

Supplementary Materials

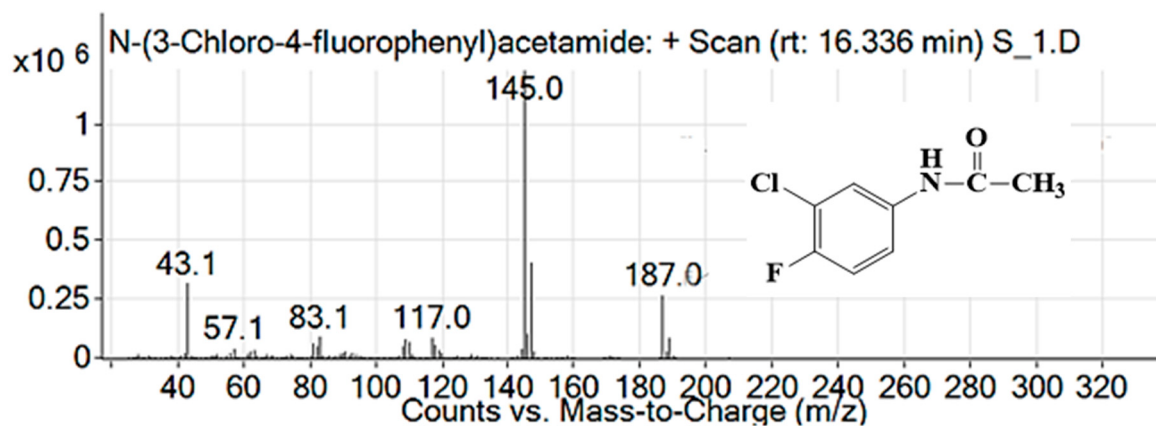


Figure S1. Mass spectrometry spectrum GC-MS of compound (1).

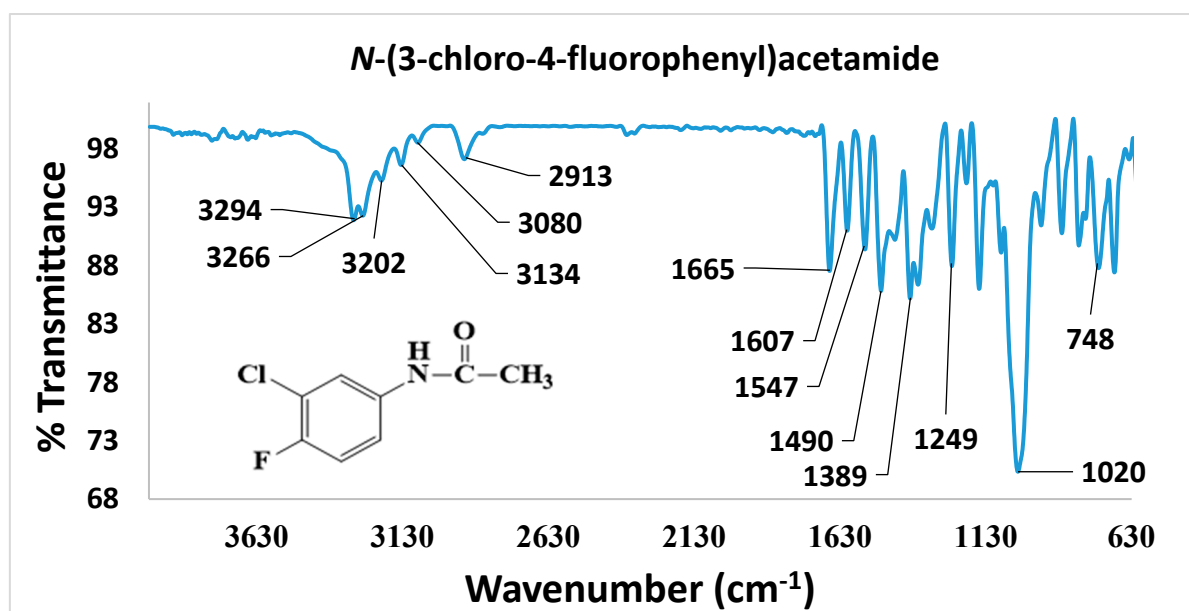


Figure S2. FT-IR spectrum of compound (1).

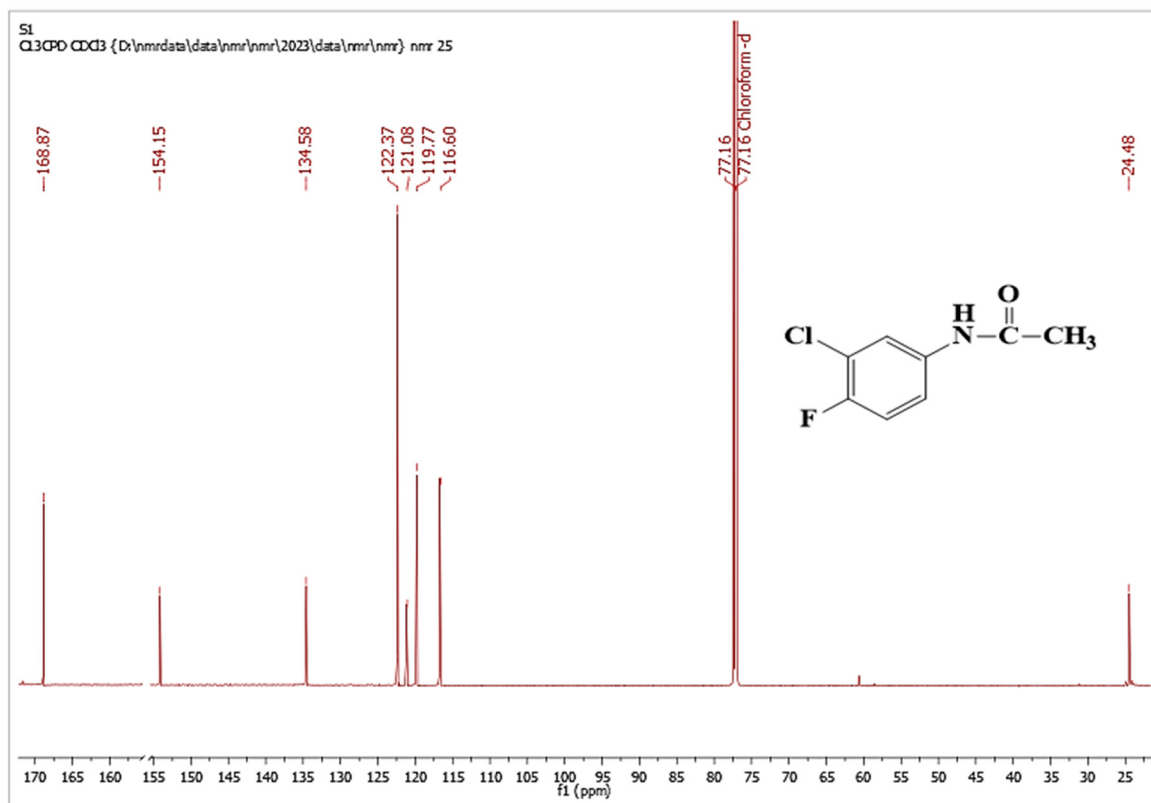


Figure S3. ^{13}C -NMR spectrum of compound (1) in CDCl_3 , 700 MHz.

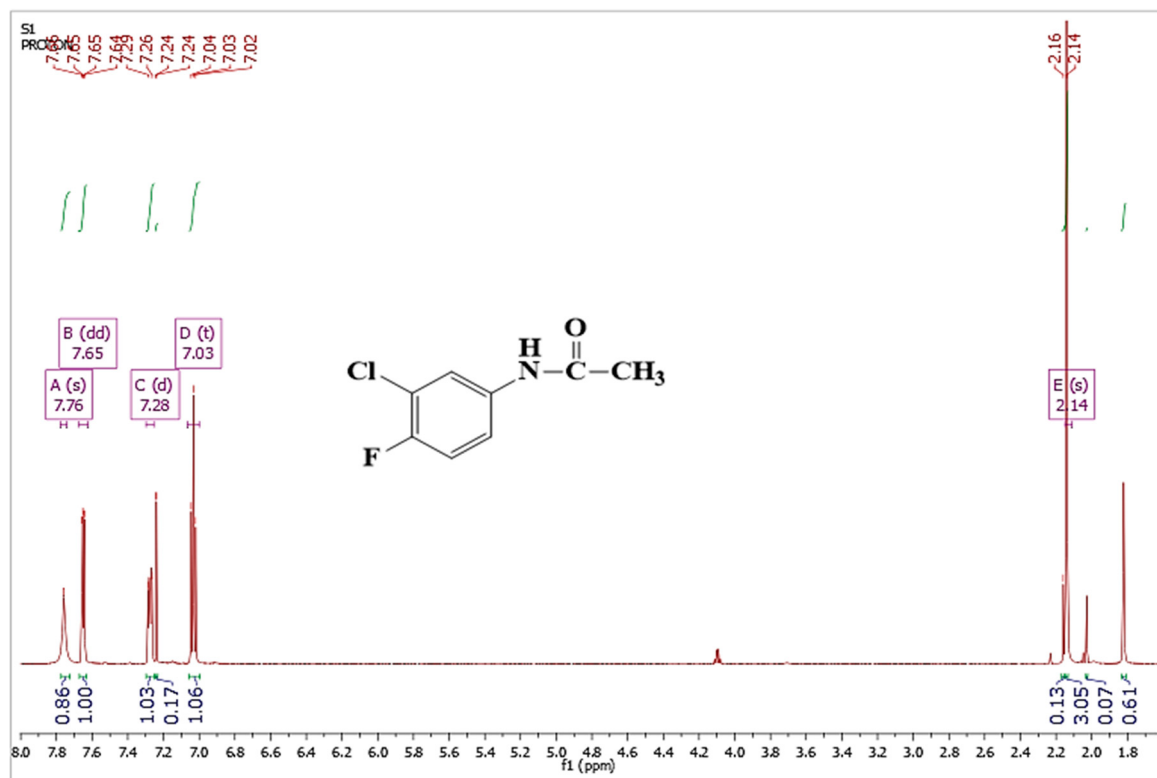


Figure S4. ^1H -NMR spectrum of compound (1) in CDCl_3 , 700 MHz.

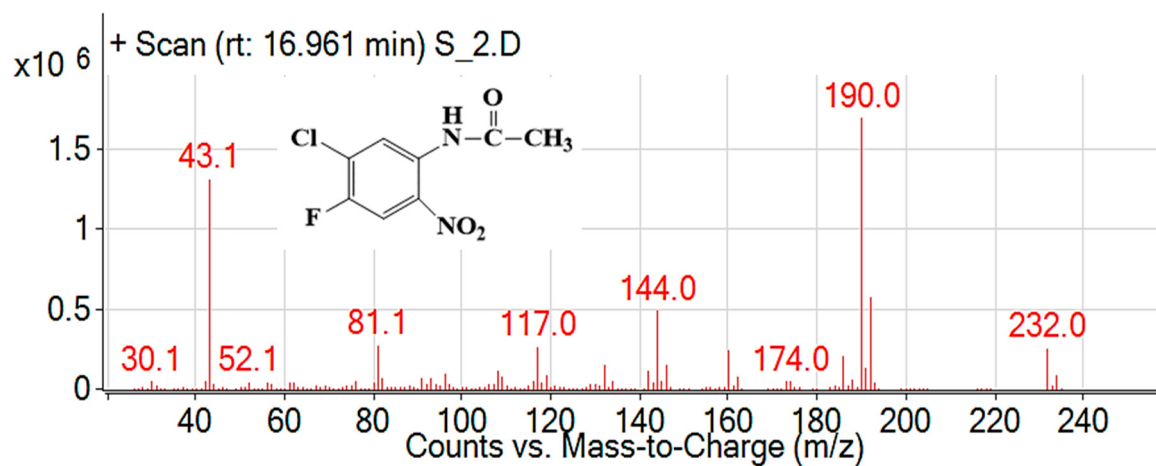


Figure S5. Mass spectrometry spectrum GC-MS of compound (2).

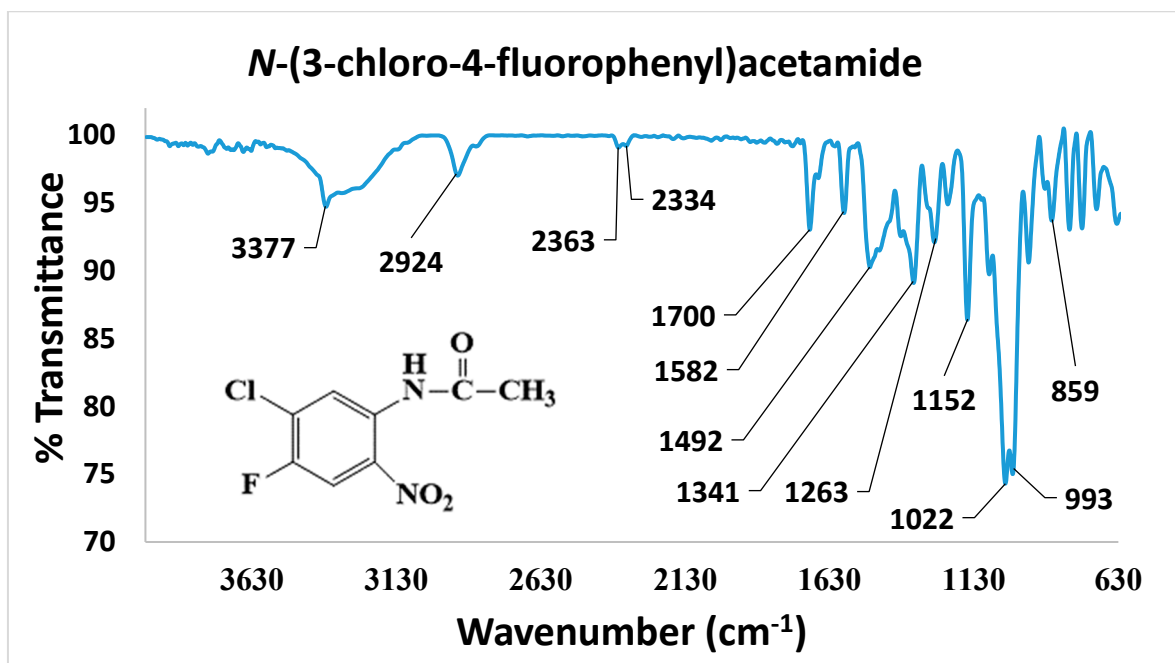


Figure S6. FT-IR spectrum of compound (2).

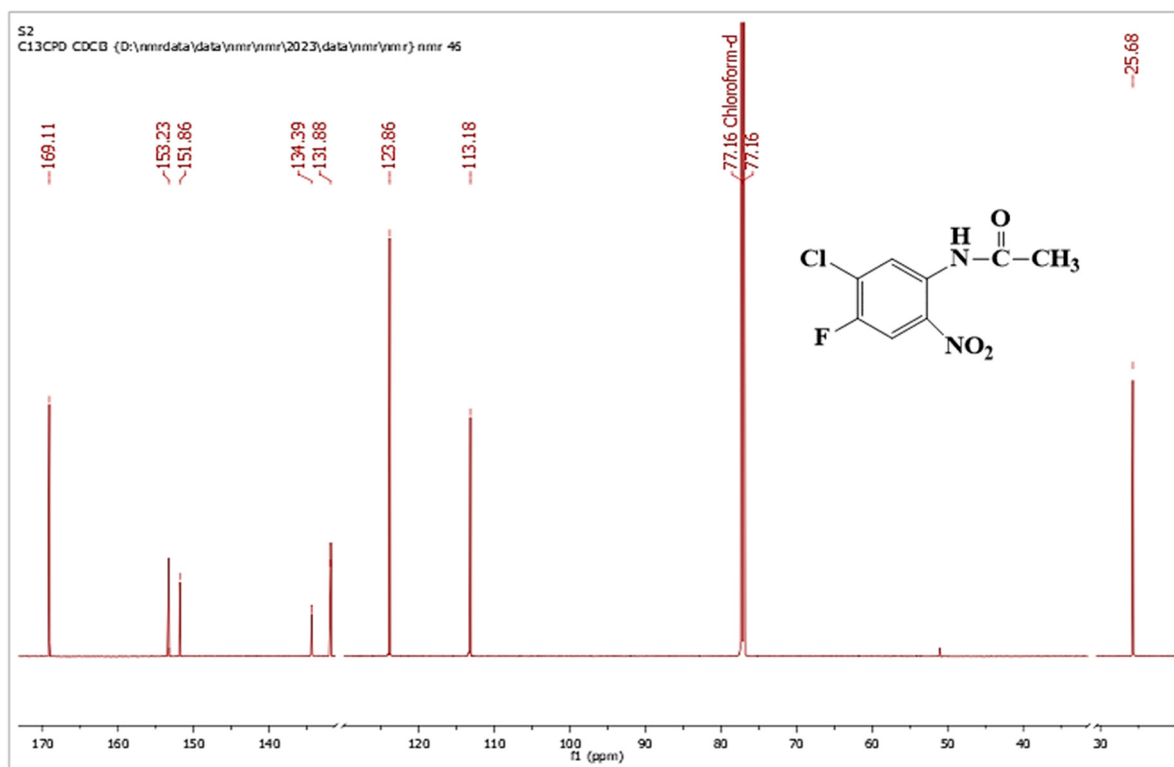


Figure S7. ¹³C-NMR spectrum of compound (2) in CDCl₃, 700 MHz.

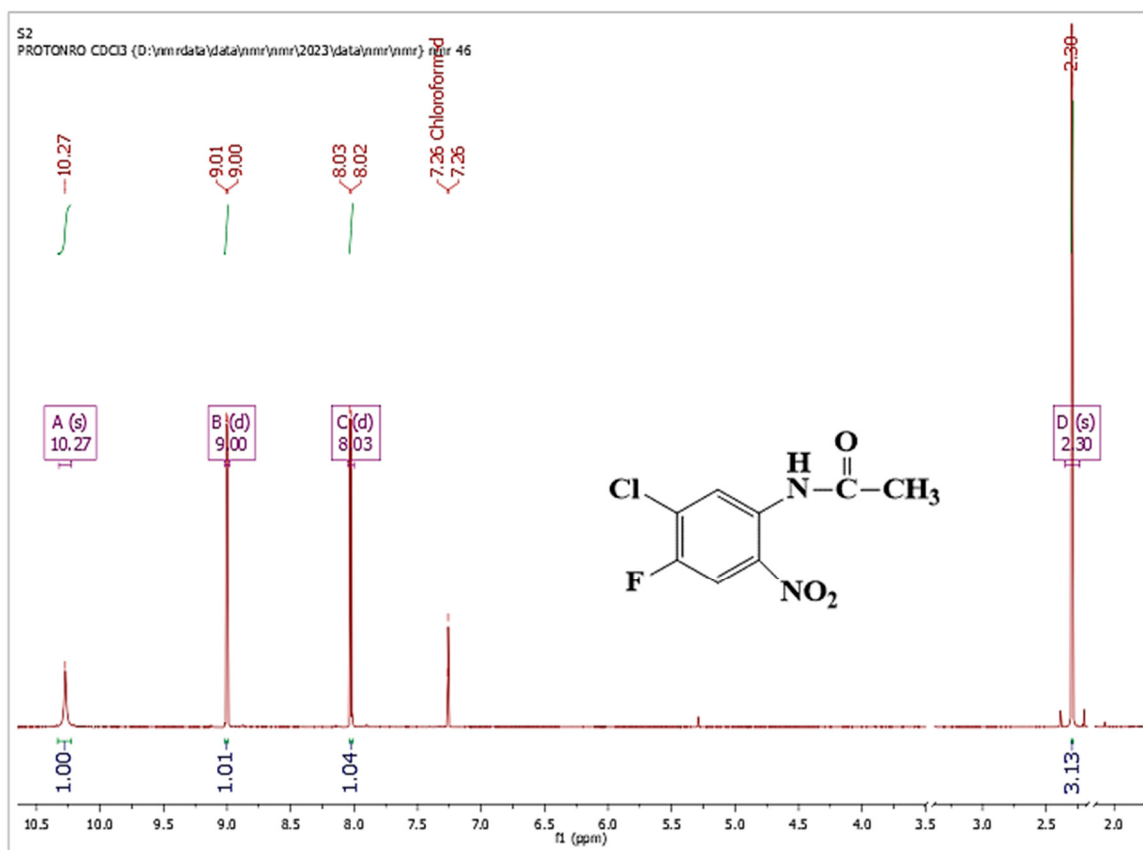


Figure S8. ¹H-NMR spectrum of compound (2) in CDCl₃, 700 MHz.

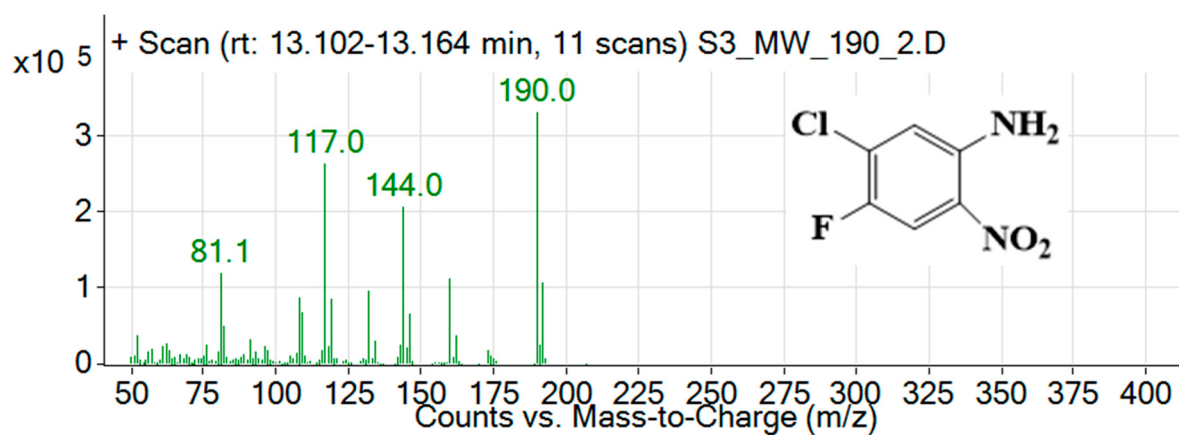


Figure S9. Mass spectrometry spectrum GC-MS of compound (3).

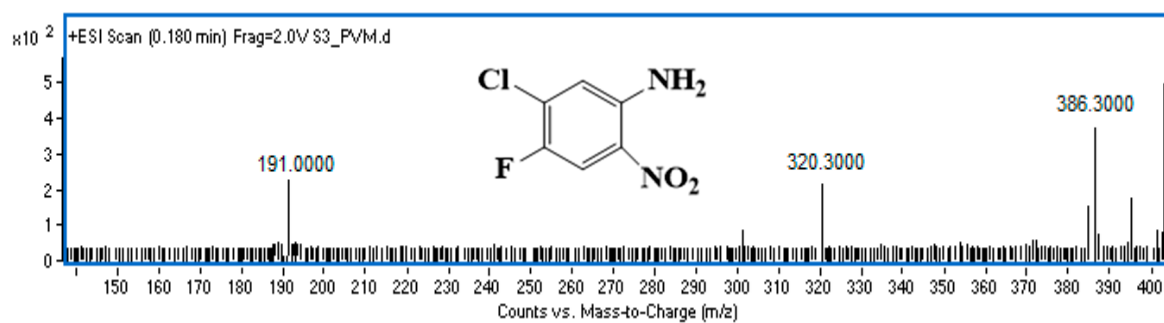


Figure S10. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (3).

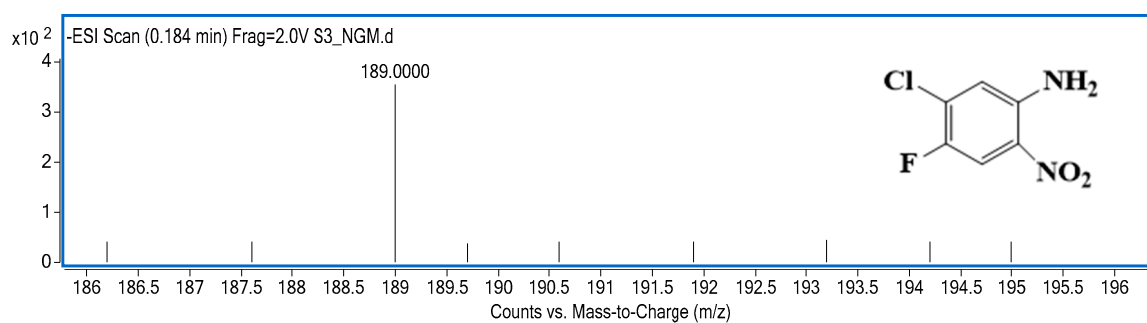


Figure S11. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (3).

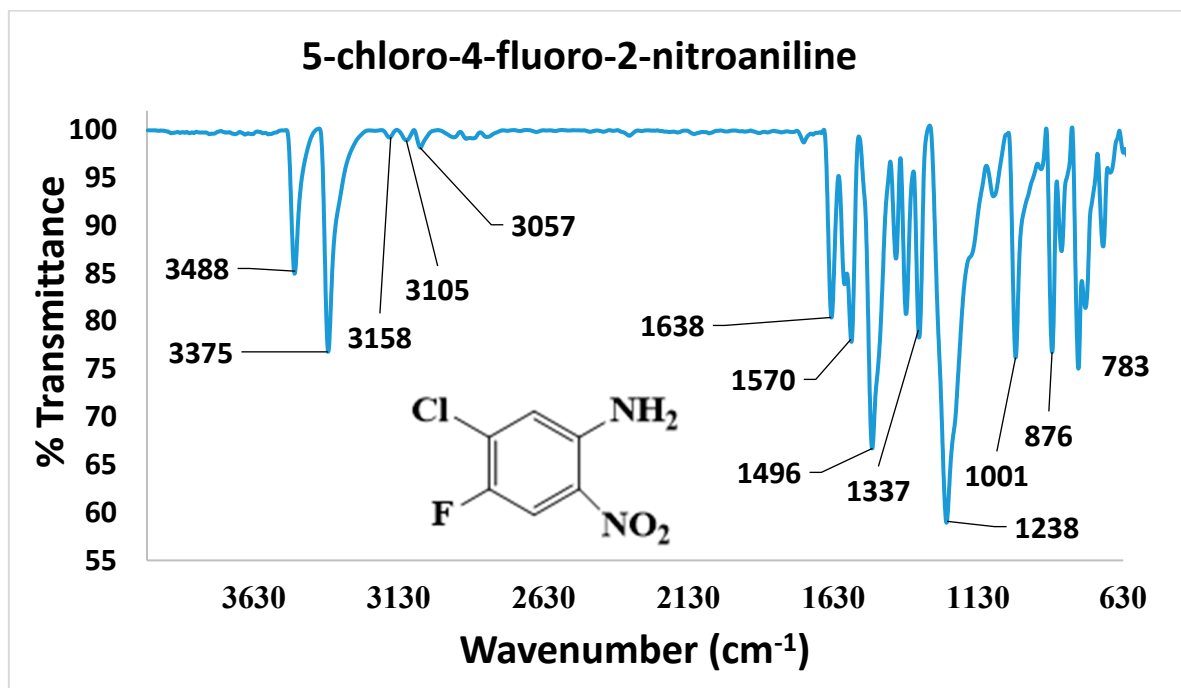


Figure S12. FT-IR spectrum of compound (3).

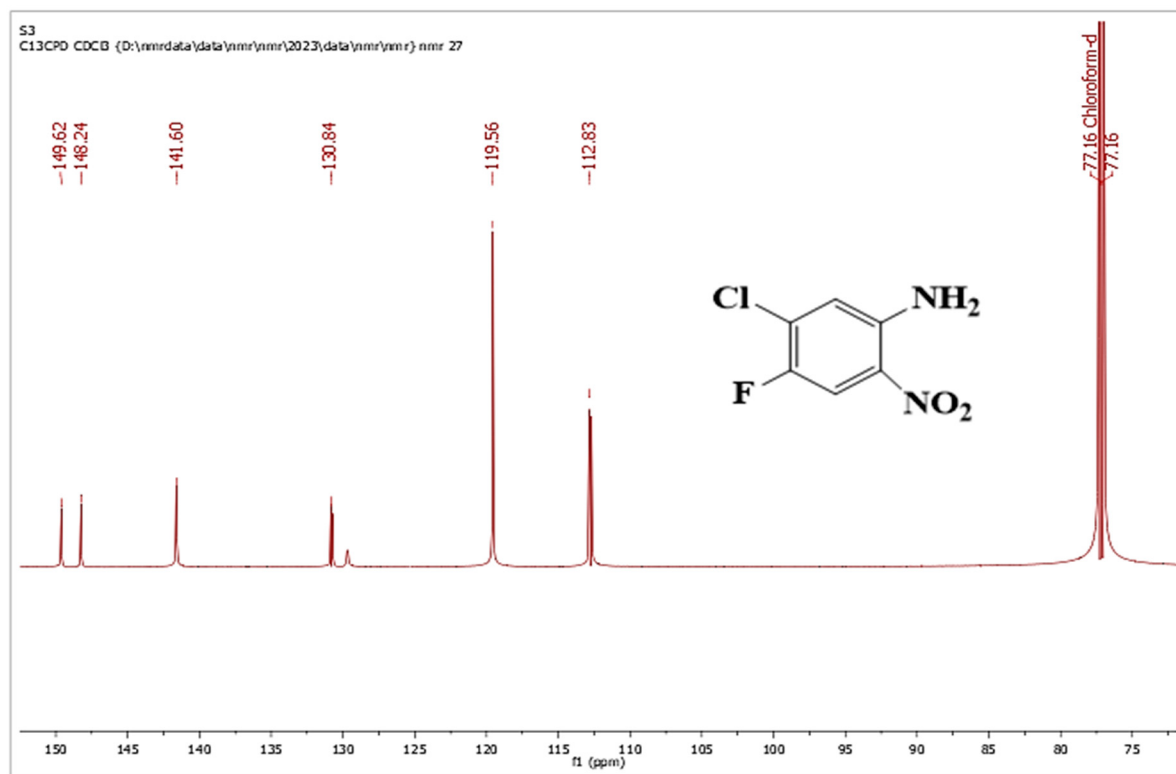


Figure S13. ^{13}C -NMR spectrum of compound (**3**) in CDCl_3 , 700 MHz.

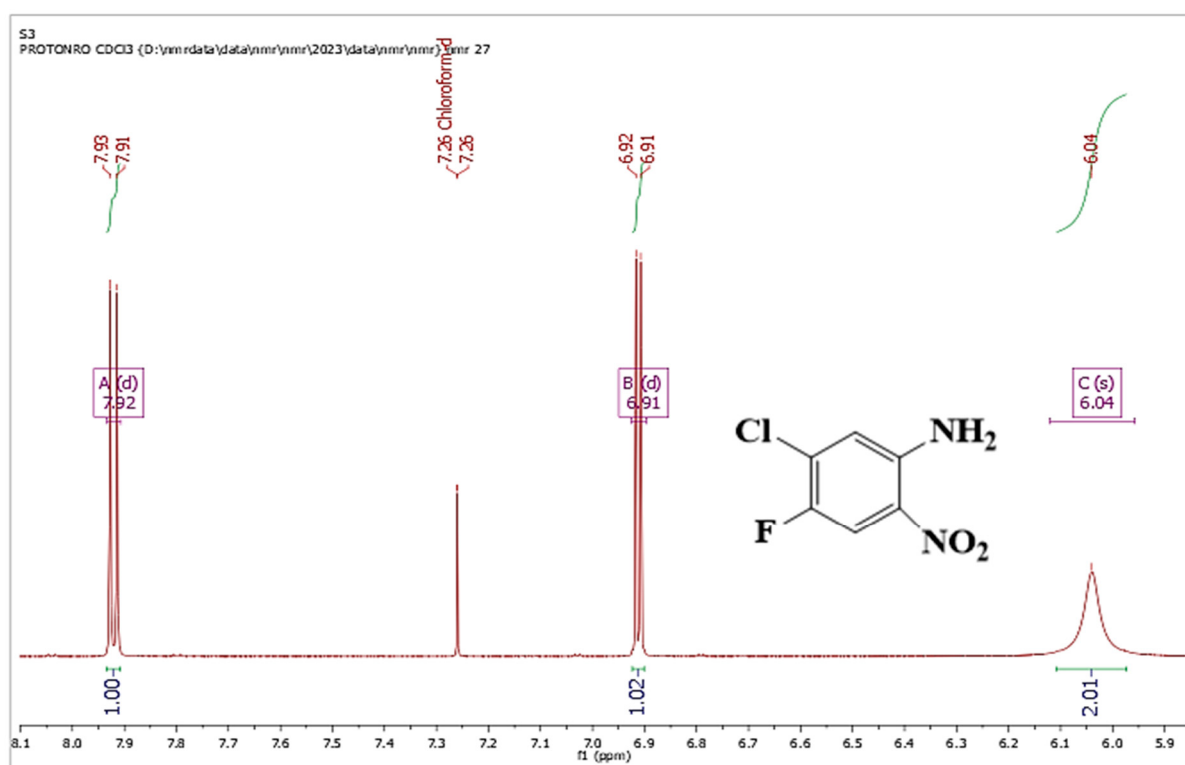


Figure S14. ^1H -NMR spectrum of compound (**3**) in CDCl_3 , 700 MHz.

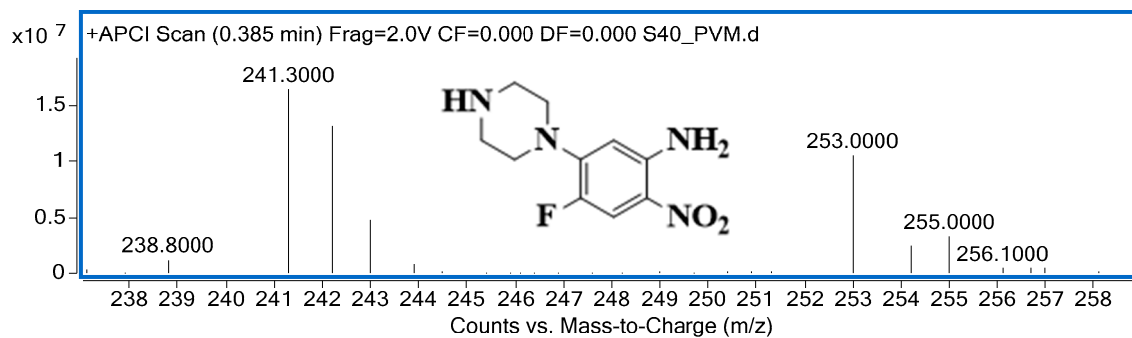


Figure S15. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (4a).

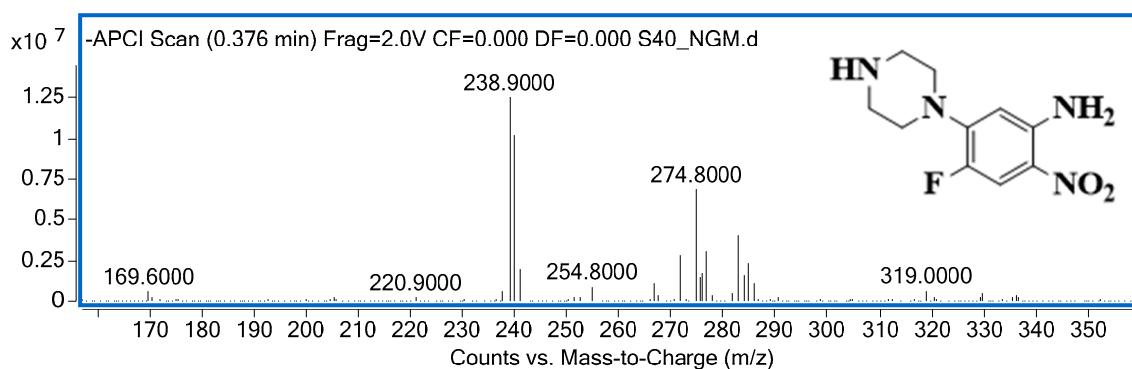


Figure S16. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (4a).

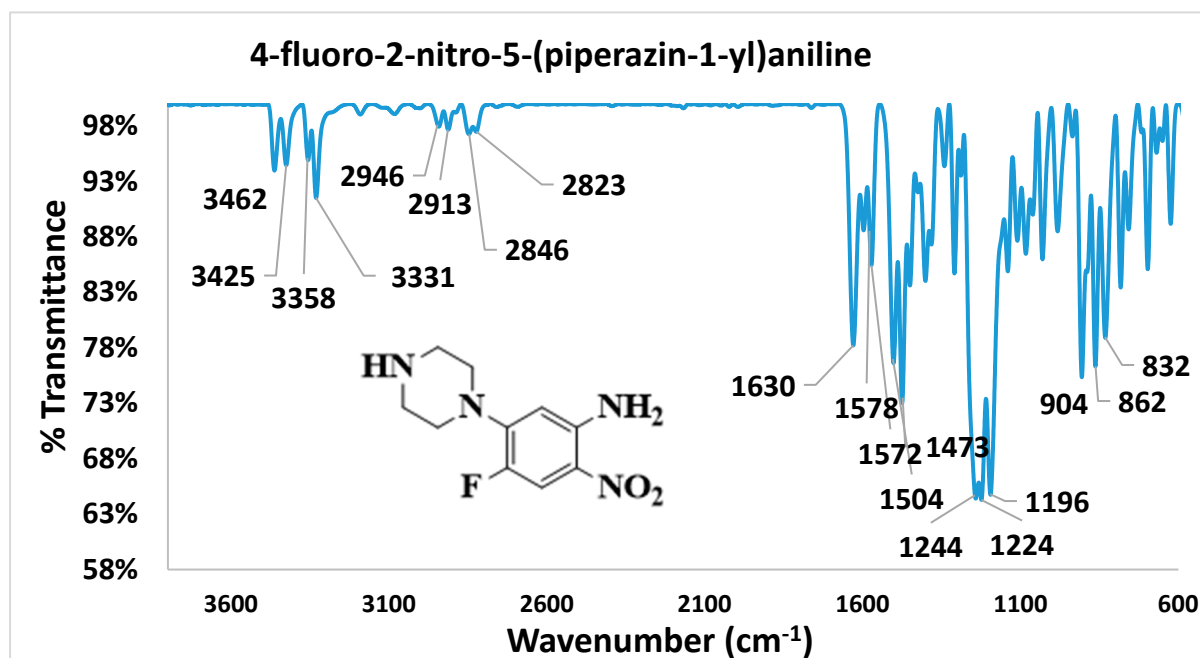


Figure S17. FT-IR spectrum of compound (4a).

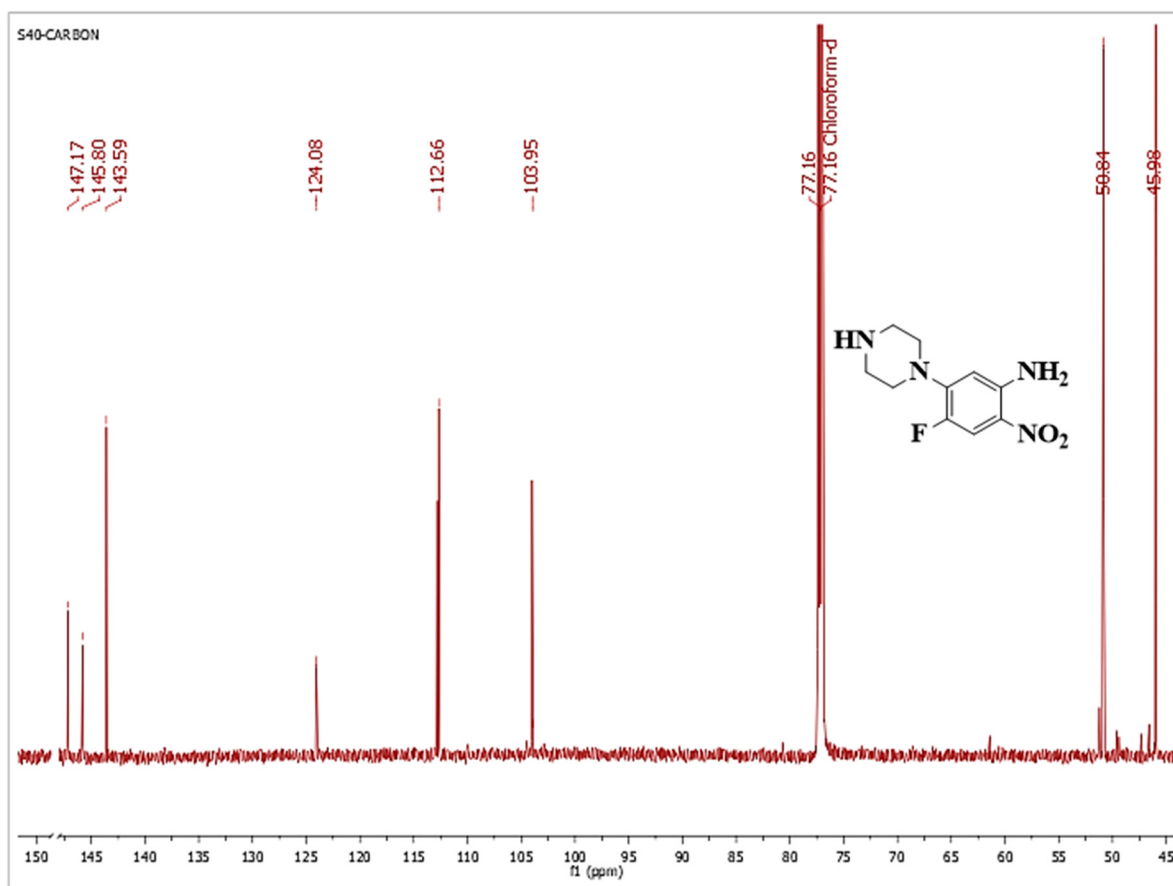
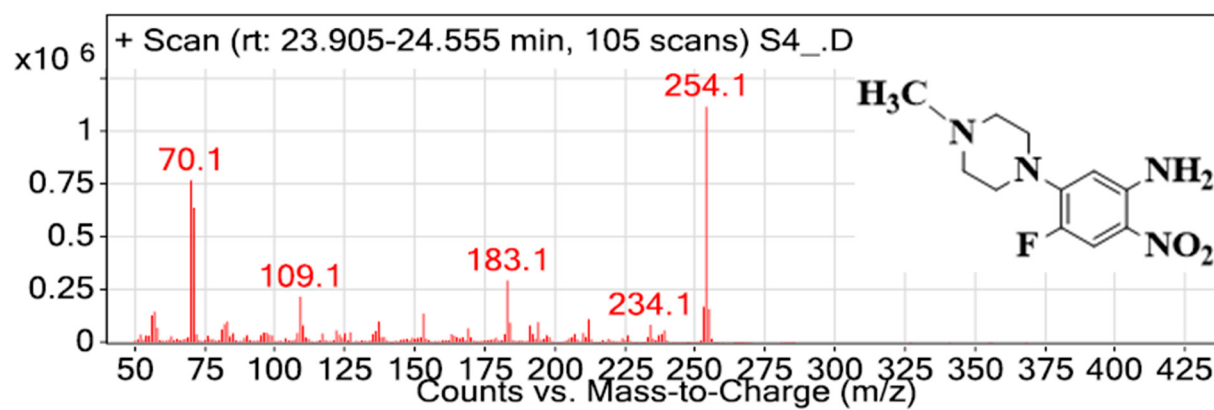
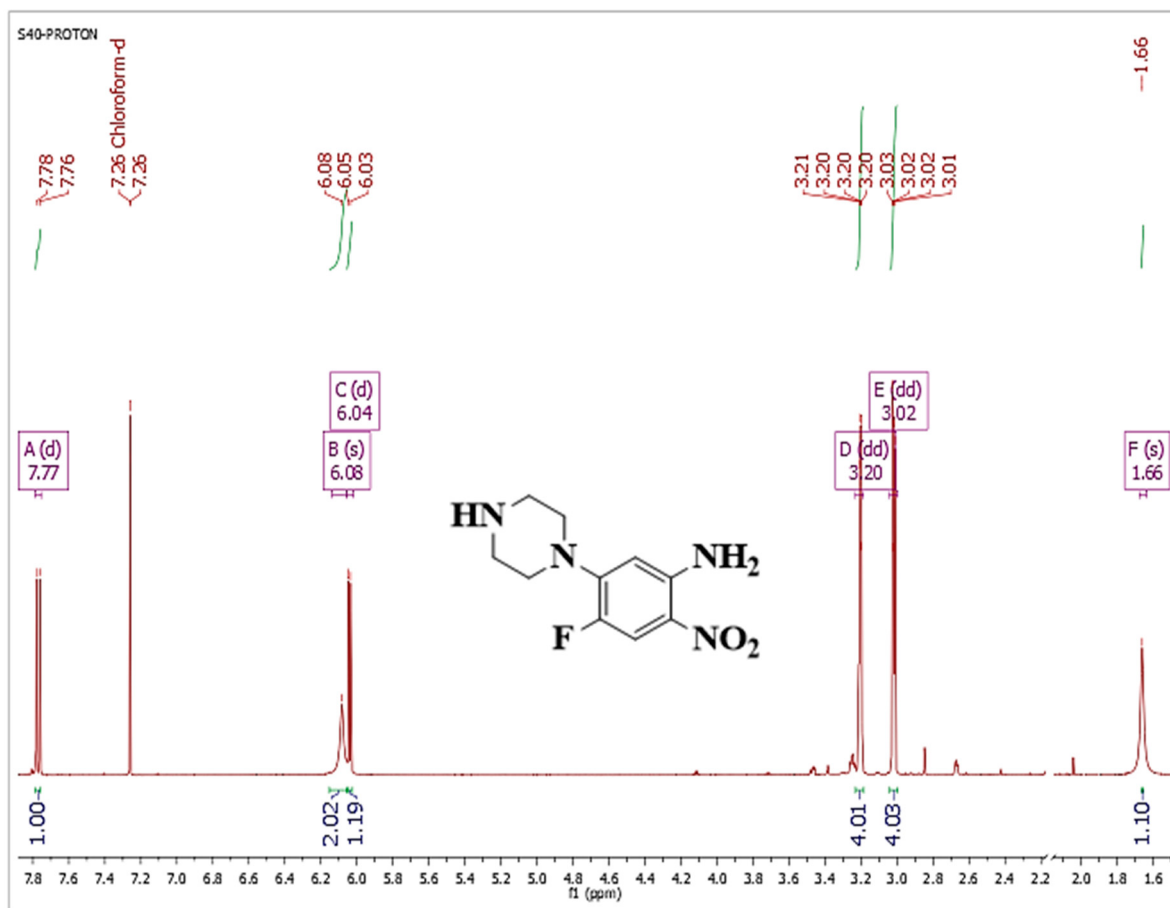


Figure S18. ^{13}C -NMR spectrum of compound (4a) in CDCl_3 , 700 MHz.



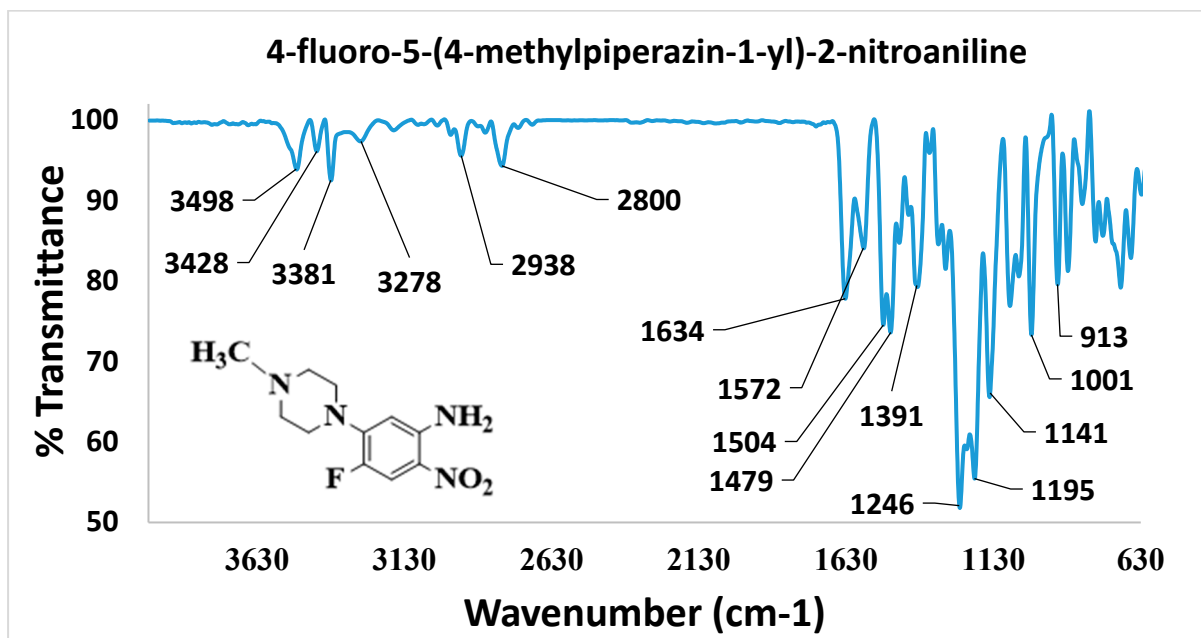


Figure S21. FT-IR spectrum of compound (**4b**).

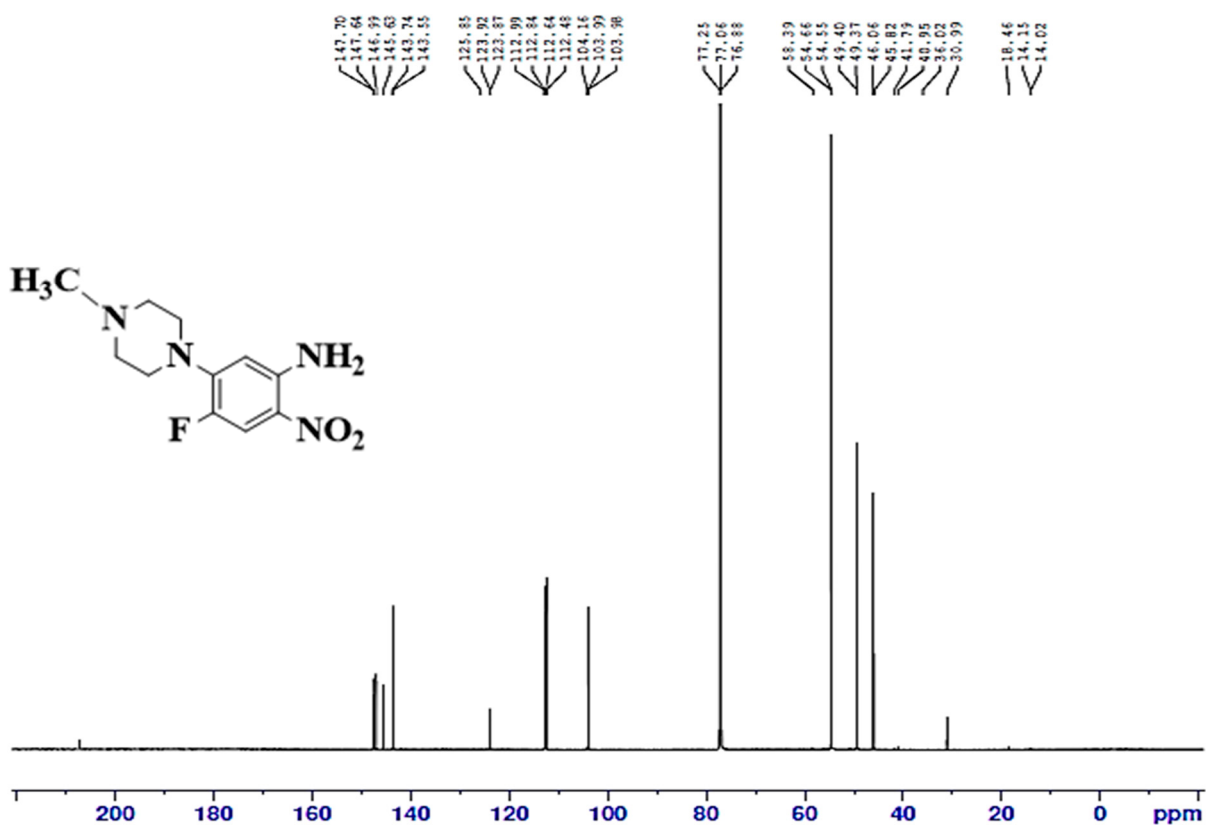


Figure S22. ¹³C-NMR spectrum of compound (**4b**) in CDCl₃, 700 MHz.

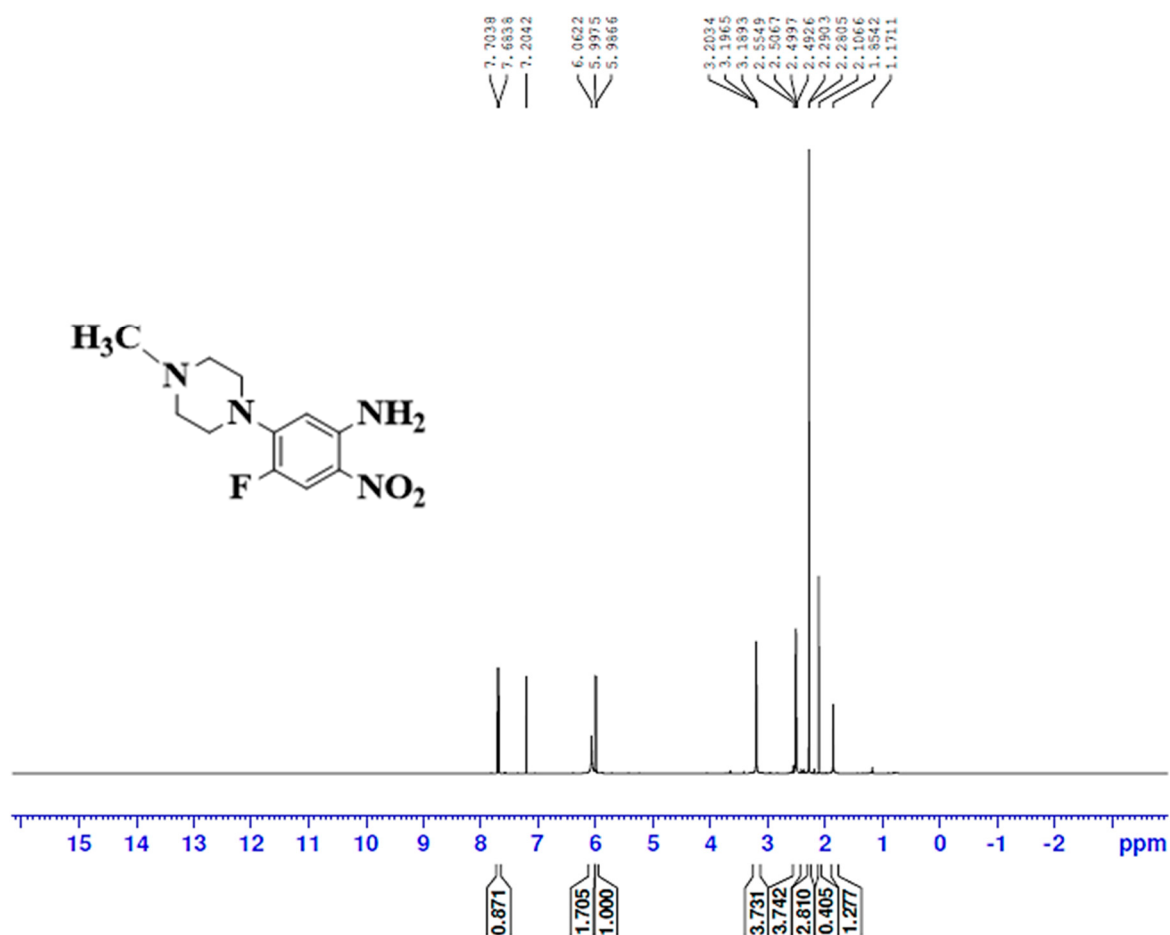


Figure S23. ¹H-NMR spectrum of compound (4b) in CDCl₃, 700 MHz.

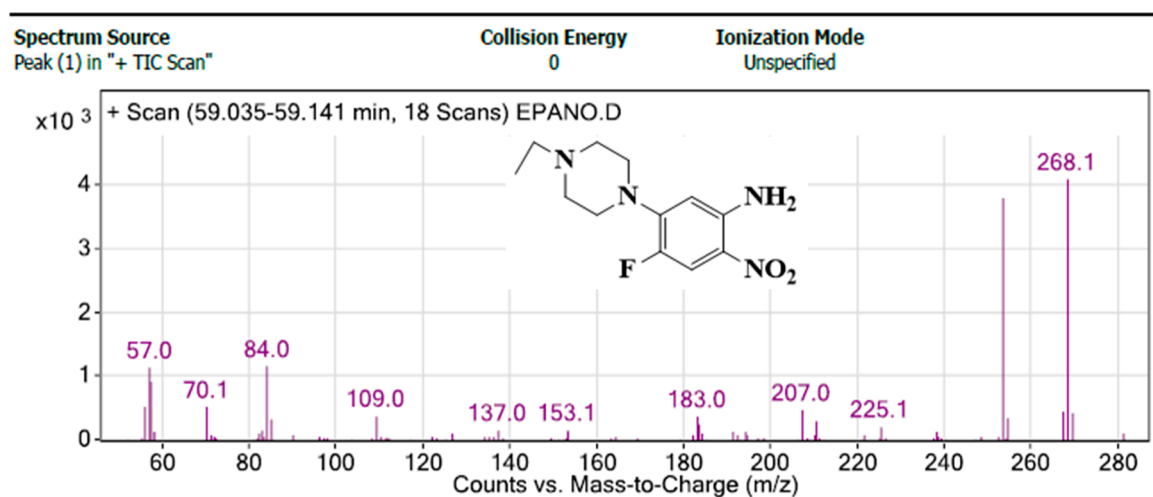


Figure S24. Mass spectrometry spectrum GC-MS of compound (4c).

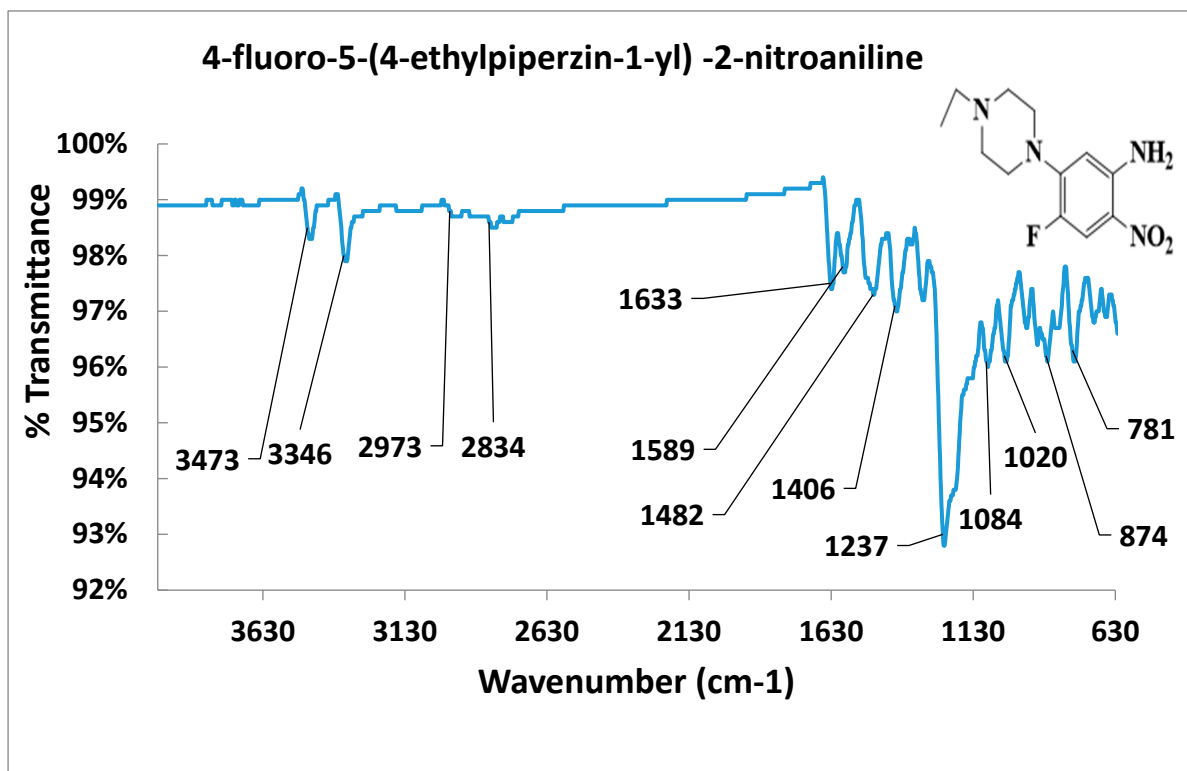


Figure S25. FT-IR spectrum of compound (**4c**).

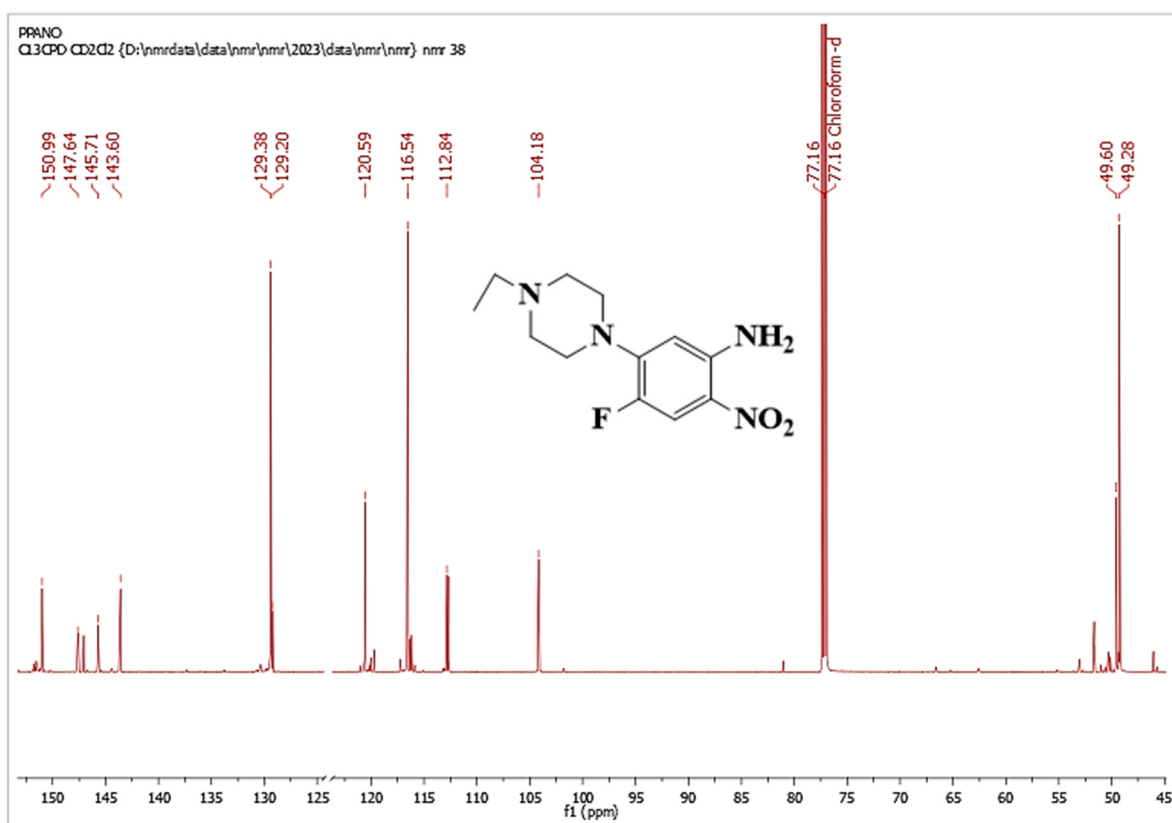


Figure S26. ¹³C-NMR spectrum of compound (**4c**) in CDCl₃, 700 MHz.

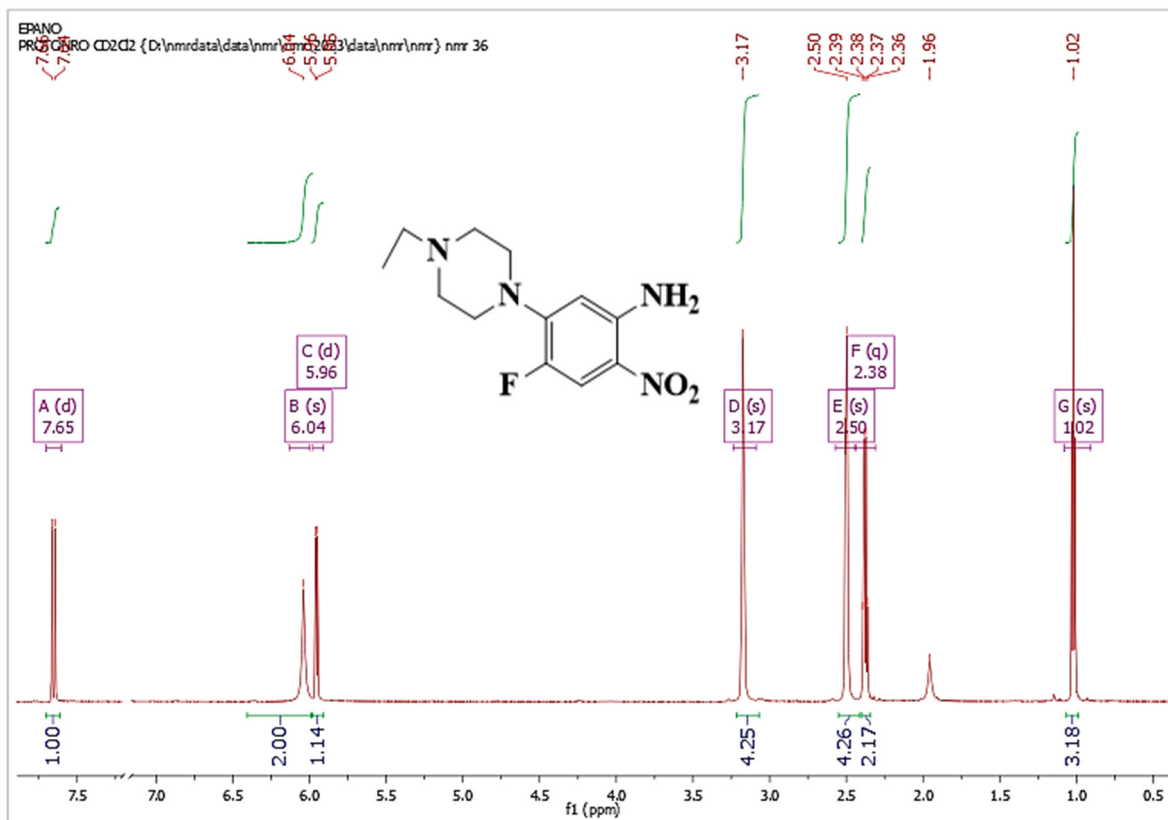


Figure S27. ^1H -NMR spectrum of compound (4c) in CDCl_3 , 700 MHz.

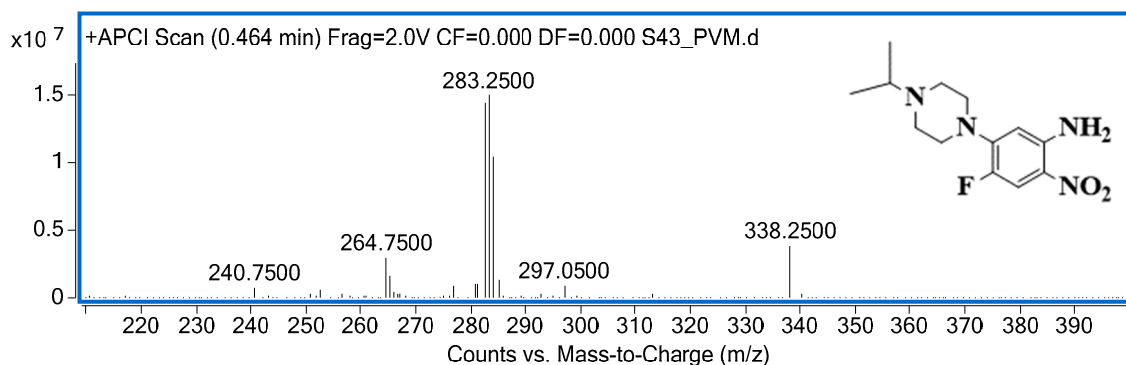


Figure S28. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (4d).

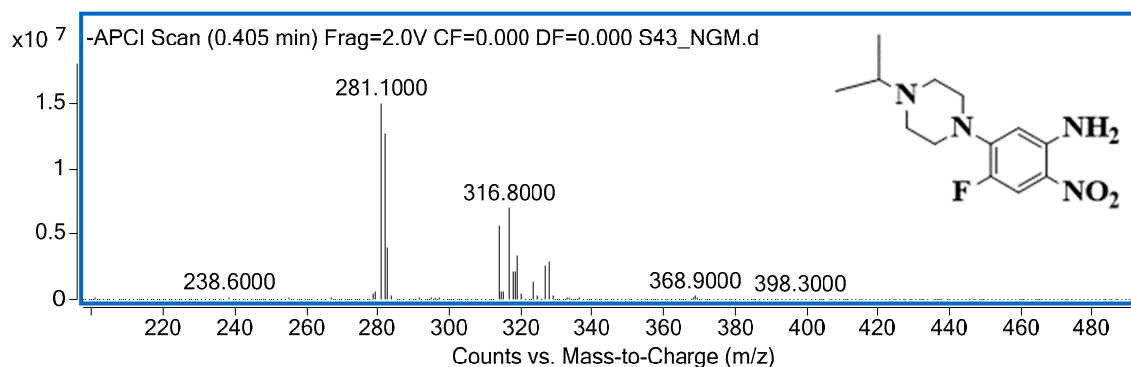


Figure S29. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (4d).

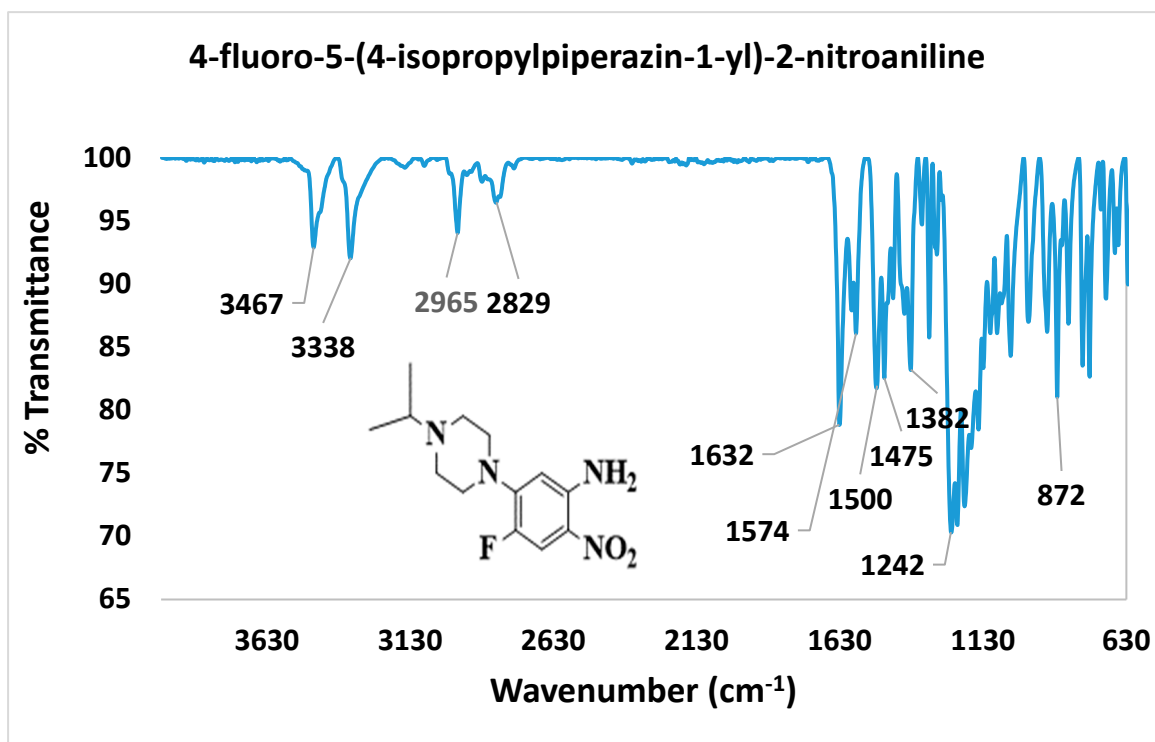


Figure S30. FT-IR spectrum of compound (**4d**).

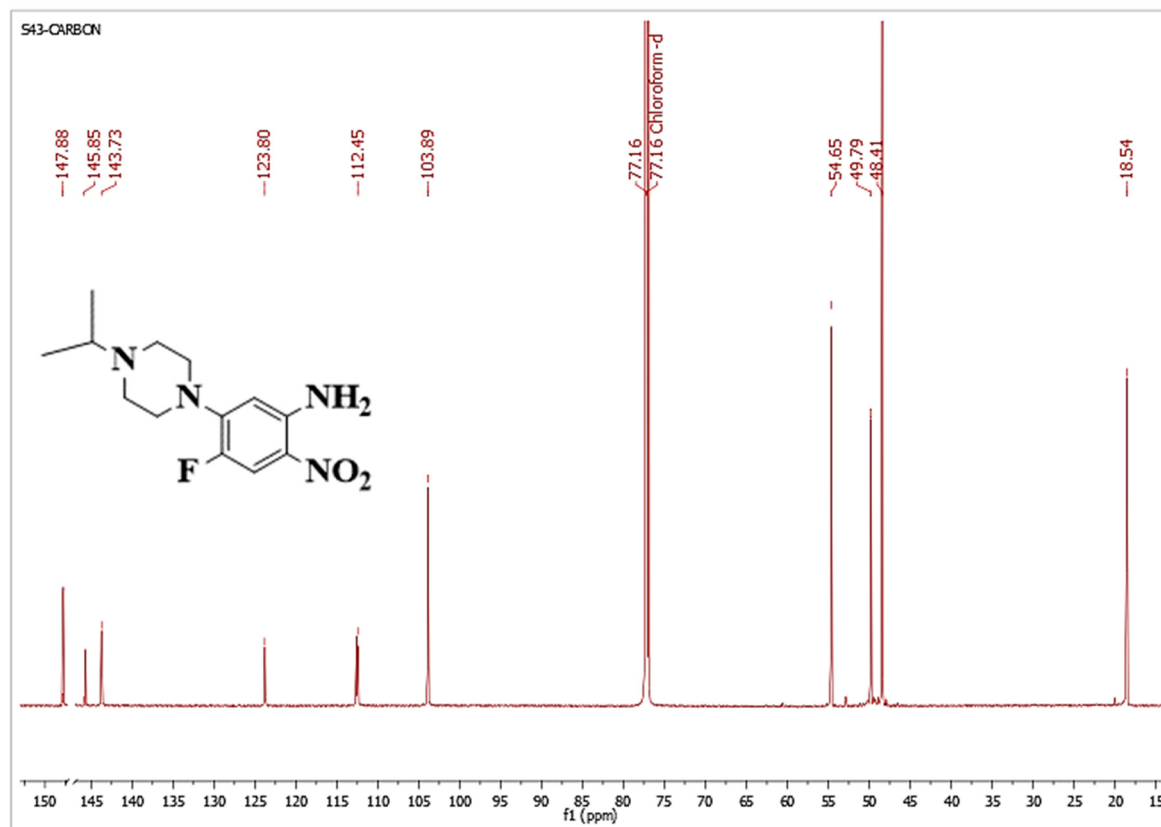


Figure S31. ¹³C-NMR spectrum of compound (**4d**) in CDCl₃, 700 MHz.

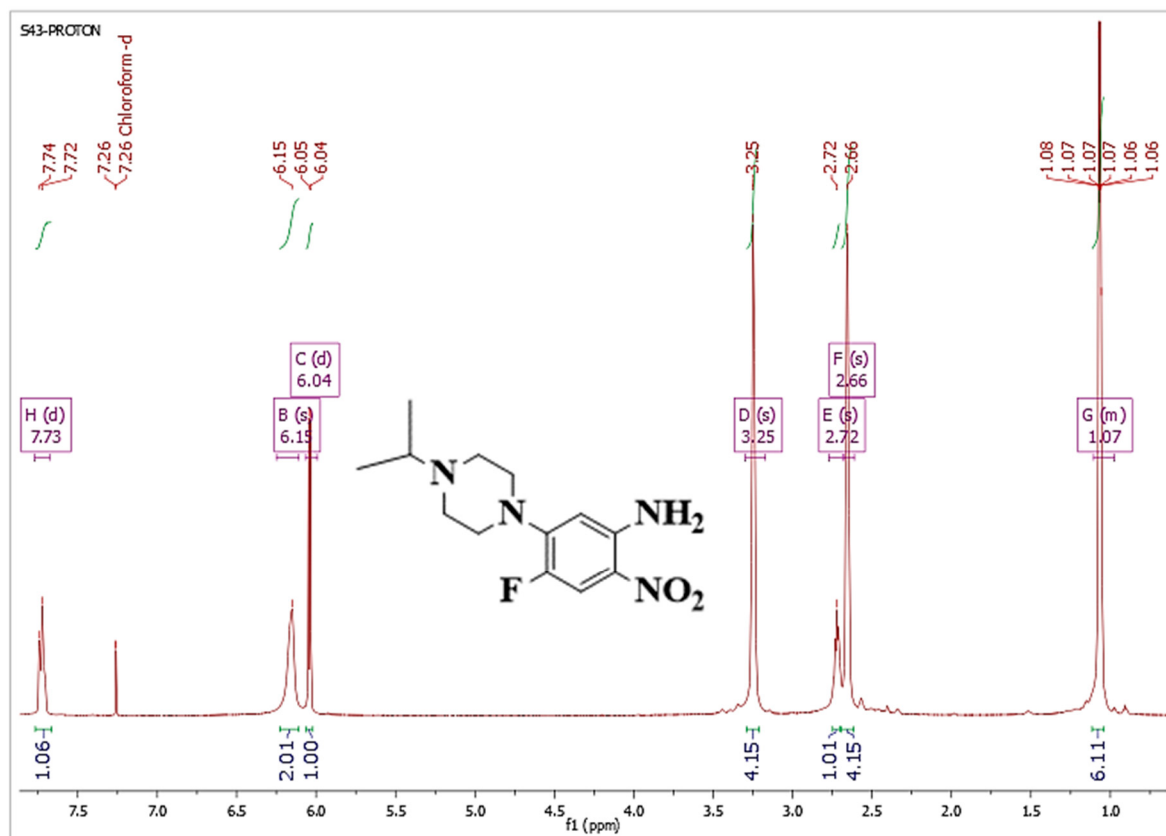


Figure S32. ^1H -NMR spectrum of compound (4d) in CDCl_3 , 700 MHz.

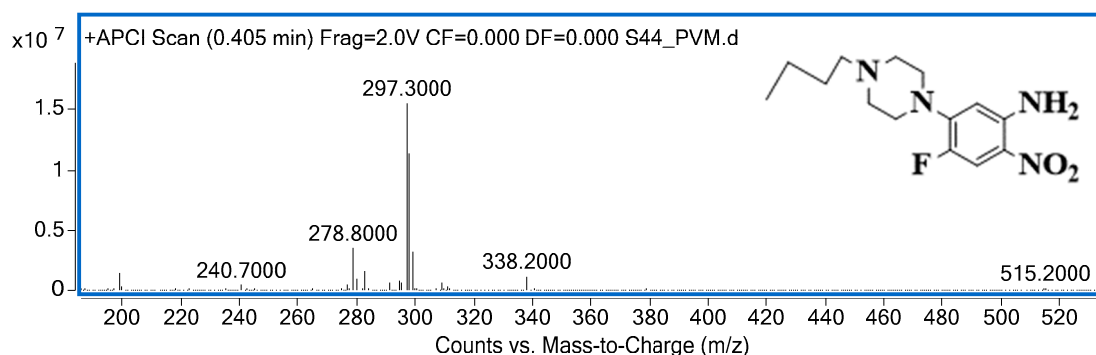


Figure S33. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (4e).

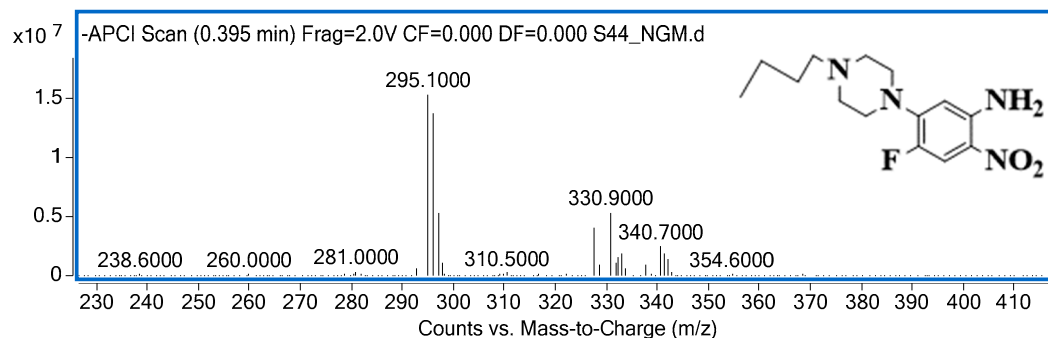


Figure S34. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (4e).

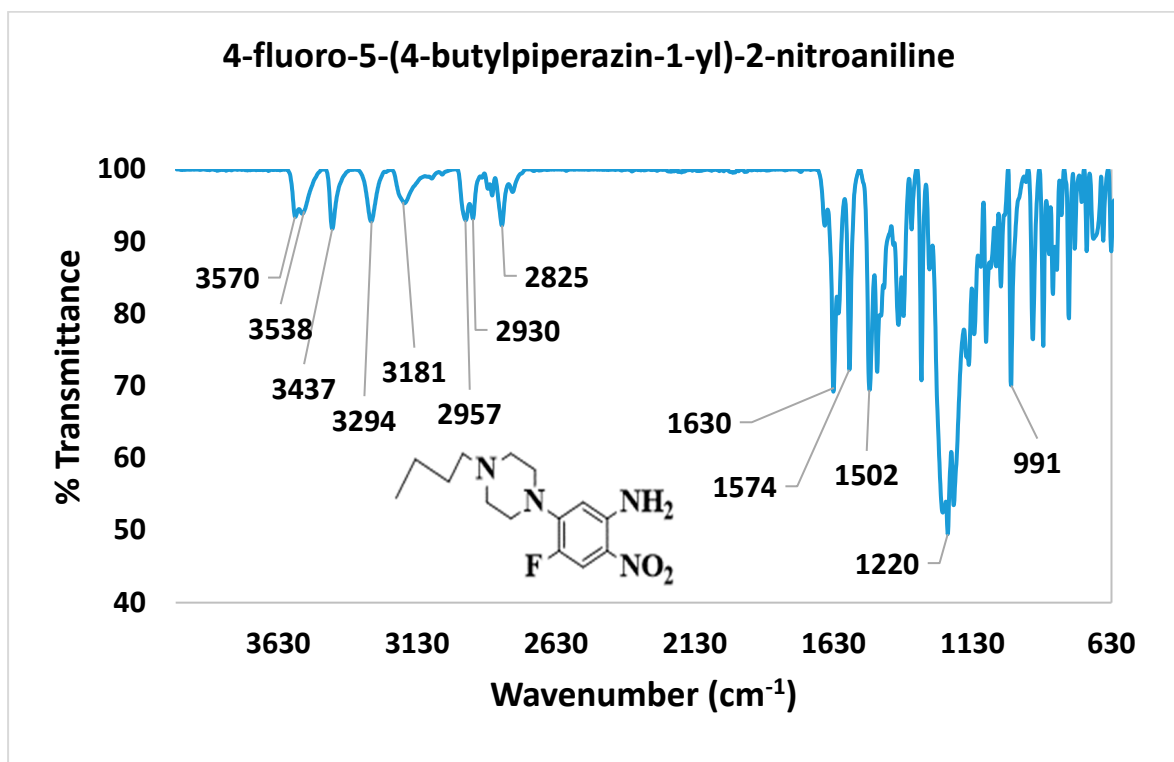


Figure S35. FT-IR spectrum of compound (**4e**).

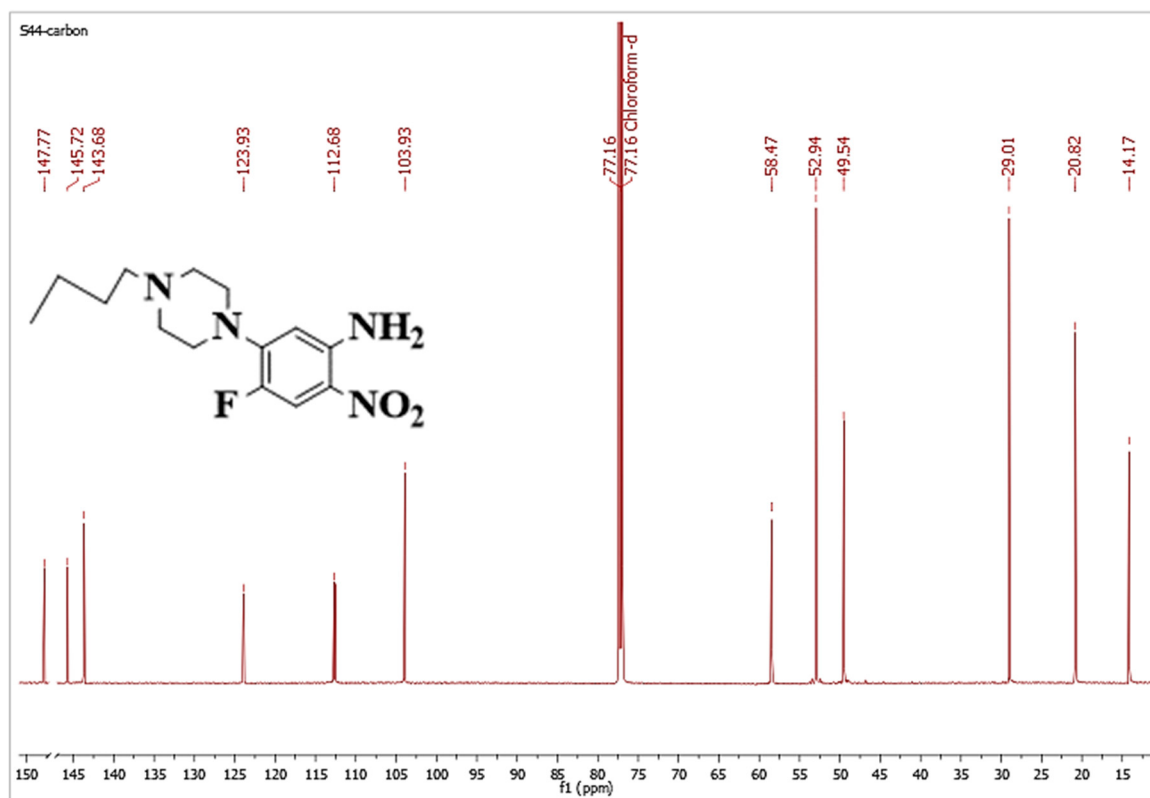


Figure S36. ¹³C-NMR spectrum for the compound (**4e**), CDCl₃, 176 MHz

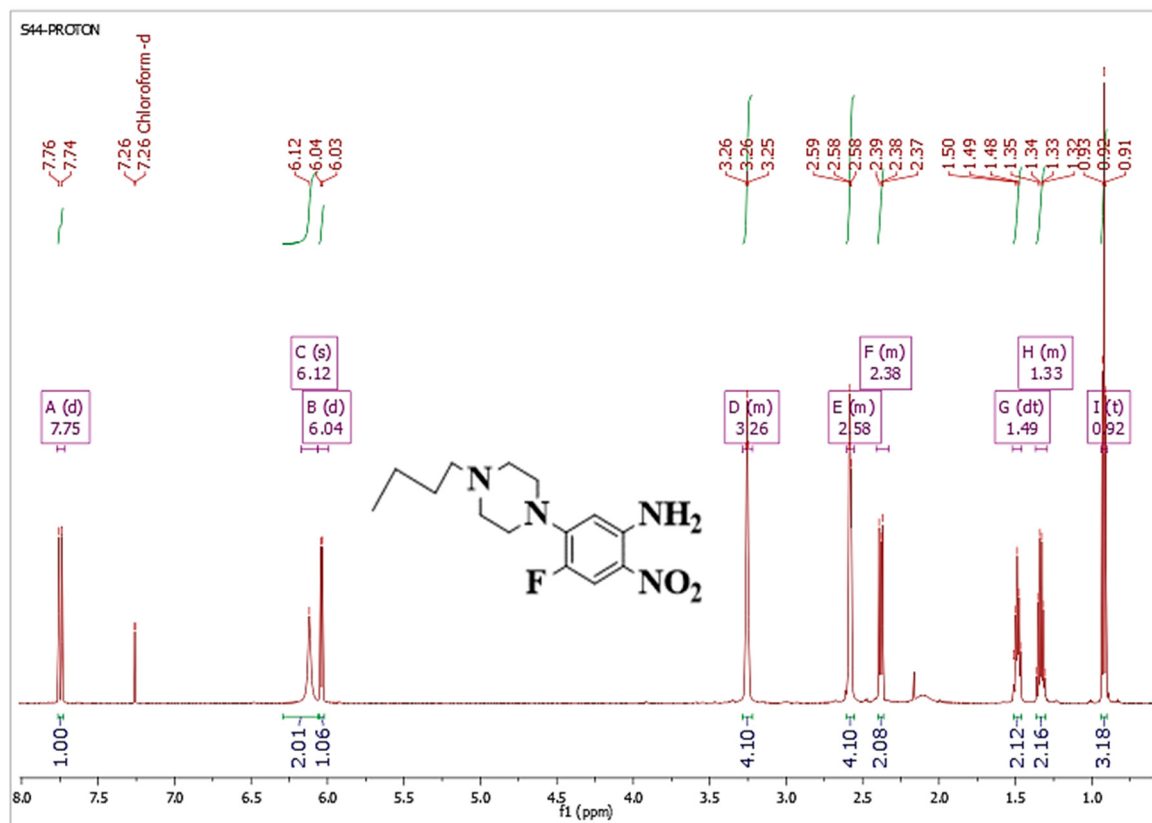


Figure S37. ^1H -NMR spectrum of compound (**4e**) in CDCl_3 , 700 MHz.

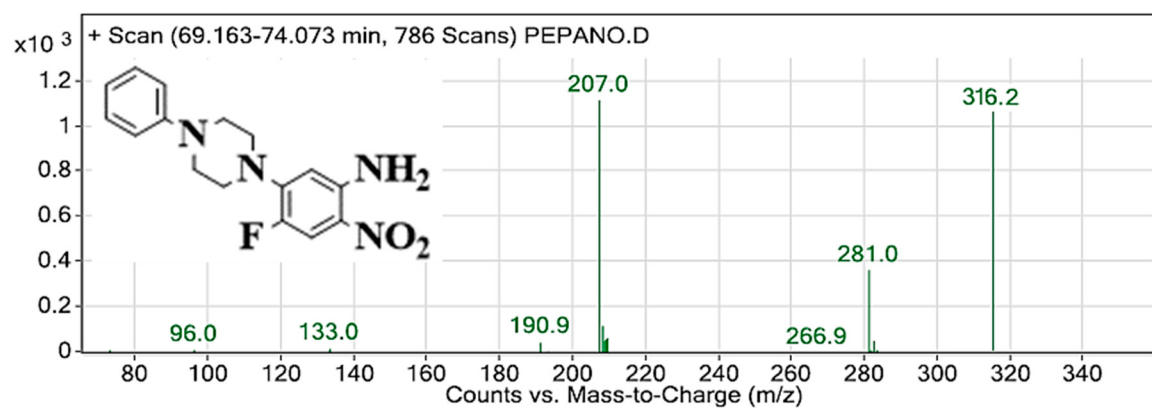


Figure S38. Mass spectrometry spectrum GC-MS of compound (**4f**).

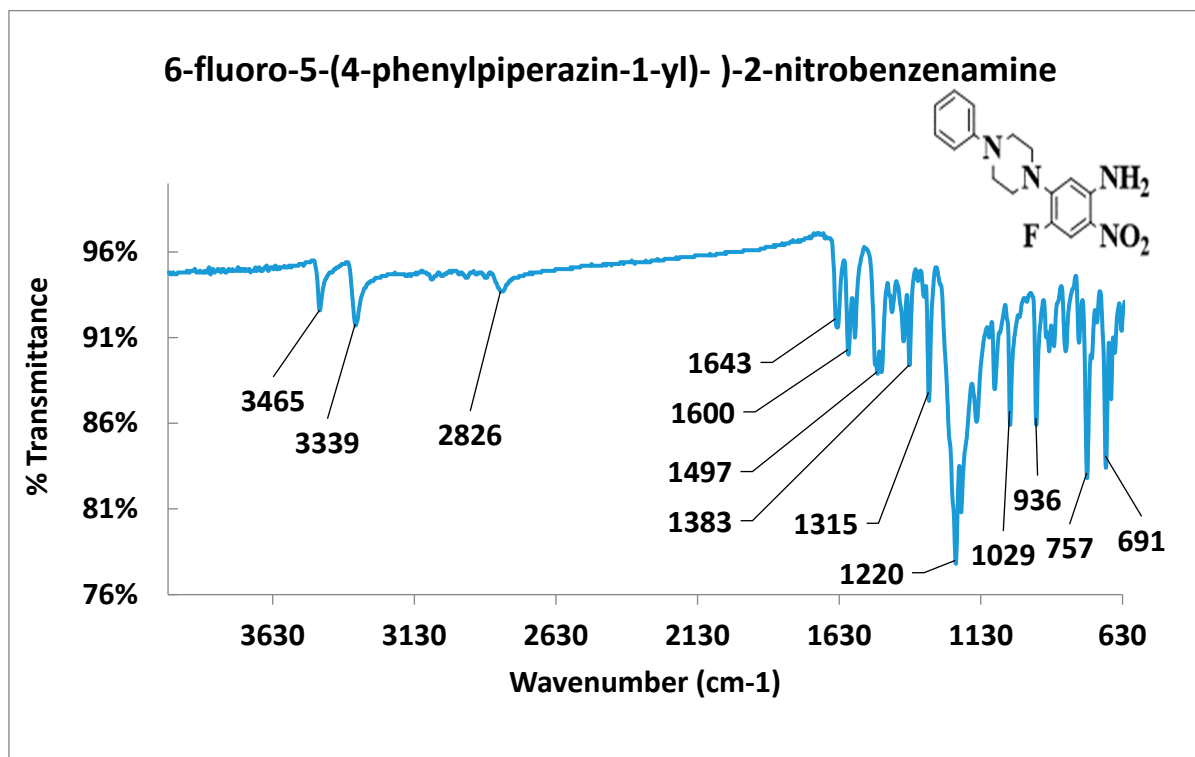


Figure S39. FT-IR spectrum of compound (**4f**).

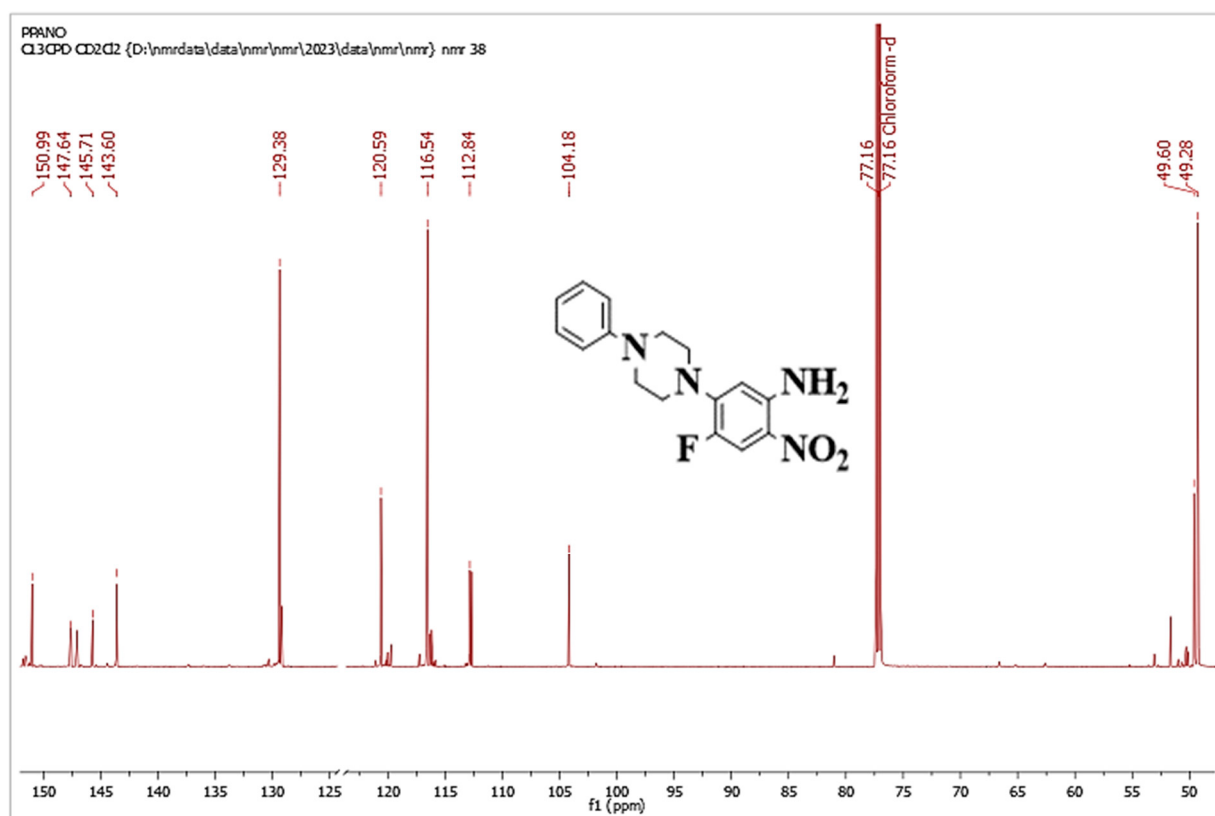


Figure S40. ¹³C-NMR spectrum of compound (**4f**) in CDCl₃, 700 MHz.

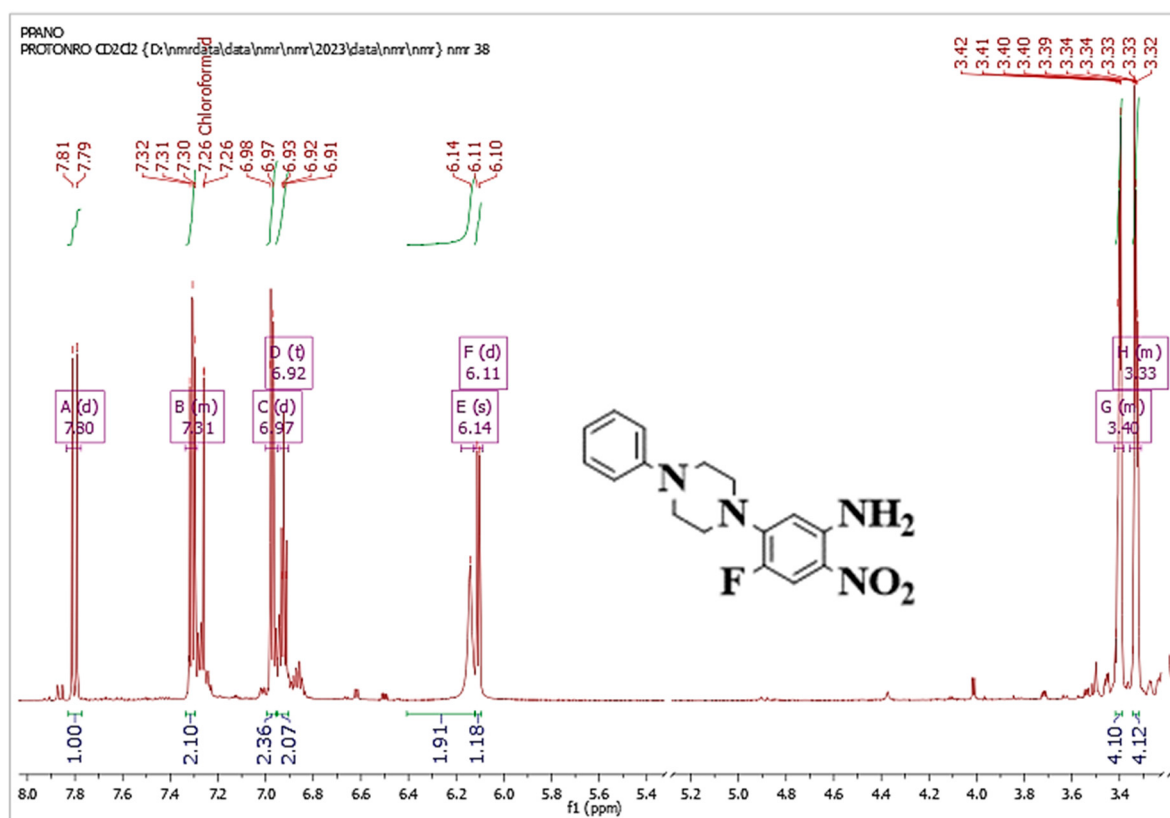


Figure S41. ¹H-NMR spectrum of compound (4f) in CDCl₃, 700 MHz

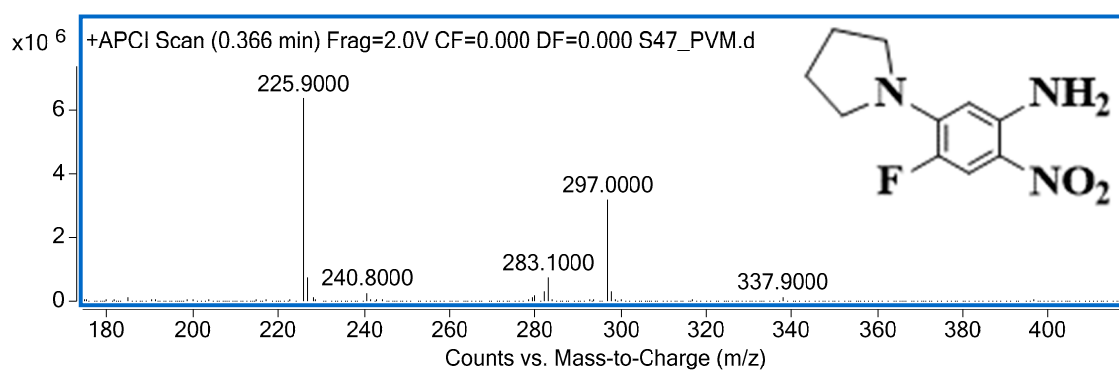


Figure S42. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (4g).

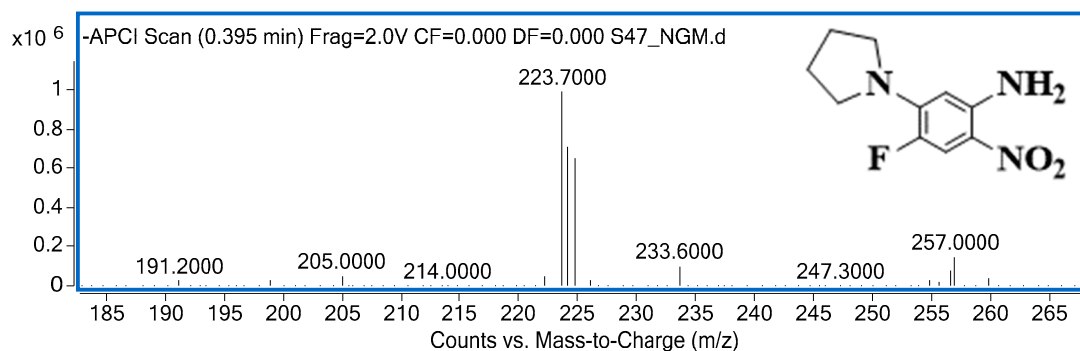


Figure S43. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (4g).

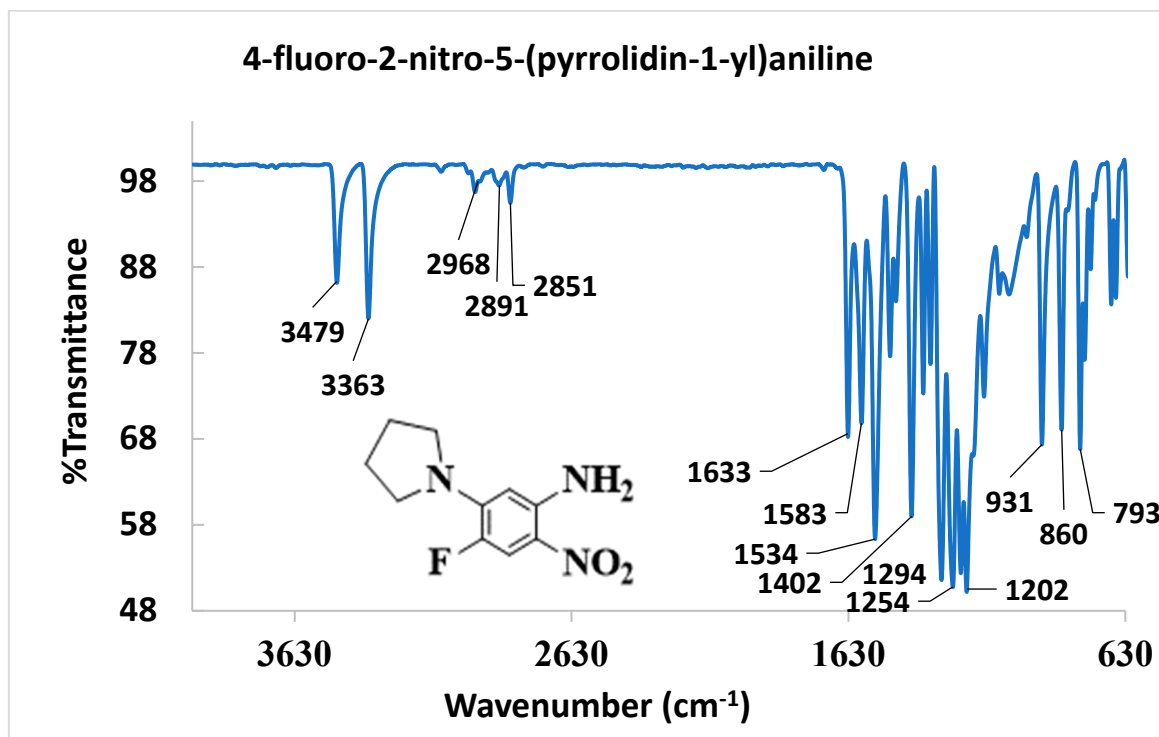


Figure S44. FT-IR spectrum of compound (**4g**).

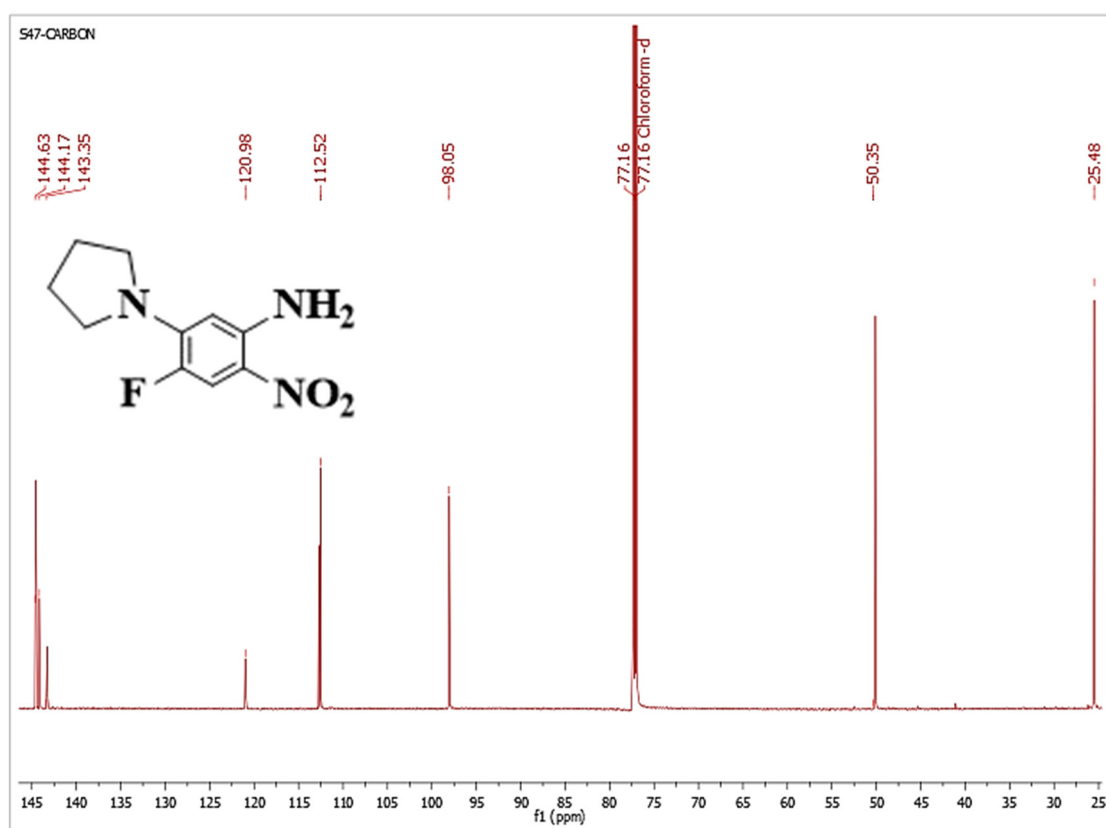


Figure S45. ¹³C-NMR spectrum for the compound (**4g**), CDCl₃, 176 MHz.

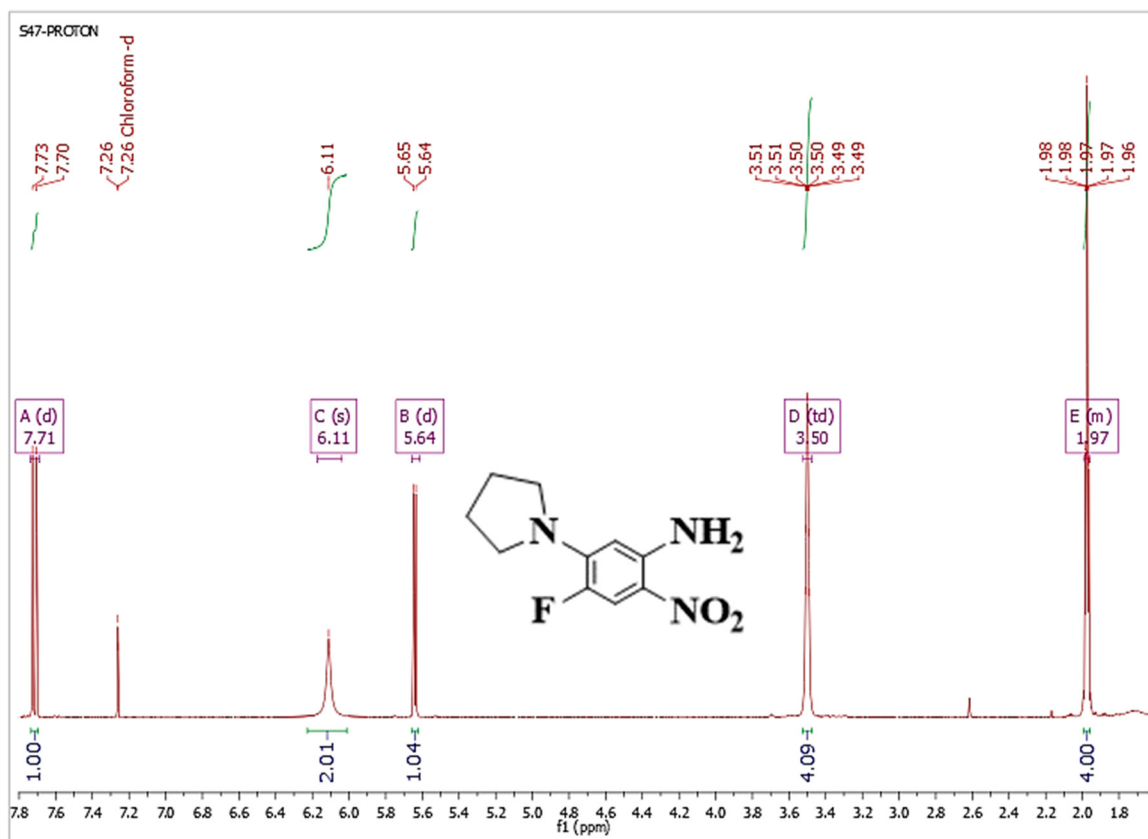


Figure S46. ^1H -NMR spectrum of compound (**4g**) in CDCl_3 , 700 MHz.

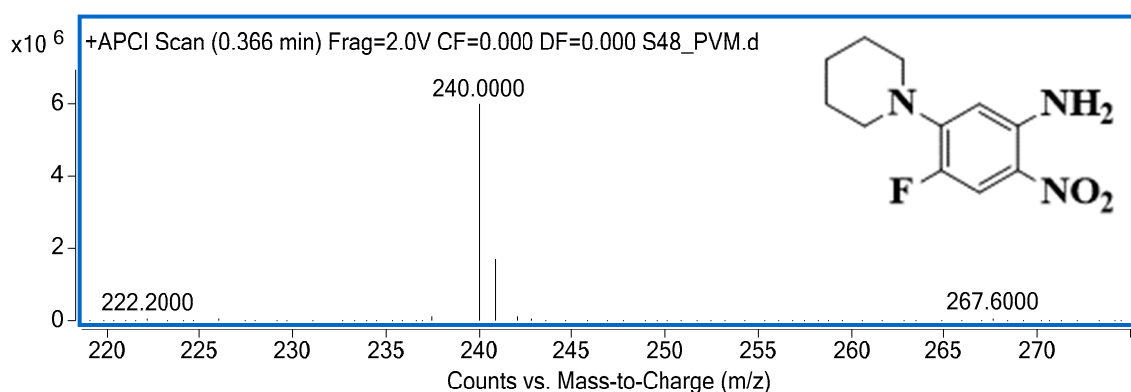


Figure S47. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (**4h**).

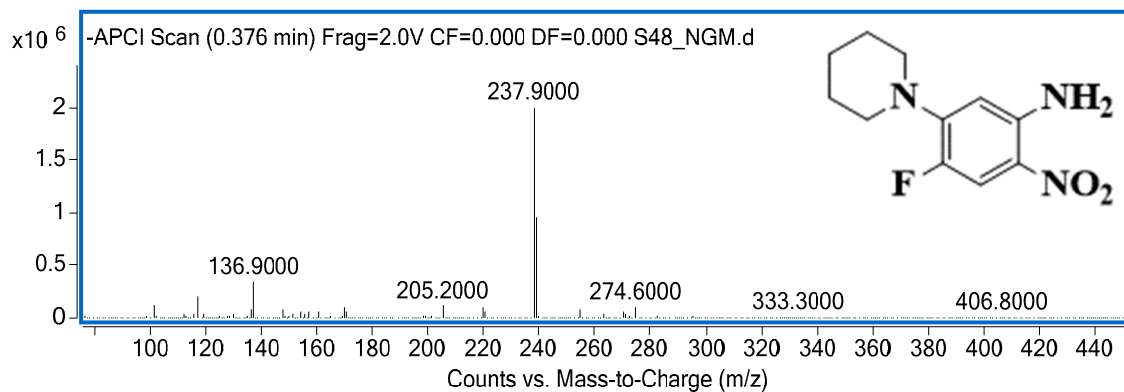


Figure S48. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (**4h**).

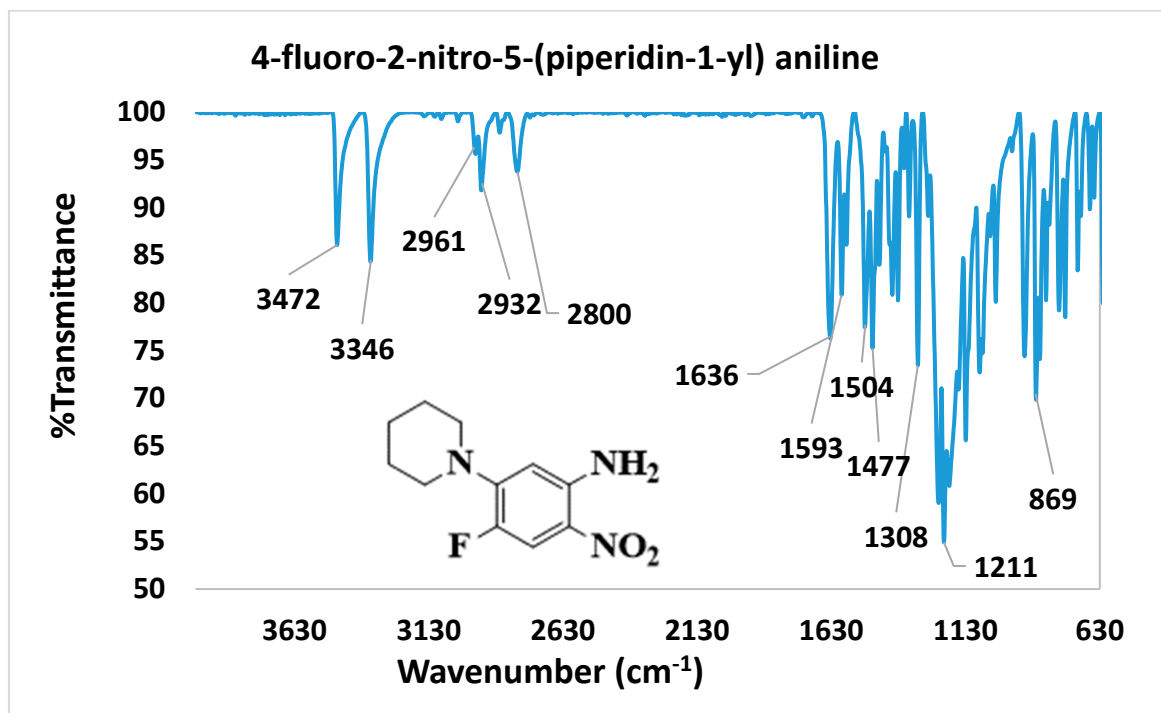


Figure S49. FT-IR spectrum of compound (**4h**).

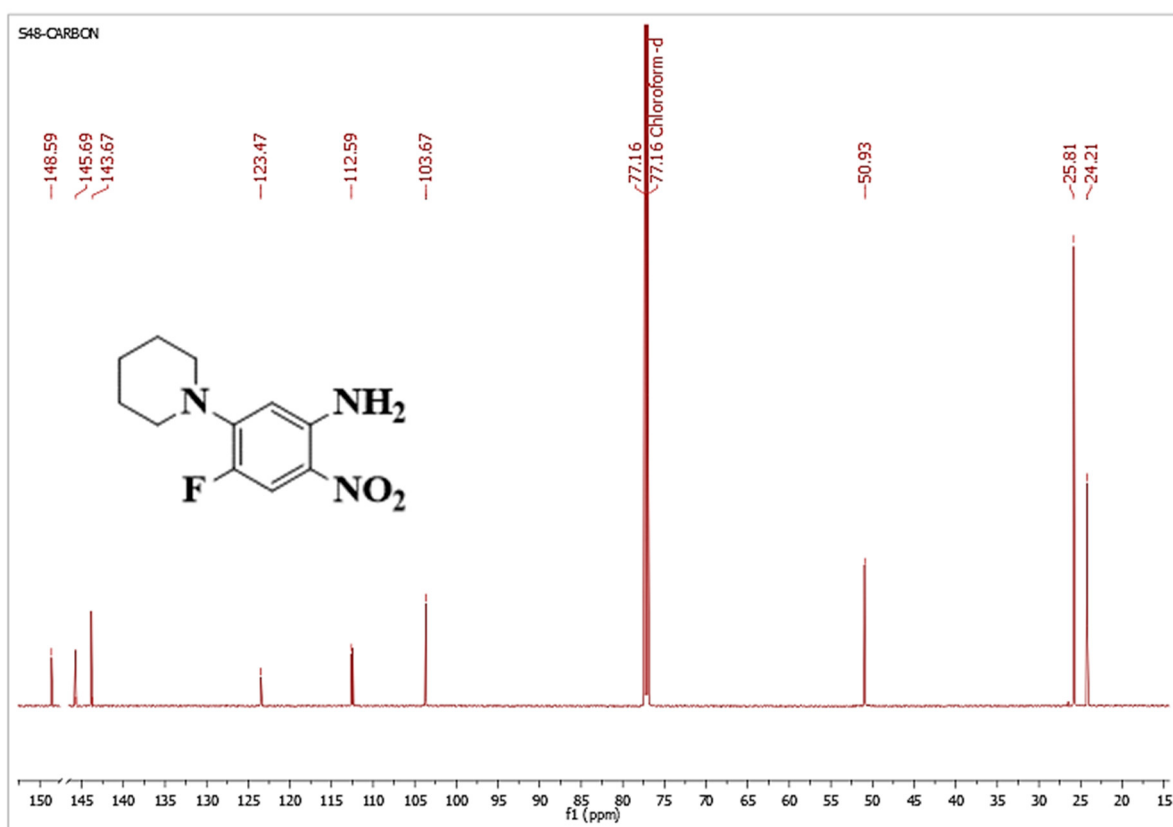


Figure S50. ¹³C-NMR spectrum of compound (**4h**) in CDCl₃, 700 MHz.

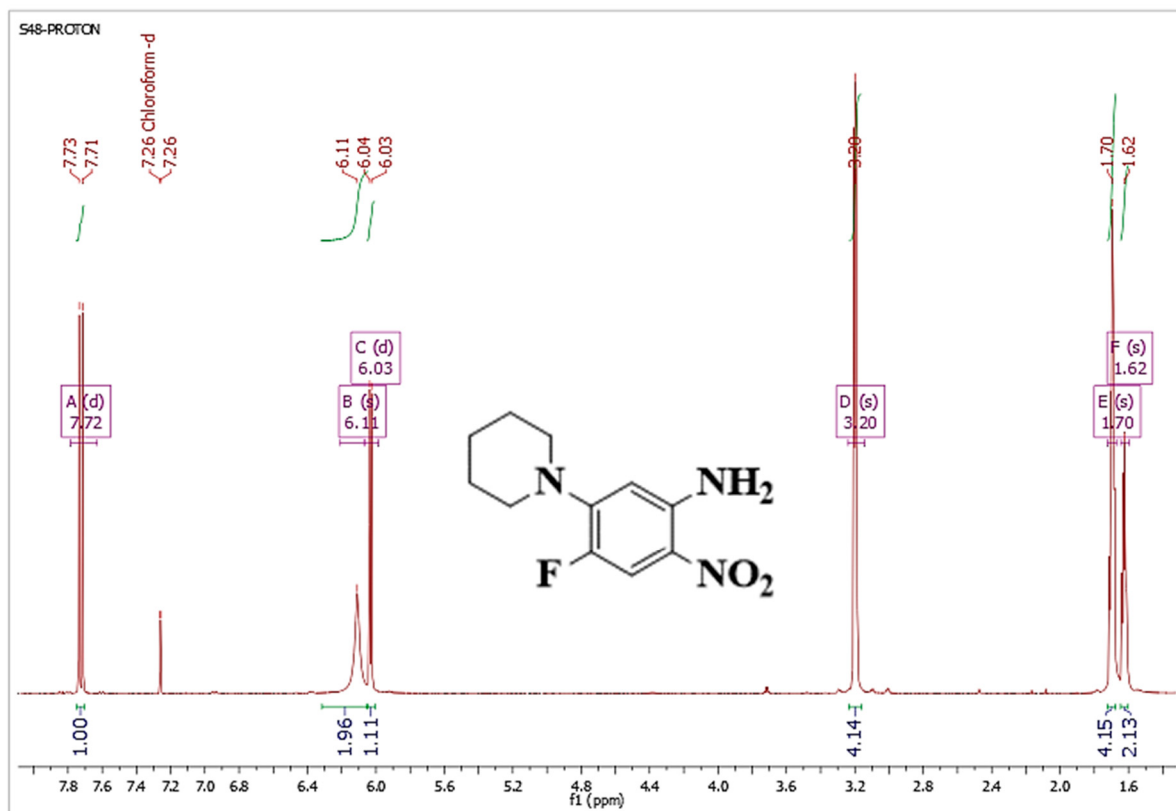


Figure S51. ^1H -NMR spectrum of compound (**4h**) in CDCl_3 , 700 MHz.

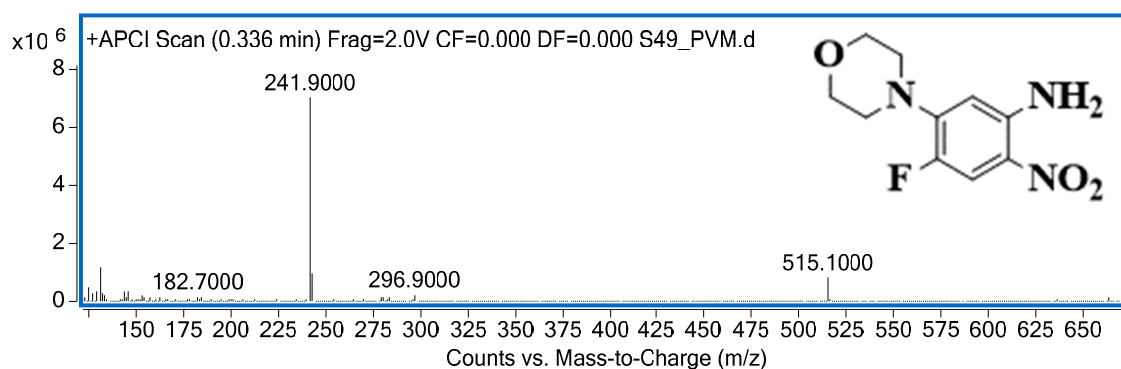


Figure S52. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (**4i**).

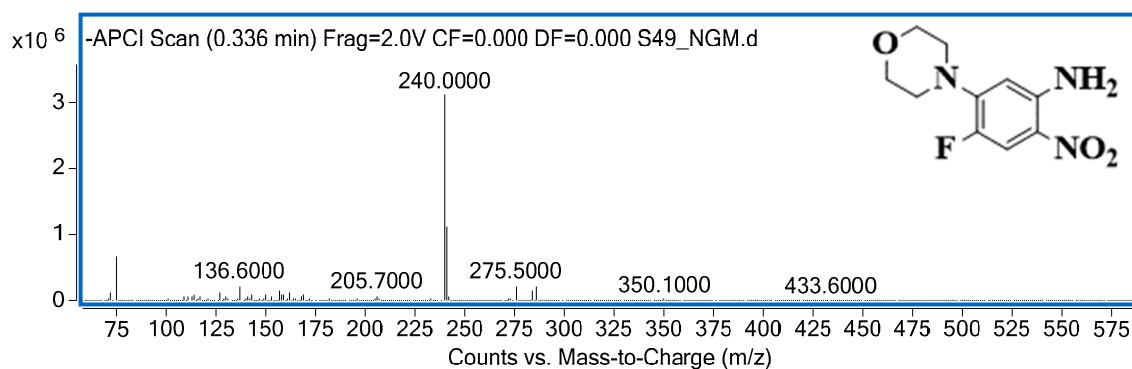


Figure S53. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (**4i**).

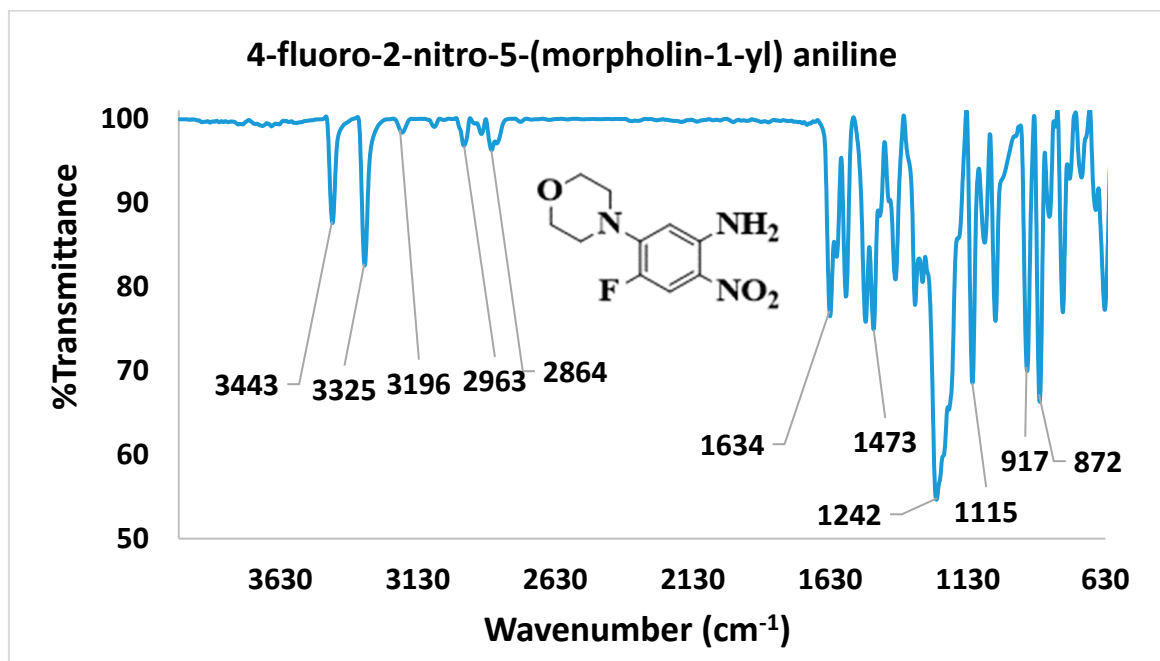


Figure S54. FT-IR spectrum of compound (**4i**).

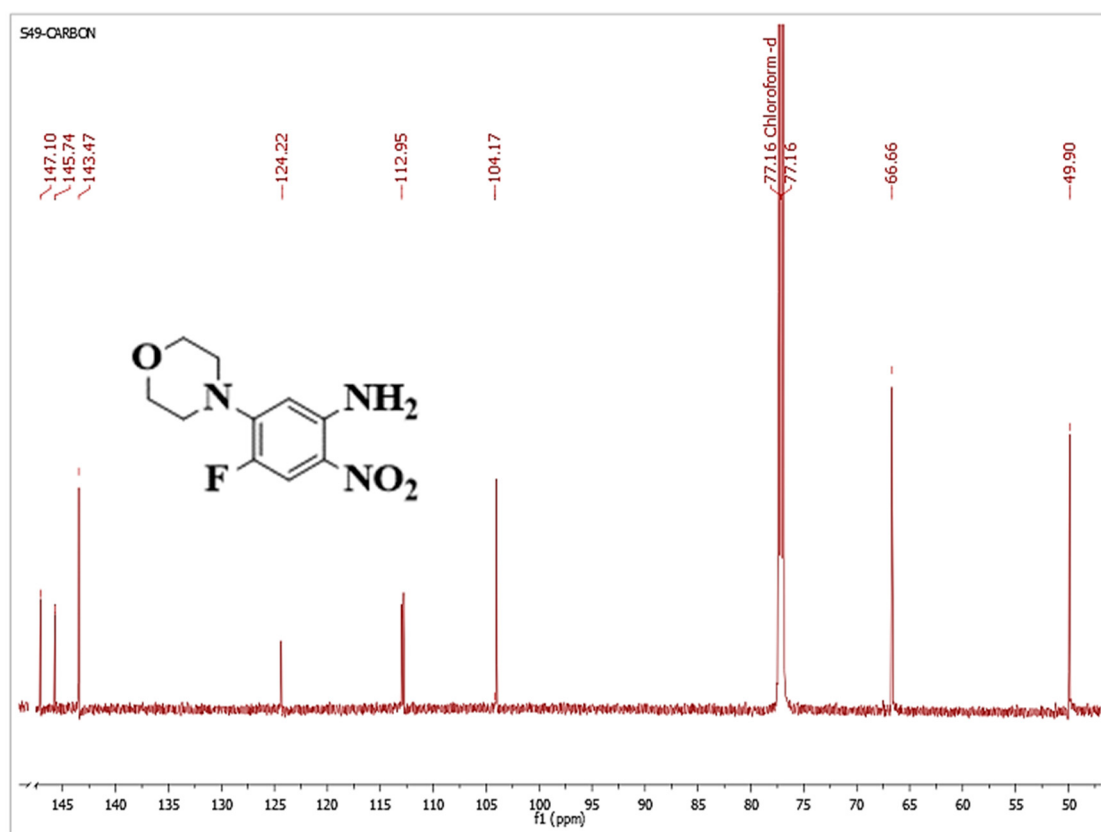


Figure S55. ¹³C-NMR spectrum of compound (**4i**) in CDCl₃, 700 MHz.

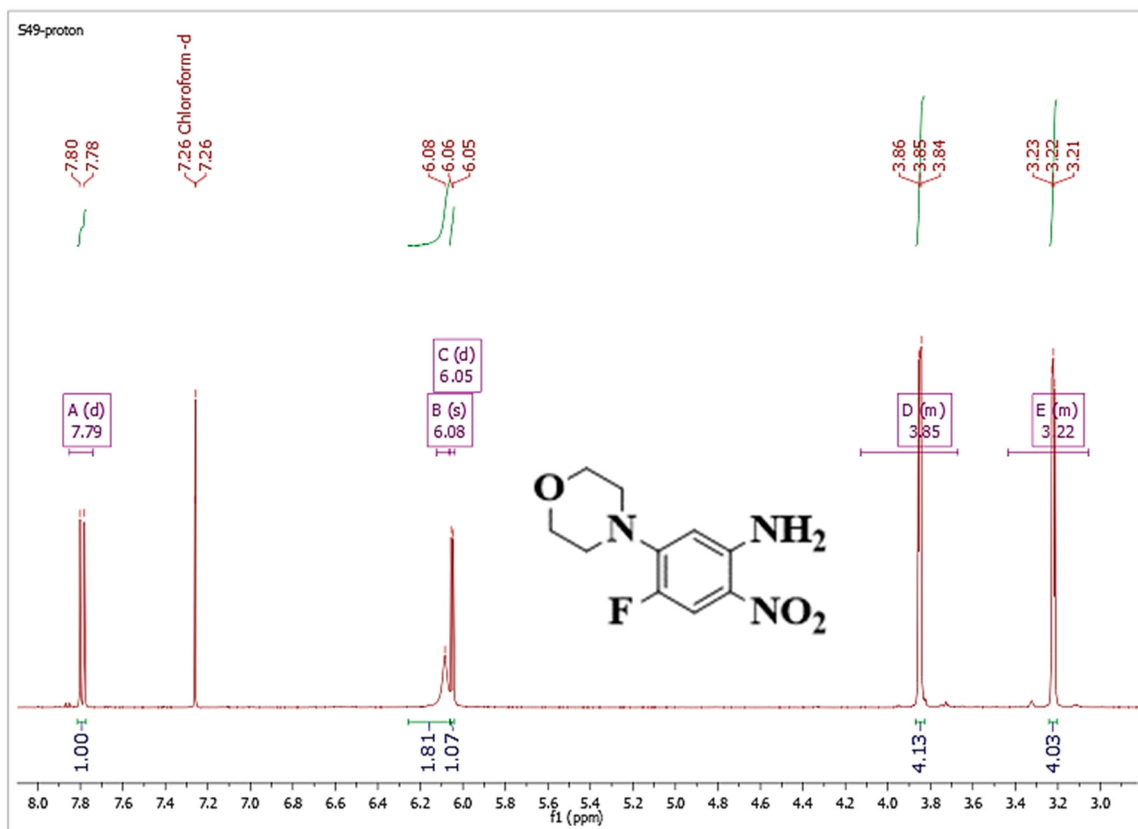


Figure S56. ^1H -NMR spectrum of compound (4i) in CDCl_3 , 700 MHz.

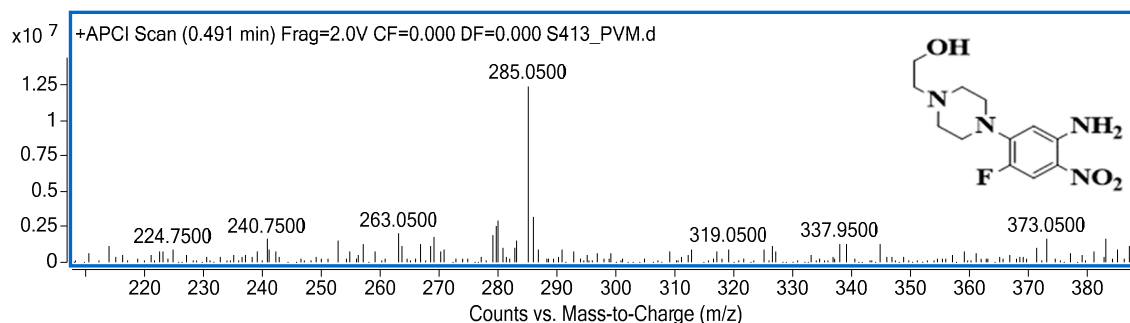


Figure S57. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (4j).

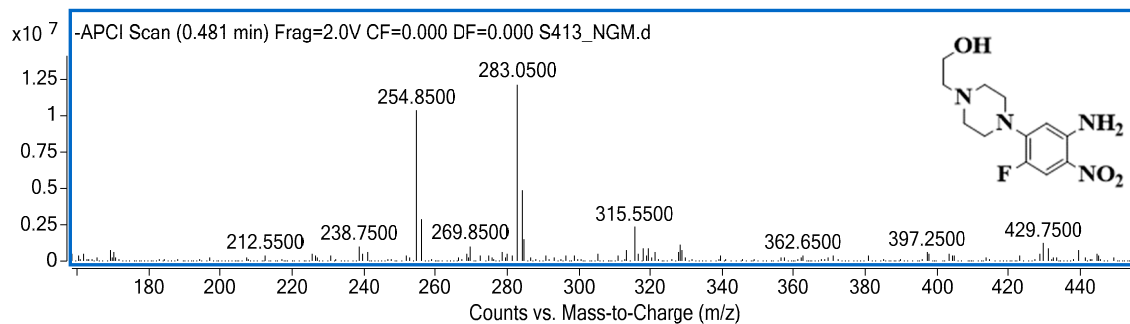


Figure S58. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (4j).

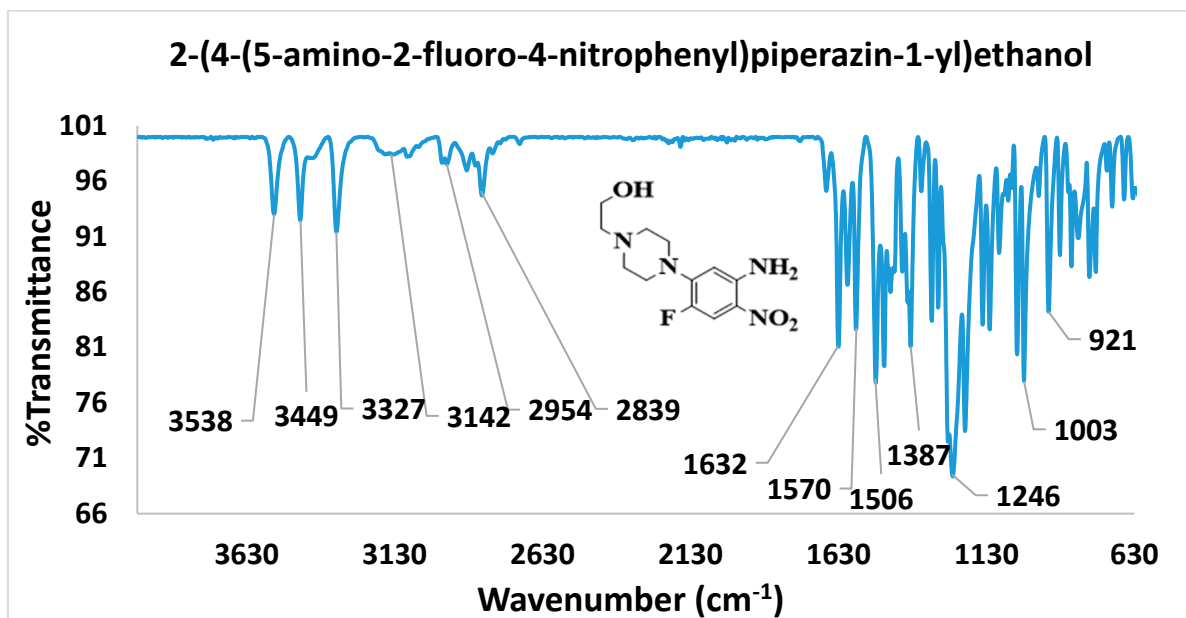


Figure S59. FT-IR spectrum of compound (**4j**).

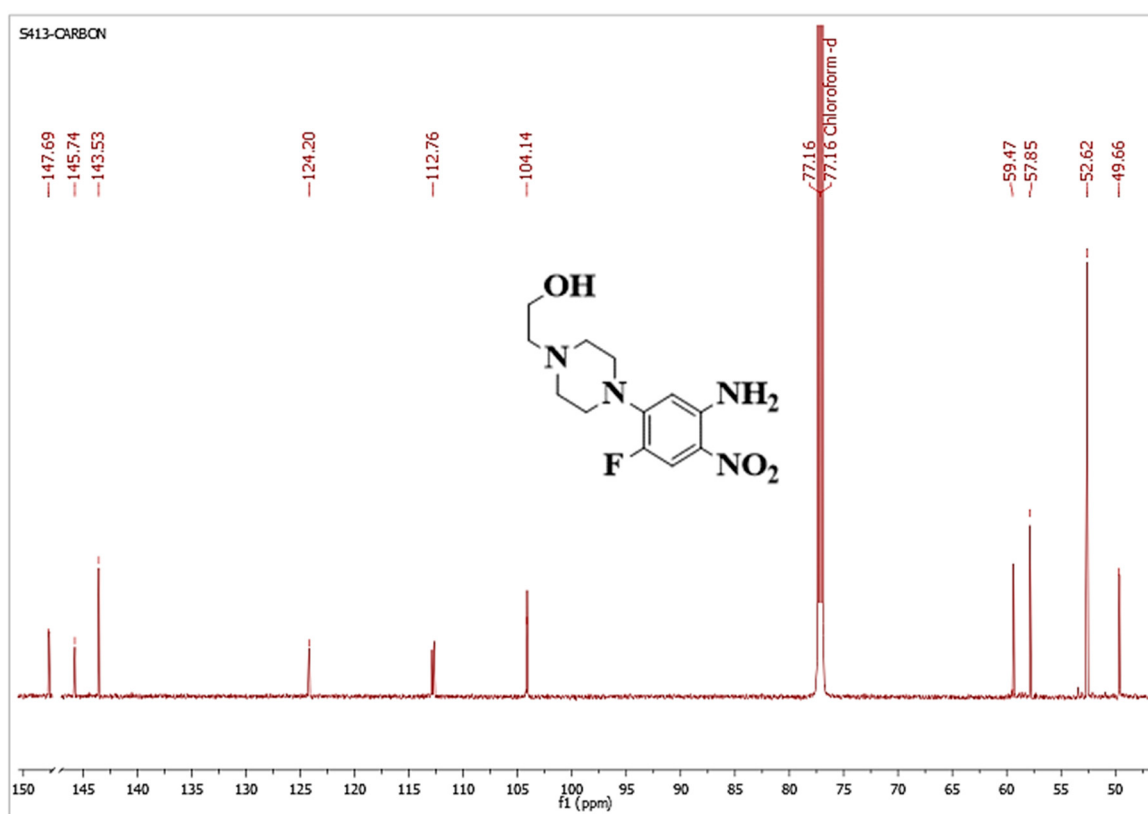


Figure S60. ¹³C-NMR spectrum of compound (**4j**) in CDCl₃, 700 MHz.

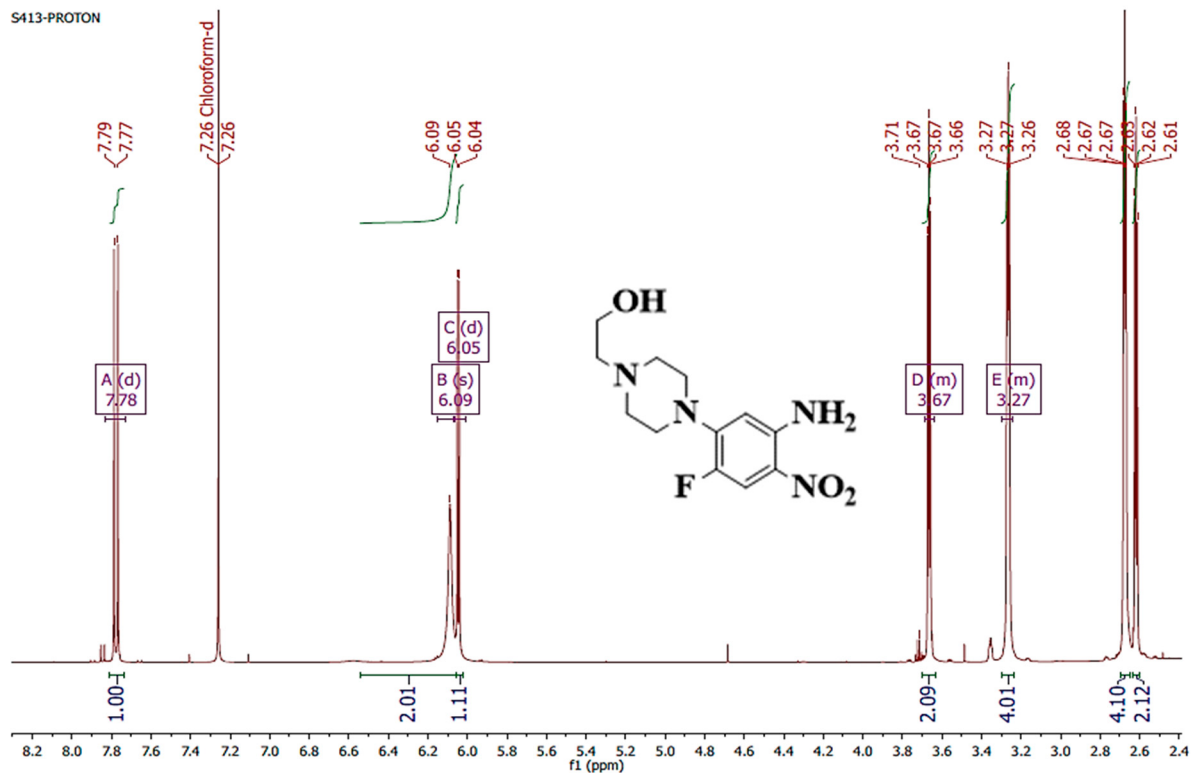


Figure S61. ^1H -NMR spectrum of compound (4j) in CDCl_3 , 700 MHz

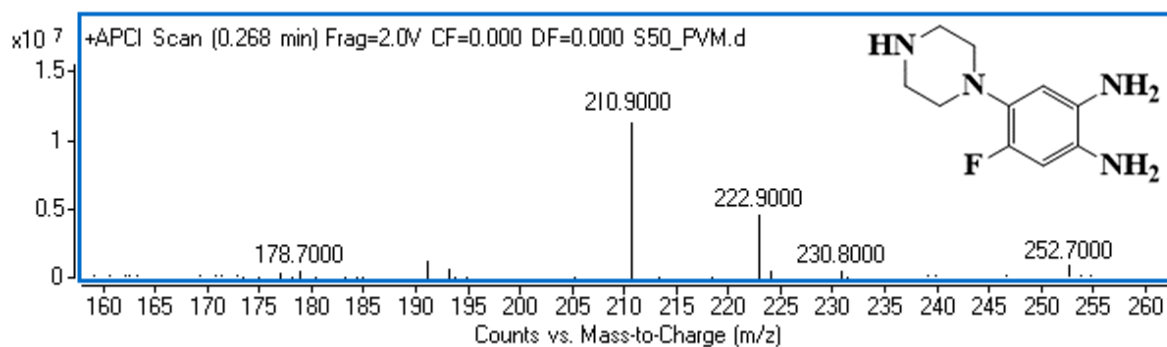


Figure S62. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (5a).

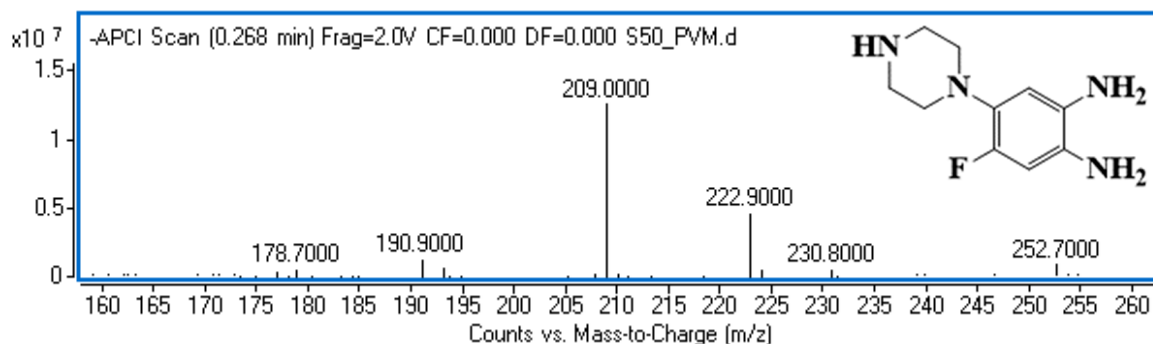


Figure S63. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (5a).

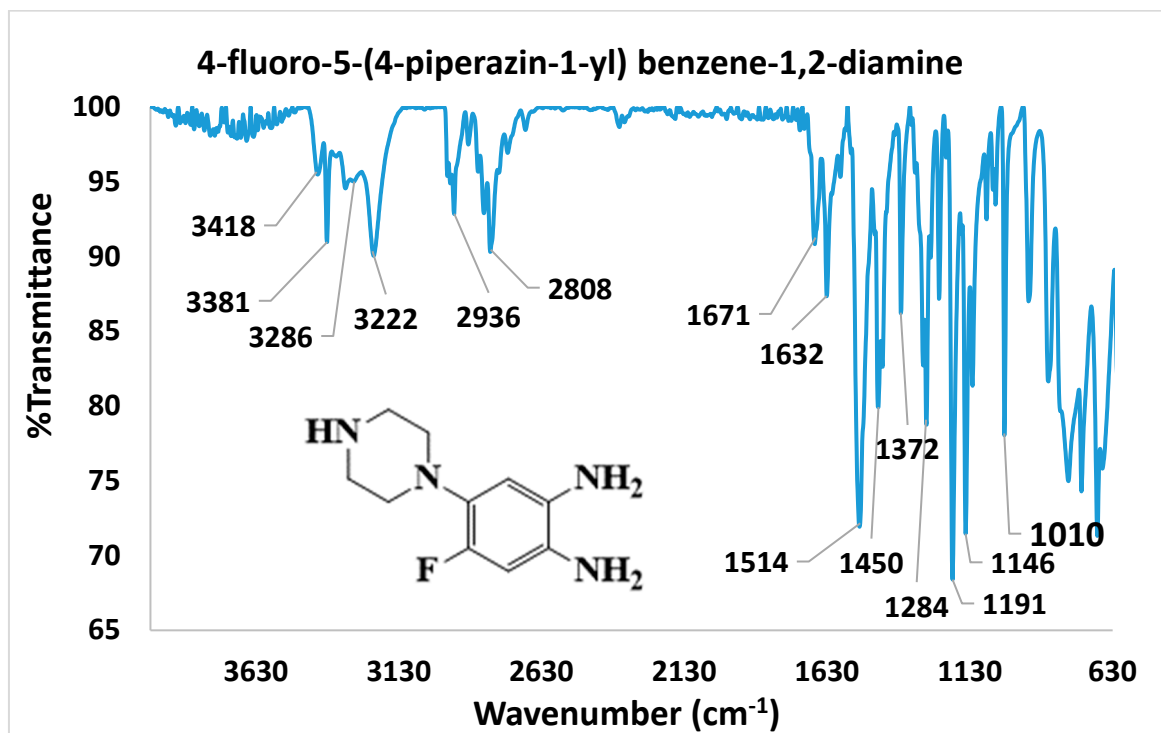


Figure S64. FT-IR spectrum of compound (5a).

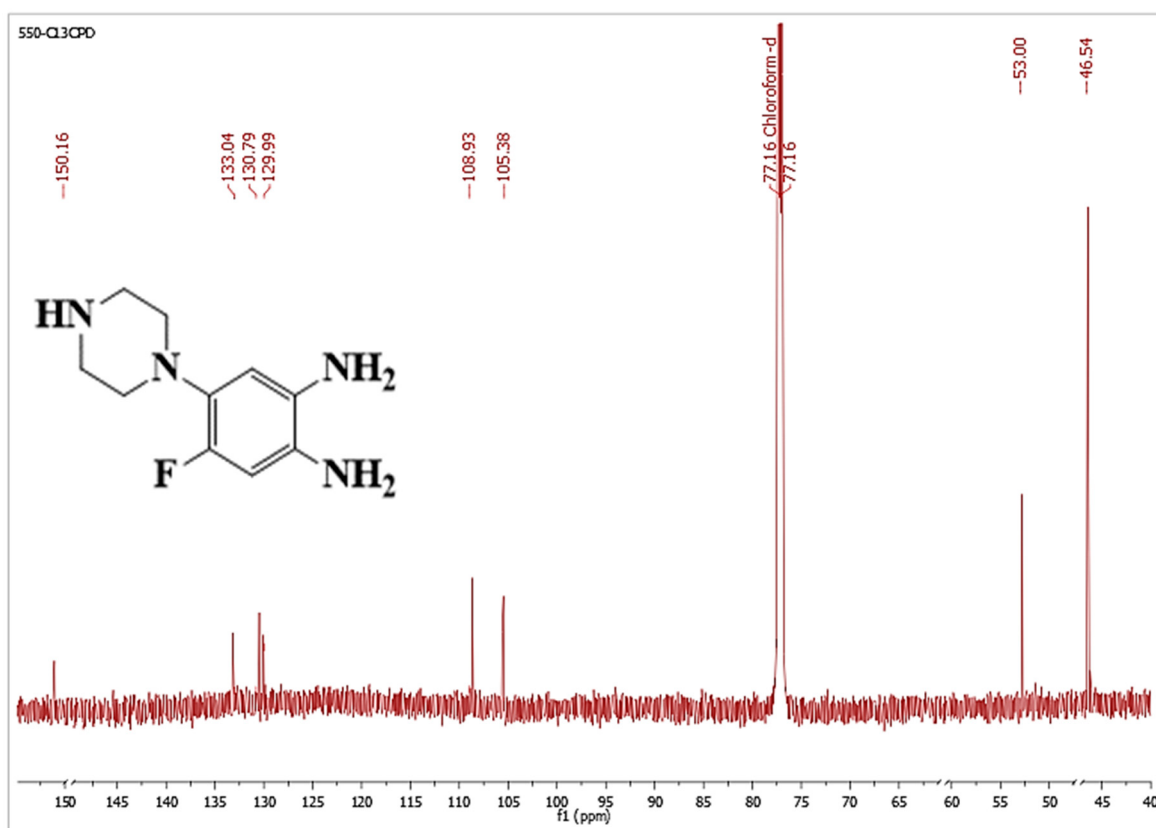


Figure S65. ¹³C-NMR spectrum of compound (5a) in CDCl₃, 700 MHz.

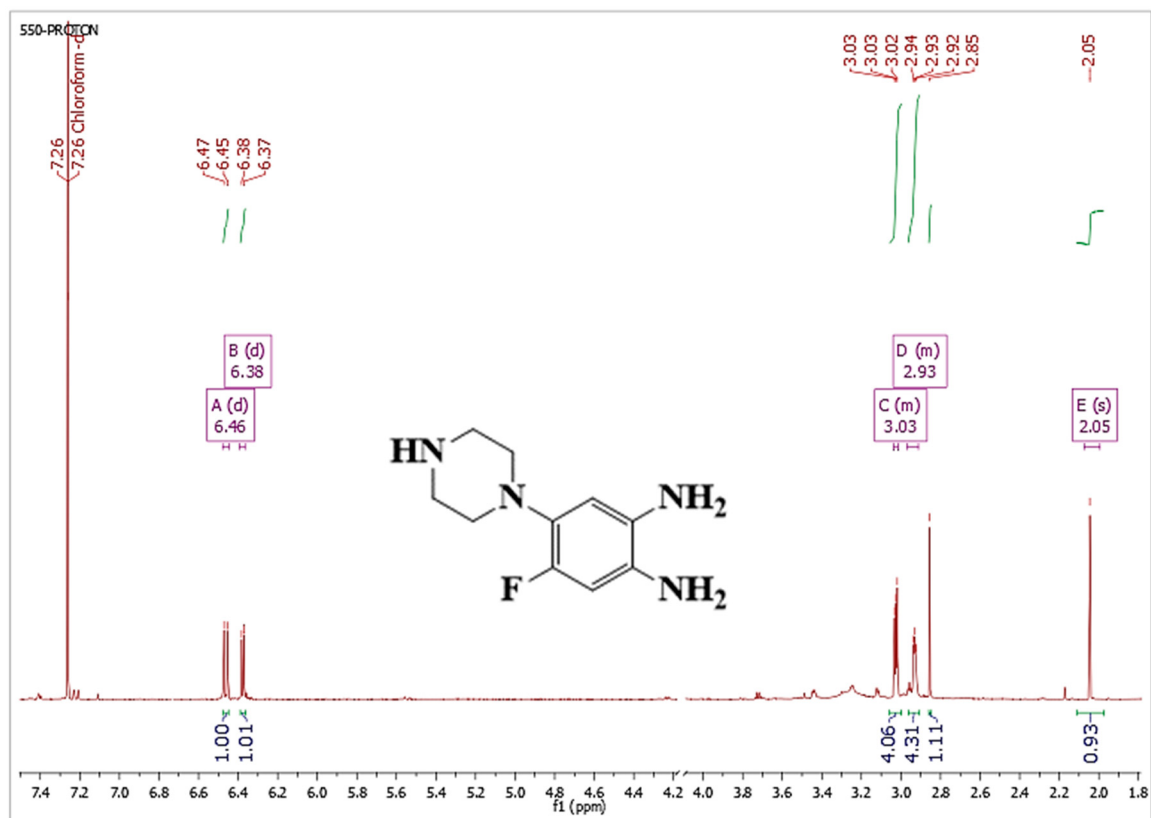


Figure S66. ¹H-NMR spectrum of compound (5a) in CDCl₃, 700 MHz.

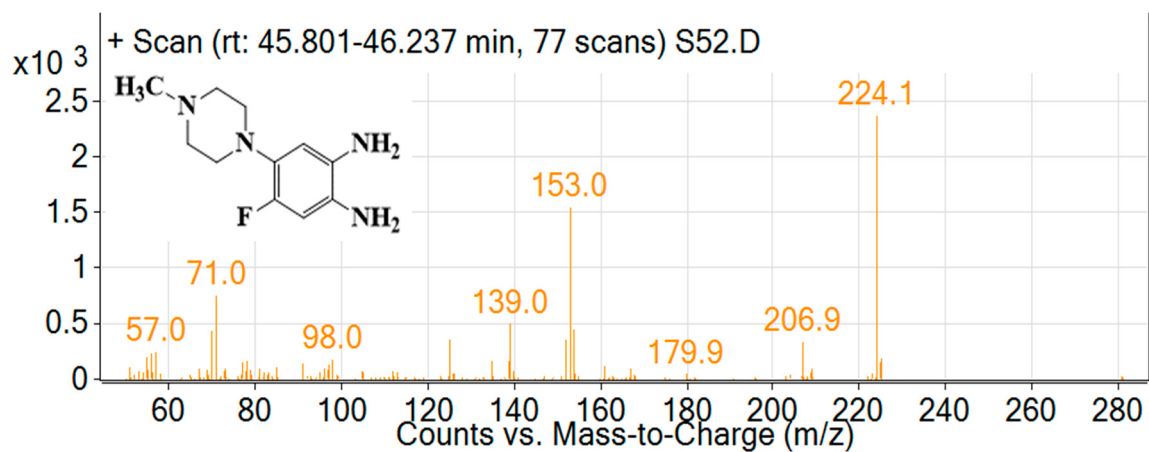


Figure S67. Mass spectrometry spectrum GC-MS of compound (5b).

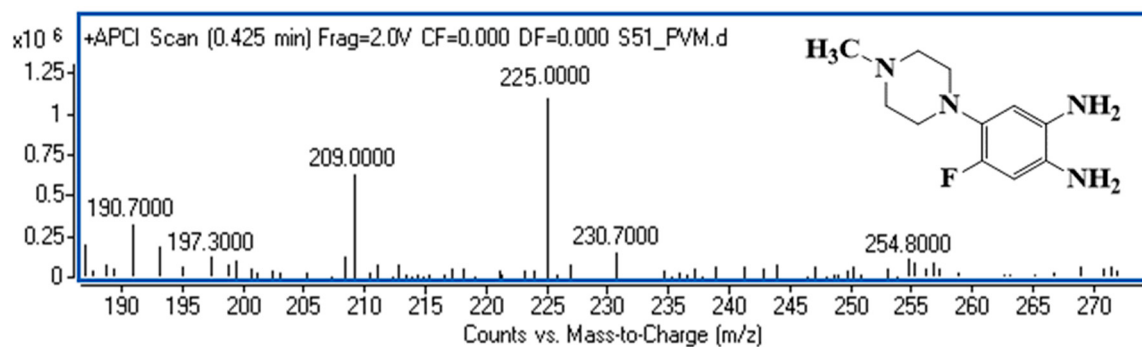


Figure S68. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (5b).

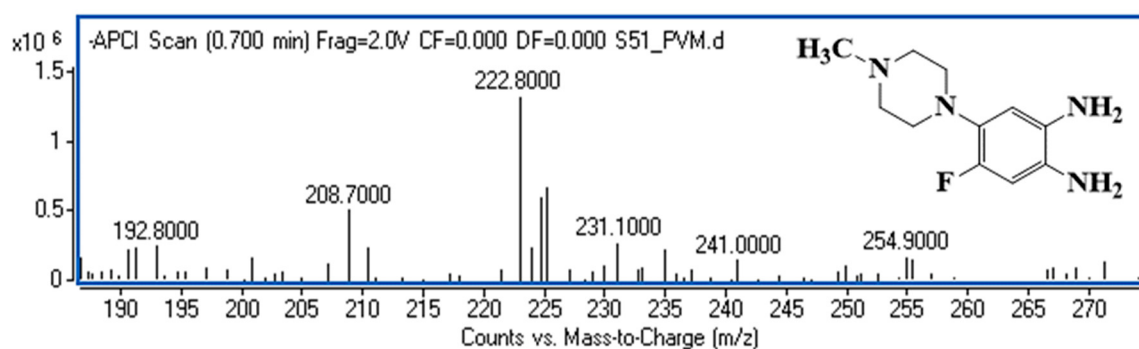


Figure S69. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (5b).

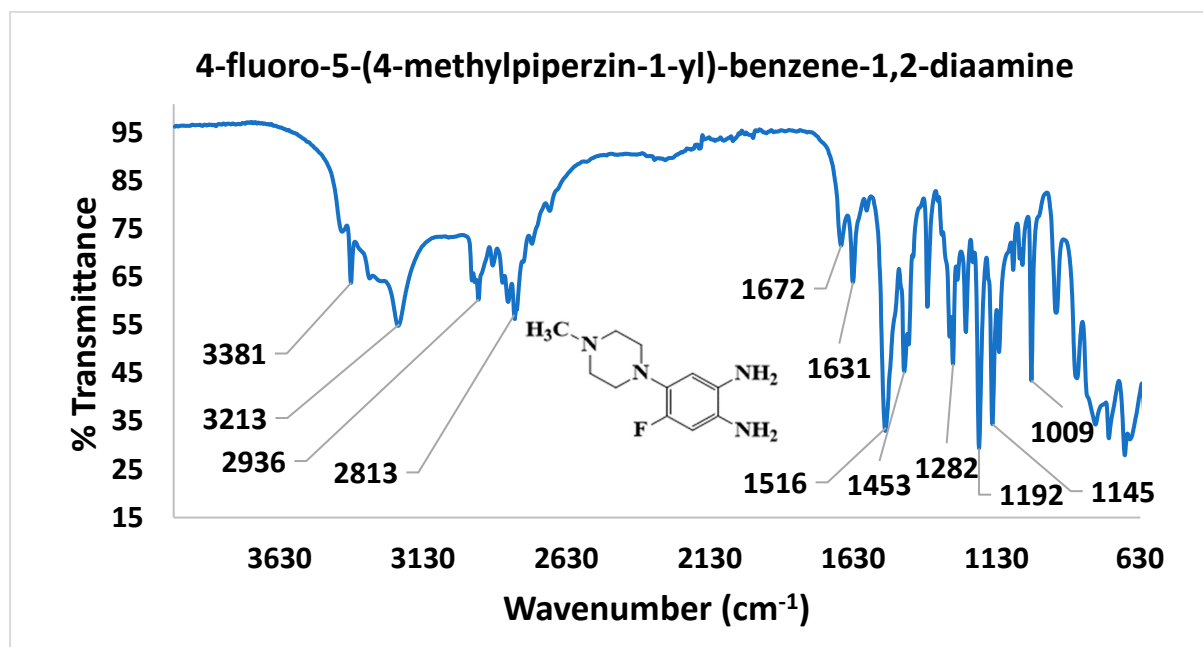


Figure S70. FT-IR spectrum of compound (5b).

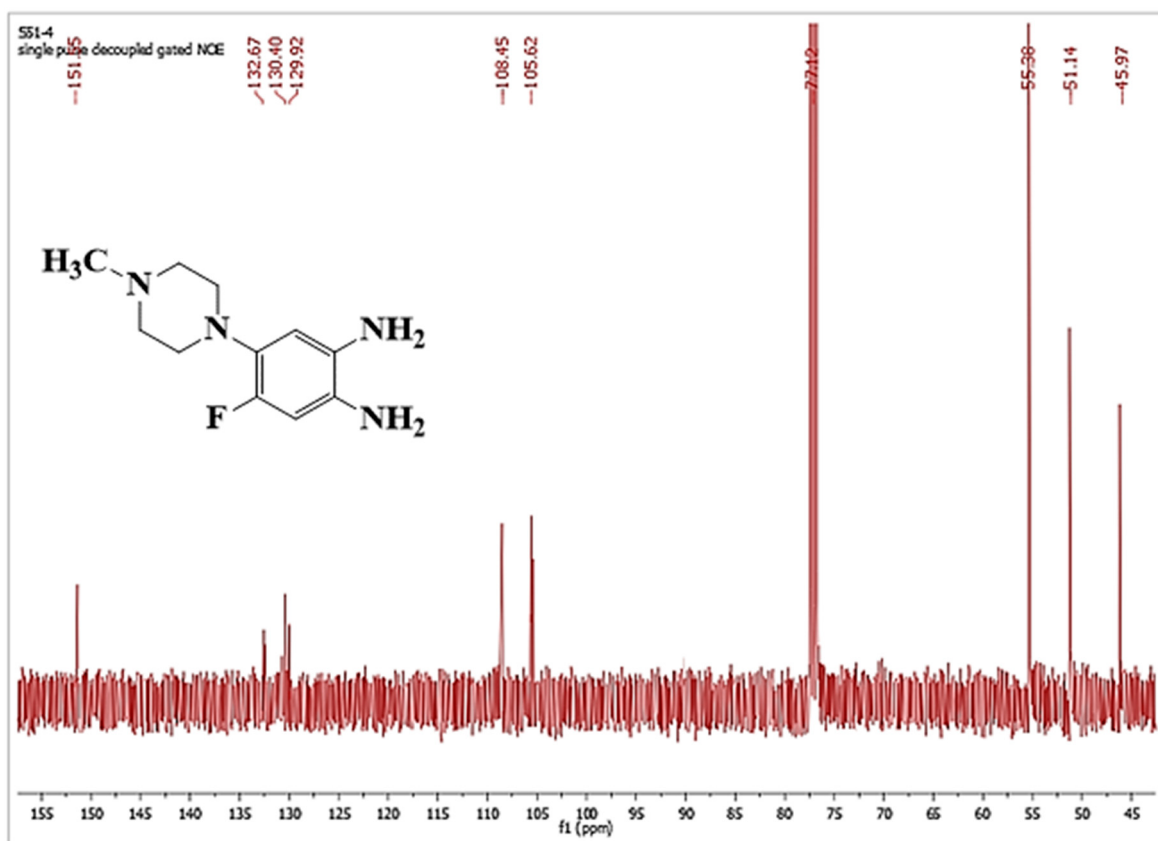


Figure S71. ¹³C-NMR spectrum of compound (**5b**) in CDCl₃, 700 MHz.

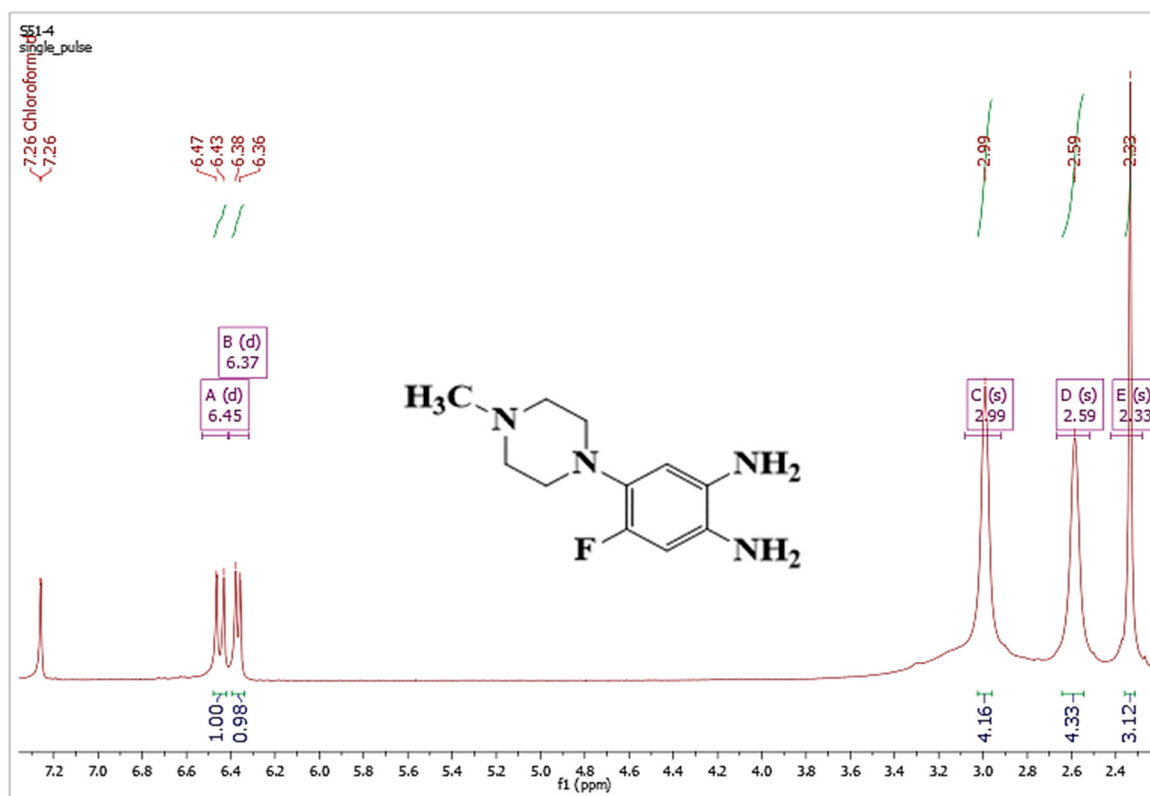


Figure S72. ¹H-NMR spectrum of compound (**5b**) in CDCl₃, 700 MHz.

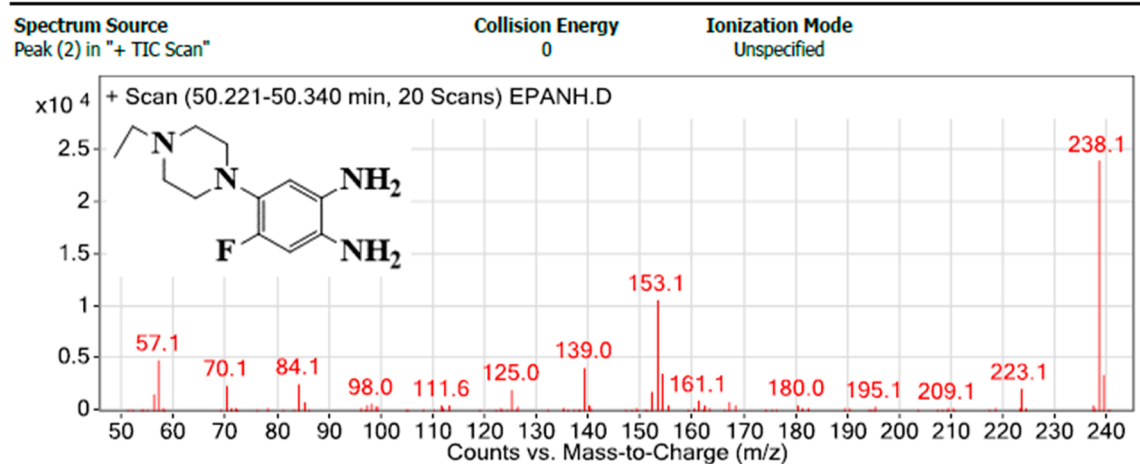


Figure S73. Mass spectrometry spectrum GC-MS of compound (**5c**).

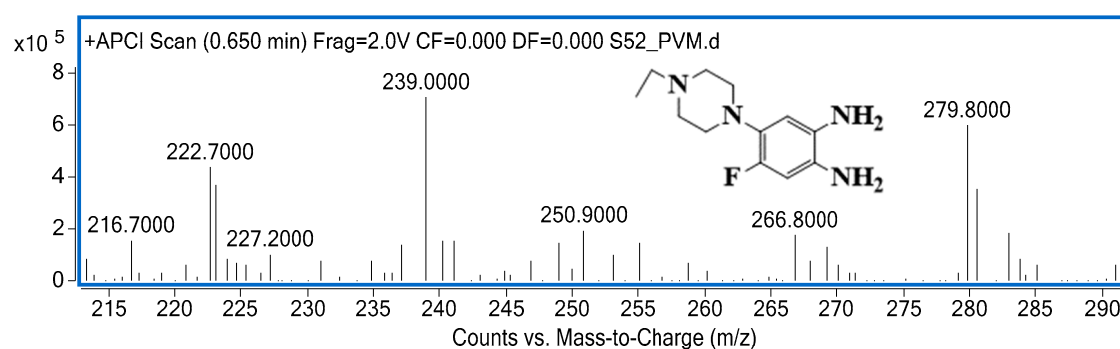


Figure S74. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (**5c**).

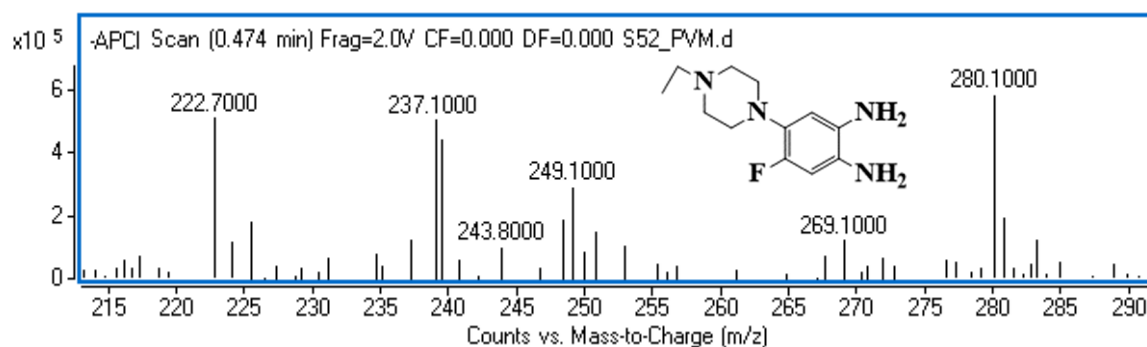


Figure S75. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (**5c**).

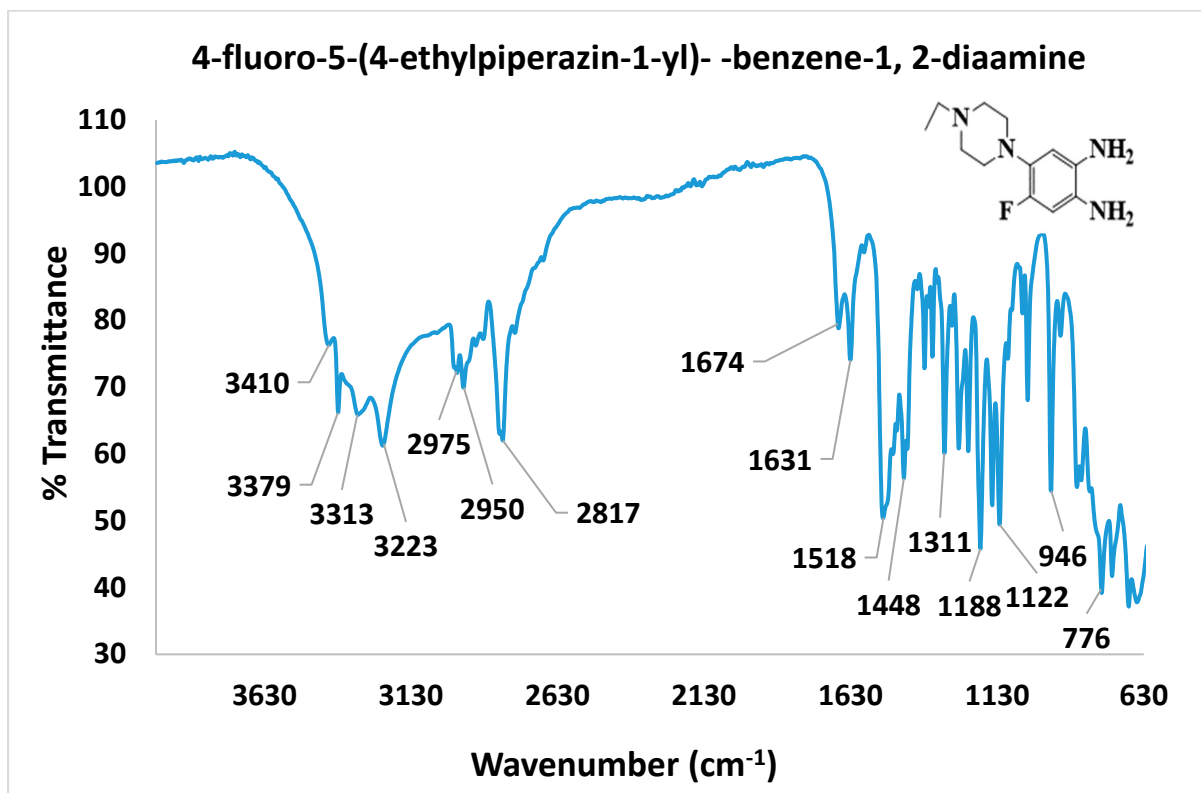


Figure S76. FT-IR spectrum of compound (**5c**).

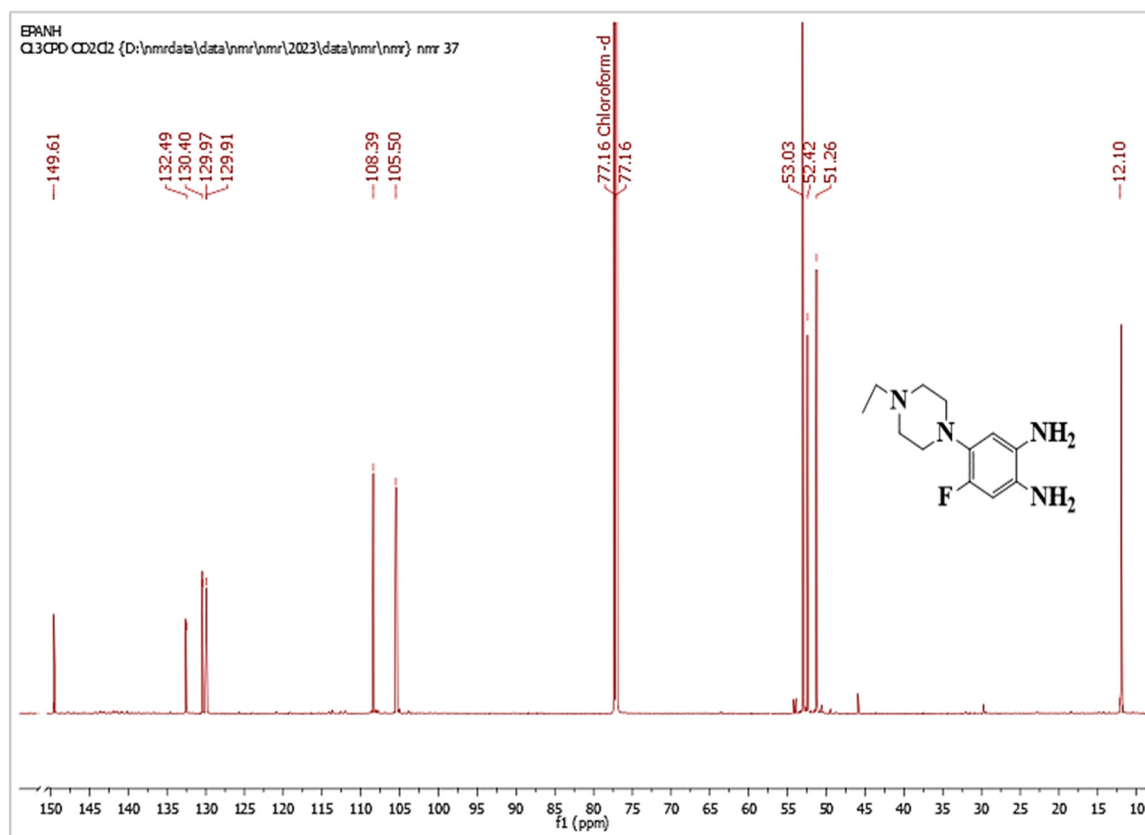
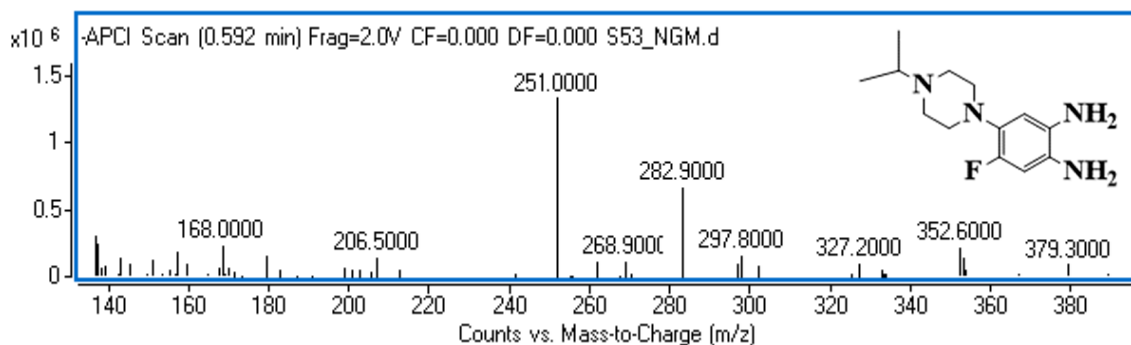
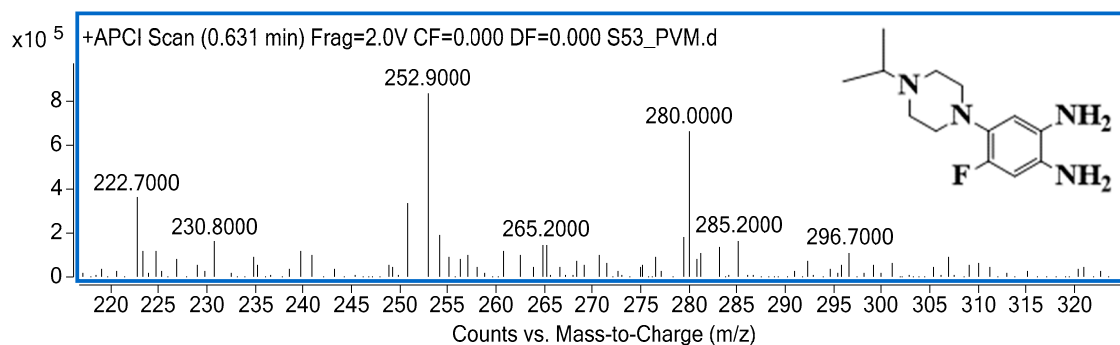
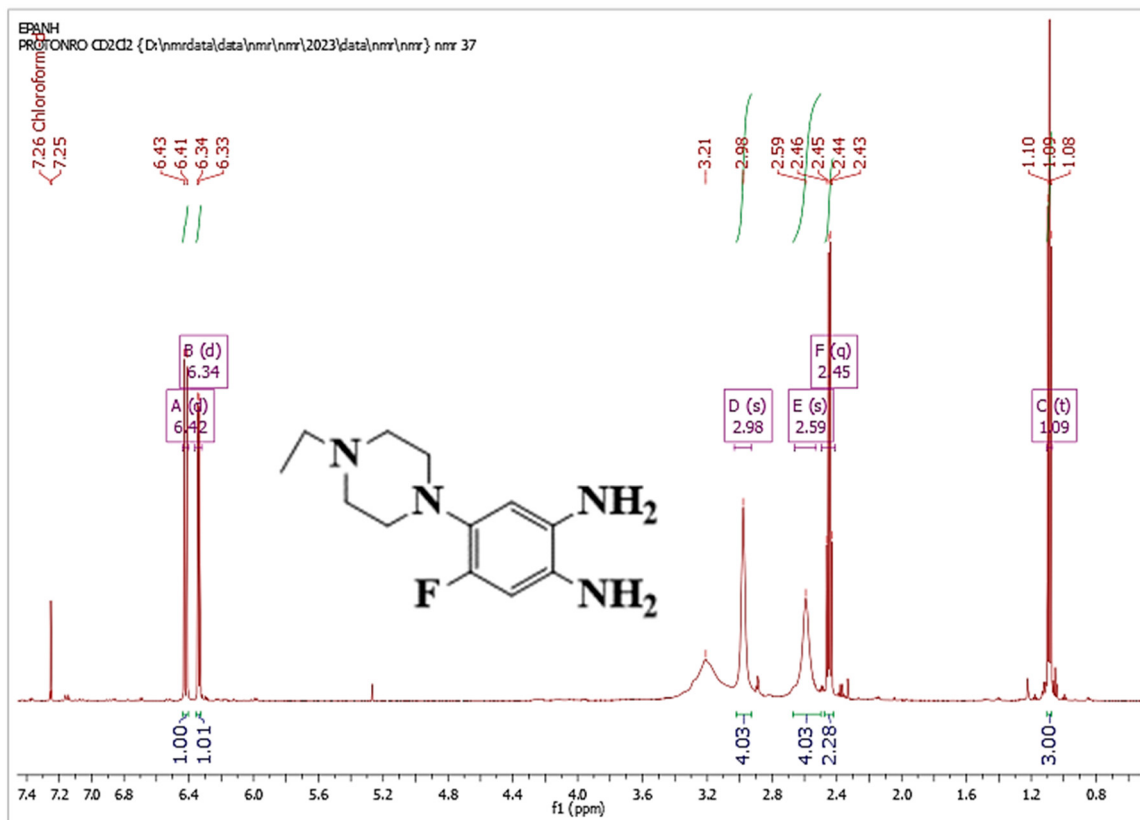


Figure S77. ¹³C-NMR spectrum of compound (**5c**) in CDCl₃, 700 MHz.



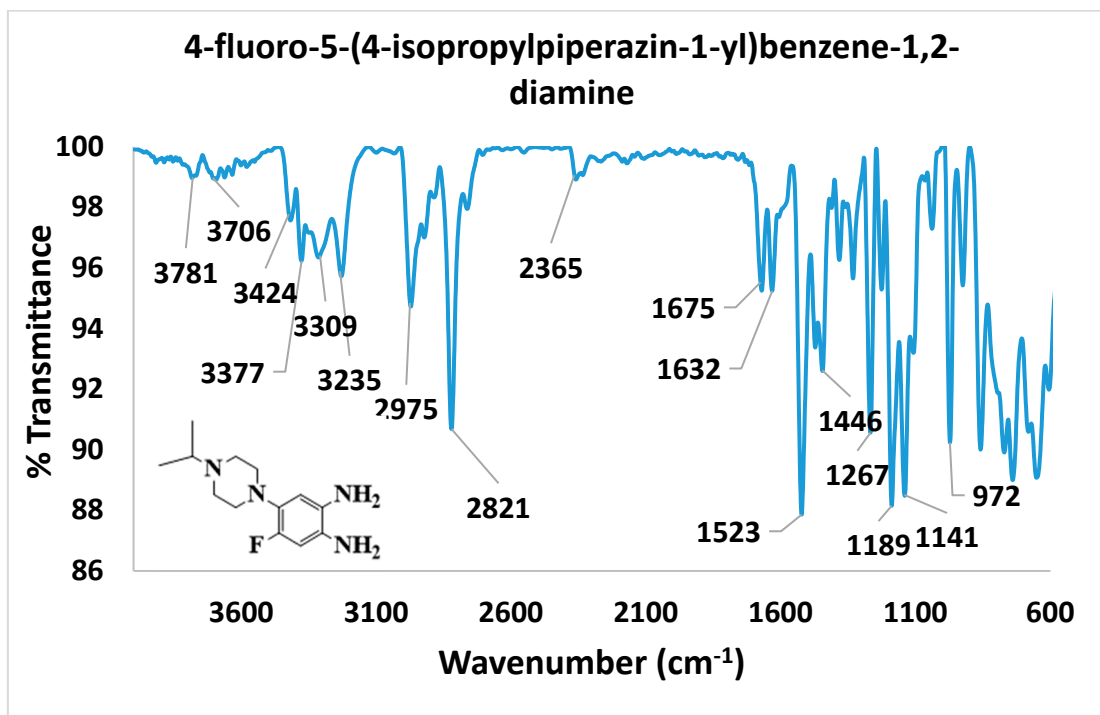


Figure S81. FT-IR spectrum of compound (5d).

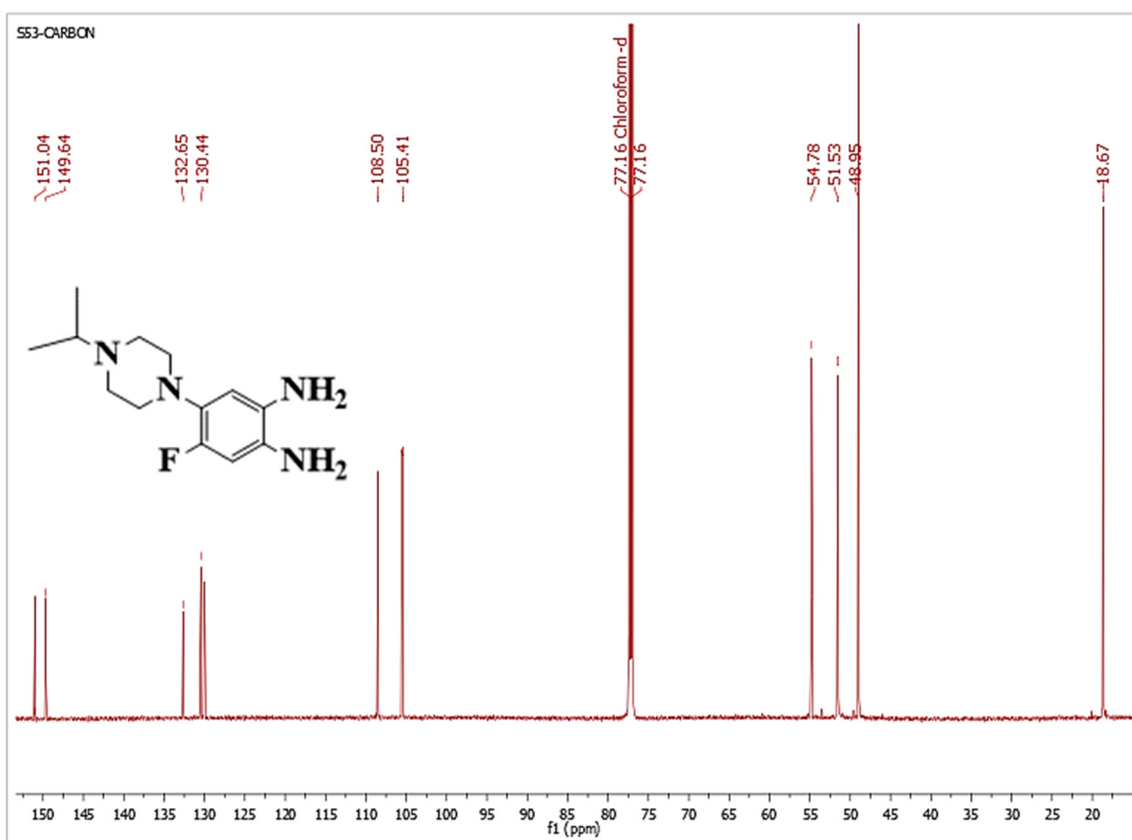


Figure S82. ¹³C-NMR spectrum of compound (5d) in CDCl₃, 700 MHz.

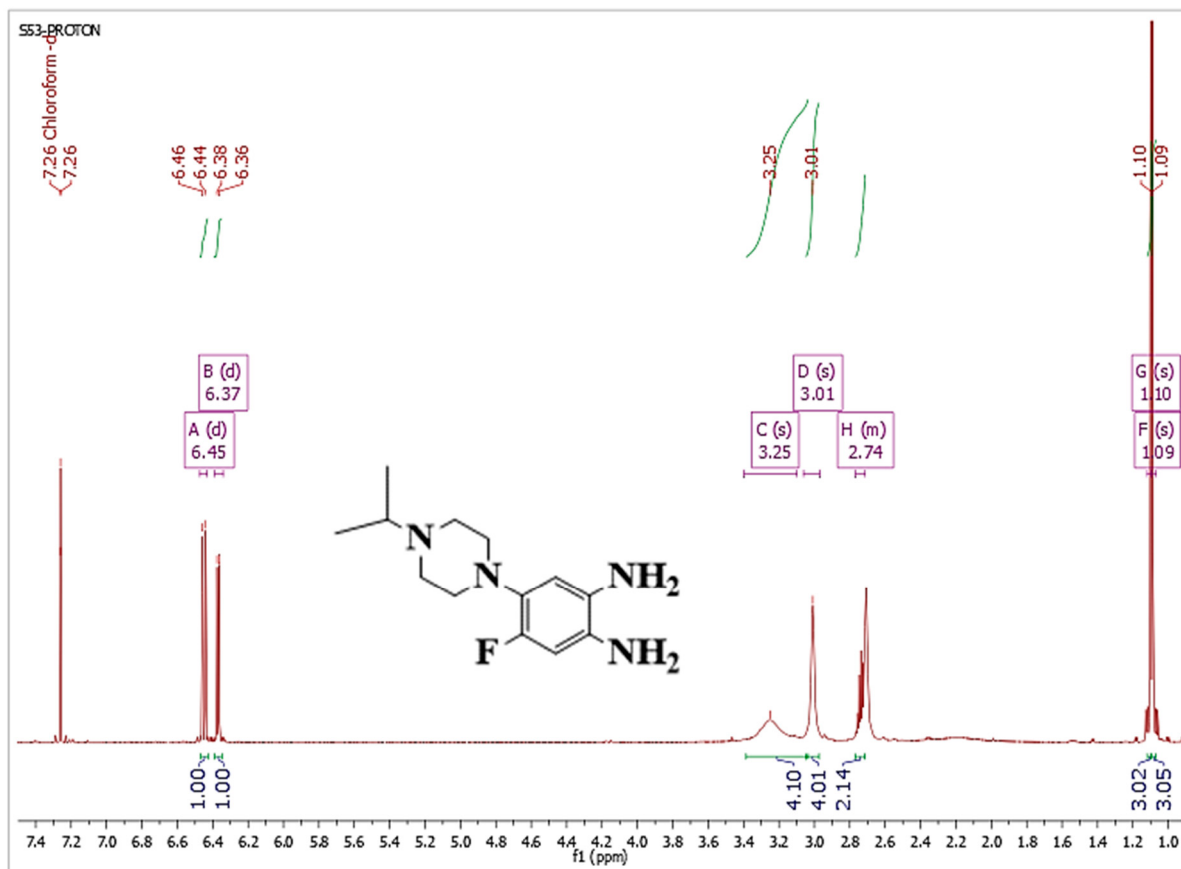


Figure S83. ^1H -NMR spectrum of compound (5d) in CDCl_3 , 700 MHz.

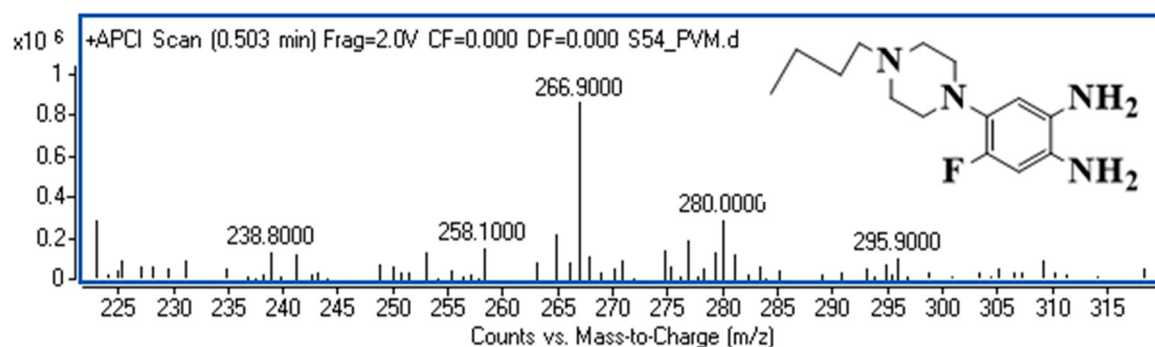


Figure S84. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (5e).

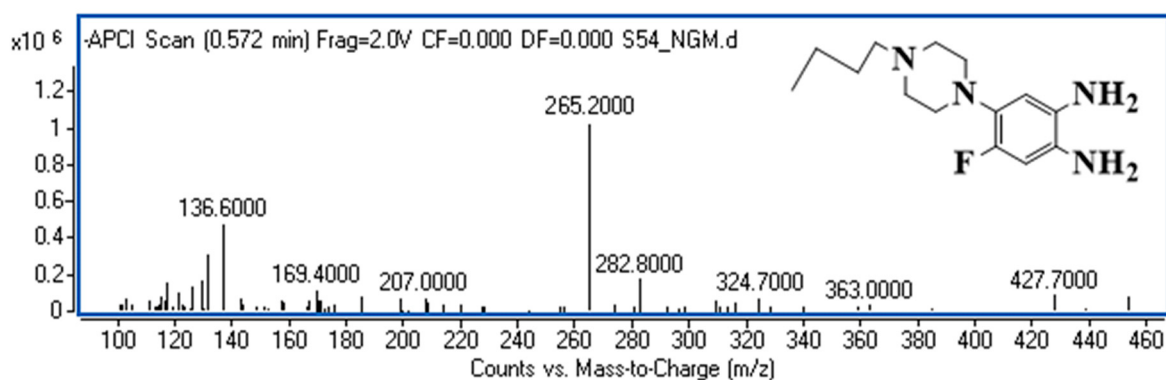


Figure S85. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (5e).

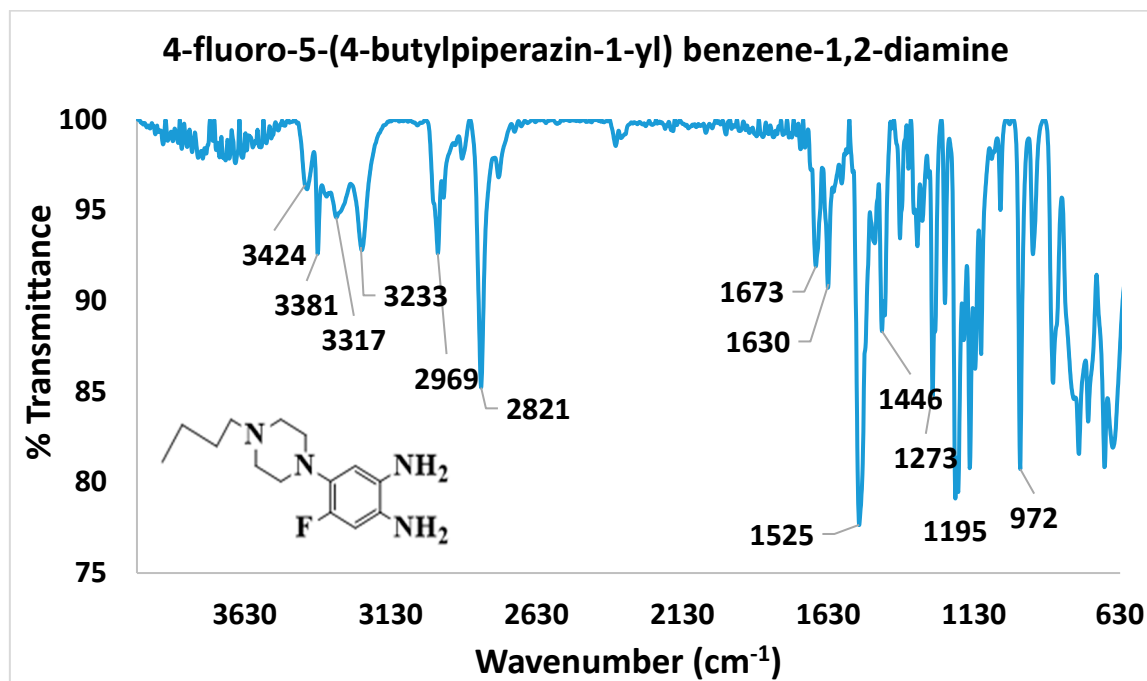


Figure S86. FT-IR spectrum of compound (5e).

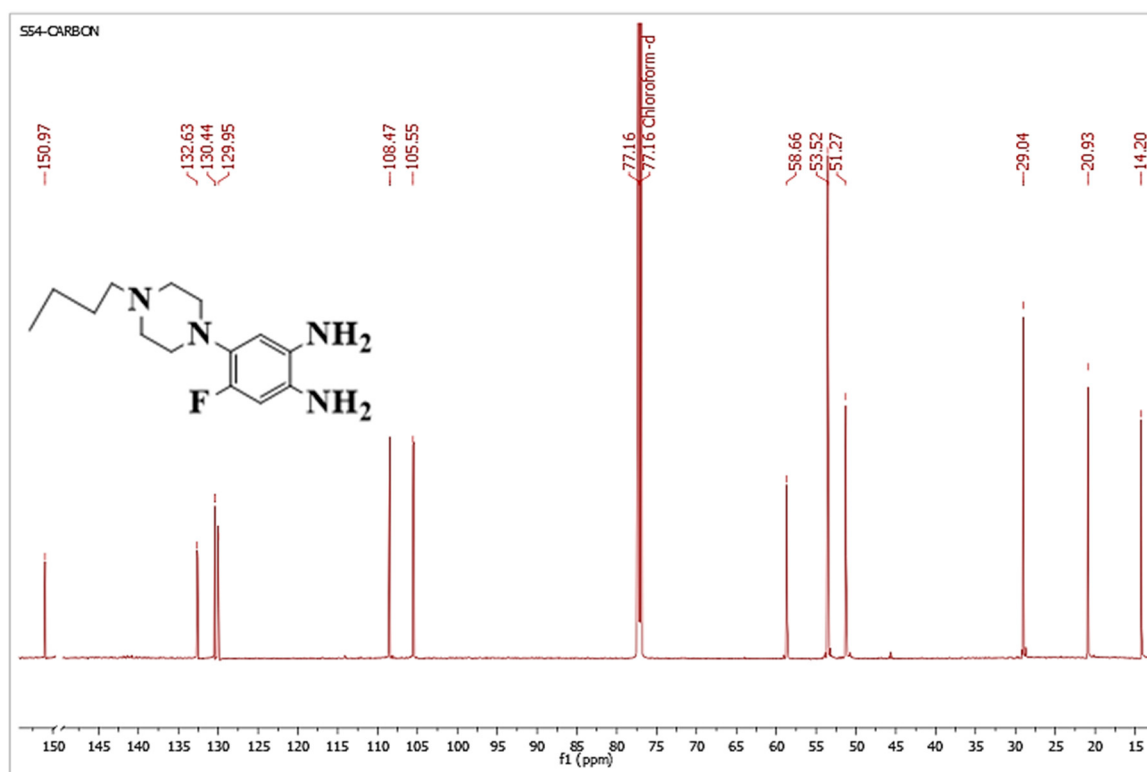


Figure S87. ¹³C-NMR spectrum of compound (5e) in CDCl₃, 700 MHz.

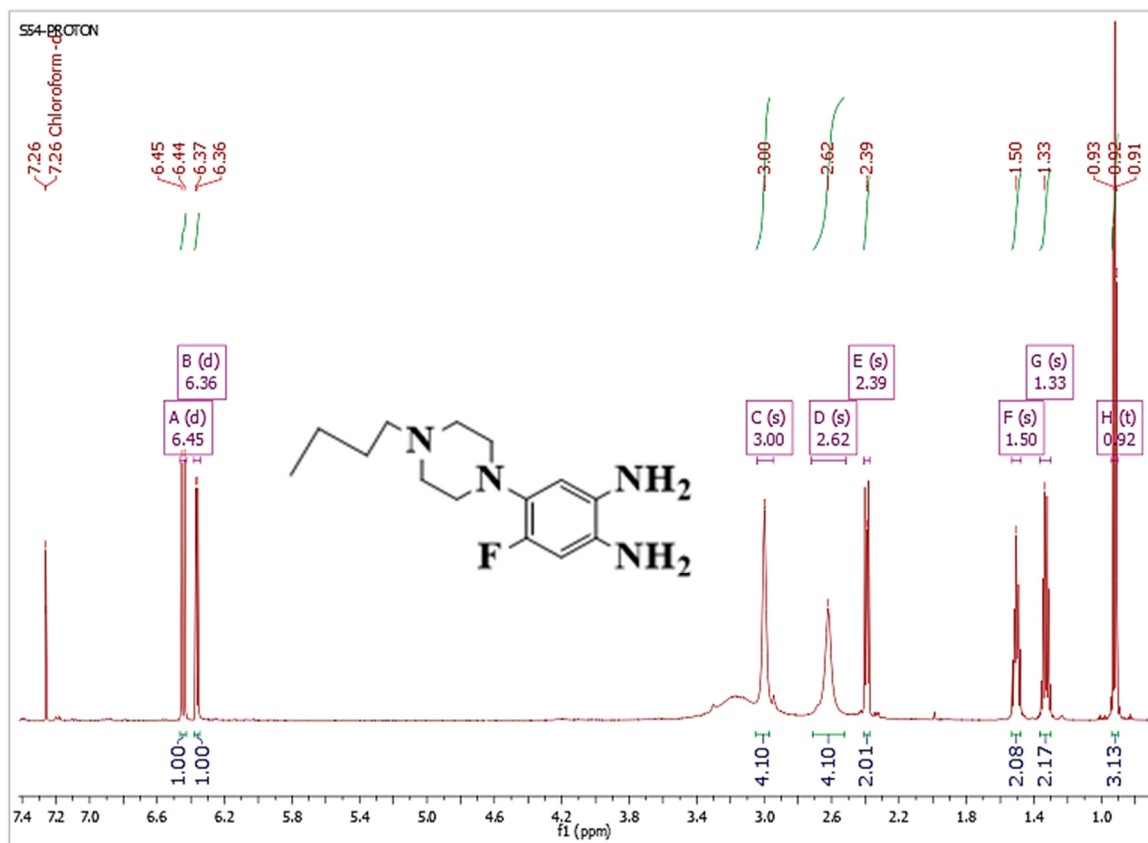


Figure S88. ^1H -NMR spectrum of compound (5e) in CDCl_3 , 700 MHz.

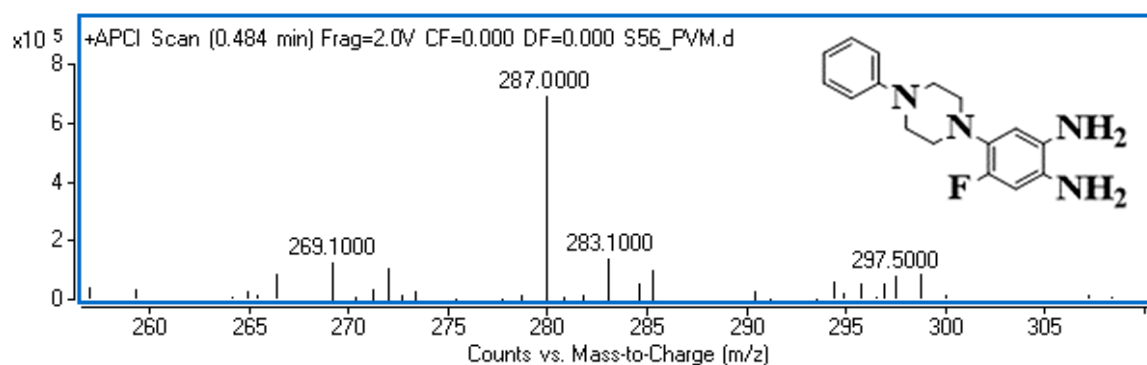


Figure S89. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (5f).

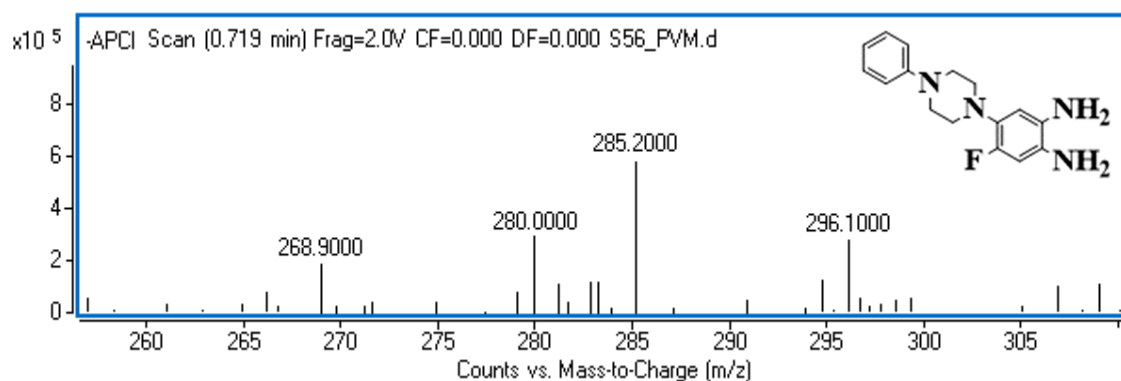


Figure S90. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (5f).

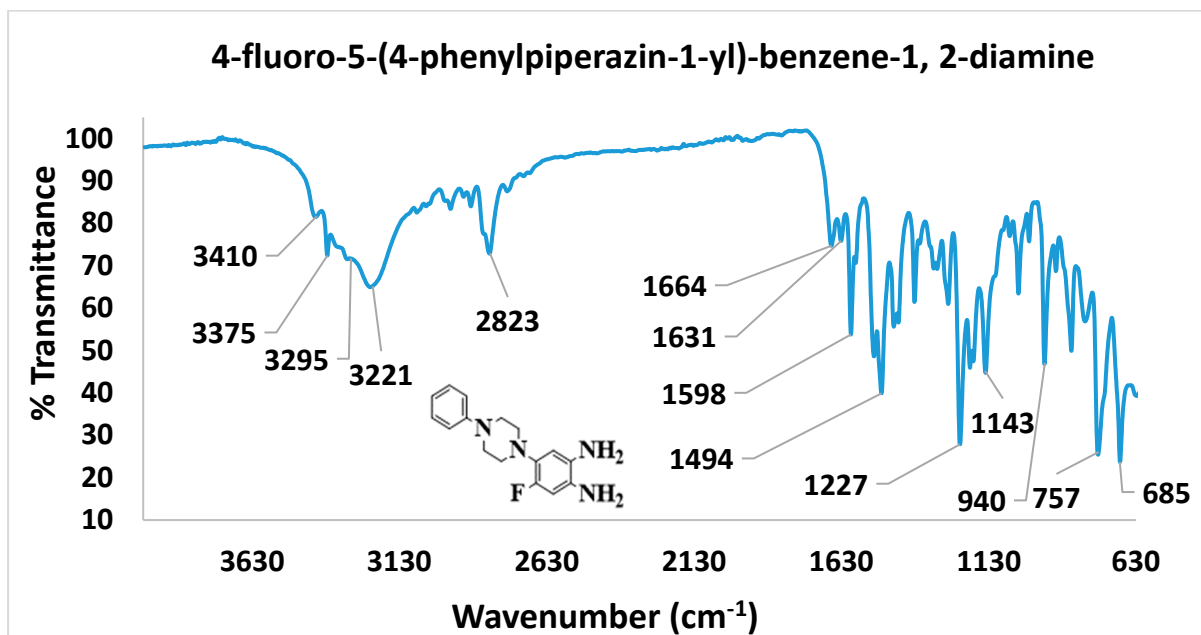


Figure S91. FT-IR spectrum of compound (**5f**).

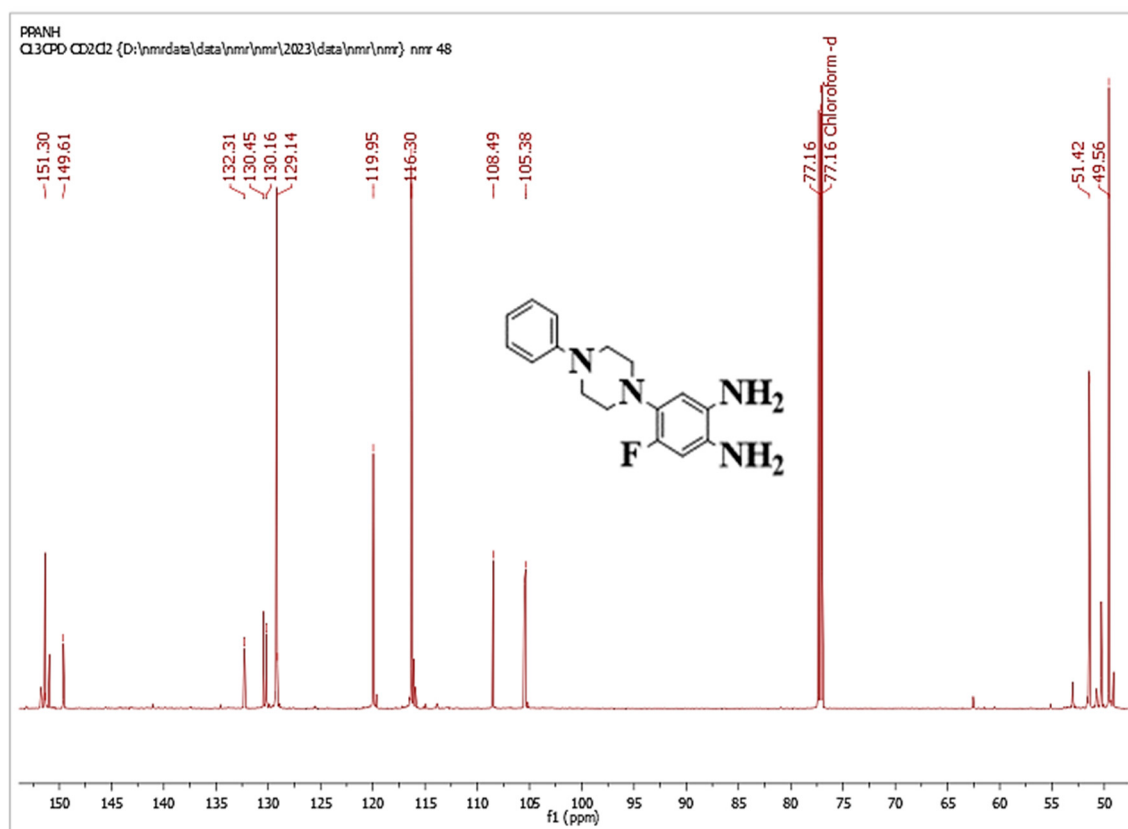


Figure S92. ¹³C-NMR spectrum of compound (**5f**) in CDCl₃, 700 MHz.

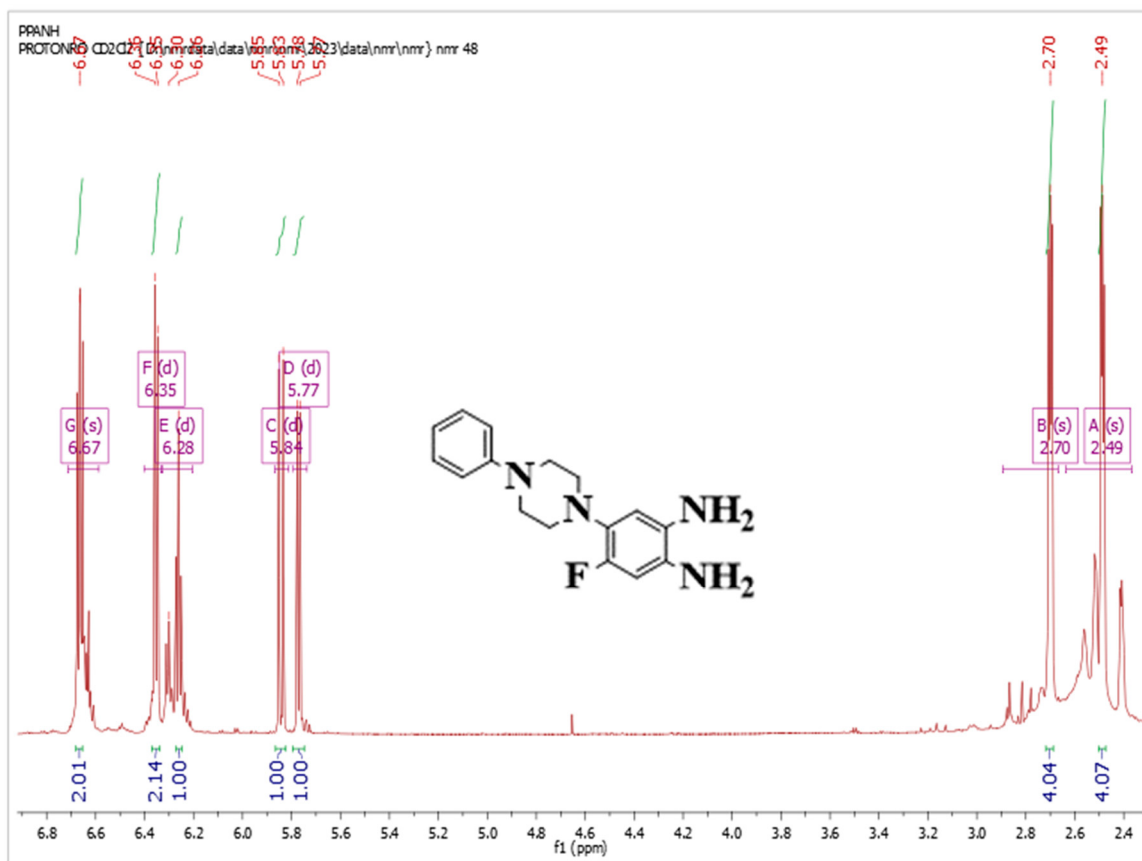


Figure S93. ^1H -NMR spectrum of compound (5f) in CDCl_3 , 700 MHz.

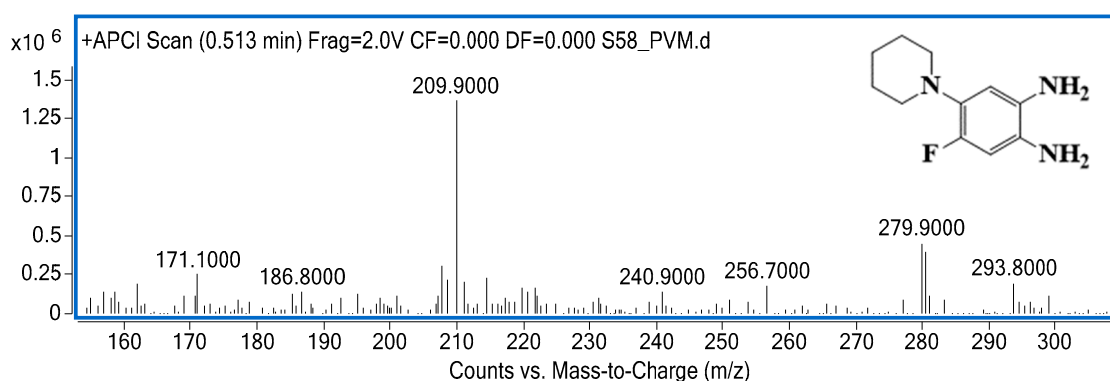


Figure S94. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (5h).

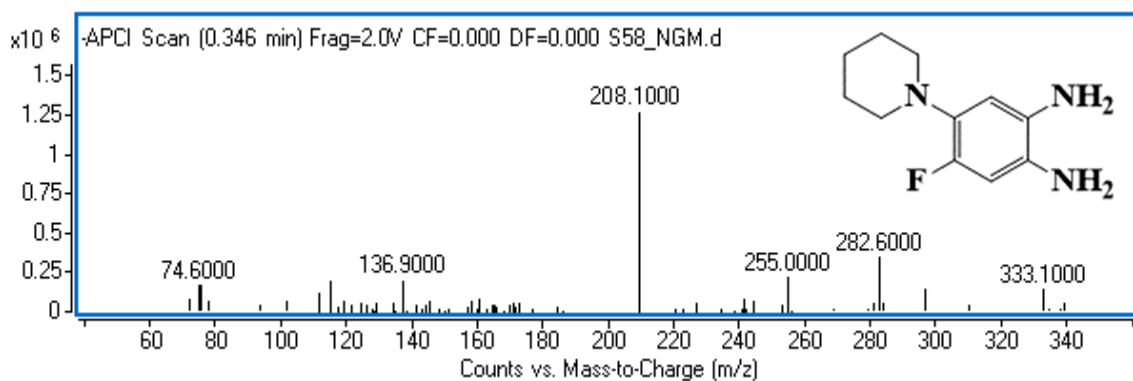


Figure S95. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (5h).

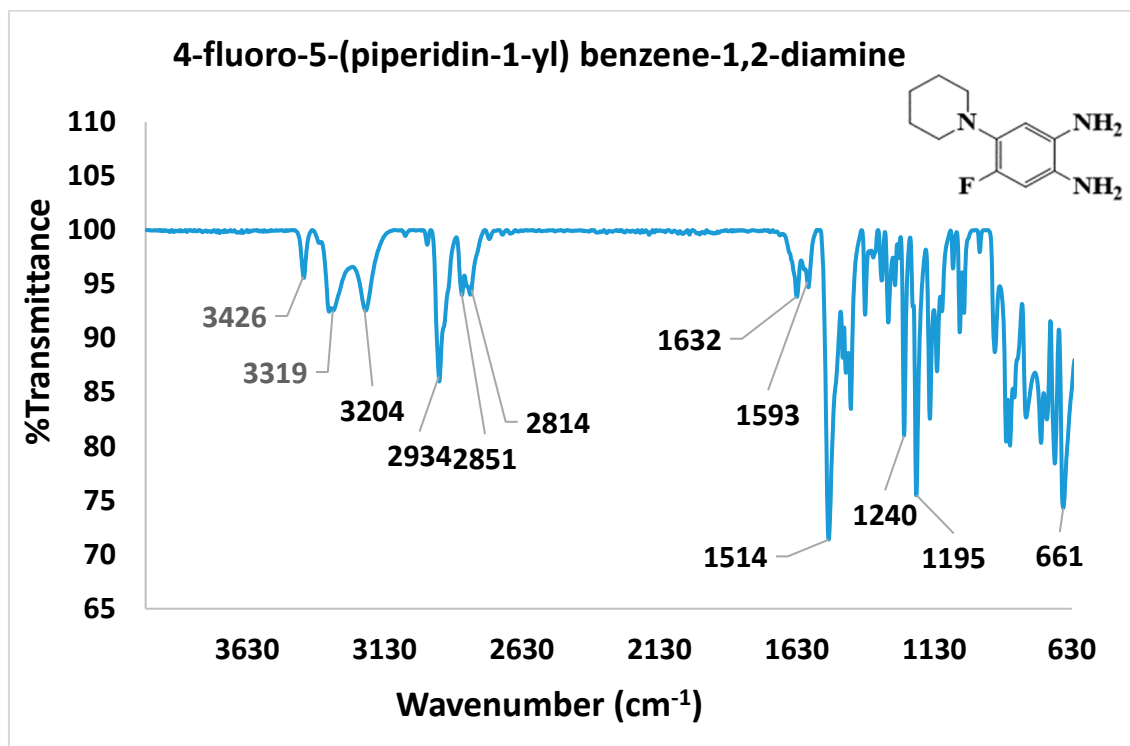


Figure S96. FT-IR spectrum of compound (**5h**).

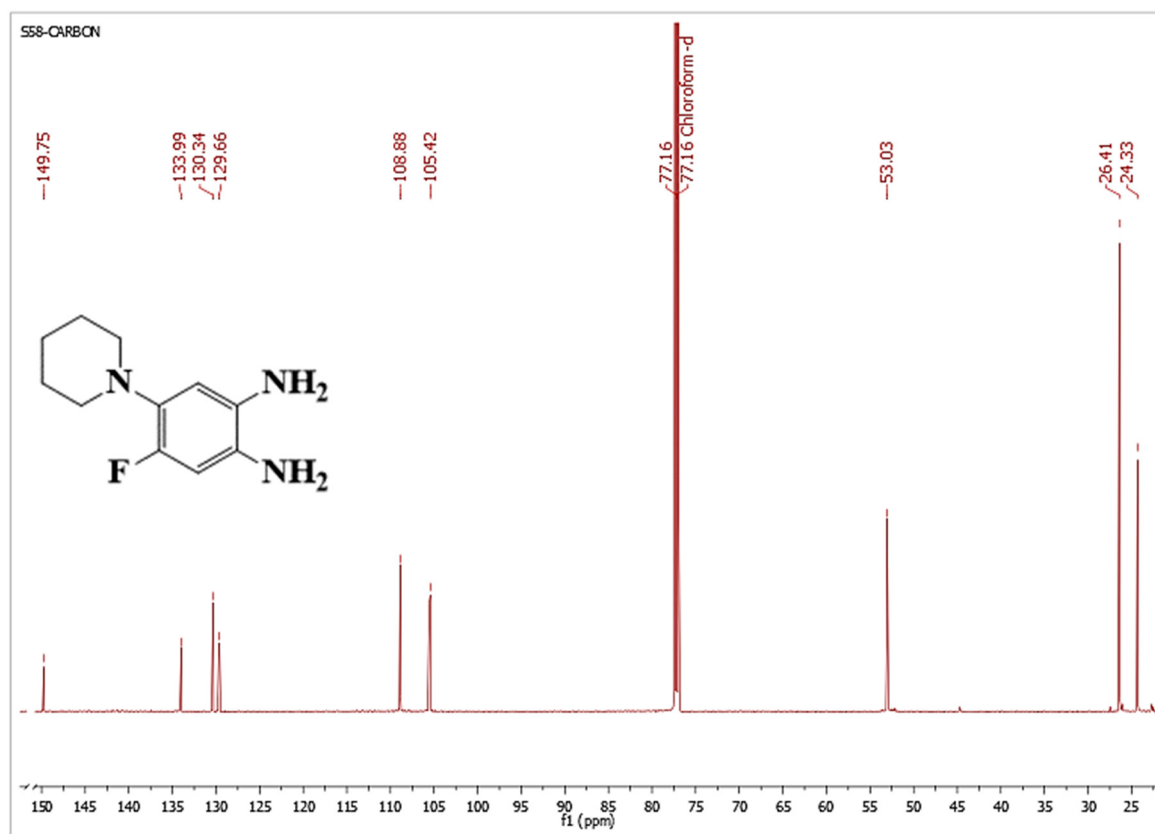
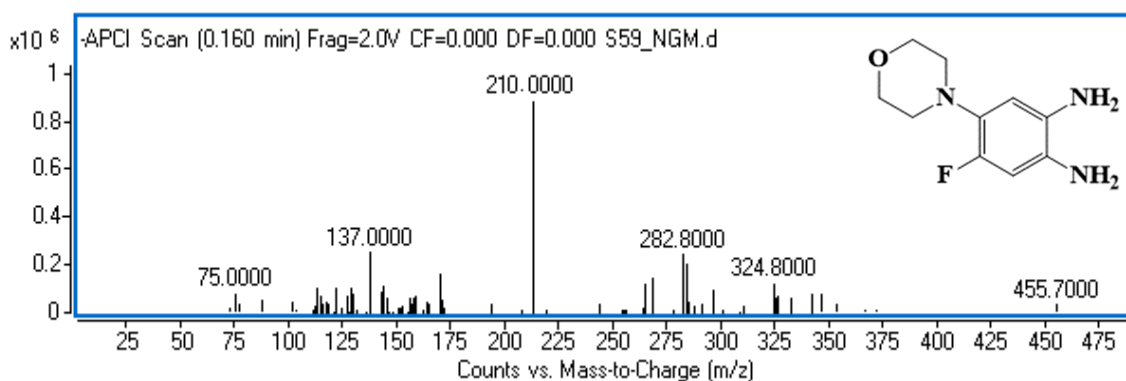
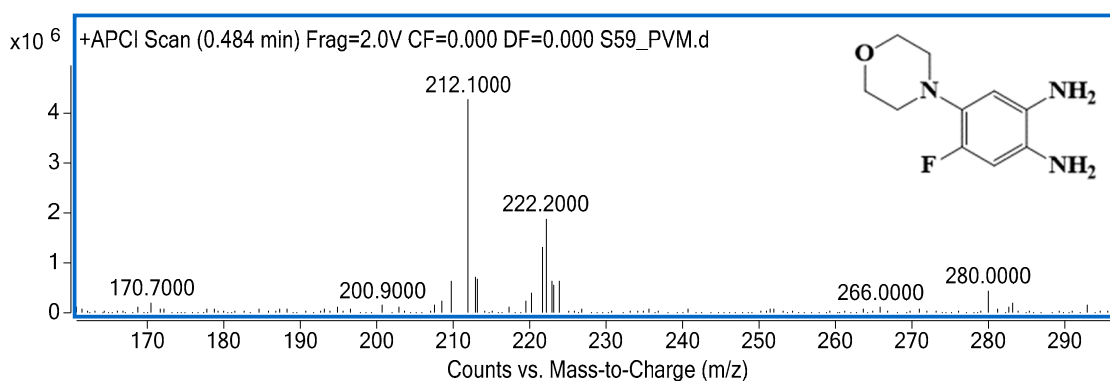
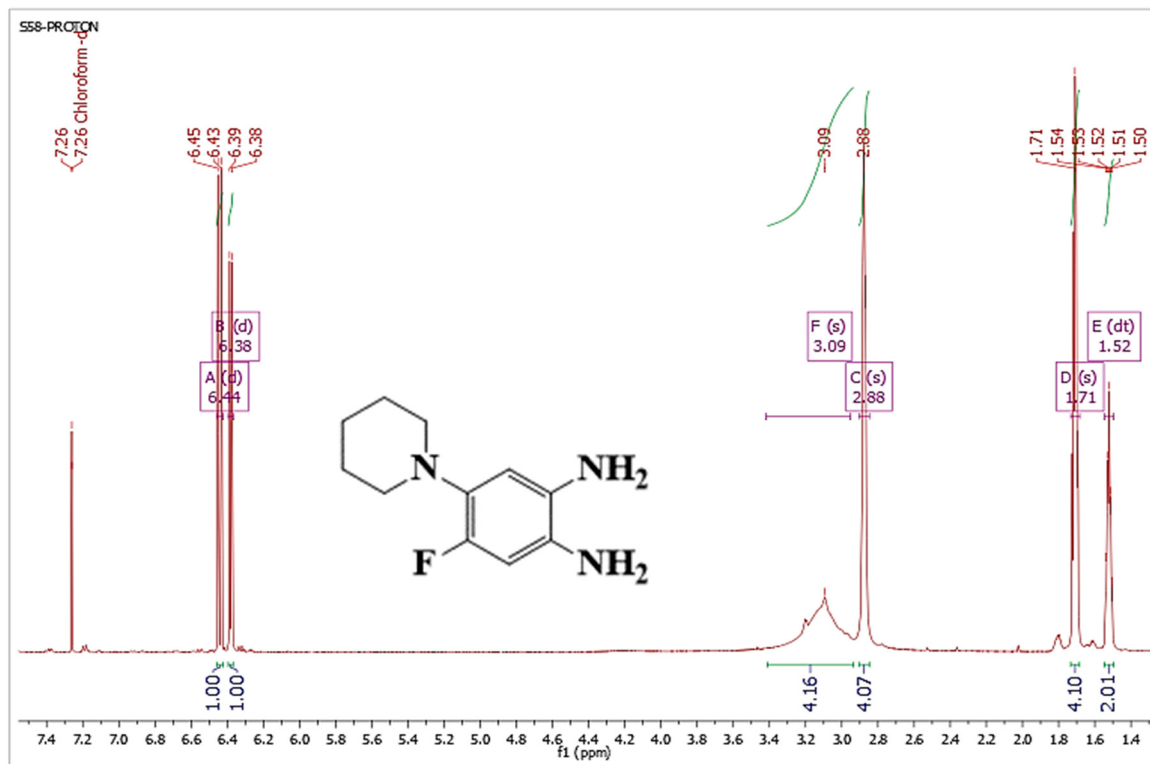


Figure S97. ¹³C-NMR spectrum of compound (**5h**) in CDCl₃, 700 MHz.



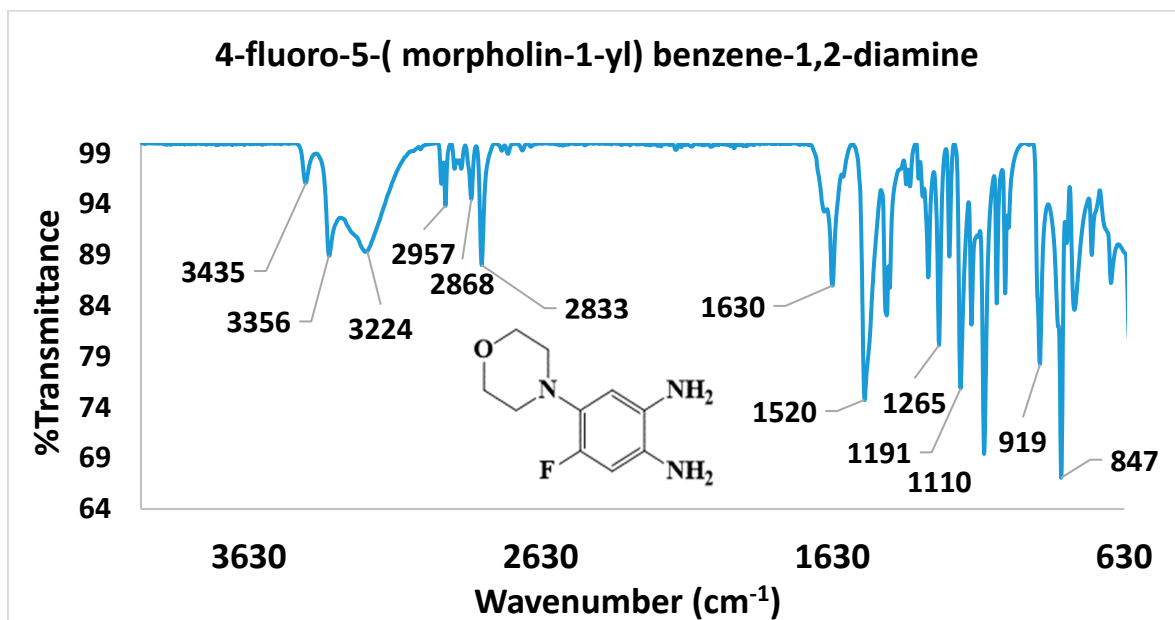


Figure S101. FT-IR spectrum of compound (**5i**).

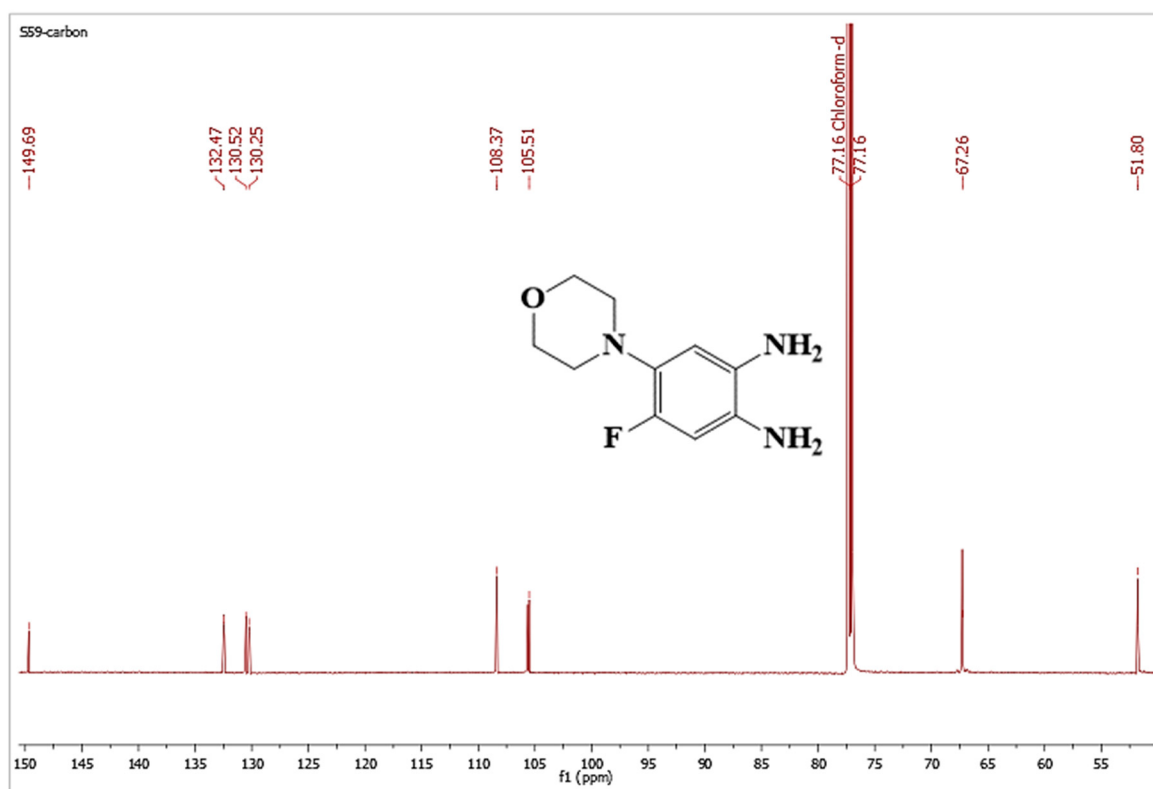


Figure S102. ¹³C-NMR spectrum of compound (**5i**) in CDCl₃, 700 MHz.

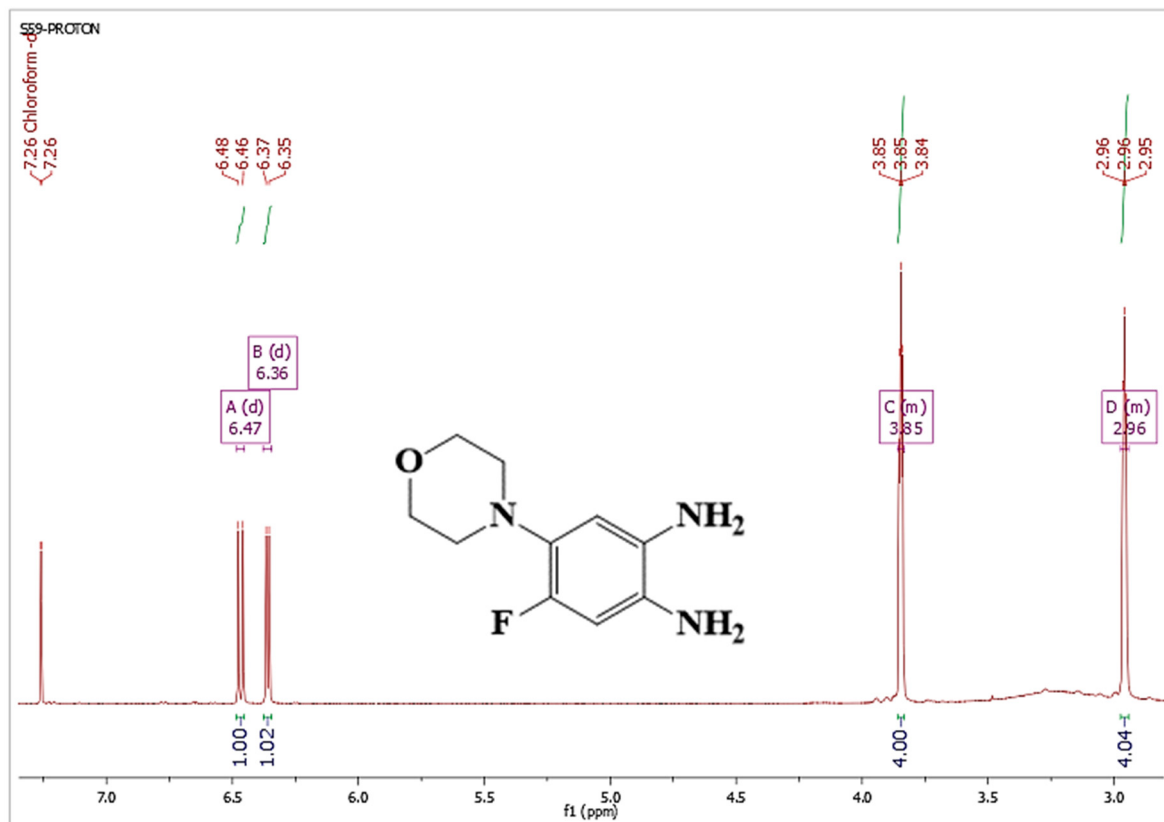


Figure S103. ^1H -NMR spectrum of compound (**5i**) in CDCl_3 , 700 MHz.

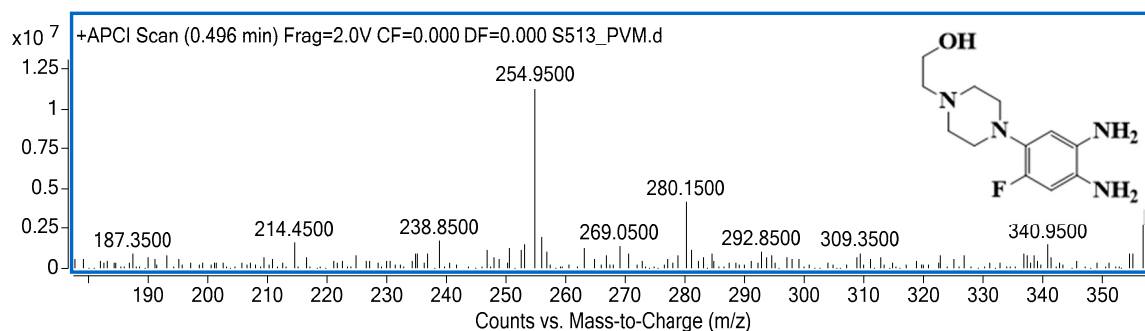


Figure S104. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (**5j**).

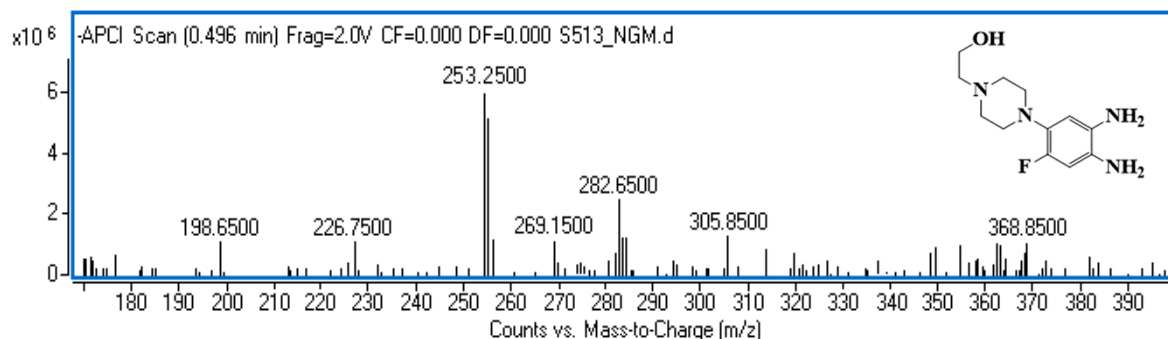


Figure S105. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (**5j**).

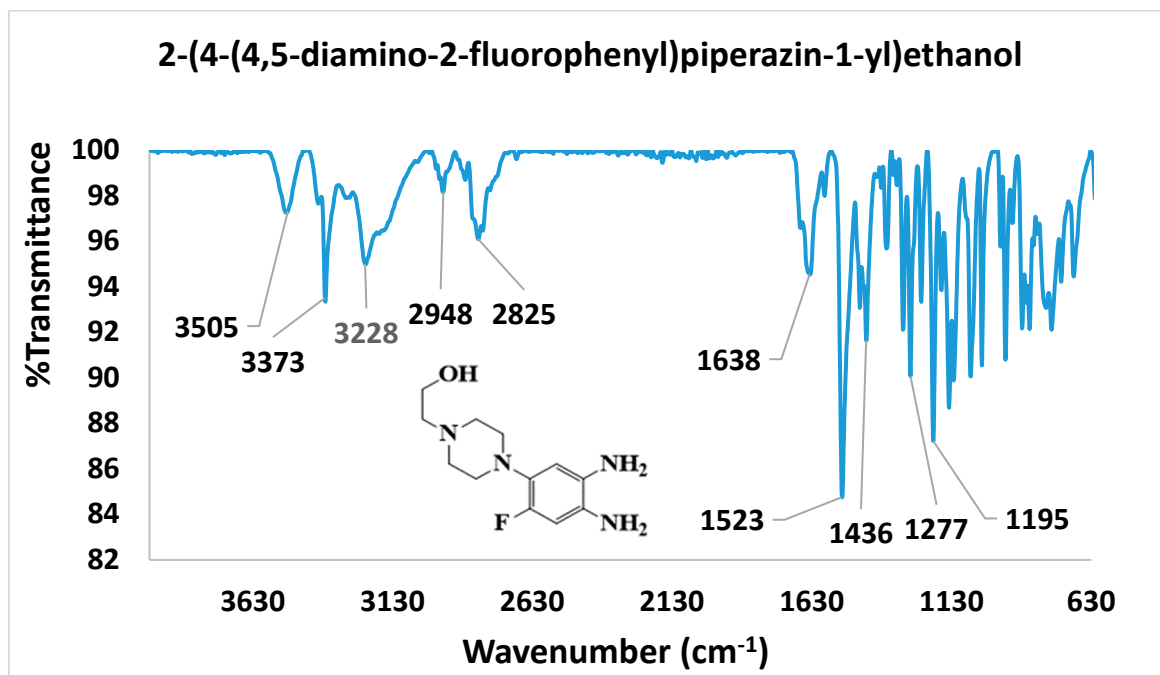


Figure S106. FT-IR spectrum of compound (**5j**).

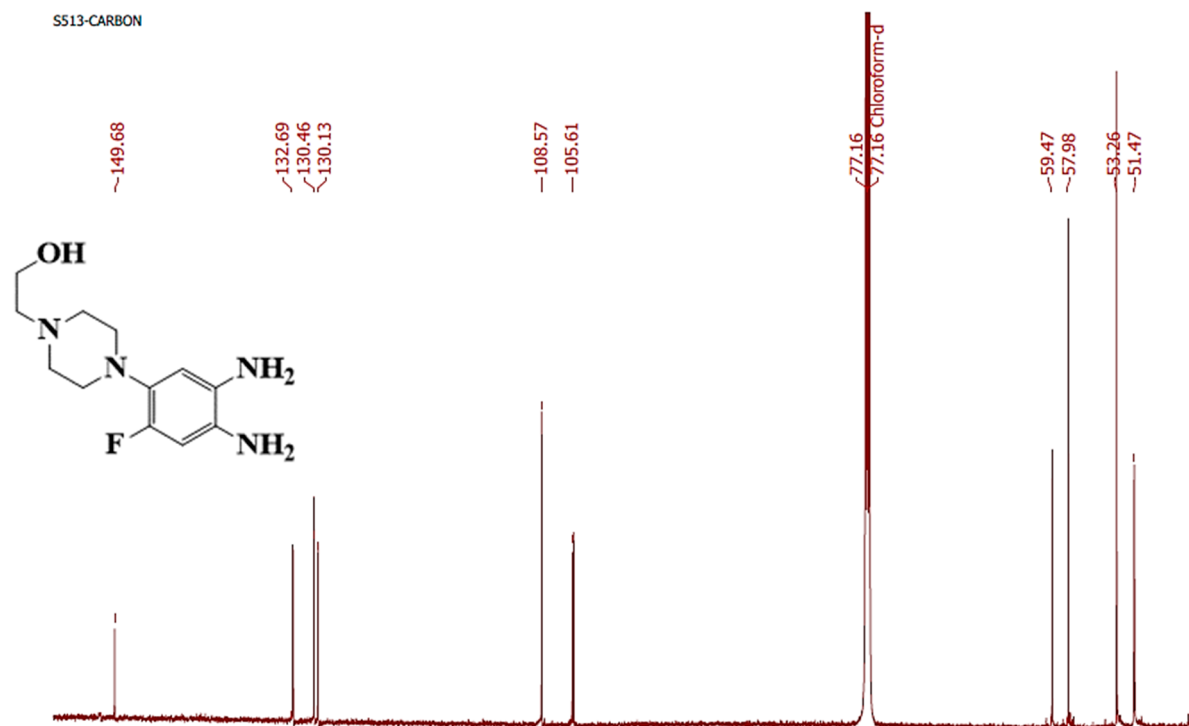


Figure S107. ¹³C-NMR spectrum of compound (**5j**) in CDCl₃, 700 MHz.

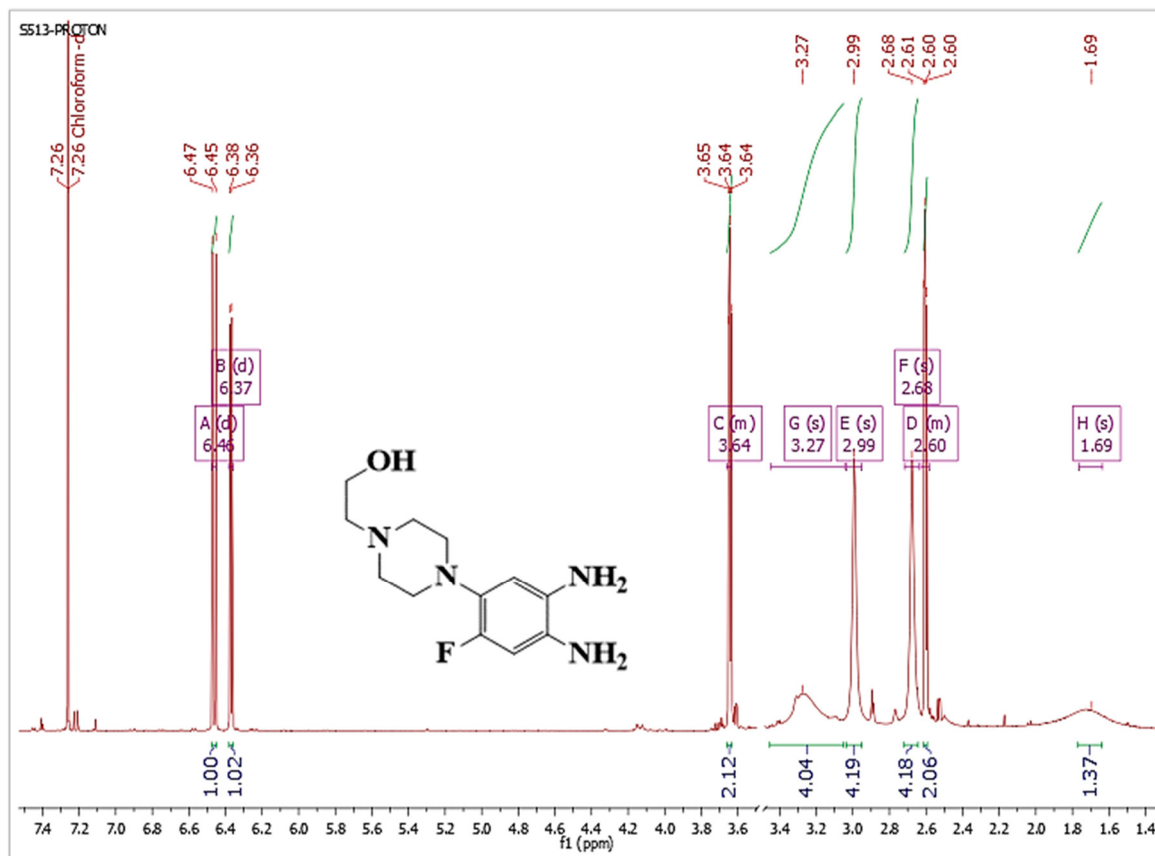


Figure S108. ^1H -NMR spectrum of compound (5j) in CDCl_3 , 700 MHz.

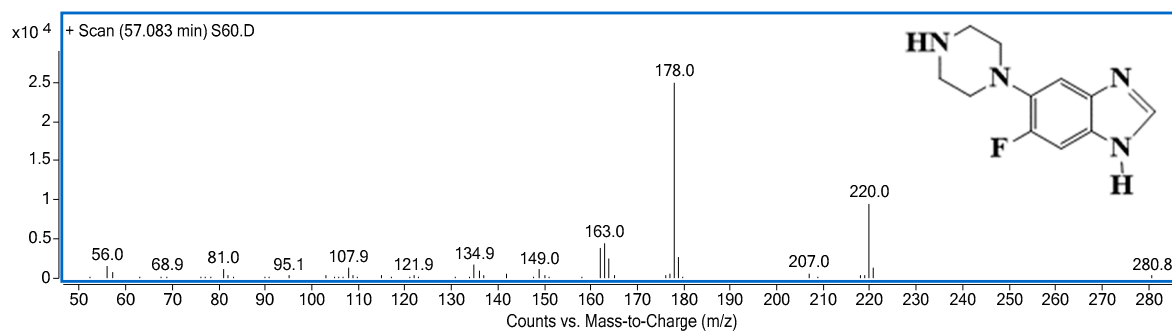


Figure S109. Mass spectrometry spectrum GC-MS of compound (6a).

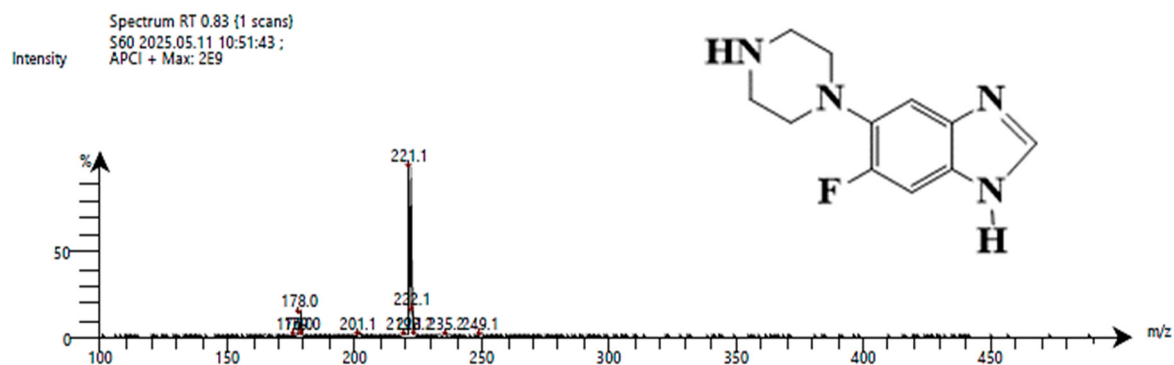


Figure S110. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6a).

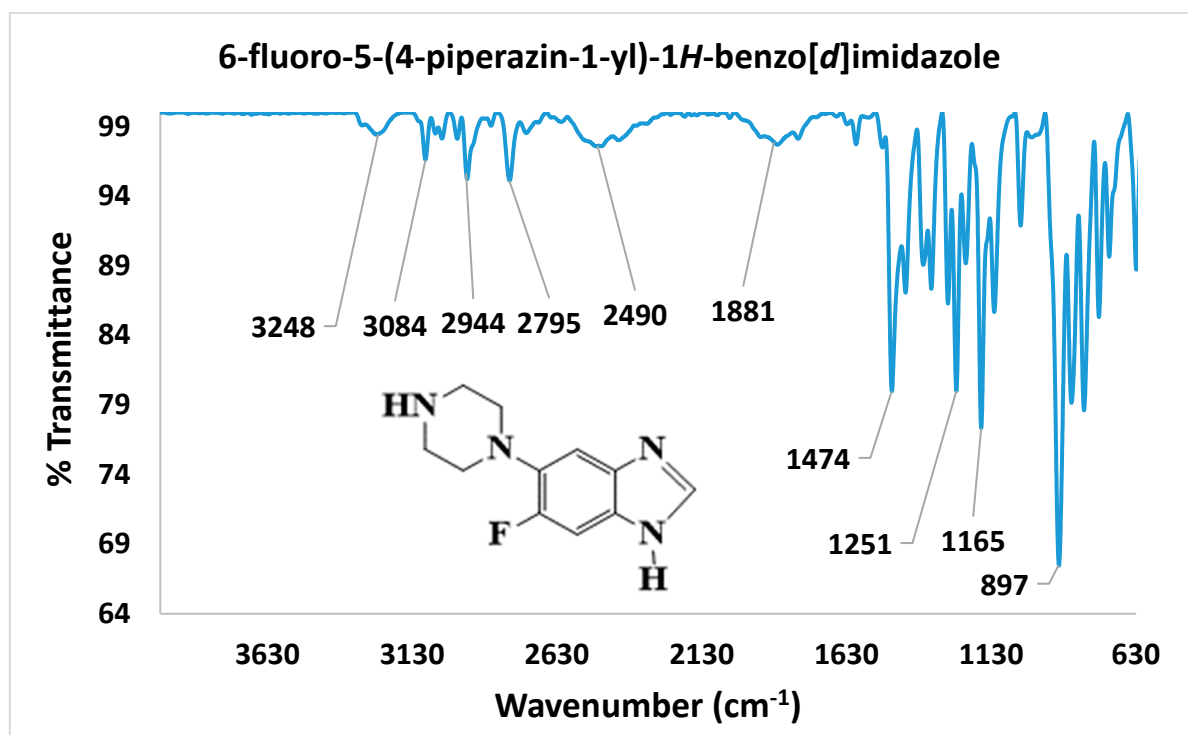


Figure S111. FT-IR spectrum of compound (6a).

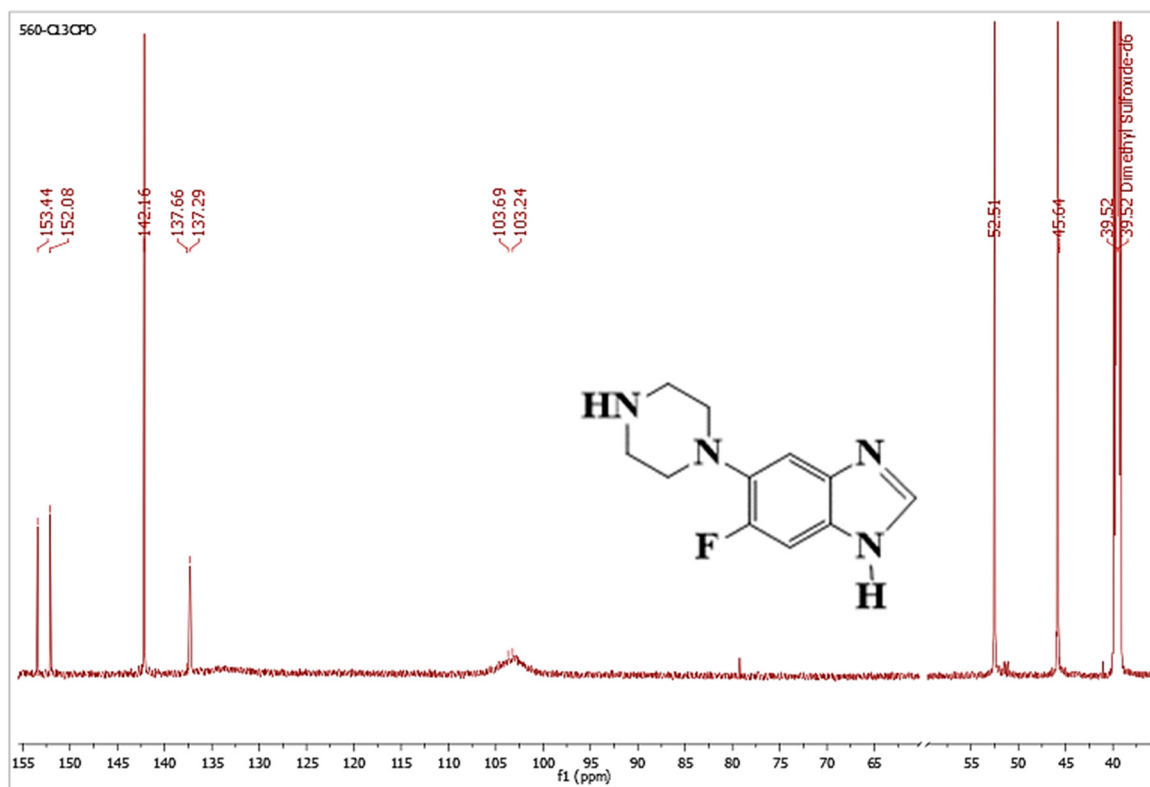


Figure S112. ^{13}C -NMR spectrum of compound (6a) in DMSO-d, 700 MHz.

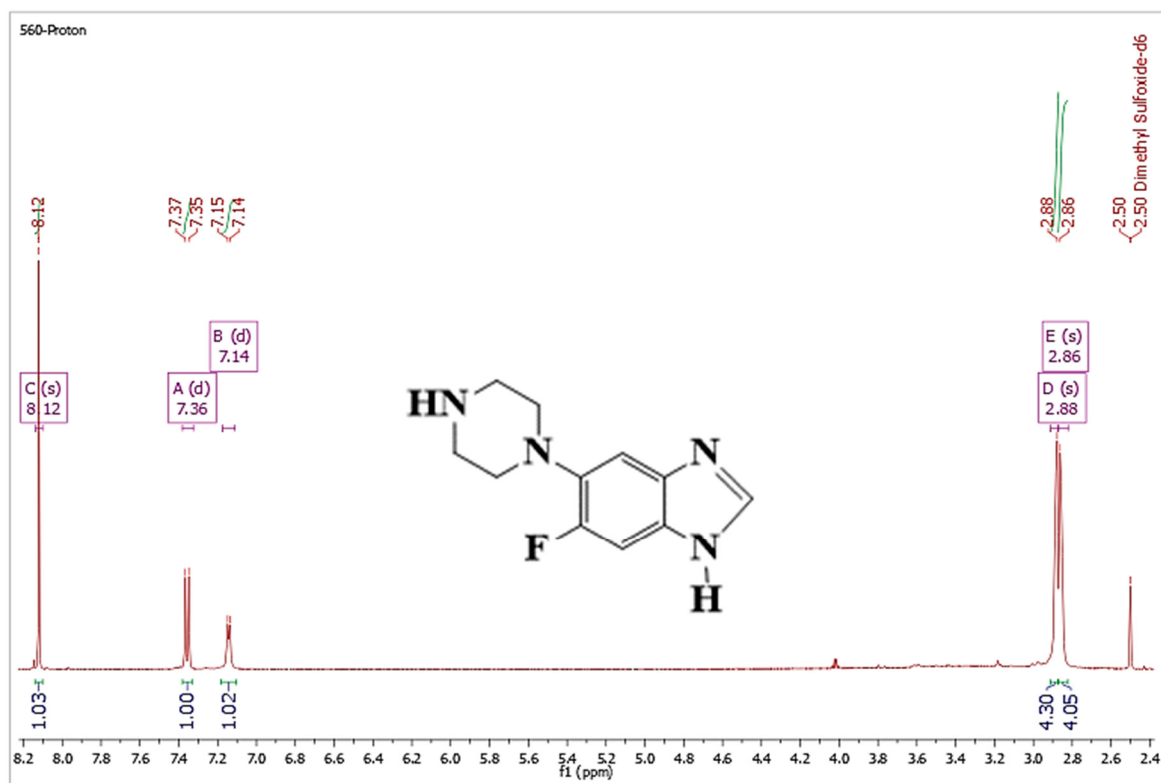


Figure S113. ^1H -NMR spectrum of compound (6a) in DMSO-d, 700 MHz.

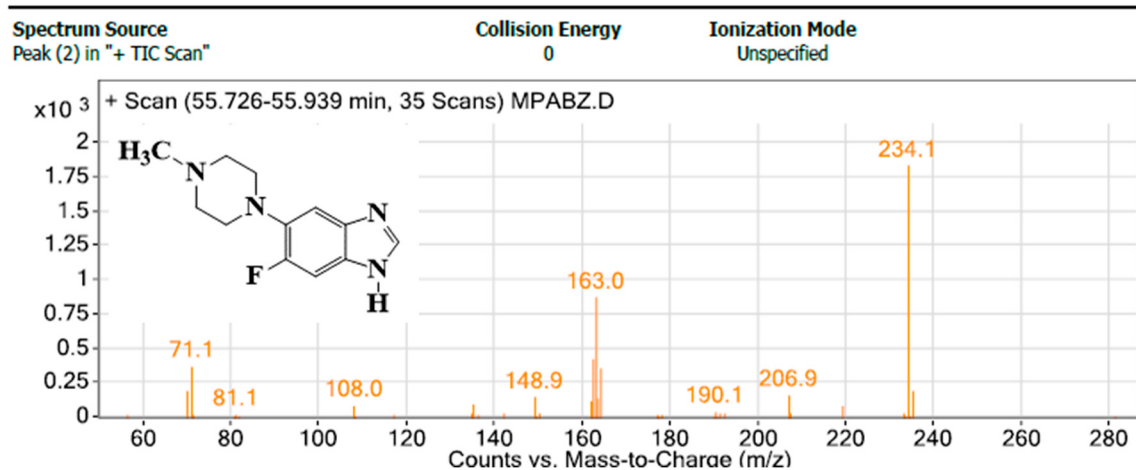


Figure S114. Mass spectrometry spectrum GC-MS of compound (6b).

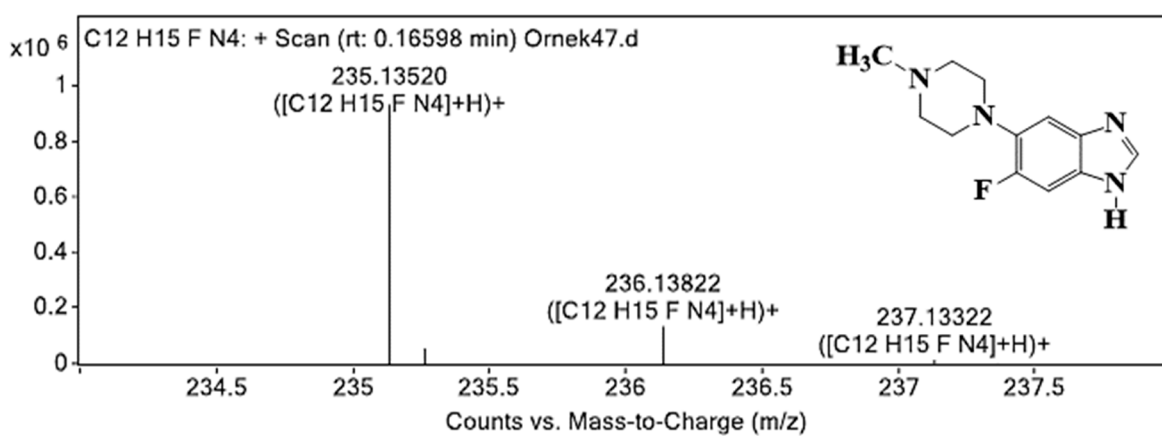


Figure S115. High resolution mass spectrometry spectrum HRMS (ESI⁺, TOF) for compound (6b).

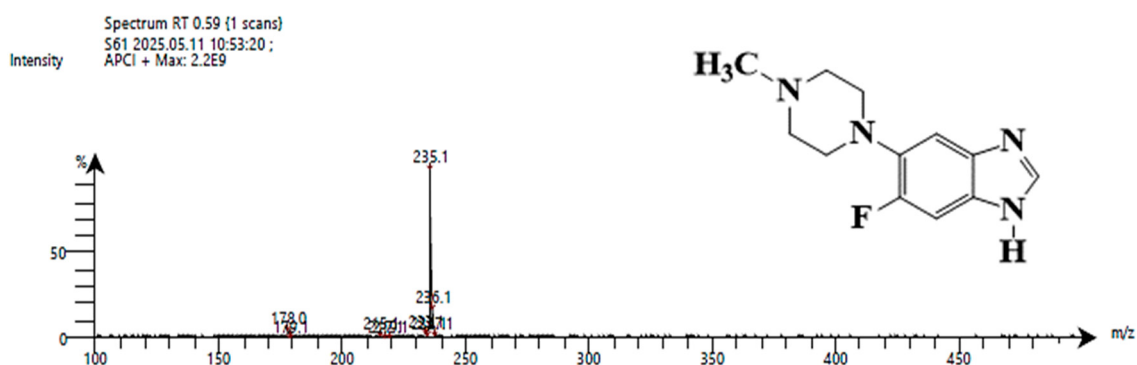


Figure S116. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6b).

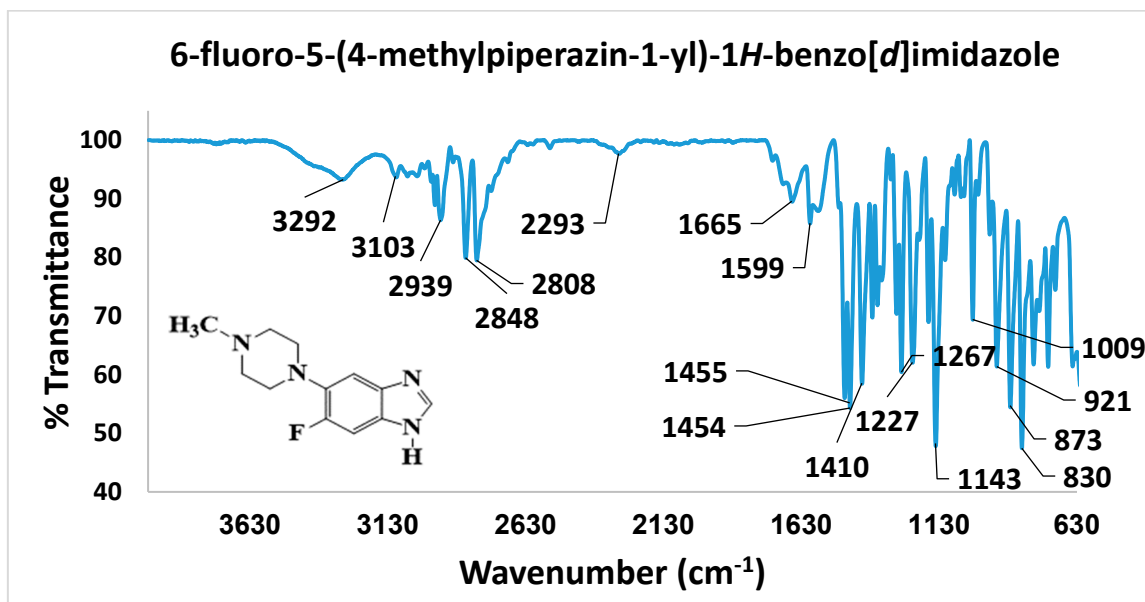


Figure S117. FT-IR spectrum of compound (**6b**).

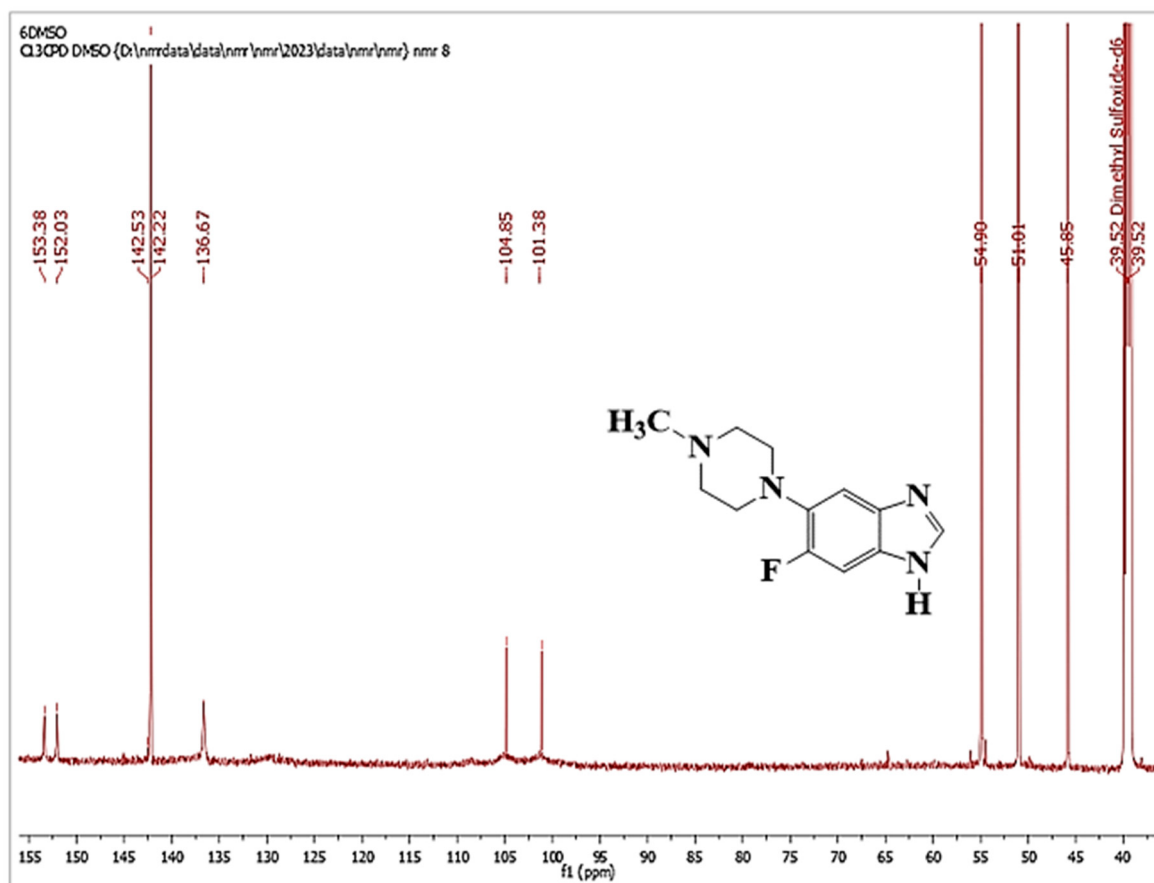


Figure S118. ¹³C-NMR spectrum of compound (**6b**) in DMSO-d, 700 MHz.

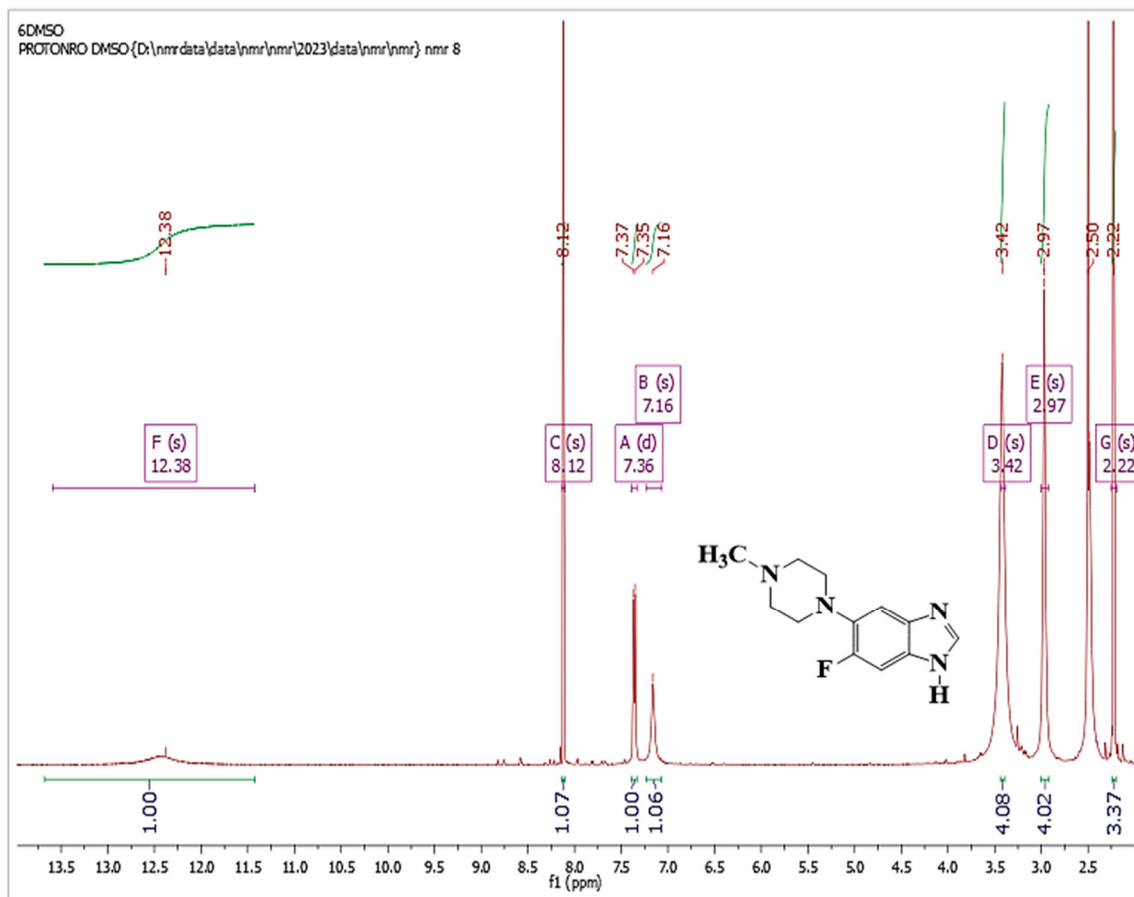


Figure S119. ^1H -NMR spectrum of compound (6b).in DMSO-d, 700 MHz.

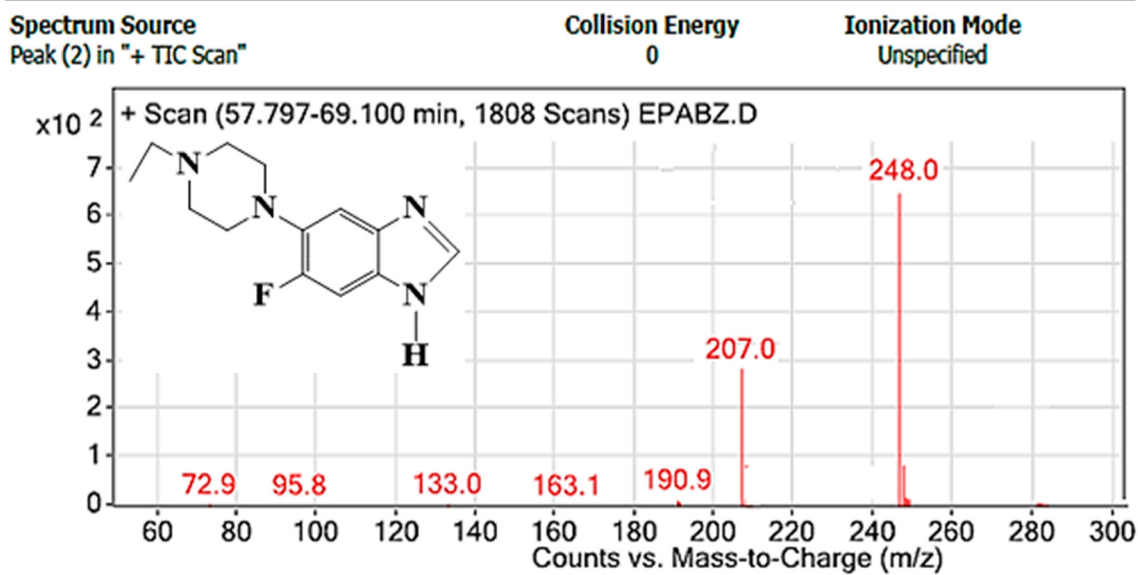


Figure S120. Mass spectrometry spectrum GC-MS of compound (6c).

Spectra

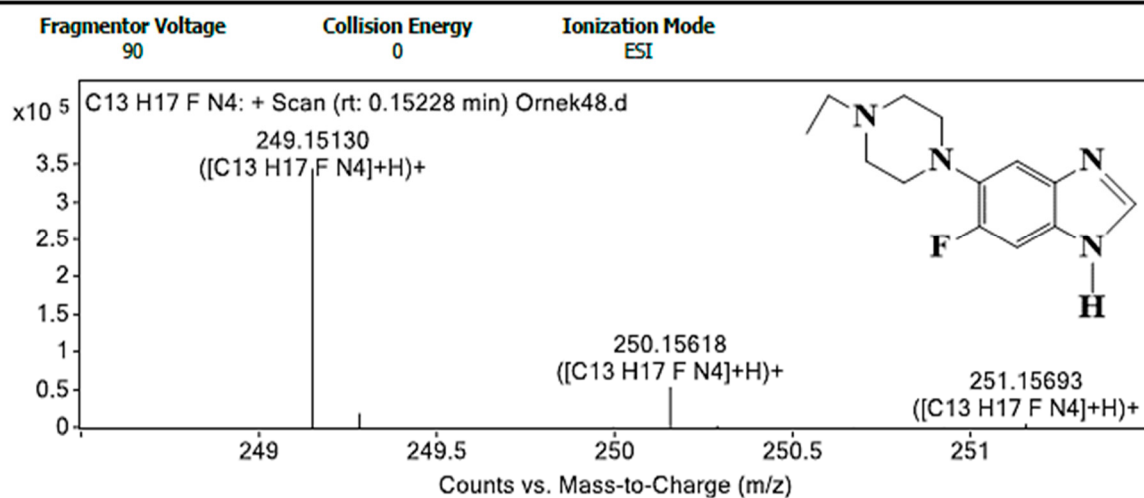


Figure S121. High resolution mass spectrometry spectrum HRMS (ESI⁺, TOF) for compound (6c).

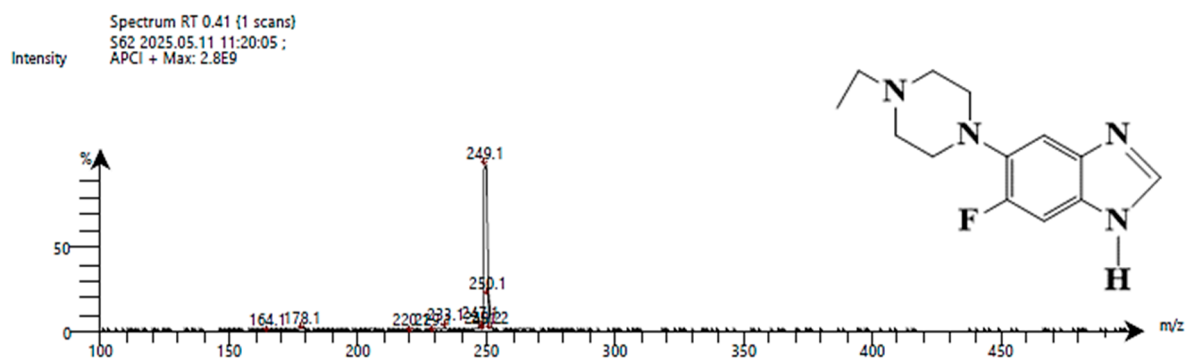


Figure S122. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6c).

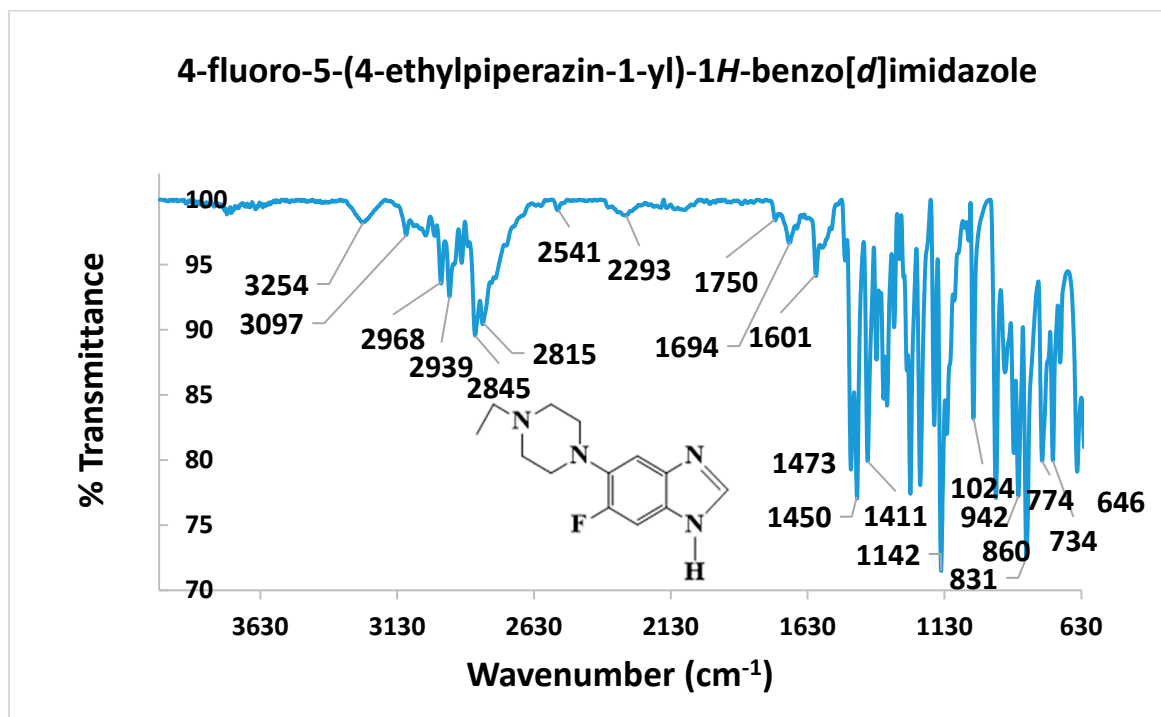


Figure S123. FT-IR spectrum of compound (6c).

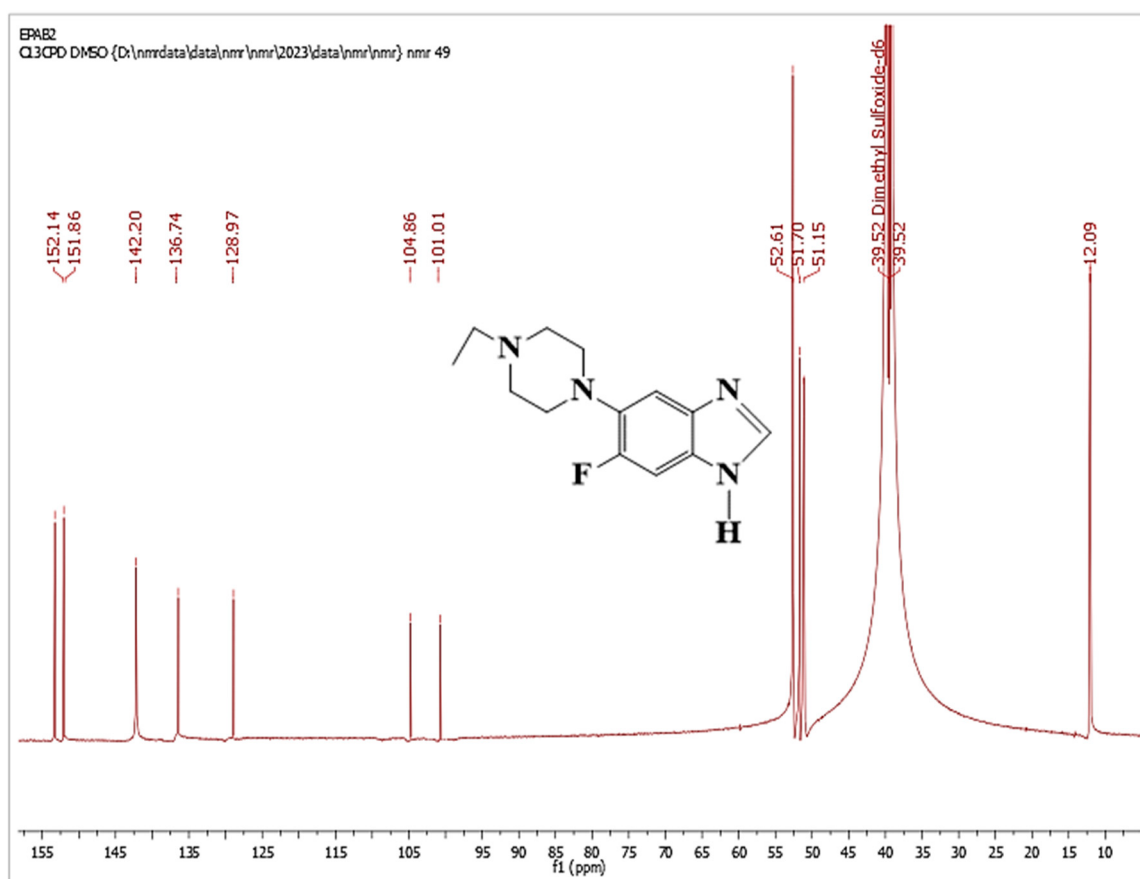


Figure S124. ¹³C NMR spectrum for the compound (6c), DMSO-d, 700 MHz.

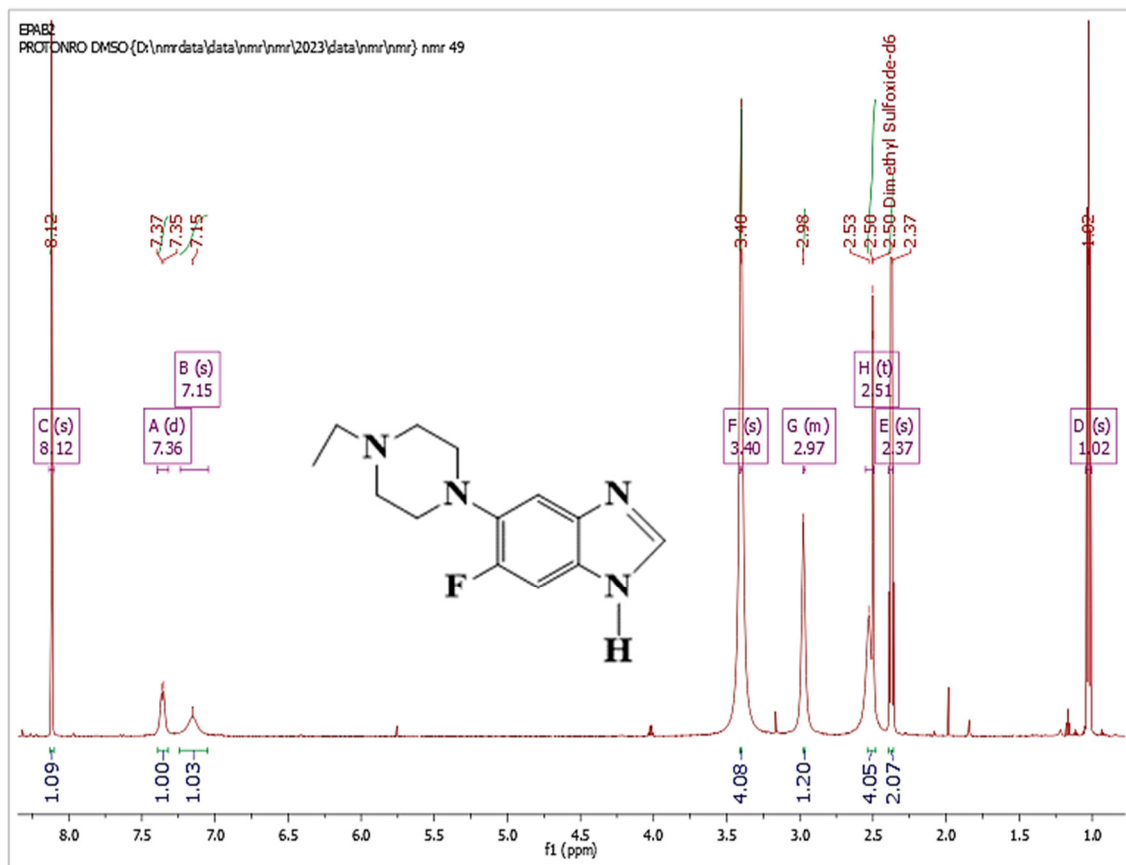


Figure S125. ^1H -NMR spectrum of compound (6c) in DMSO- d_6 , 700 MHz.

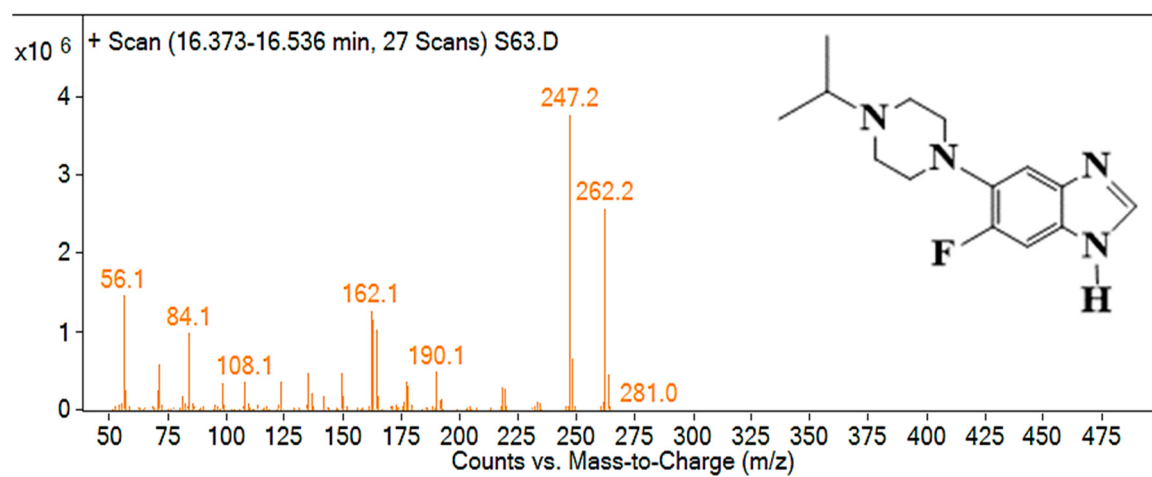


Figure S126. Mass spectrometry spectrum GC-MS of compound (6d).

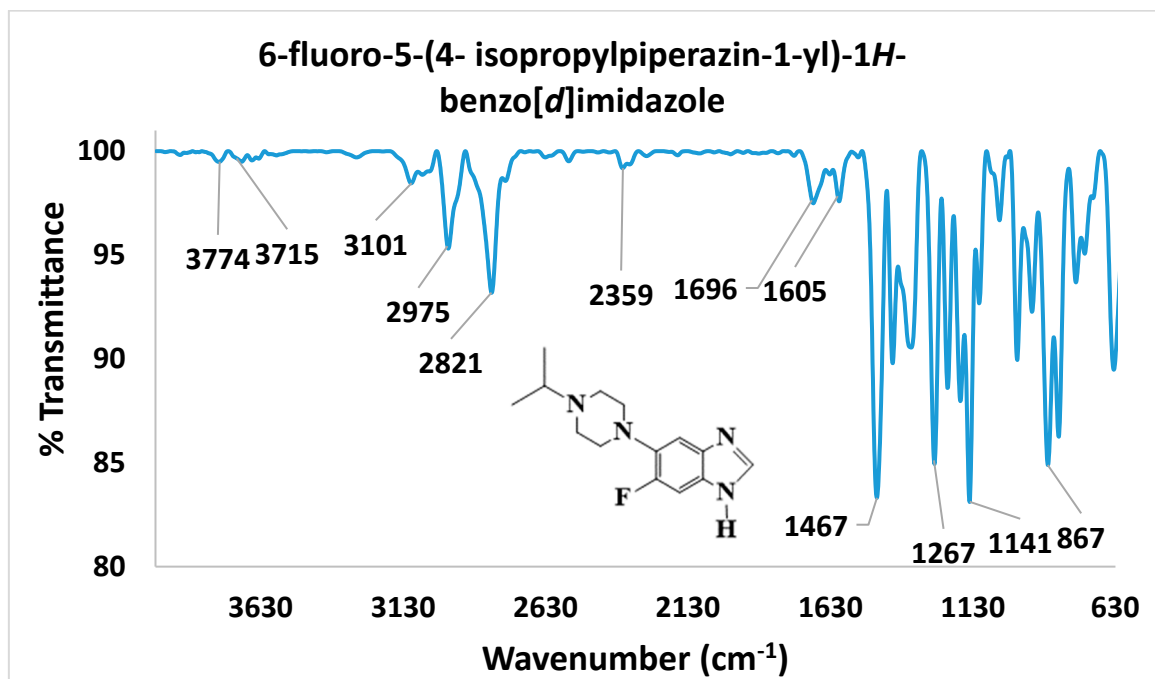


Figure S127. FT-IR spectrum of compound (**6d**).

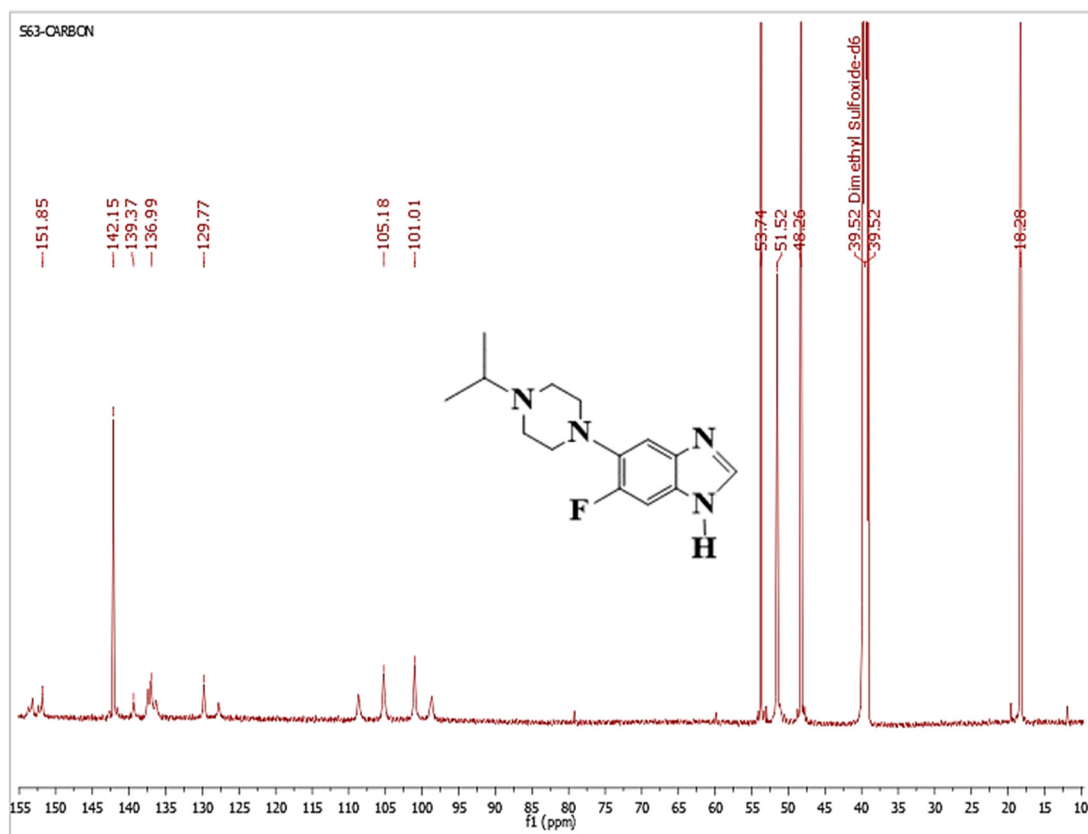


Figure S128. ¹³C-NMR spectrum of compound (**6d**) in DMSO-d, 700 MHz.

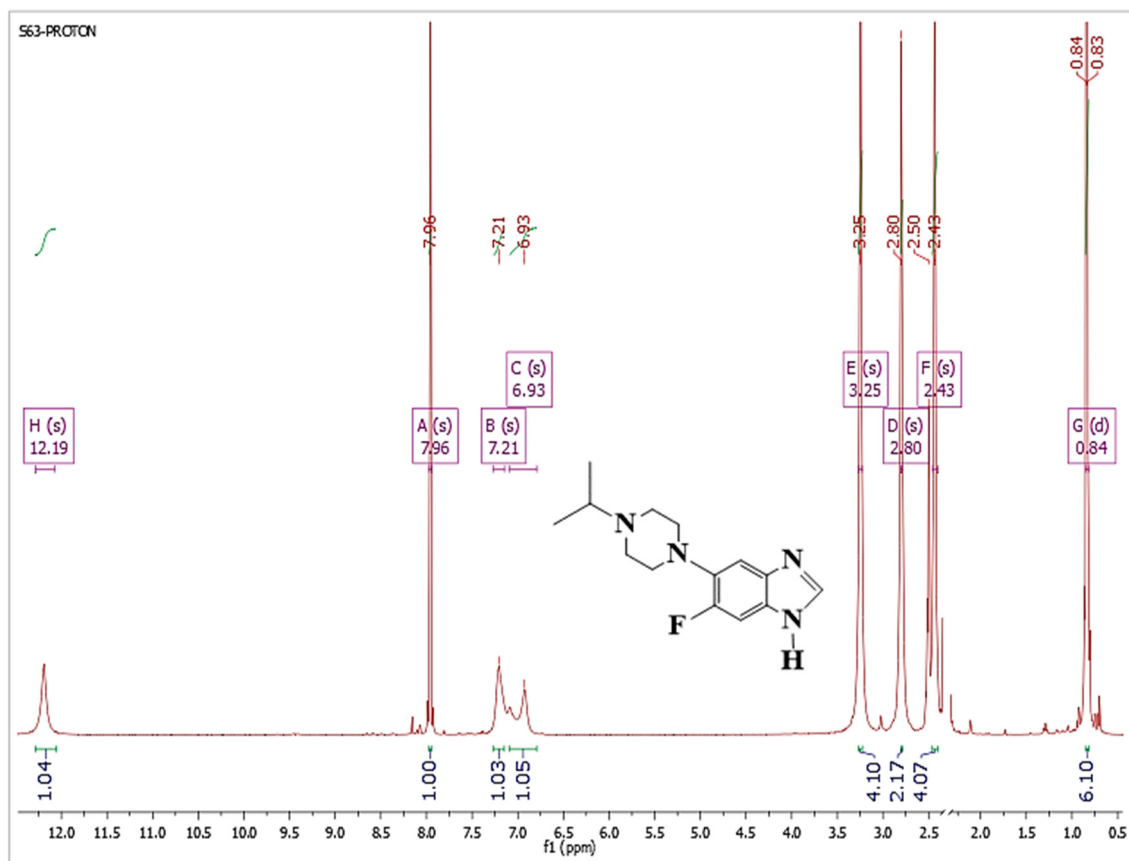
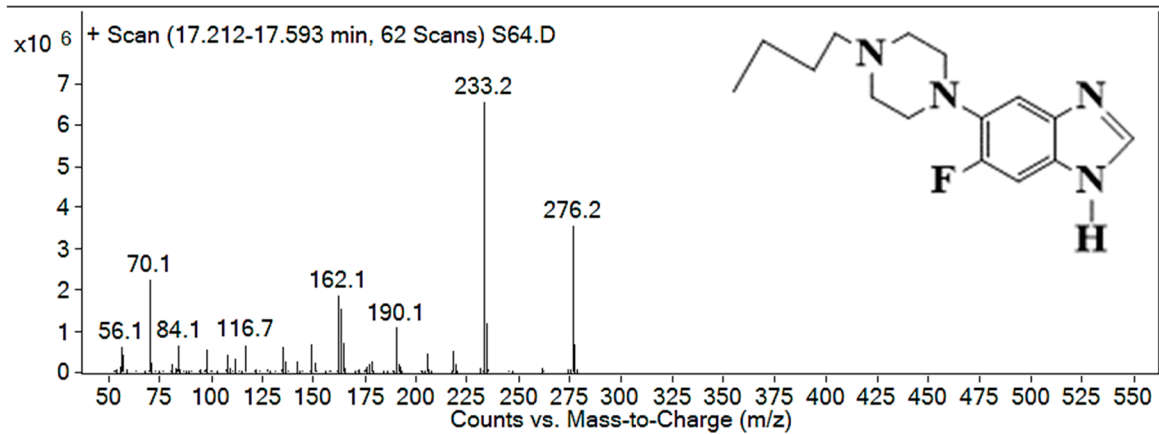


Figure S129. ^1H -NMR spectrum of compound (6d) in DMSO- d_6 , 700 MHz.

Figure S130. Mass spectrometry spectrum GC-MS of compound (6e).



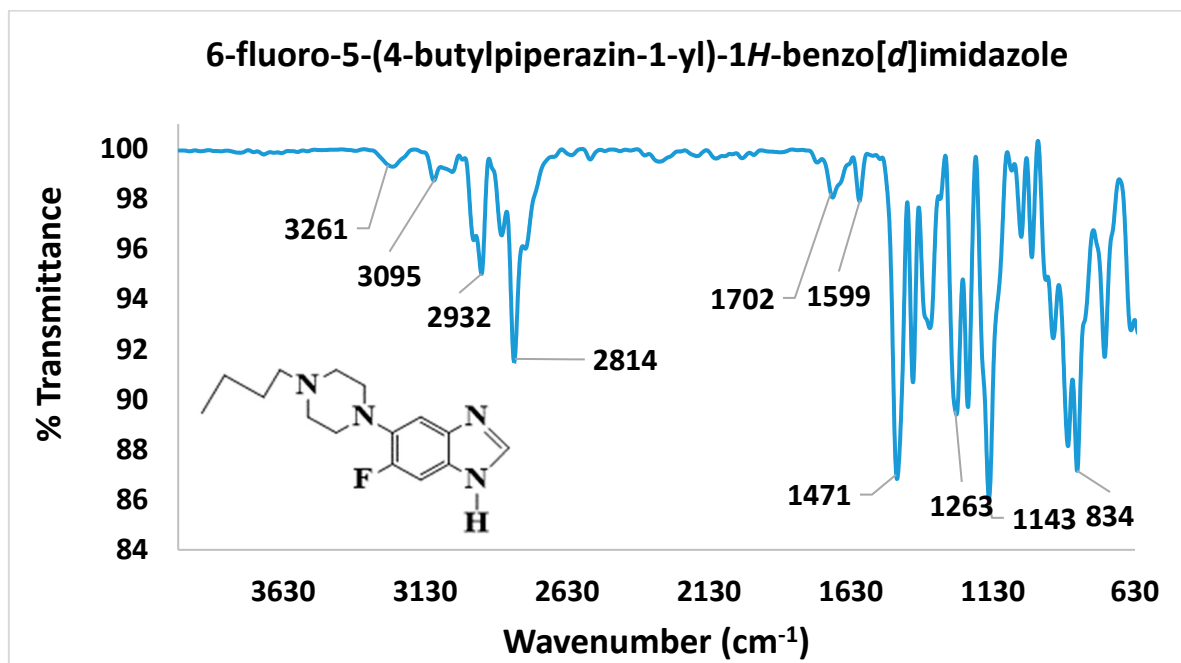


Figure S131. FT-IR spectrum of compound (**6e**).

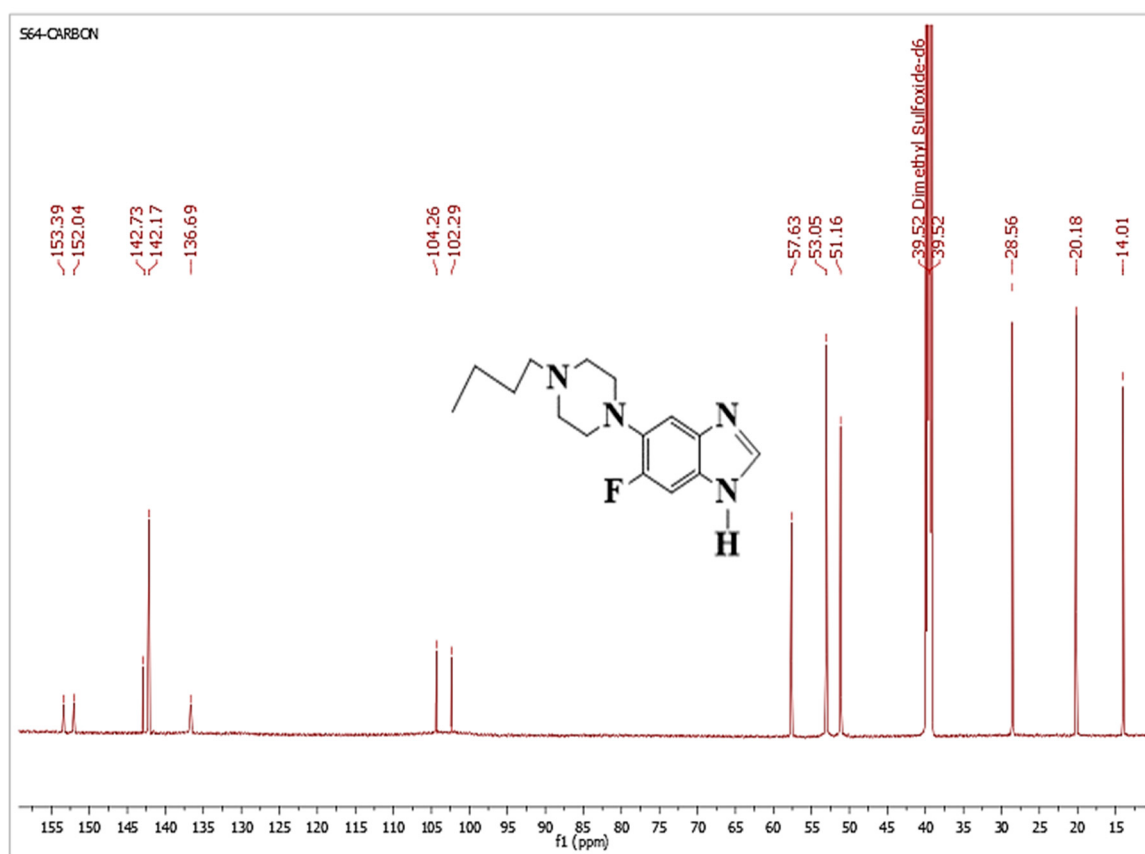


Figure S132. ¹³C-NMR spectrum of compound (**6e**) in DMSO-d, 700 MHz.

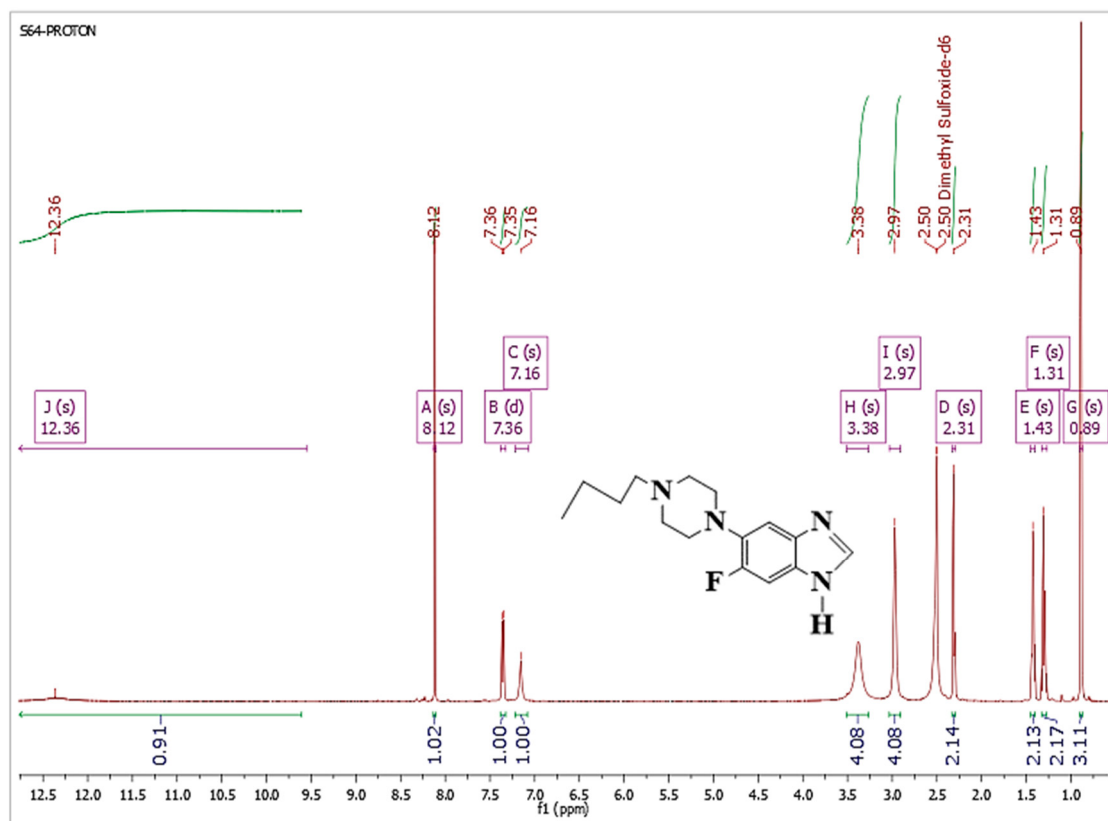


Figure S133. ^1H -NMR spectrum of compound (6e) in DMSO-d, 700 MHz.

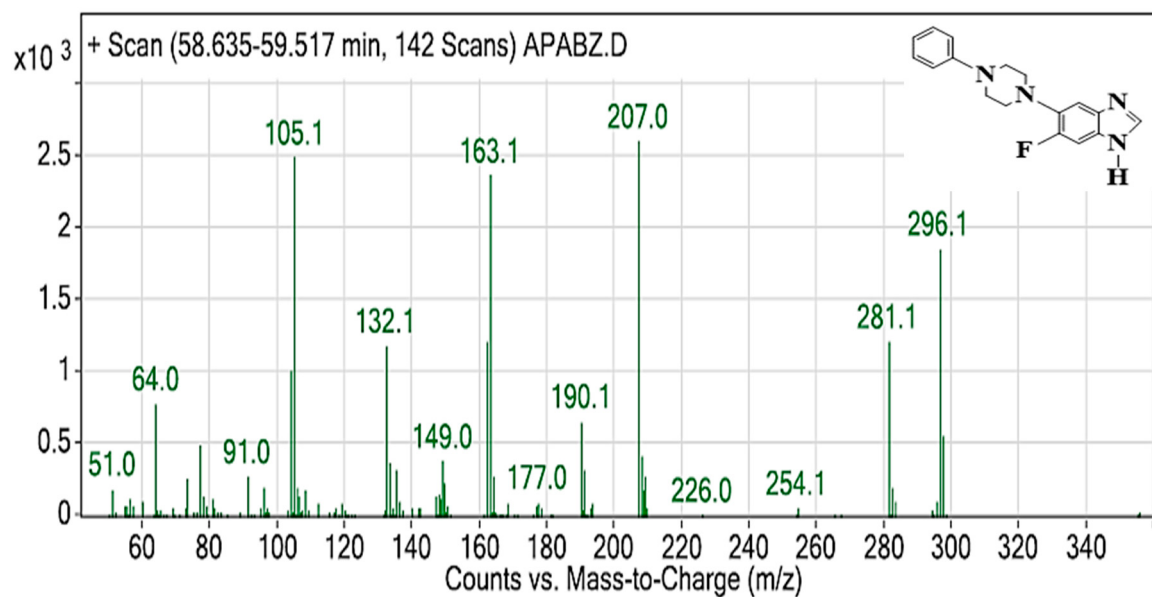


Figure S134. Mass spectrometry spectrum GC-MS of compound (6f).

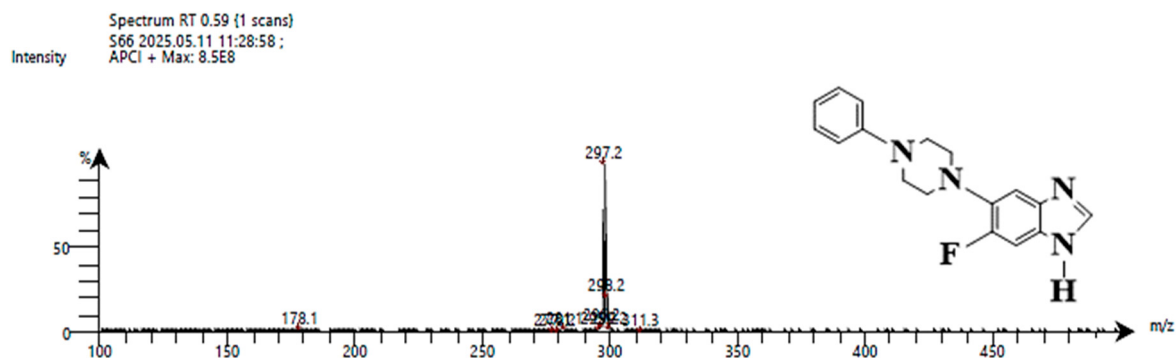


Figure S135. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6f).

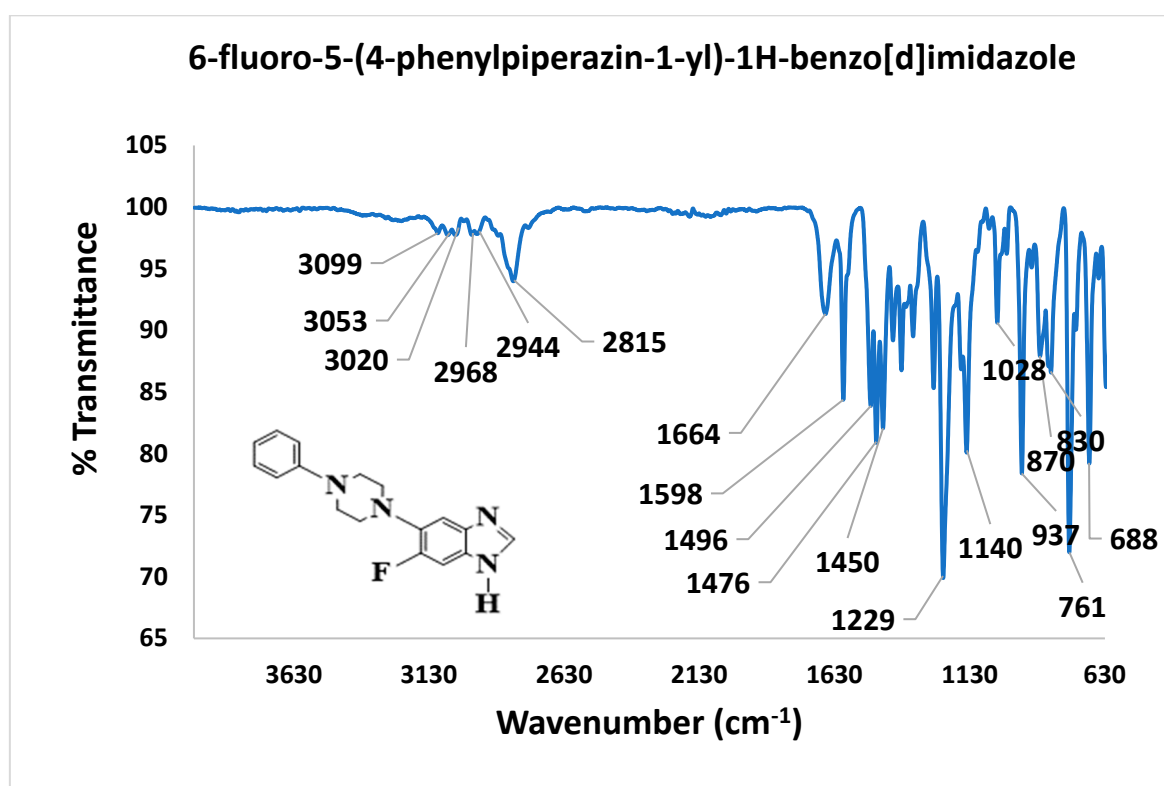


Figure S136. FT-IR spectrum of compound (6f).

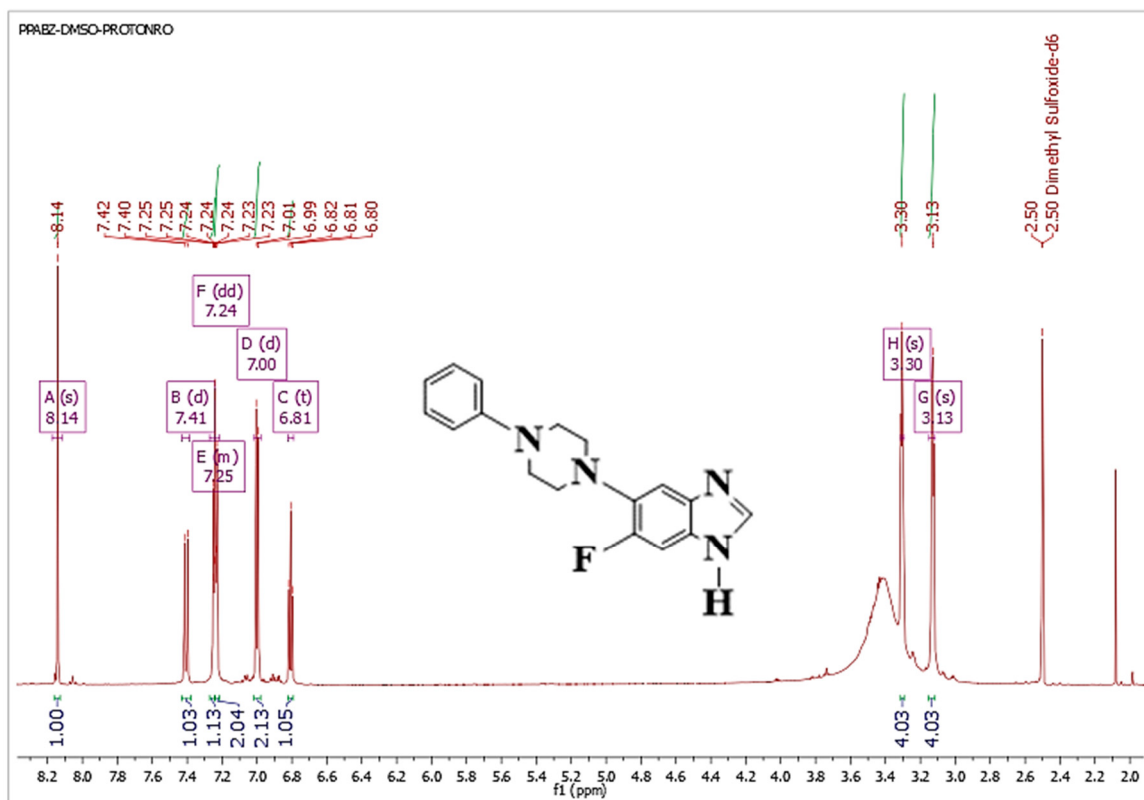


Figure S137. ^1H -NMR spectrum of compound (6f) in DMSO-d, 700 MHz.

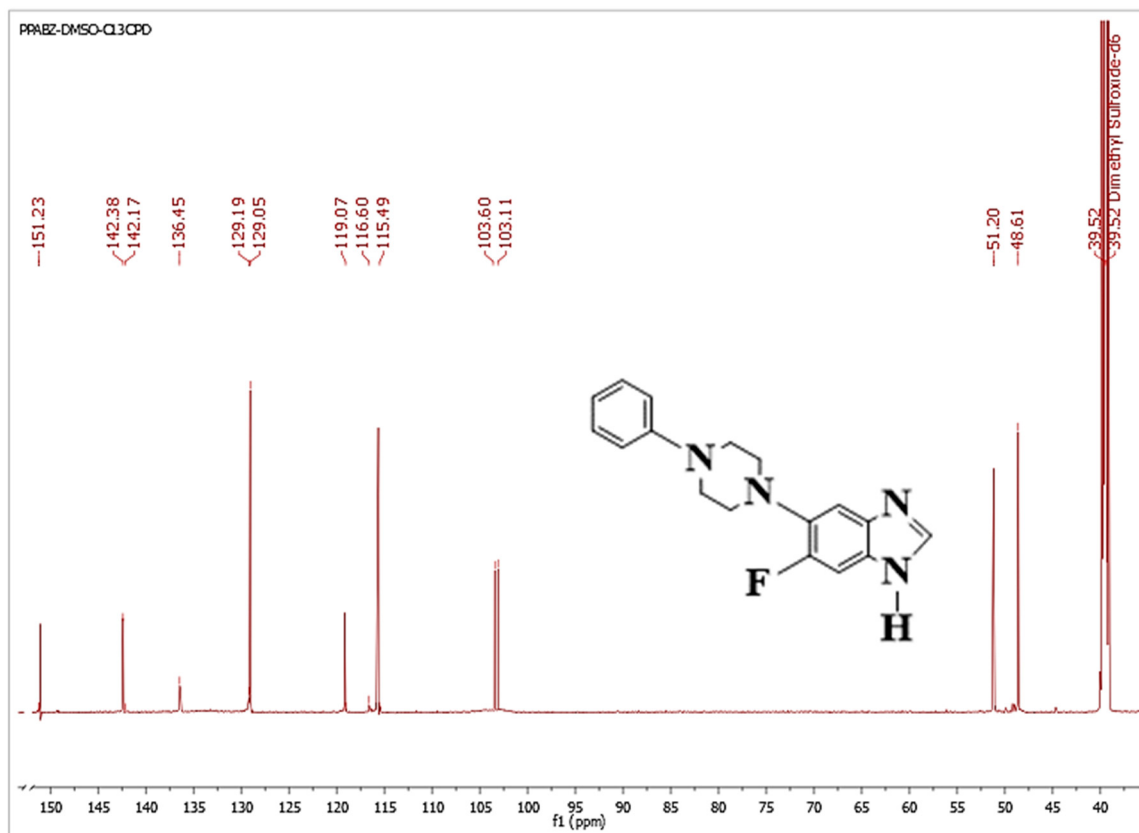


Figure S138. ^{13}C -NMR spectrum of compound (6f) in DMSO-d, 700 MHz.

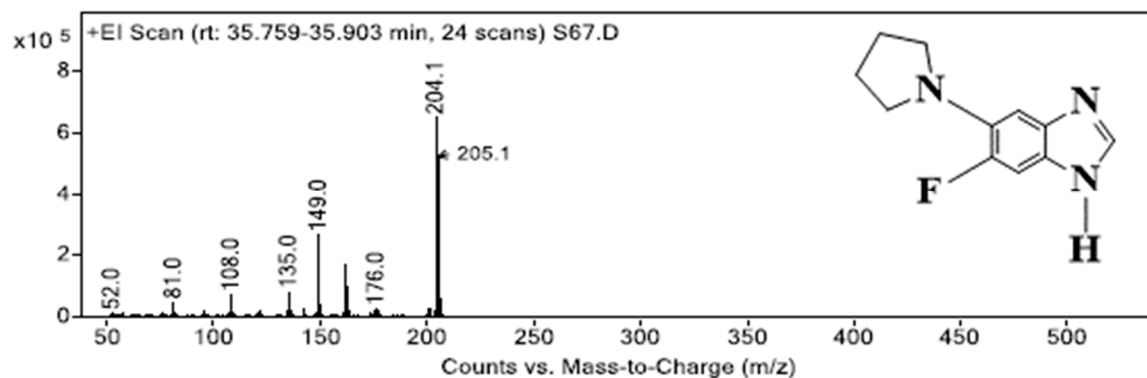


Figure S139. Mass spectrometry spectrum GC-MS of compound (6g).

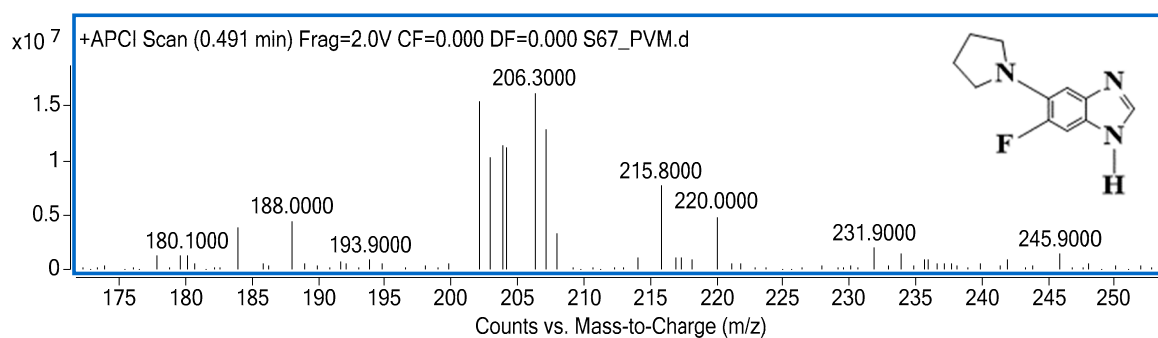


Figure S140. Mass spectrometry spectrum LC-MS (APCI, positive) of compound (6g).

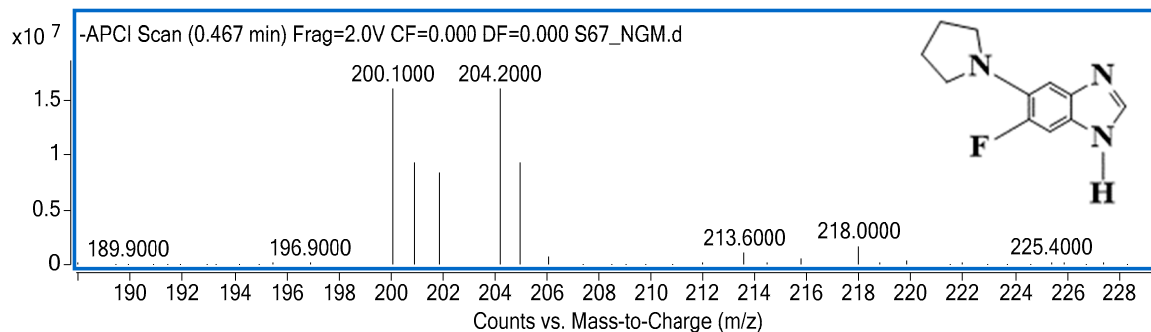


Figure S141. Mass spectrometry spectrum LC-MS (APCI, negative) of compound (6g).

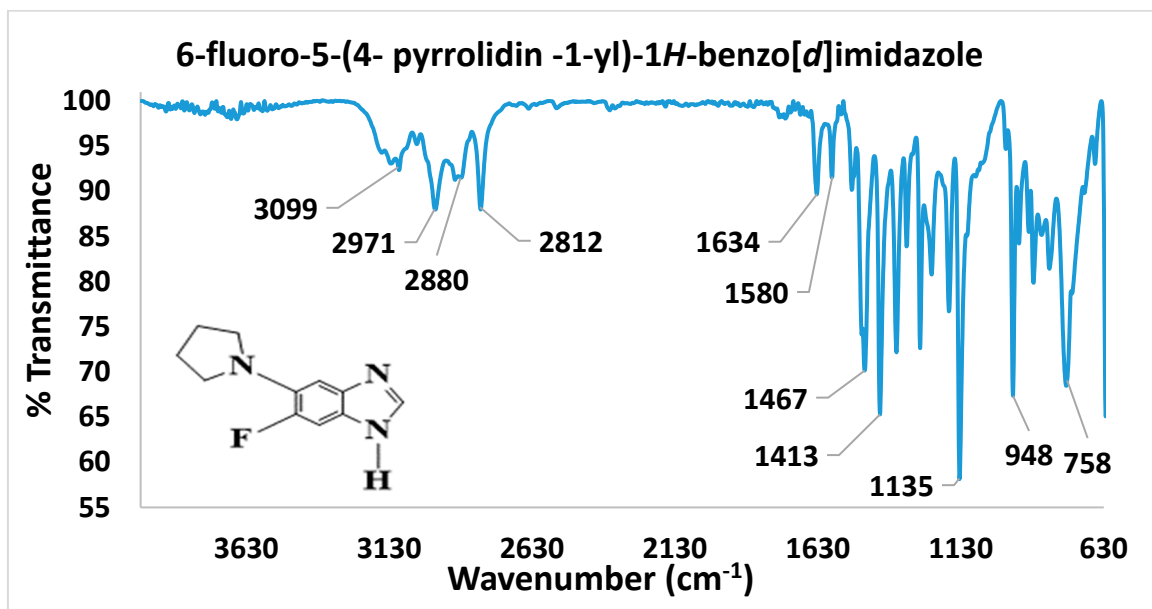


Figure S142. FT-IR spectrum of compound (6g).

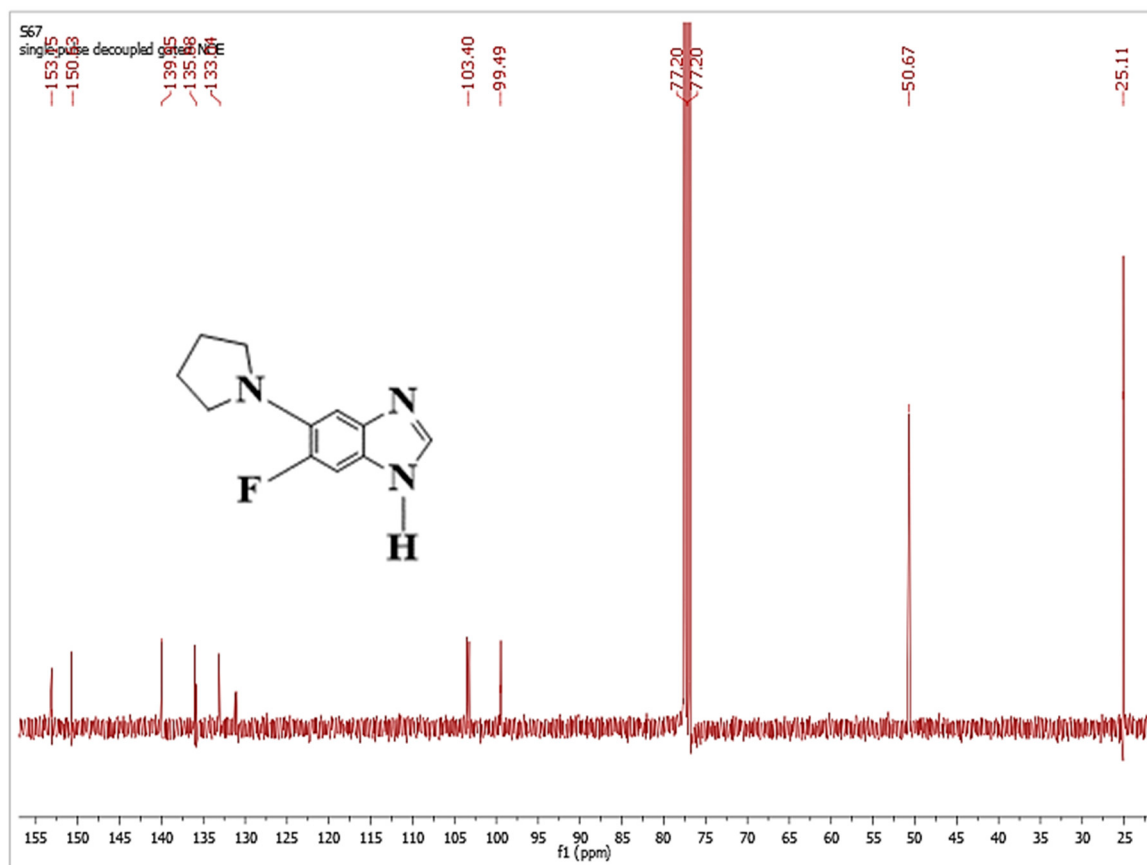


Figure S143. ¹³C-NMR spectrum of compound (6g) in DMSO-d, 700 MHz.

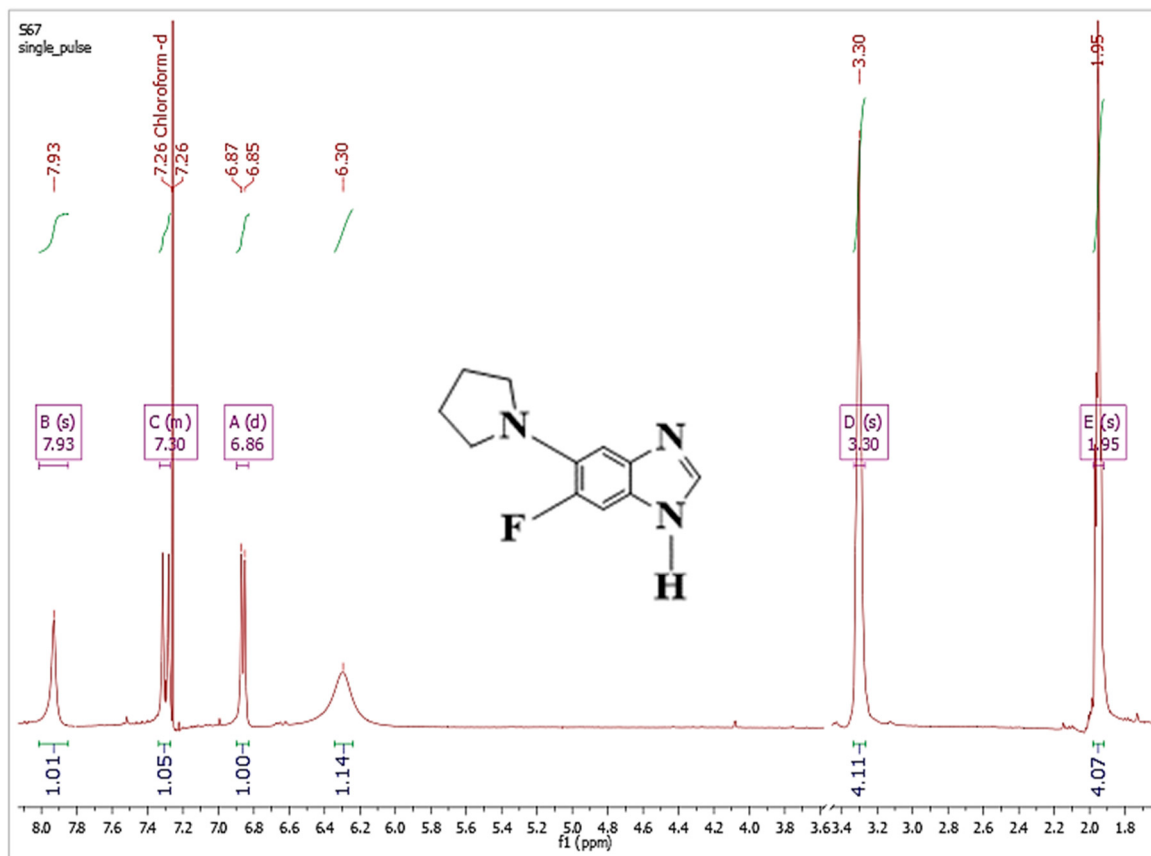


Figure S144. ^1H -NMR spectrum of compound (6g) in DMSO-d_6 , 700 MHz.

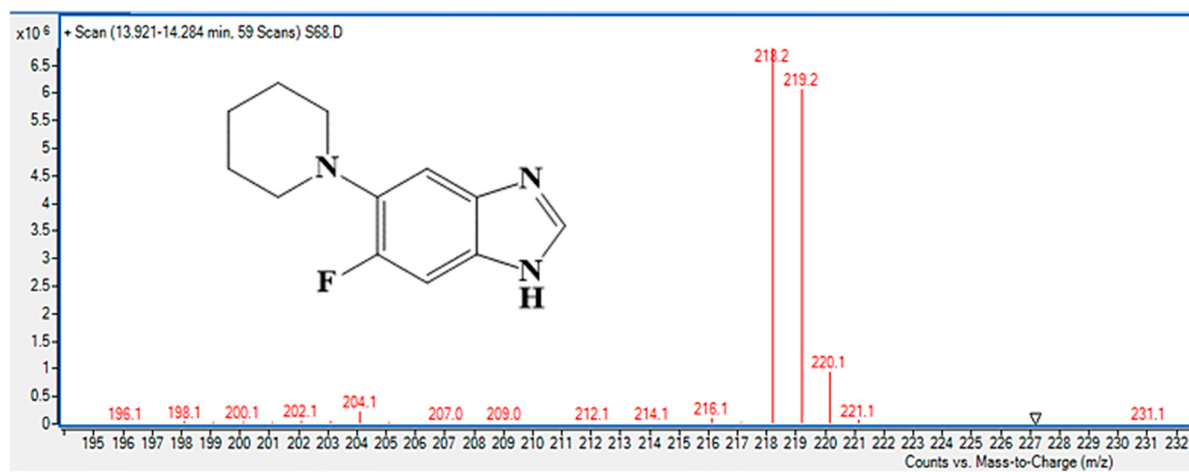


Figure S145. Mass spectrometry spectrum GC-MS of compound (6h).

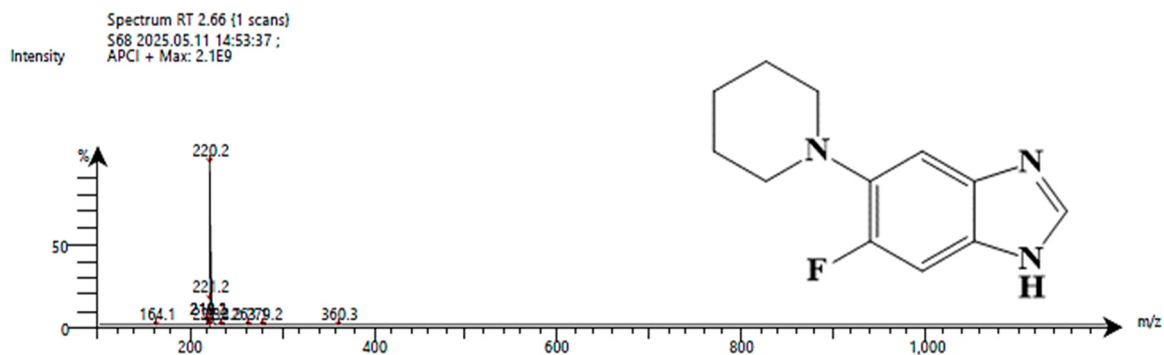


Figure S146. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (**6h**).

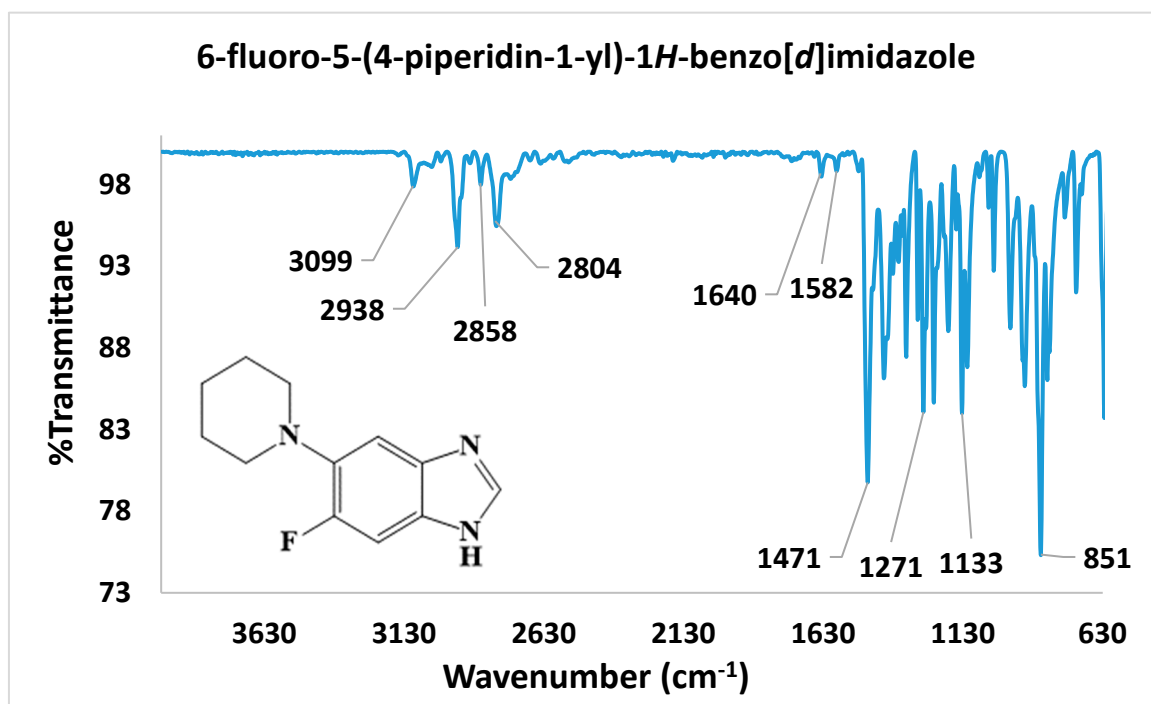


Figure S147. FT-IR spectrum of compound (**6h**).

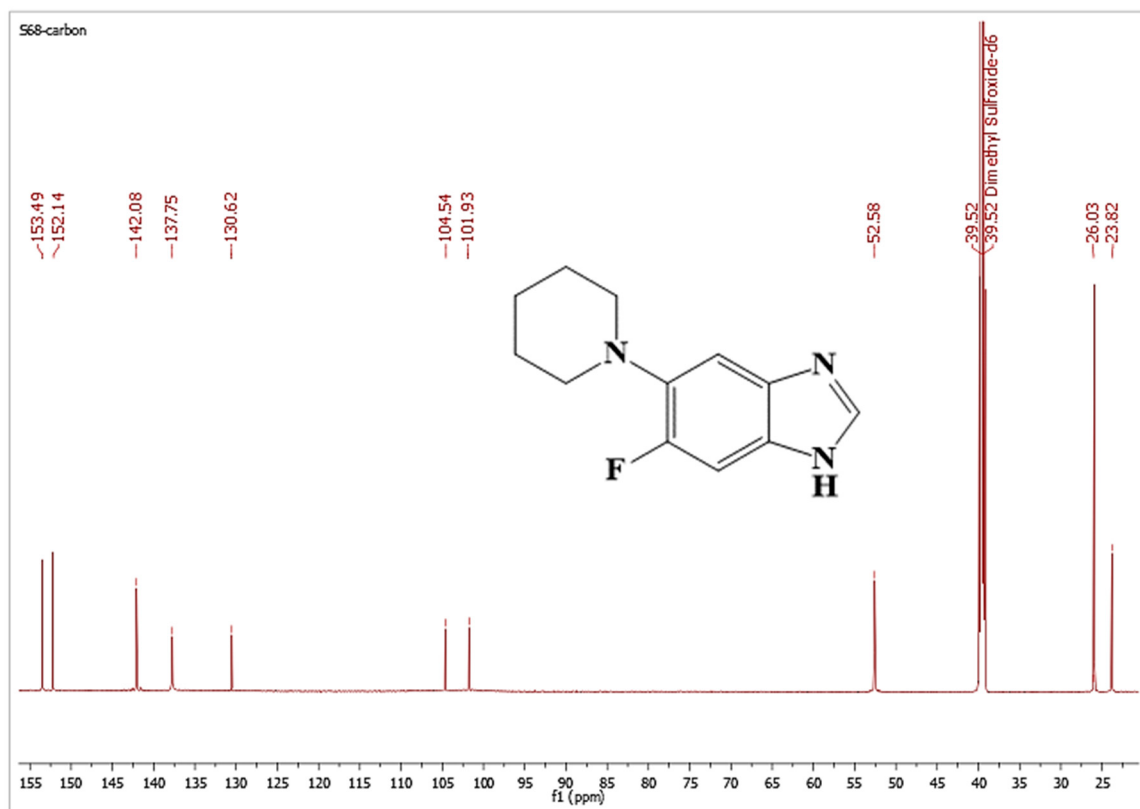


Figure S148. ^{13}C -NMR spectrum of compound (**6h**), DMSO-d, 700 MHz.

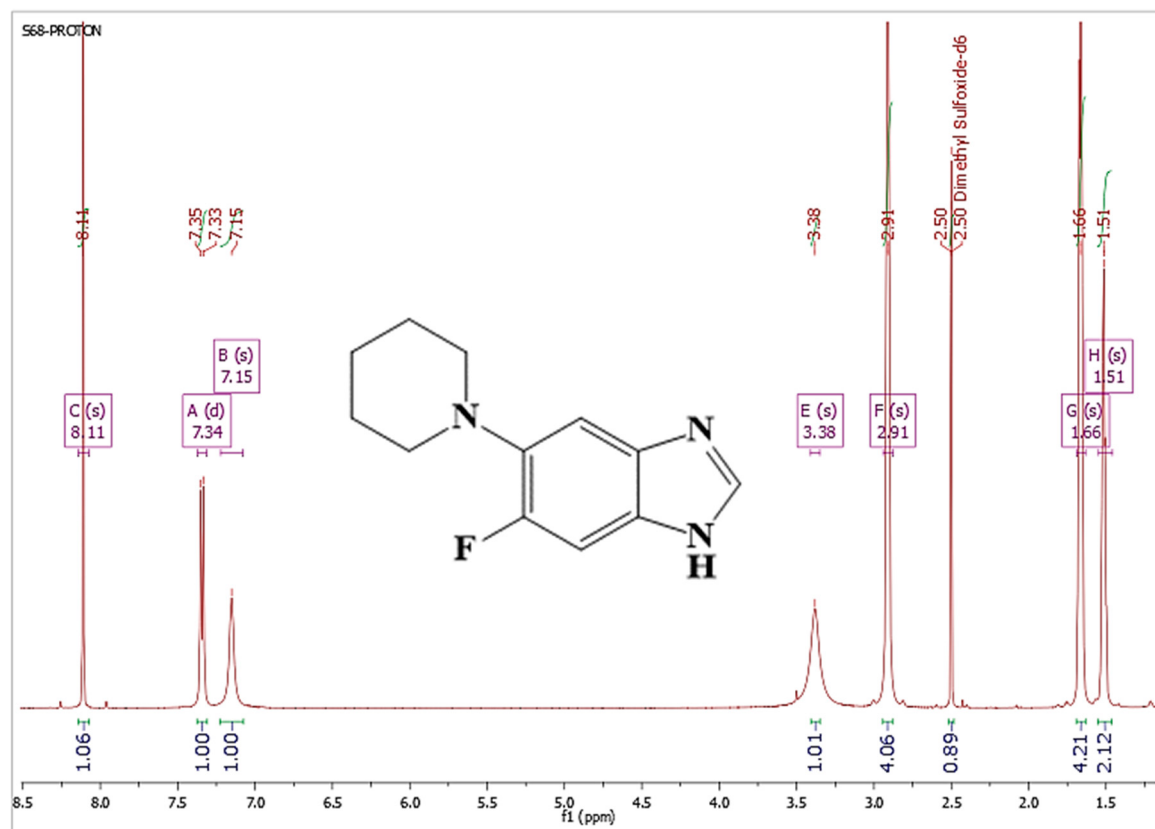


Figure S149. ^1H -NMR spectrum of compound (**6h**) in DMSO-d, 700 MHz.

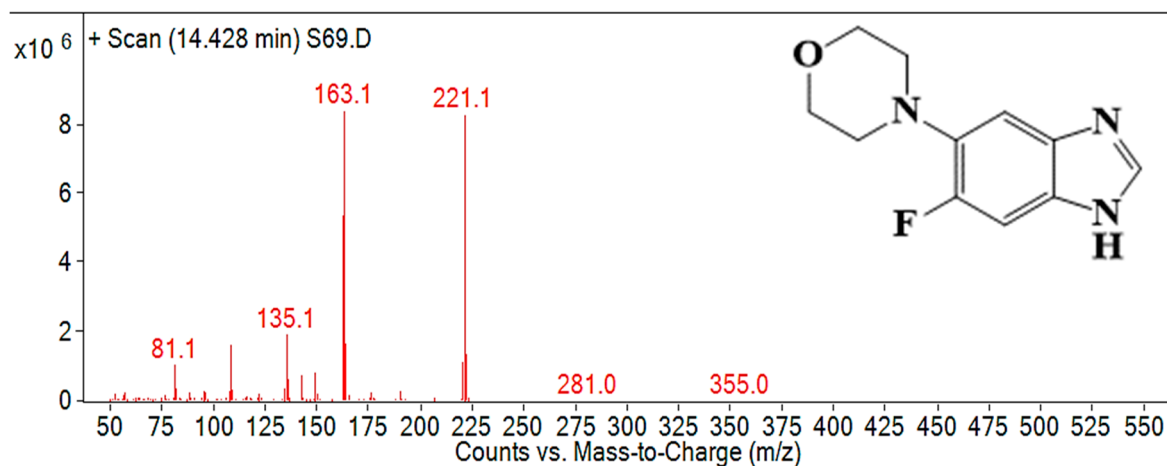


Figure S150. Mass spectrometry spectrum GC-MS of compound (6i).

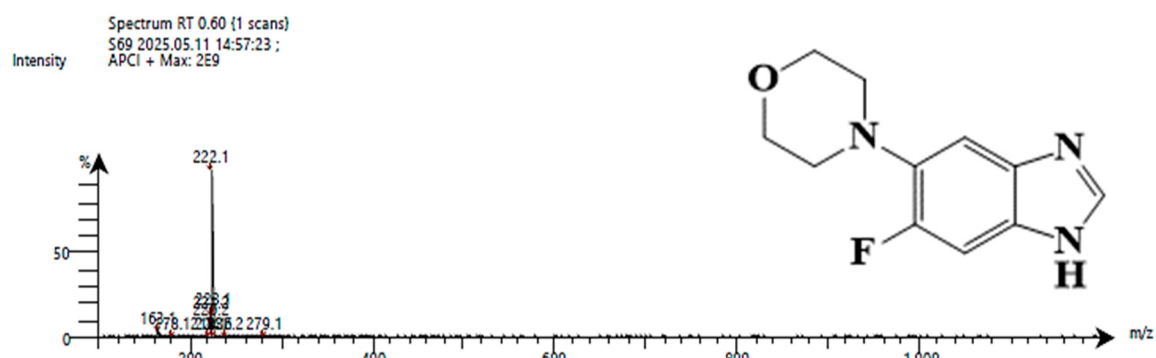


Figure S151. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6i).

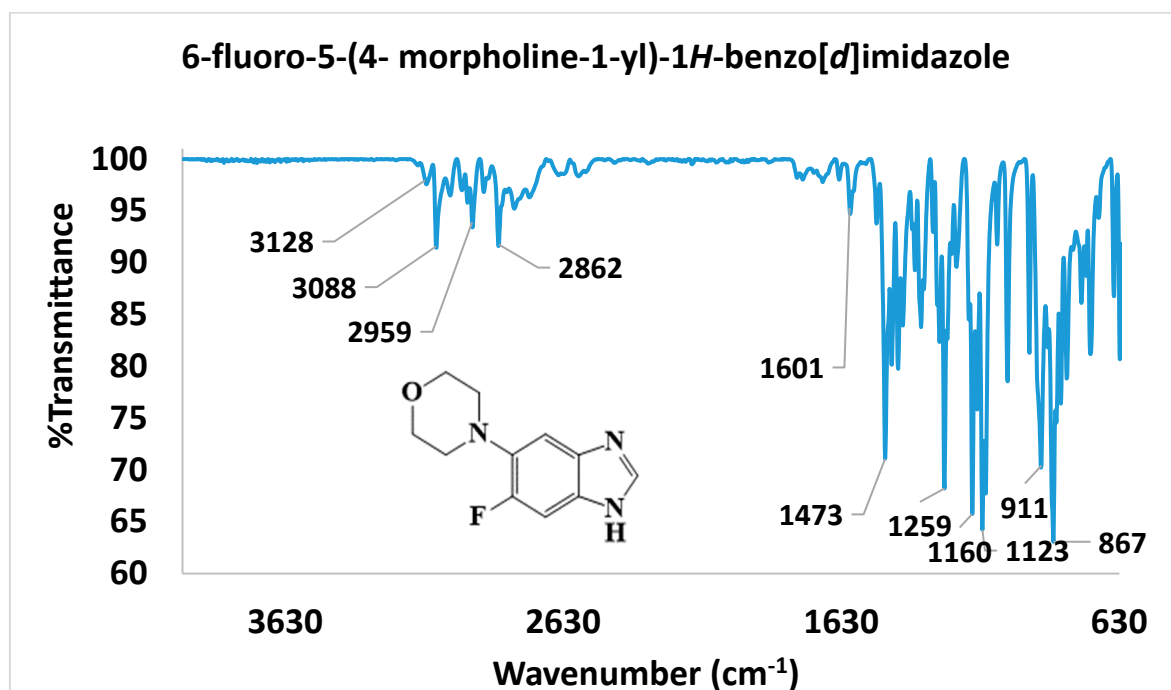


Figure S152. FT-IR spectrum of compound (6i).

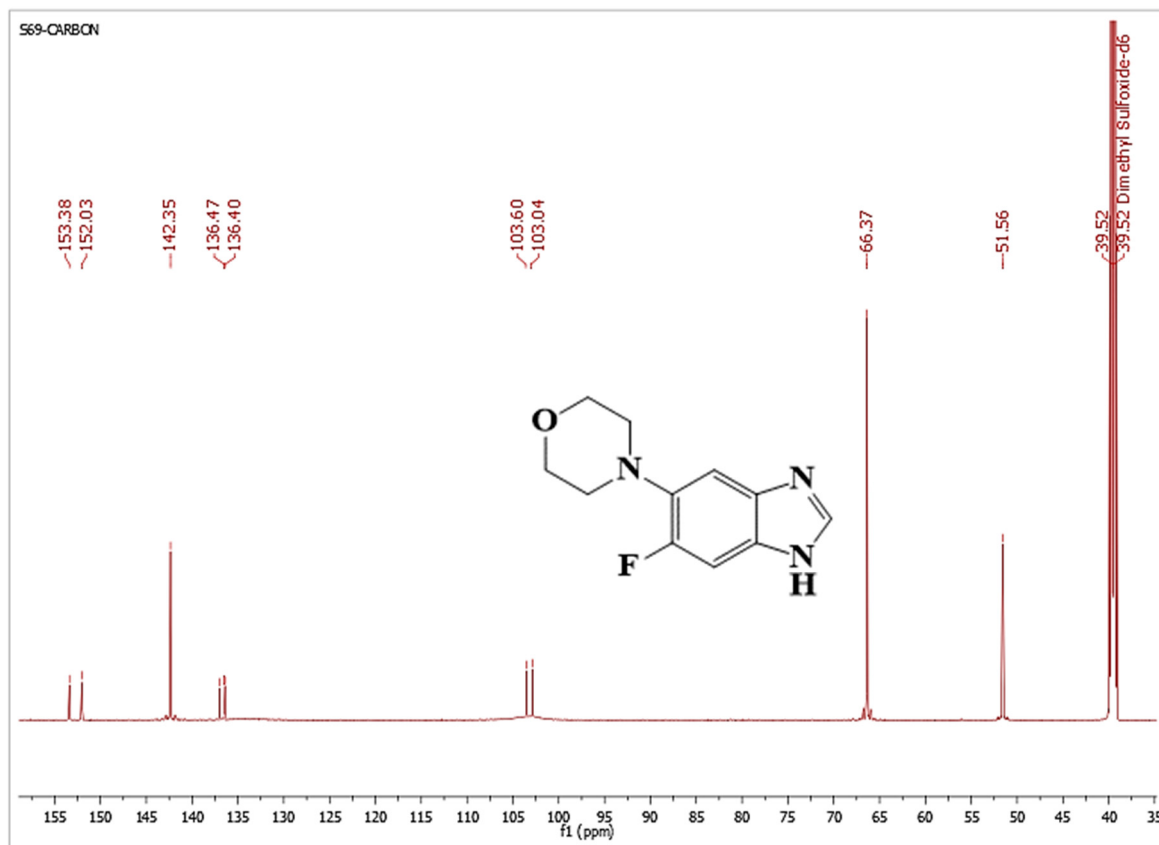


Figure S153. ^{13}C -NMR spectrum of compound (6i) in DMSO-d, 700 MHz.

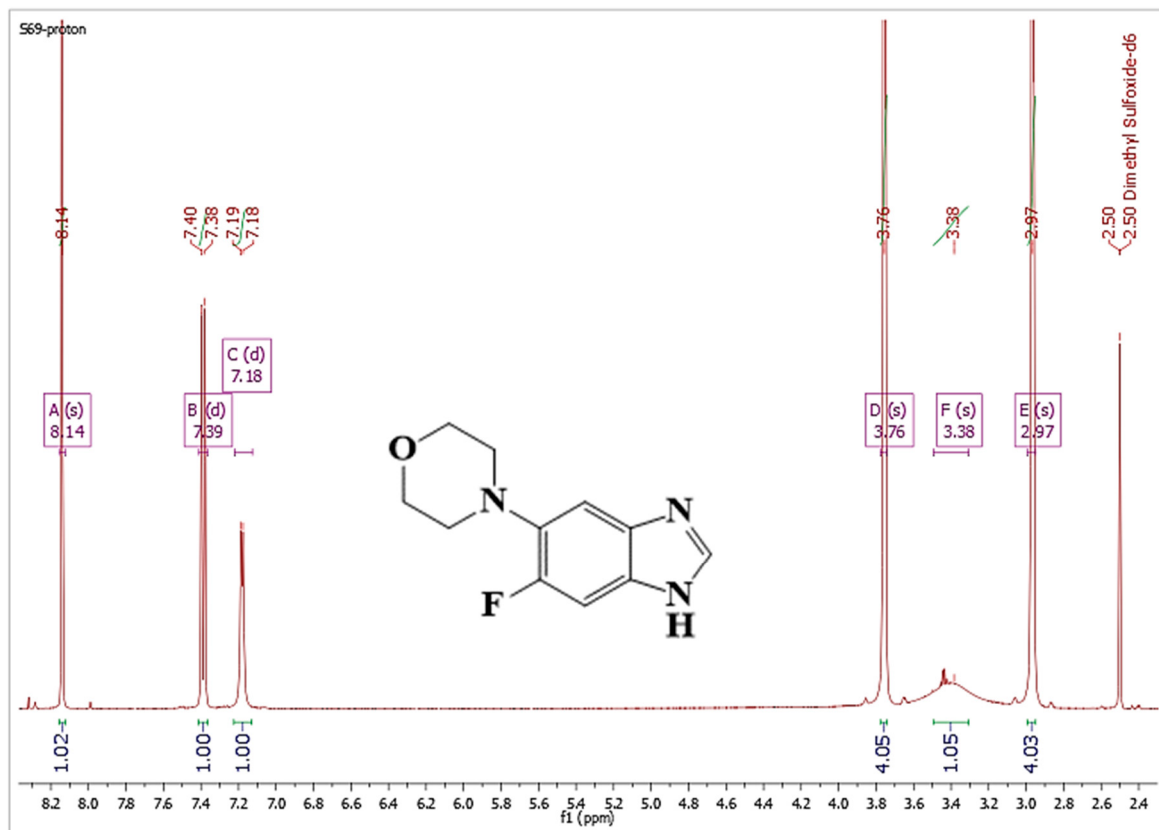


Figure S154. ^1H -NMR spectrum of compound (6i) in DMSO-d, 700 MHz.

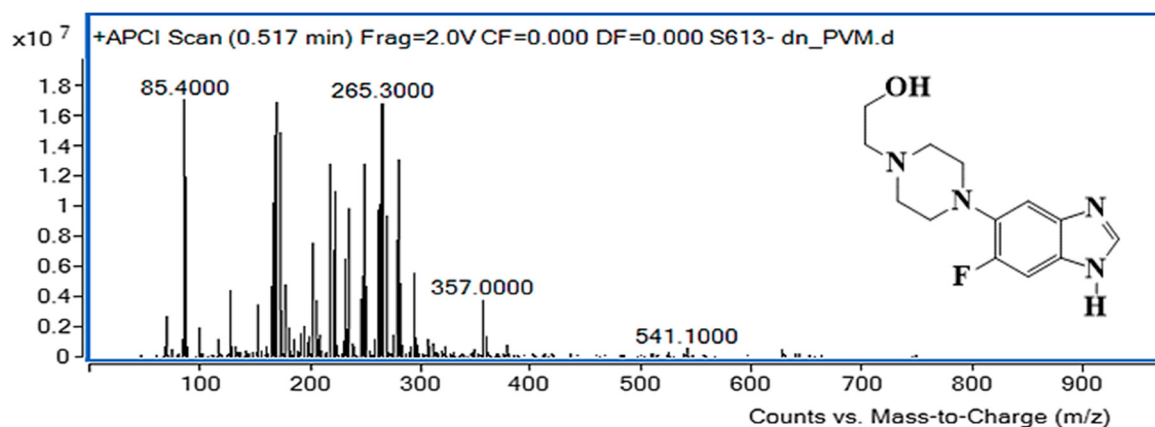


Figure S155. mass spectrometry spectrum LC-MS (APCI, positive) of compound (6j).

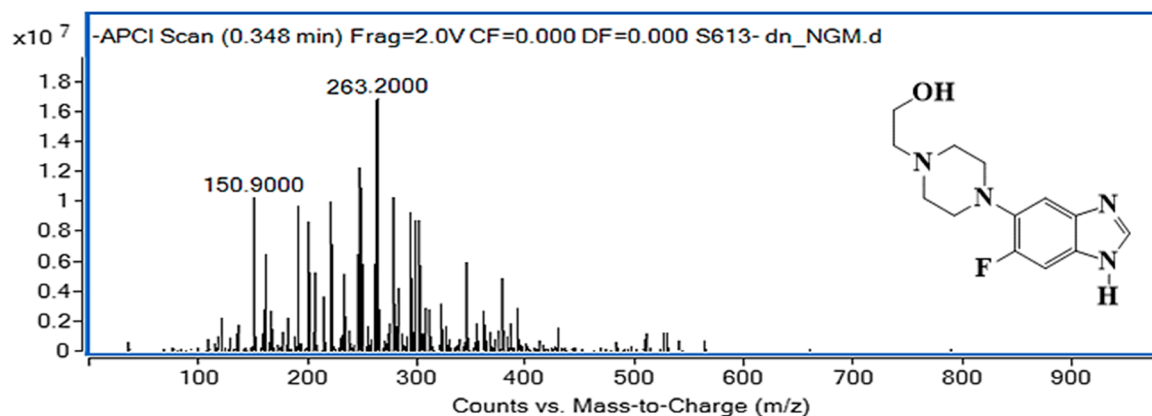


Figure S156. mass spectrometry spectrum LC-MS (APCI, negative) of compound (6j).

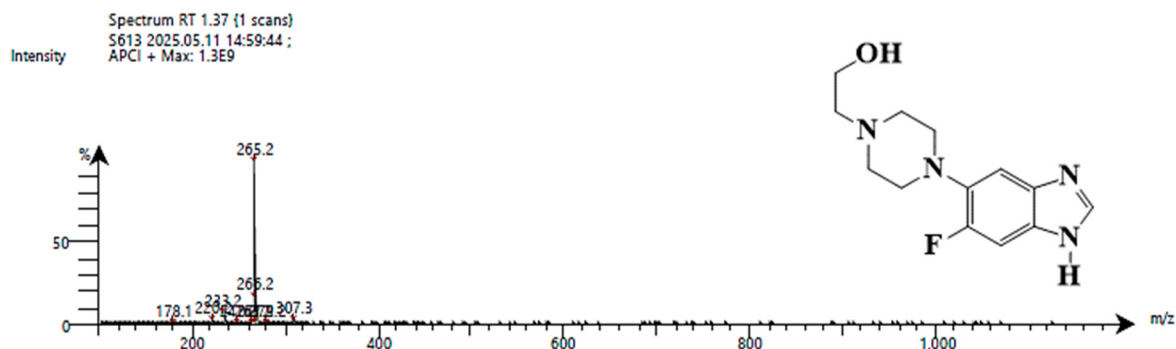


Figure S157. Mass spectrometry spectrum Advion Expression CMS single quadrupole ESI⁺/APCI⁺ for compound (6j).

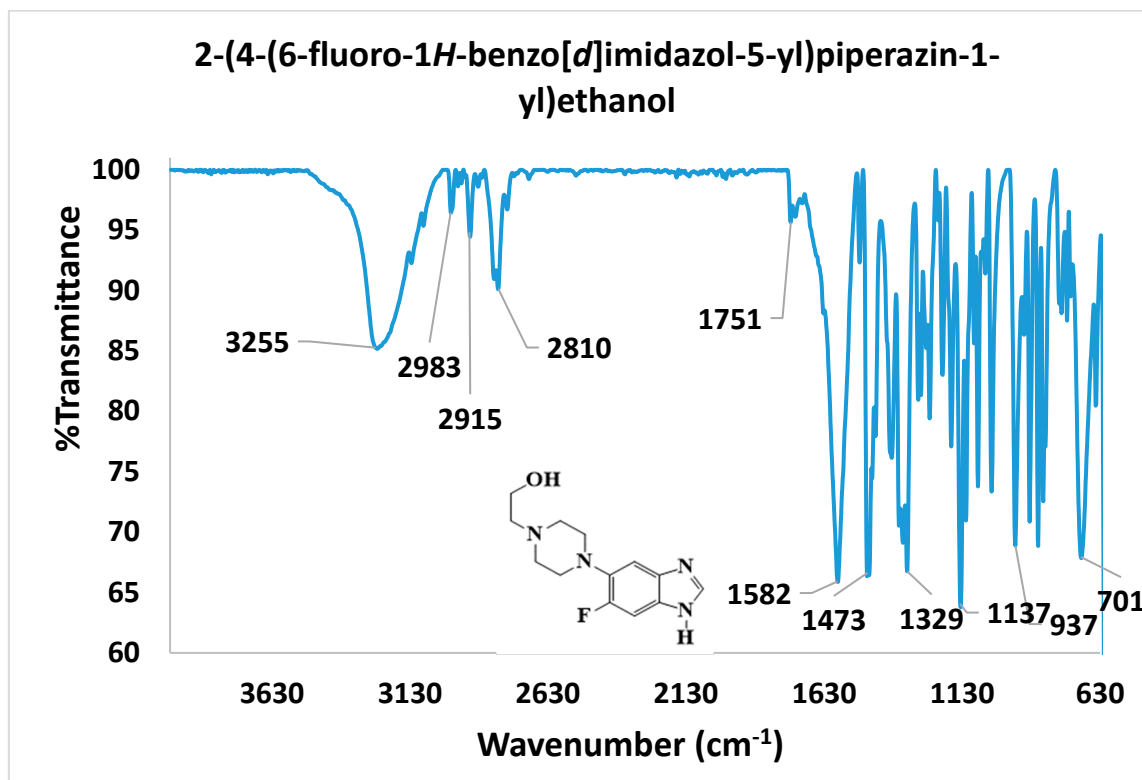


Figure S158. FT-IR spectrum of compound (6j).

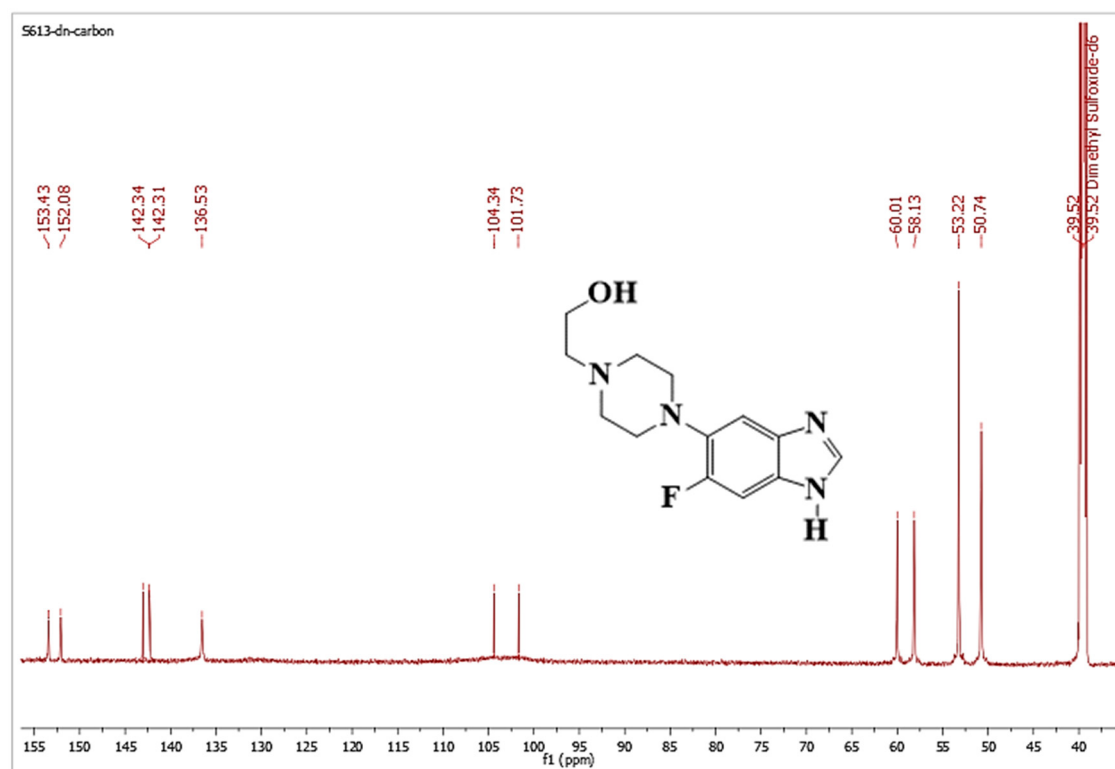


Figure S159. ¹³C-NMR spectrum of compound (6j) in DMSO-d, 700 MHz.

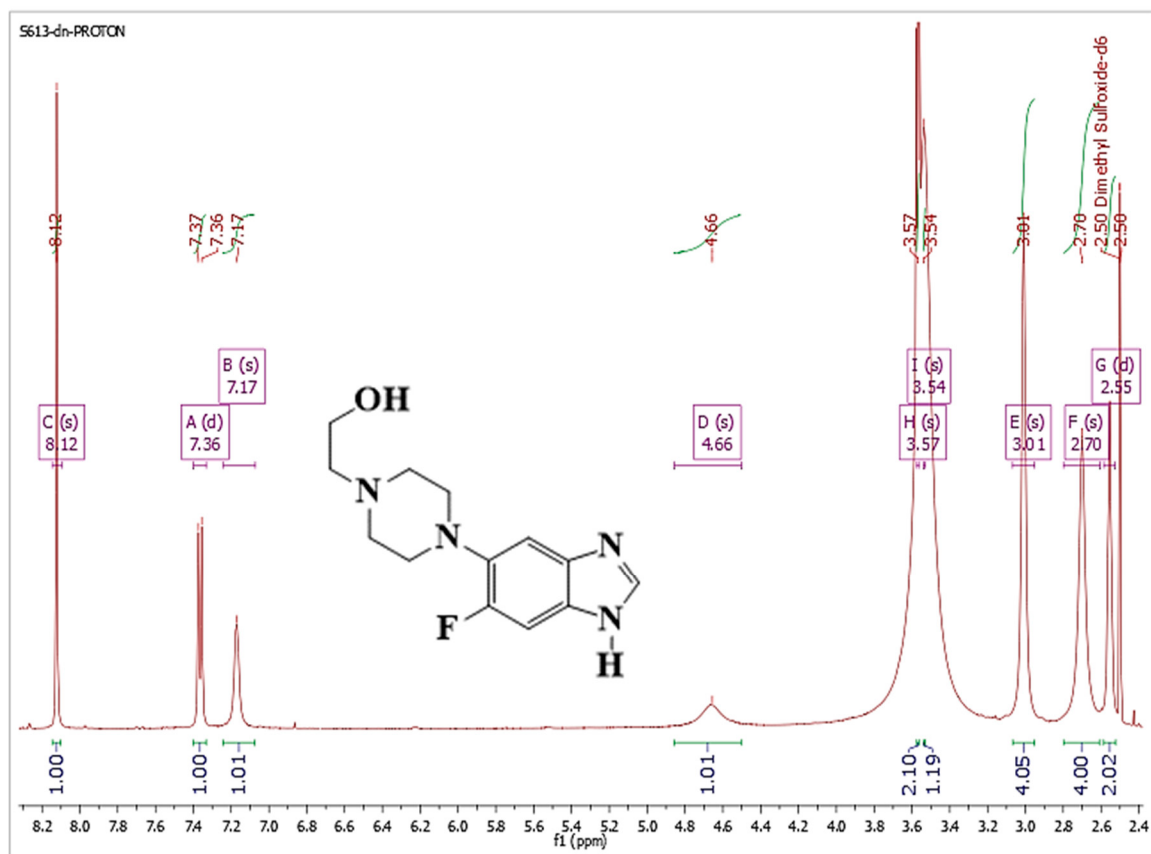


Figure S160. ^1H -NMR spectrum of compound (6j) in DMSO-d, 700 MHz.