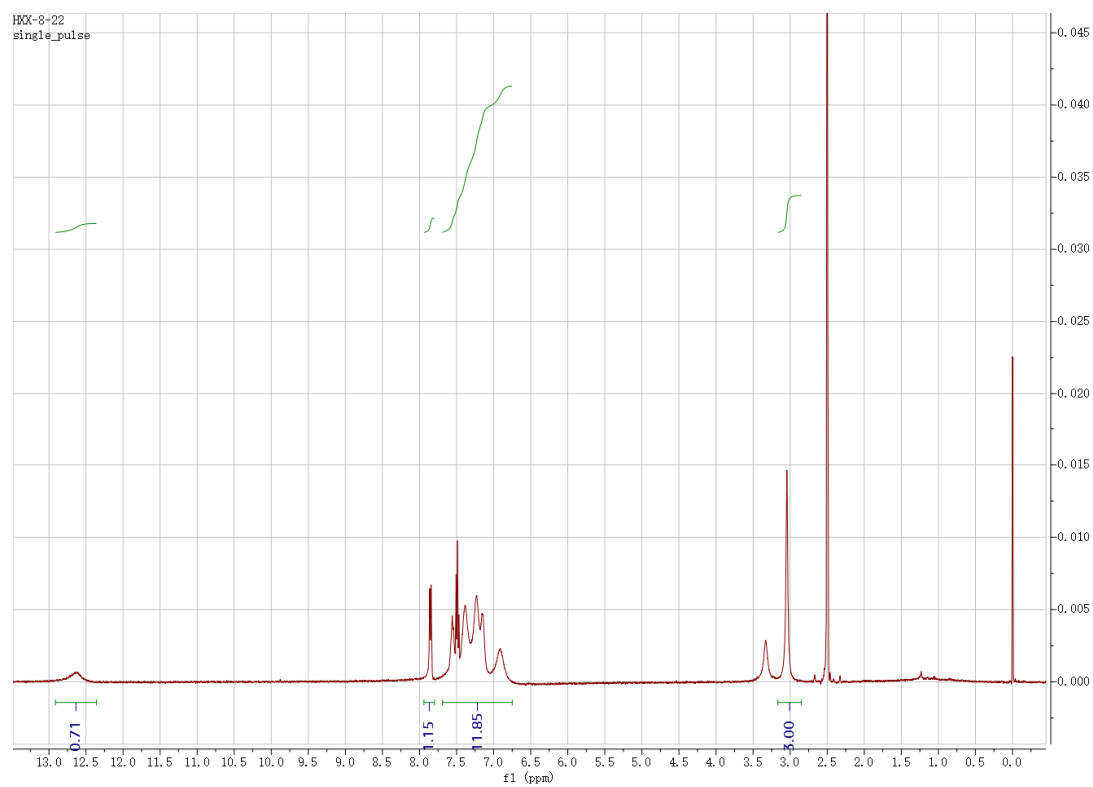
Compound A16:

HR-ESI-MS:

HXX-8-22 #1121 RT: 3.97 AV: 1 NL: 3.65E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



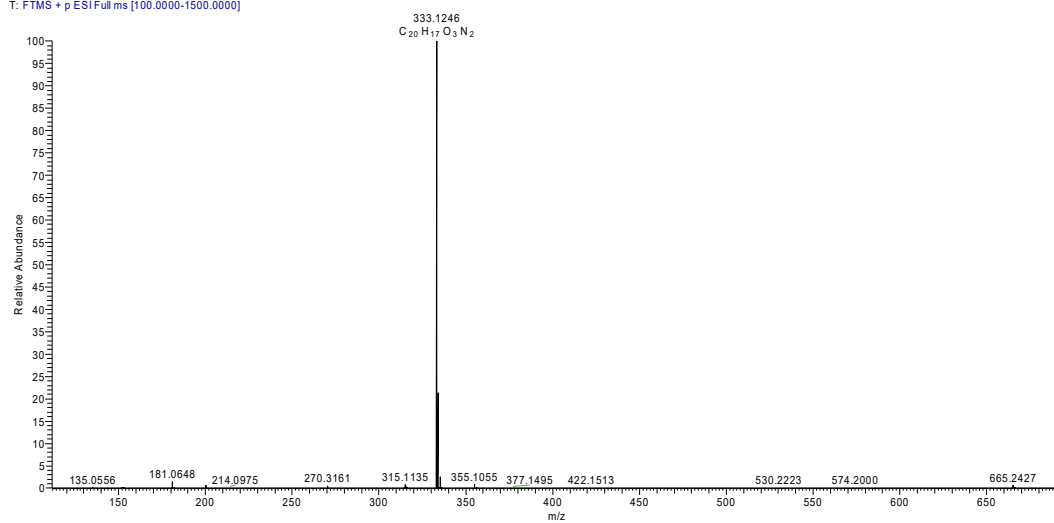
^1H -NMR:



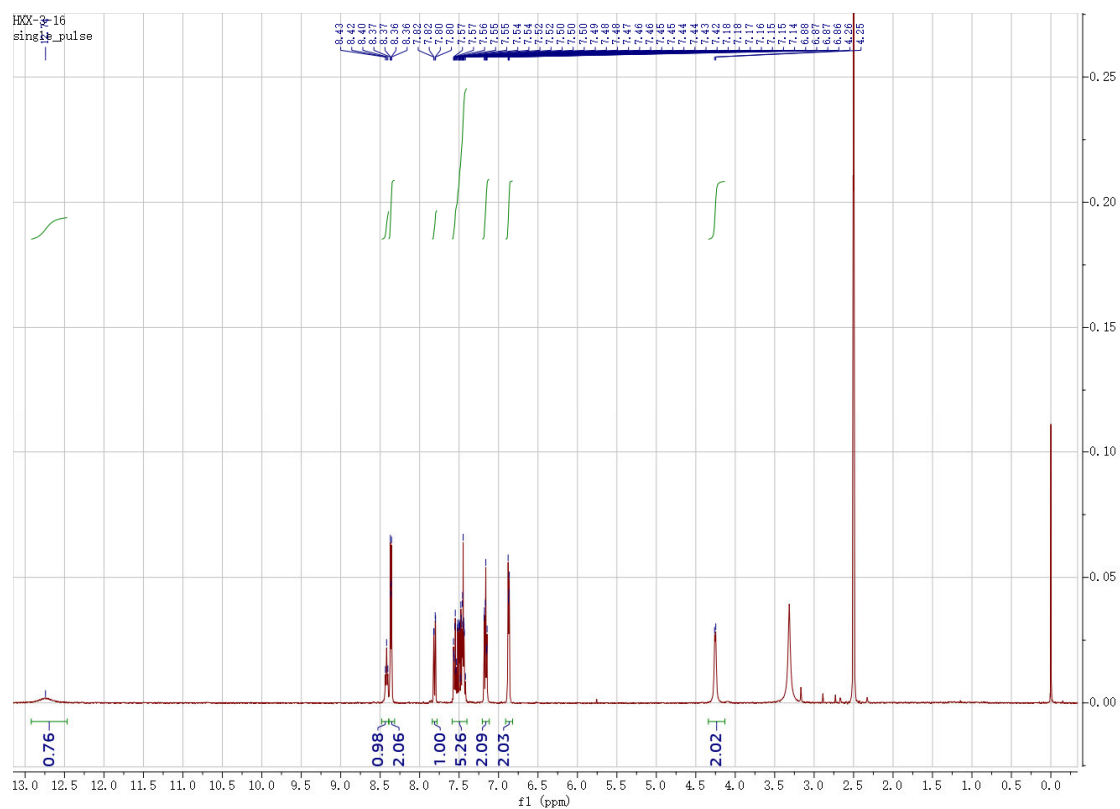
Compound A17:

HR-ESI-MS:

HXX-3-16 #47 RT: 0.29 AV: 1 NL: 8.37E7
T: FTMS + p ESI(Full ms [100.0000-1500.0000])



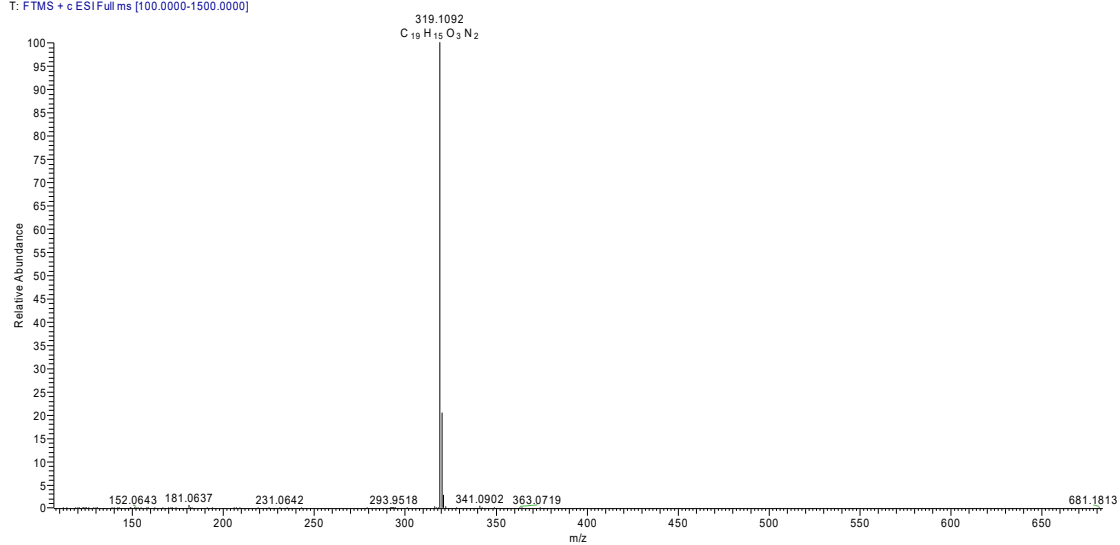
^1H -NMR:



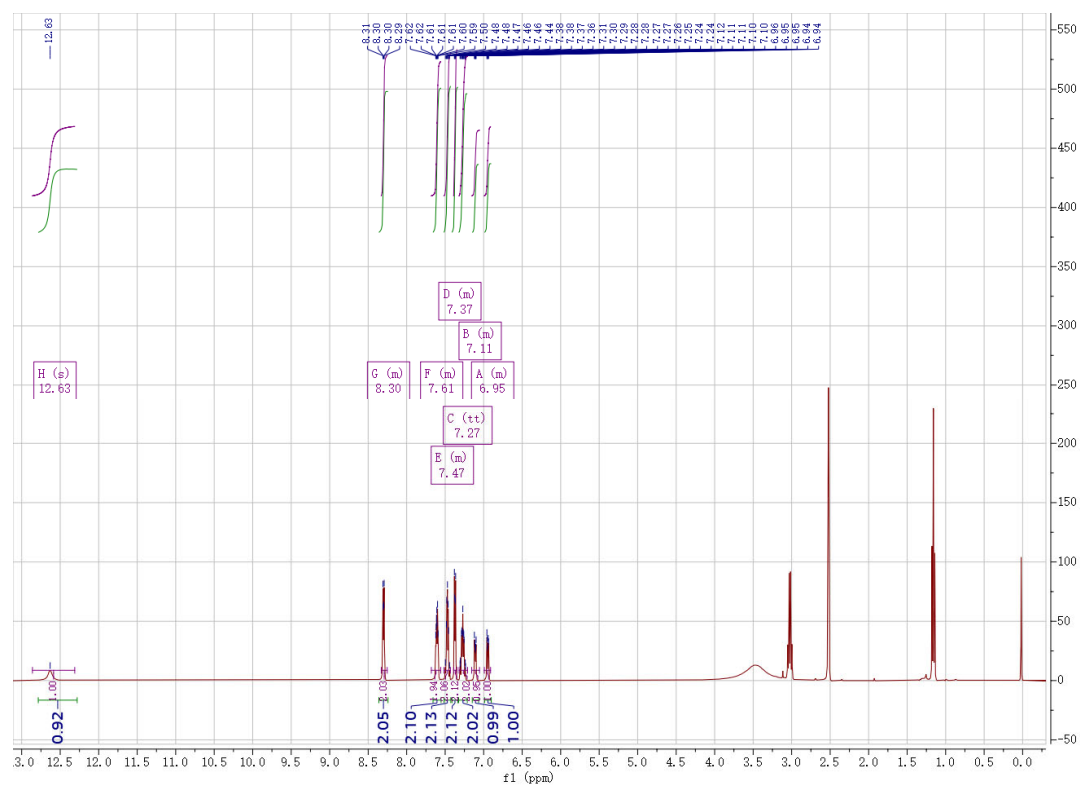
Compound A18:

HR-ESI-MS:

HXX-3-18 #754 RT: 2.75 AV: 1 NL: 3.36E8
T: FTMS + c ESI Full ms [100.0000-1500.0000]



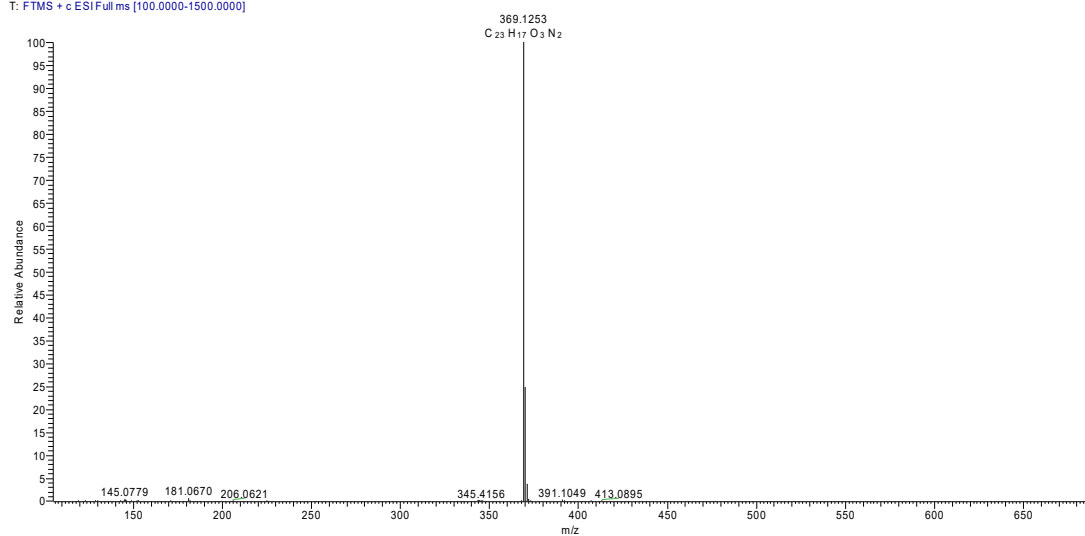
^1H -NMR:



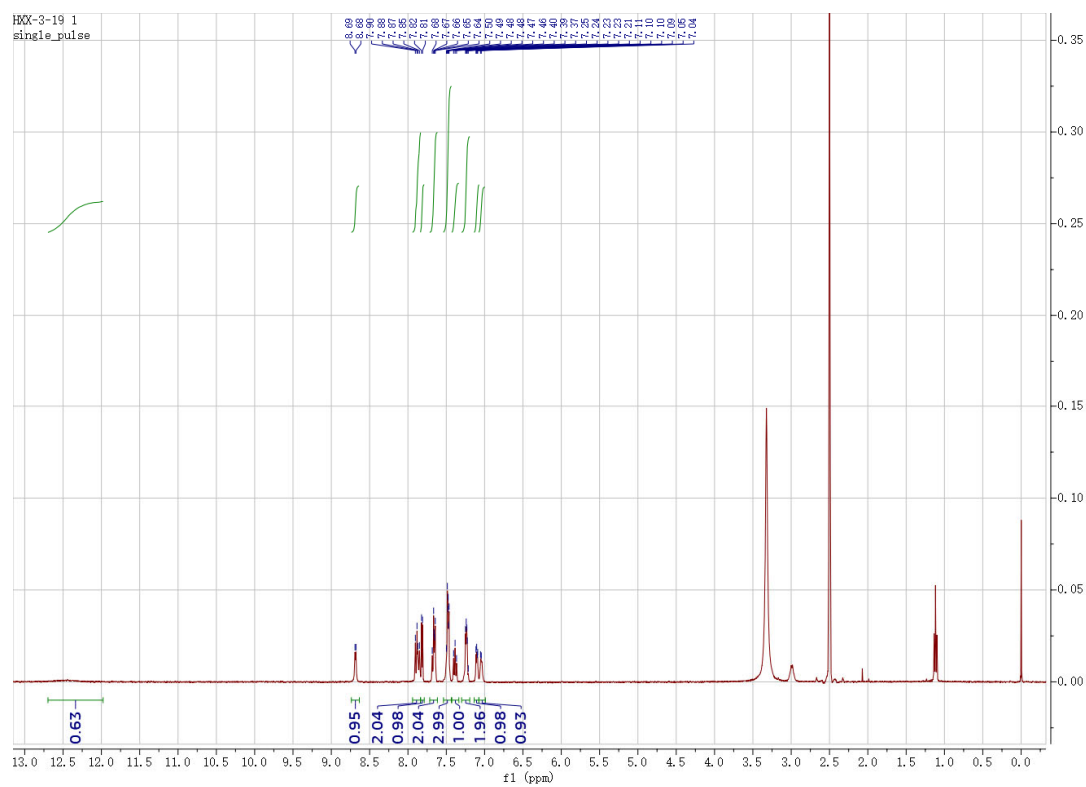
Compound A19:

HR-ESI-MS:

HXX-3-19 #827 RT: 2.99 AV: 1 NL: 8.60E8
T: FTMS + c ESI Full ms [100.0000-1500.0000]



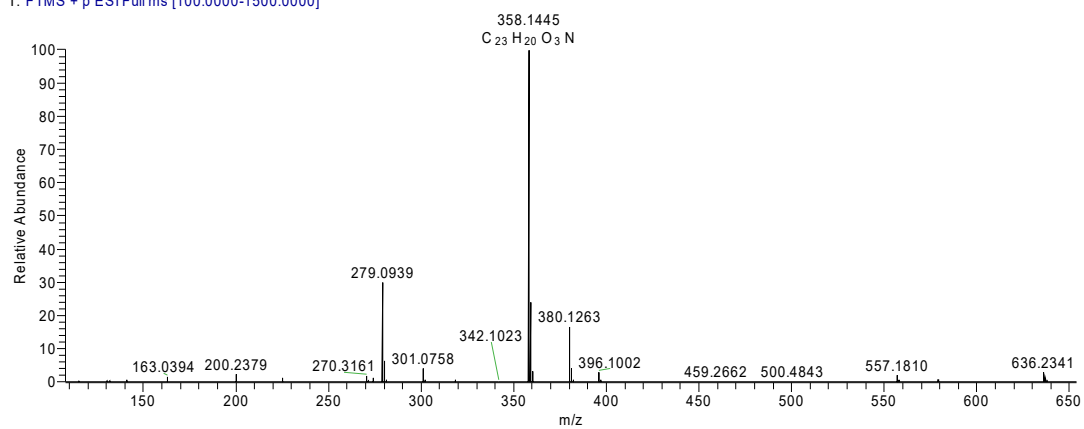
^1H -NMR:



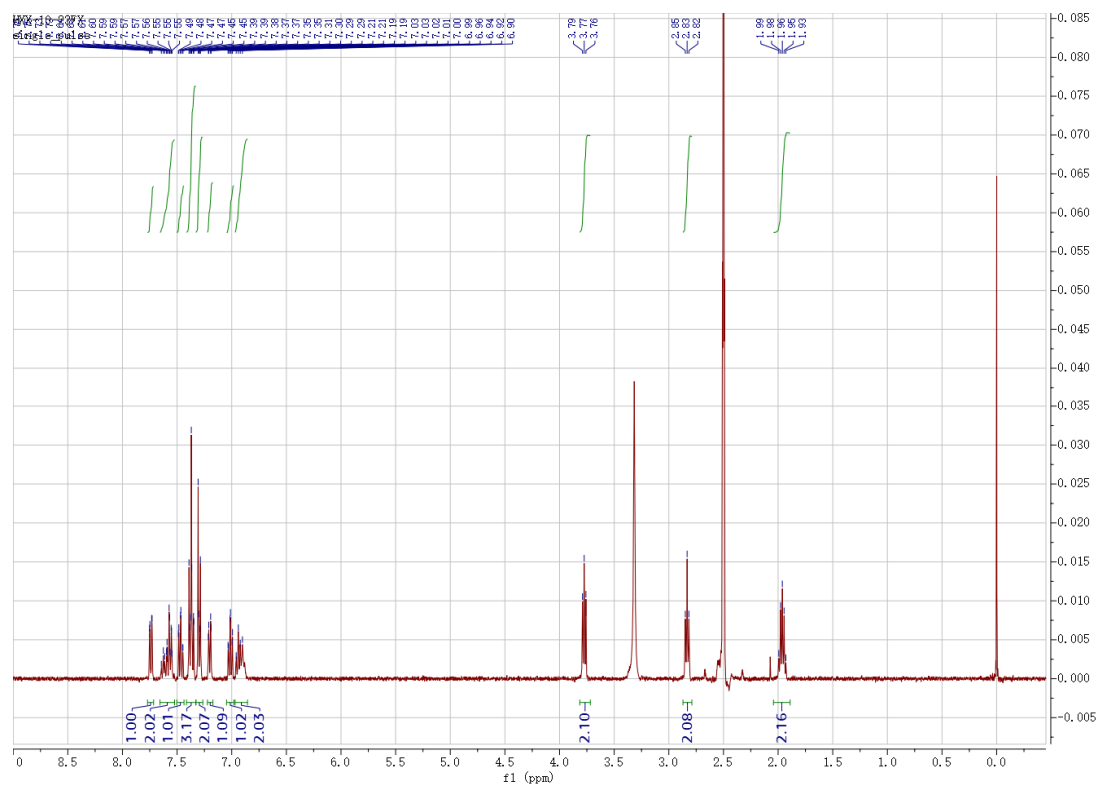
Compound A20:

HR-ESI-MS:

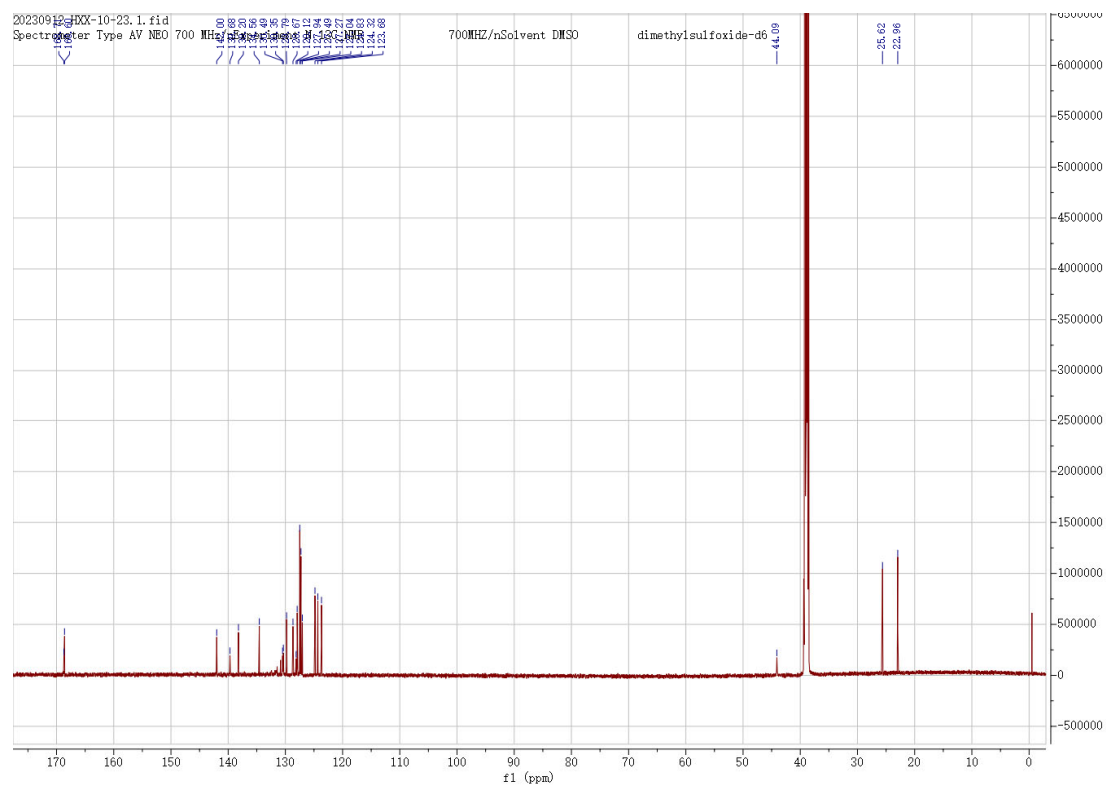
HXX-10-23 #50 RT: 0.32 AV: 1 NL: 2.76E6
T: FTMS + p ESI Full ms [100.0000-1500.0000]



^1H -NMR:



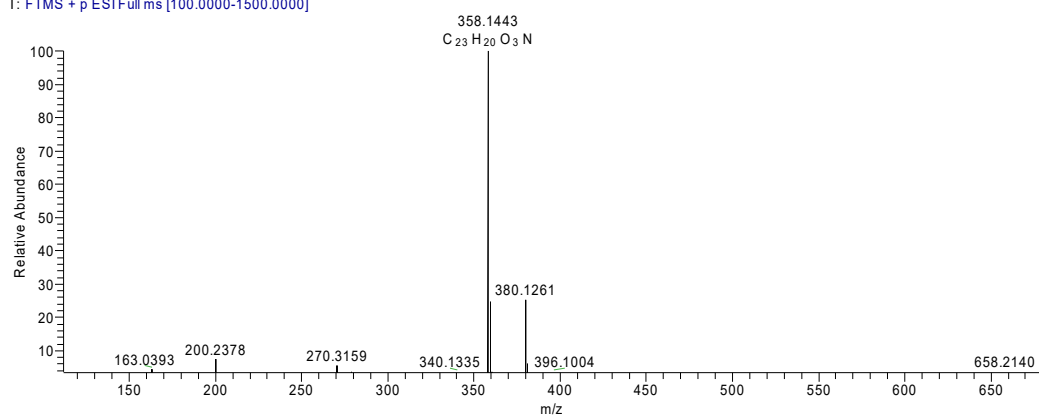
^{13}C -NMR:



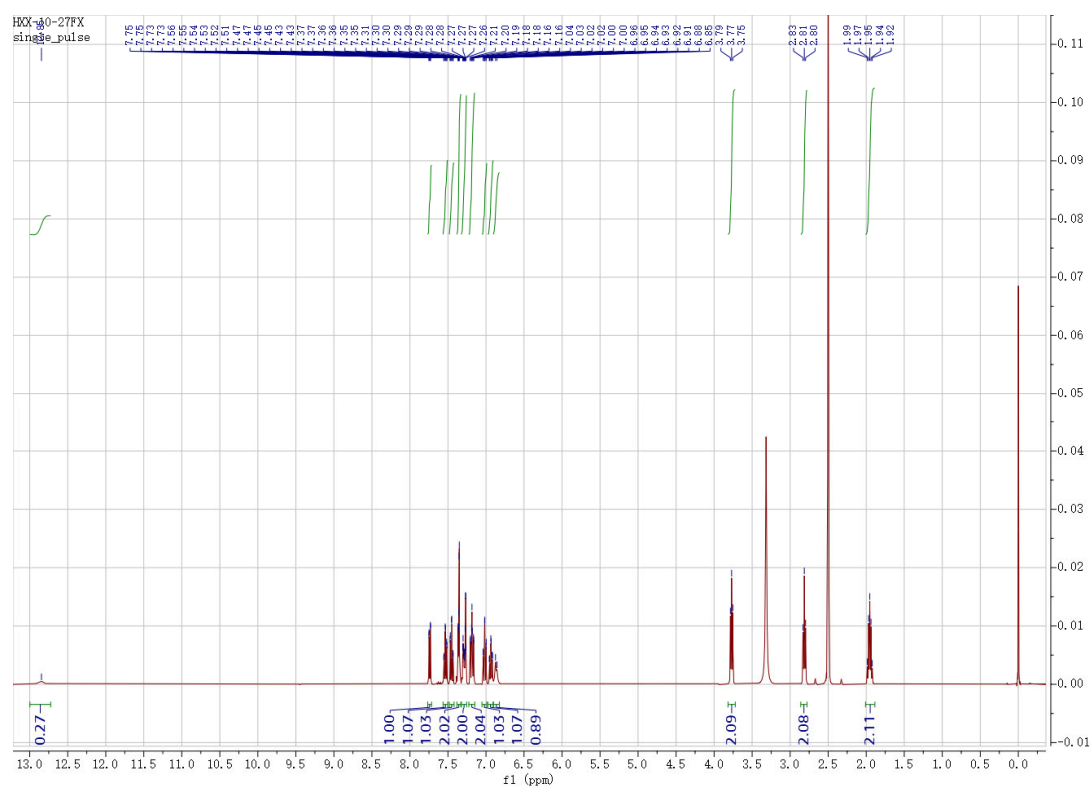
Compound A21:

HR-ESI-MS:

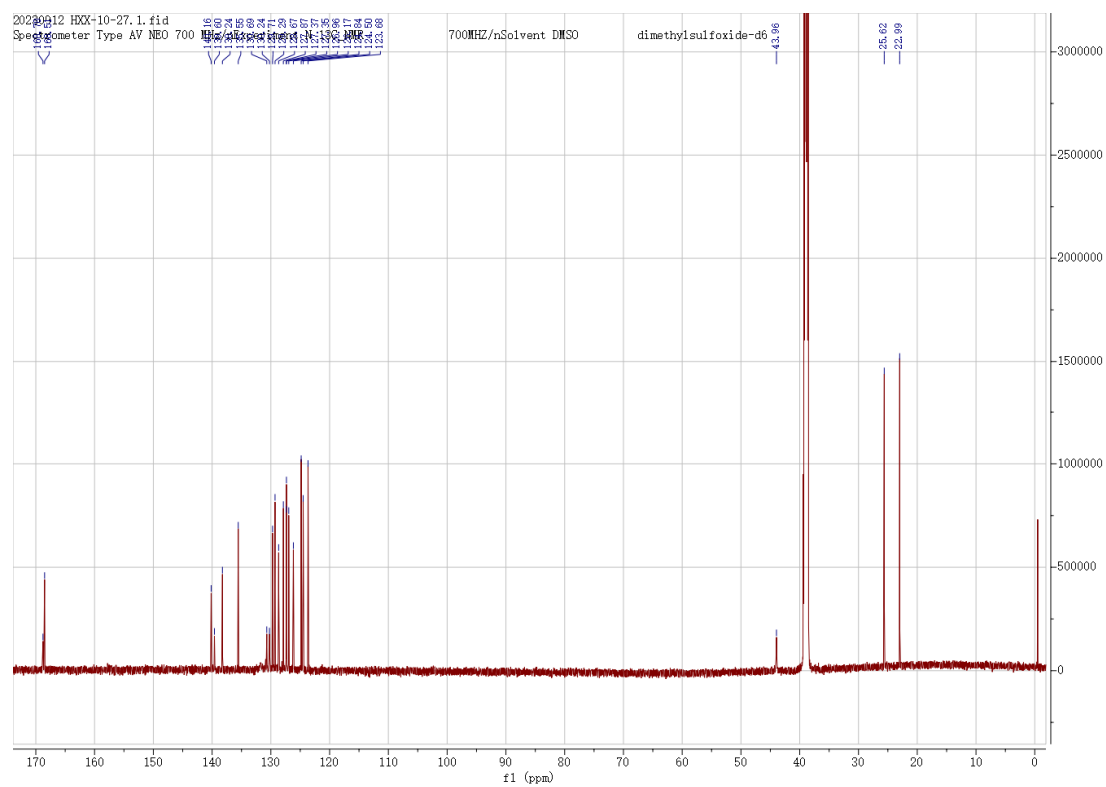
HXX-10-27 #51 RT: 0.33 AV: 1 NL: 1.60E6
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:

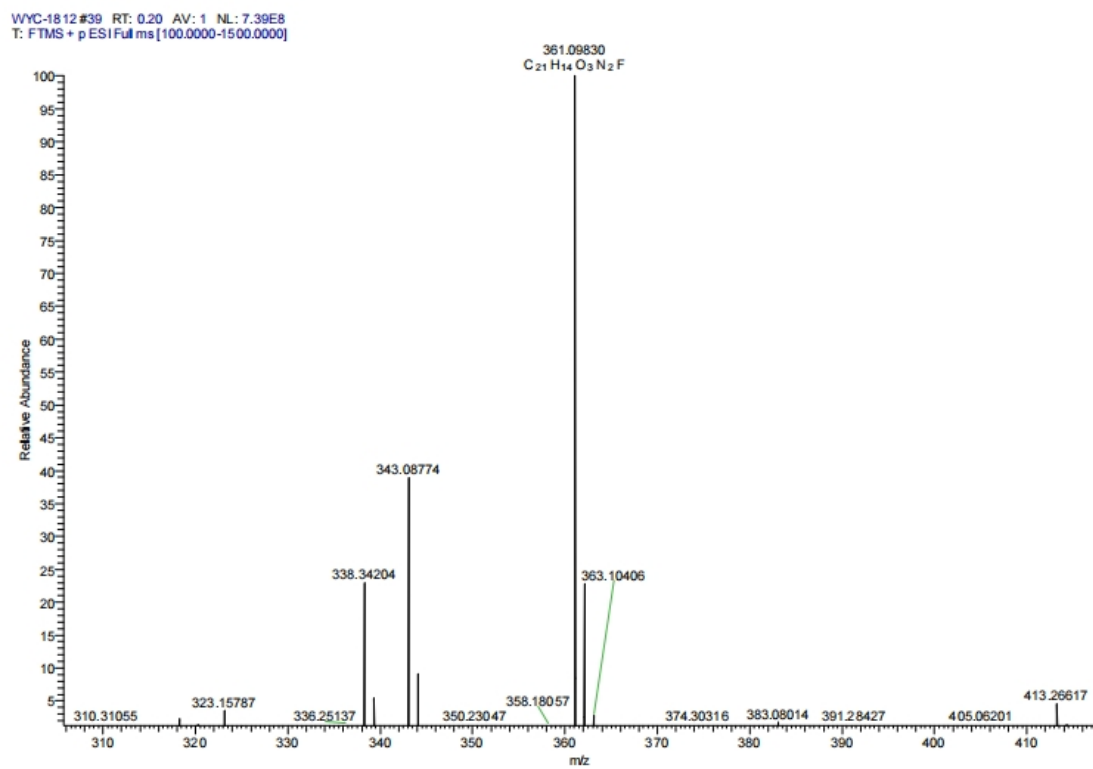


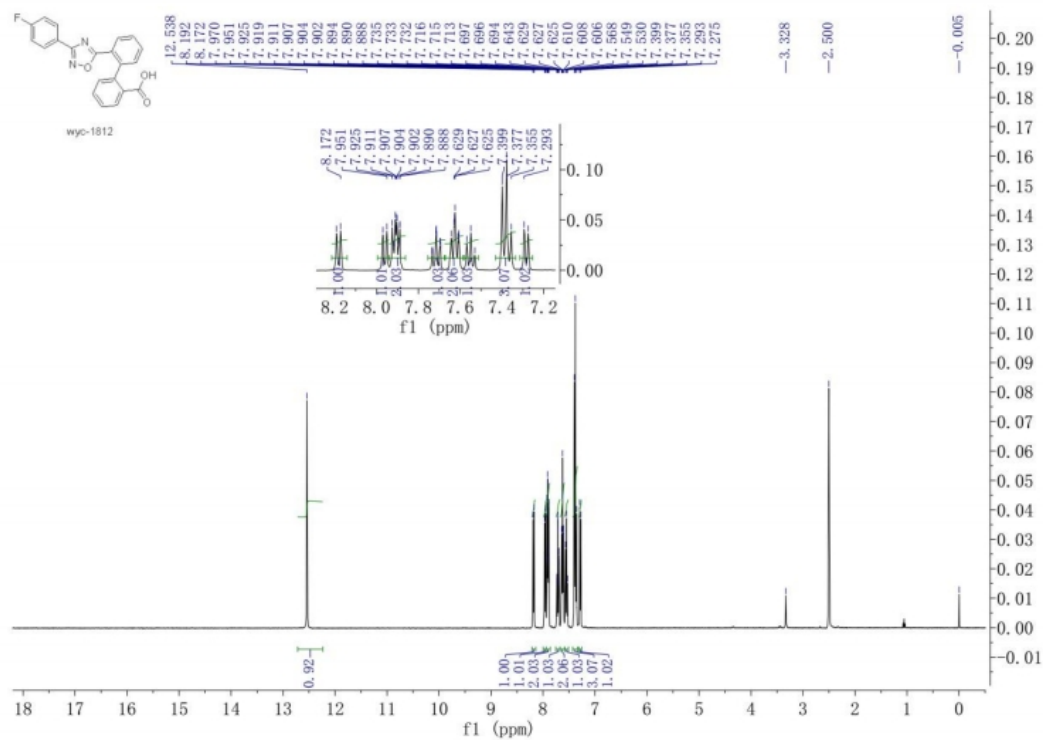
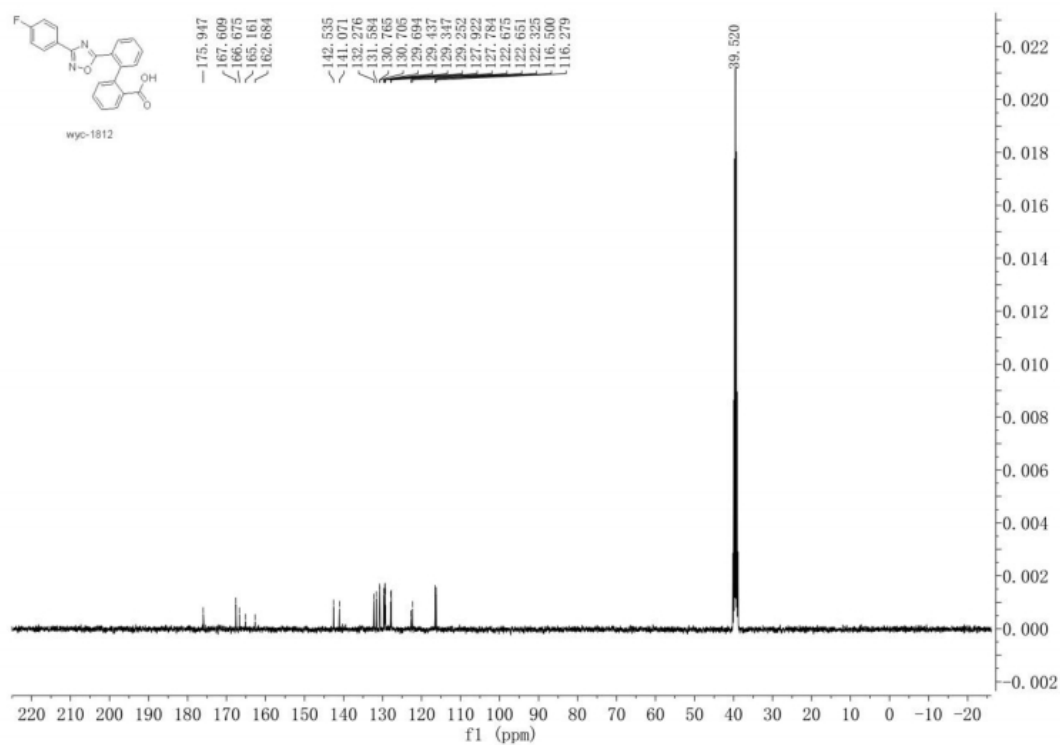
^{13}C -NMR:



Compound **B1**:

HR-ESI-MS:

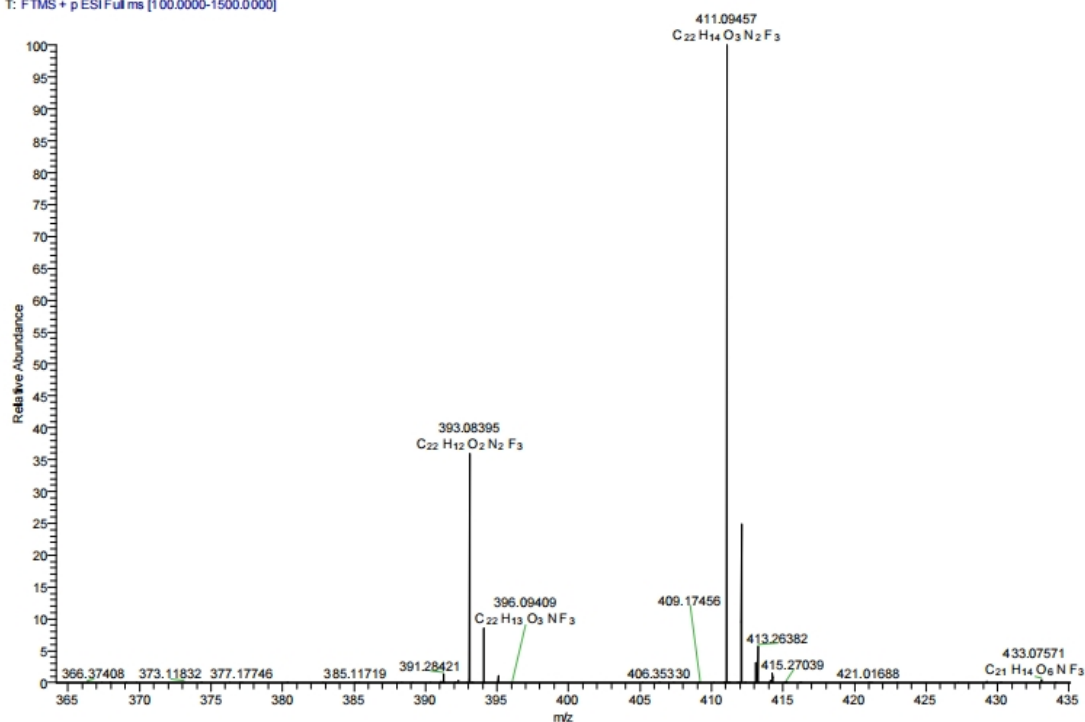


¹H-NMR:¹³C-NMR:

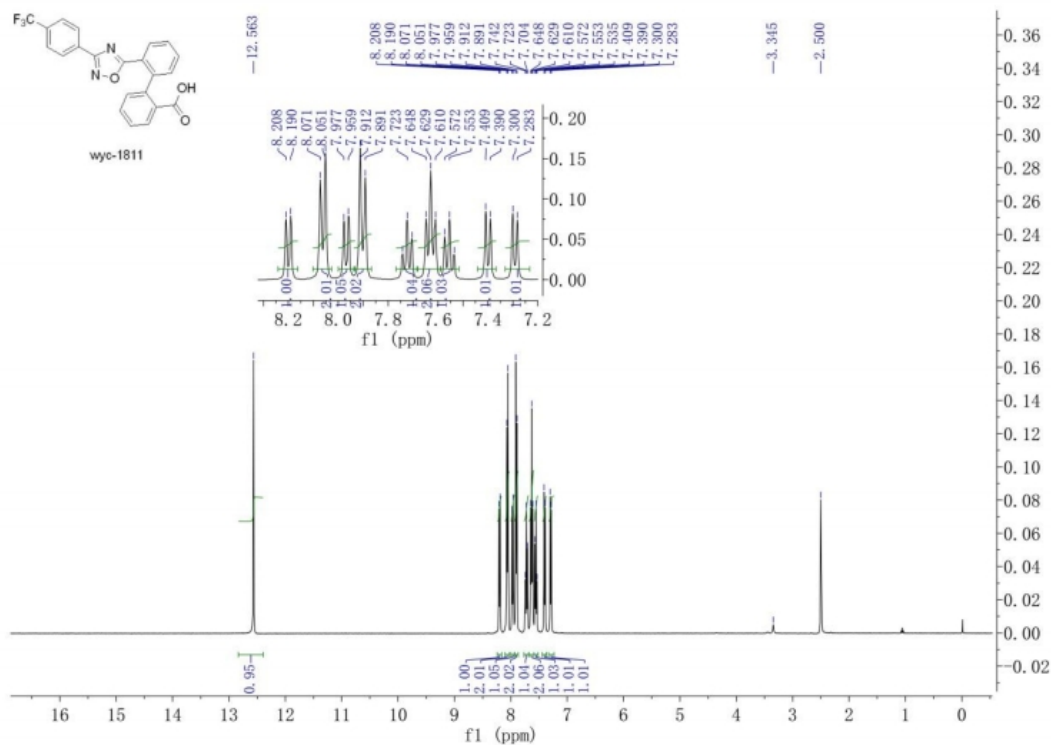
Compound **B2**:

HR-ESI-MS:

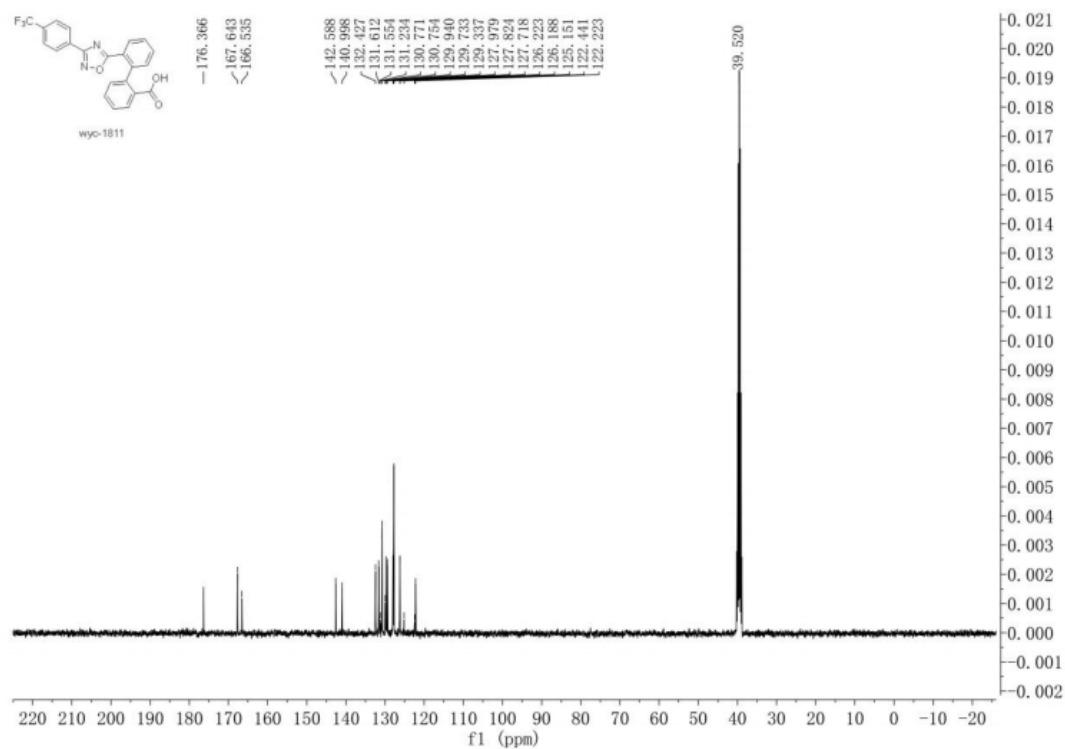
WYC-1811 #29 RT: 0.17 AV: 1 NL: 1.08E9
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:



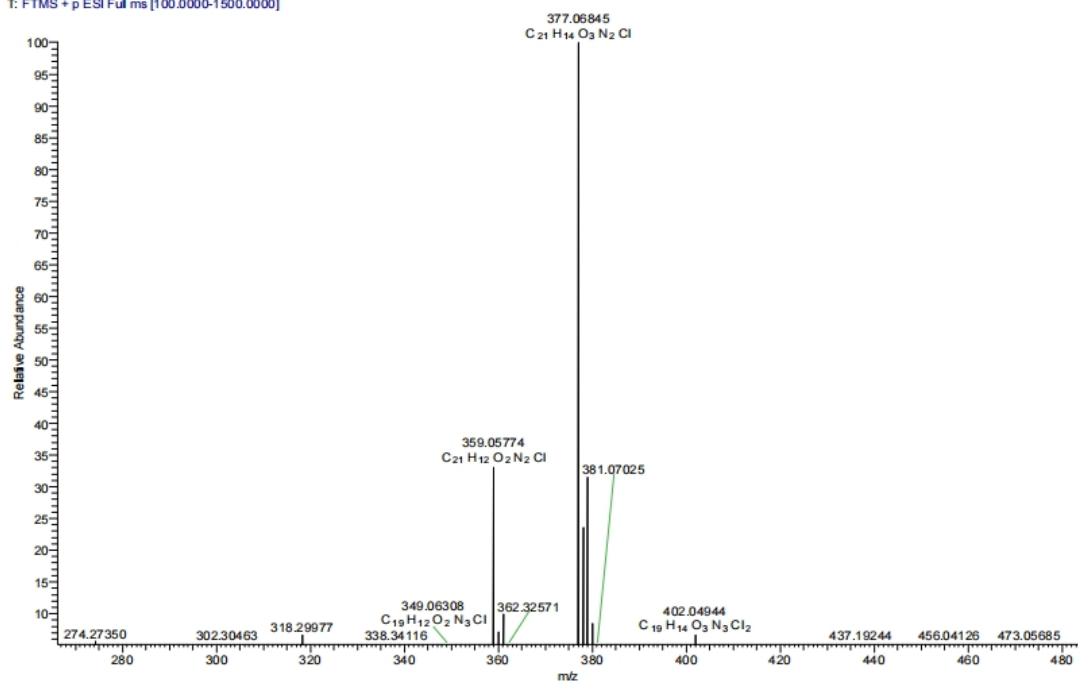
^{13}C -NMR:



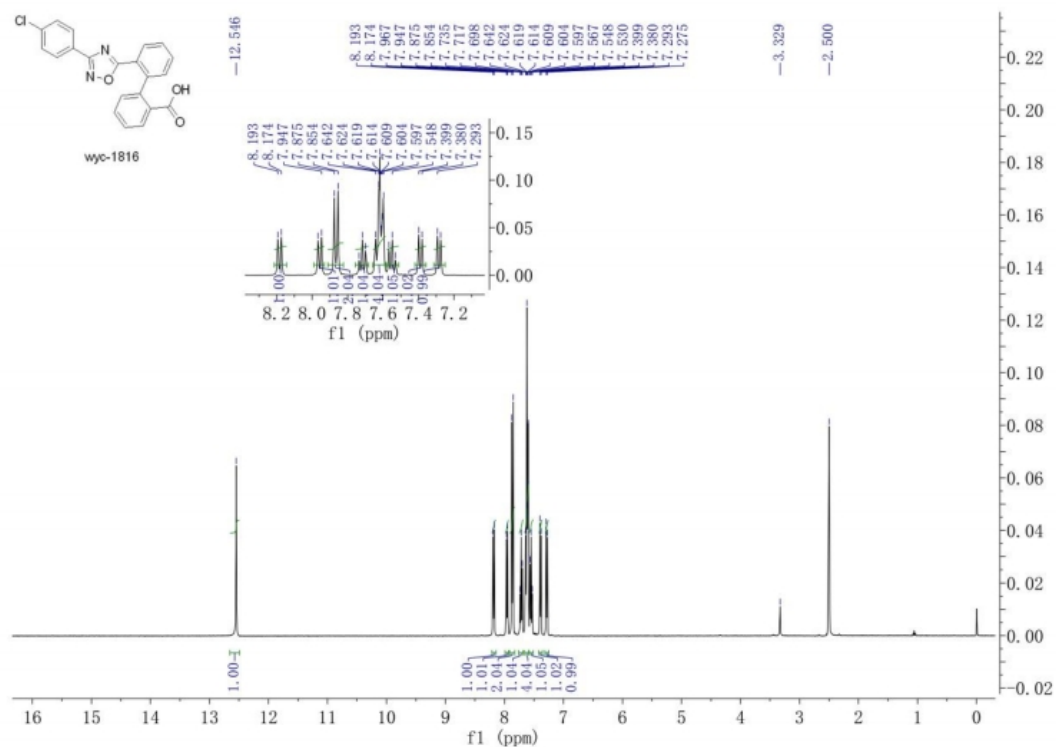
Compound **B3**:

HR-ESI-MS:

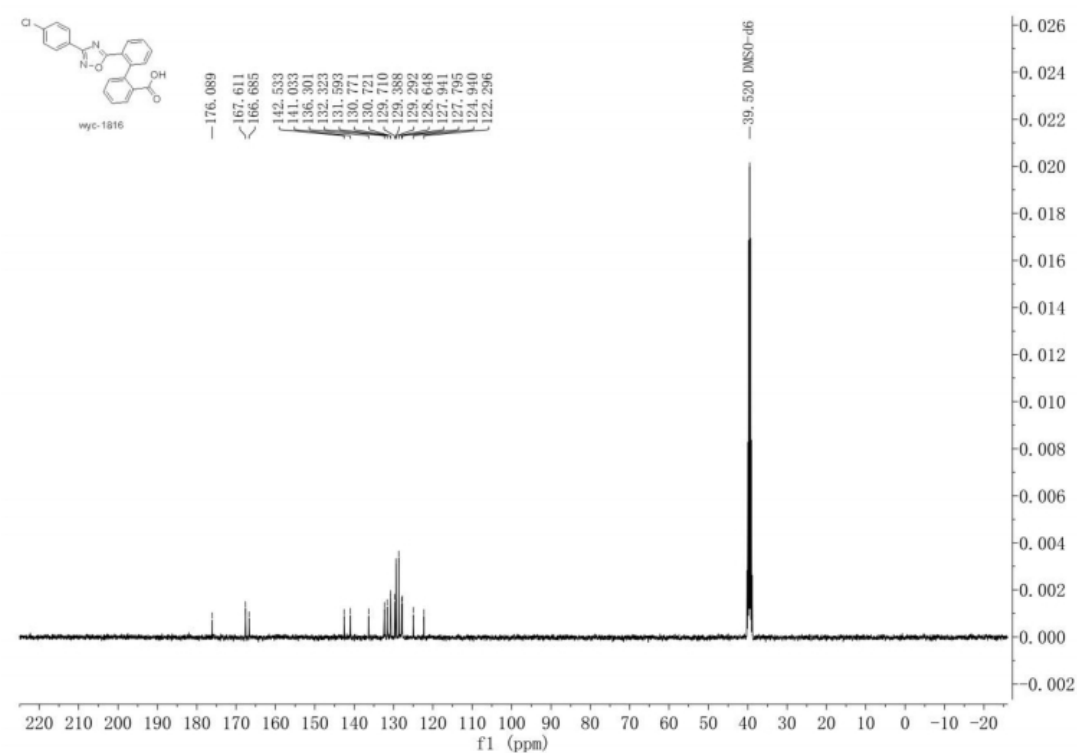
WYC-1816 #35 RT: 0.20 AV: 1 NL: 8.33E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]



^1H -NMR:



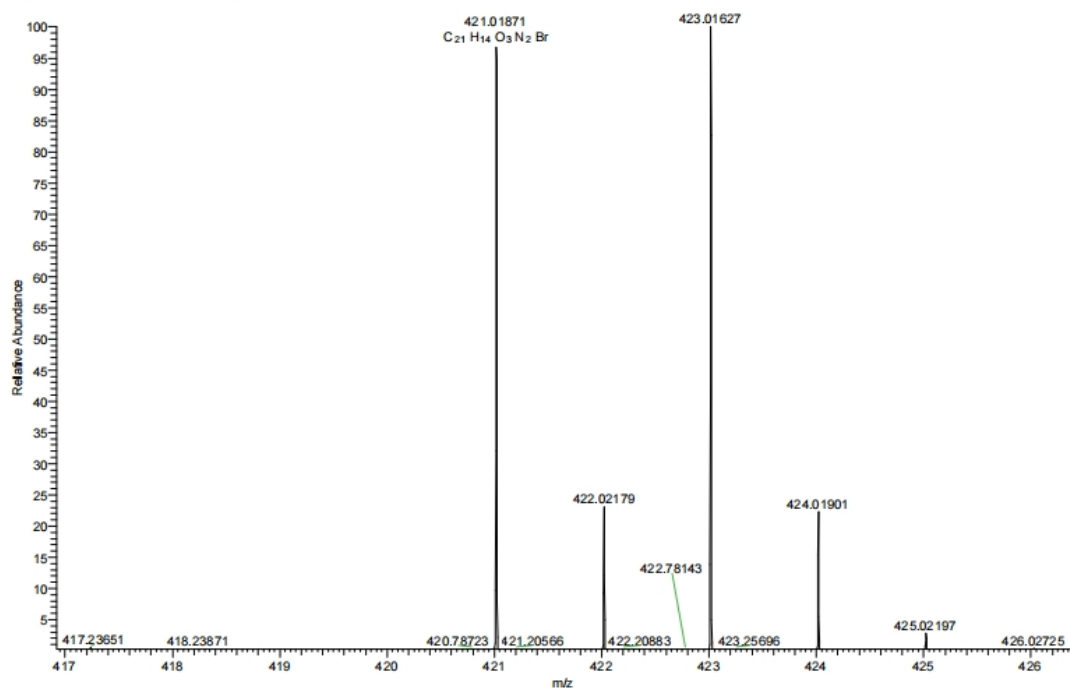
^{13}C -NMR:



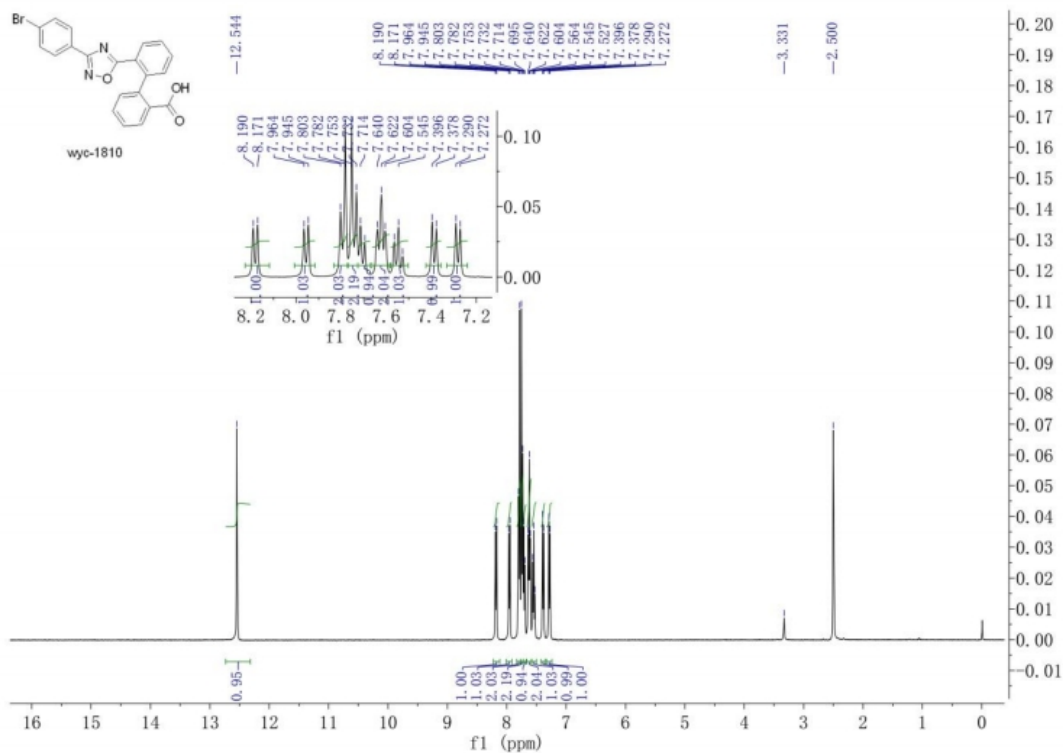
Compound B4:

HR-ESI-MS:

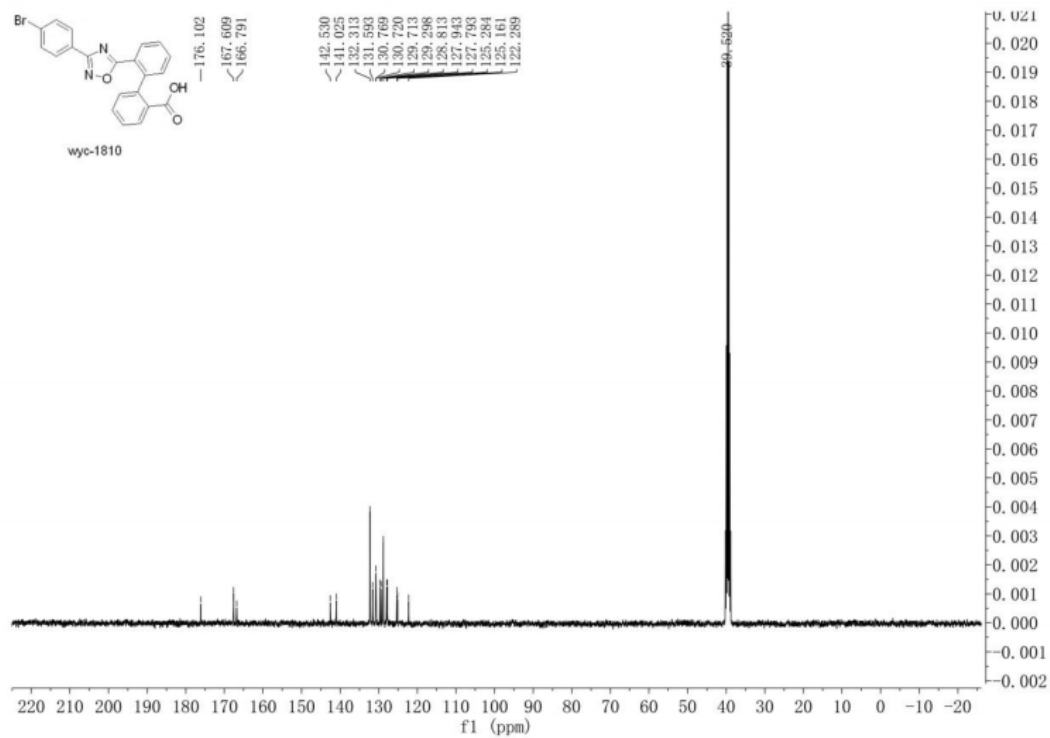
WYC-1810 #39 RT: 0.21 AV: 1 NL: 2.03E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:

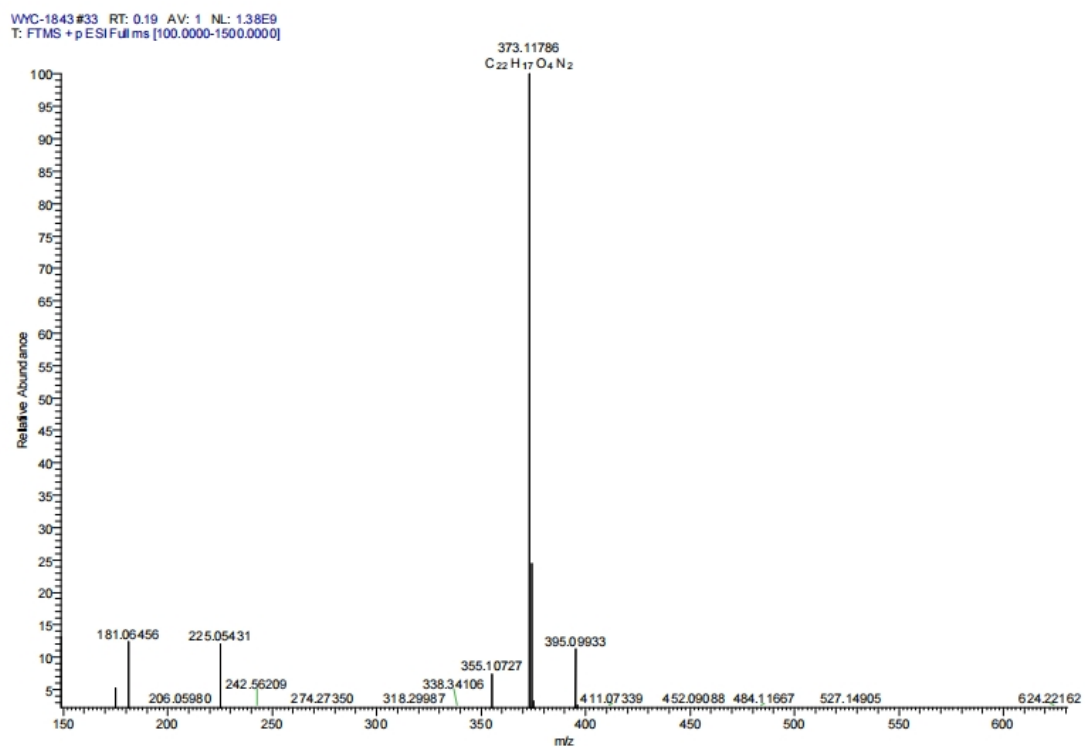


^{13}C -NMR:

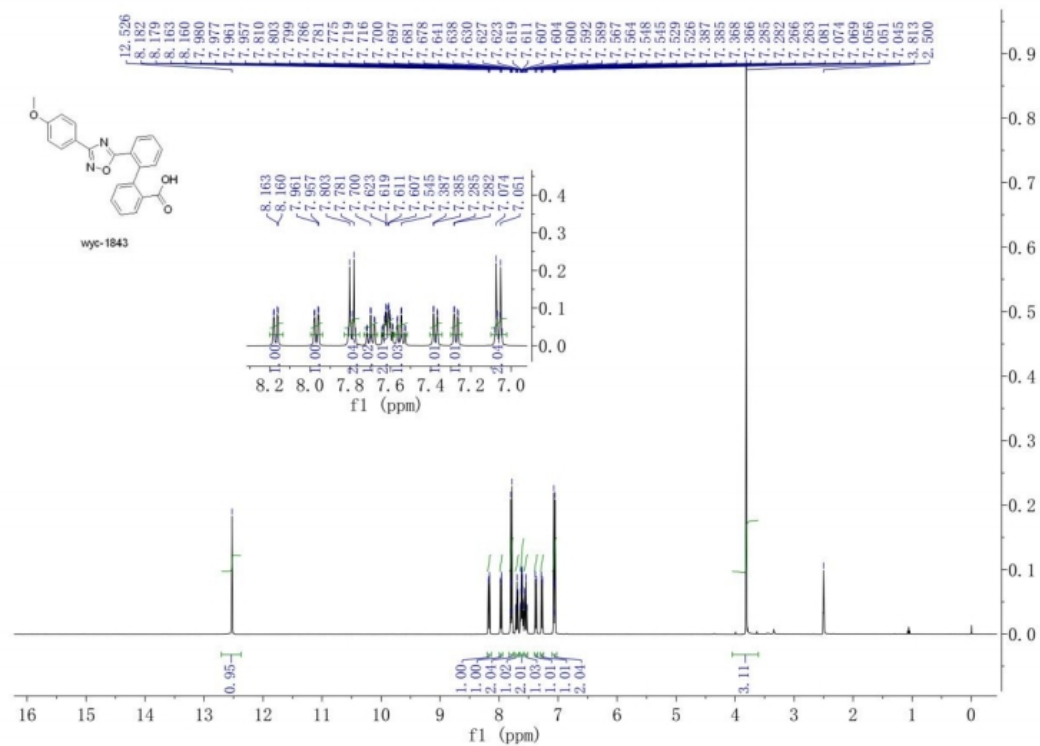


Compound **B5**:

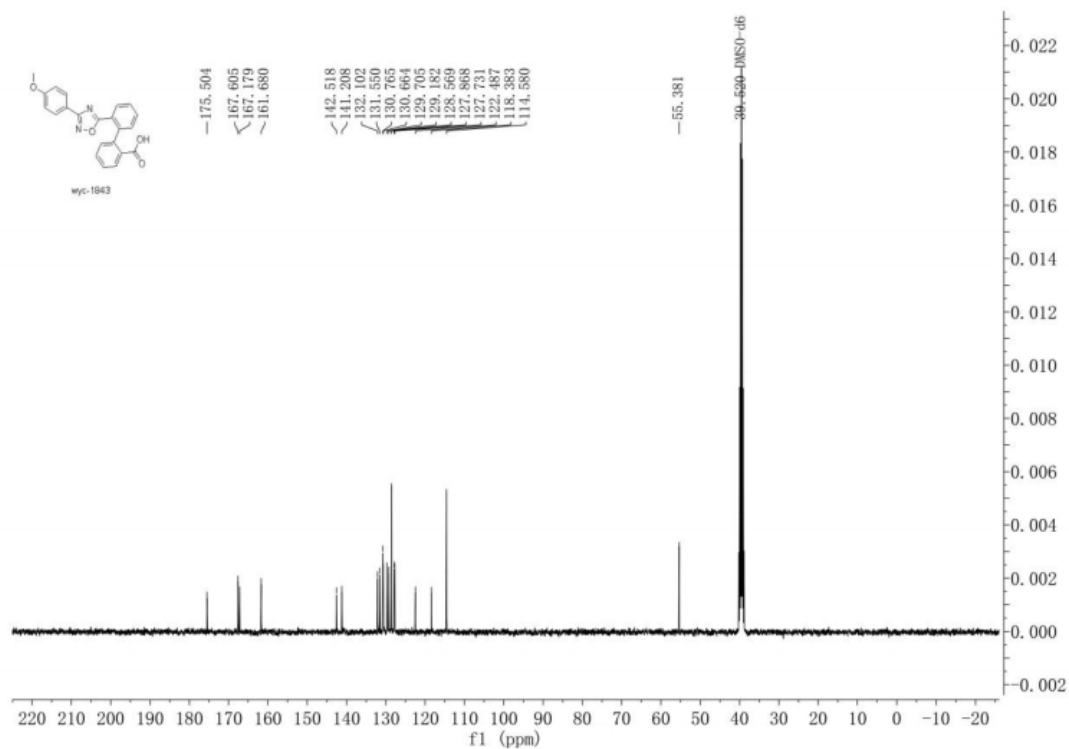
HR-ESI-MS:



^1H -NMR:

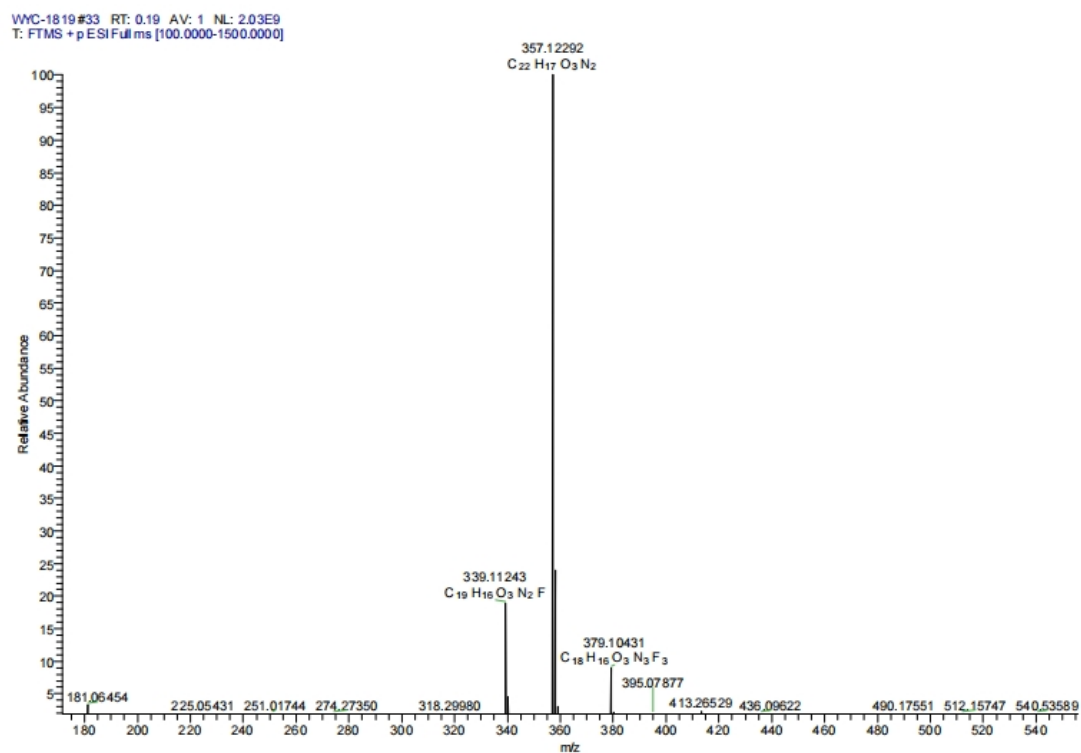


^{13}C -NMR:

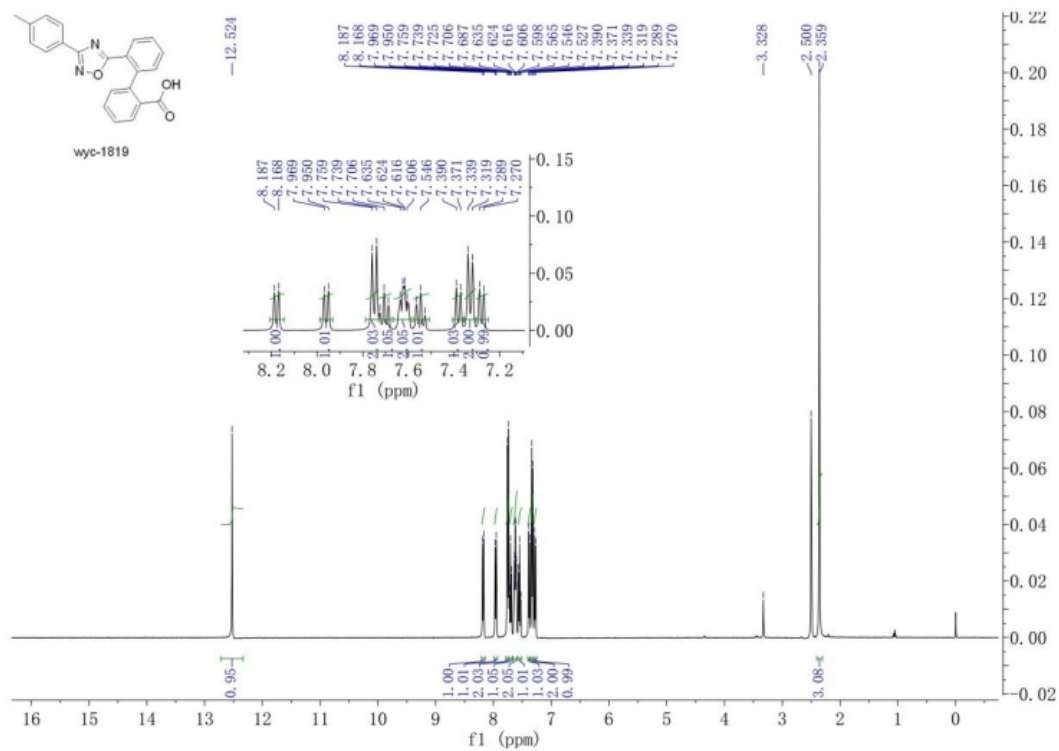


Compound B6:

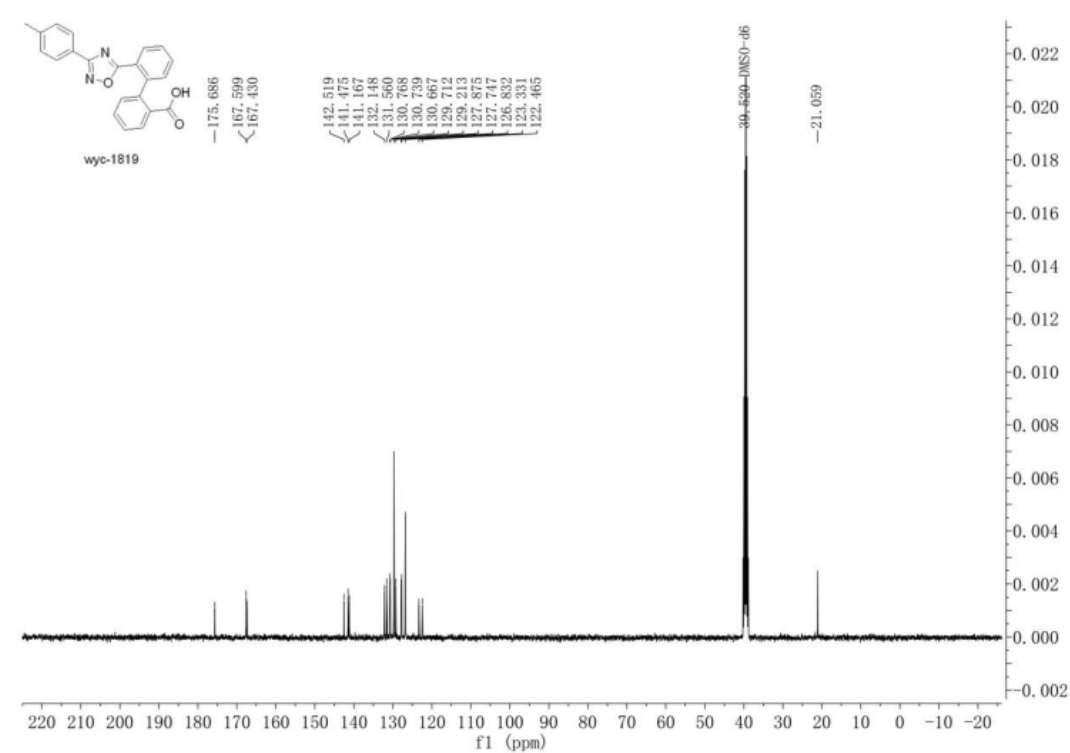
HR-ESI-MS:



¹H-NMR:



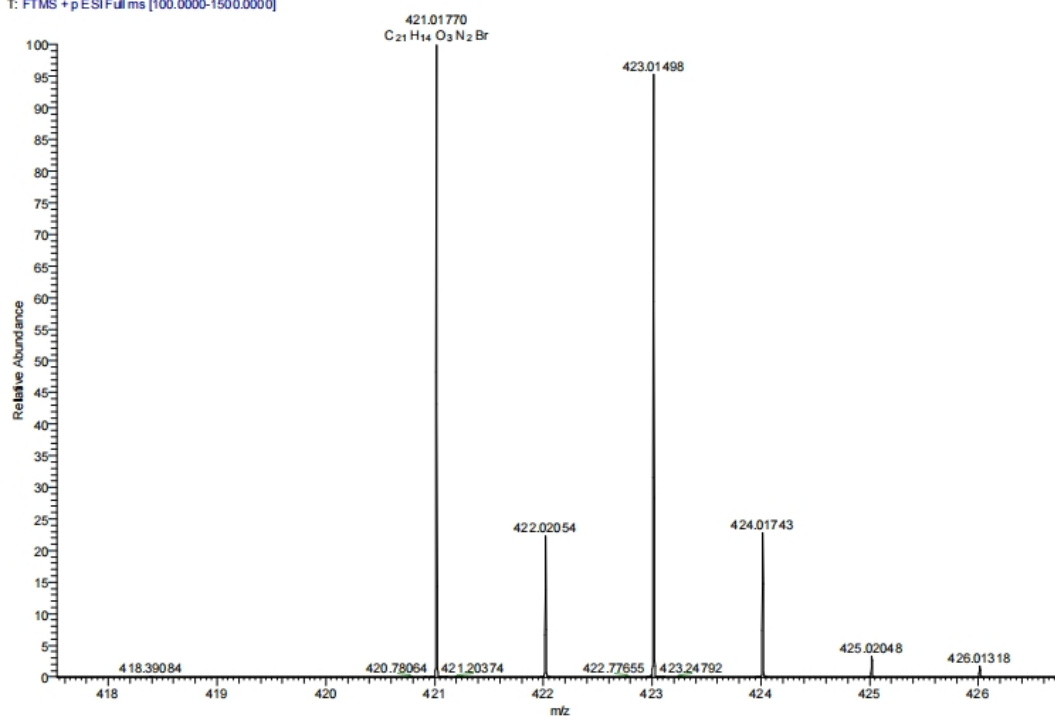
^{13}C -NMR:



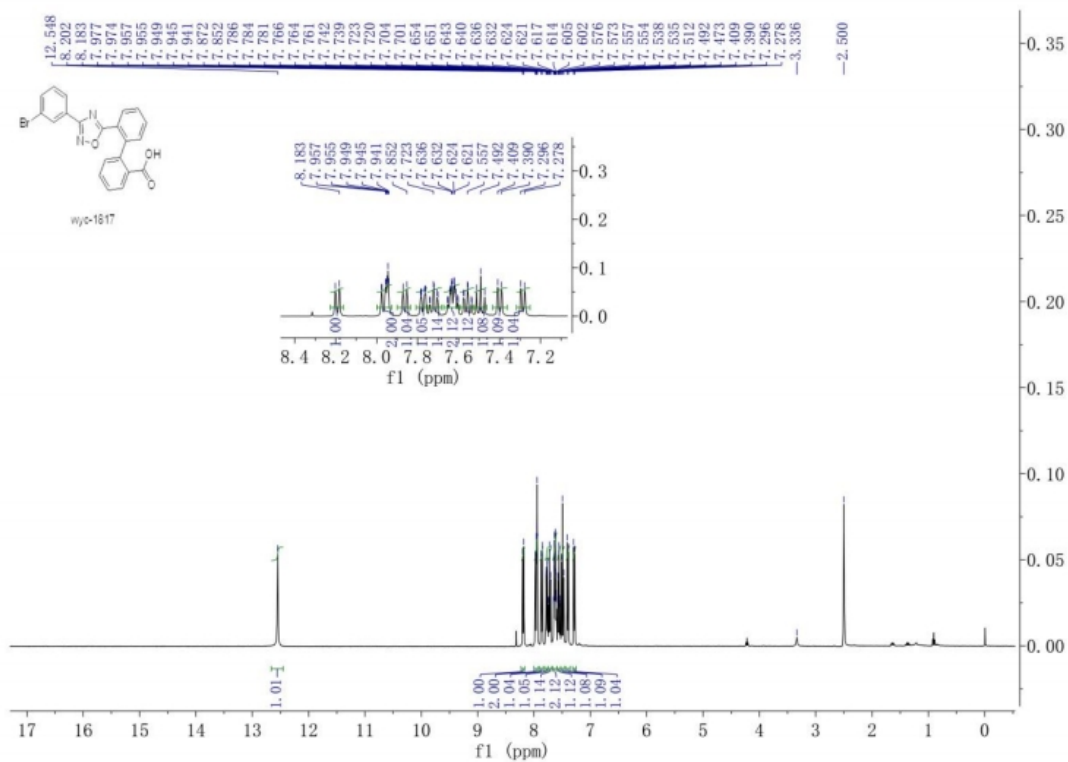
Compound **B7**:

HR-ESI-MS:

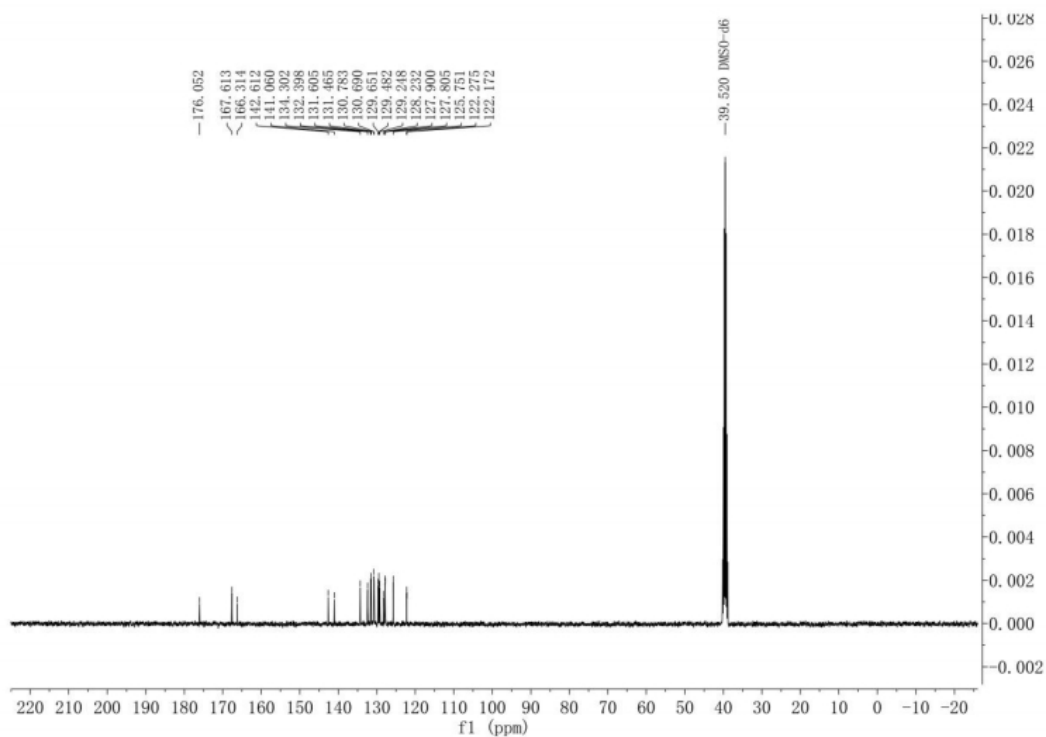
WYC-1817 #36 RT: 0.20 AV: 1 NL: 3.35E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]



^1H -NMR:

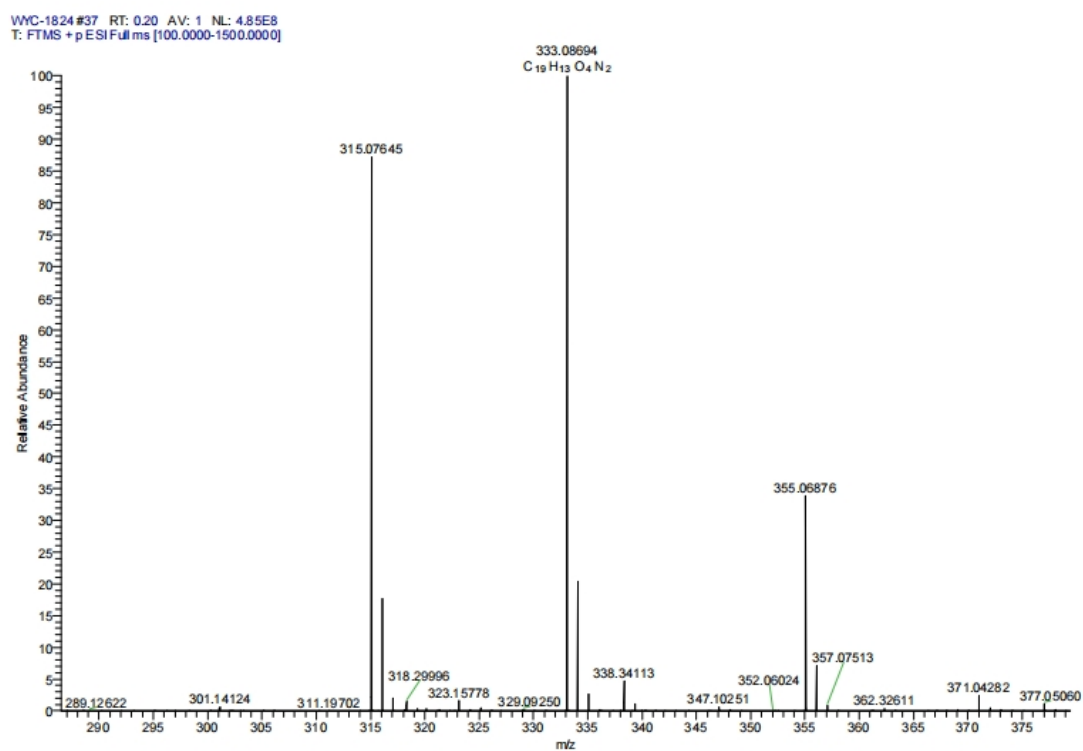


^{13}C -NMR:

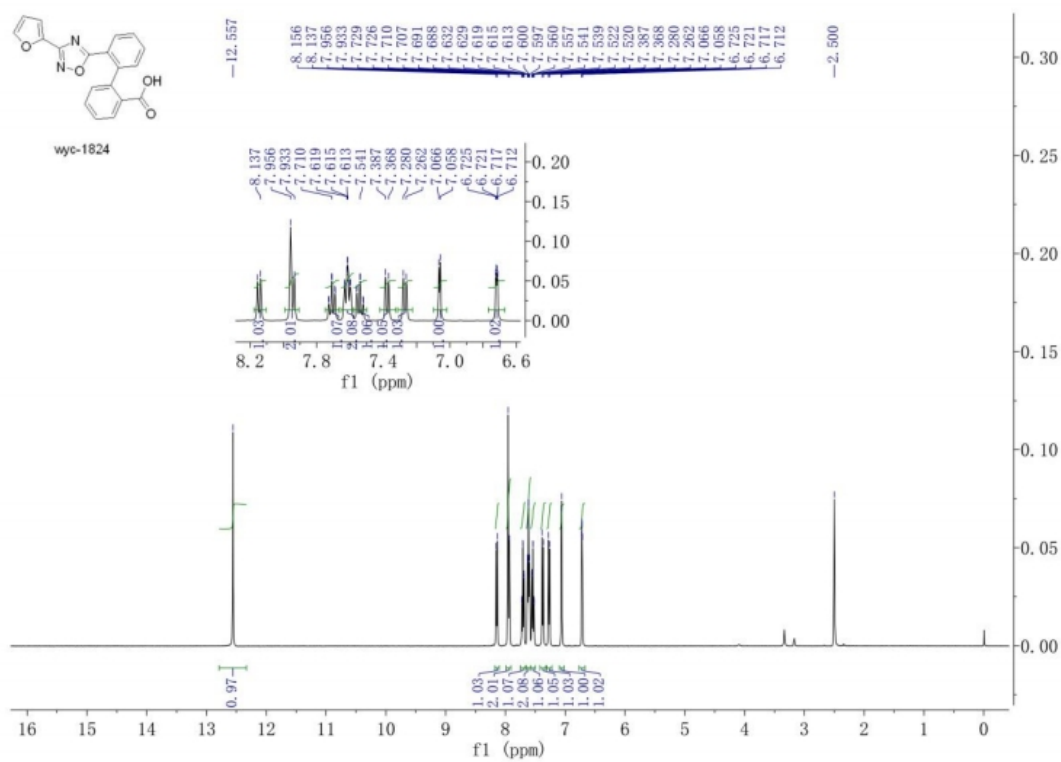


Compound B8:

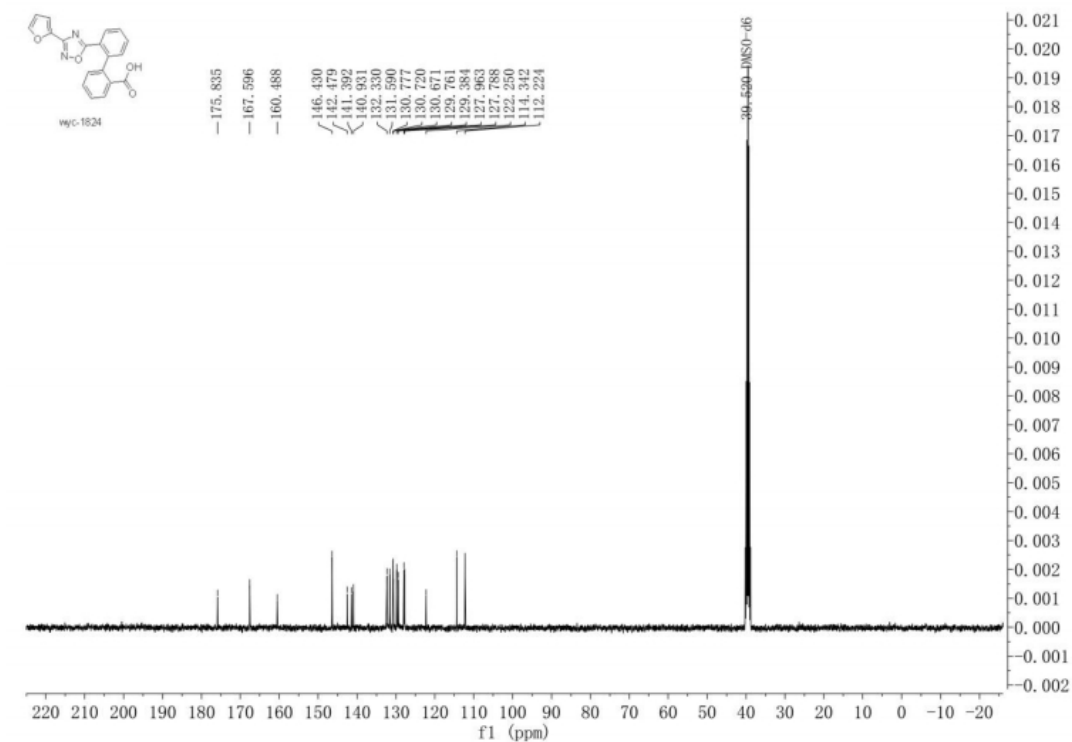
HR-ESI-MS:



¹H-NMR:

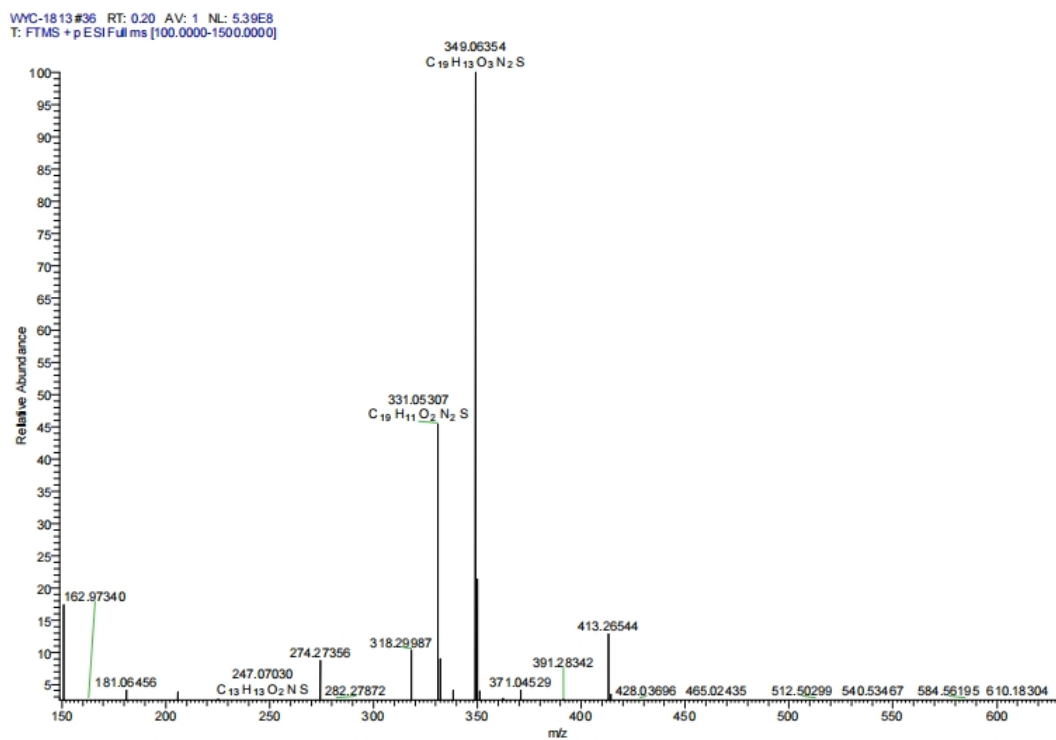


^{13}C -NMR:

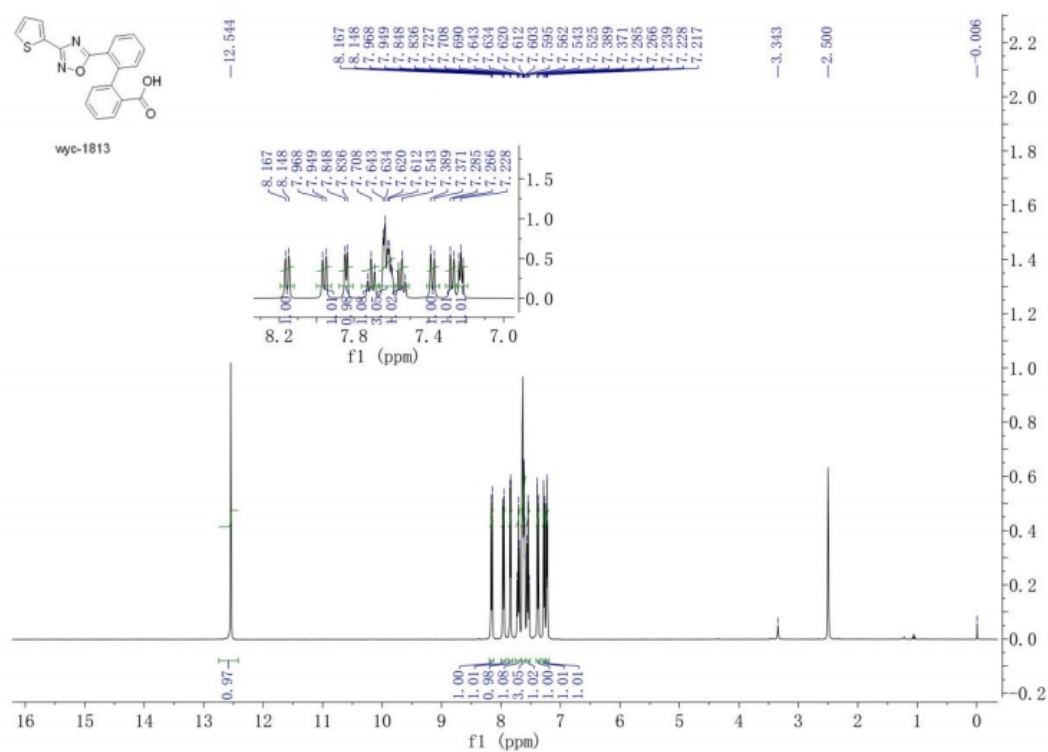


Compound **B9**:

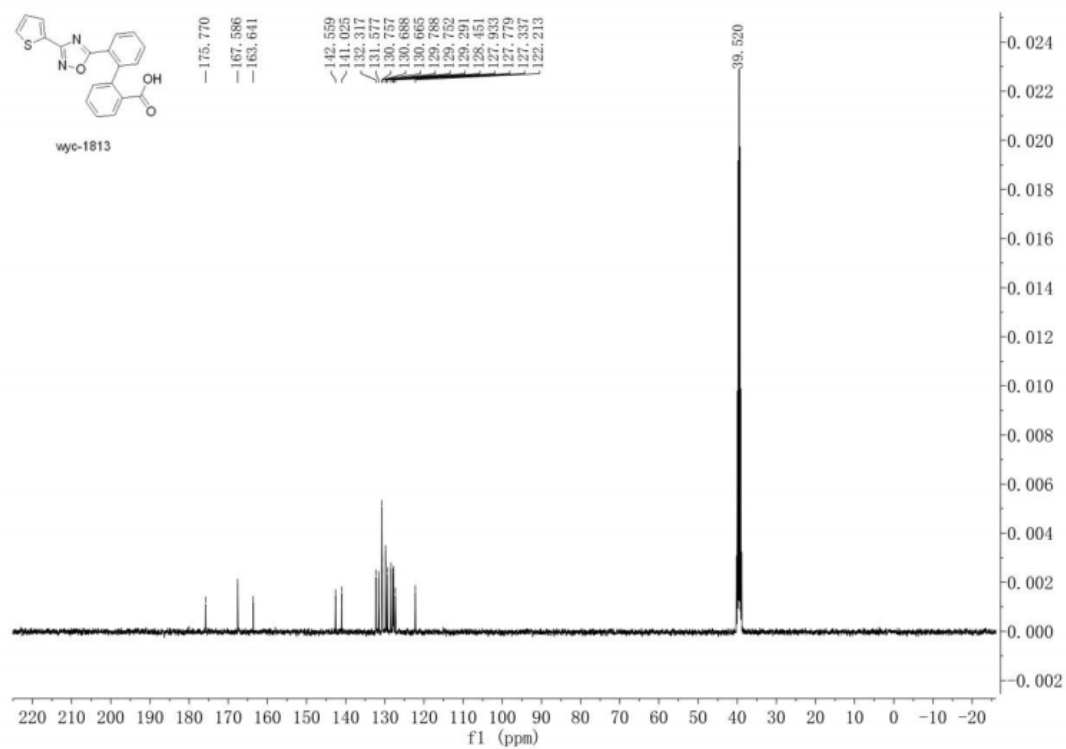
HR-ESI-MS:



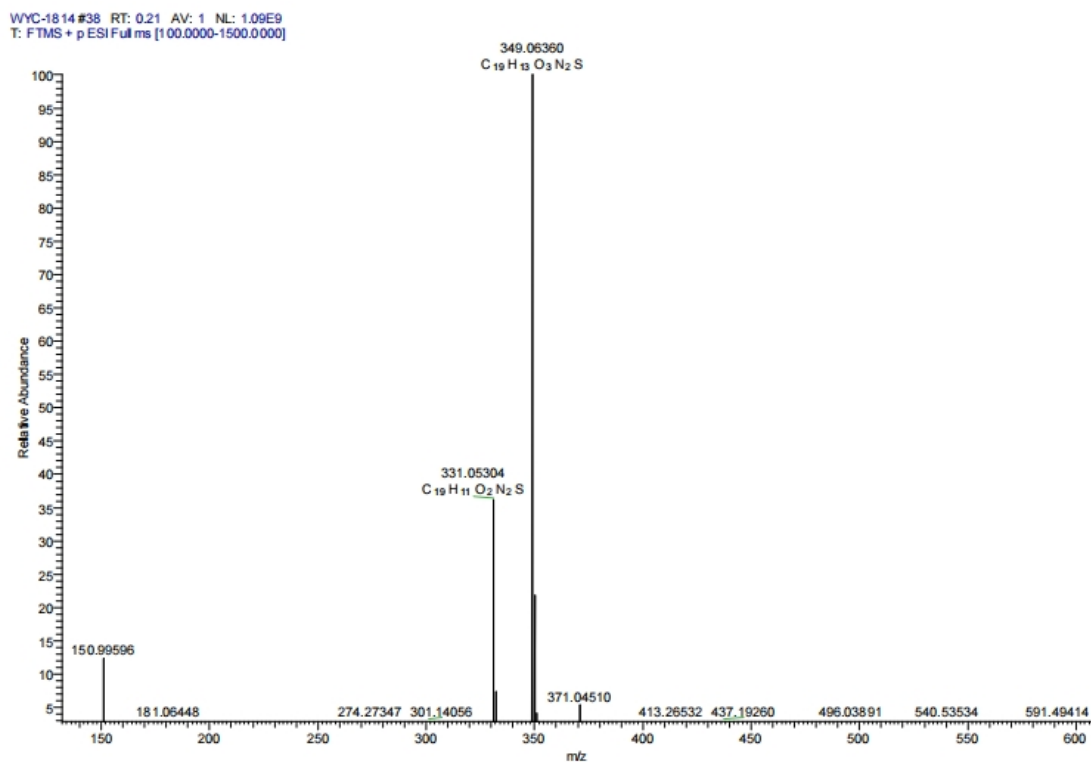
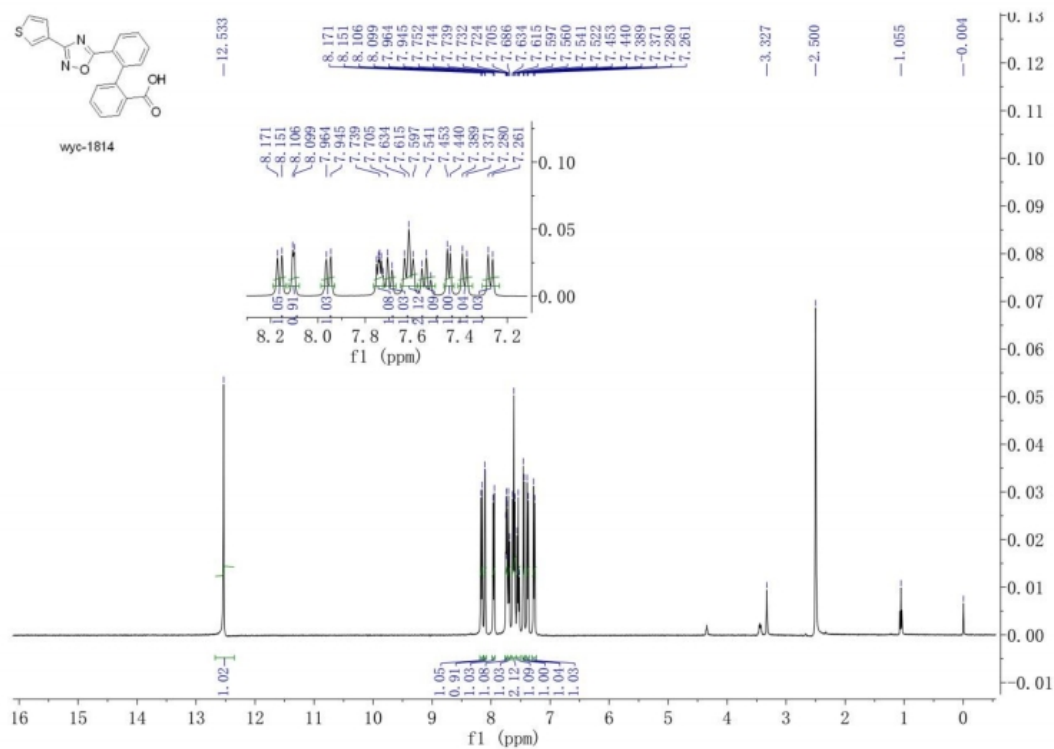
^1H -NMR:



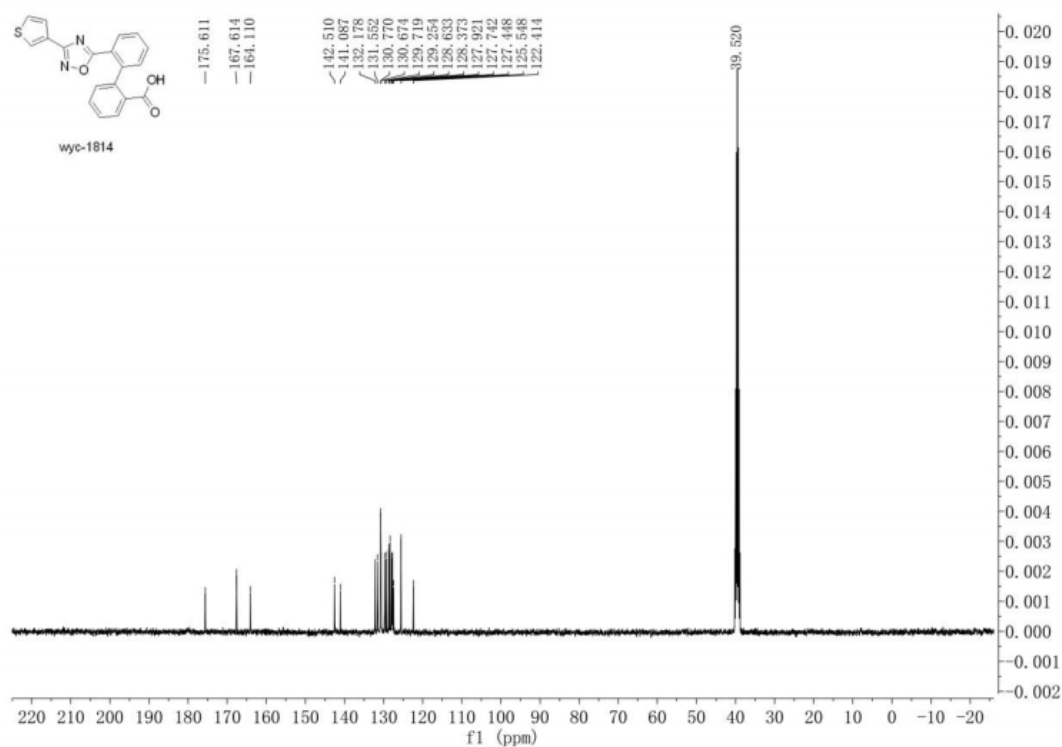
^{13}C -NMR:



HR-ESI-MS:

¹H-NMR:

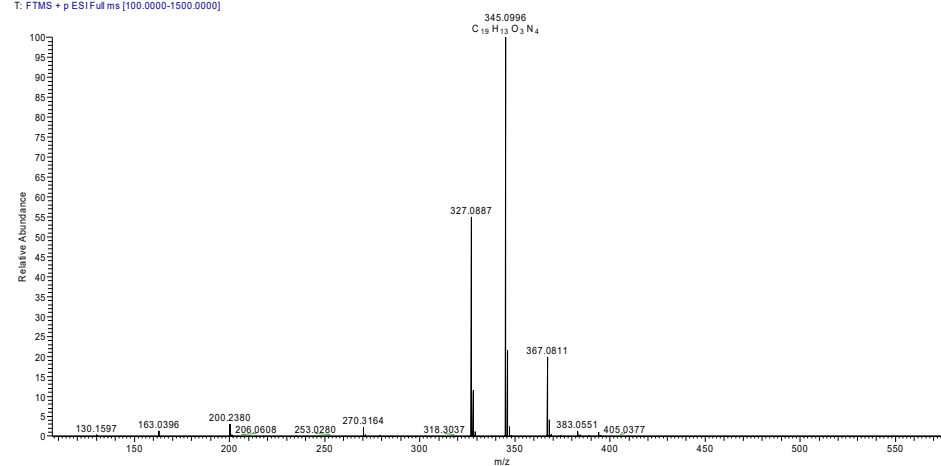
^{13}C -NMR:



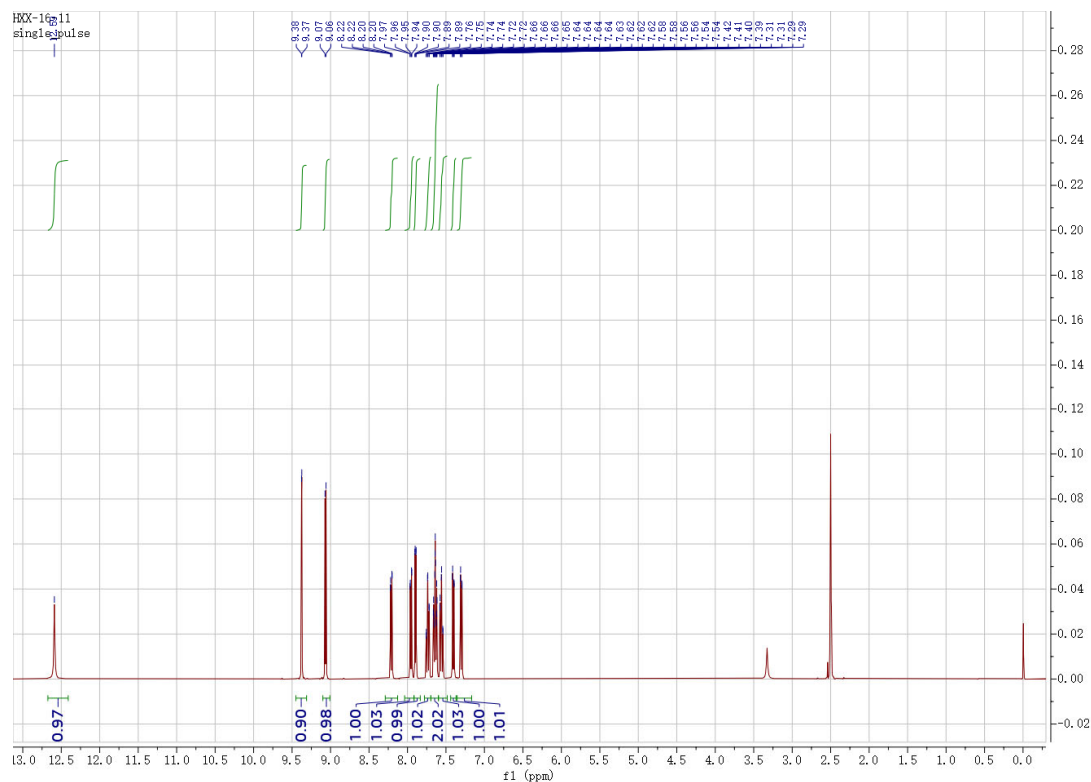
Compound **B11**:

HR-ESI-MS:

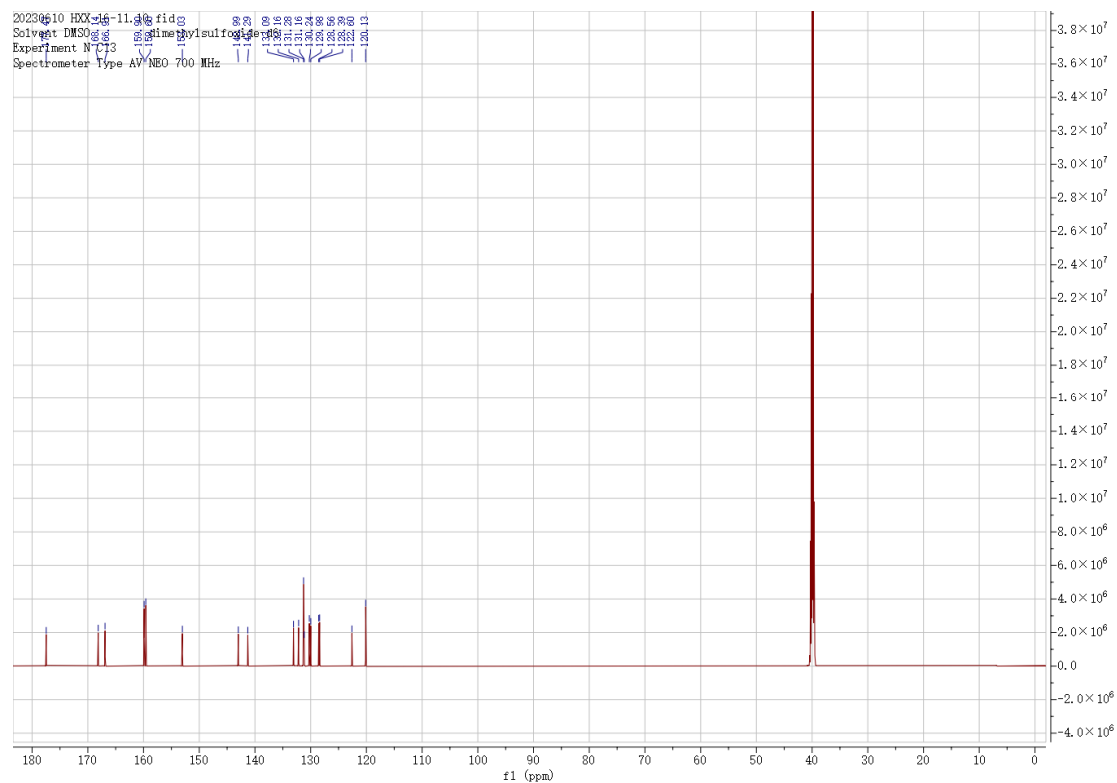
HXX-16-11 #60 RT: 0.31 AV: 1 NL: 1.06E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:

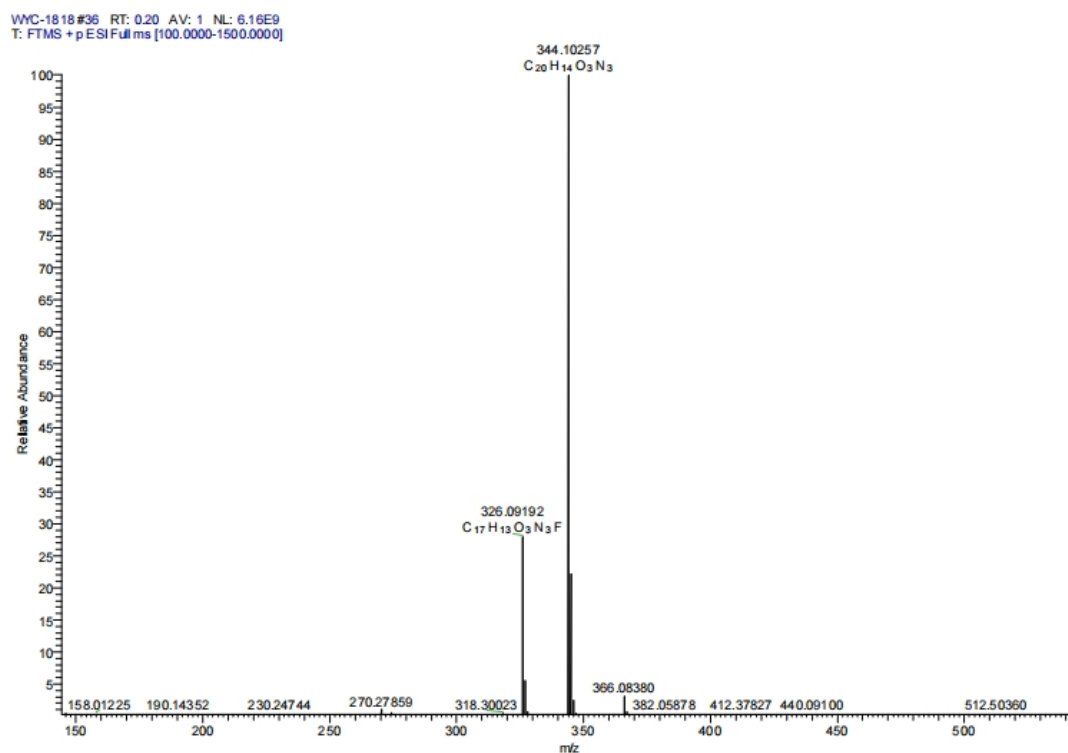


¹³C-NMR:

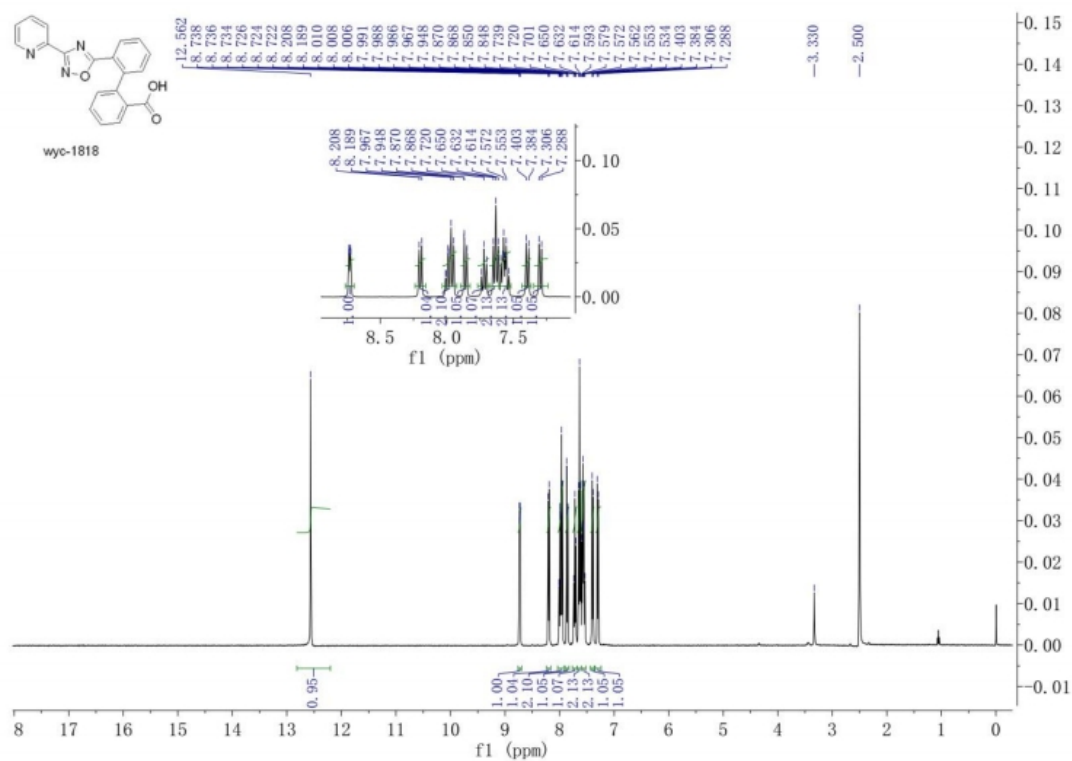


Compound B12:

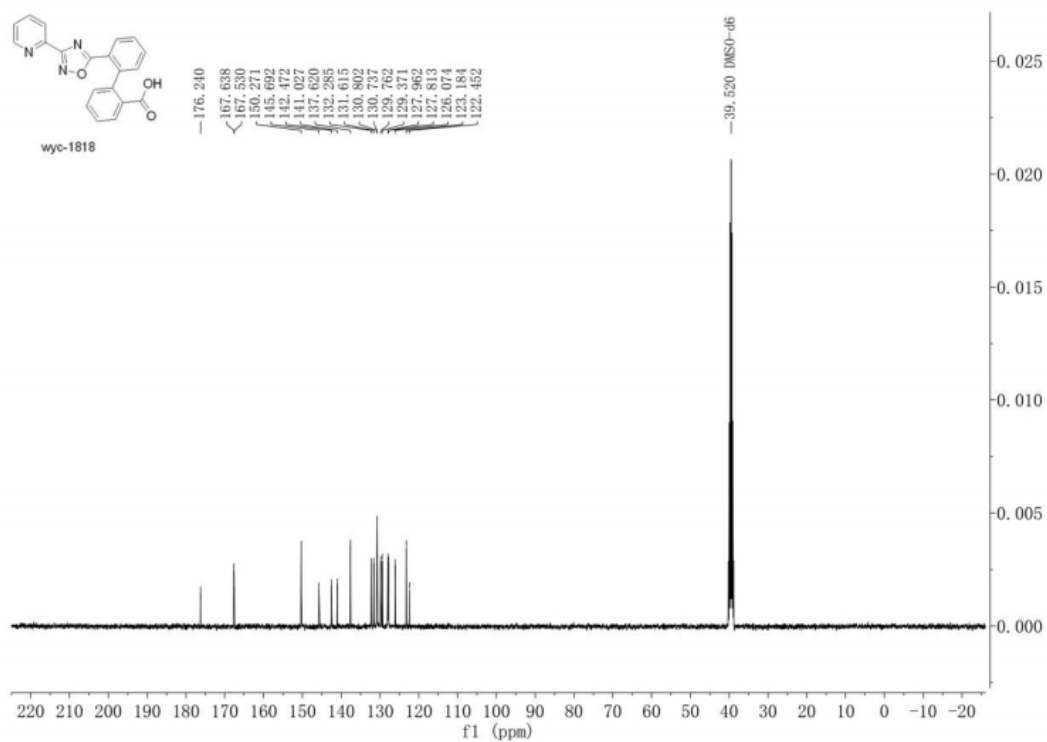
HR-ESI-MS:



1H -NMR:



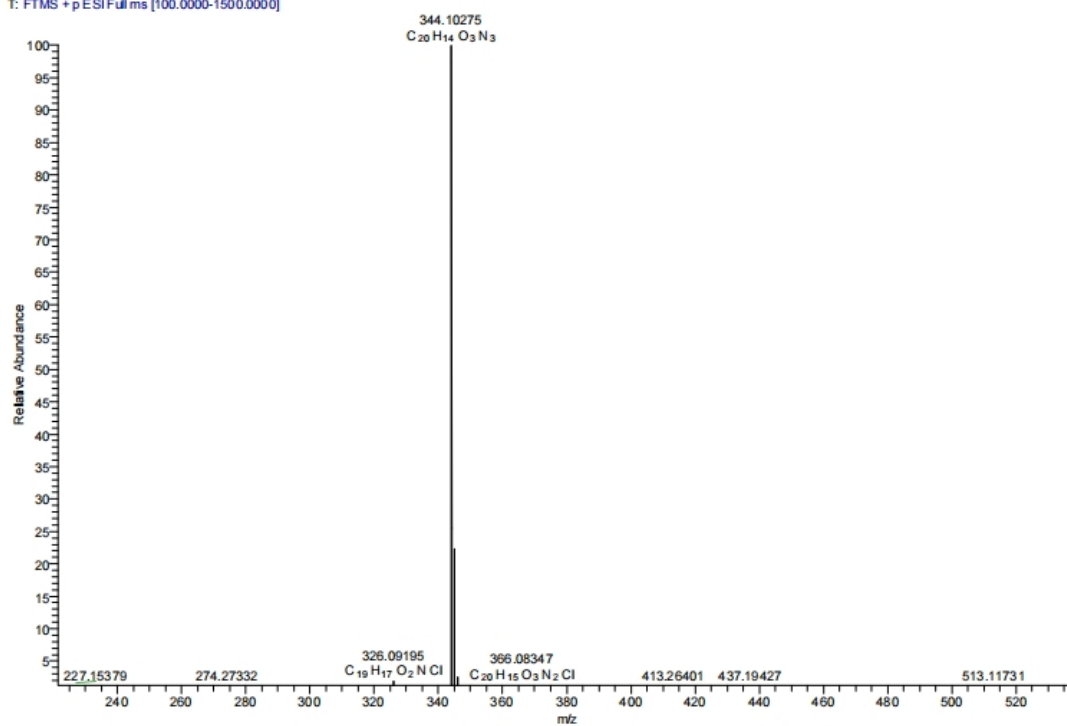
^{13}C -NMR:



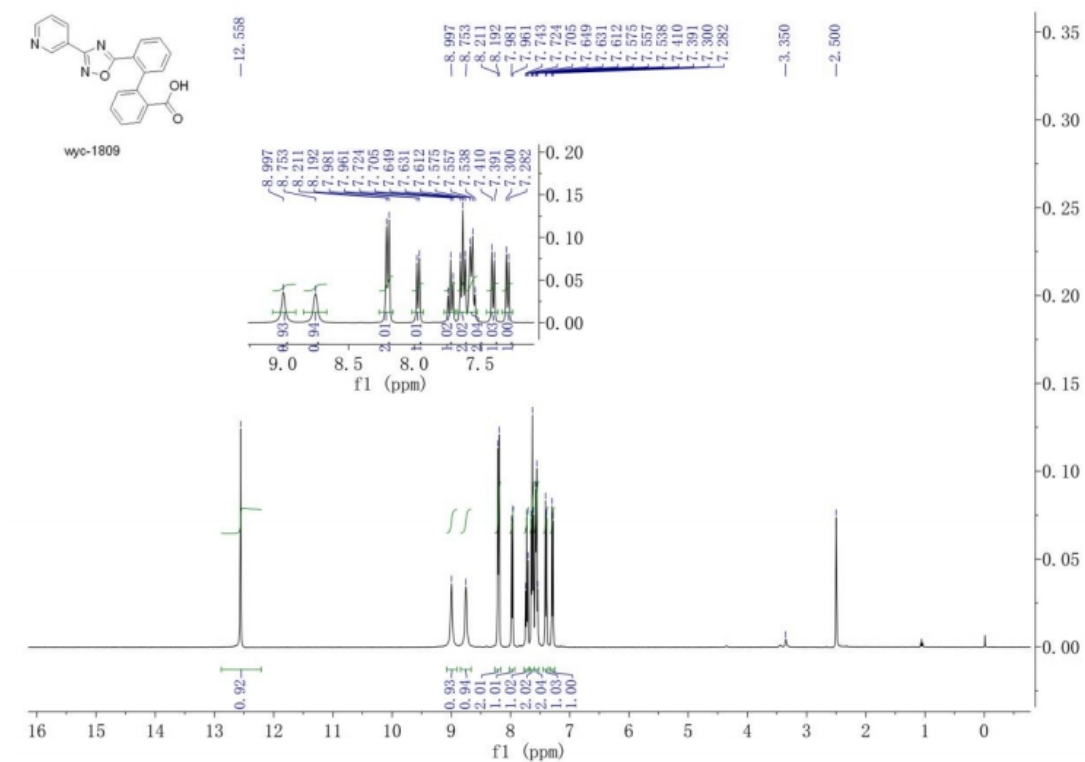
Compound **B13**:

HR-ESI-MS:

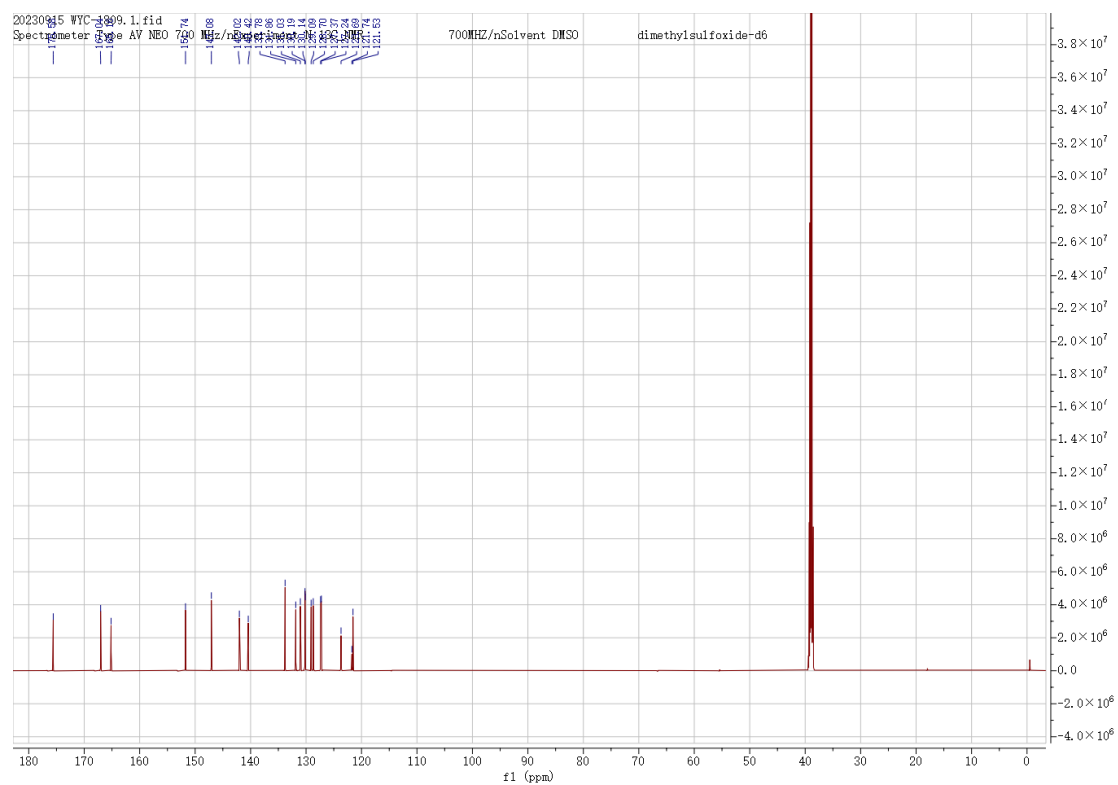
WYC-1809 #33 RT: 0.19 AV: 1 NL: 6.50E9
T: FTMS + pESI Full ms [100.0000-1500.0000]



^1H -NMR:

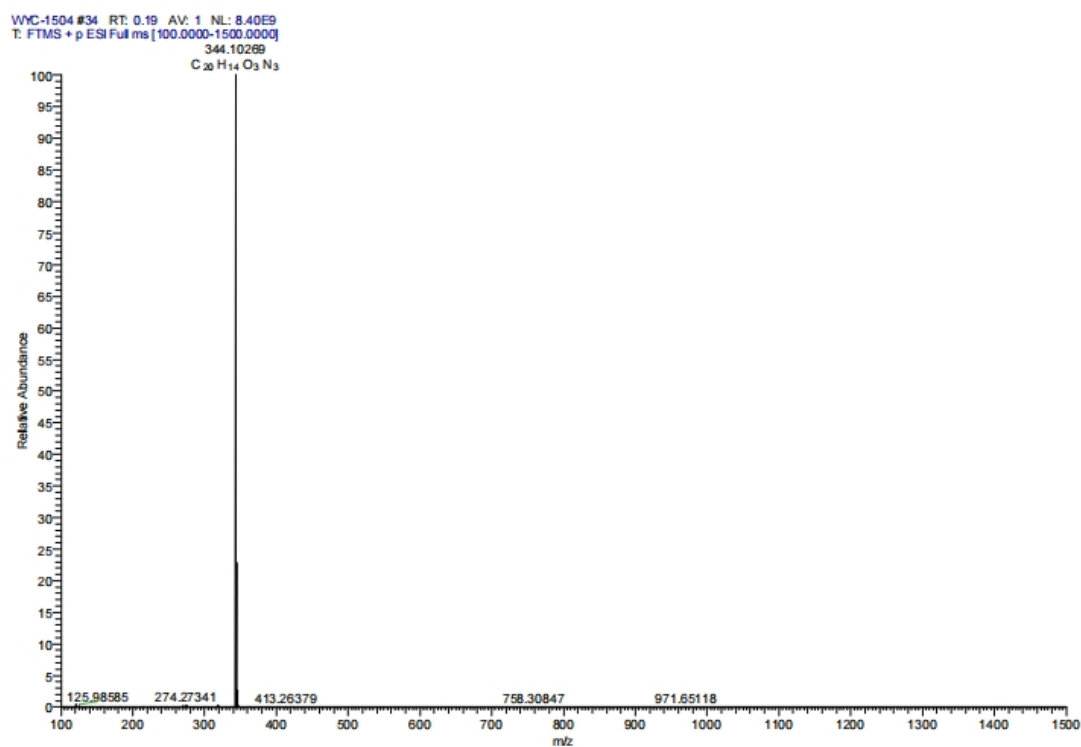


^{13}C -NMR:

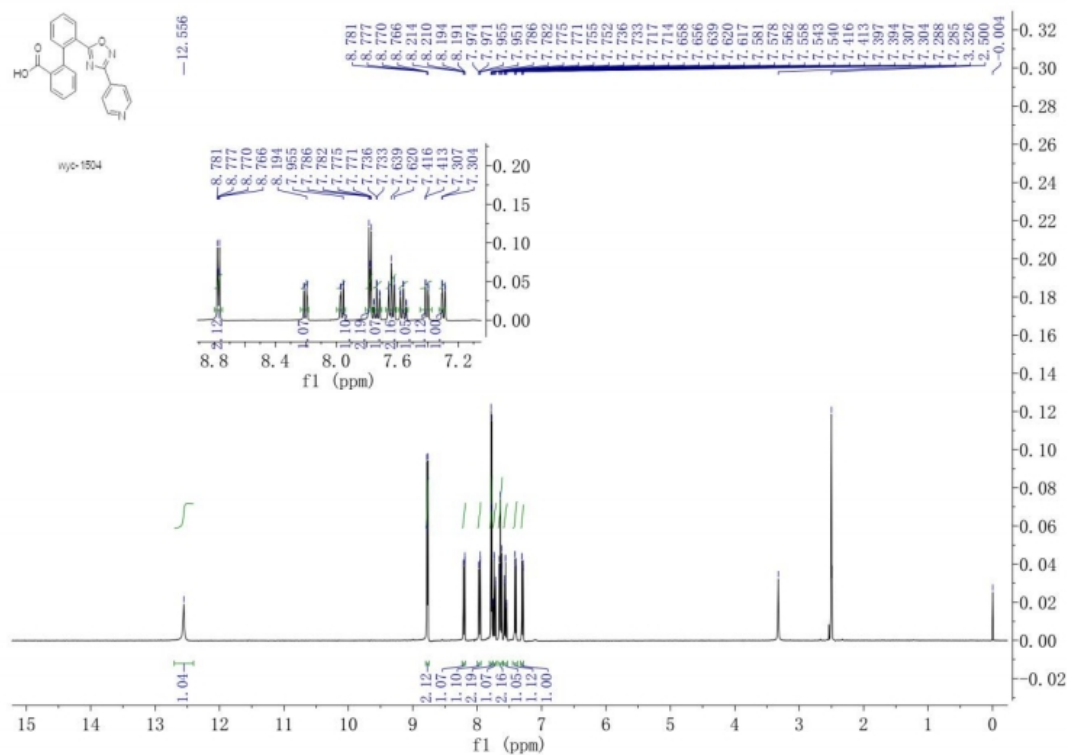


Compound **B14**:

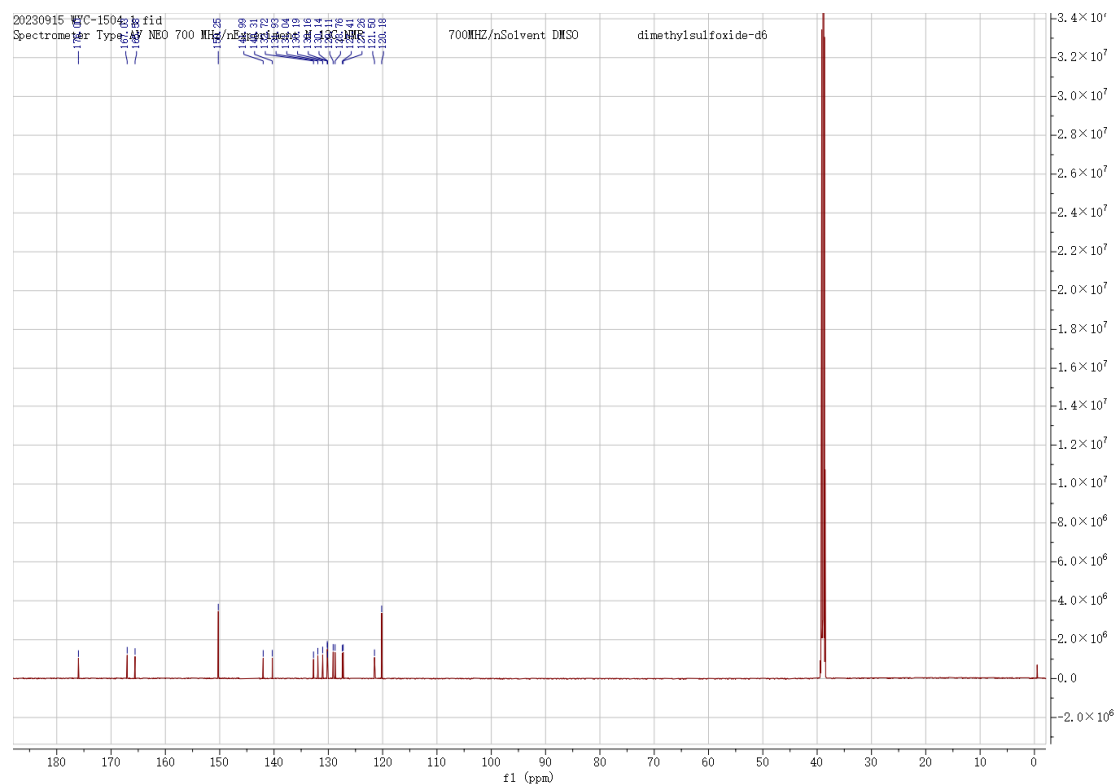
HR-ESI-MS:



¹H-NMR:

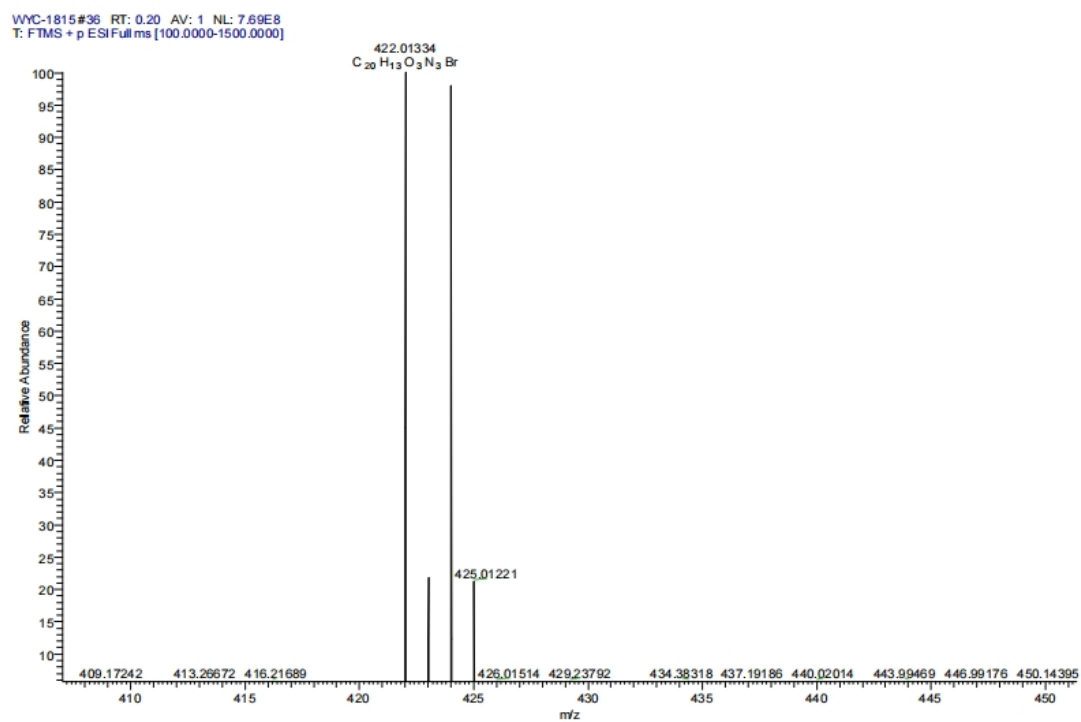


^{13}C -NMR:

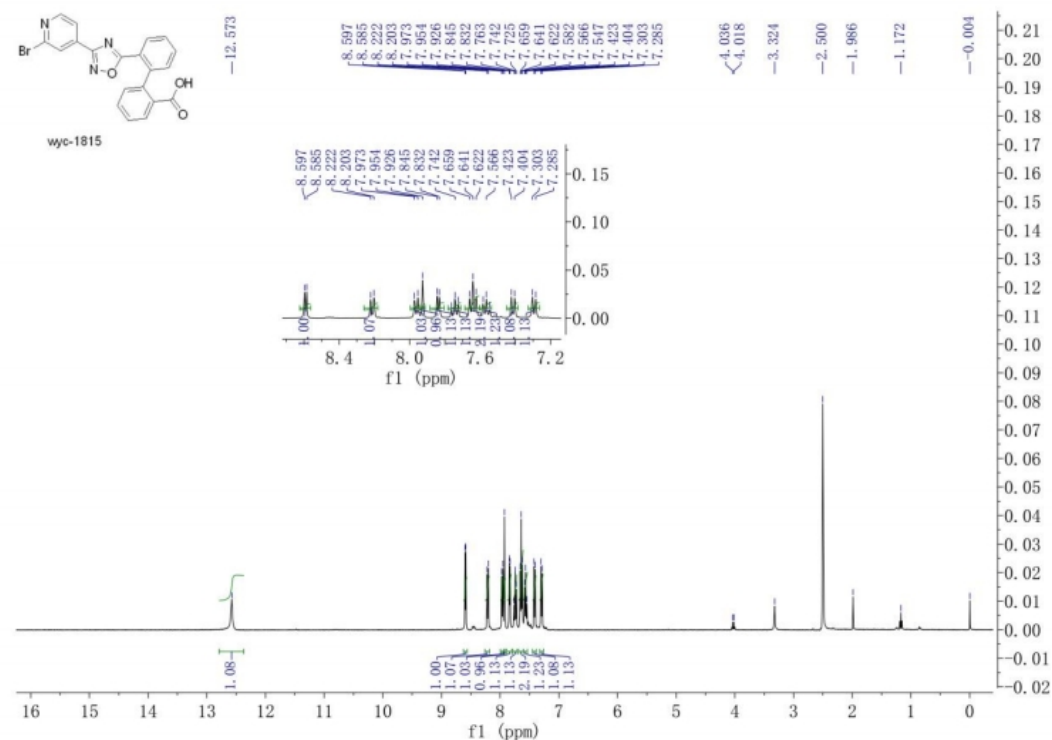


Compound **B15**:

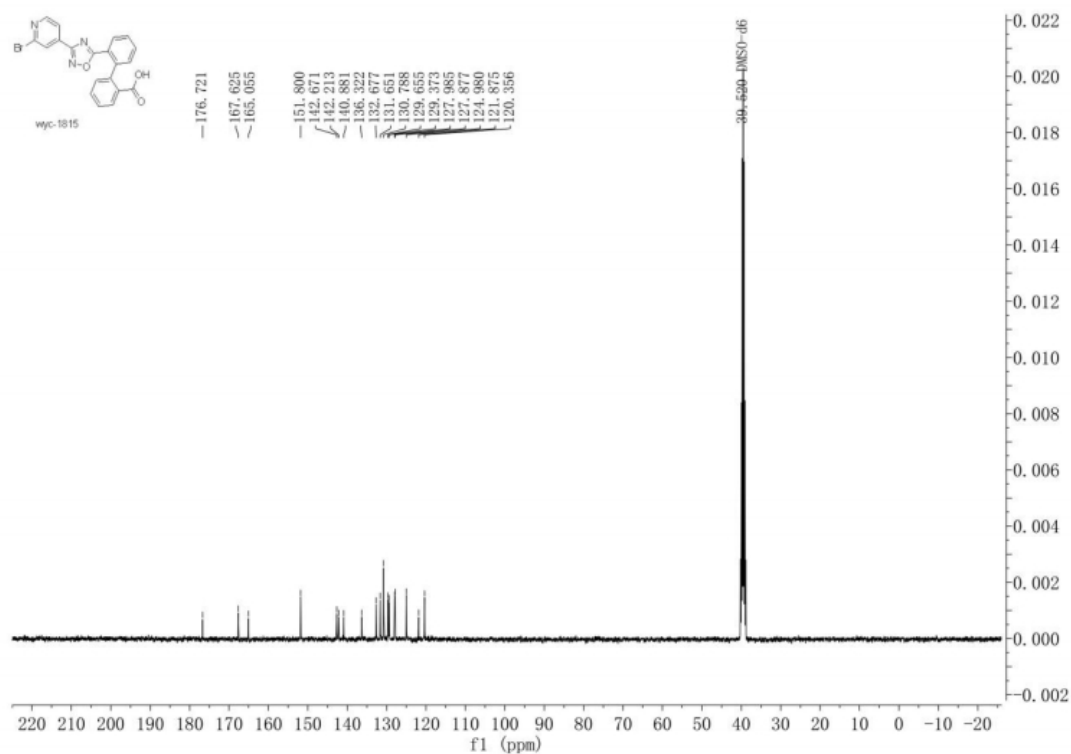
HR-ESI-MS:



^1H -NMR:

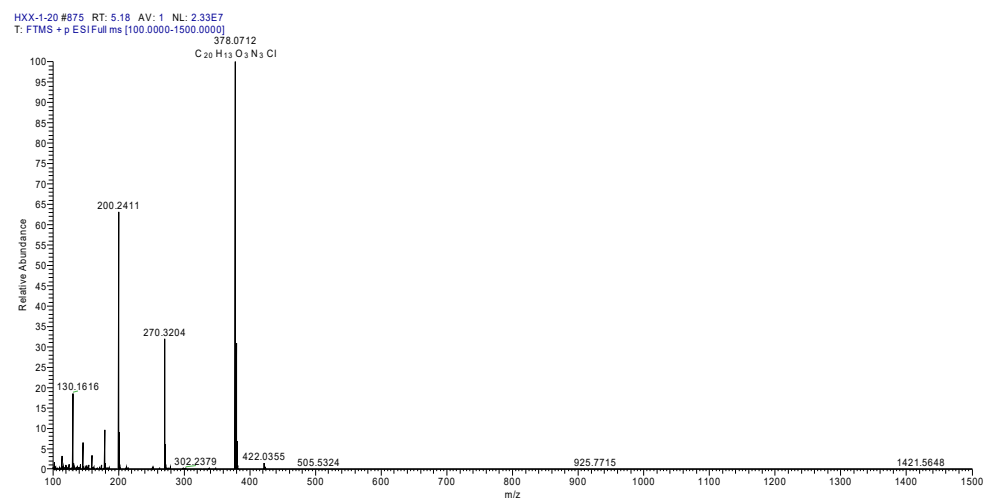


^{13}C -NMR:

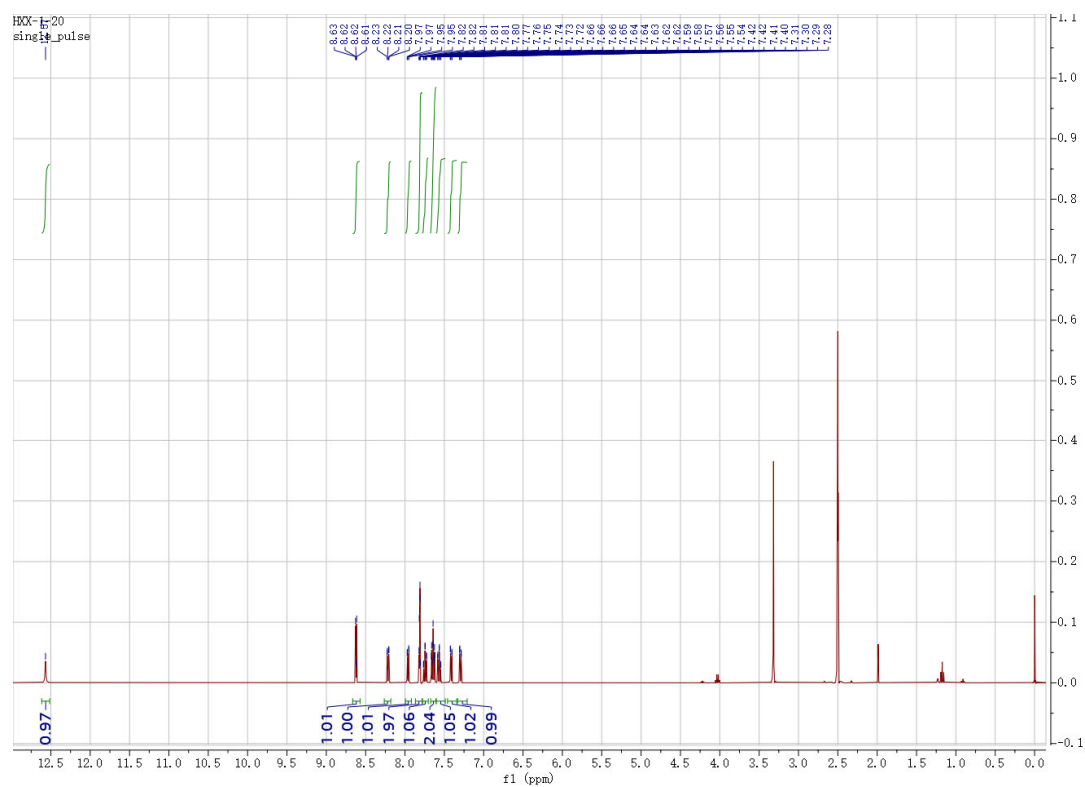


Compound B16:

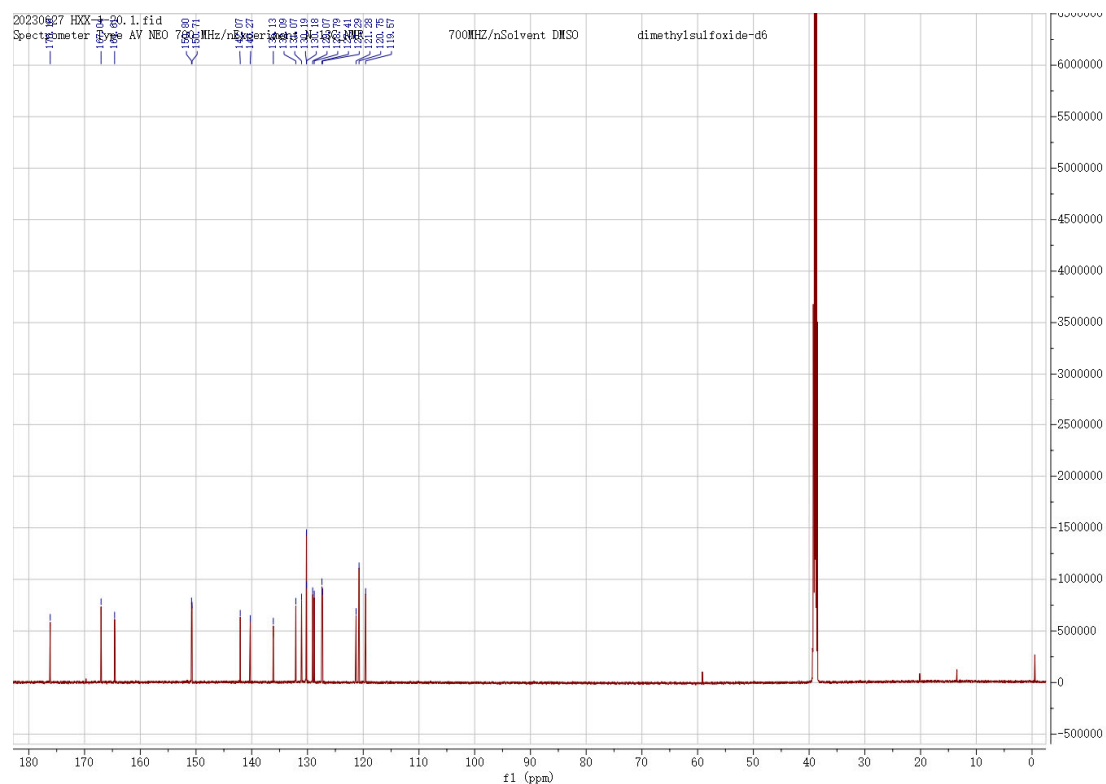
HR-ESI-MS:



1H -NMR:

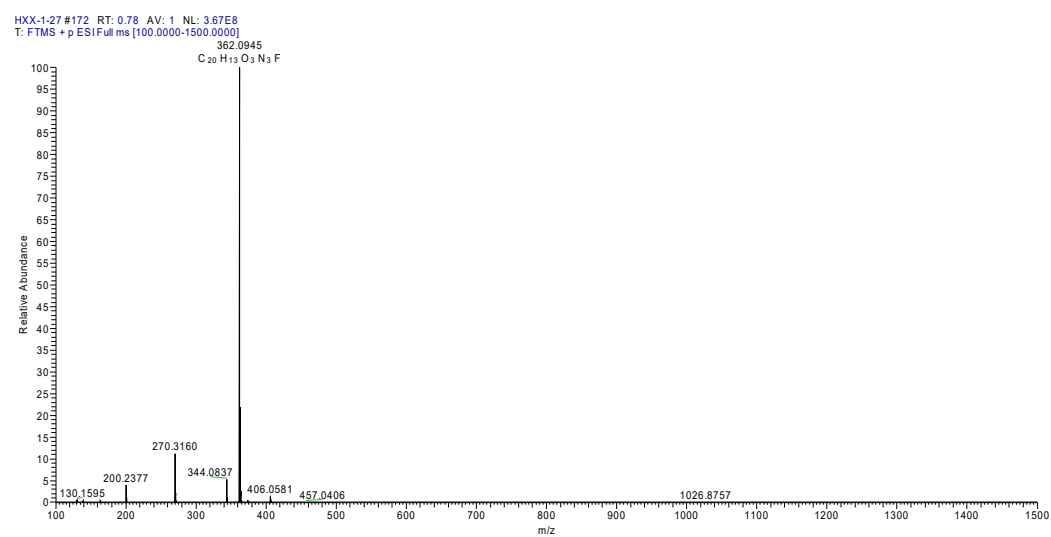


^{13}C -NMR:

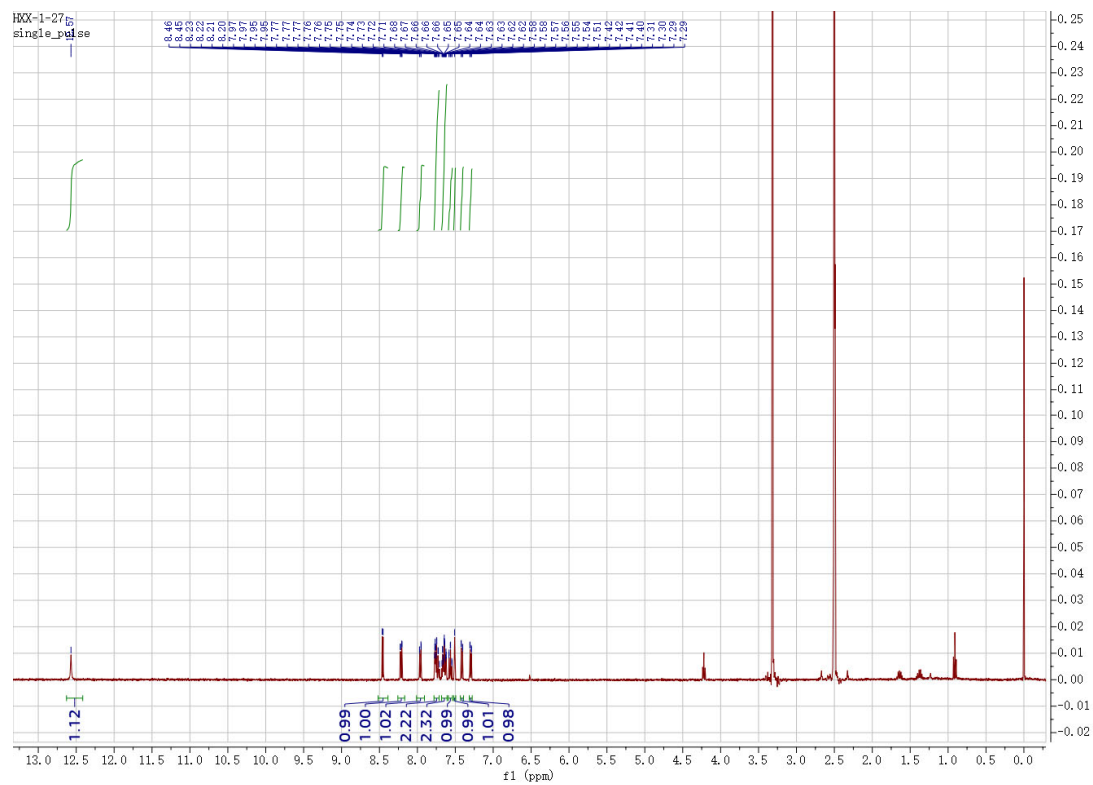


Compound **B17**:

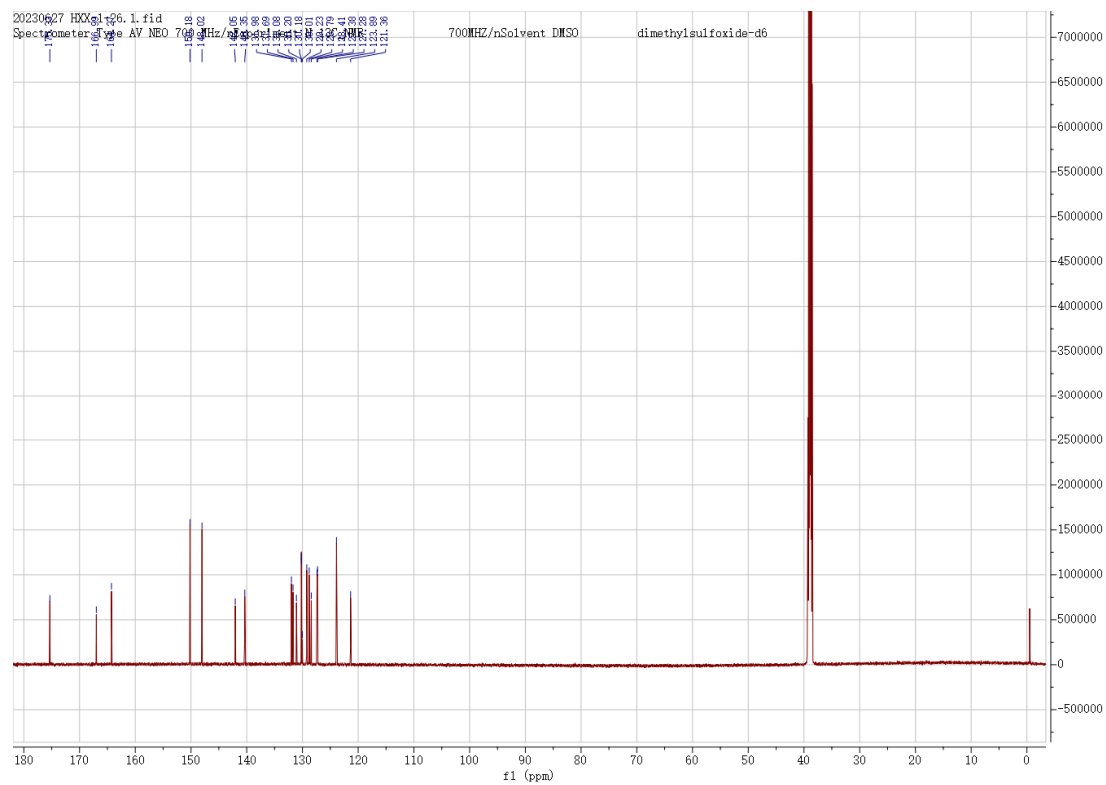
HR-ESI-MS:



^1H -NMR:

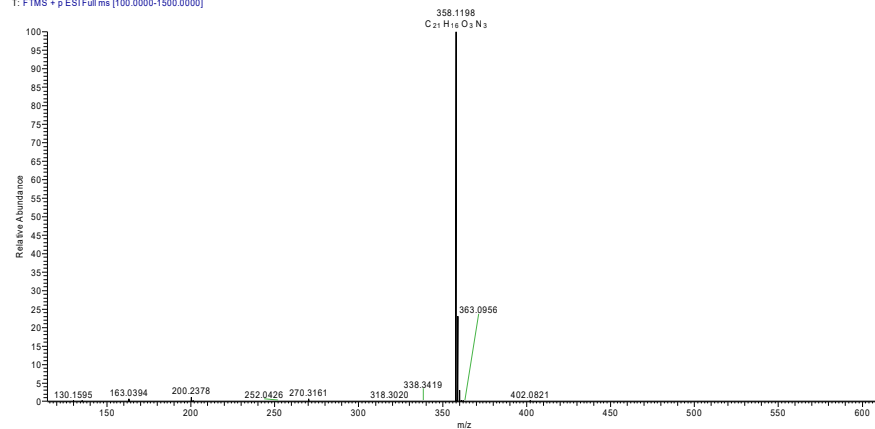
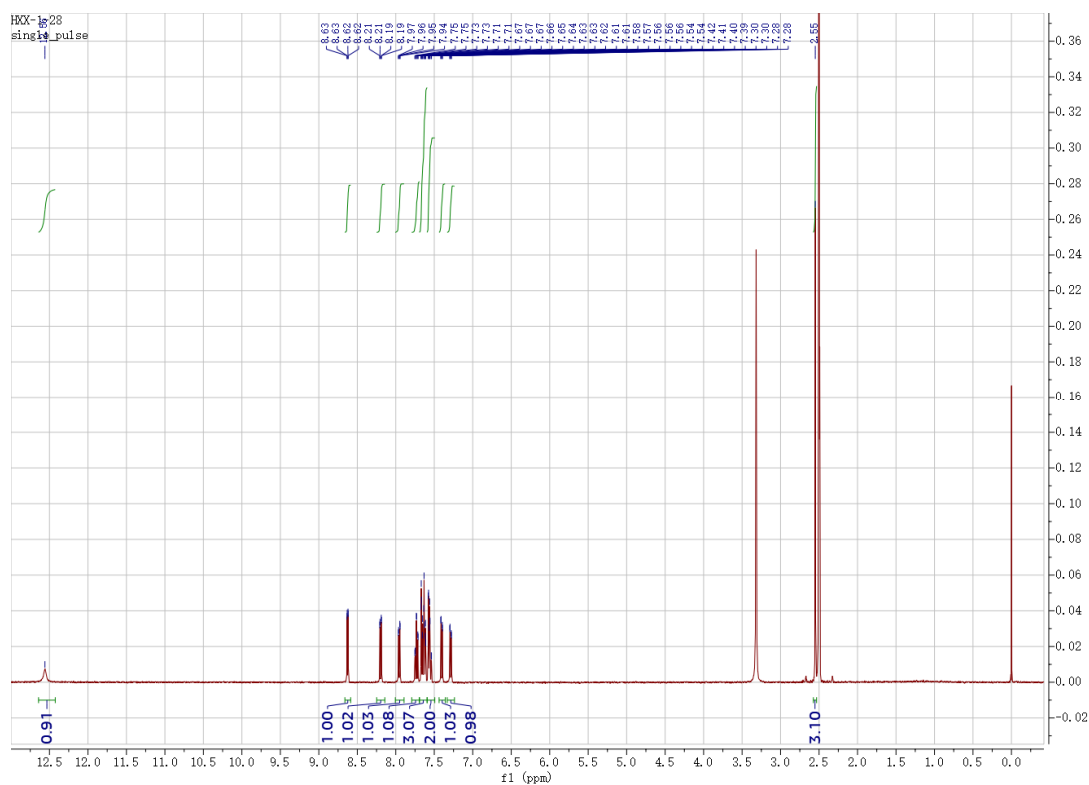


^{13}C -NMR:

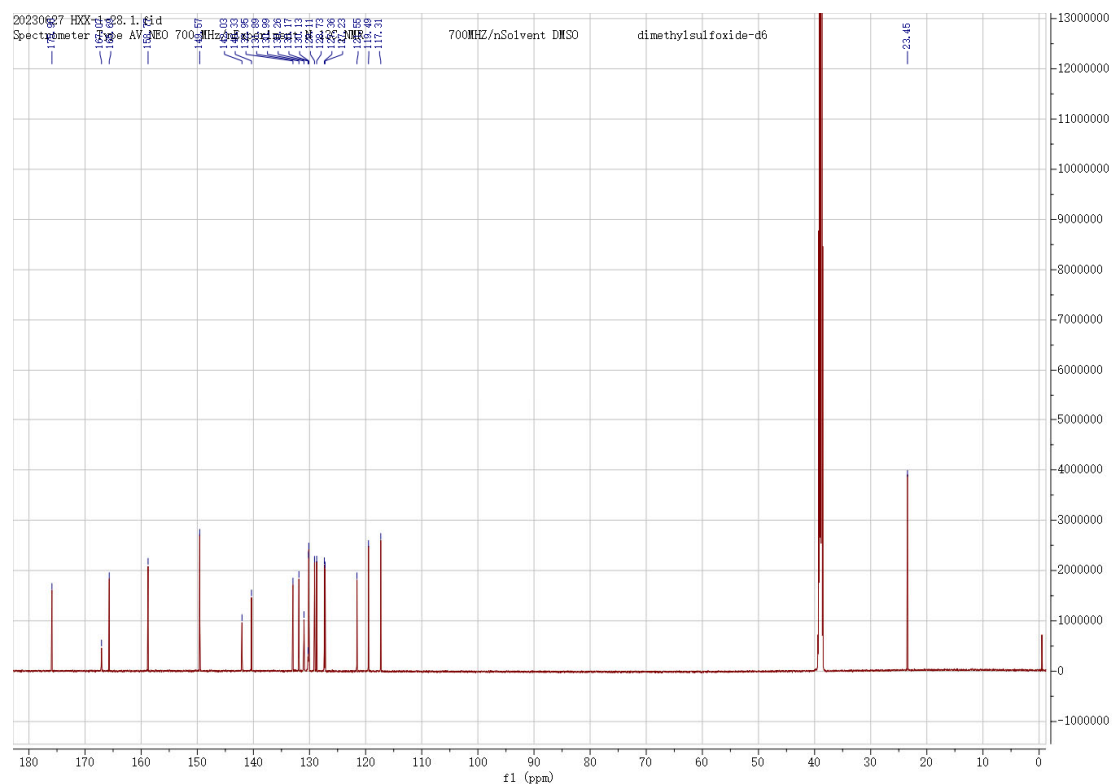


HR-ESI-MS:

HXX-1-28 #88 RT: 0.31 AV: 1 NL: 1.05E9
T: FTMS + p ESI Full ms [100.0000-1500.0000]

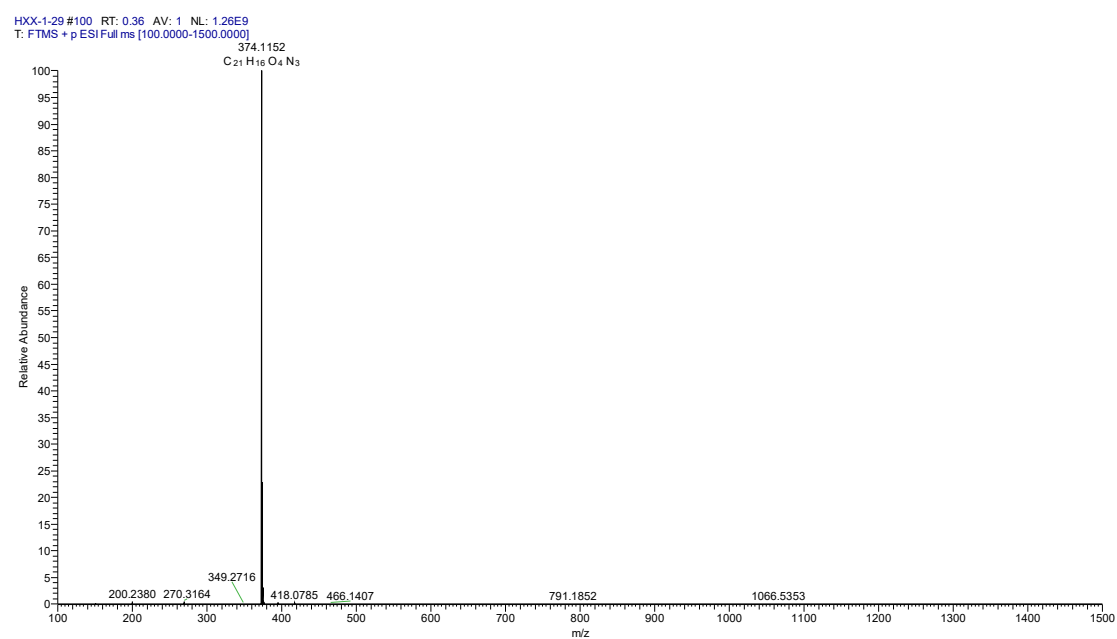
¹H-NMR:

^{13}C -NMR:

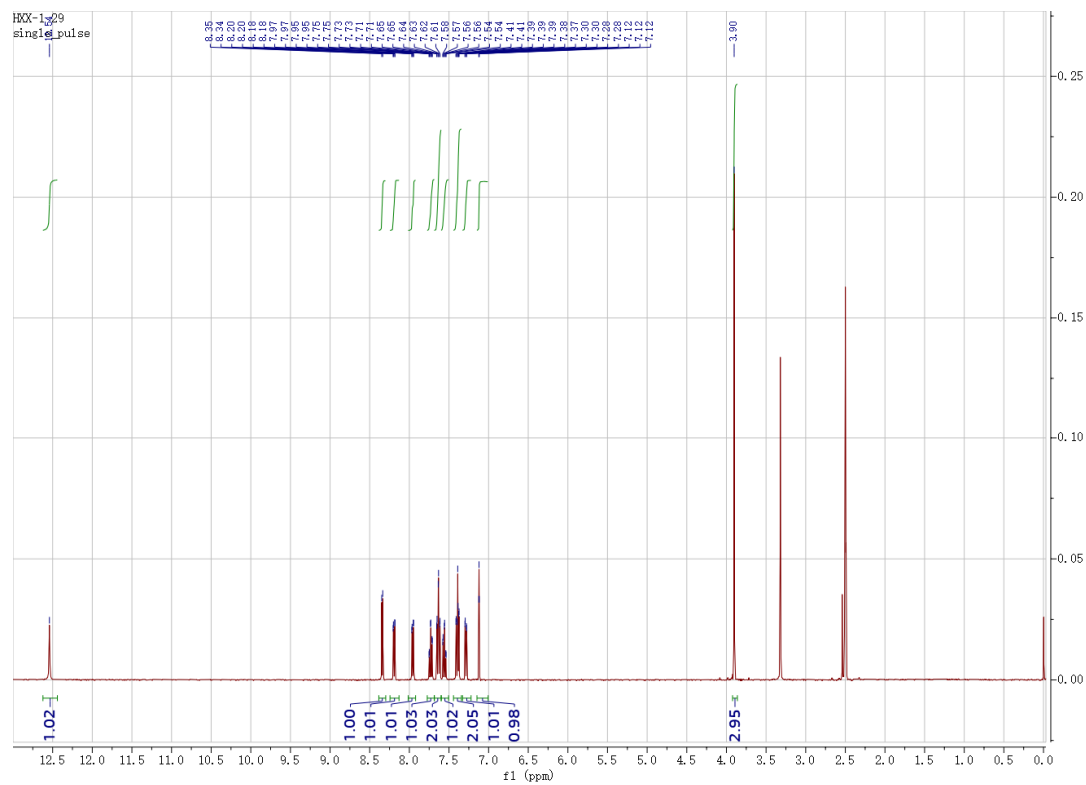


Compound **B19**:

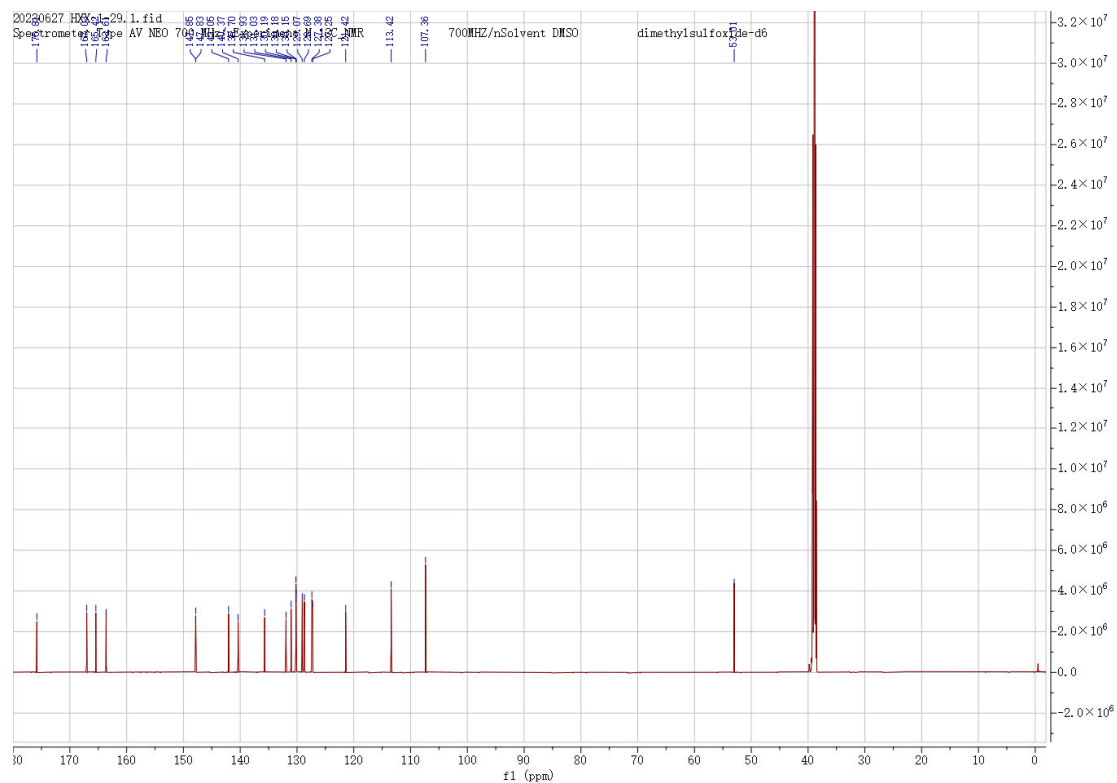
HR-ESI-MS:



¹H-NMR:

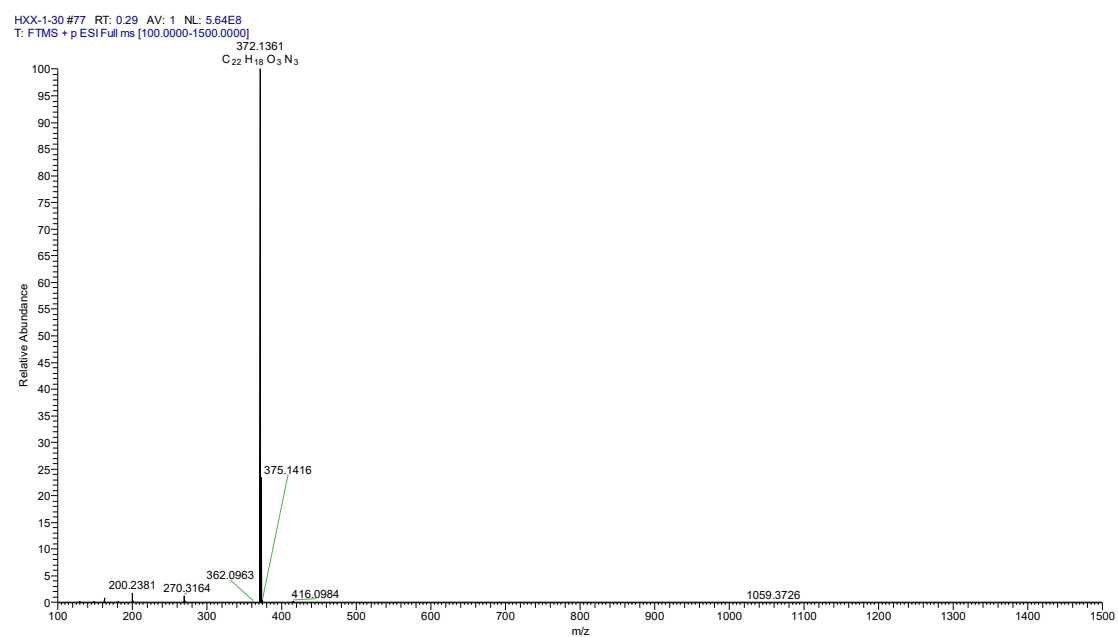


¹³C-NMR:

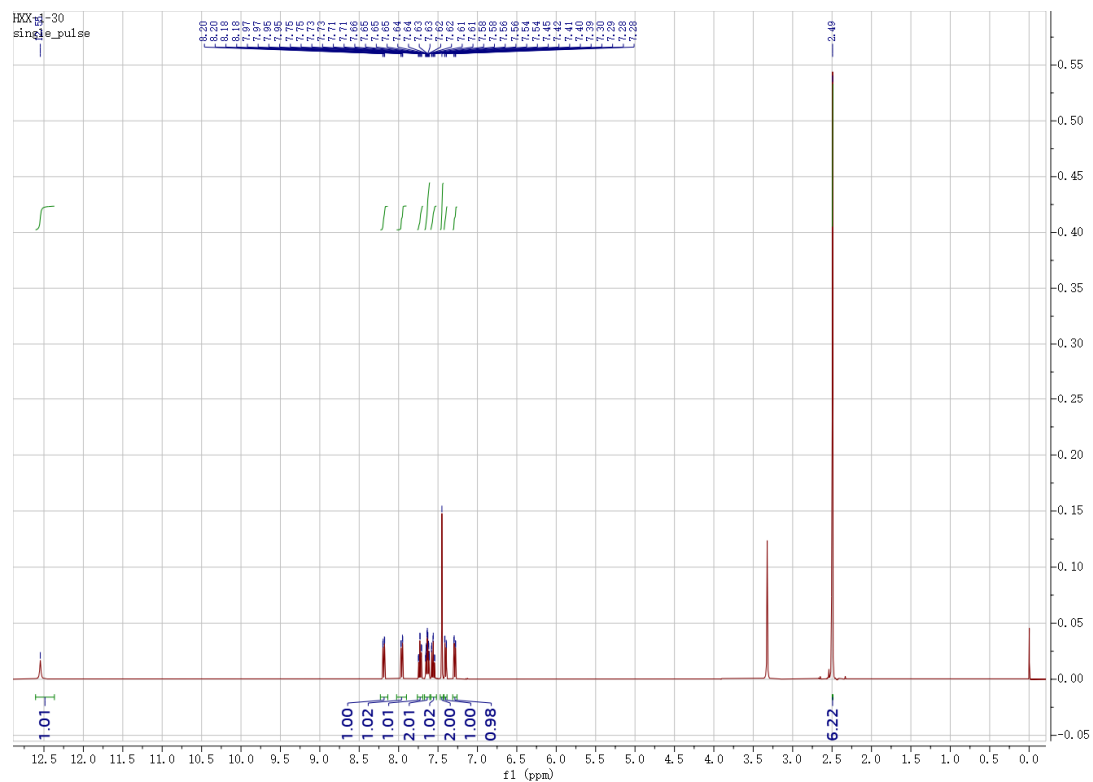


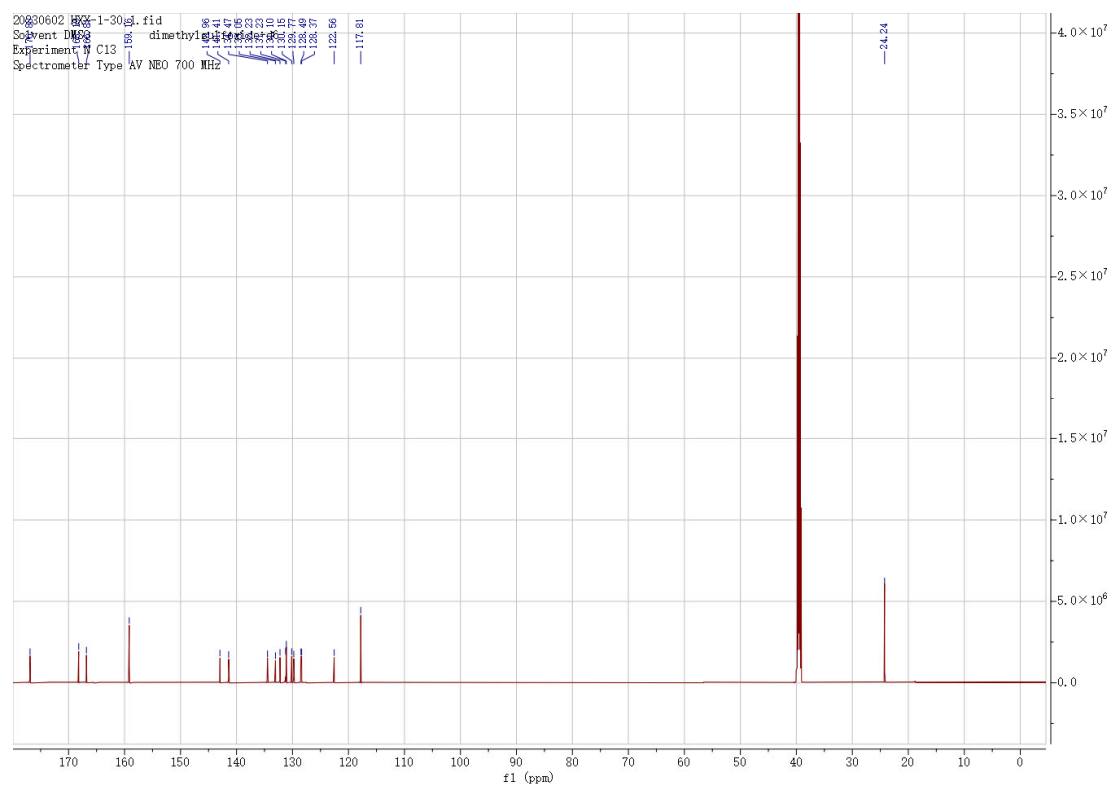
Compound B20:

HR-ESI-MS:



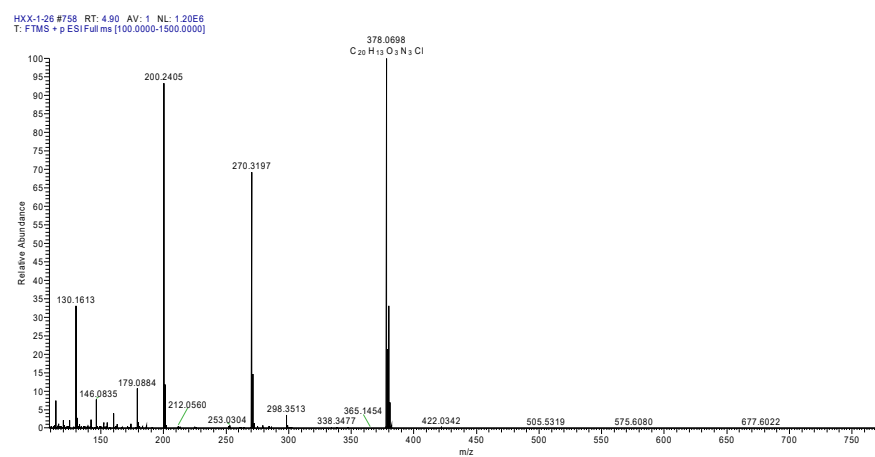
¹H-NMR:



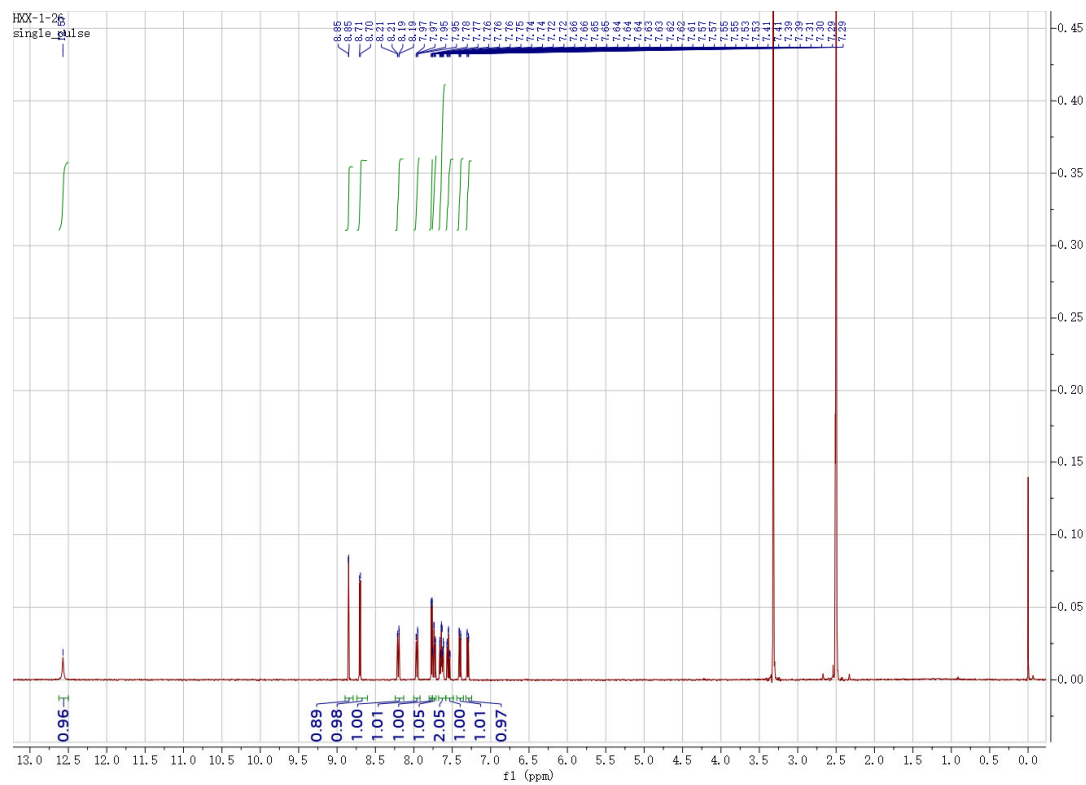
¹³C-NMR:

Compound **B21**:

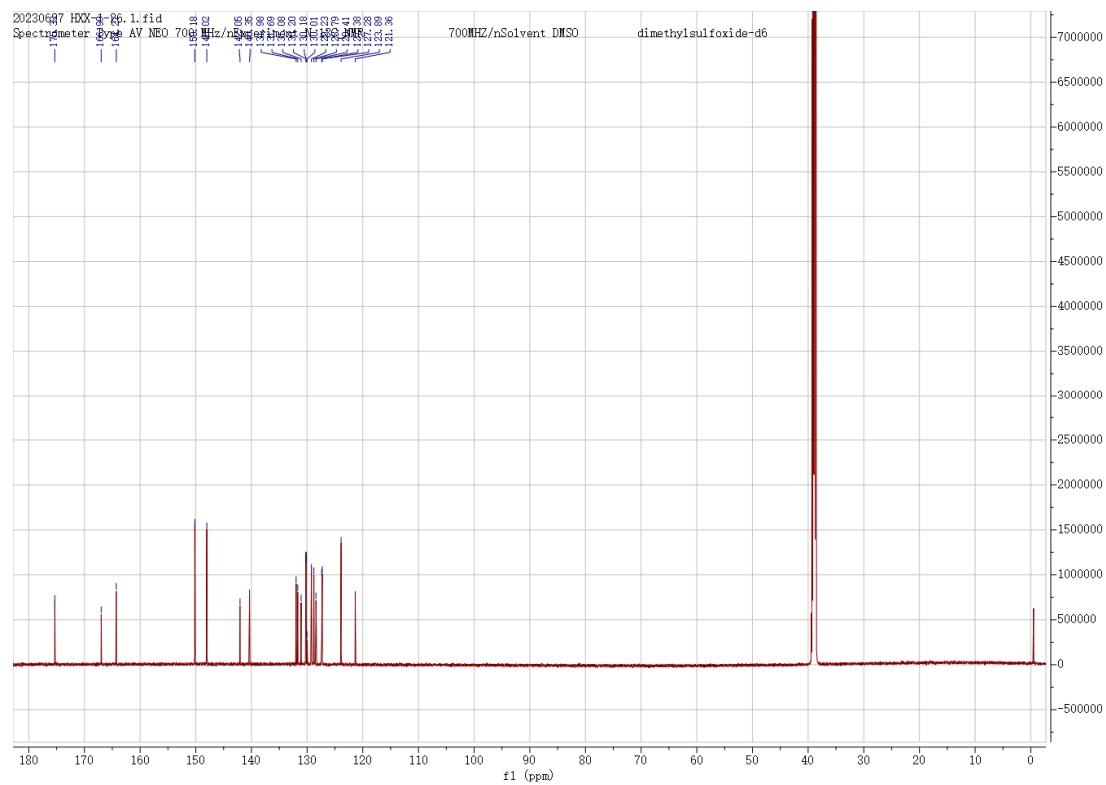
HR-ESI-MS:



^1H -NMR:

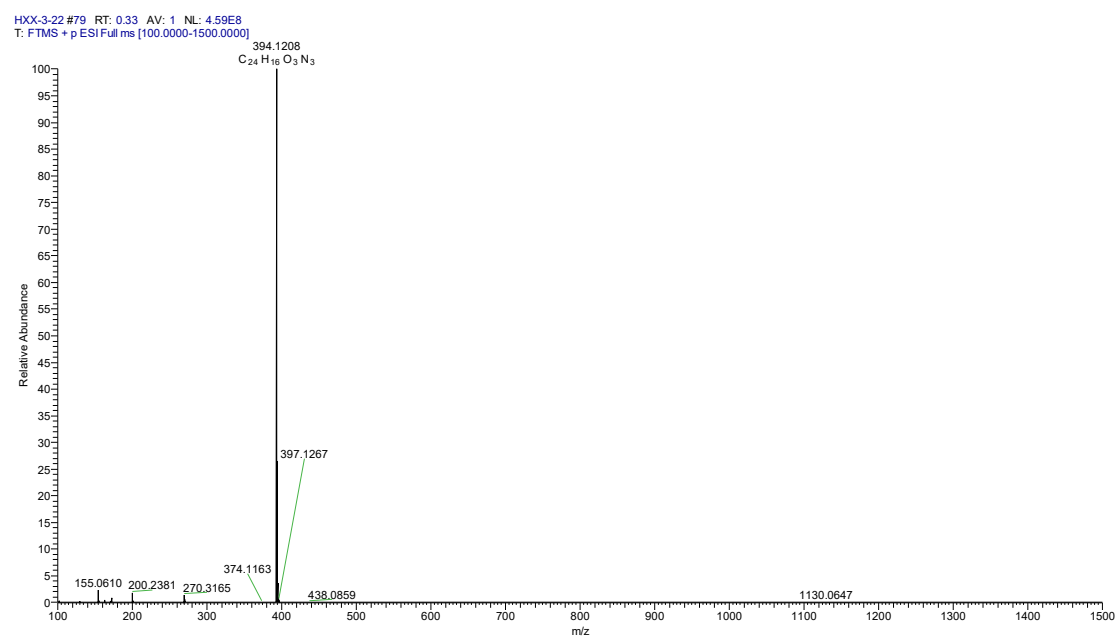


^{13}C -NMR:

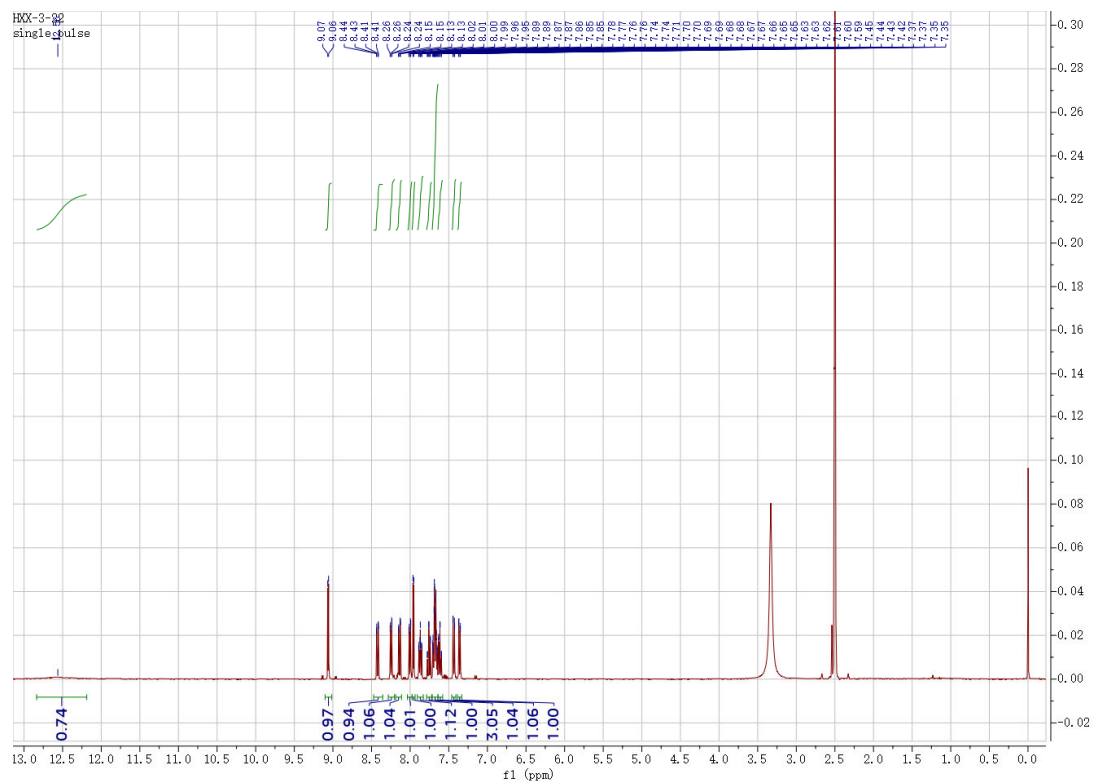


Compound B22:

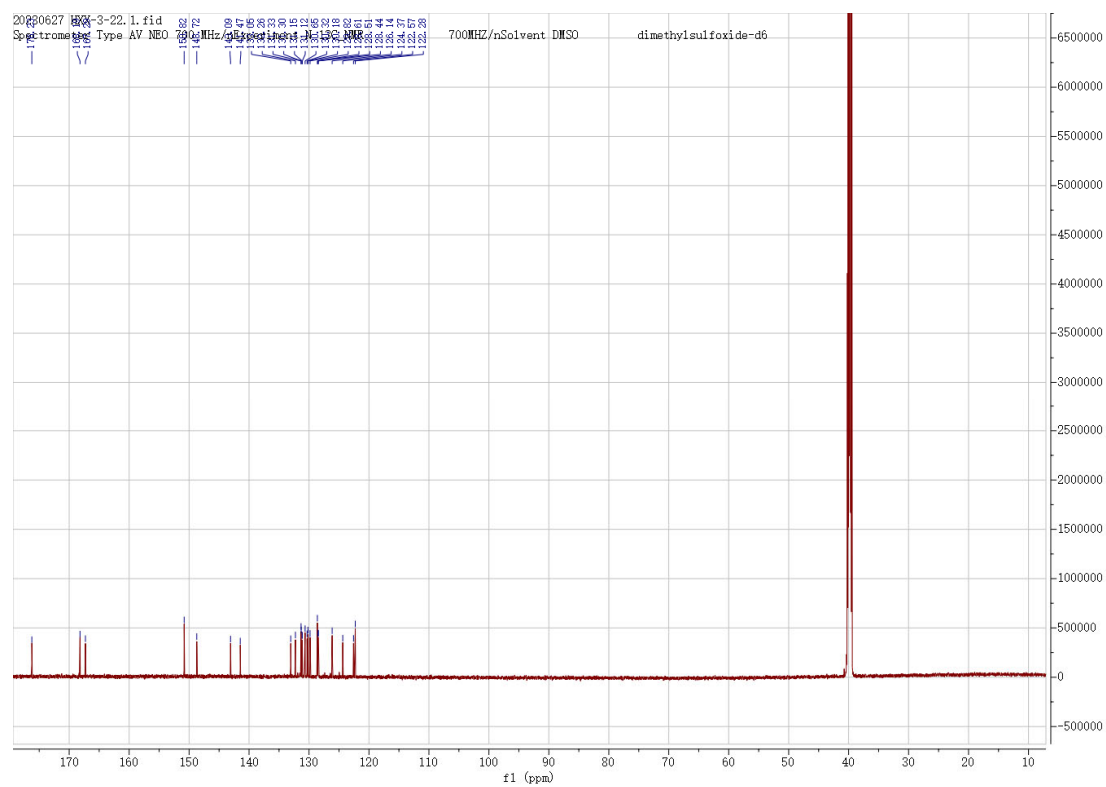
HR-ESI-MS:



1H -NMR:

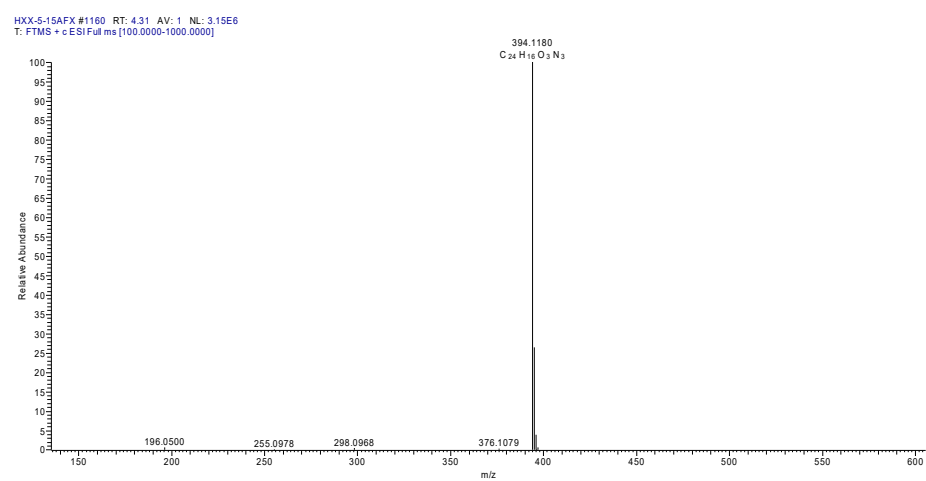


^{13}C -NMR:

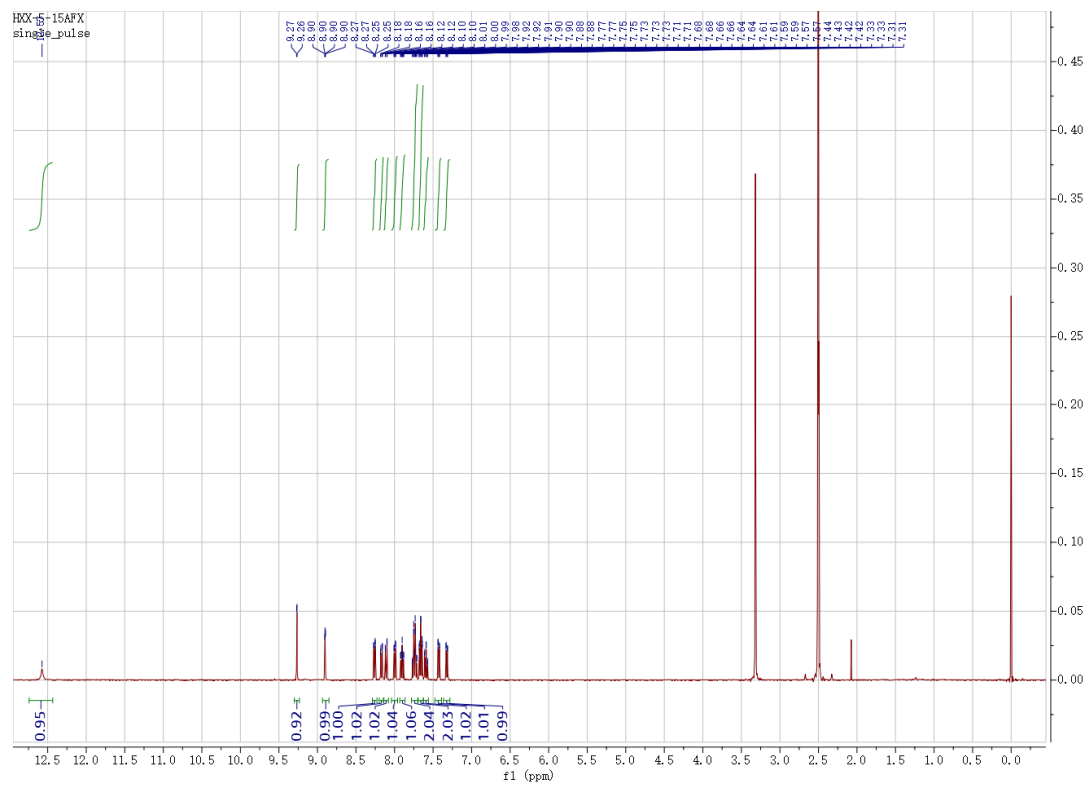


Compound **B23**:

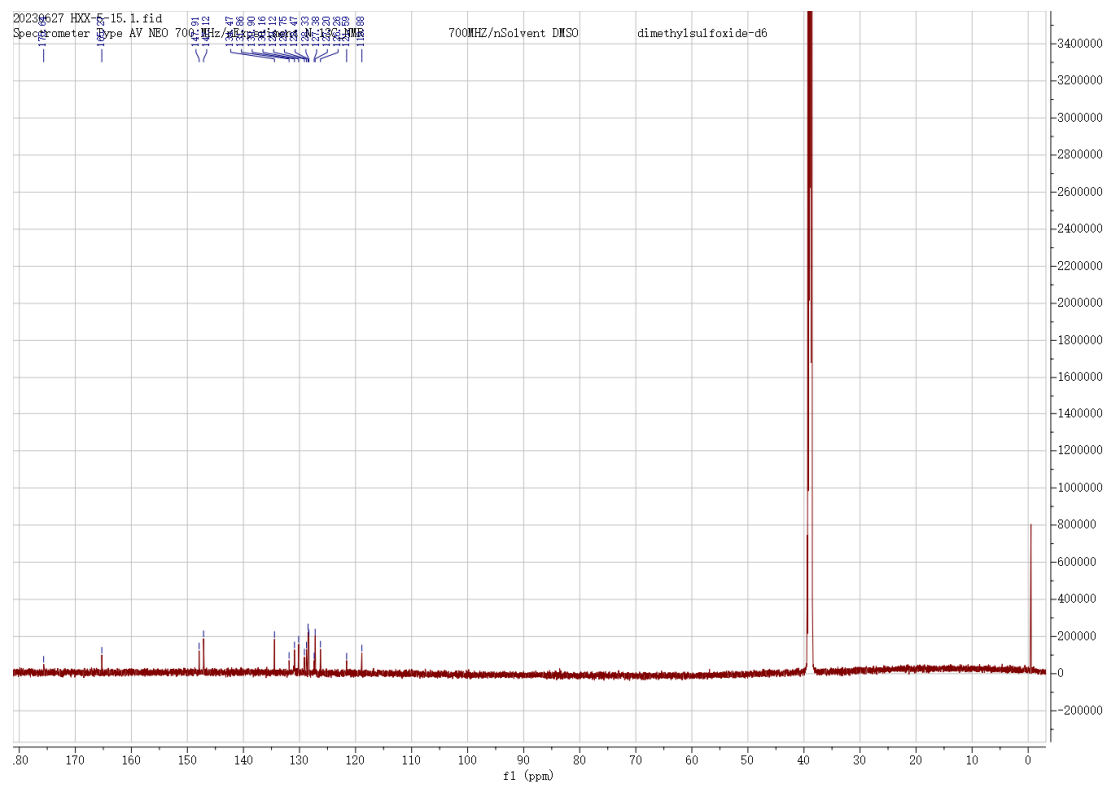
HR-ESI-MS:



¹H-NMR:



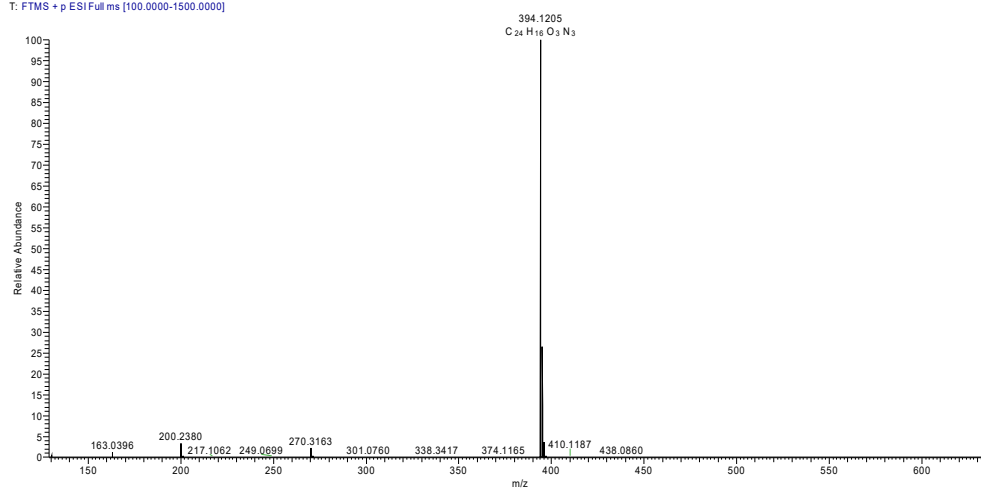
¹³C-NMR:



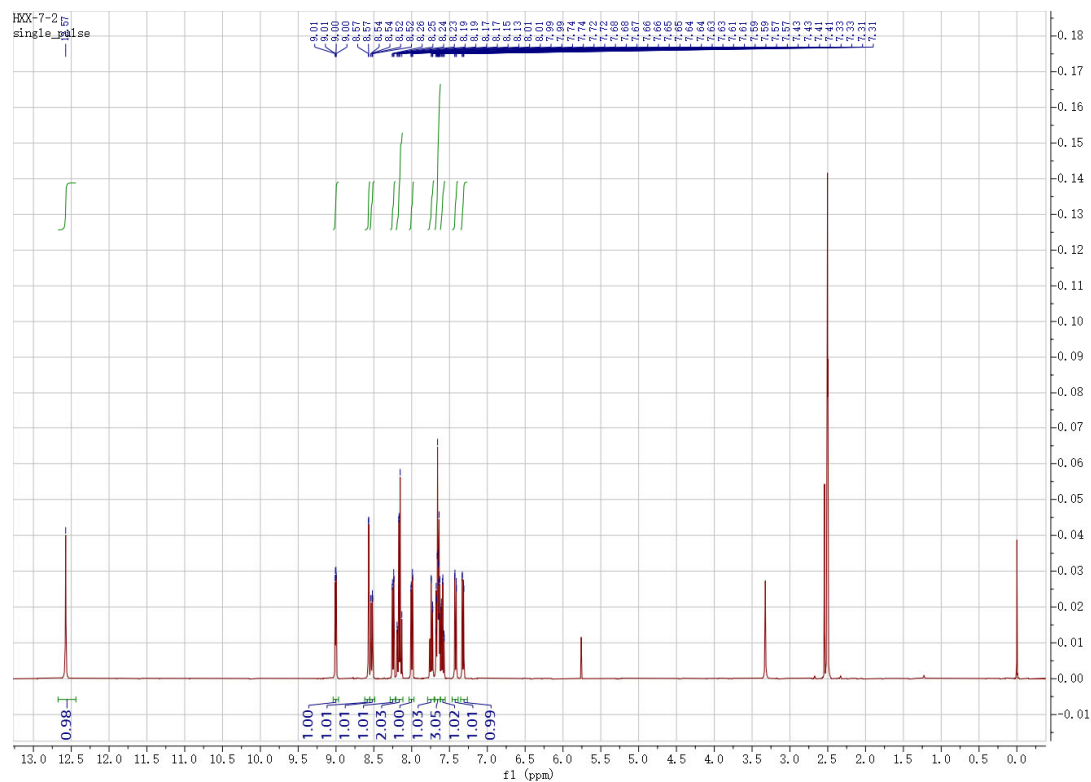
Compound B24:

HR-ESI-MS:

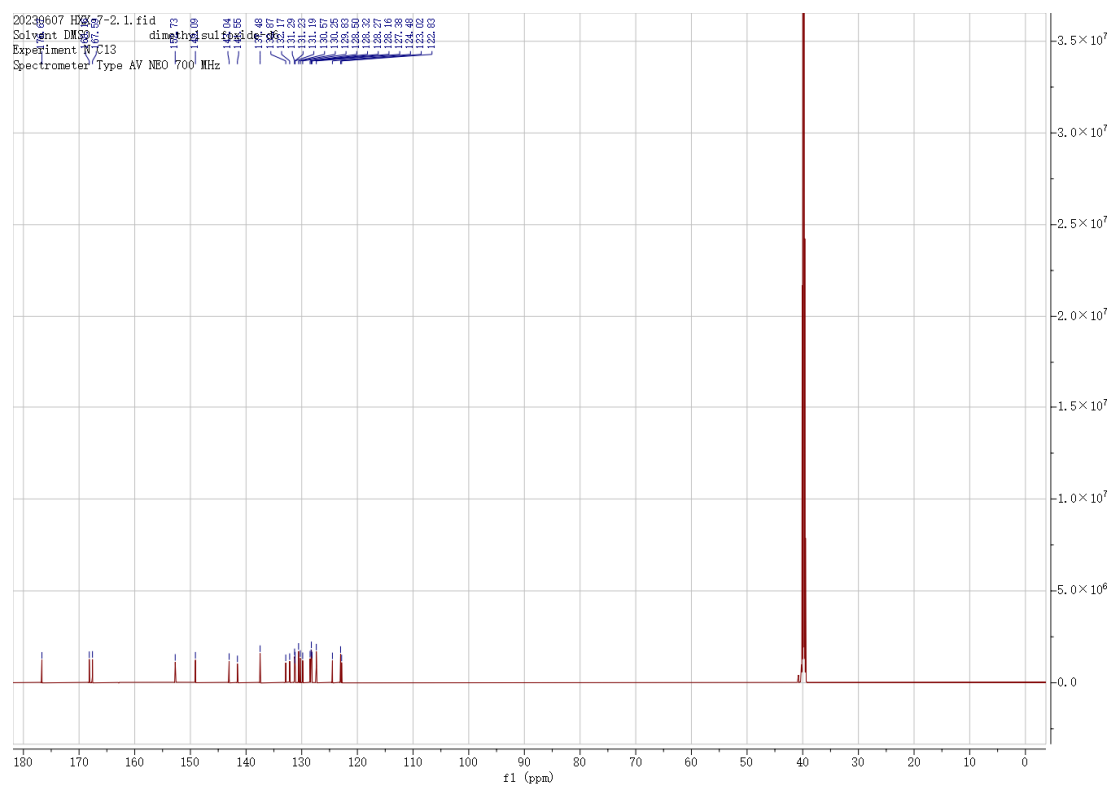
HXX-7-2 #66 RT: 0.31 AV: 1 NL: 2.38E8
T: FTMS +p ESI Full ms [100.0000-1500.0000]



¹H-NMR:



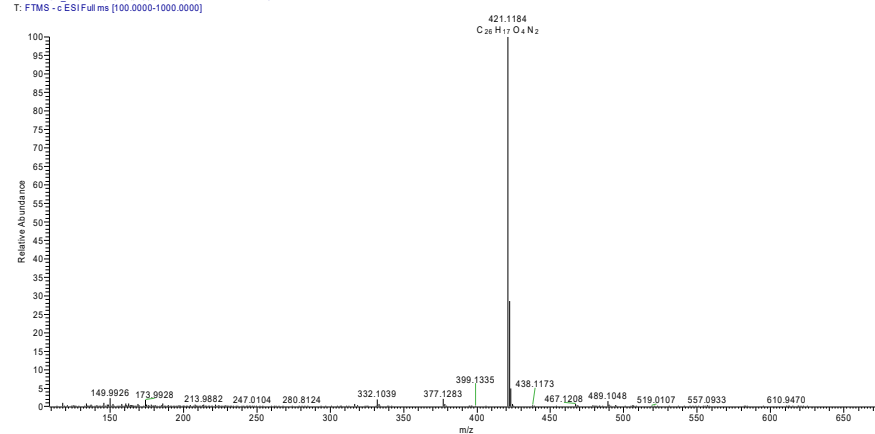
¹³C-NMR:



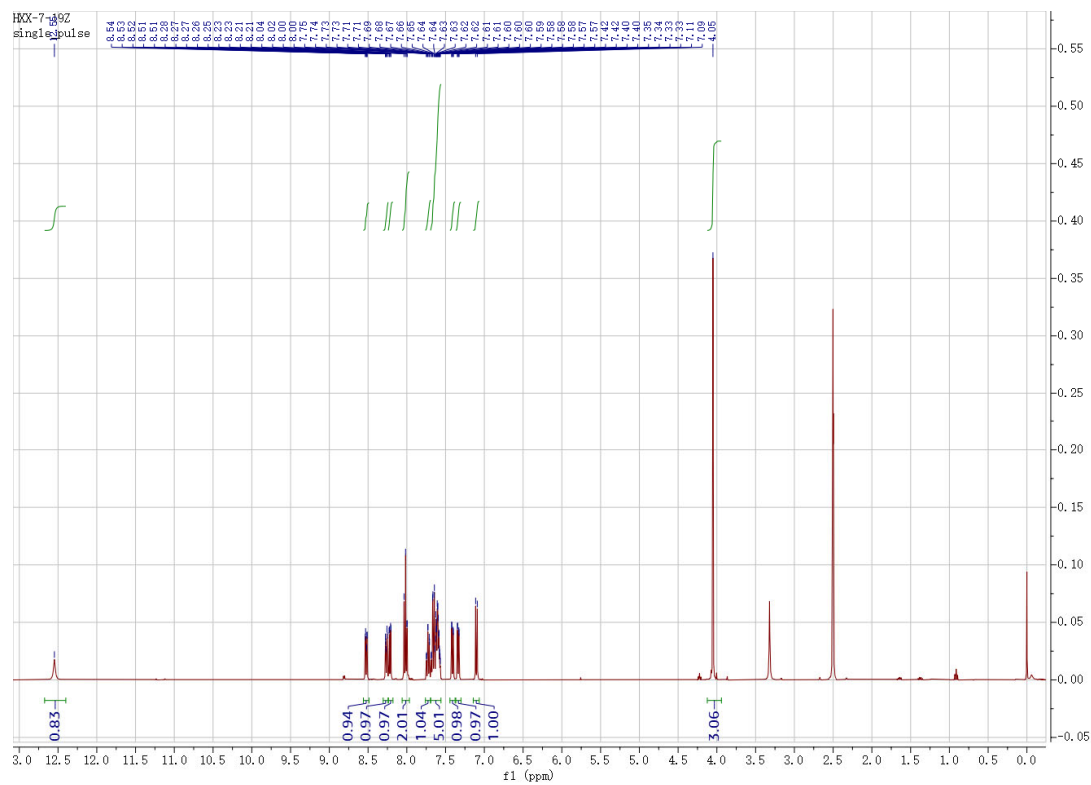
Compound **B25**:

HR-ESI-MS:

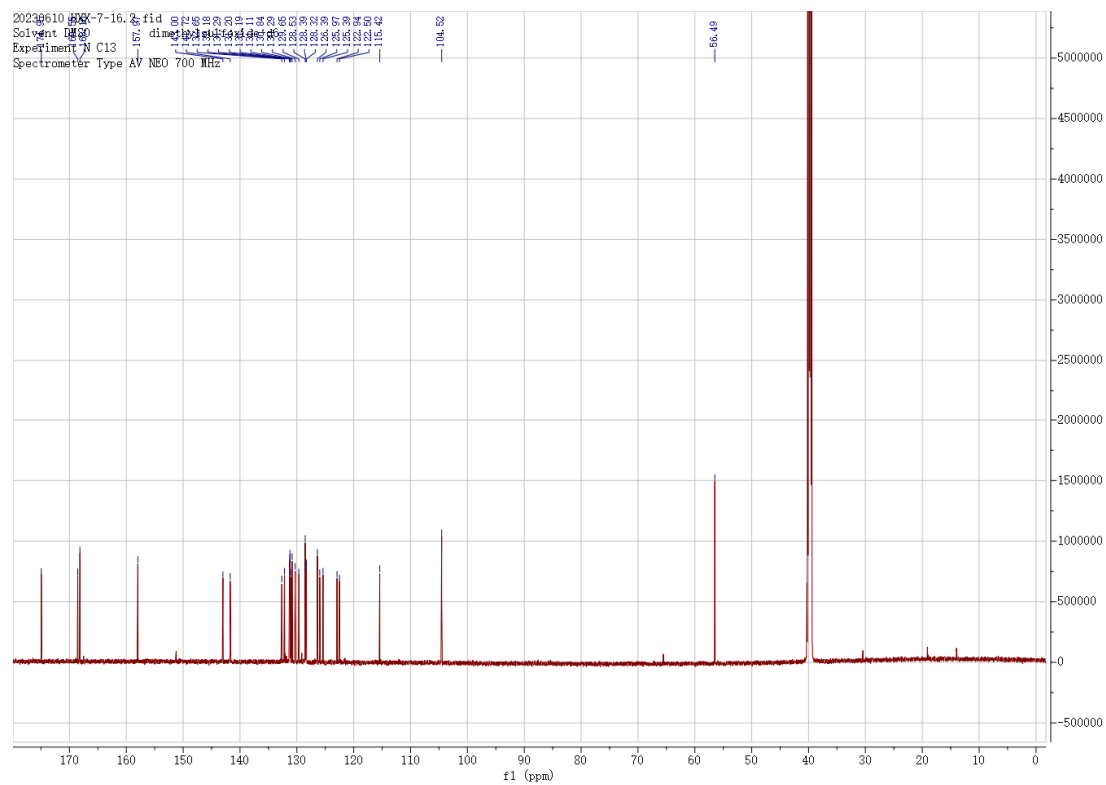
HXX-7-19N_210122102310 #1556 RT: 5.78 AV: 1 NL: 2.10E7
T: FTMS - e ESI Full ms [100.0000-1000.0000]



¹H-NMR:



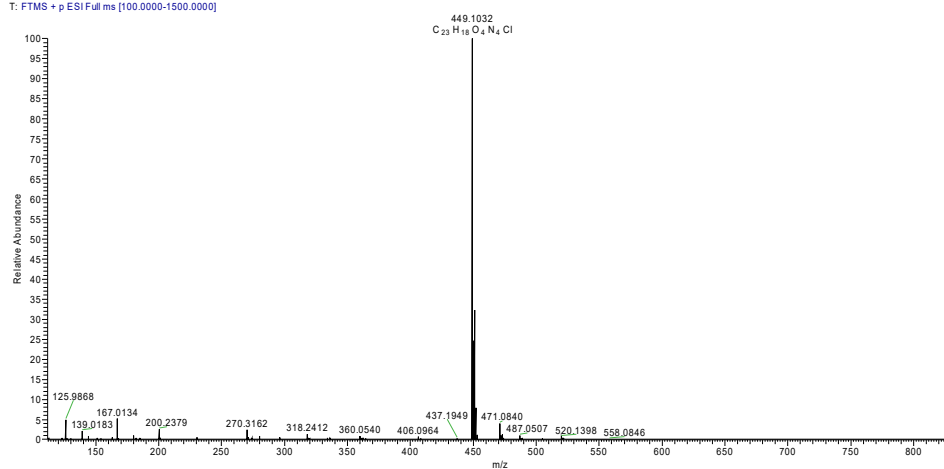
¹³C-NMR:



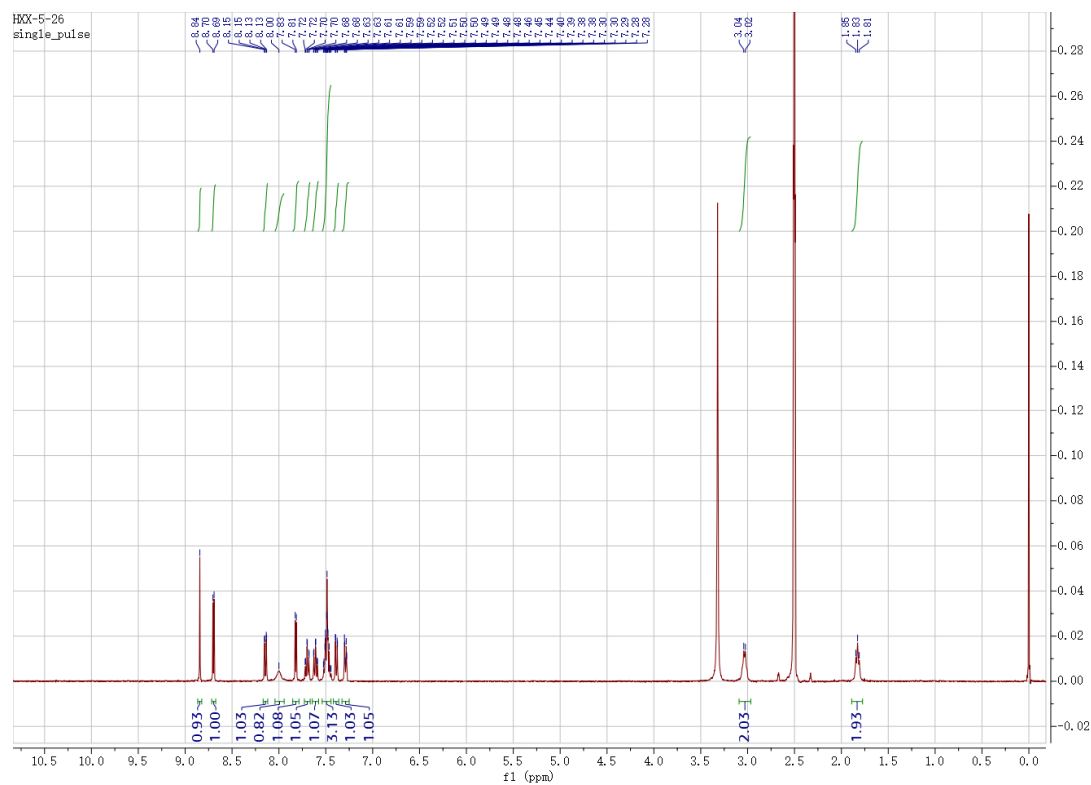
Compound B26:

HR-ESI-MS:

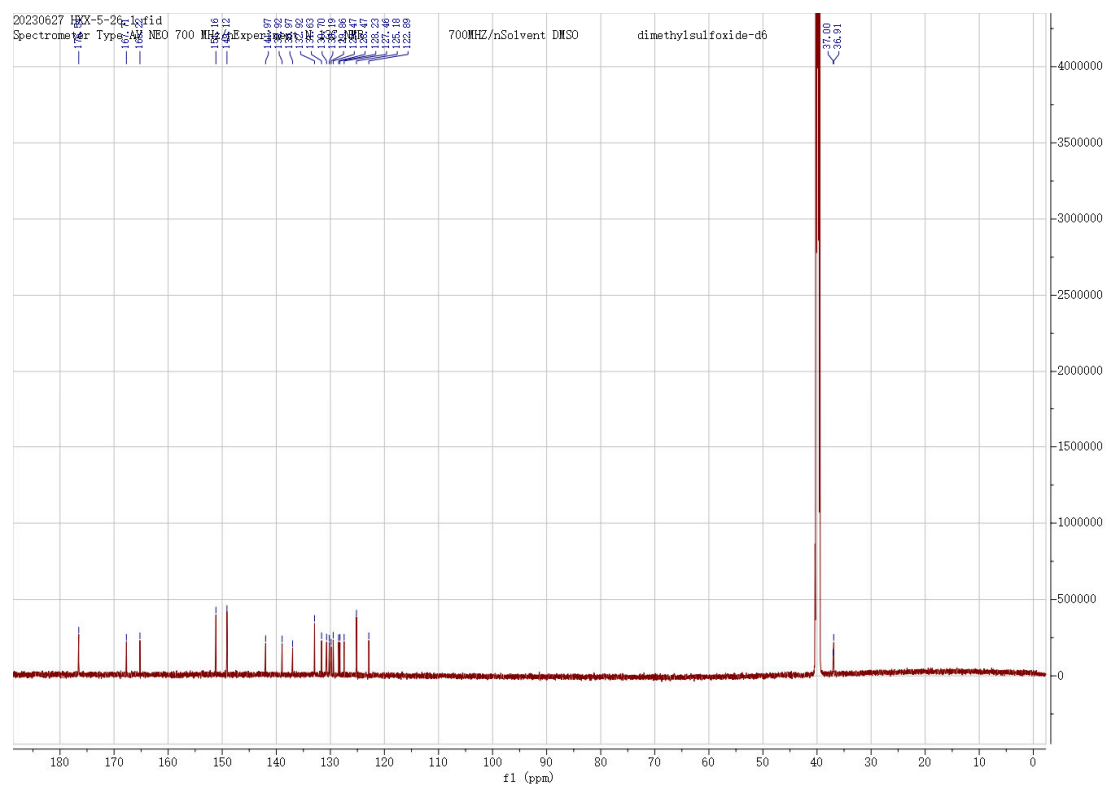
HXX-5-26 #60 RT: 0.35 AV: 1 NL: 6.03E7
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:



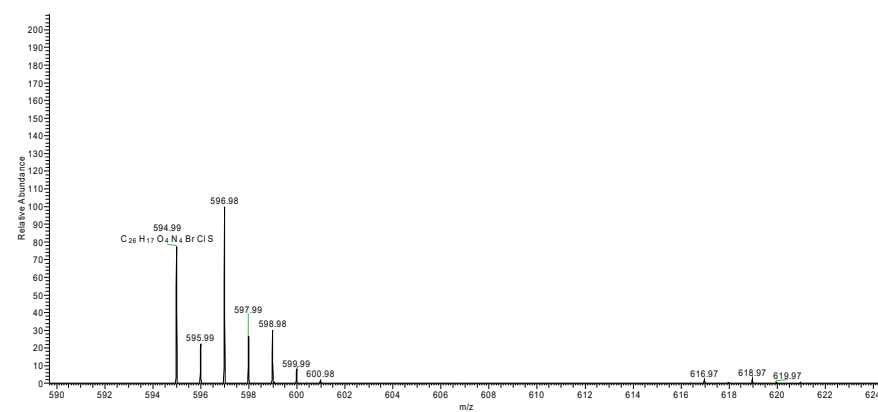
^{13}C -NMR:

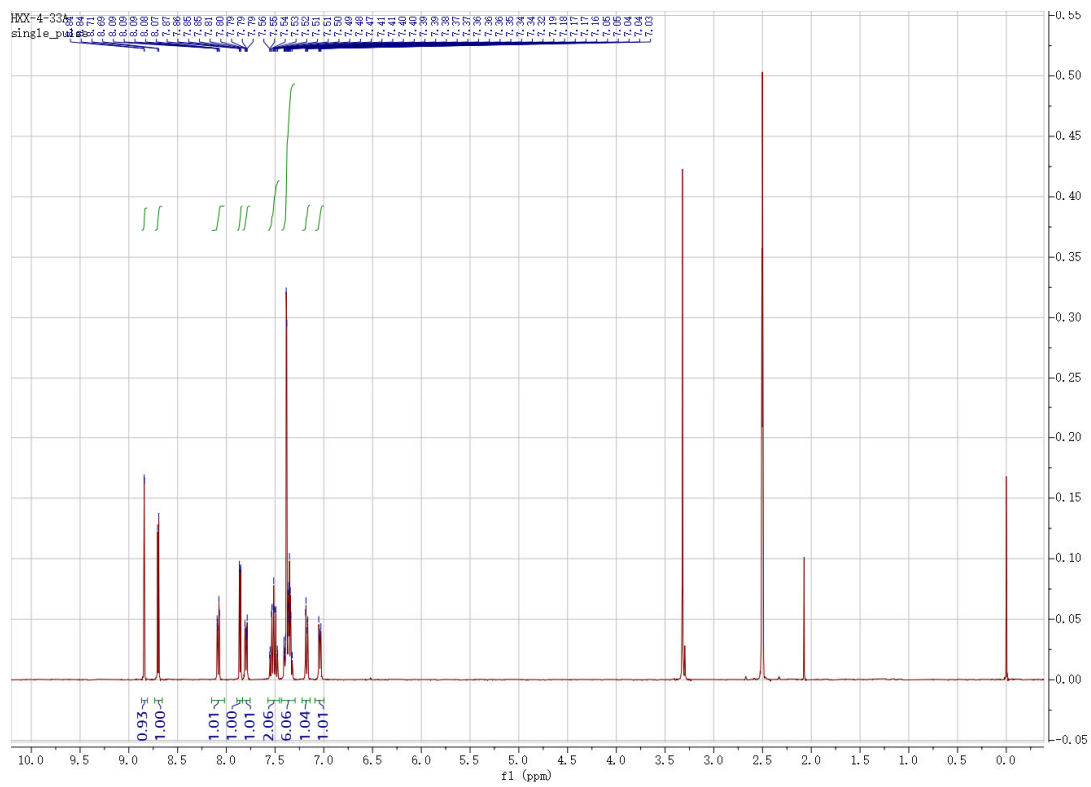
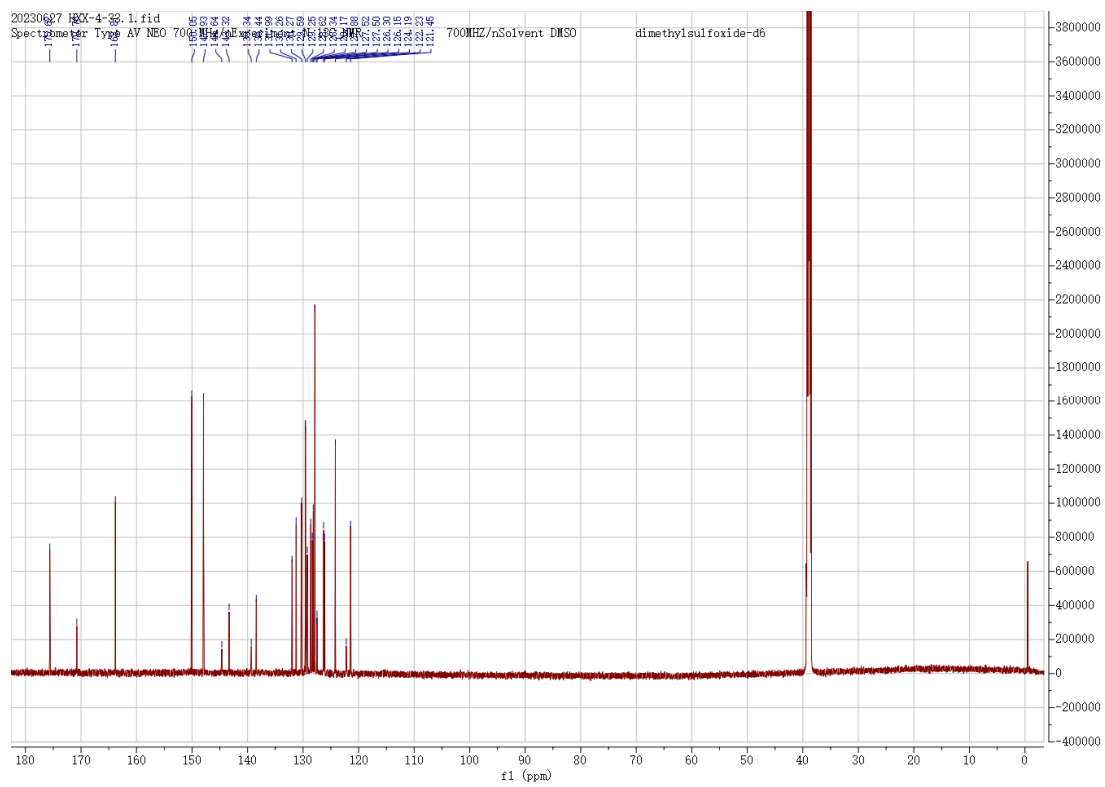


Compound **B27**:

HR-ESI-MS:

HXX-4-33 #52 RT: 0.32 AV: 1 NL: 1.02E6
T: FTMS + p ESI Full ms [100.0000-1500.0000]

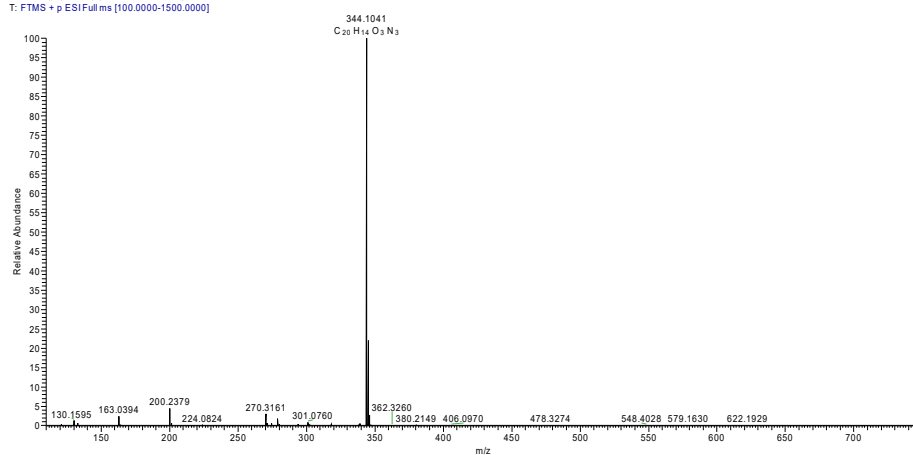


¹H-NMR:¹³C-NMR:

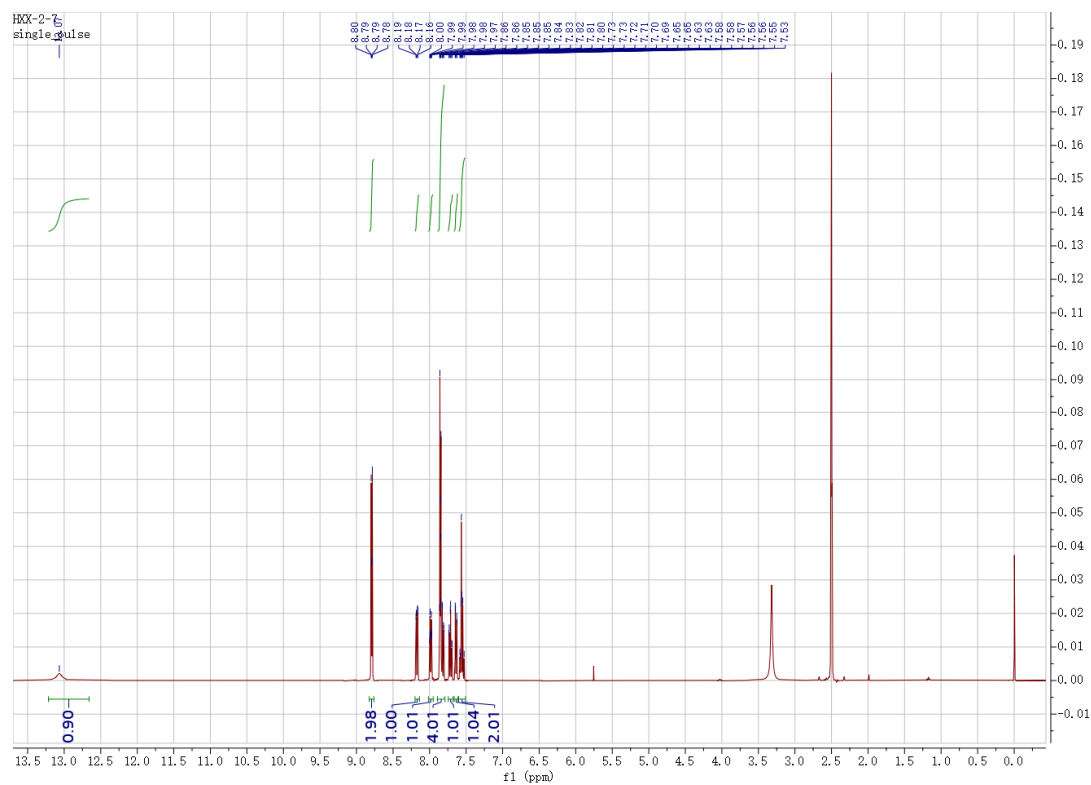
Compound B28:

HR-ESI-MS:

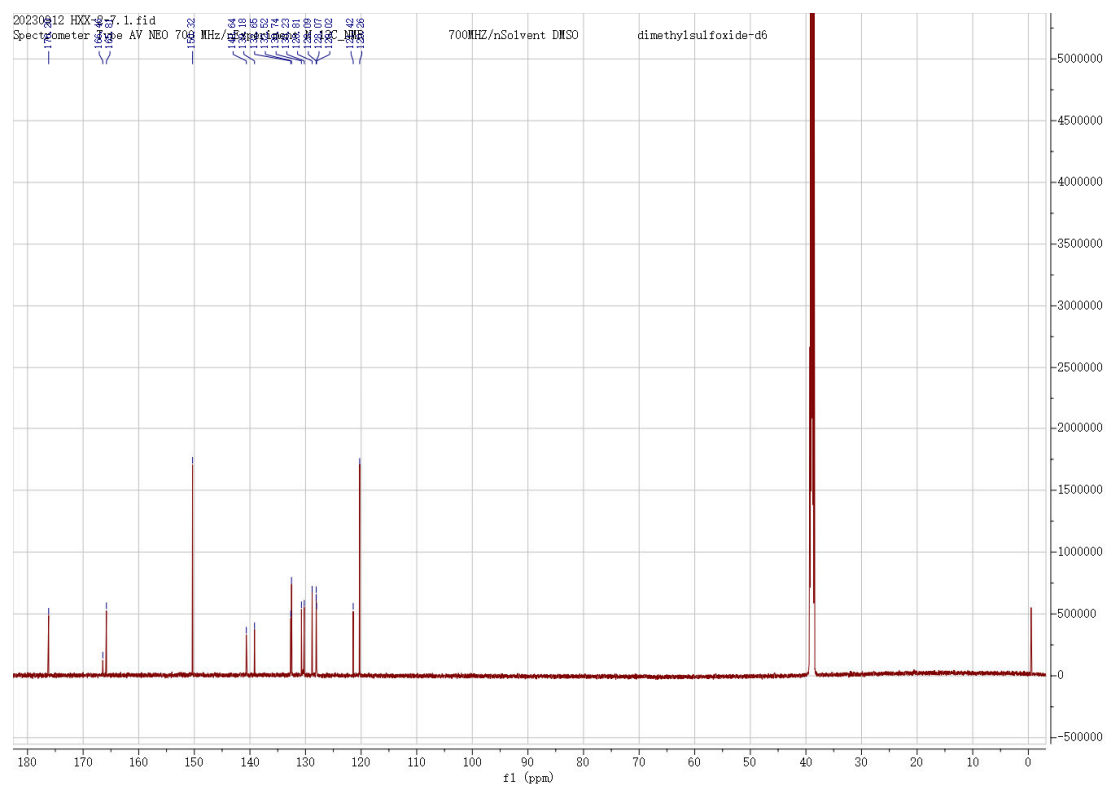
HXX-2-7 #48 RT: 0.31 AV: 1 NL: 2.28E7
T: FTMS + p ESI Full ms [100.0000-1500.0000]



¹H-NMR:

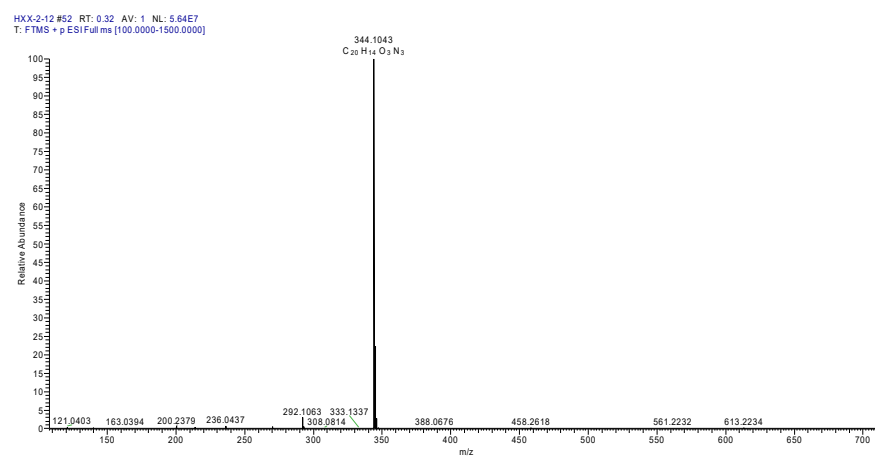


^{13}C -NMR:

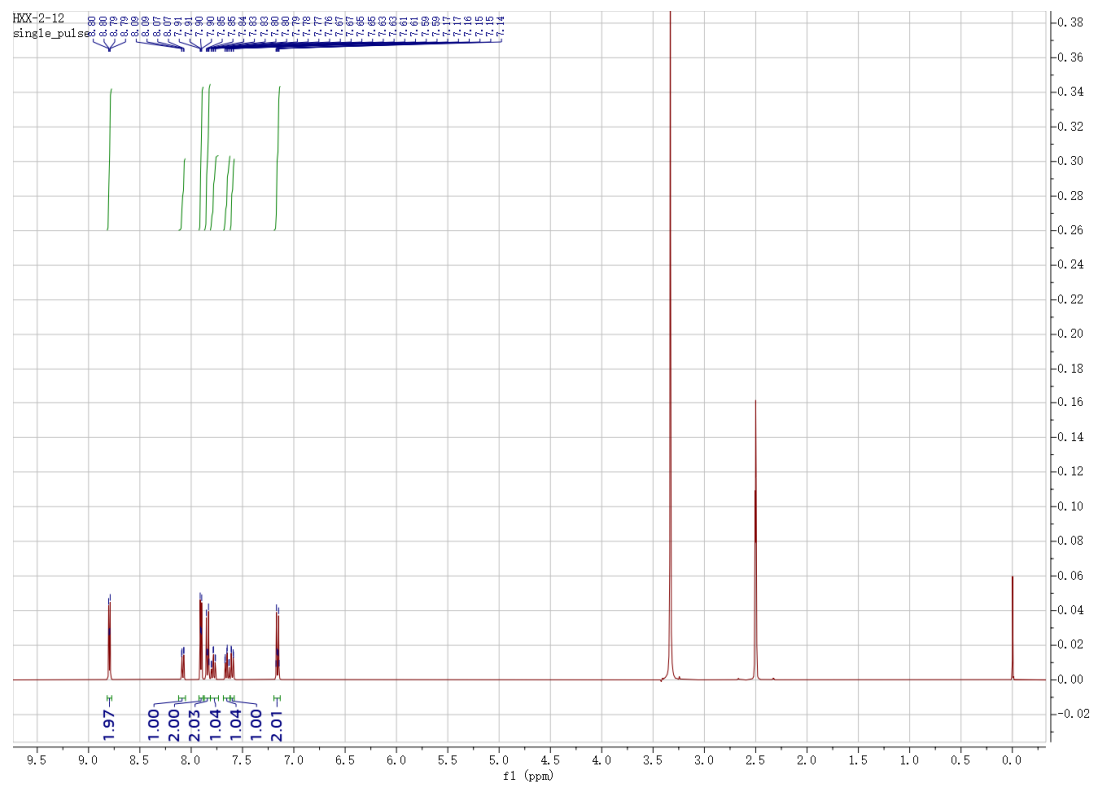


Compound **B29**:

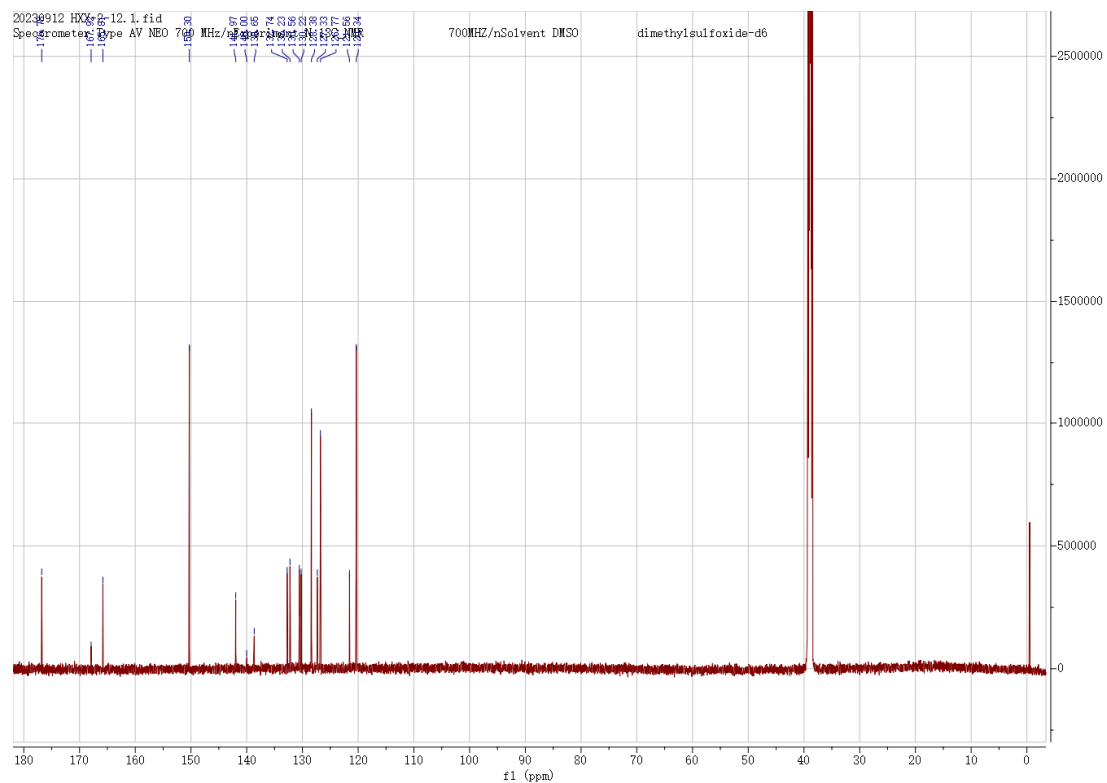
HR-ESI-MS:



¹H-NMR:



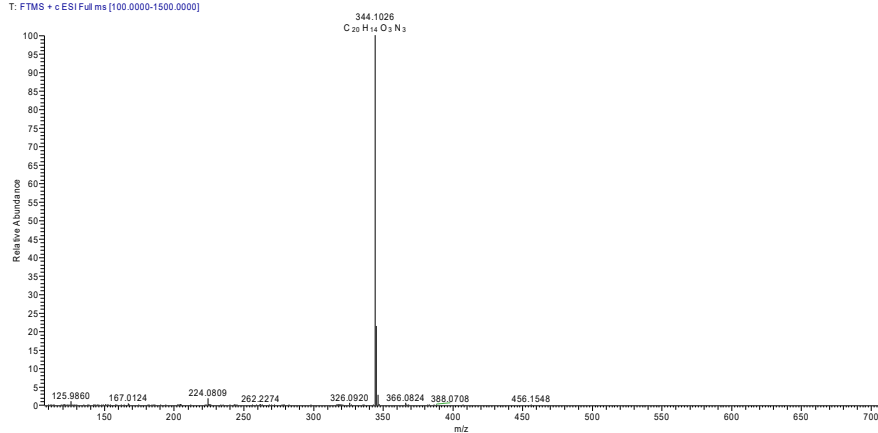
¹³C-NMR:



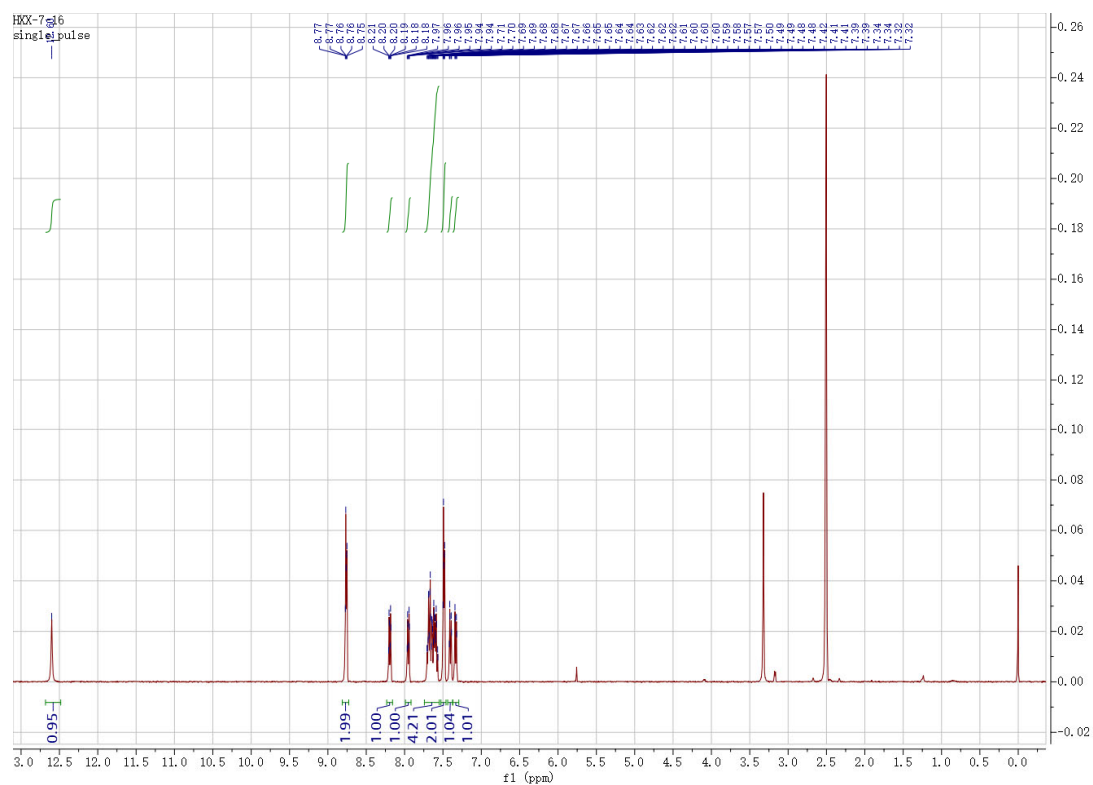
Compound B30:

HR-ESI-MS:

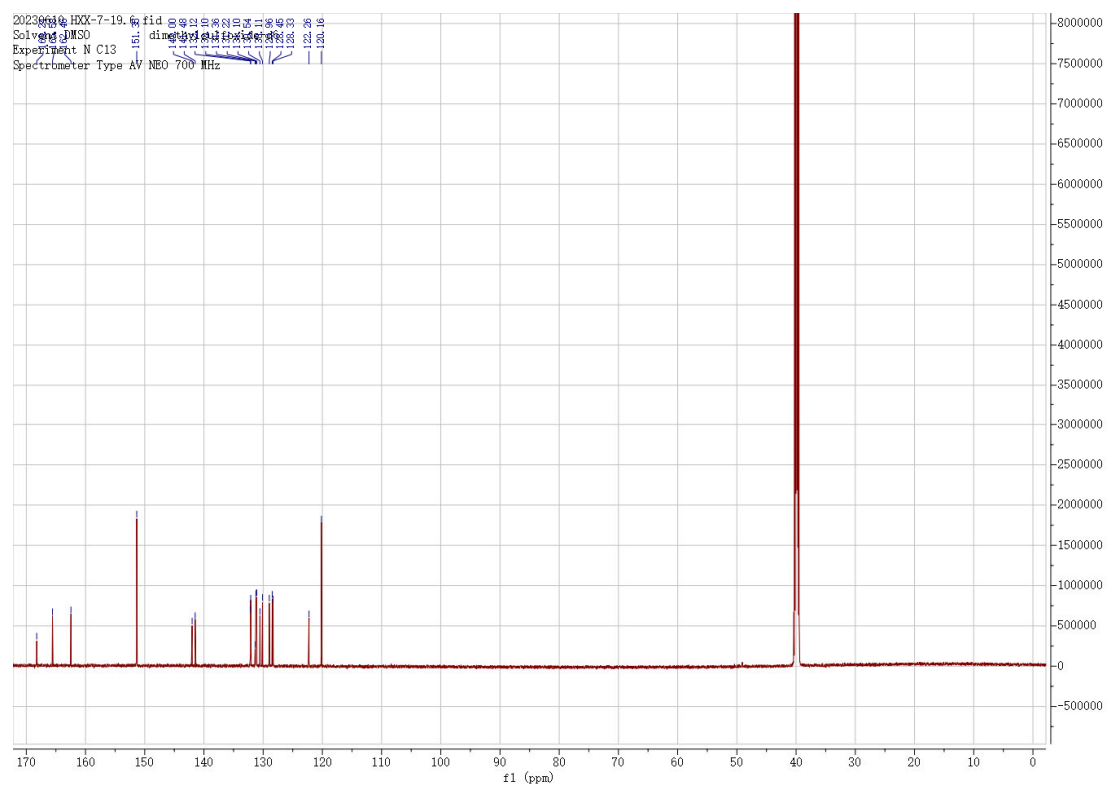
HXX-7-16P #973 RT: 3.54 AV: 1 NL: 1.70E9
T: FTMS + c ESI Full ms [100.0000-1500.0000]



¹H-NMR:

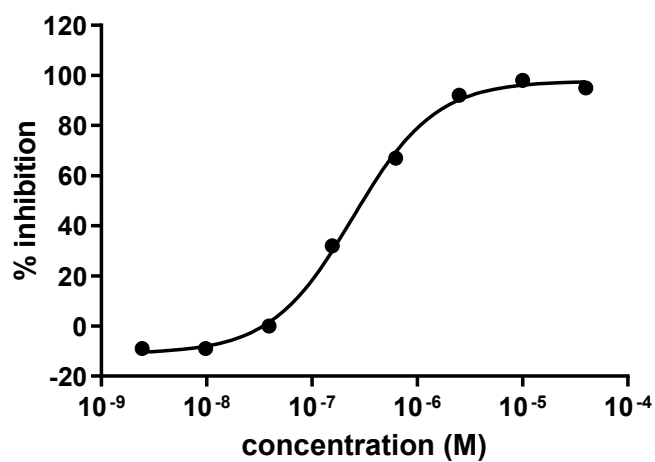


^{13}C -NMR:

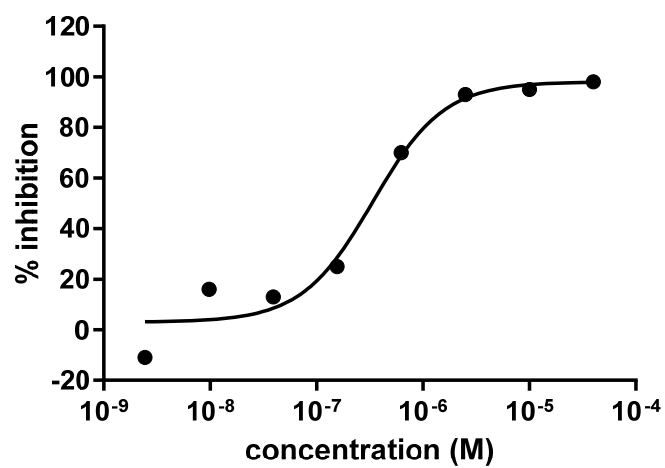


IC₅₀ curves for all the target compounds are provided herein.

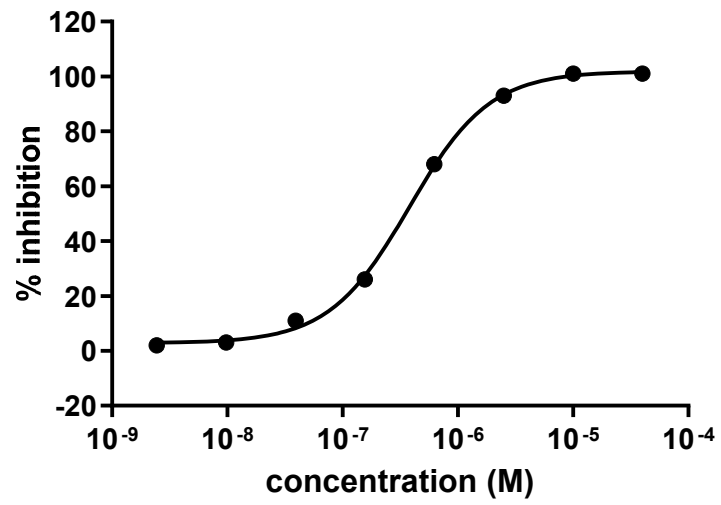
Benzbromarone



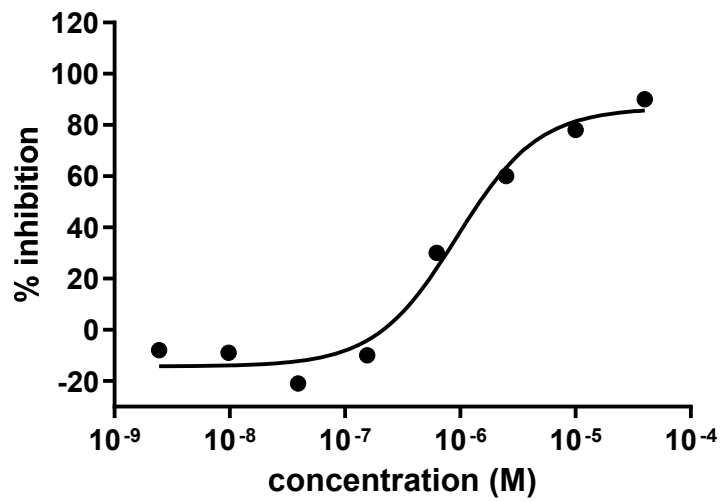
Benzbromarone



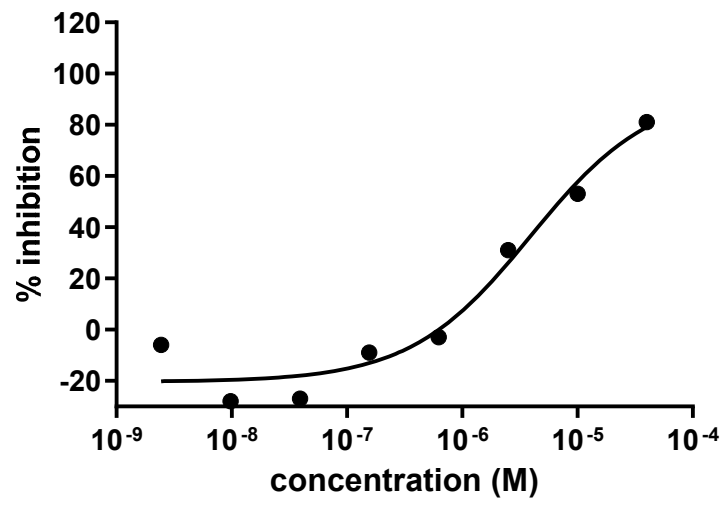
Benzbromarone



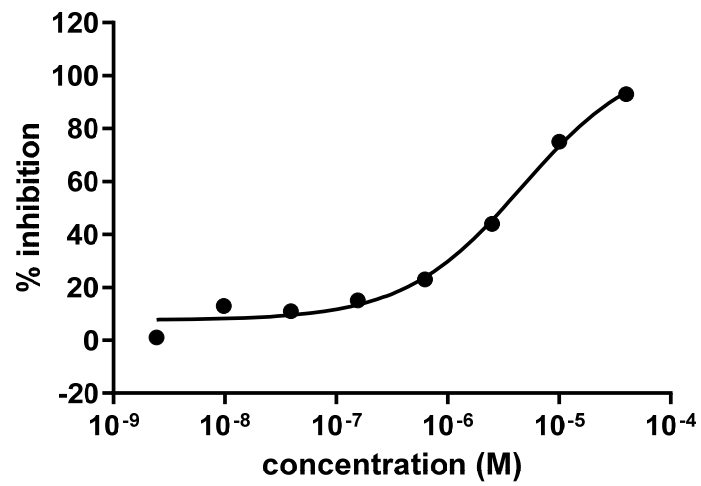
Compound A1



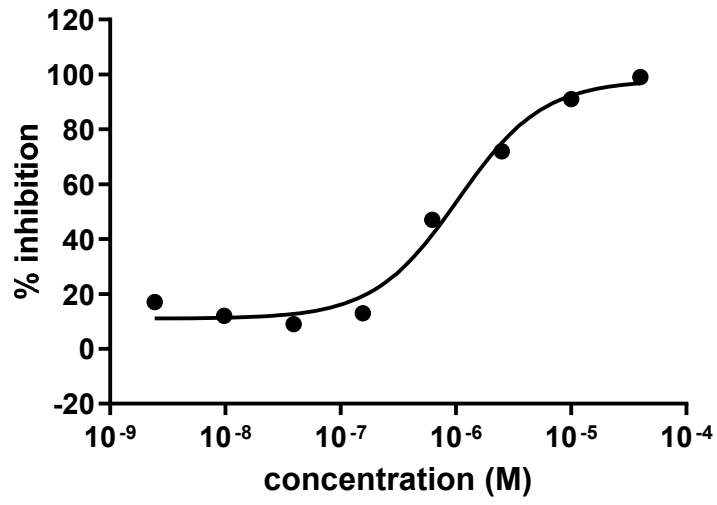
Compound A2



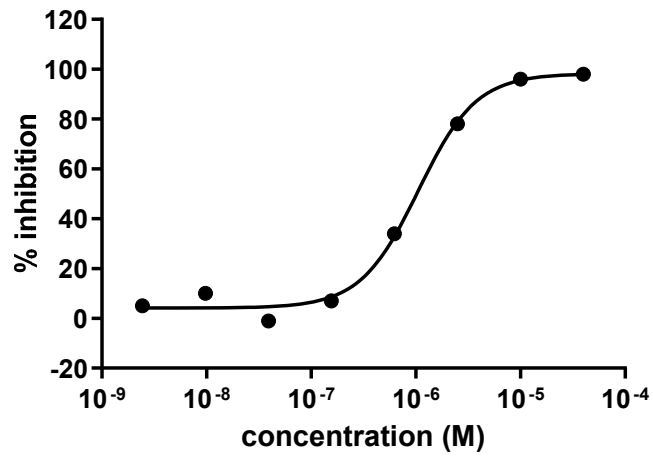
Compound A4



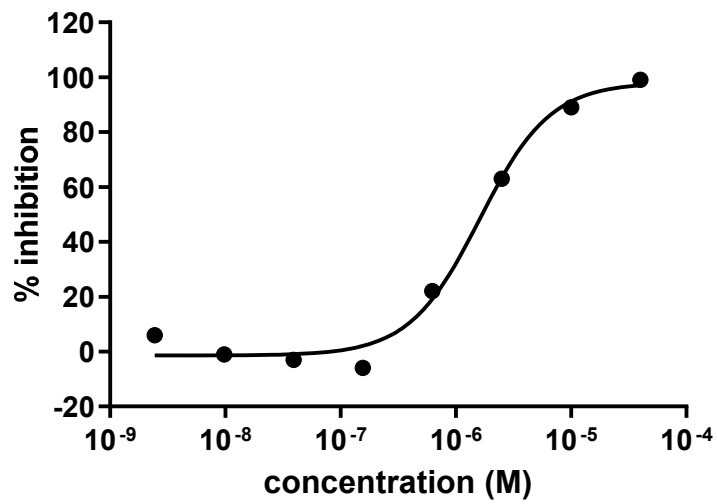
Compound A6



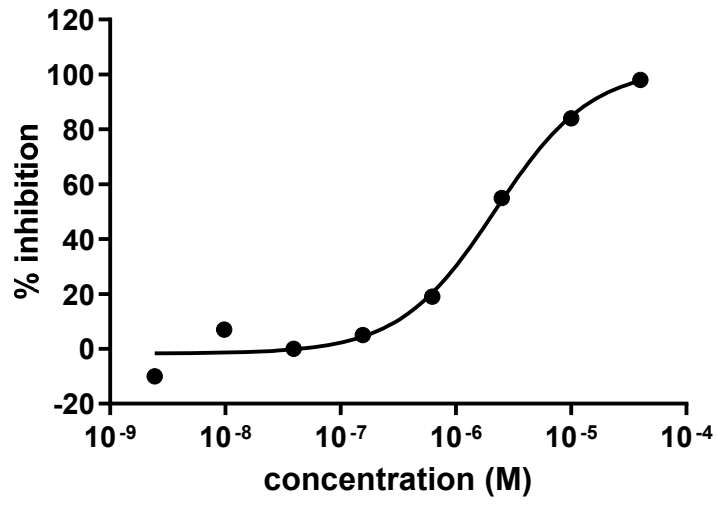
Compound A7



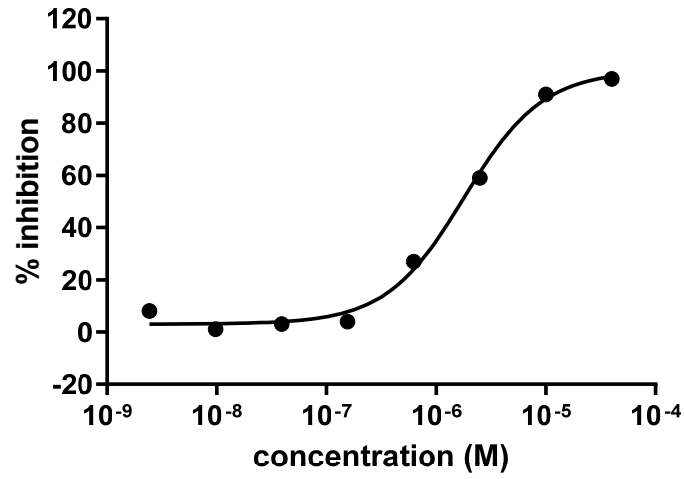
Compound A8



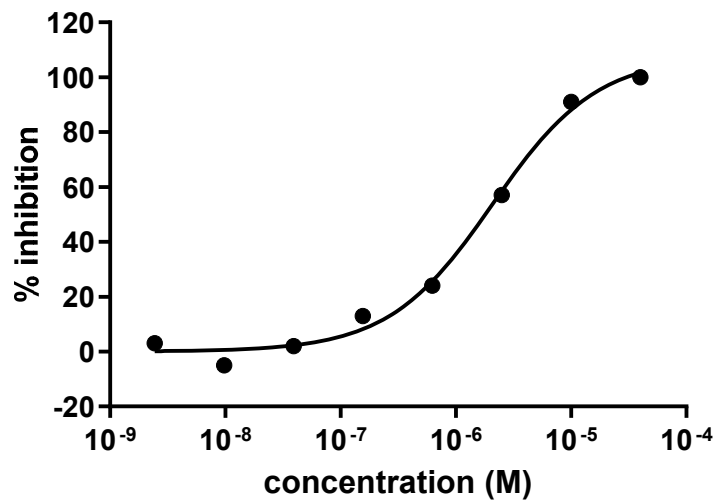
Compound A9



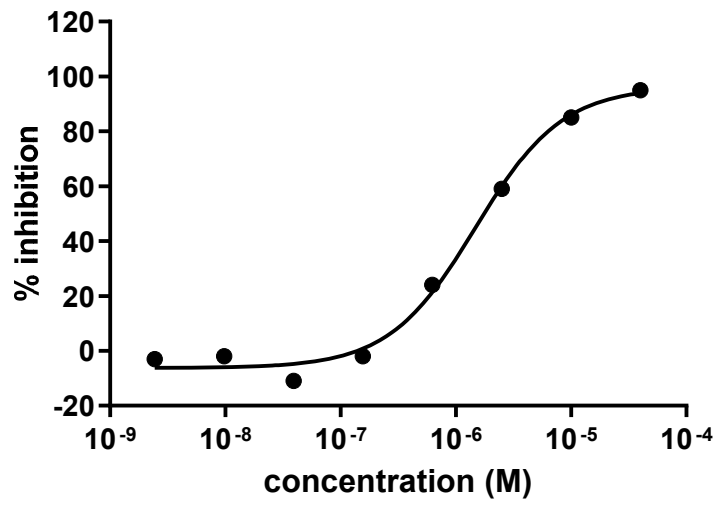
Compound A10



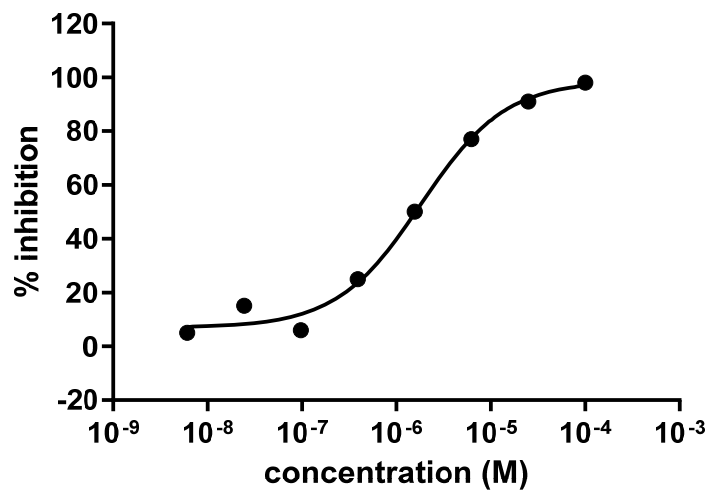
Compound A11



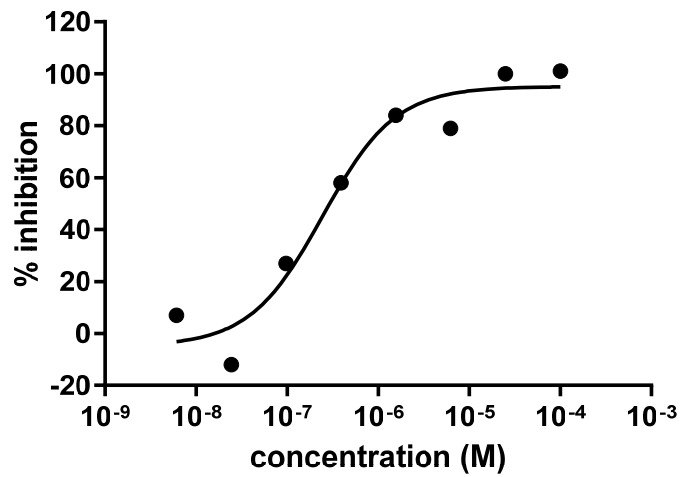
Compound A13



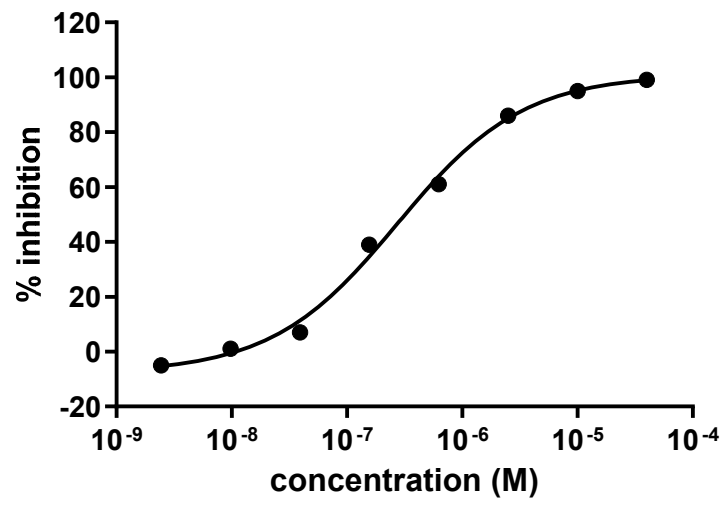
Compound B14



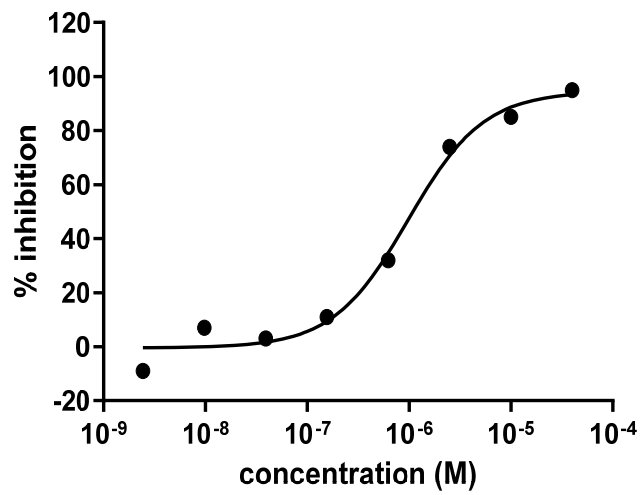
Compound B15



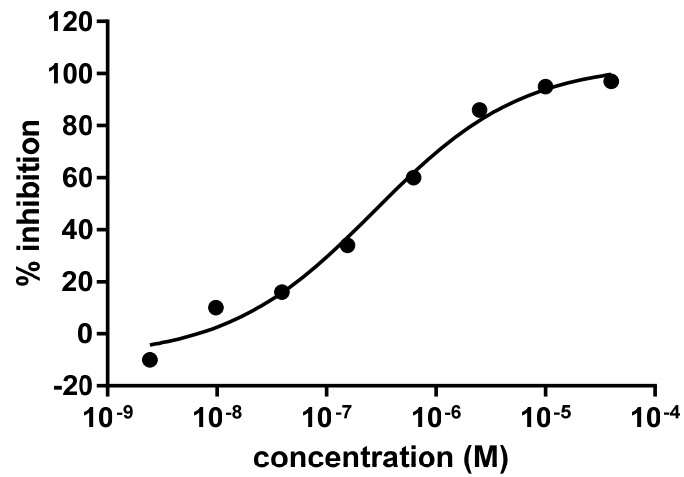
Compound B16



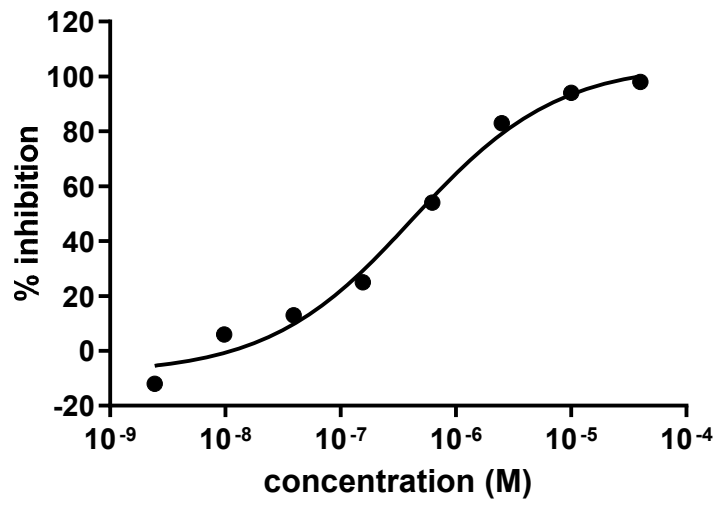
Compound B17



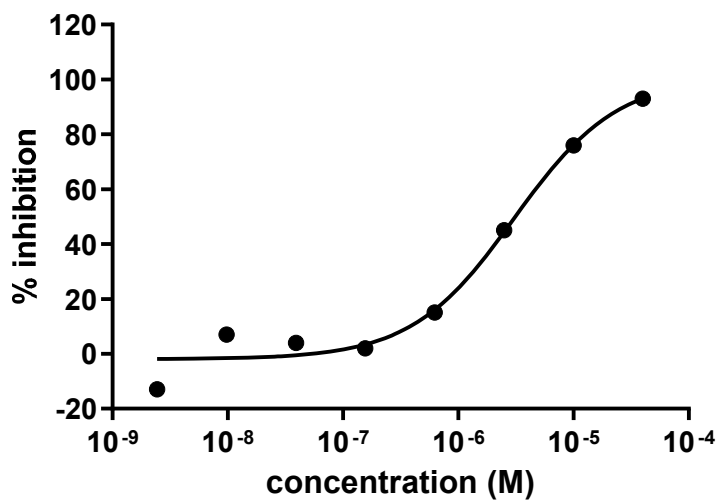
Compound B18



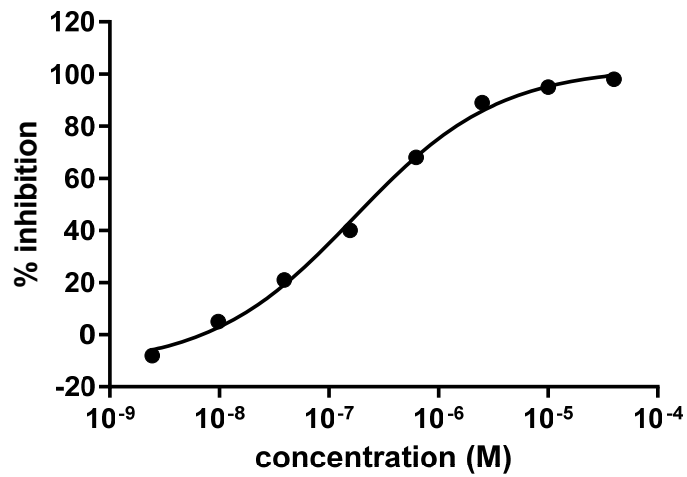
Compound B19



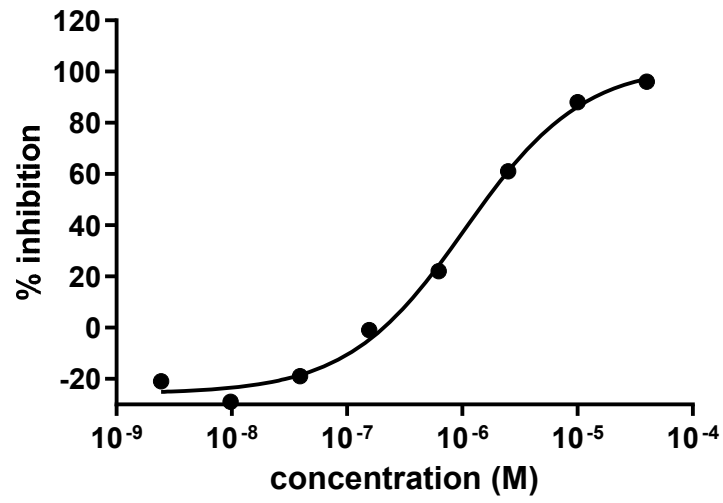
Compound B20



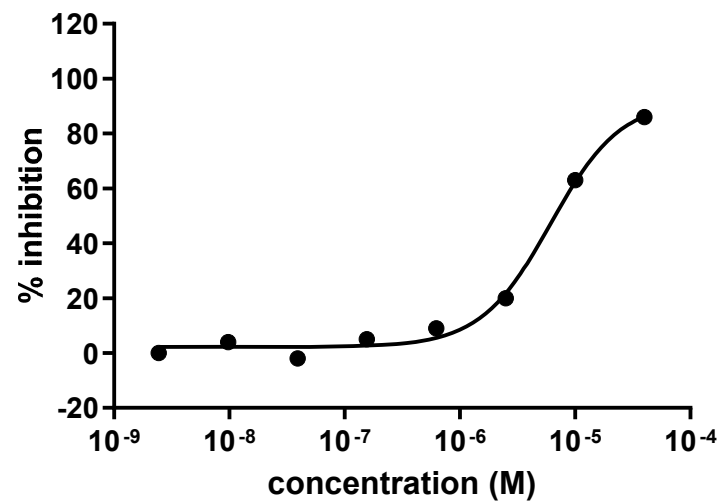
Compound B21



Compound B22



Compound B23



Compound B27

