

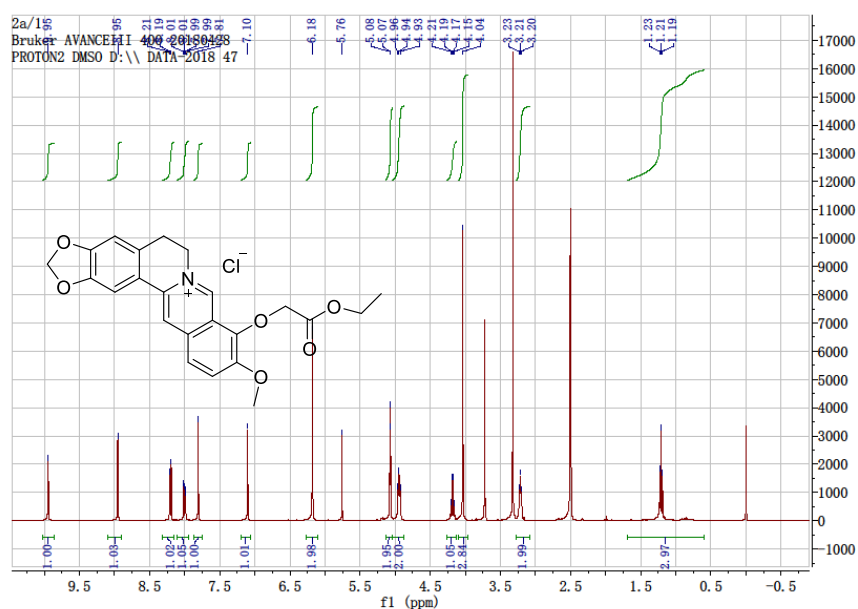
Supporting Information

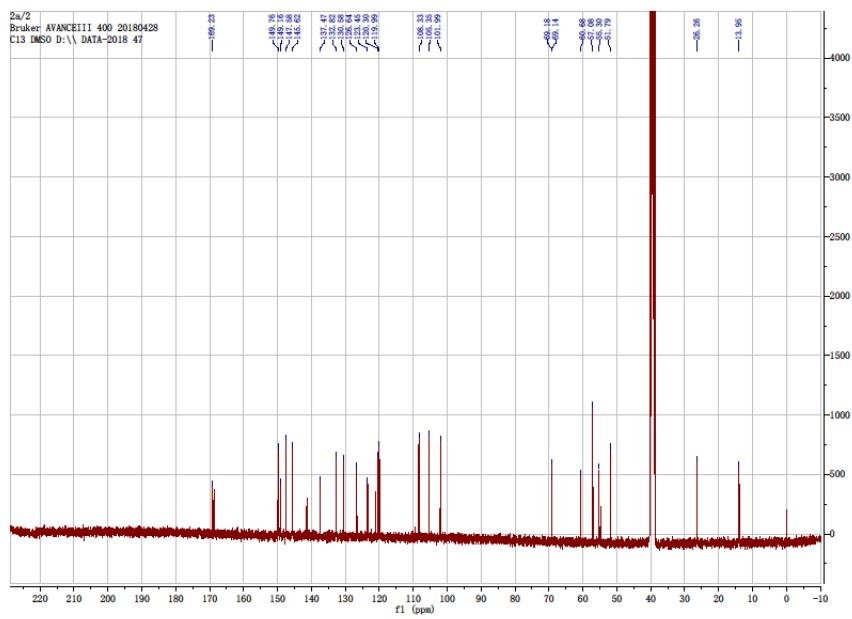
# Synthesis and Evolution of Berberine Derivatives as a New Class of Antiviral Agents against Enterovirus 71 through MEK/ERK Pathway and Autophagy

Yan-Xiang Wang, Lu Yang, Hui-Qiang Wang, Xiao-Qiang Zhao, Ting Liu, Ying-Hong Li, Qing-Xuan Zeng, Yu-Huan Li, Dan-Qing Song

## 1. $^1\text{H}$ NMR, $^{13}\text{C}$ NMR, HRMS-ESI spectra

### 2a



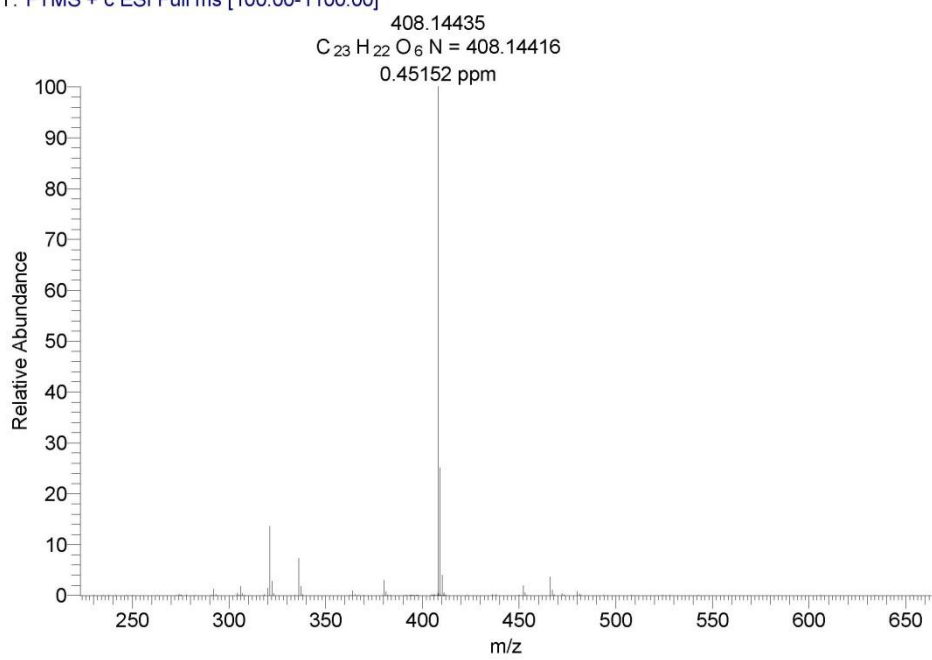


E:\HRMS\2018\04\27\51\_180427104716

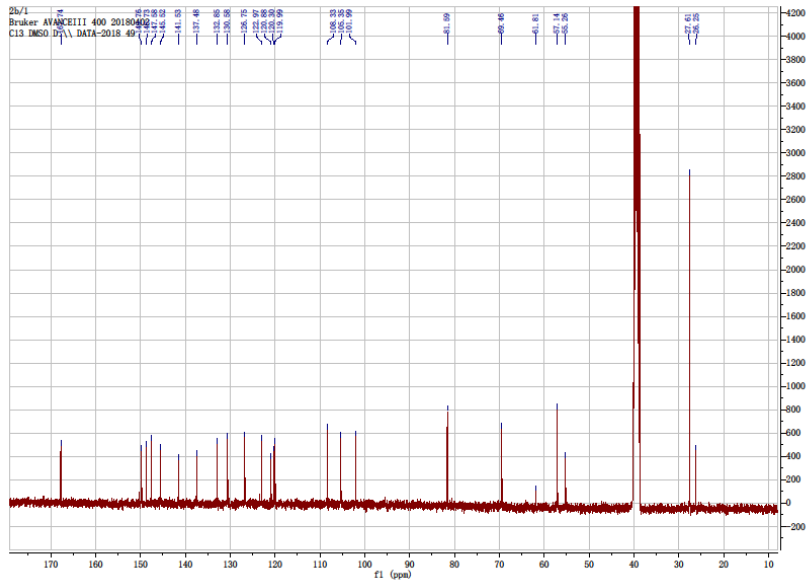
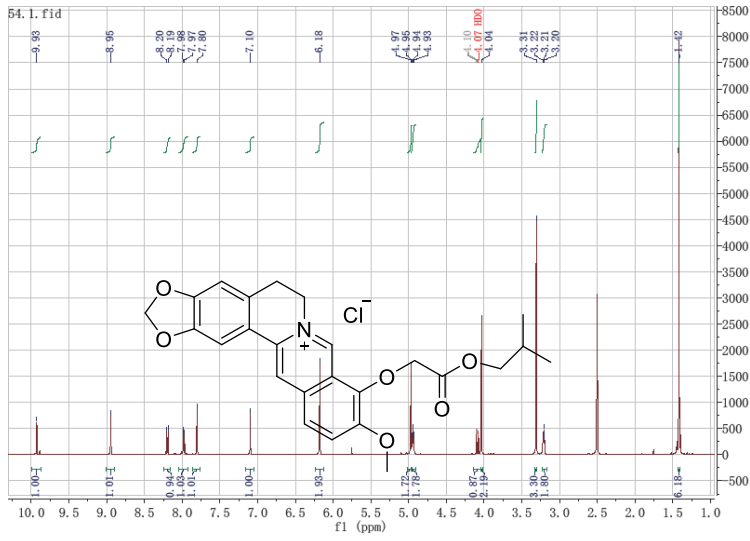
4/27/2018 11:20:09 AM

51

51\_180427104716 #57 RT: 0.46 AV: 1 NL: 5.34E8  
 T: FTMS + c ESI Full ms [100.00-1100.00]

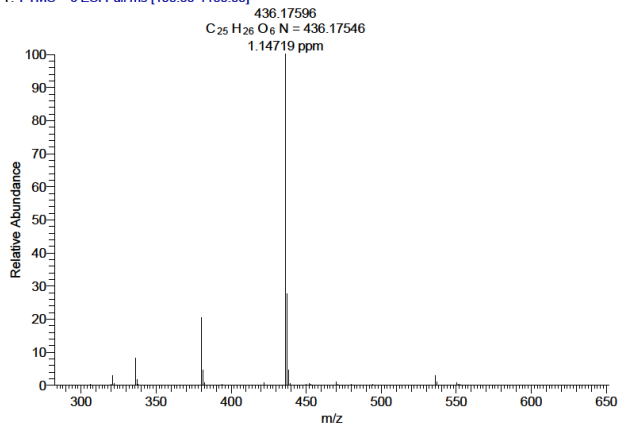


2b

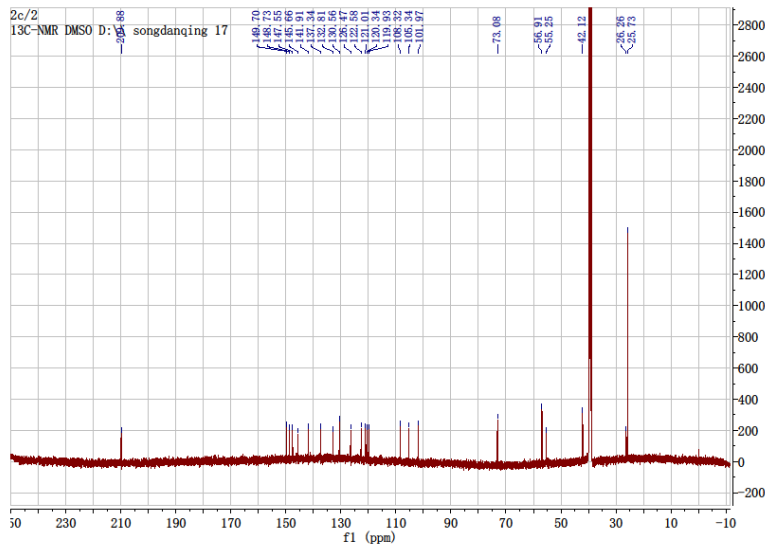
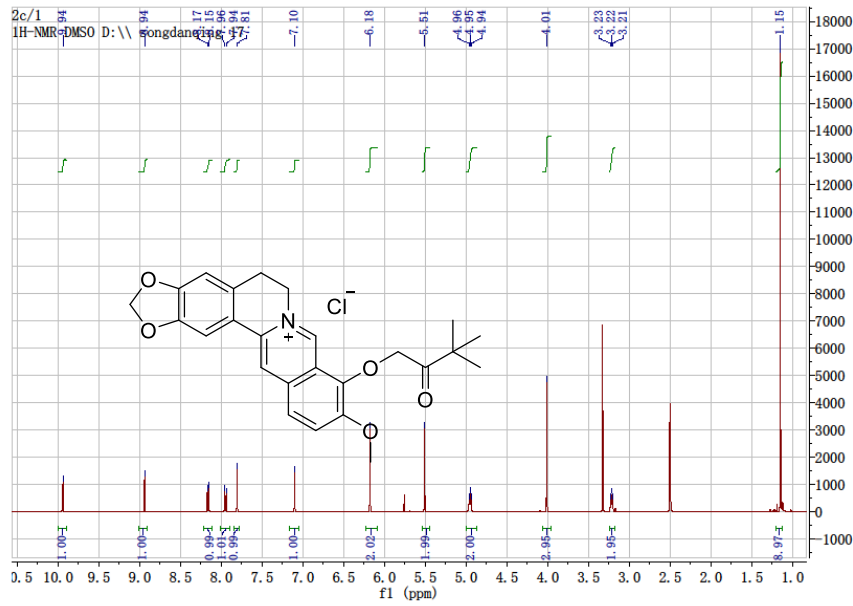


E:\HRMS\2018\04\27\54\_180427104716 4/27/2018 11:25:47 AM 54

54\_180427104716 #60 RT: 0.49 AV: 1 NL: 6.56E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



2c



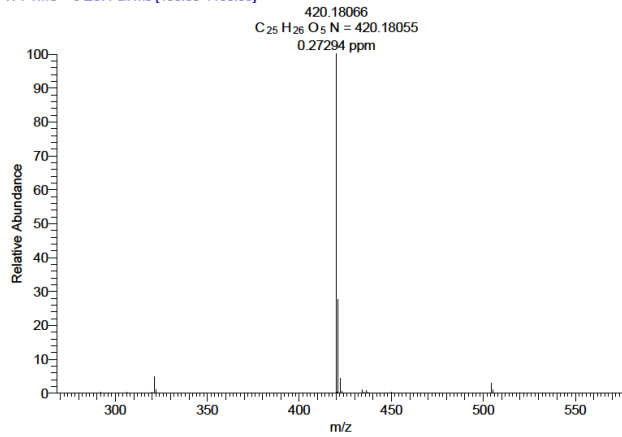
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4/27/2018 10:53:18 AM

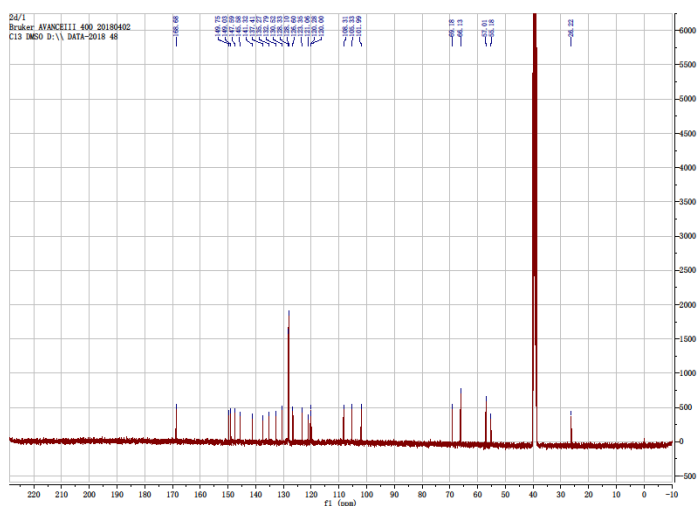
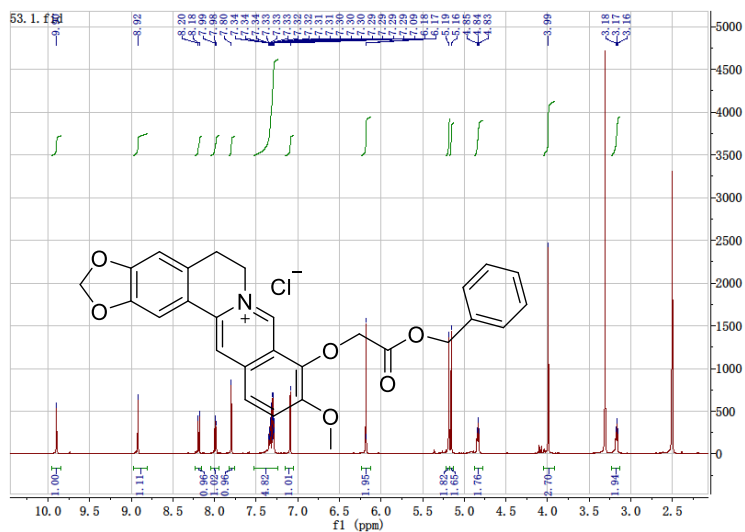
M1-3

M1-3\_180427104716 #78 RT: 0.50 AV: 1 NL: 8.36E8

T: FTMS + c ESI Full ms [100.00-1100.00]



2d

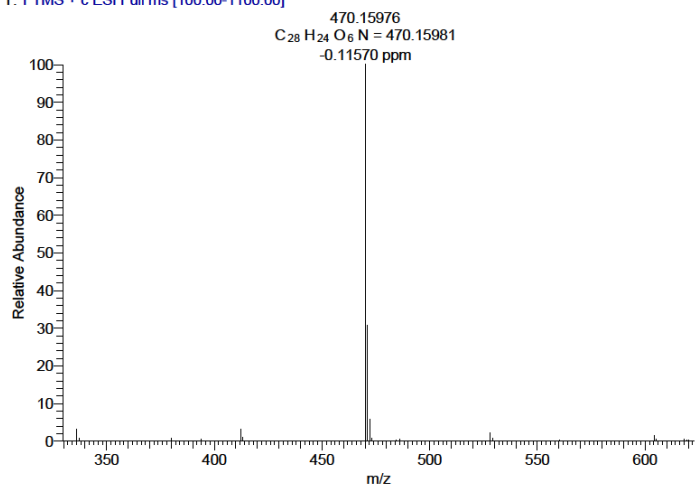


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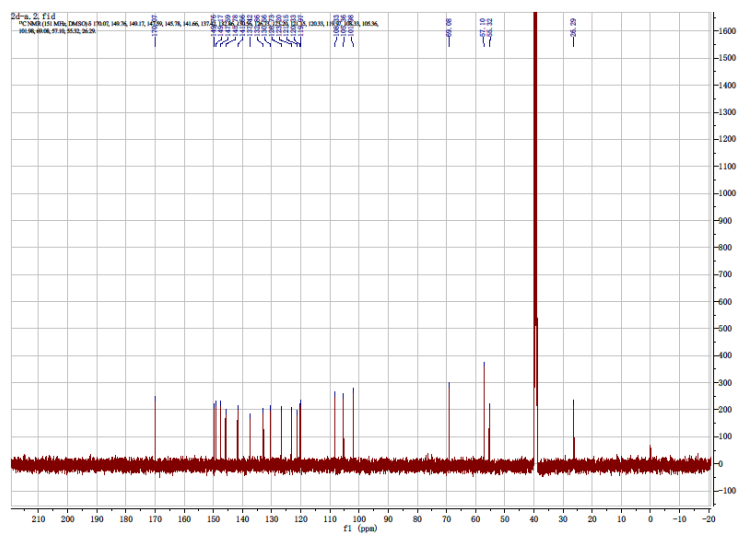
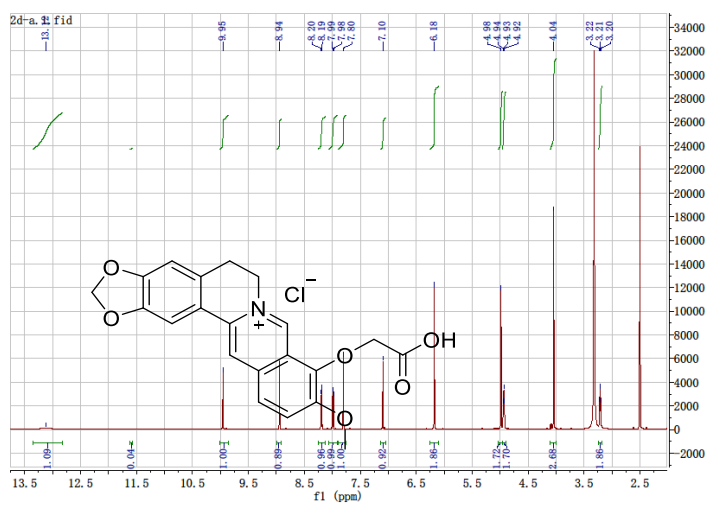
4/27/2018 11:24:29 AM

53

53\_180427104716 #53 RT: 0.45 AV: 1 NL: 9.16E8  
 T: FTMS + c ESI Full ms [100.00-1100.00]



# 2d-a



E:\HRMS\2018\07\25\2D-A\_180725144206

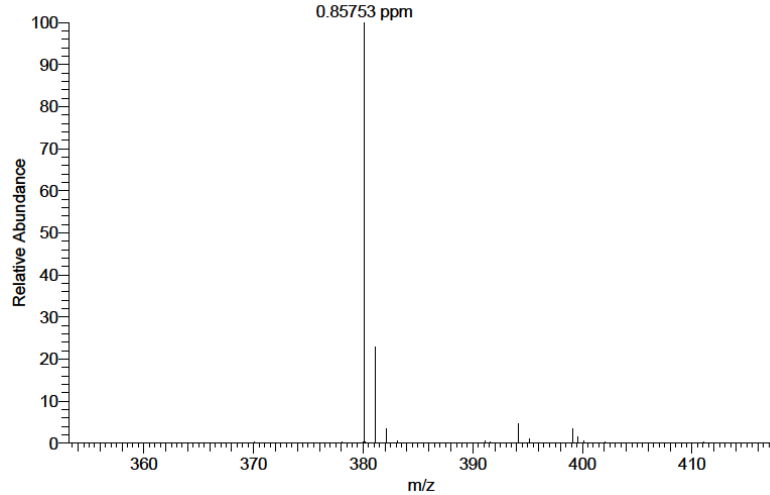
7/25/2018 3:14:40 PM

2D-A

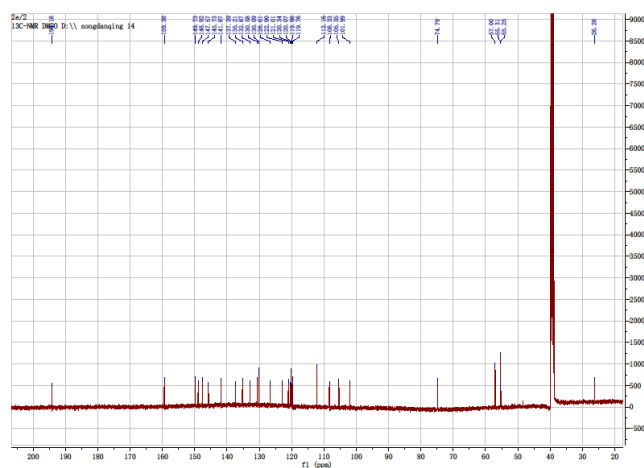
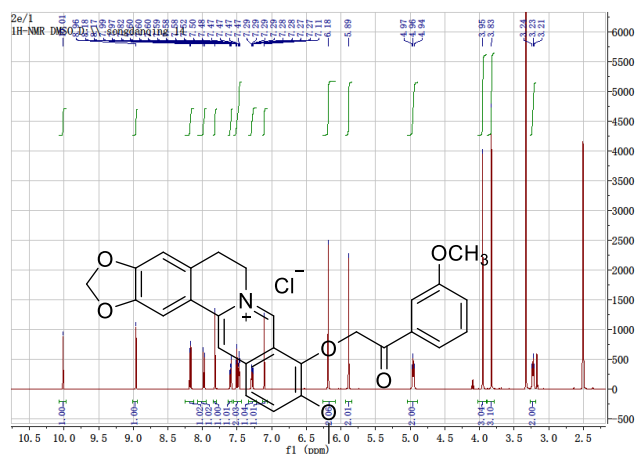
2D-A\_180725144206 #22 RT: 0.17 AV: 1 NL: 3.07E8

T: FTMS + c ESI Full ms [100.00-1000.00]

380.11319  
 $C_{21}H_{18}O_6N = 380.11286$   
 0.85753 ppm



2e

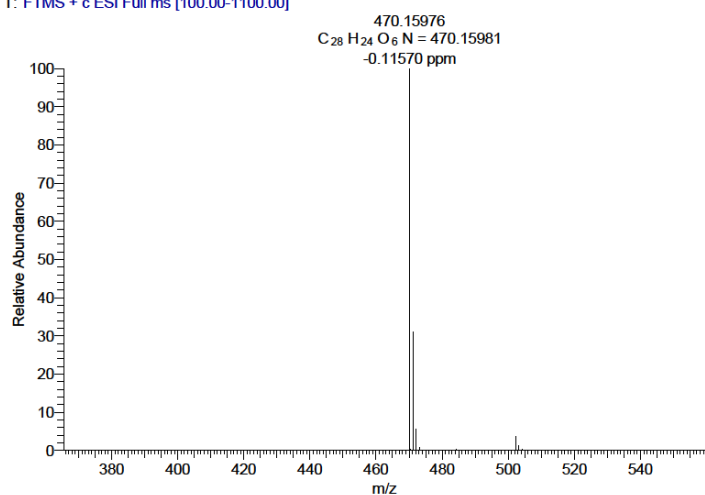


E:\HRMS\2018\04\27\M1-1\_180427104716

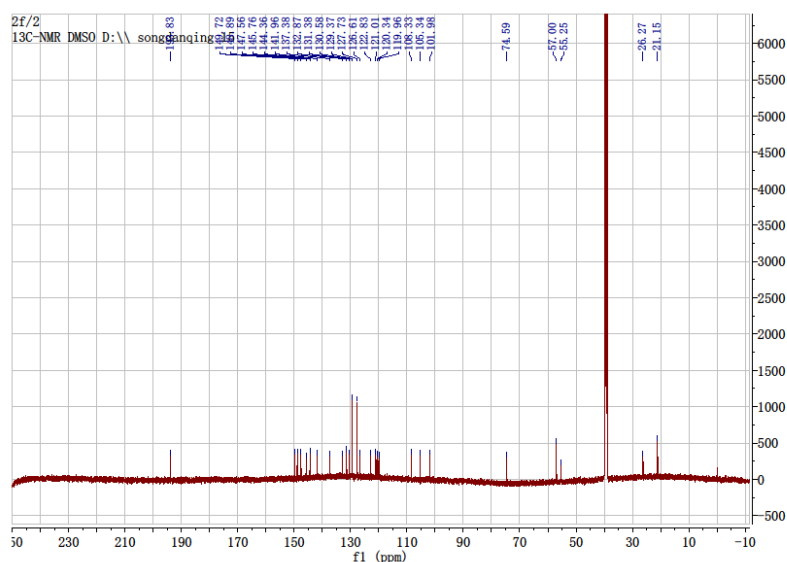
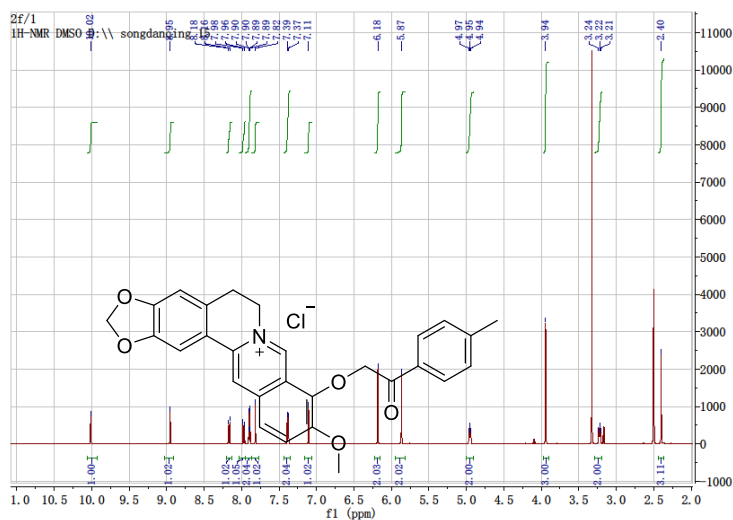
4/27/2018 10:49:37 AM

M1-1

M1-1\_180427104716 #79 RT: 0.53 AV: 1 NL: 7.96E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



2f

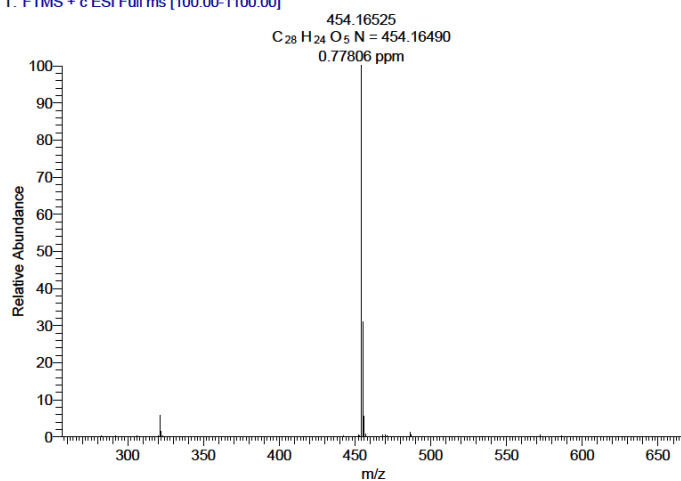


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4/27/2018 10:51:34 AM

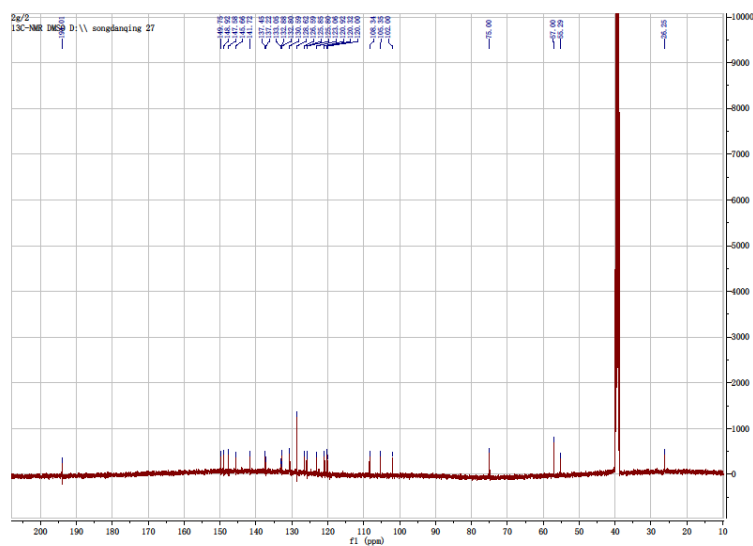
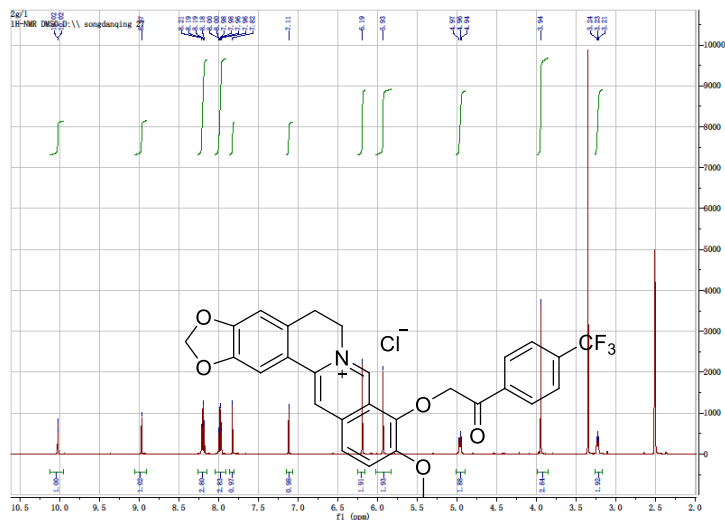
M1-2

M1-2\_180427104716 #93 RT: 0.56 AV: 1 NL: 5.89E7  
T: FTMS + c ESI Full ms [100.00-1100.00]





2g

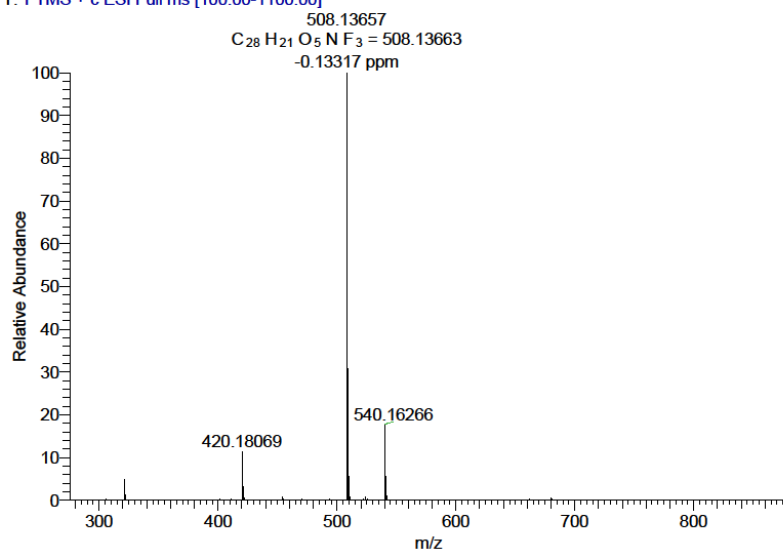


E:\HRMS\2018\04\27\M1-4\_180427104716

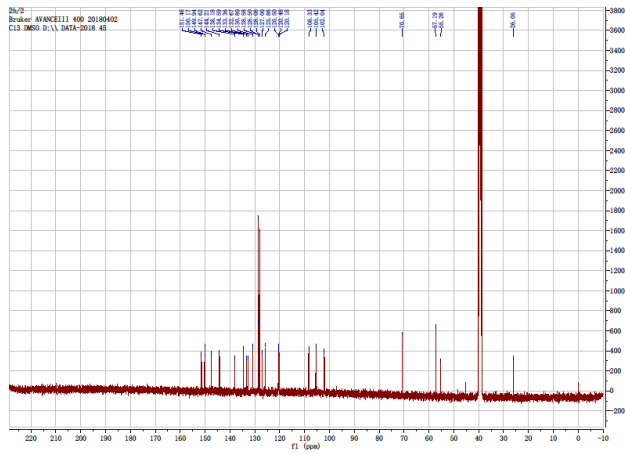
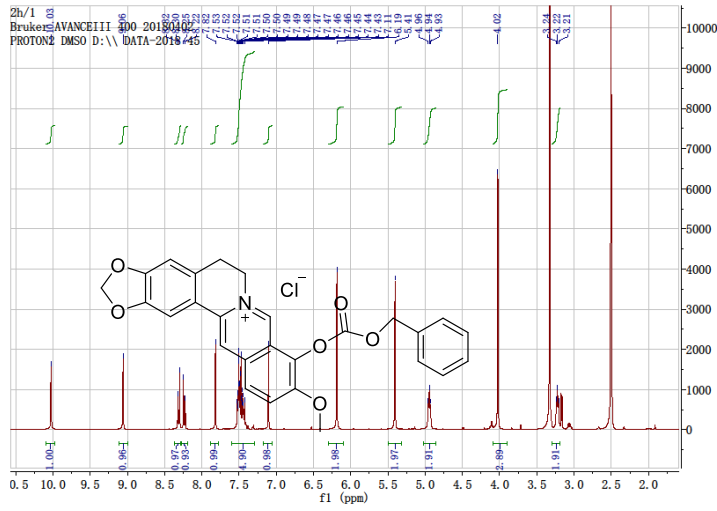
4/27/2018 10:54:45 AM

M1-4

M1-4\_180427104716 #78 RT: 0.49 AV: 1 NL: 2.52E8  
T: FTMS + c ESI Full ms [100.00-1100.00]

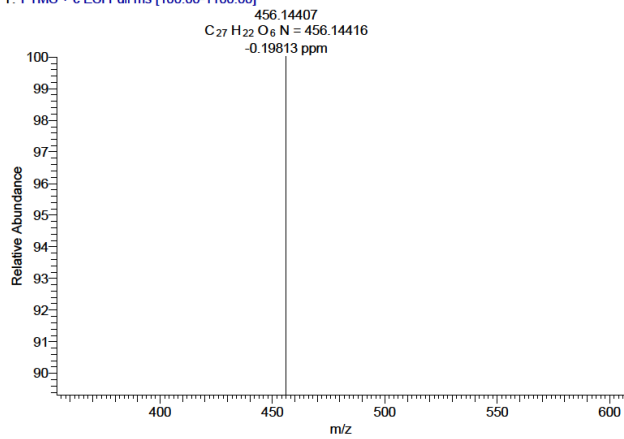


# 2h

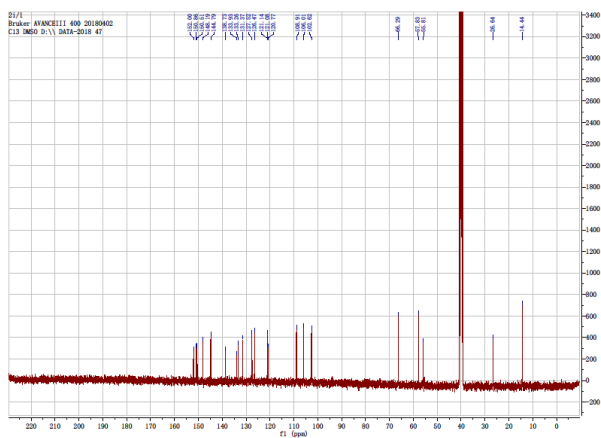


E:\HRMS\2018\04\27\M1-5\_180427104716 4/27/2018 10:57:46 AM M1-5

M1-5\_180427104716 #72 RT: 0.49 AV: 1 NL: 7.58E8  
T: FTMS + c.ESI Full ms [100.00-1100.00]



2i



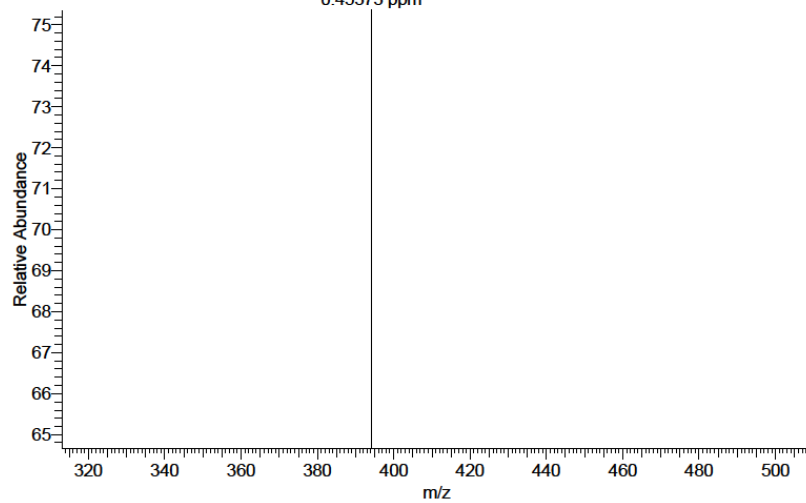
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4/27/2018 11:22:44 AM

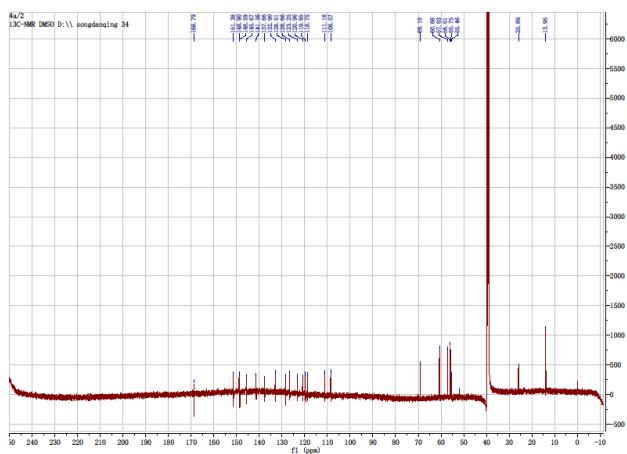
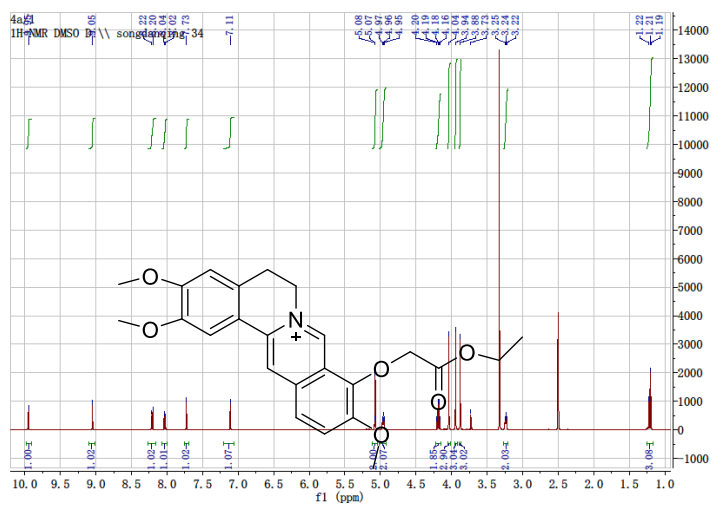
52

52\_180427104716 #58 RT: 0.50 AV: 1 NL: 8.03E8  
T: FTMS + c ESI Full ms [100.00-1100.00]

394.12869  
C<sub>22</sub>H<sub>20</sub>O<sub>6</sub>N = 394.12851  
0.45373 ppm



4a

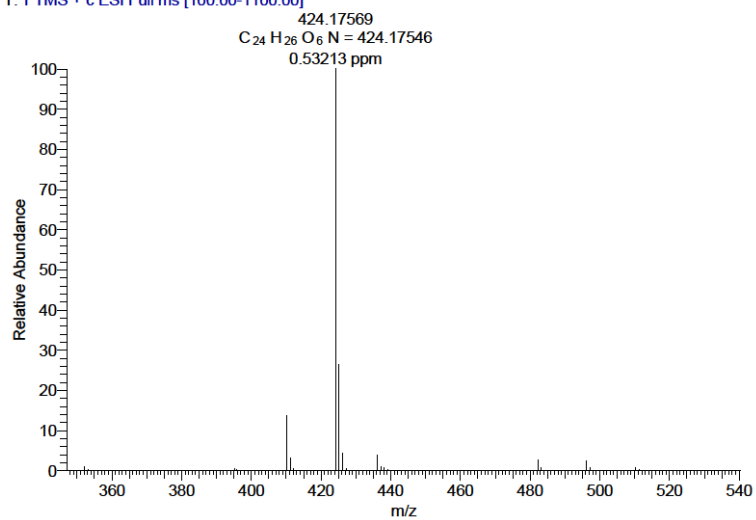


E:\HRMS\2018\04\27\BMT4\_180427104716

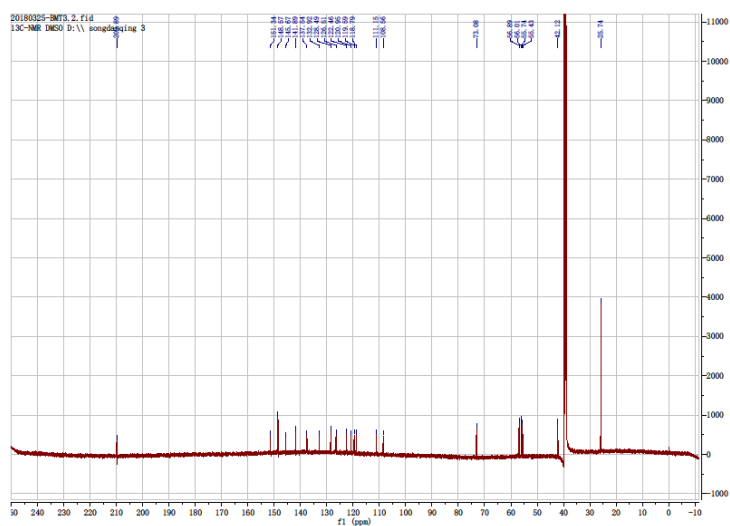
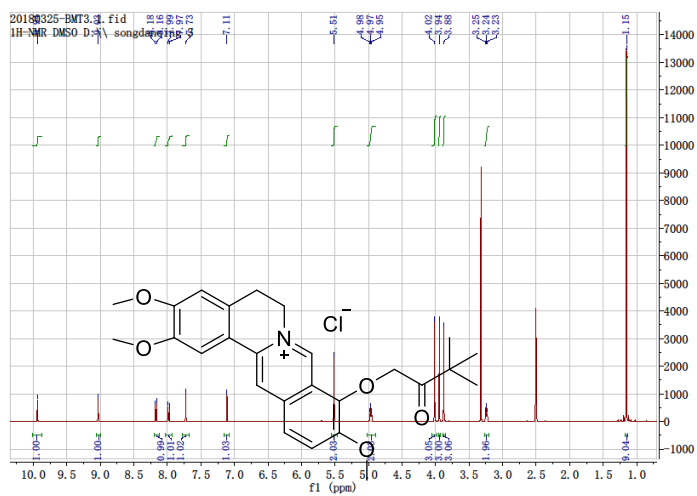
4/27/2018 11:04:15 AM

BMT4

BMT4\_180427104716 #84 RT: 0.48 AV: 1 NL: 5.39E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



4b



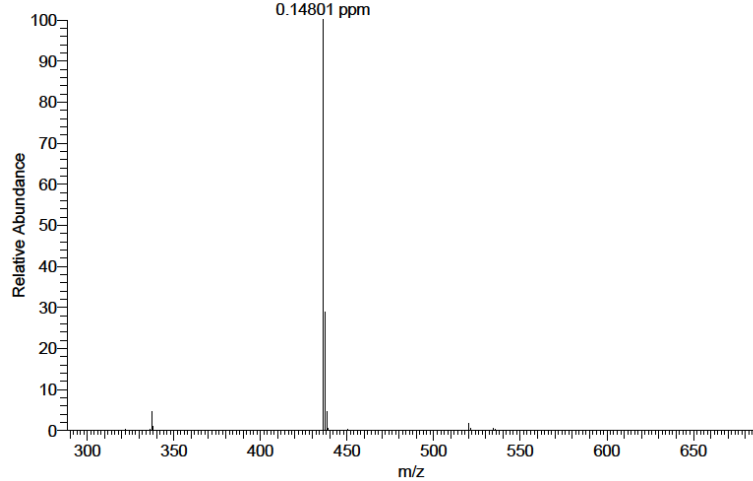
E:\HRMS\2018\04\27\BMT3\_180427104716

4/27/2018 11:02:48 AM

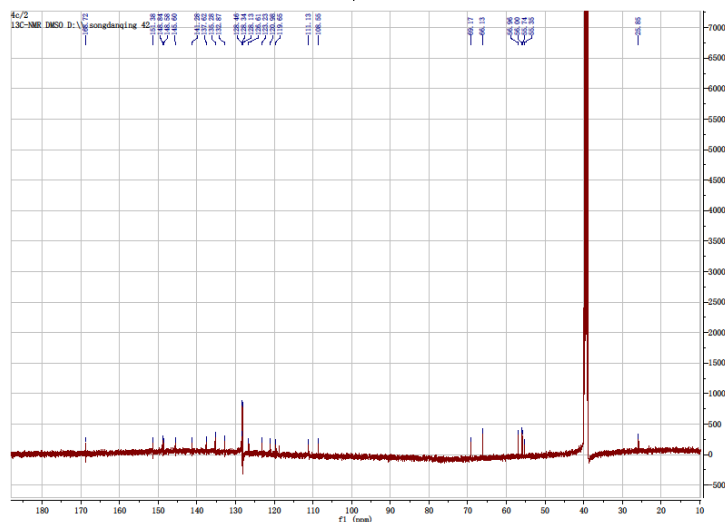
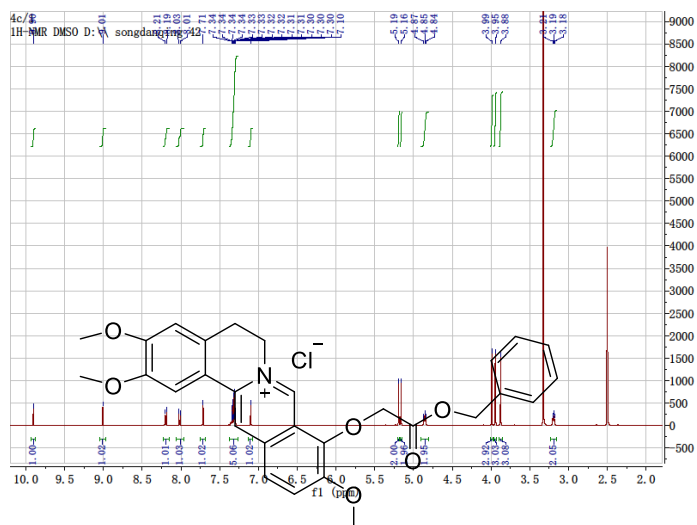
BMT3

BMT3\_180427104716 #80 RT: 0.51 AV: 1 NL: 1.02E9  
T: FTMS + c ESI Full ms [100.00-1100.00]

436.21191  
C<sub>26</sub>H<sub>30</sub>O<sub>5</sub>N = 436.21185  
0.14801 ppm

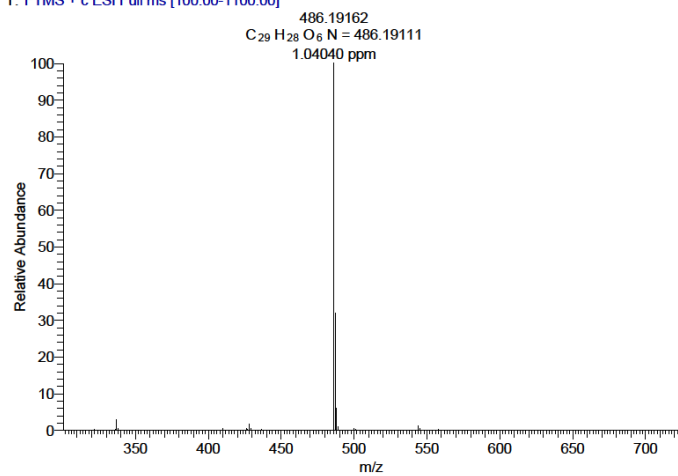


4c

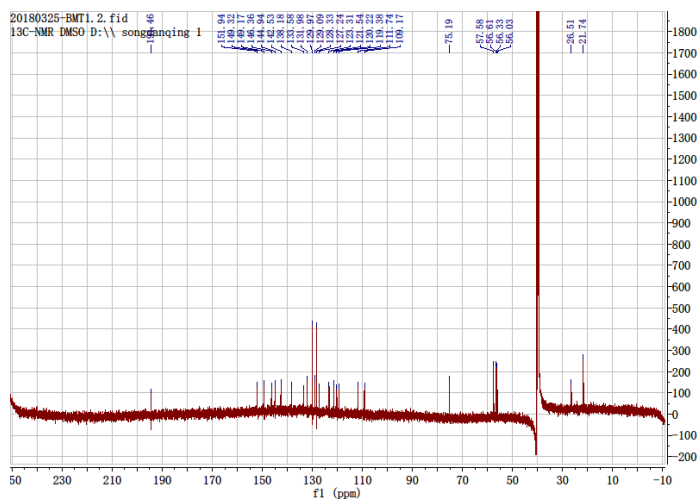
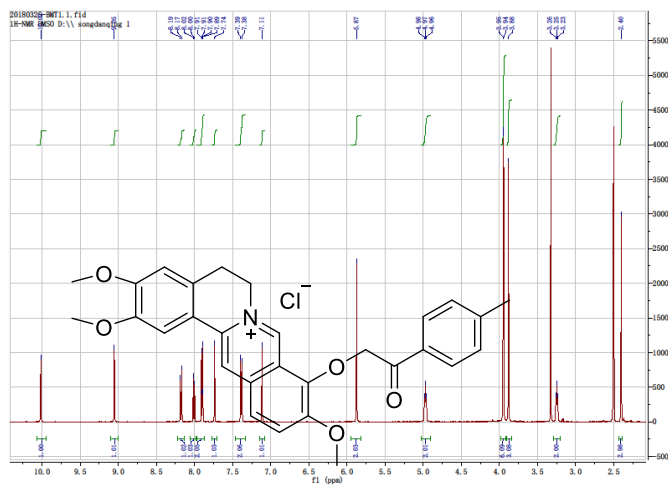


E:\HRMS\2018\04\27\BMT6\_180427104716 4/27/2018 11:07:15 AM BMT6

BMT6\_180427104716 #73 RT: 0.48 AV: 1 NL: 9.37E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



4d



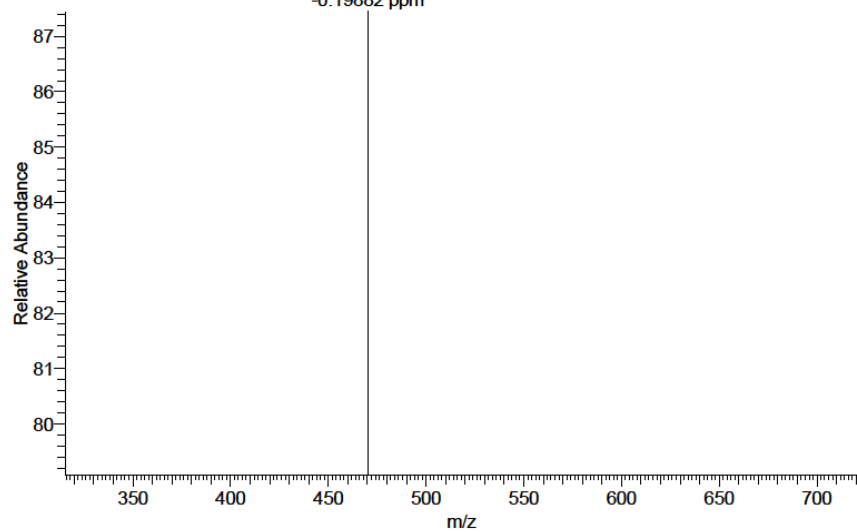
E:\HRMS\201804\27BMT1\_180427104716

4/27/2018 10:59:36 AM

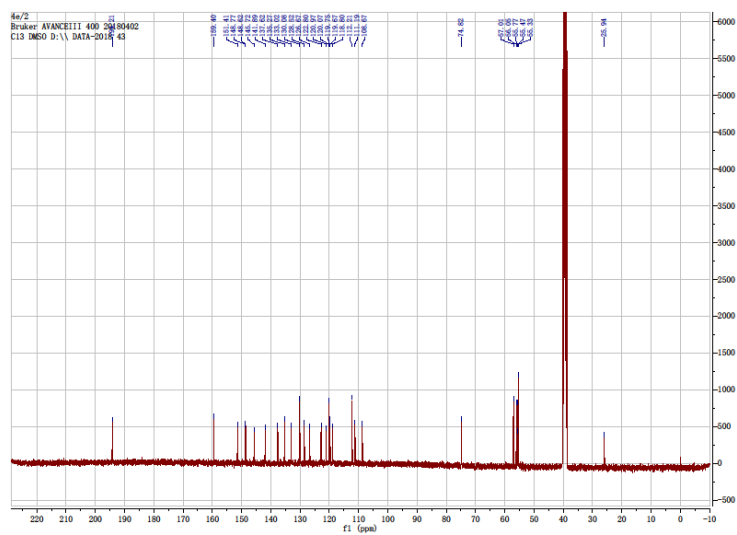
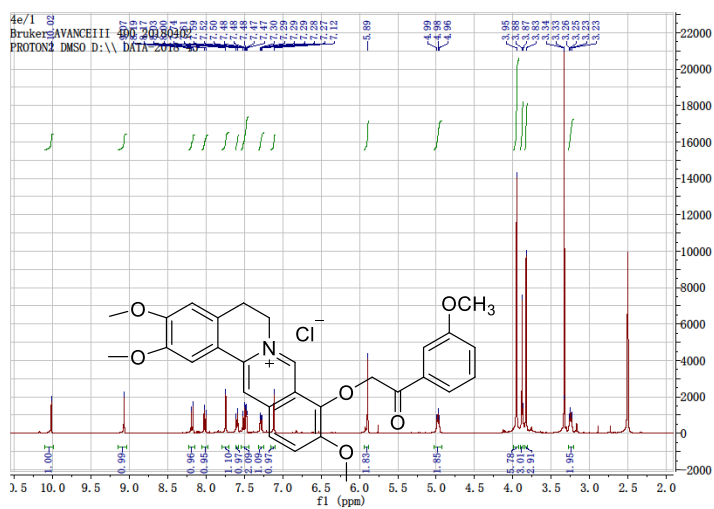
BMT1

BMT1\_180427104716 #71 RT: 0.47 AV: 1 NL: 7.99E8  
T: FTMS + c ESI Full ms [100.00-1100.00]

470.19611  
C<sub>29</sub>H<sub>28</sub>O<sub>5</sub>N = 470.19620  
-0.19882 ppm



4e



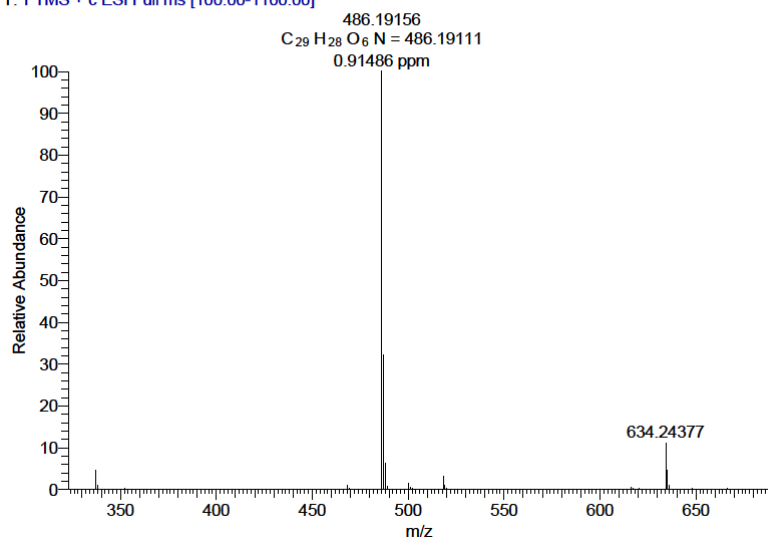
E:\HRMS\201804\27\BMT2\_180427104716

4/27/2018 11:01:10 AM

BMT2

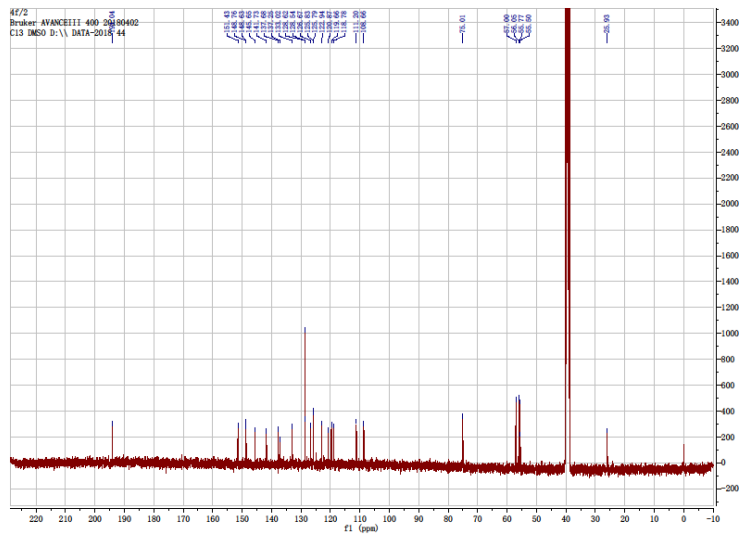
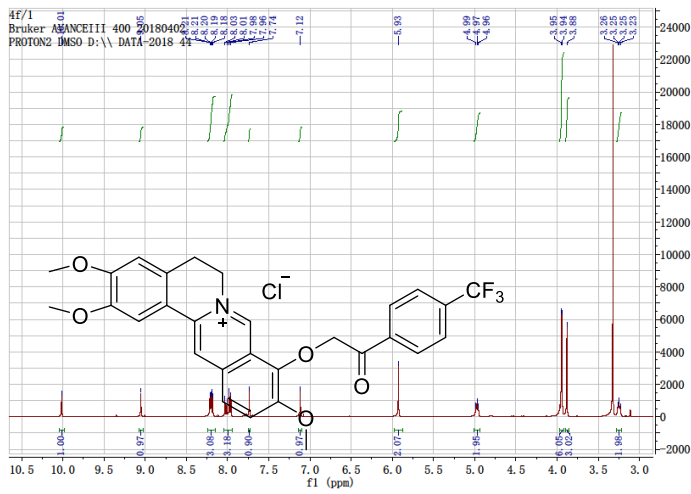
BMT2\_180427104716 #81 RT: 0.54 AV: 1 NL: 9.70E8

T: FTMS + c ESI Full ms [100.00-1100.00]





4f

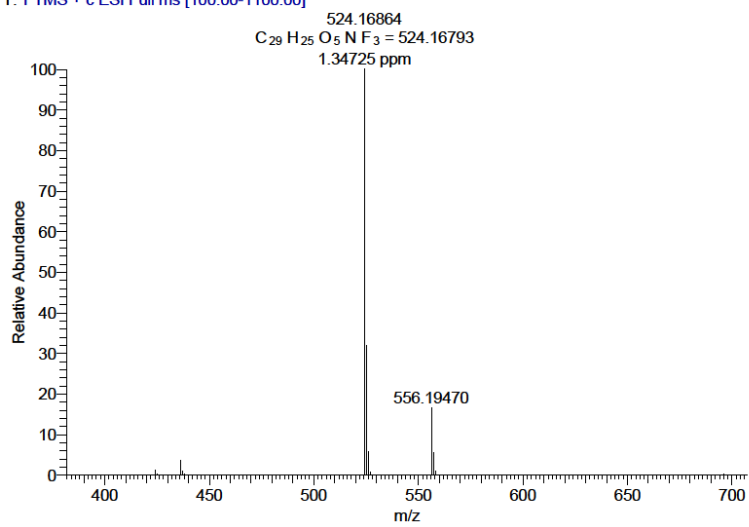


E:\HRMS\2018\04\27\BMT5\_180427104716

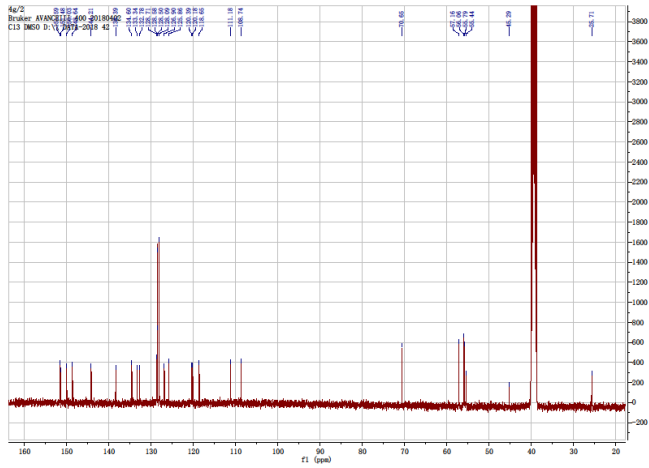
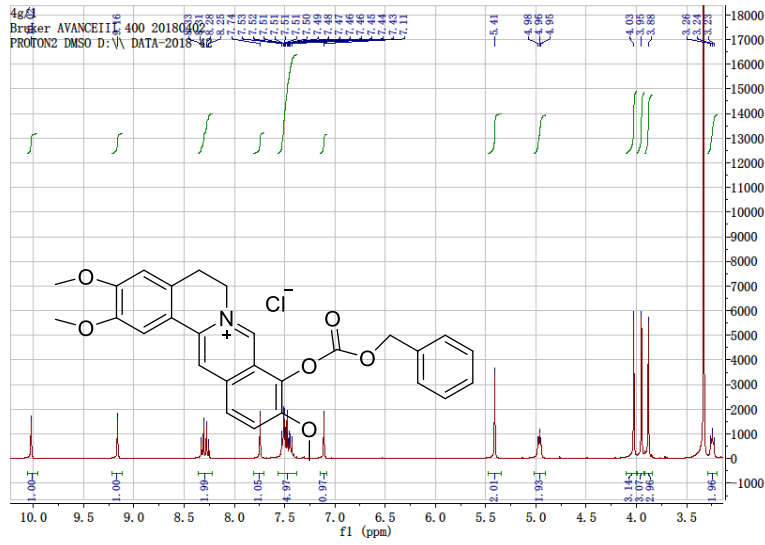
4/27/2018 11:05:47 AM

BMT5

BMT5\_180427104716 #77 RT: 0.49 AV: 1 NL: 7.64E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



4g

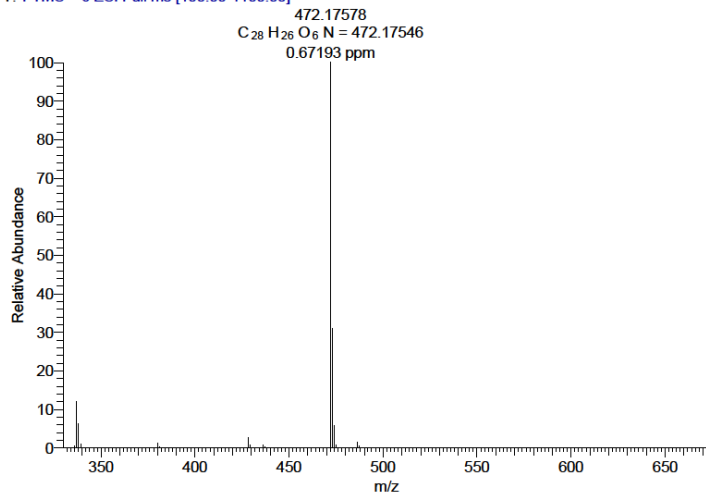


E:\HRMS\2018\04\27\BMT7\_180427104716

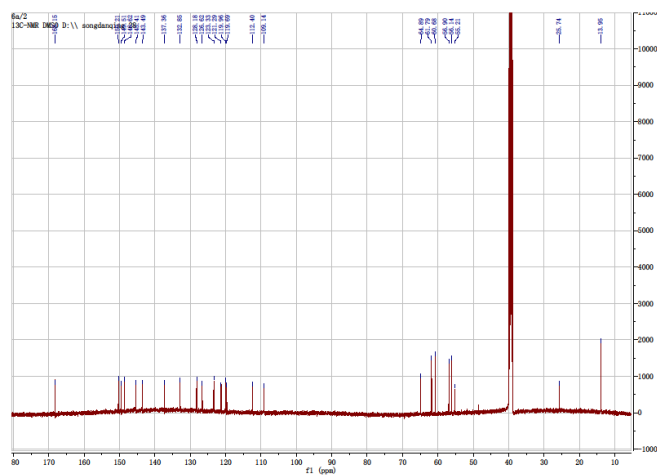
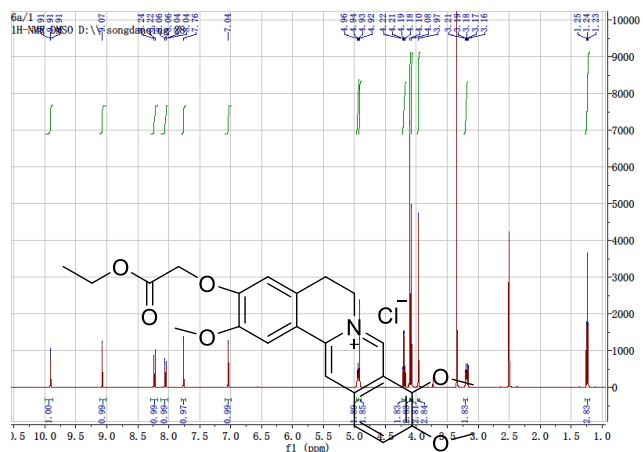
4/27/2018 11:08:37 AM

BMT7

BMT7\_180427104716 #69 RT: 0.46 AV: 1 NL: 6.67E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



5a



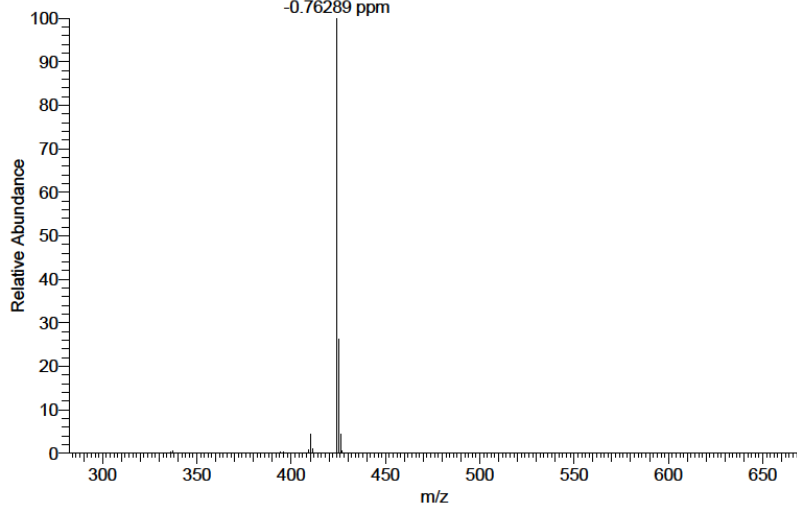
E:\HRMS\2018\04\27\M4-6\_180427104716

4/27/2018 11:17:33 AM

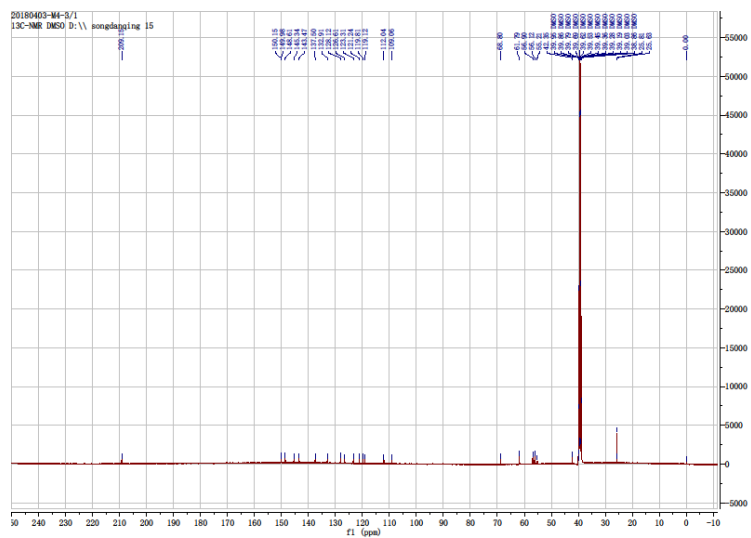
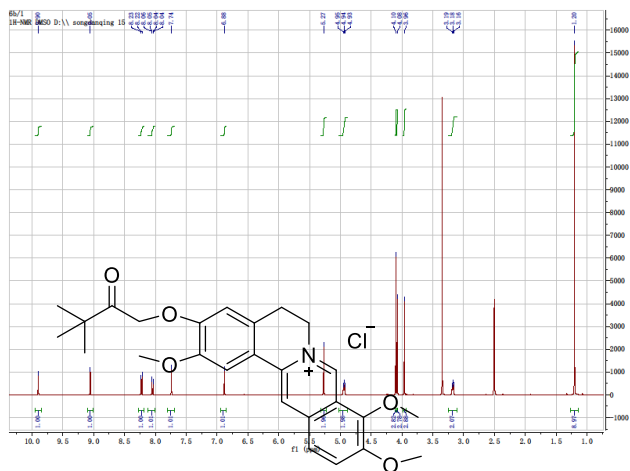
M4-6

M4-6\_180427104716 #51 RT: 0.42 AV: 1 NL: 9.32E8  
T: FTMS + c ESI Full ms [100.00-1100.00]

424.17514  
C<sub>24</sub>H<sub>26</sub>O<sub>6</sub>N = 424.17546  
-0.76289 ppm



5b



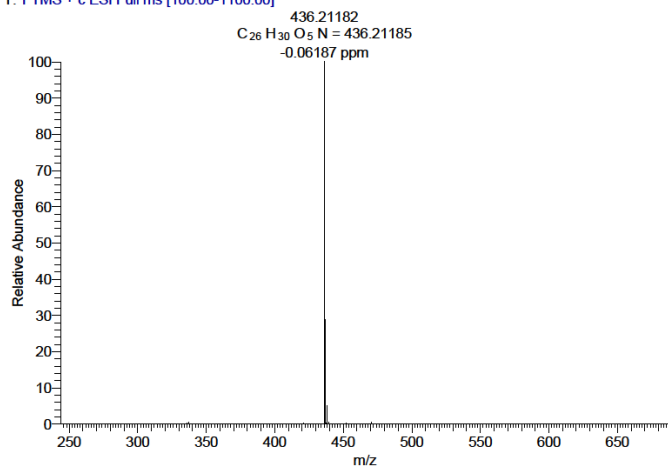
E:\HRMS\2018\04\27\M4-3\_180427104716

4/27/2018 11:13:16 AM

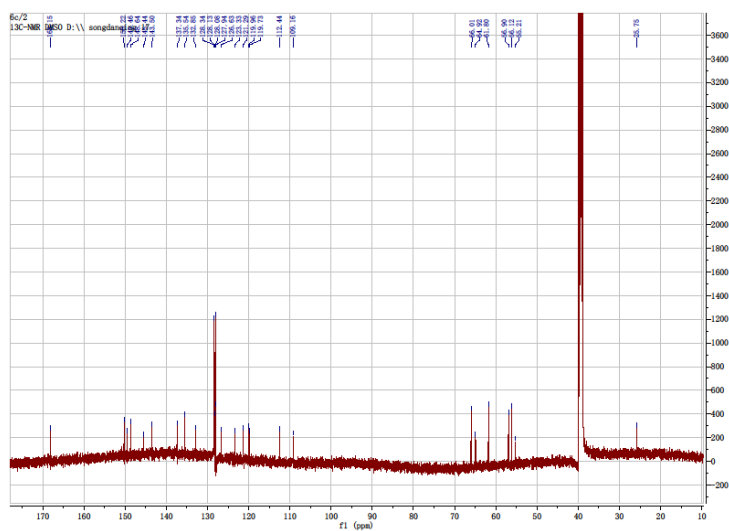
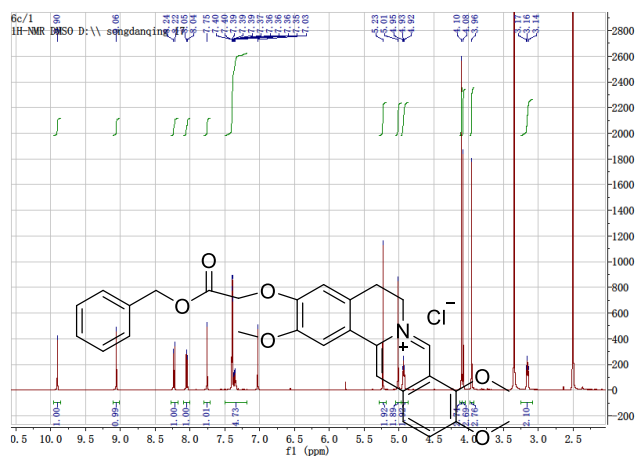
M4-3

M4-3\_180427104716 #62 RT: 0.44 AV: 1 NL: 9.01E8

T: FTMS + c ESI Full ms [100.00-1100.00]



5c



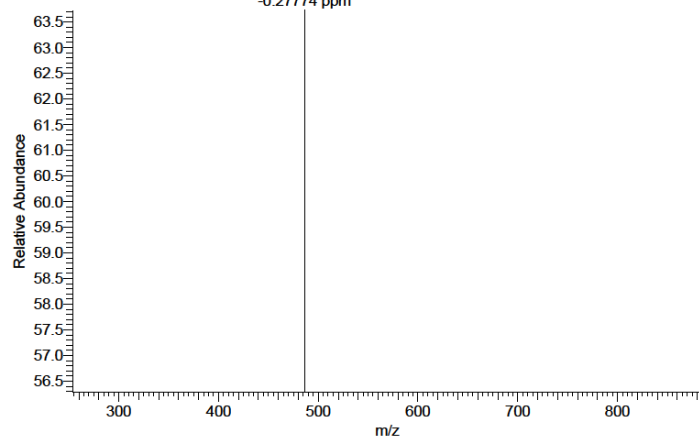
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4/27/2018 11:16:38 AM

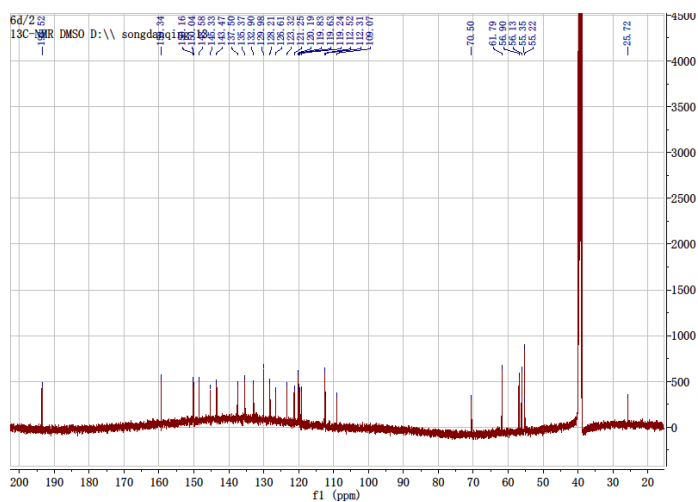
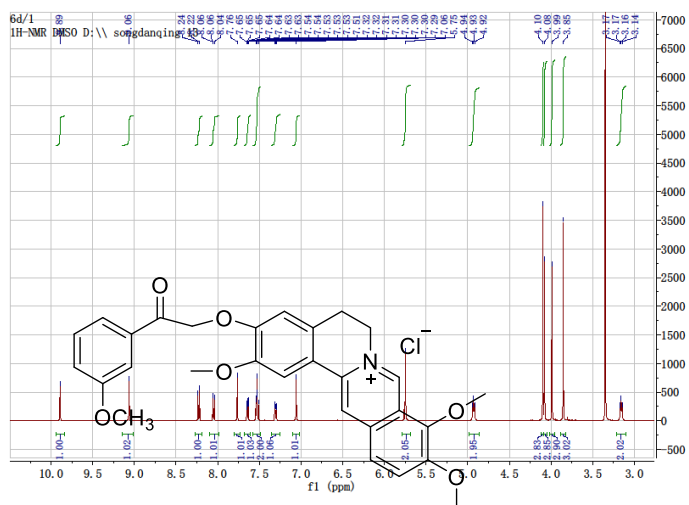
M4-5

M4-5\_180427104716 #23 RT: 0.17 AV: 1 NL: 4.76E8  
T: FTMS + c ESI Full ms [100.00-1100.00]

486.19098  
C<sub>29</sub>H<sub>28</sub>O<sub>6</sub>N = 486.19111  
-0.27774 ppm



5d

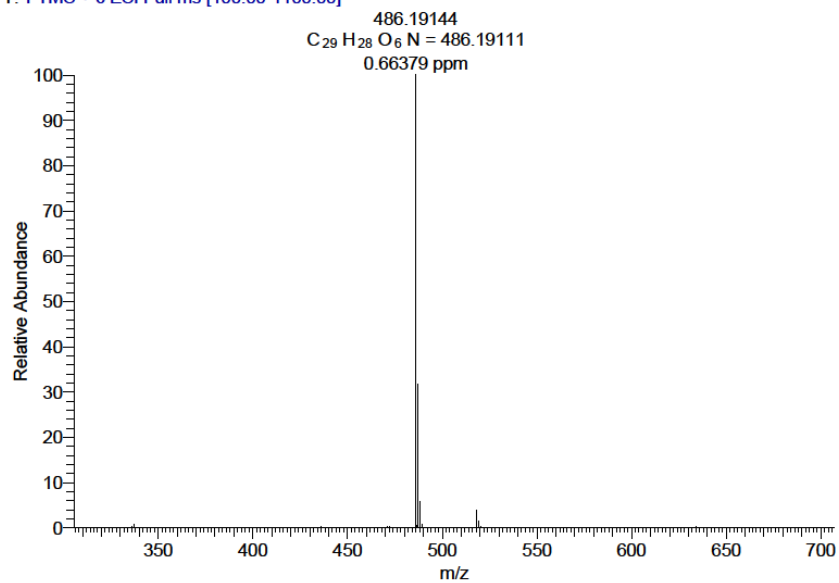


E:\HRMS\2018\04\27\M4-1\_180427104716

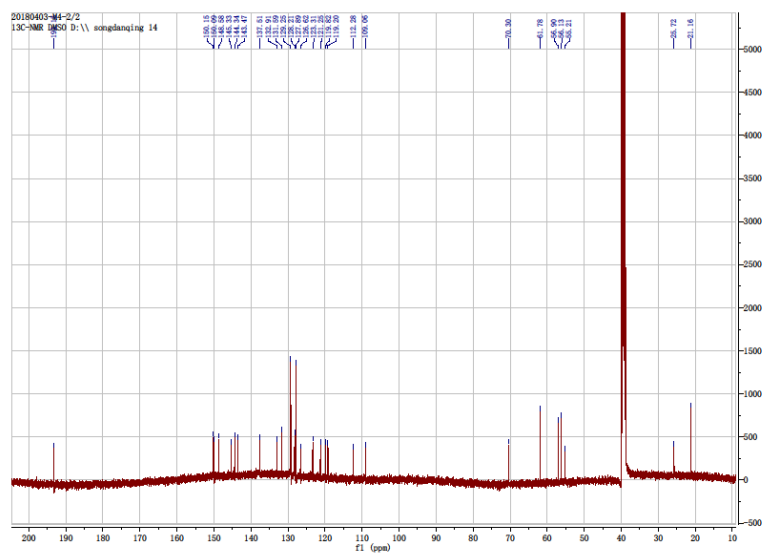
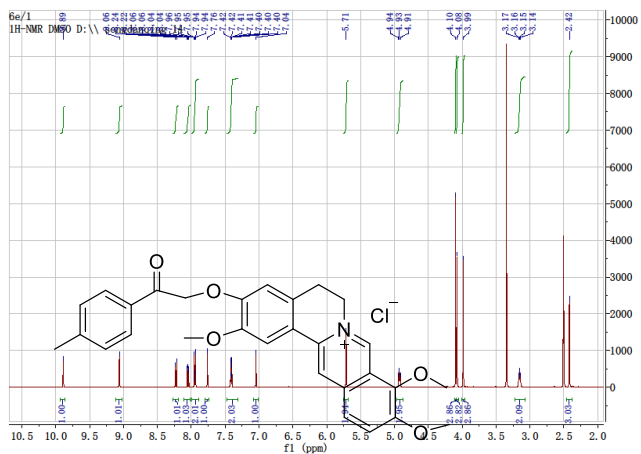
4/27/2018 11:10:07 AM

M4-1

M4-1\_180427104716 #69 RT: 0.49 AV: 1 NL: 6.87E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



5e

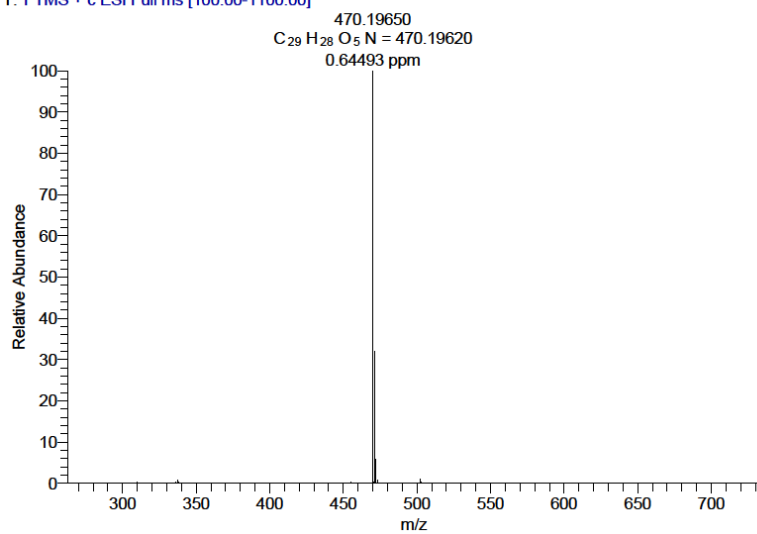


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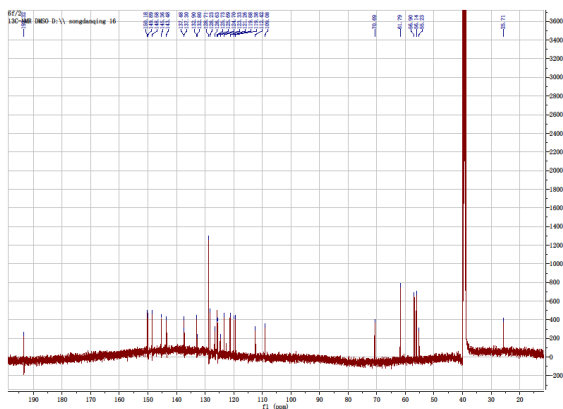
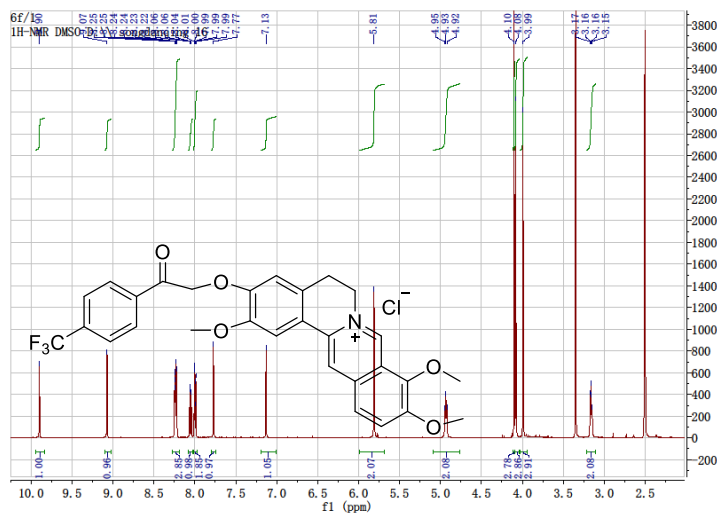
4/27/2018 11:11:53 AM

M4-2

M4-2\_180427104716 #68 RT: 0.50 AV: 1 NL: 9.62E8  
T: FTMS + c ESI Full ms [100.00-1100.00]



5f



E:\HRMS\201804\27\M4-4\_180427104716

4/27/2018 11:14:36 AM

M4-4

M4-4\_180427104716 #63 RT: 0.49 AV: 1 NL: 8.93E8

T: FTMS + c ESI Full ms [100.00-1100.00]

