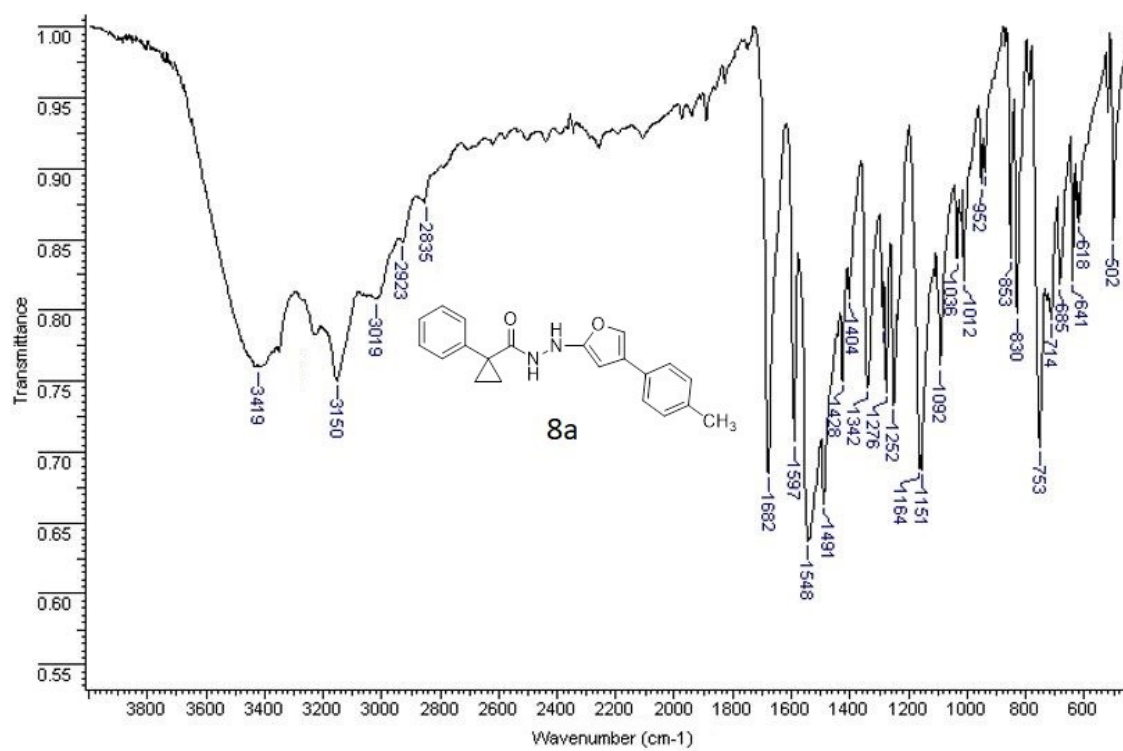


Supporting Information

Cell Culture Conditions and MTT Assay

Human breast (MCF-7, MDA-MB-231), lung (A549) and liver (HepG2) cancer cell lines were cultured in Dulbecco's Modified Eagle medium (DMEM) under optimal conditions (5% CO₂ at 37 °C) and provided with growth supplements (10% fetal bovine serum) and standard antibiotics (100 µg/mL penicillin and 100 µg/mL streptomycin). The *in vitro* cytotoxicity of GA was determined using a standard 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. In brief, the cell lines were harvested using trypsin, pooled, and plated at a density of 1 x 10⁵ cells/ml cells/well containing 10% FBS and 1% antibiotic solution for 24 h at 37 °C. After being washed using sterile PBS, the cells were treated with different concentrations of GA dissolved in serum-free DMEM and incubated under the abovementioned optimal conditions under 5% CO₂ for 24 h. After 24 h, the cells were incubated with MTT (20 µL of 5 mg/ml) for 2–4 h and observed for the formation of purple precipitates. Later, the medium with MTT was aspirated and washed with 1 x PBS (200 µl). 100 µL of DMSO was added at this point and the plate was shaken for 5 min. Later, the absorbance was read at 570 nm using a microplate reader (Thermo Fisher Scientific, USA). All these experiments were conducted in triplicate. Subsequently, the percentage of cell viability was determined and the IC₅₀ value was calculated using GraphPad Prism 6.0 software (USA). All chemicals used in the study were of analytical grade.

Supporting spectral information [Figure S1-S60]



Fig

ure S1. IR spectrum of **8a**

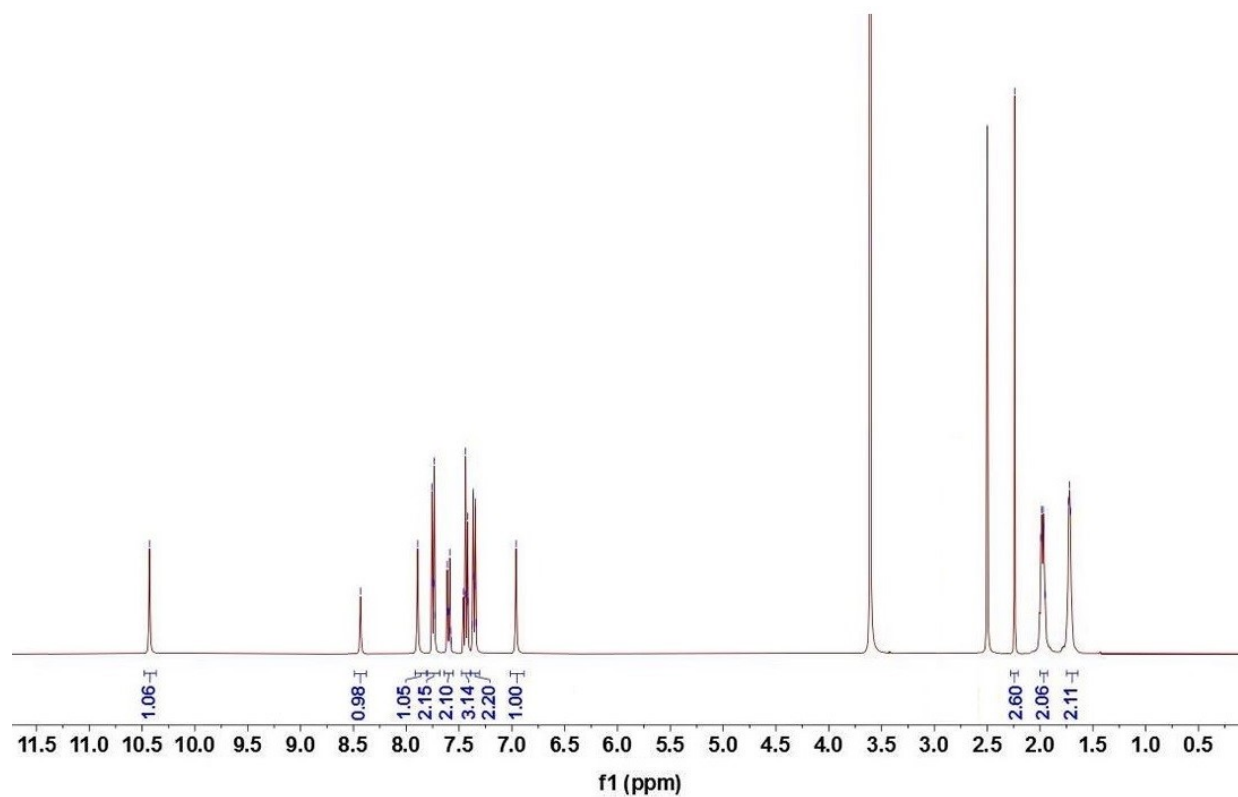


Figure S2. ¹H NMR spectrum of **8a**

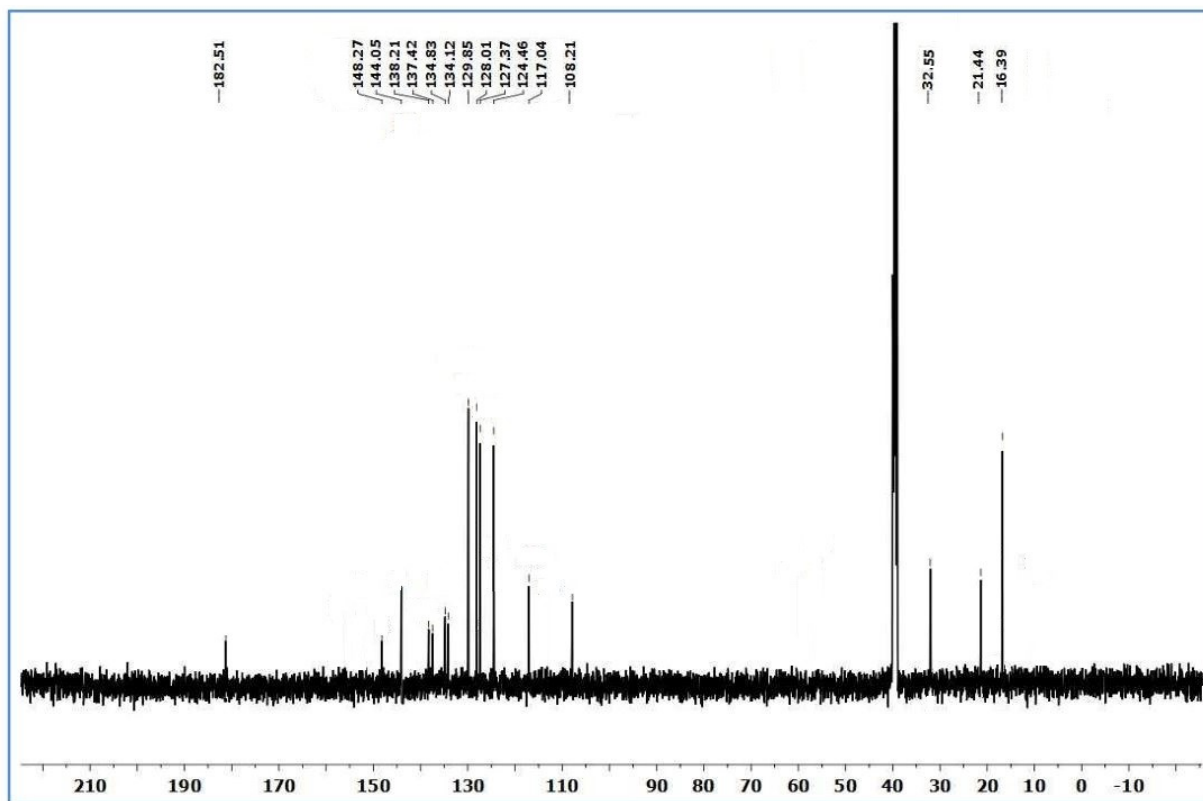


Figure S3. ^{13}C NMR spectrum of **8a**

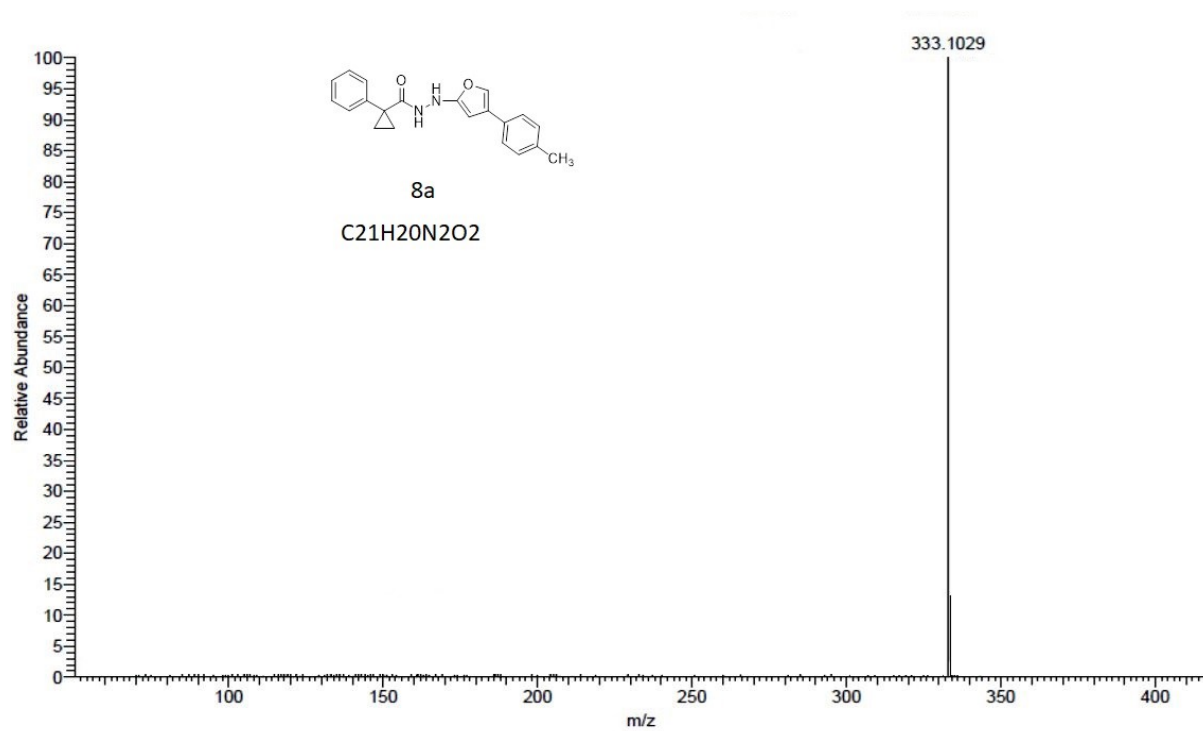


Figure S4. HRMS spectrum of **8a**

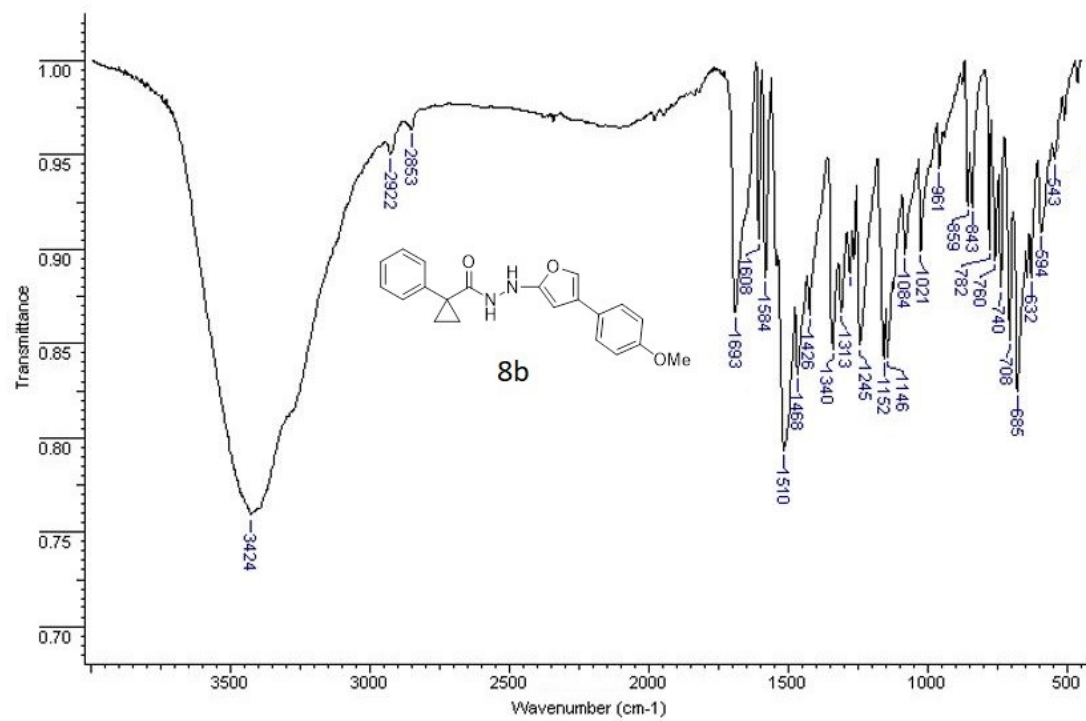


Figure S5. IR spectrum of **8b**

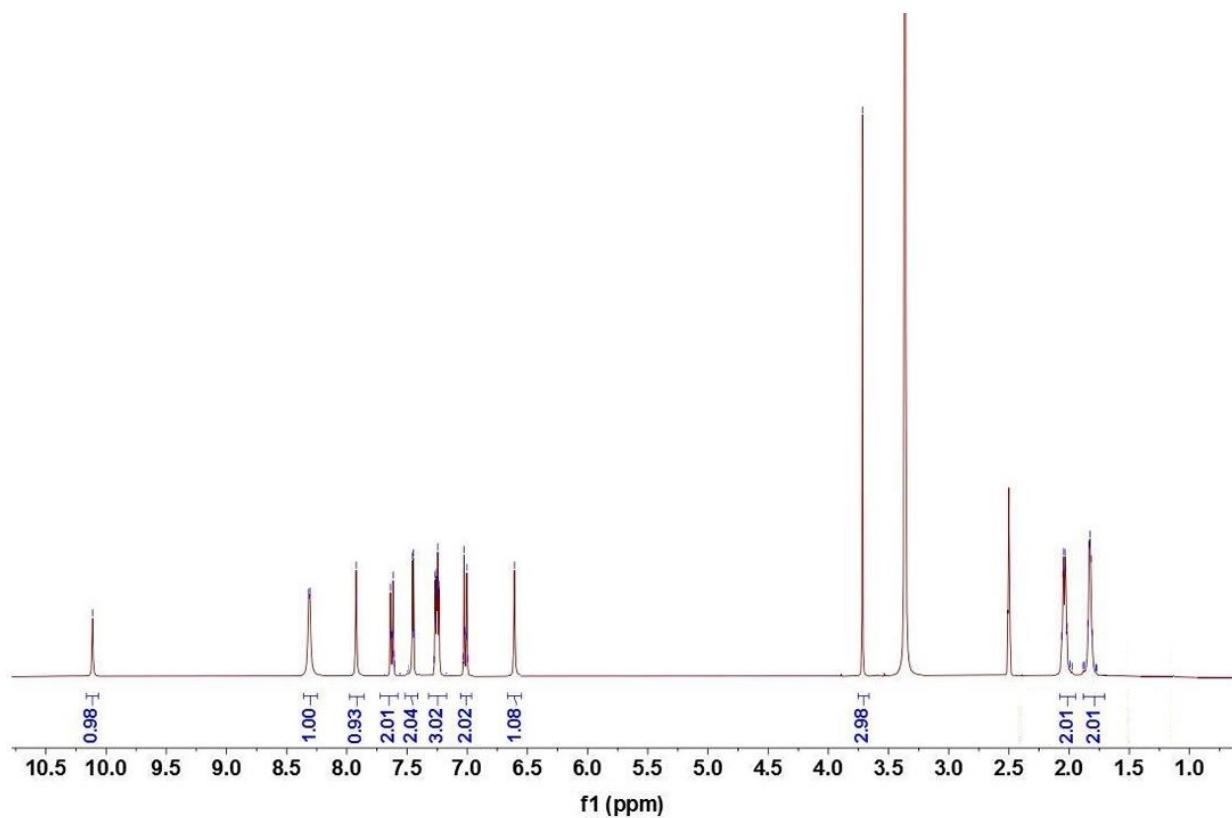


Figure S6. ¹H NMR spectrum of **8b**

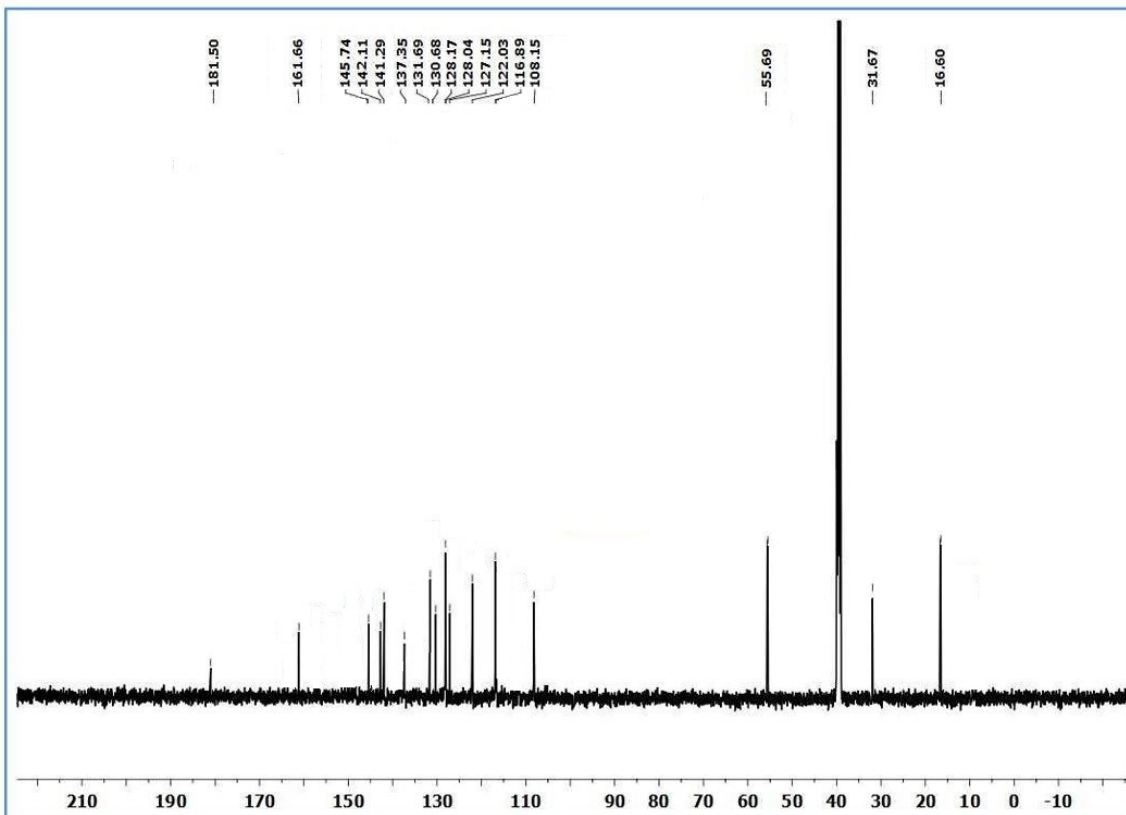


Figure S7. ^{13}C NMR spectrum of **8b**

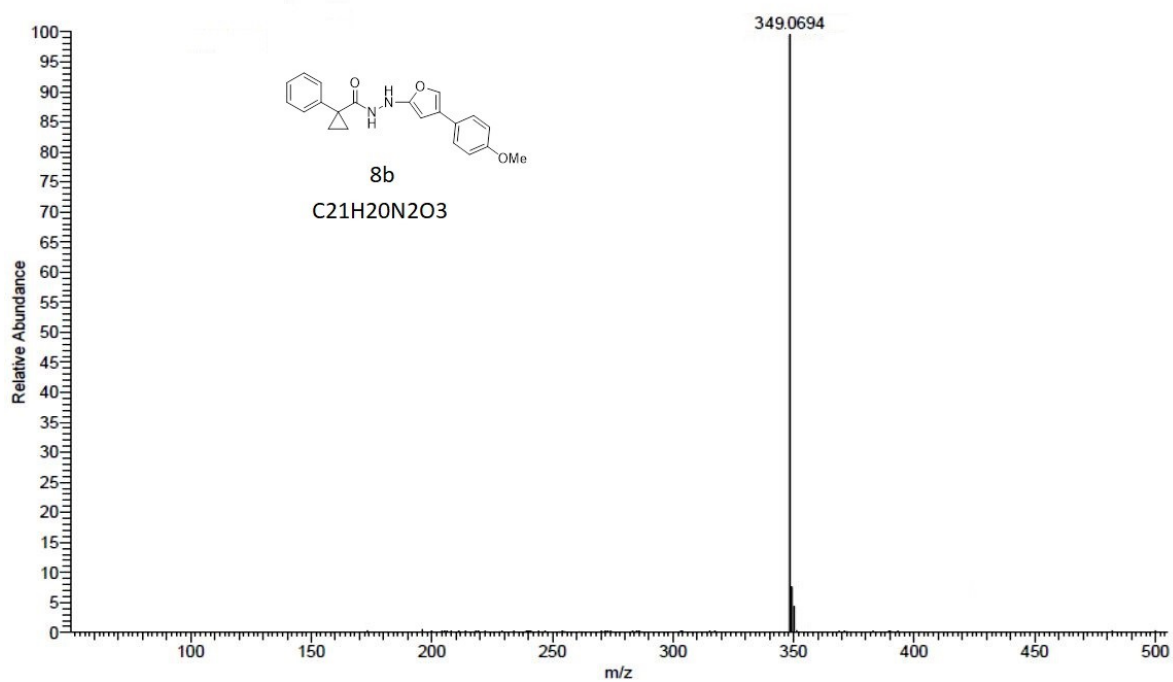


Figure S8. HRMS spectrum of **8b**

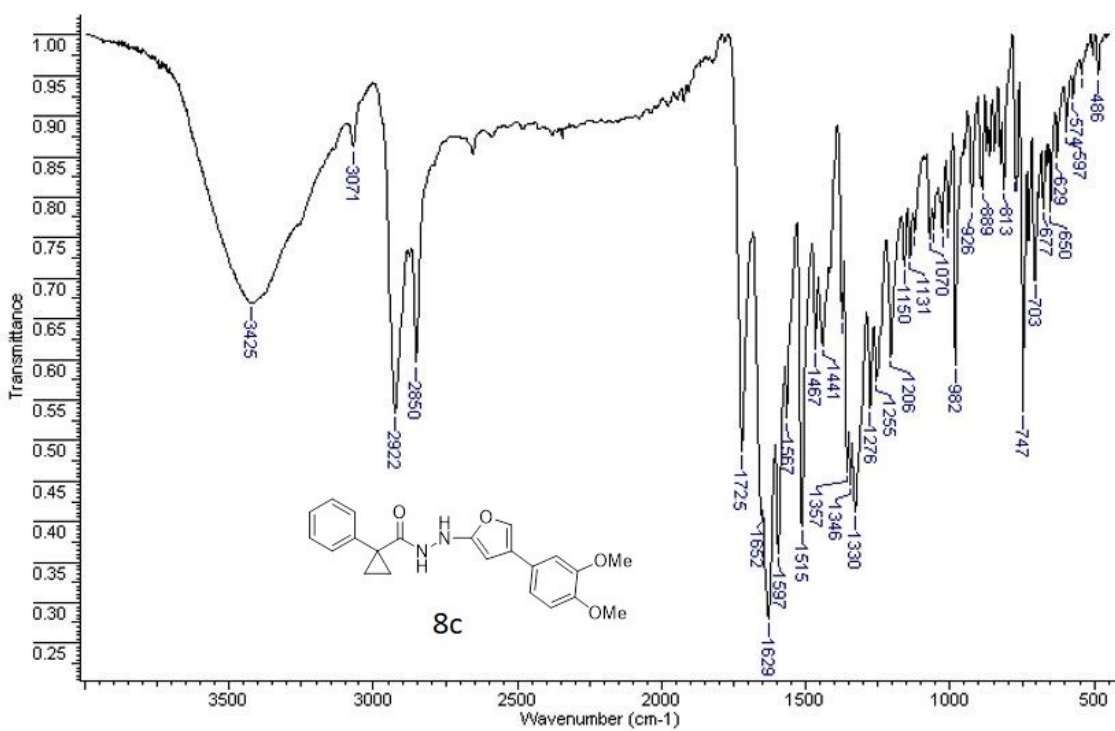


Figure S9. IR spectrum of 8c

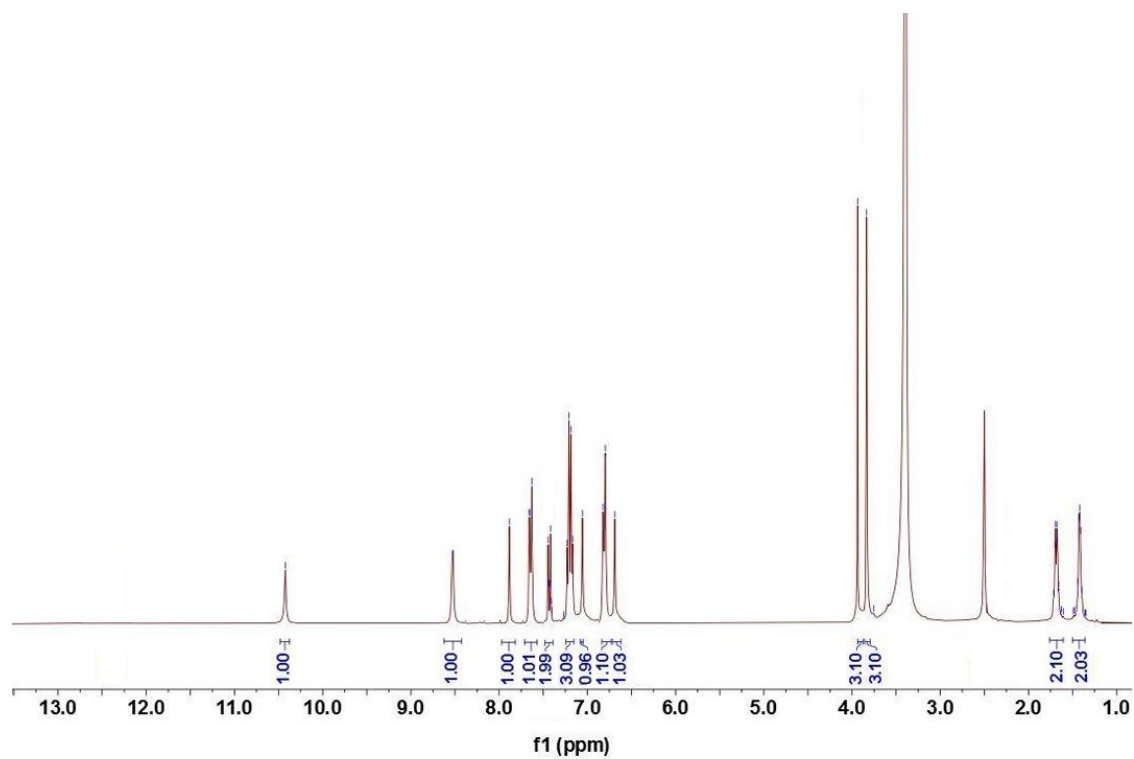


Figure S10. ^1H NMR spectrum of **8c**

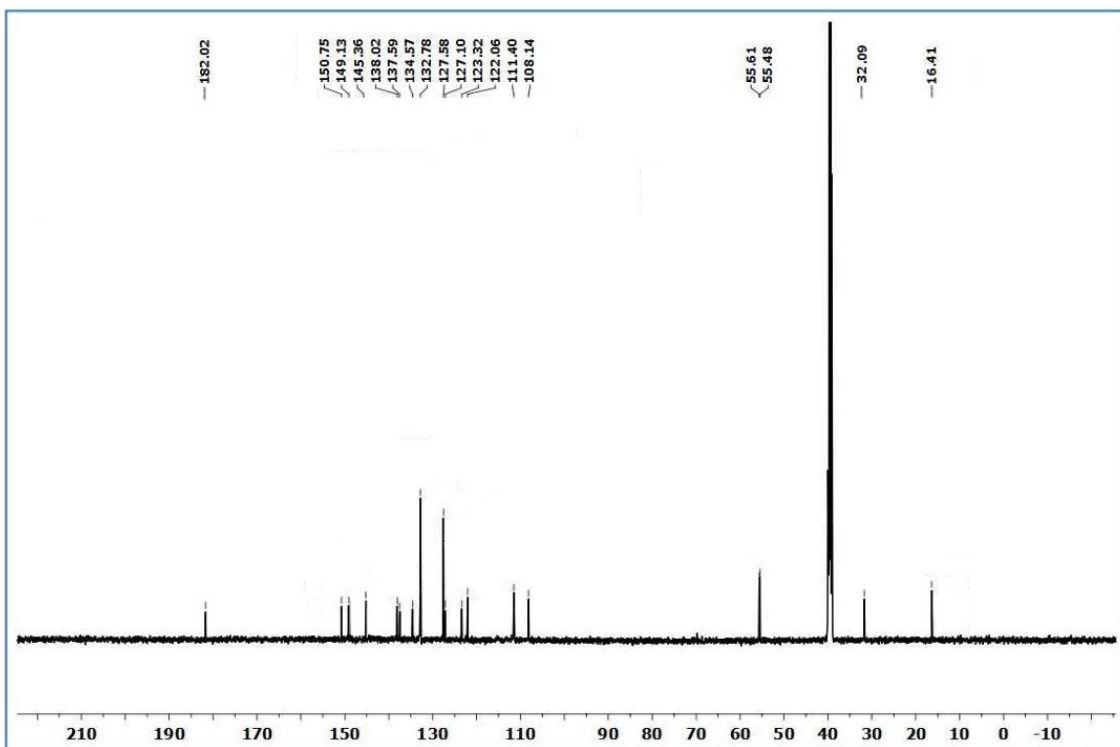


Figure S11. ^{13}C NMR spectrum of **8c**

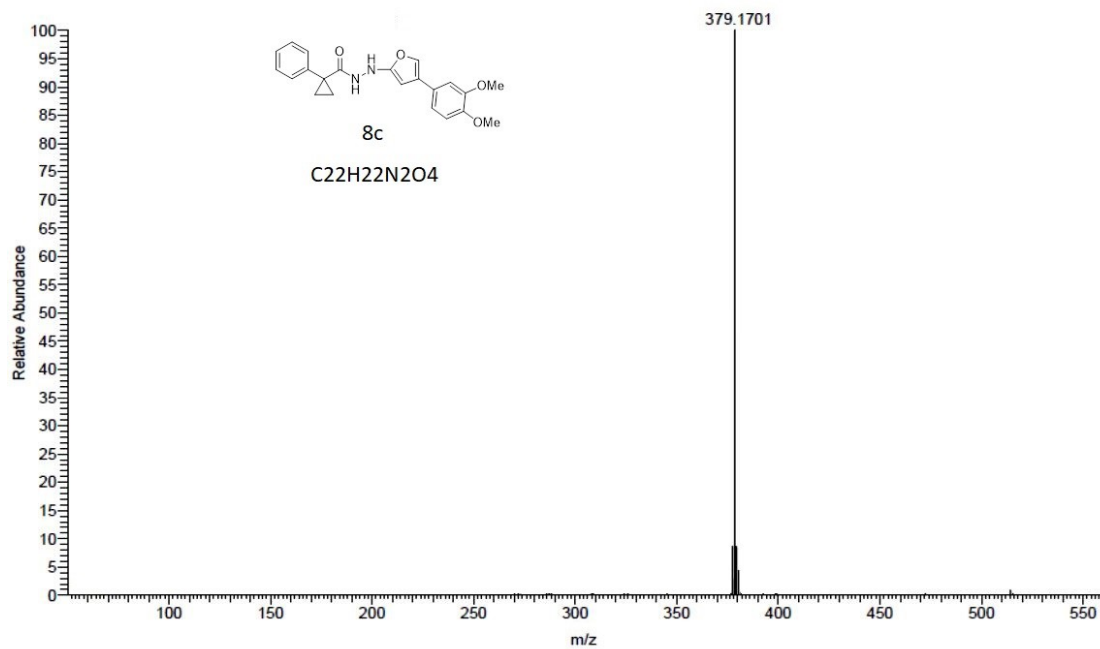


Figure S12. HRMS spectrum of **8c**

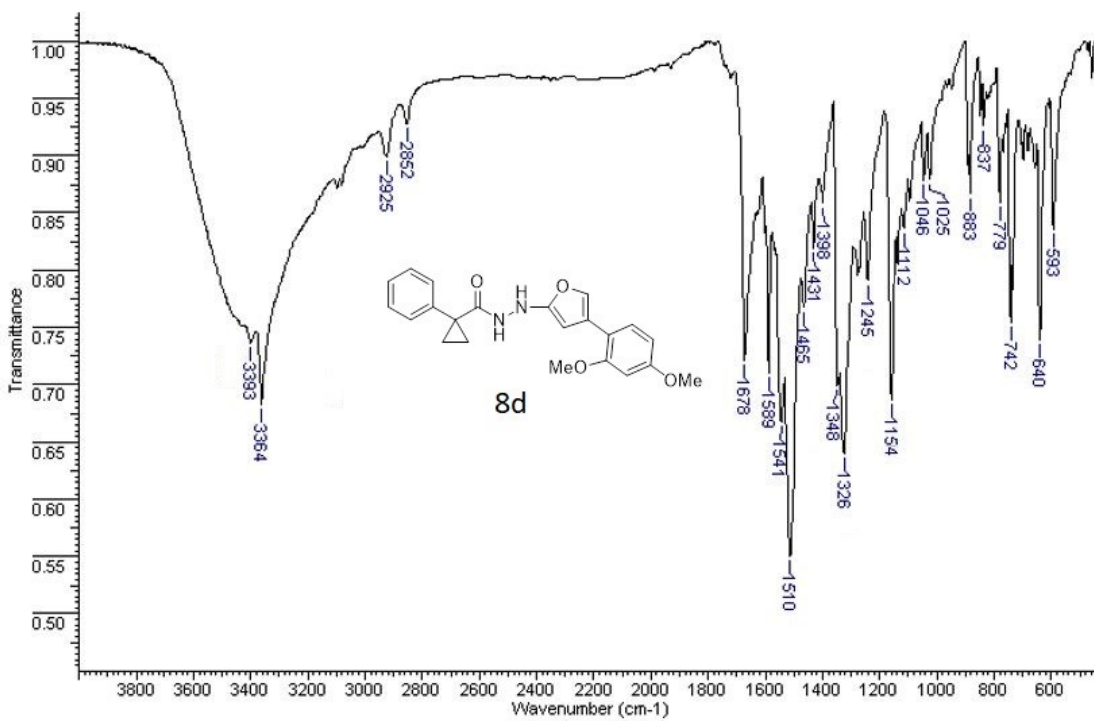


Figure S13. IR spectrum of **8d**

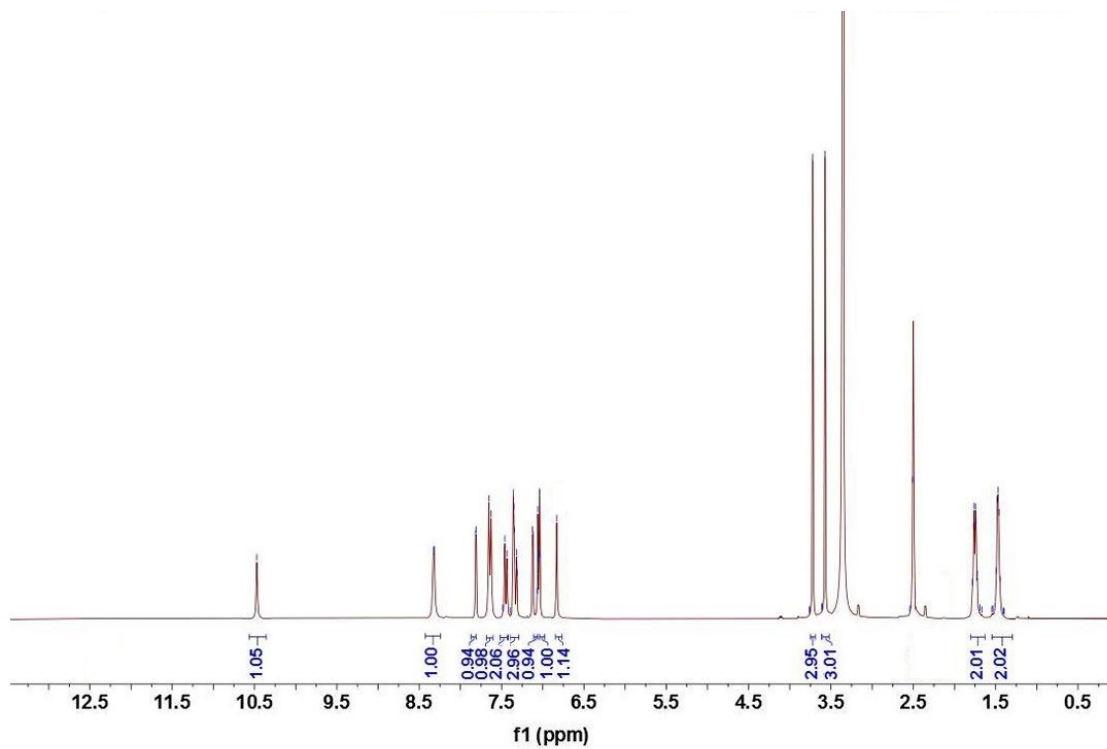


Figure S14. ¹H NMR spectrum of 8d

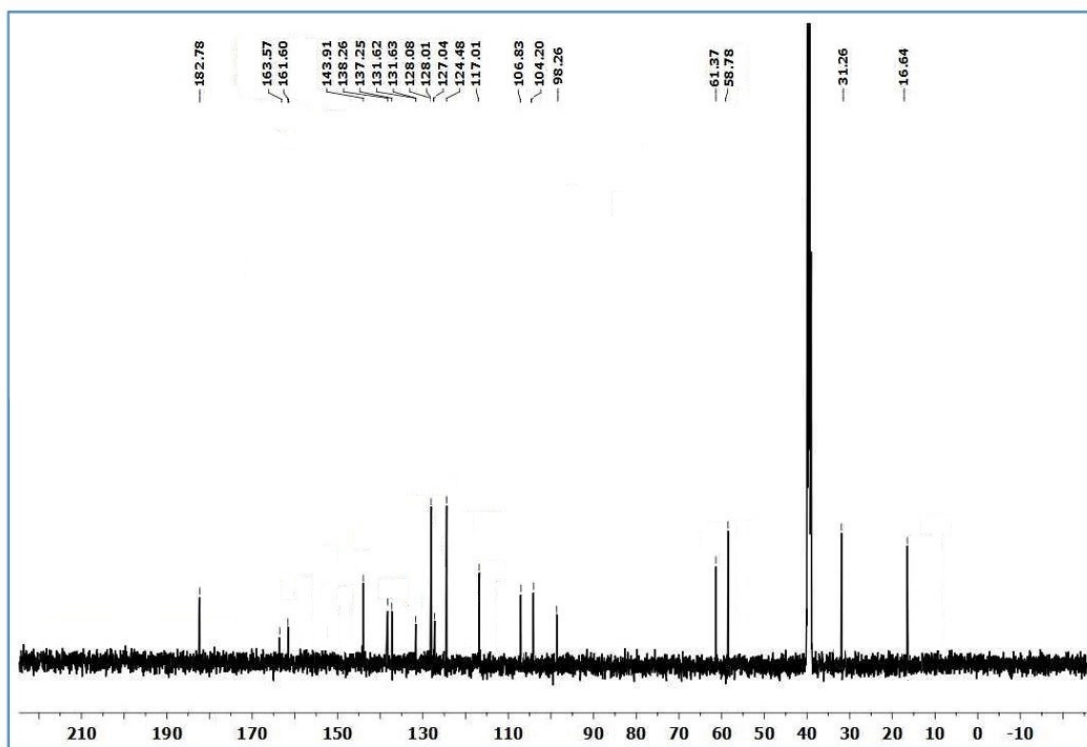


Figure S15. ¹³C NMR spectrum of 8d

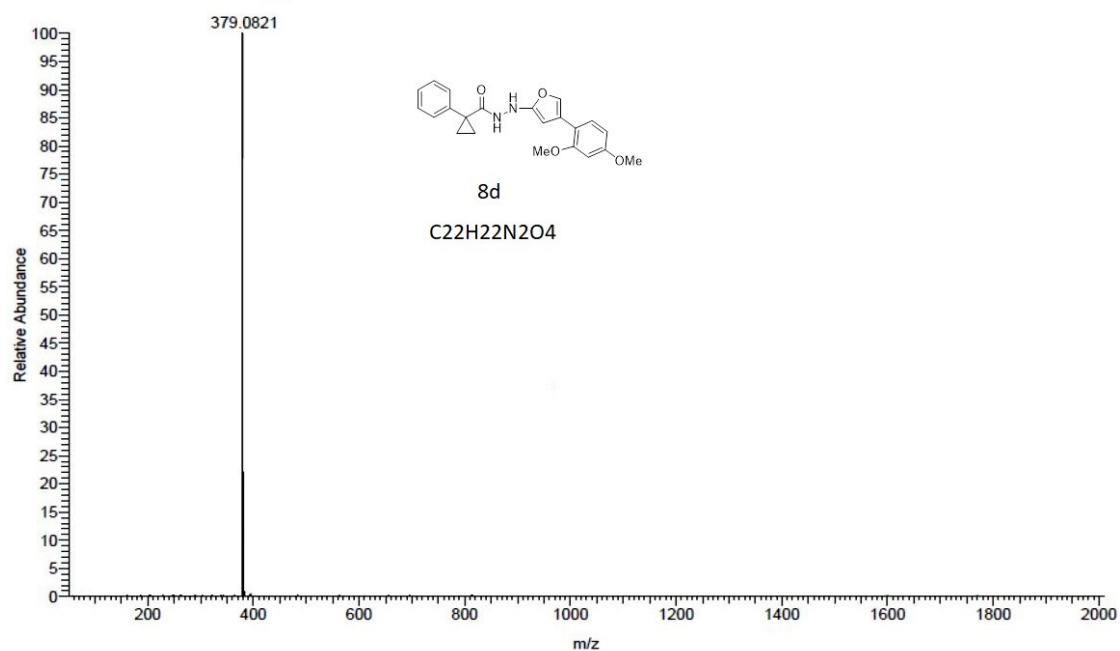


Figure S16. HRMS spectrum of **8d**

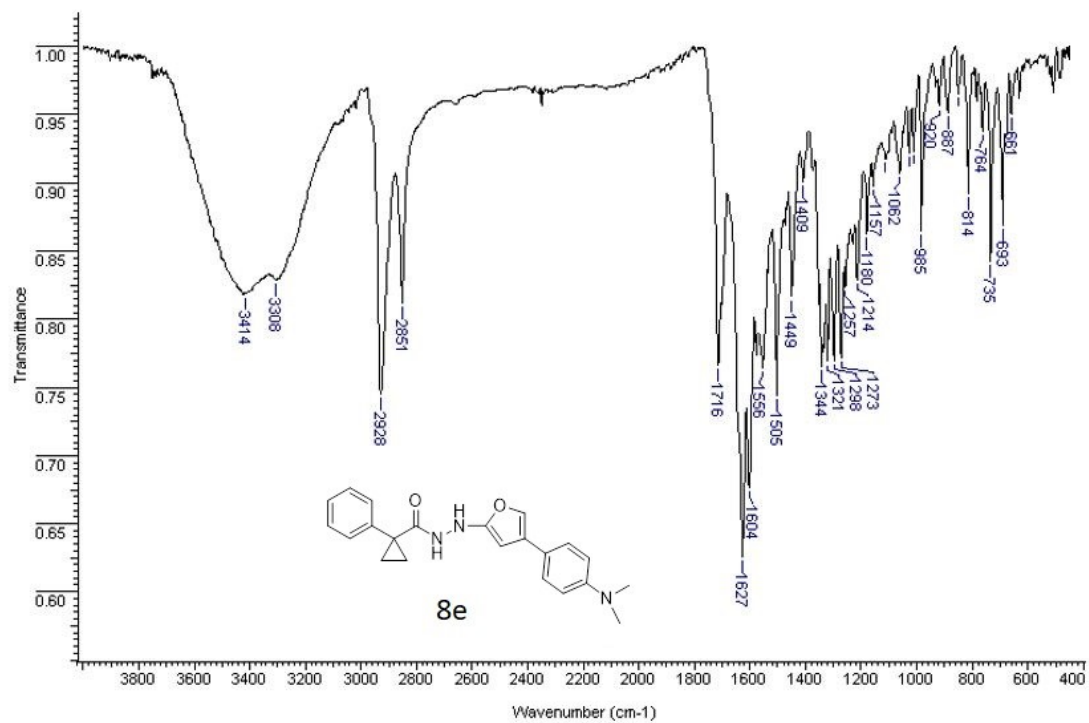


Figure S17. IR spectrum of **8e**

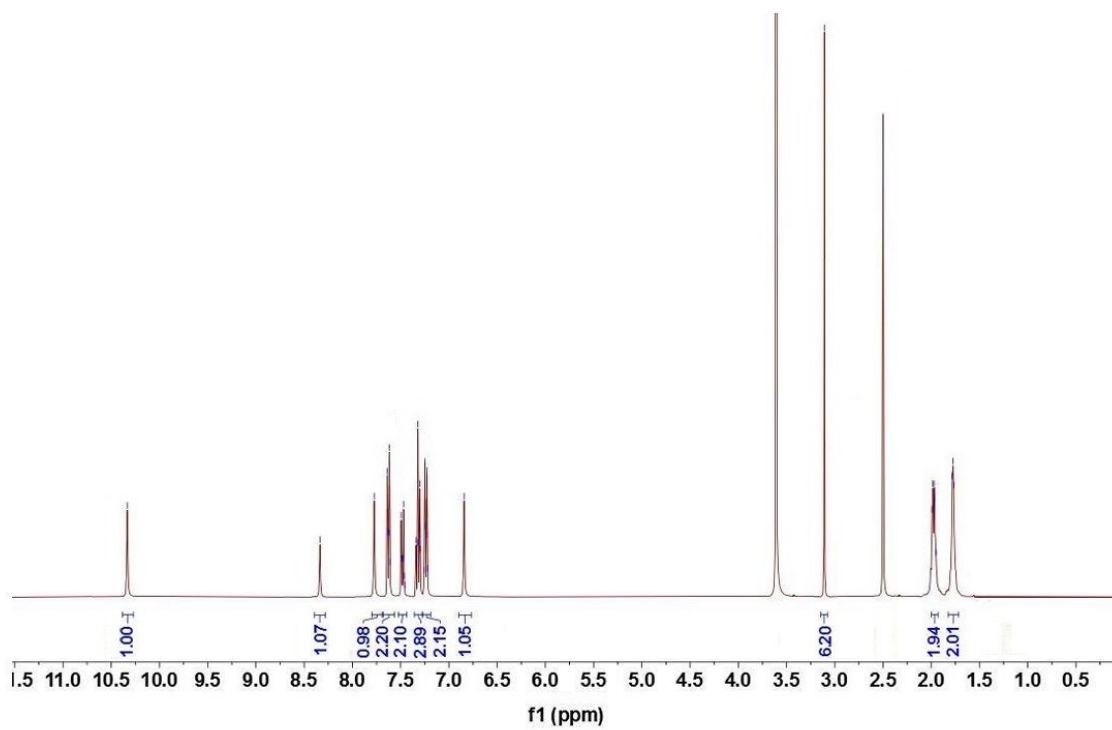


Figure S18. ¹H NMR spectrum of **8e**

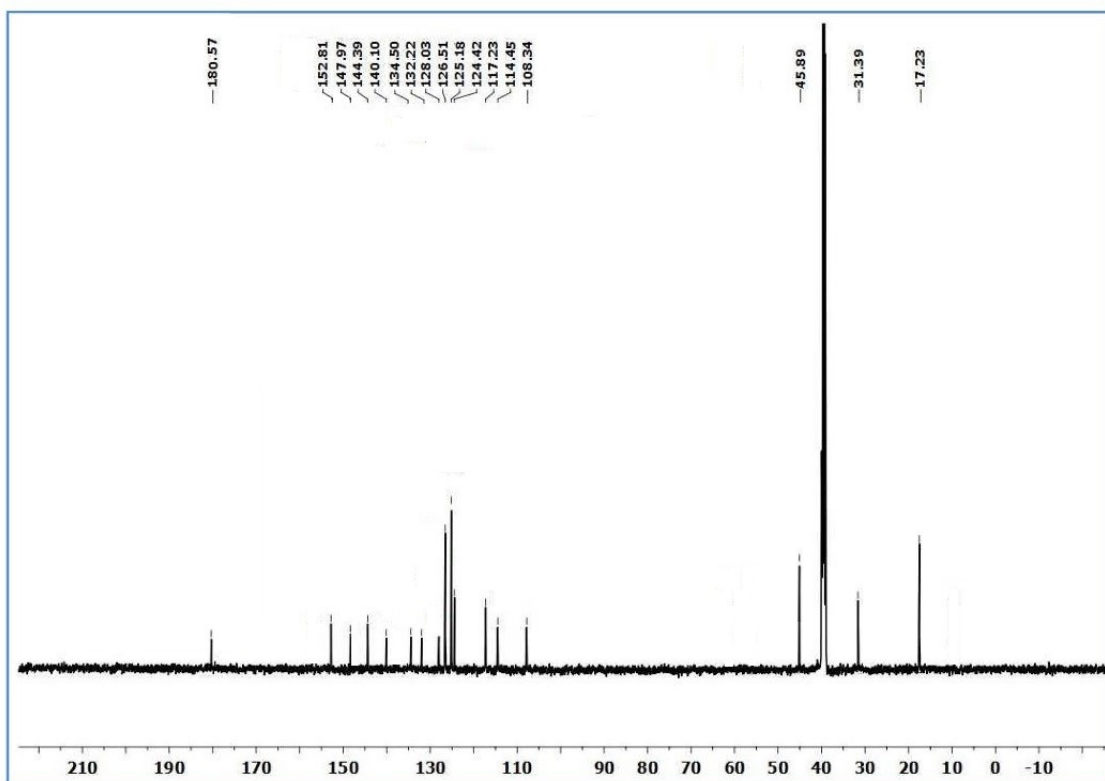


Figure S19. ¹³C NMR spectrum of **8e**

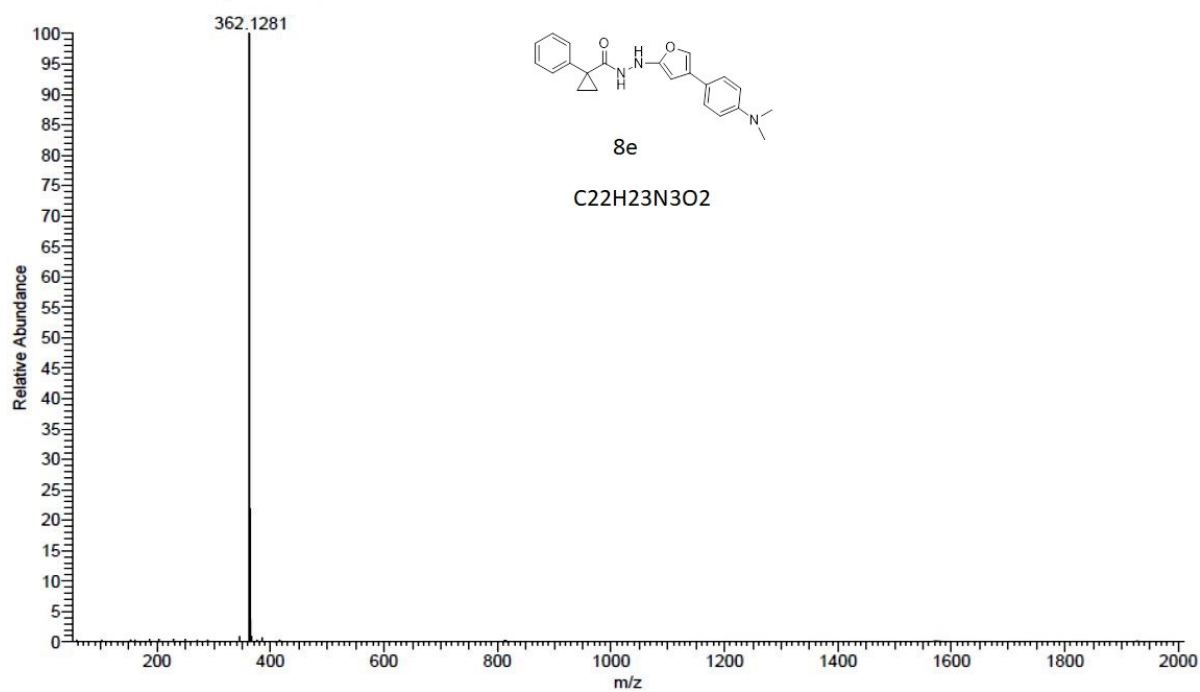


Figure S20. HRMS spectrum of **8e**

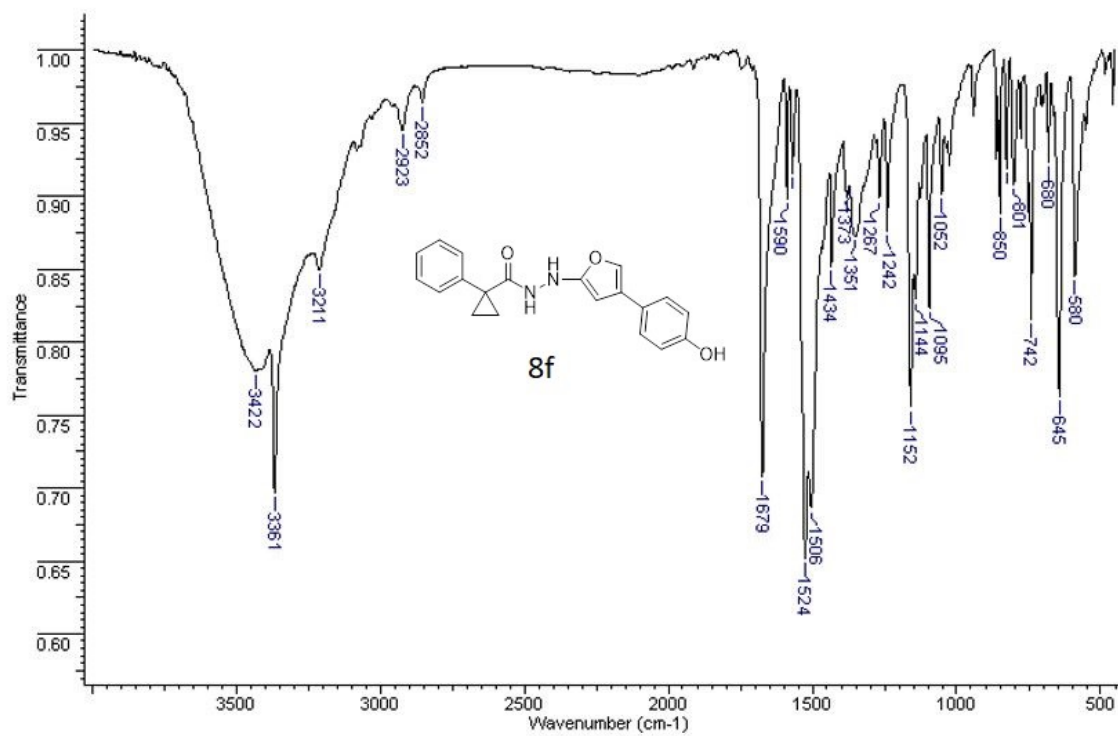


Figure S21. IR spectrum of **8f**

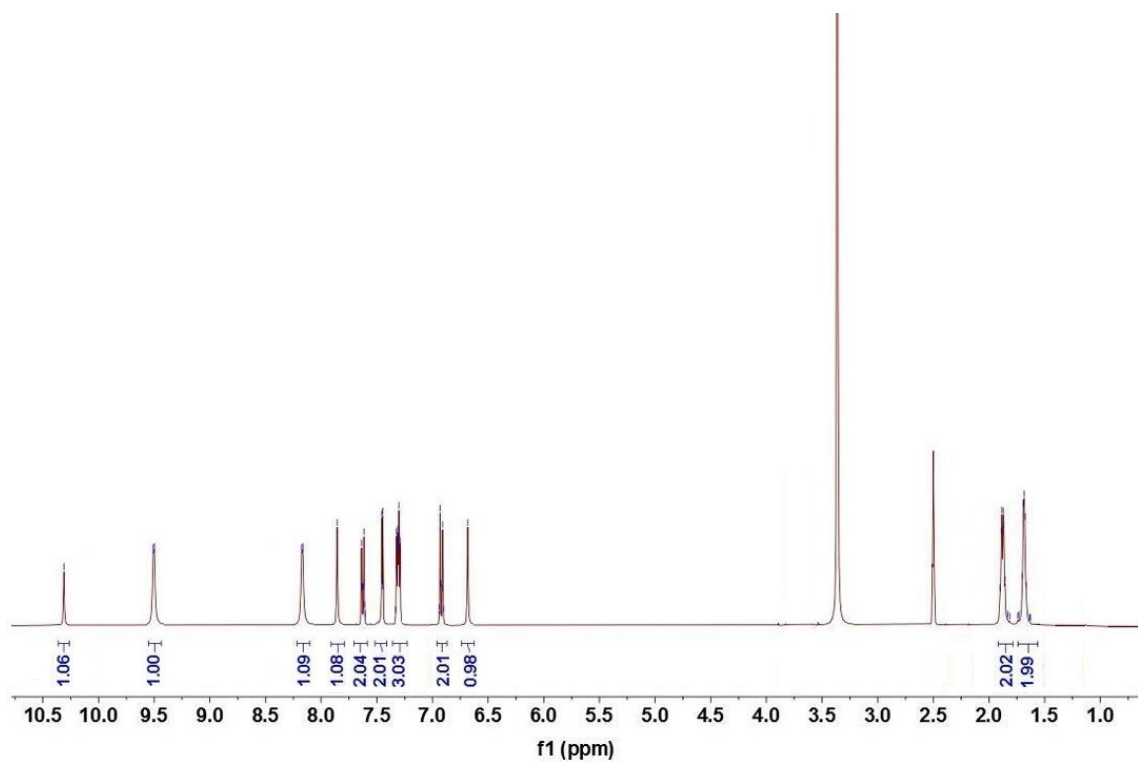


Figure S22. ¹H NMR spectrum of **8f**

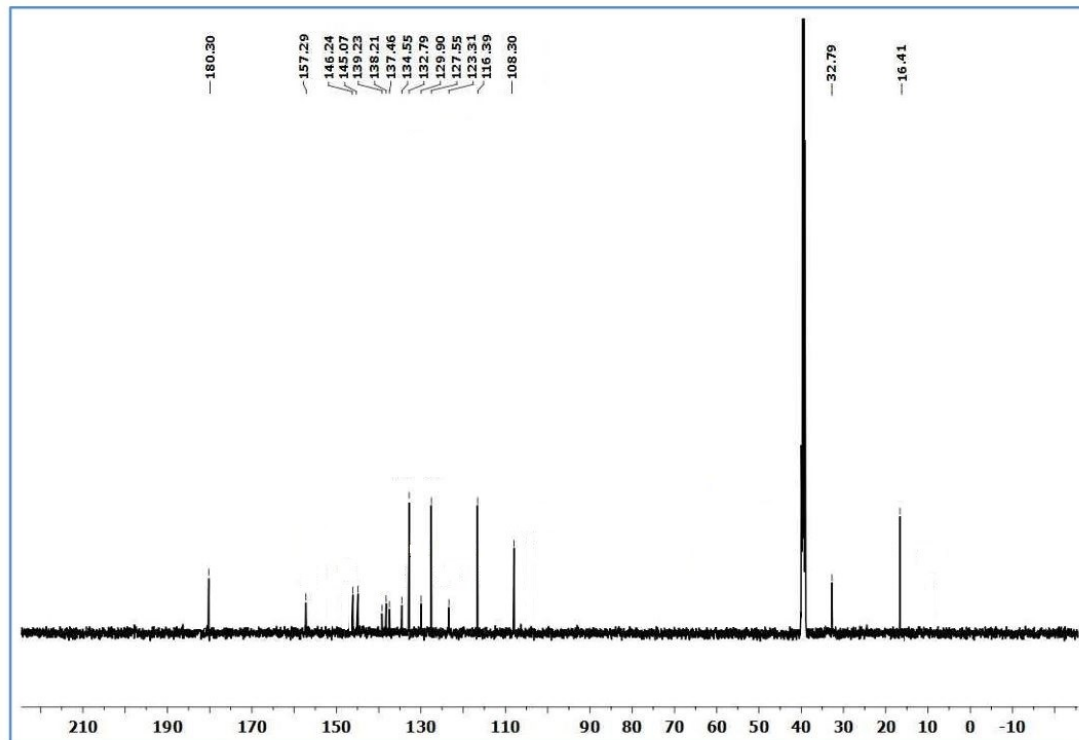


Figure S23. ¹³C NMR spectrum of **8f**

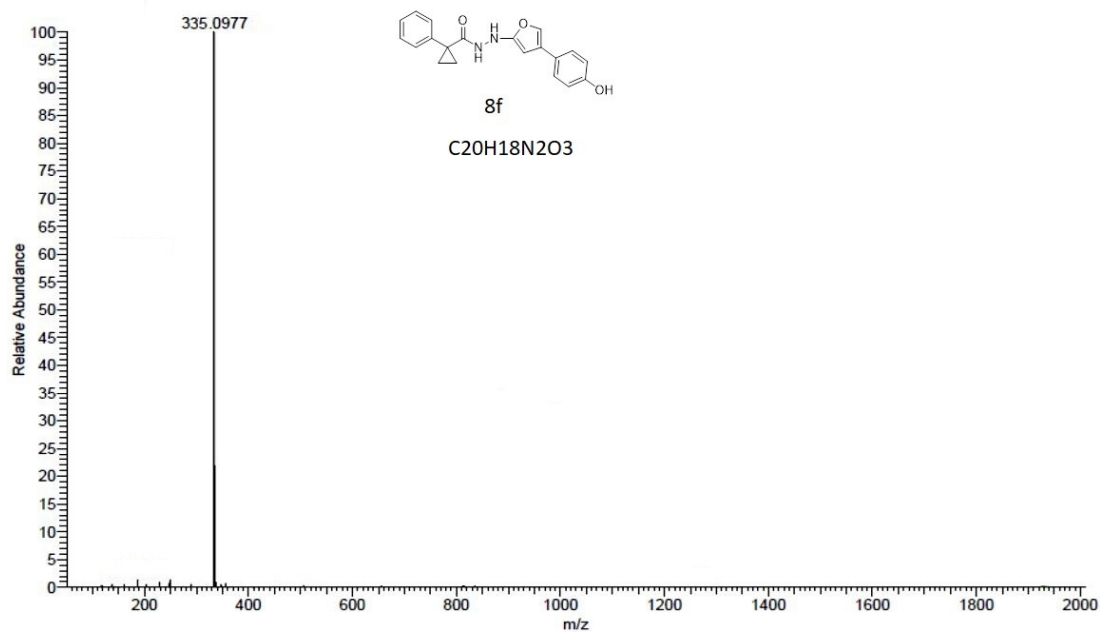


Figure S24. HRMS spectrum of **8f**

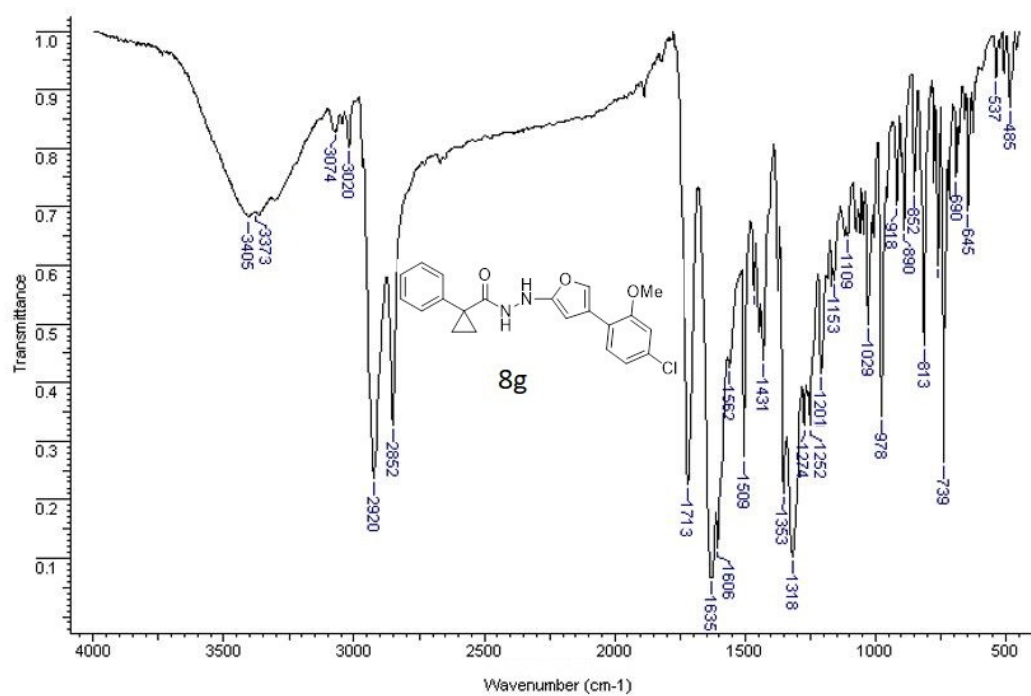


Figure S25. IR spectrum of **8g**

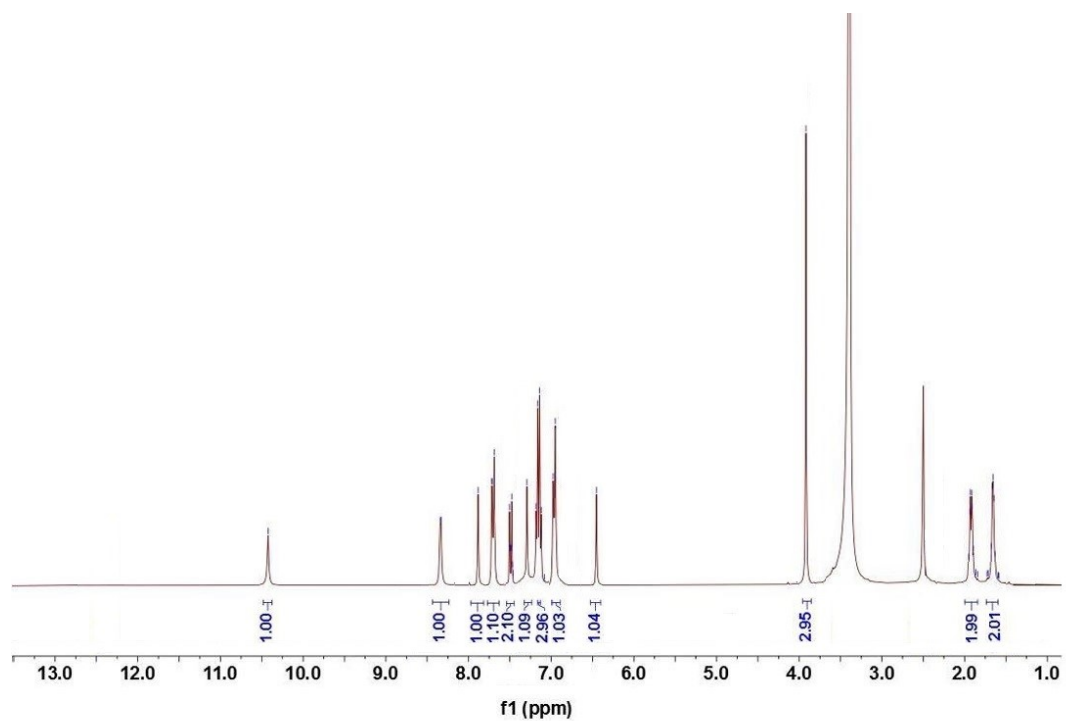


Figure S26. ¹H NMR spectrum of **8g**

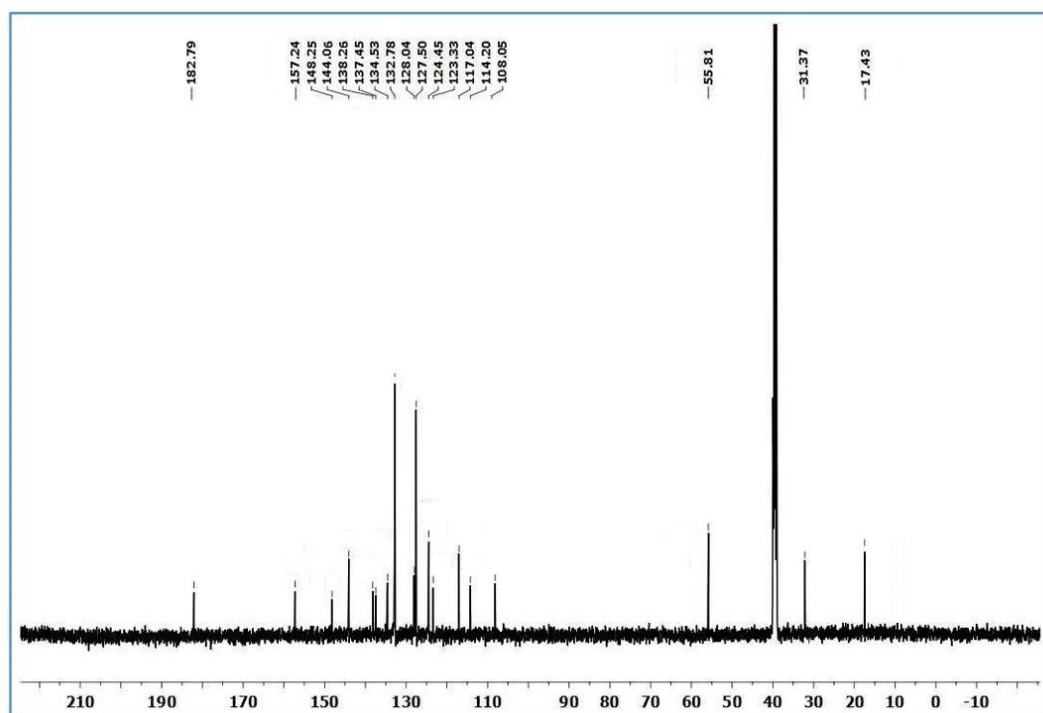


Figure S27. ¹³C NMR spectrum of **8g**

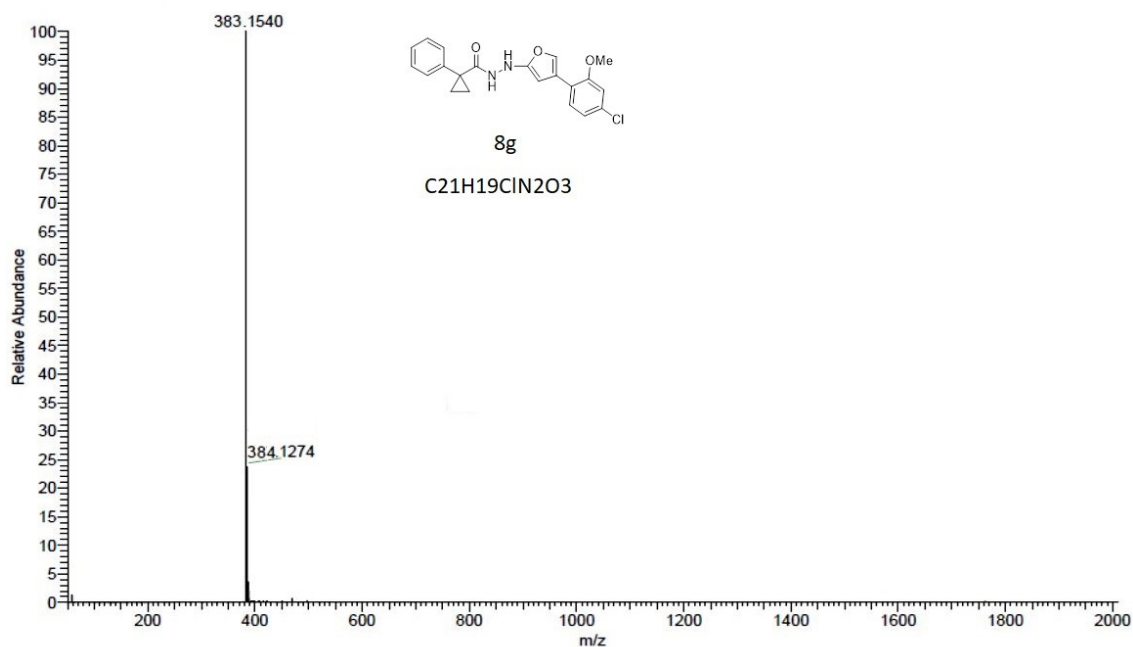


Figure S28. HRMS spectrum of **8g**

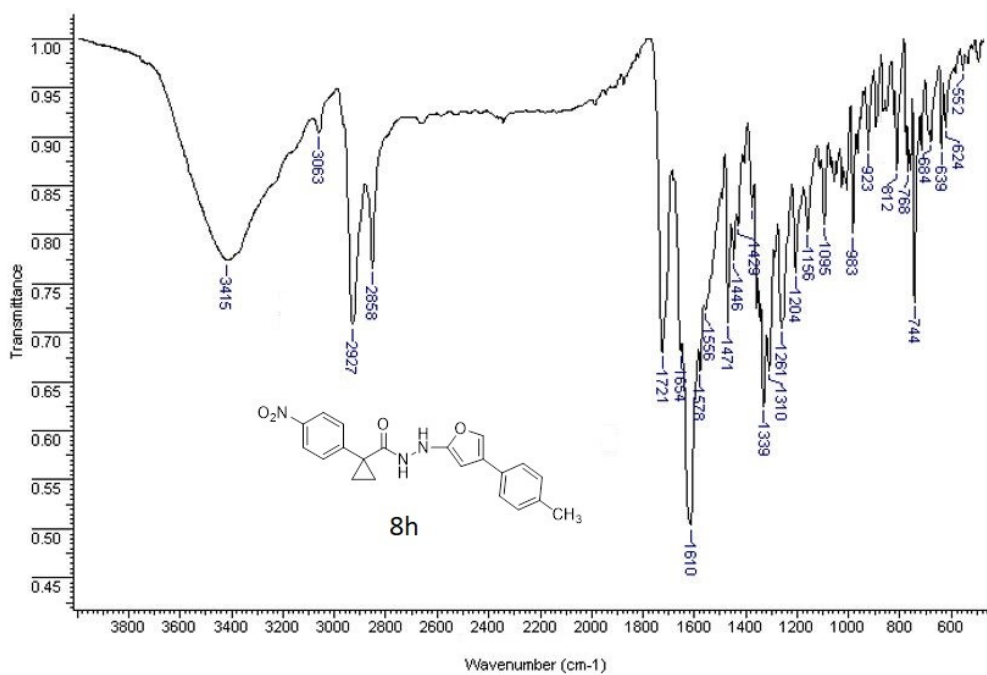


Figure S29. IR spectrum of **8h**

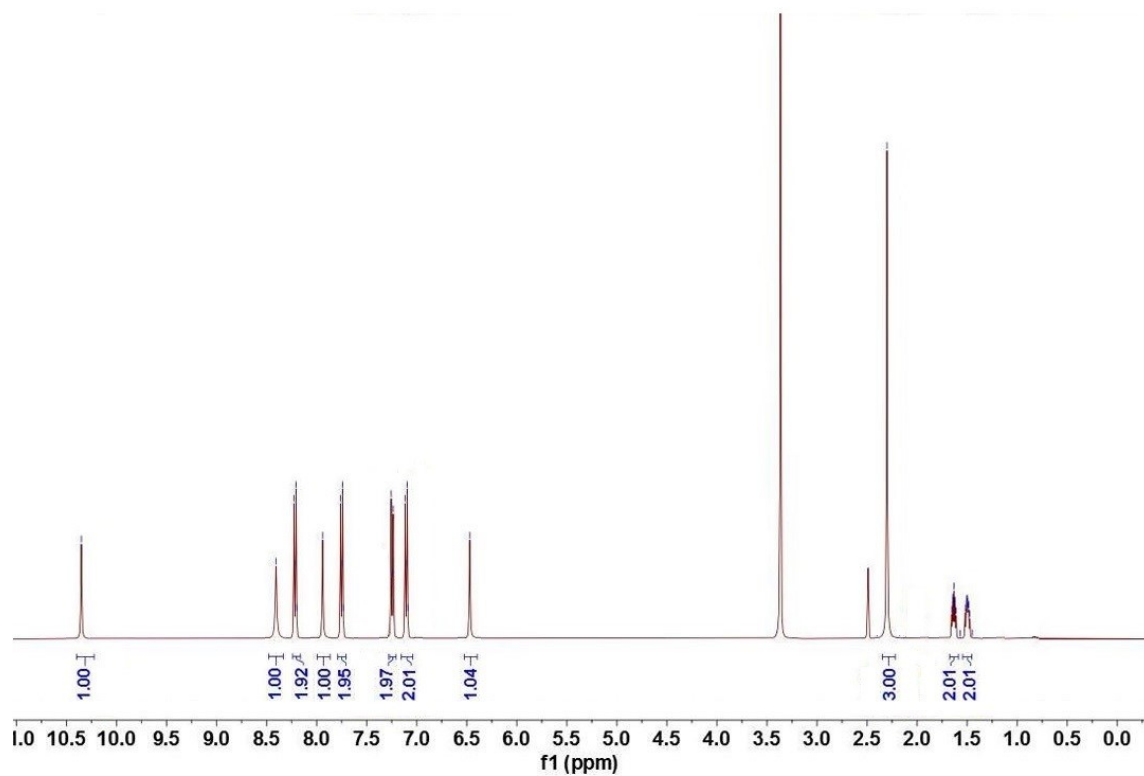


Figure S30. ^1H NMR spectrum of **8h**

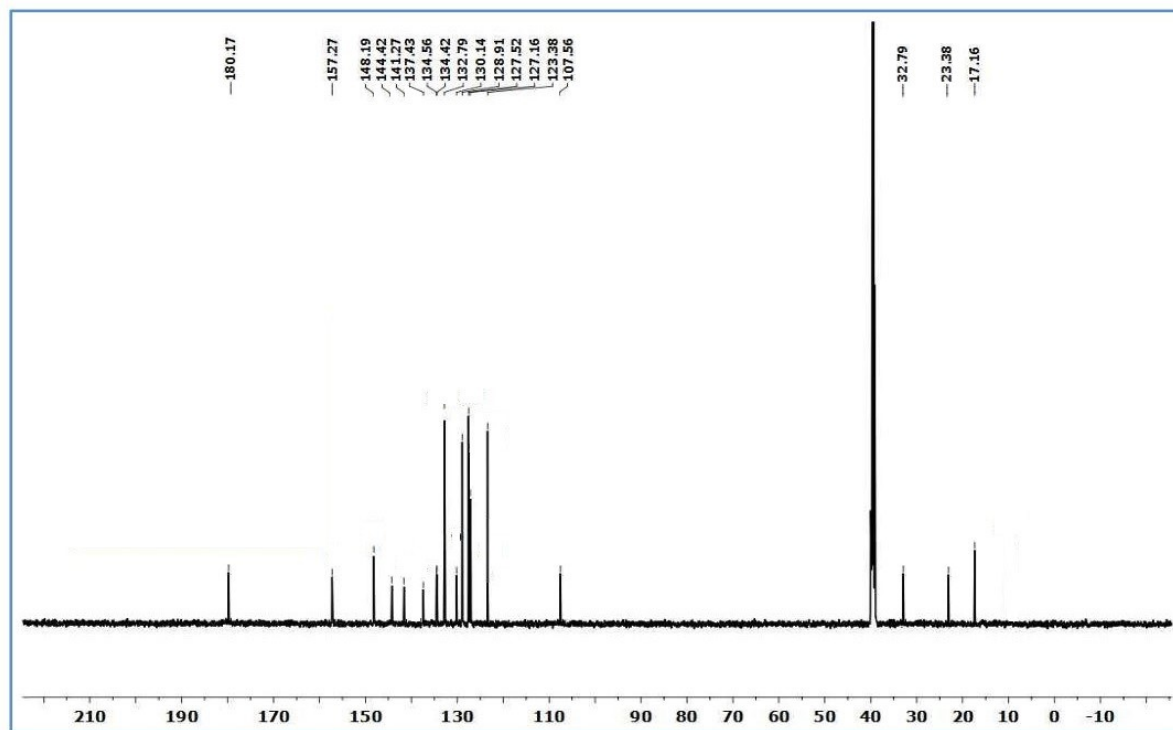


Figure S31. ^{13}C NMR spectrum of **8h**

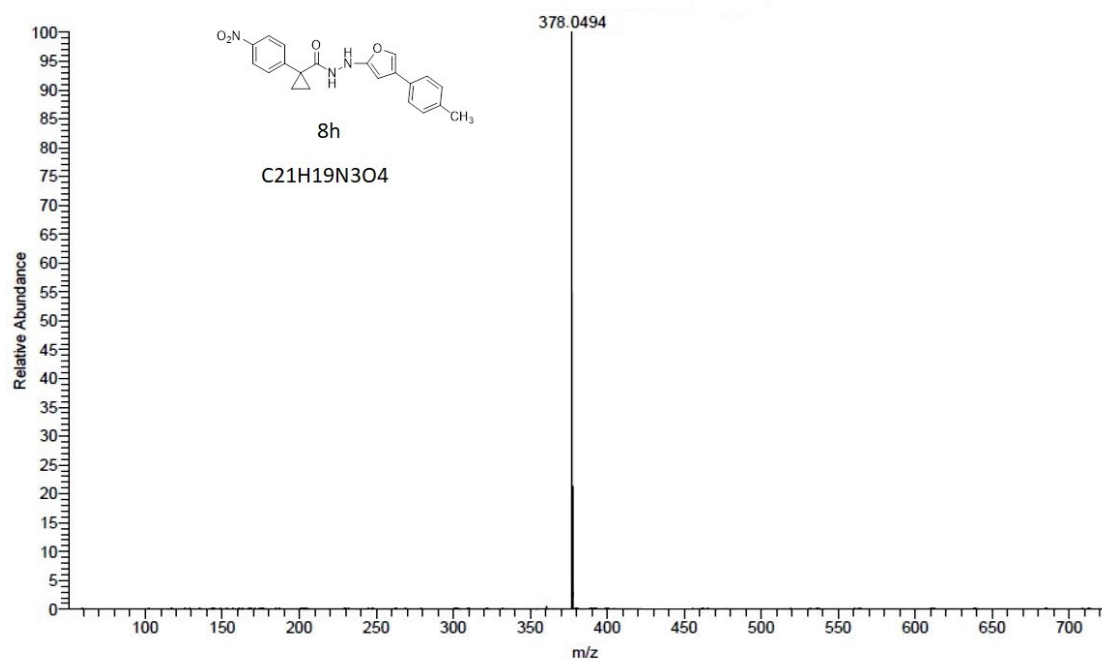


Figure S32. HRMS spectrum of **8h**

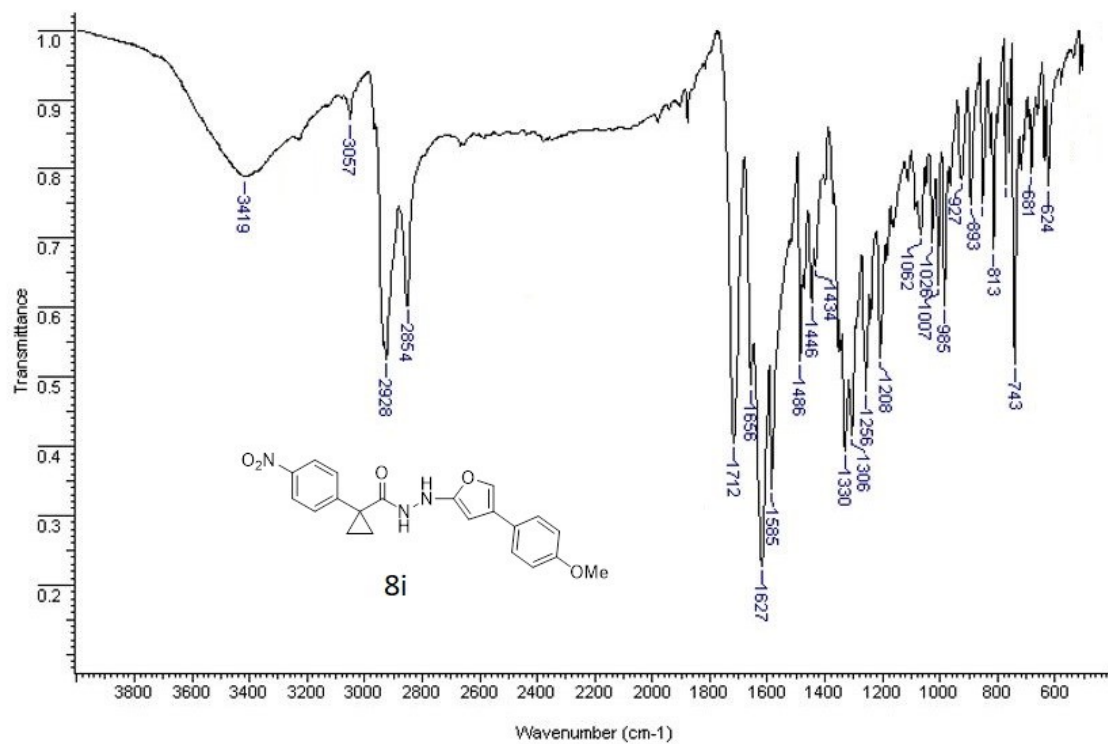


Figure S33. IR spectrum of **8i**

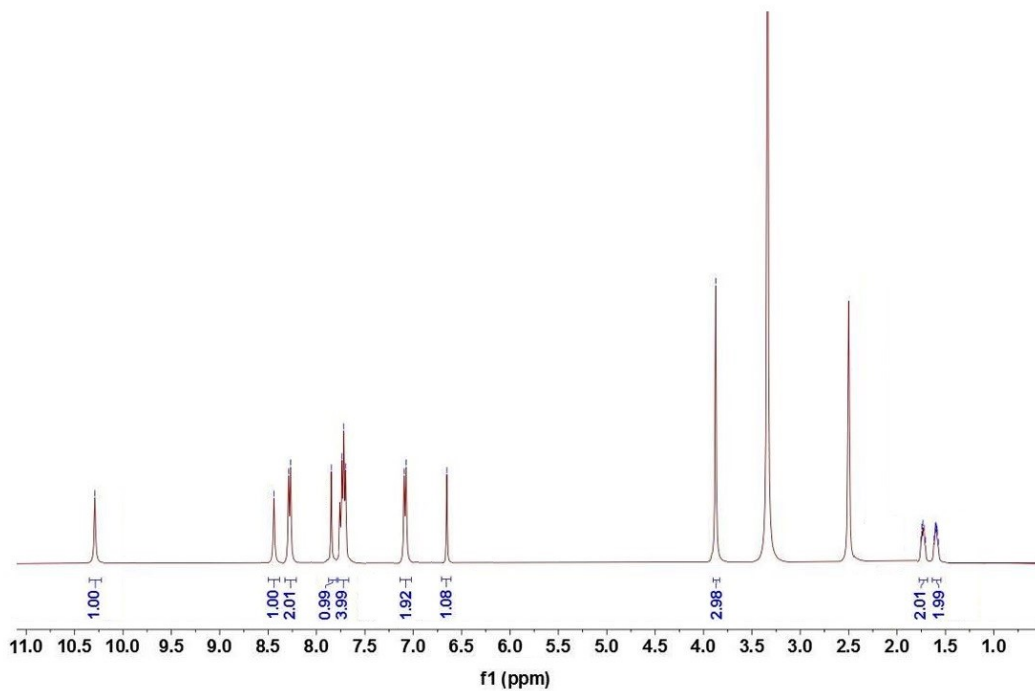


Figure S34. ¹H NMR spectrum of **8i**

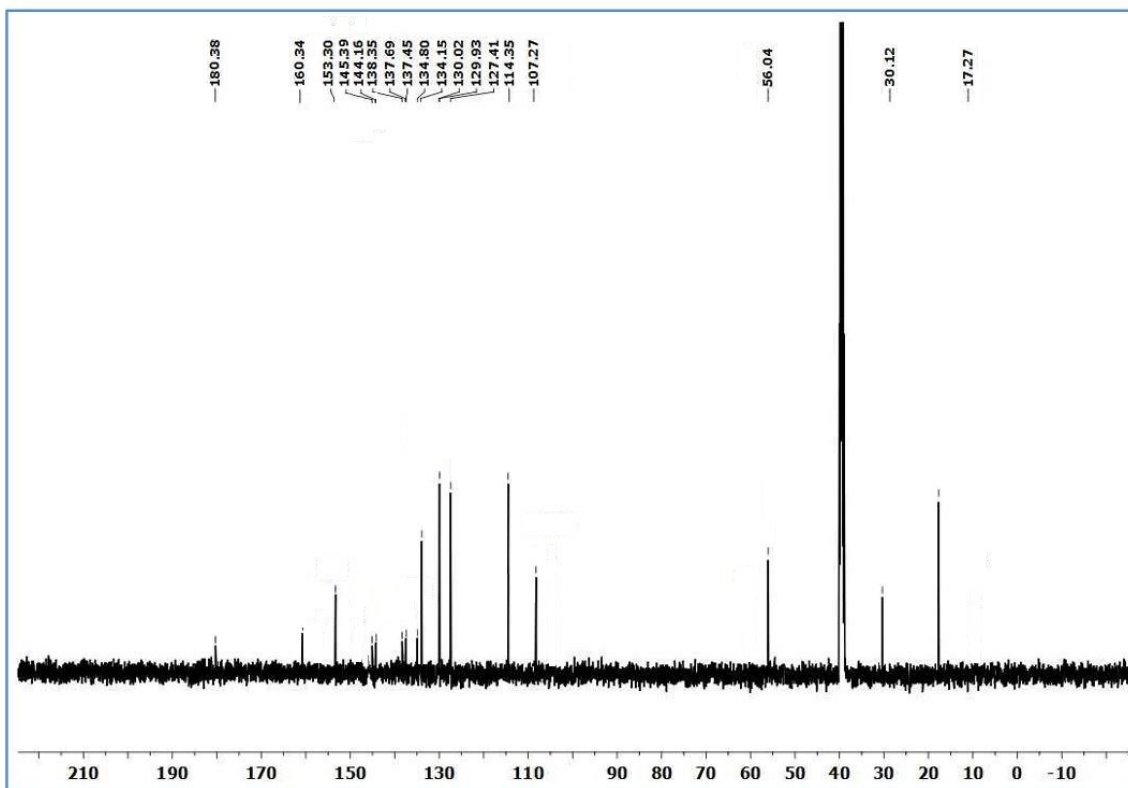


Figure S35. ¹³C NMR spectrum of **8i**

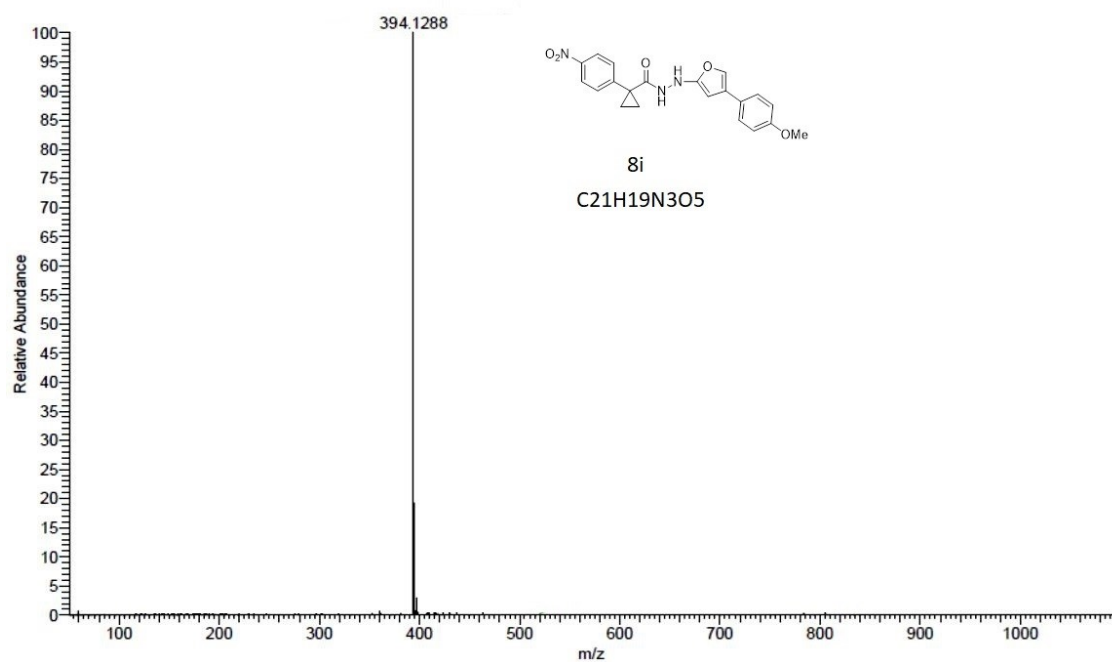


Figure S36. HRMS spectrum of **8i**

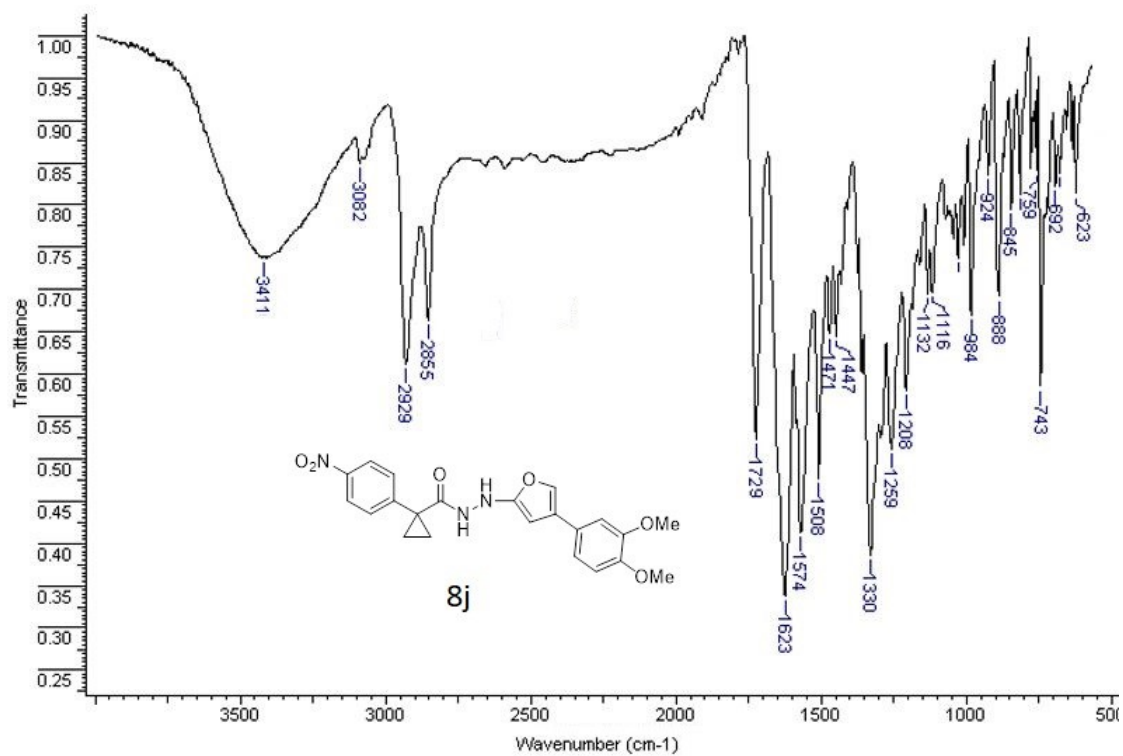


Figure S37. IR spectrum of **8j**

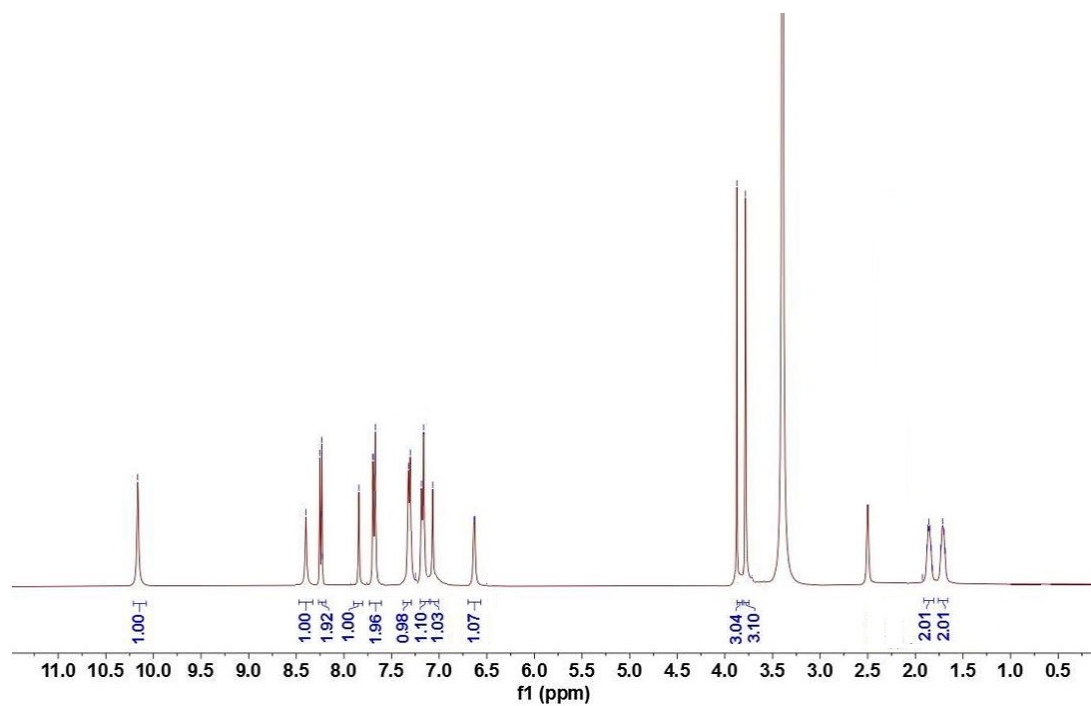


Figure S38. ¹H NMR spectrum of **8j**

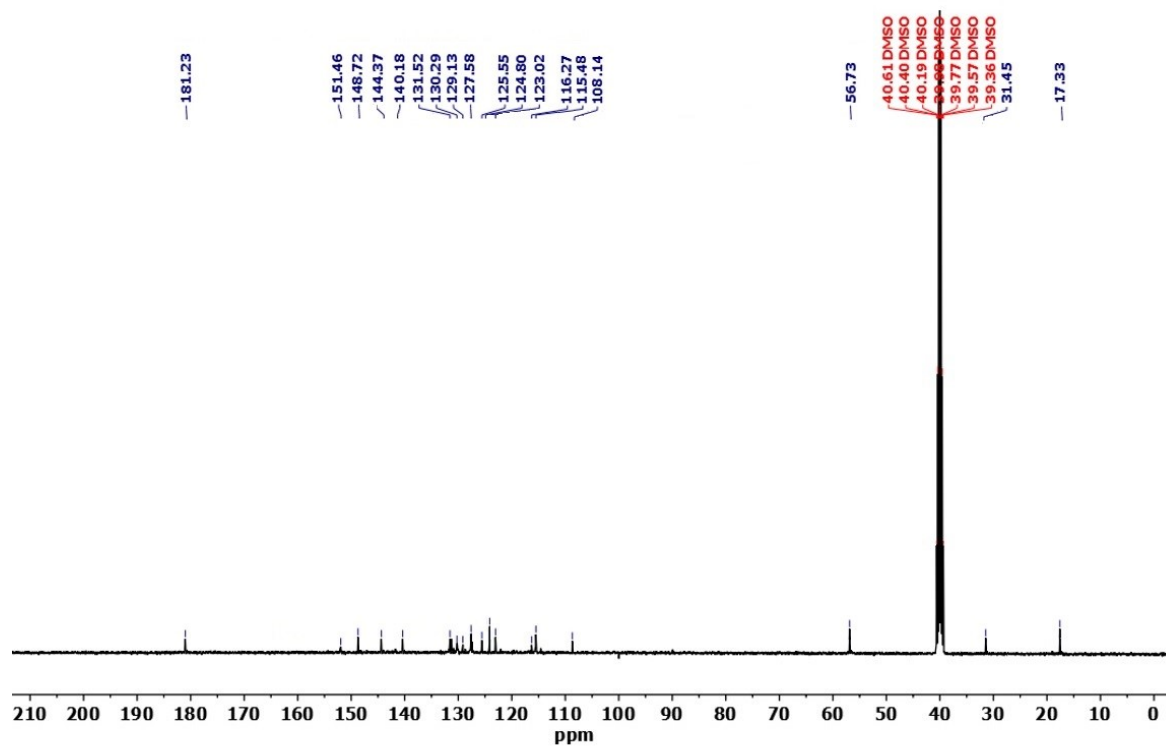


Figure S39. ¹³C NMR spectrum of **8j**

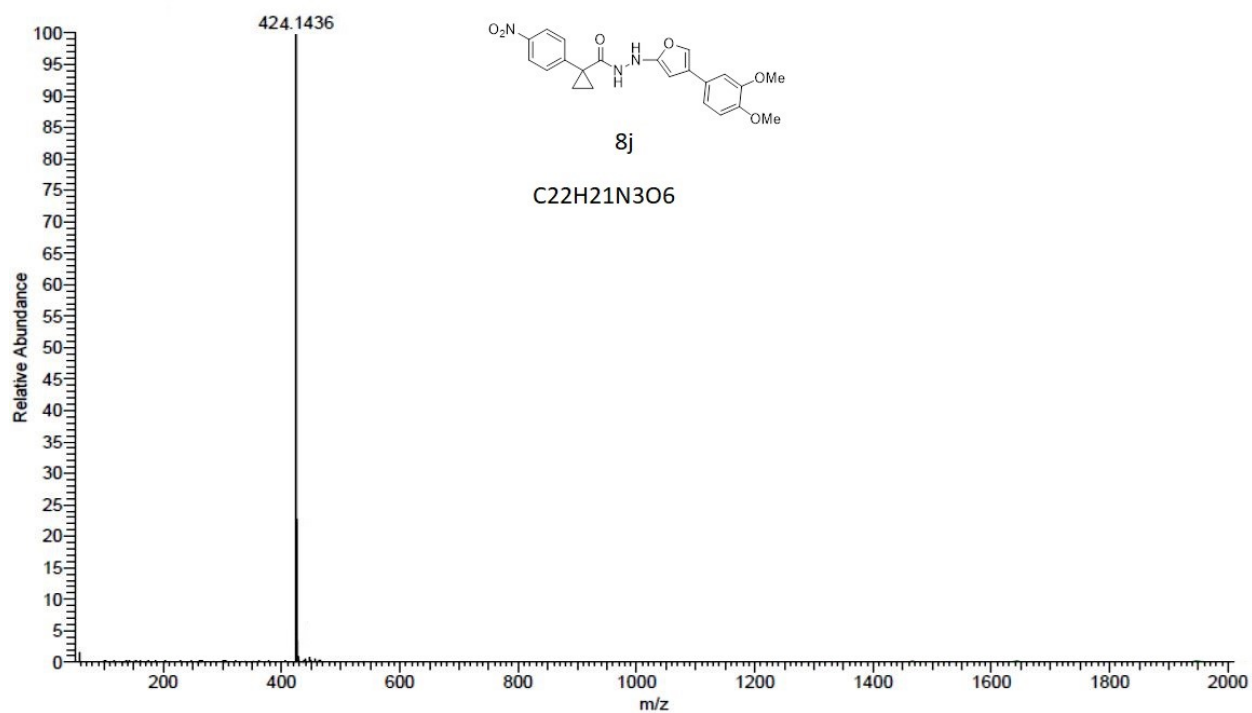


Figure S40. HRMS spectrum of **8j**

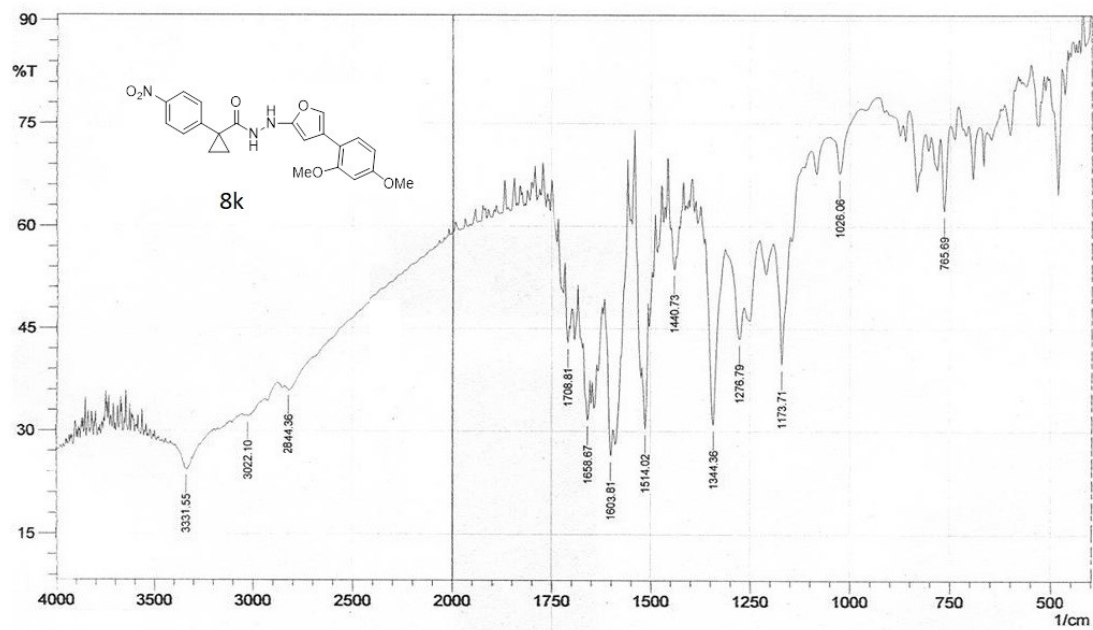


Figure S41. IR spectrum of **8k**

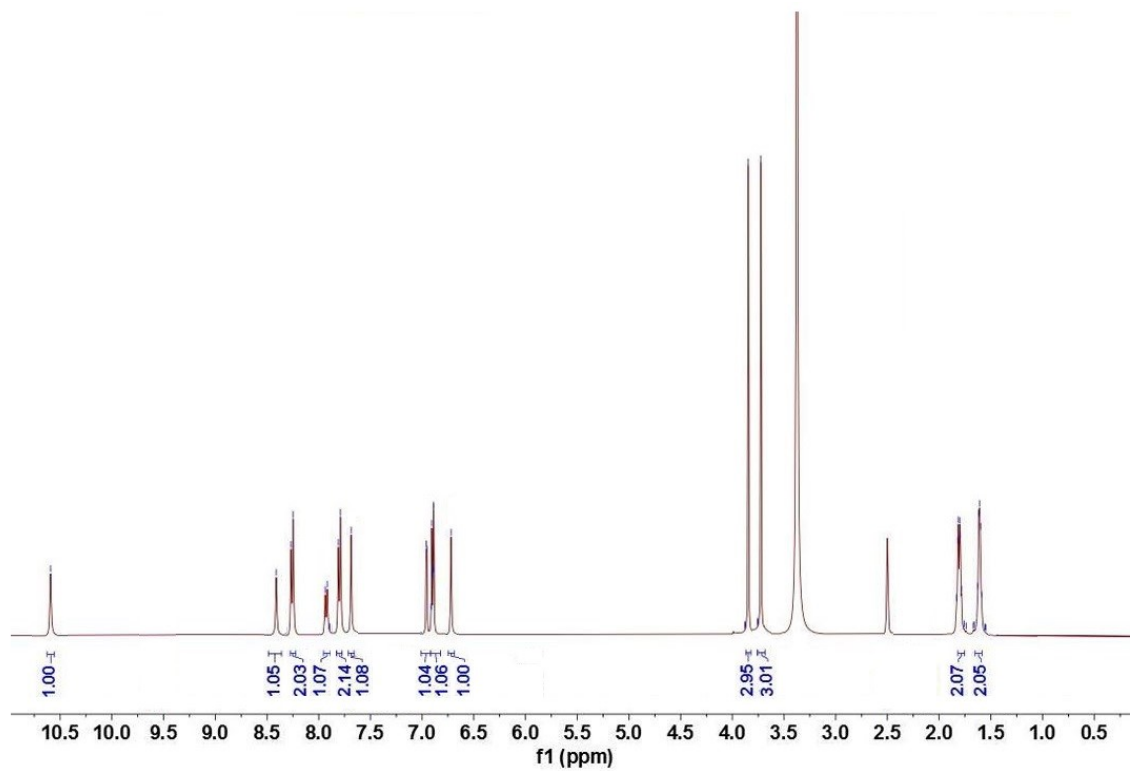
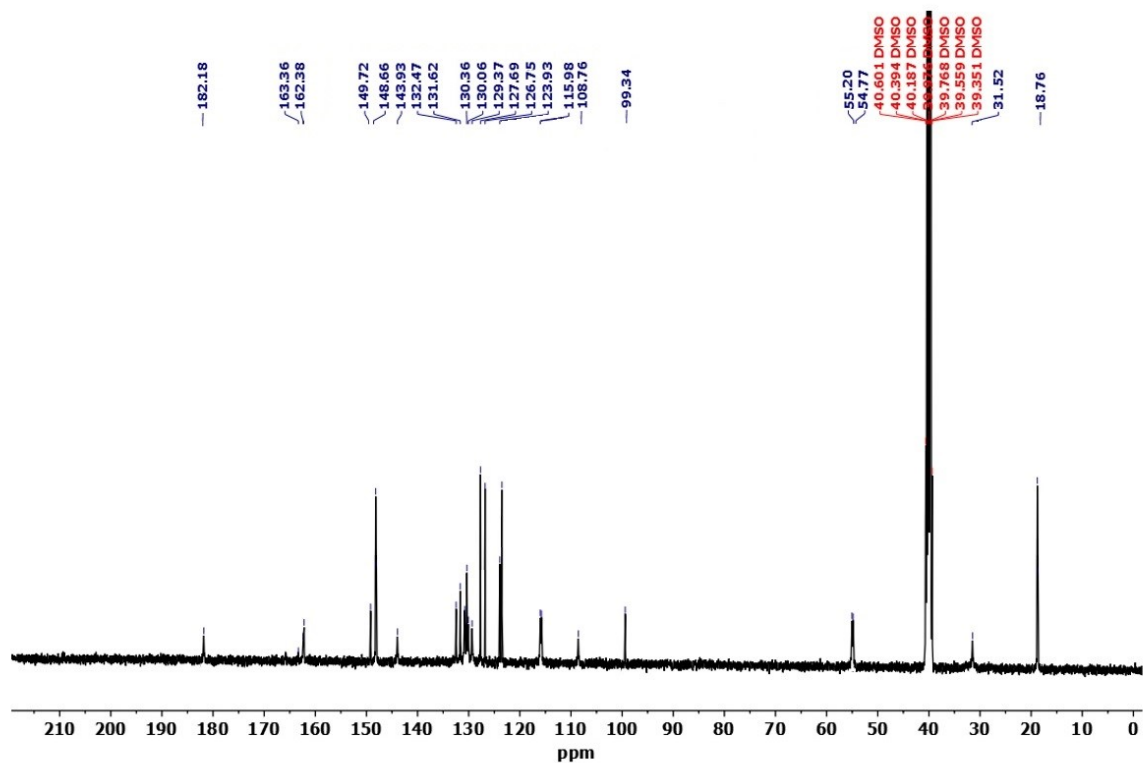


Figure S42. ¹H NMR spectrum of **8k**



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Figure S43. ^{13}C NMR spectrum of **8k**

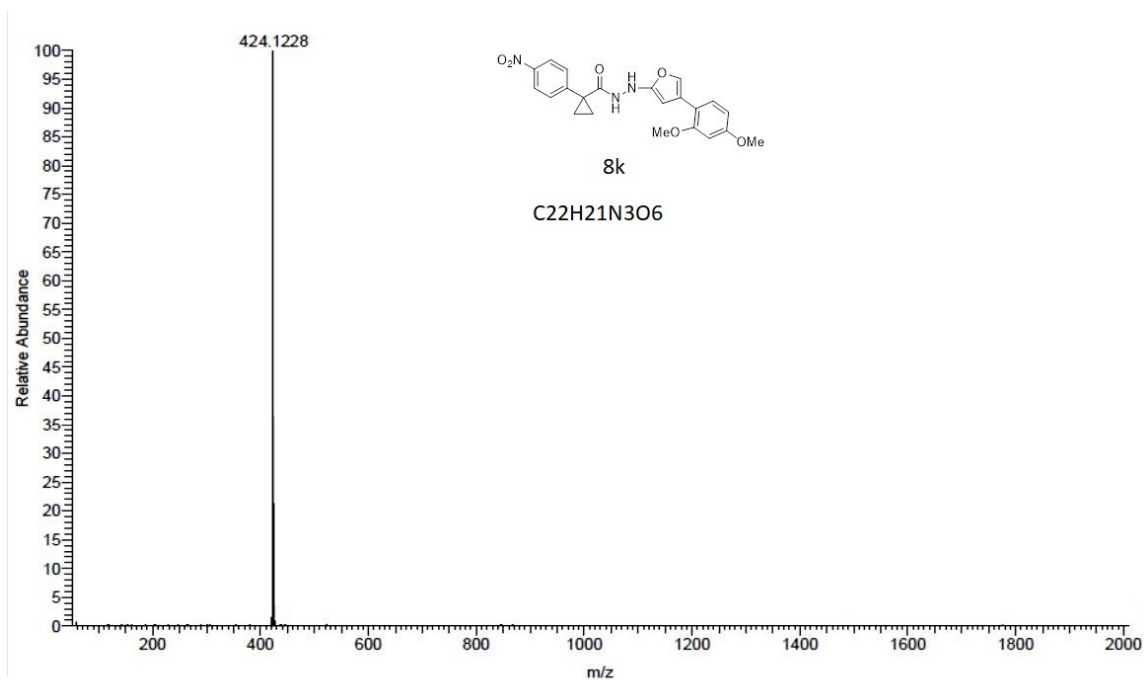


Figure S44. HRMS spectrum of **8k**

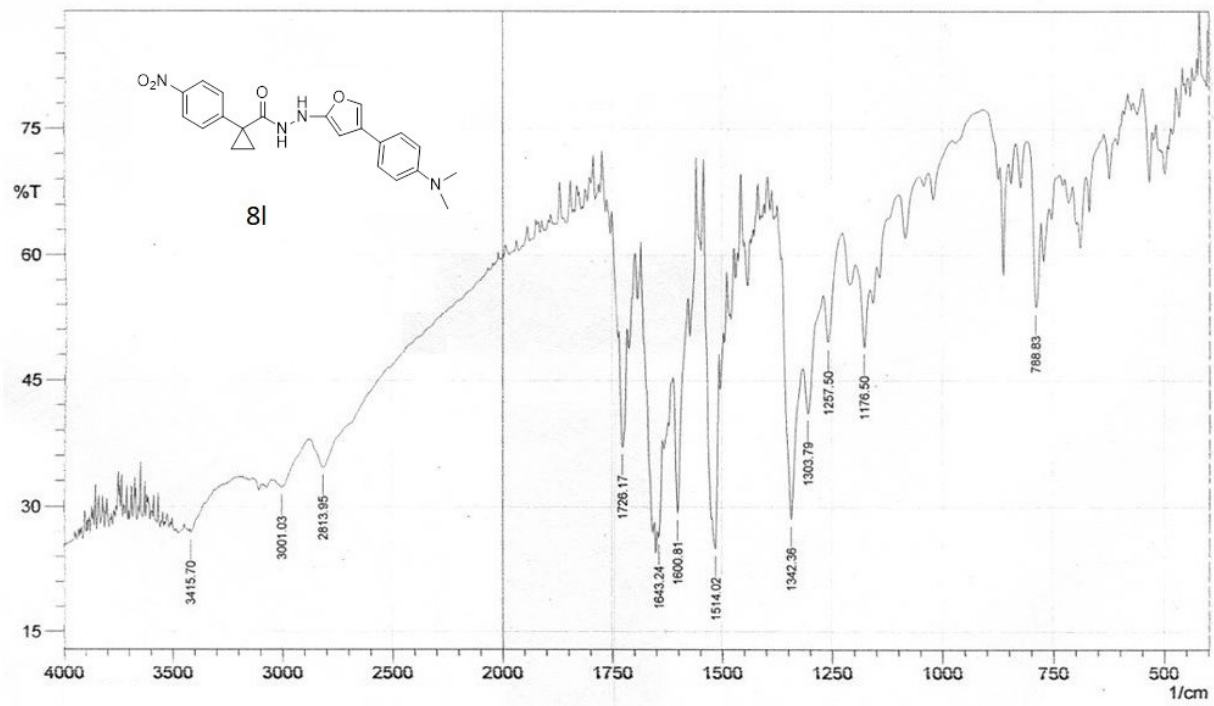


Figure S45. IR spectrum of **8l**

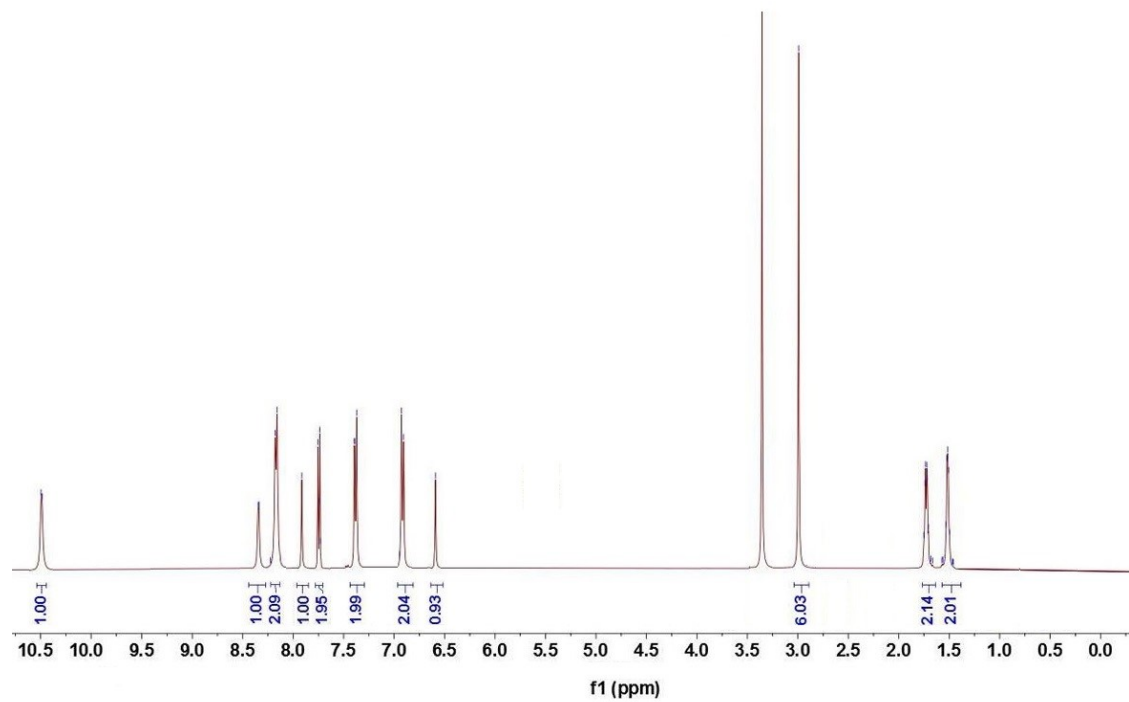


Figure S46. ¹H NMR spectrum of **8l**

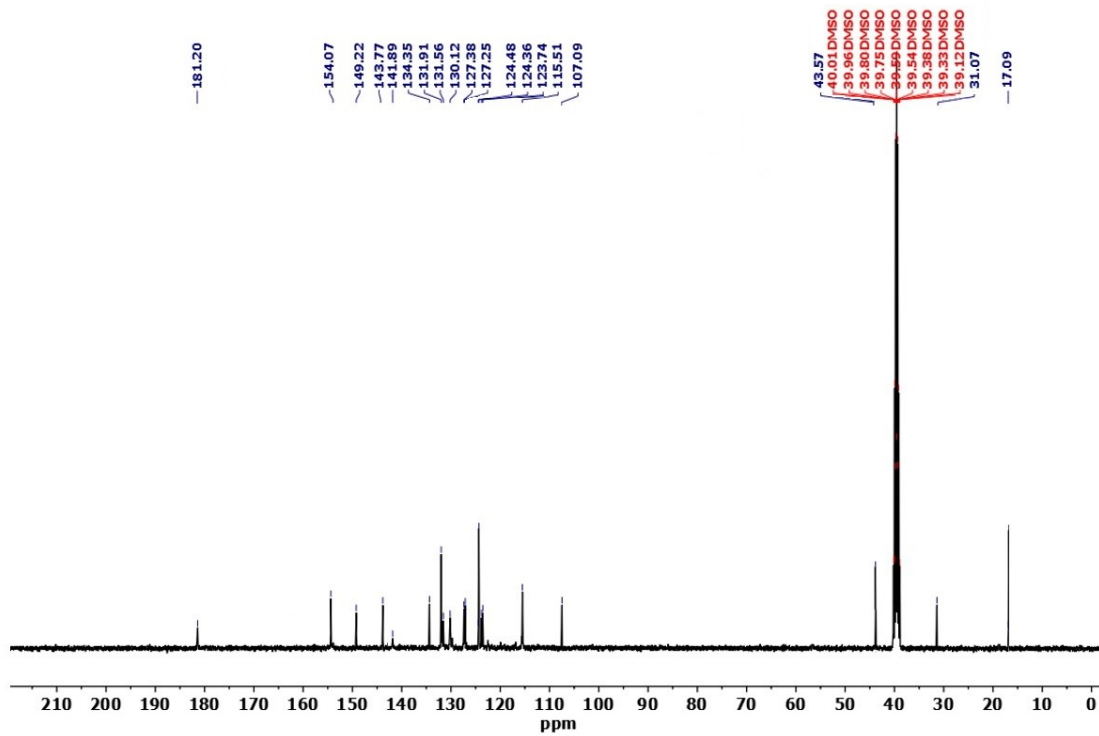


Figure S47. ^{13}C NMR spectrum of **8I**

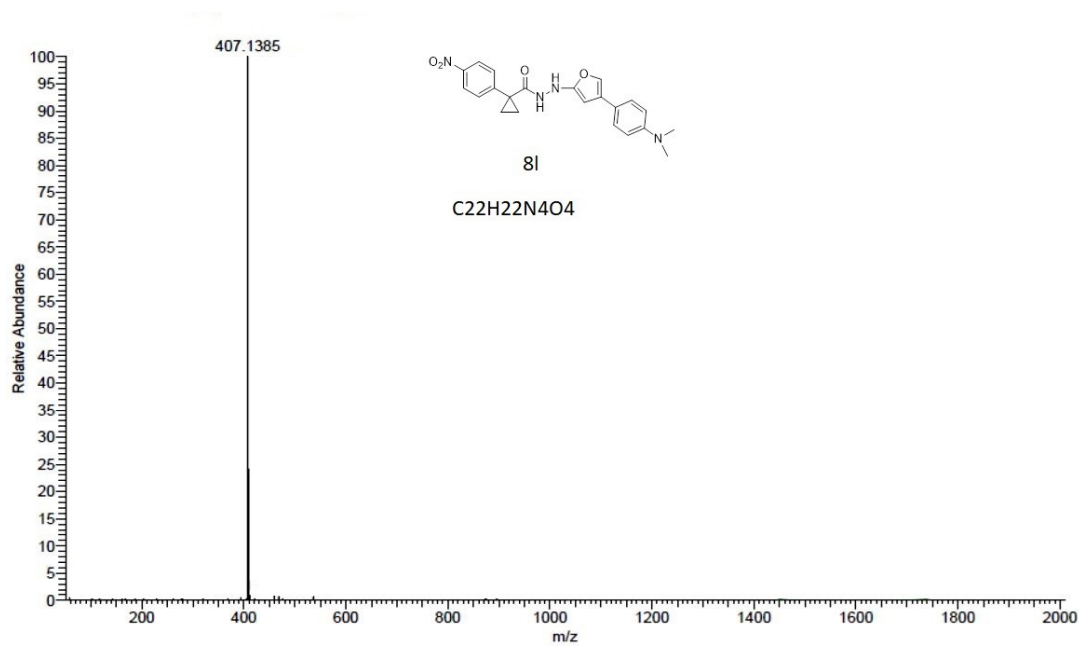


Figure S48. HRMS spectrum of **8I**

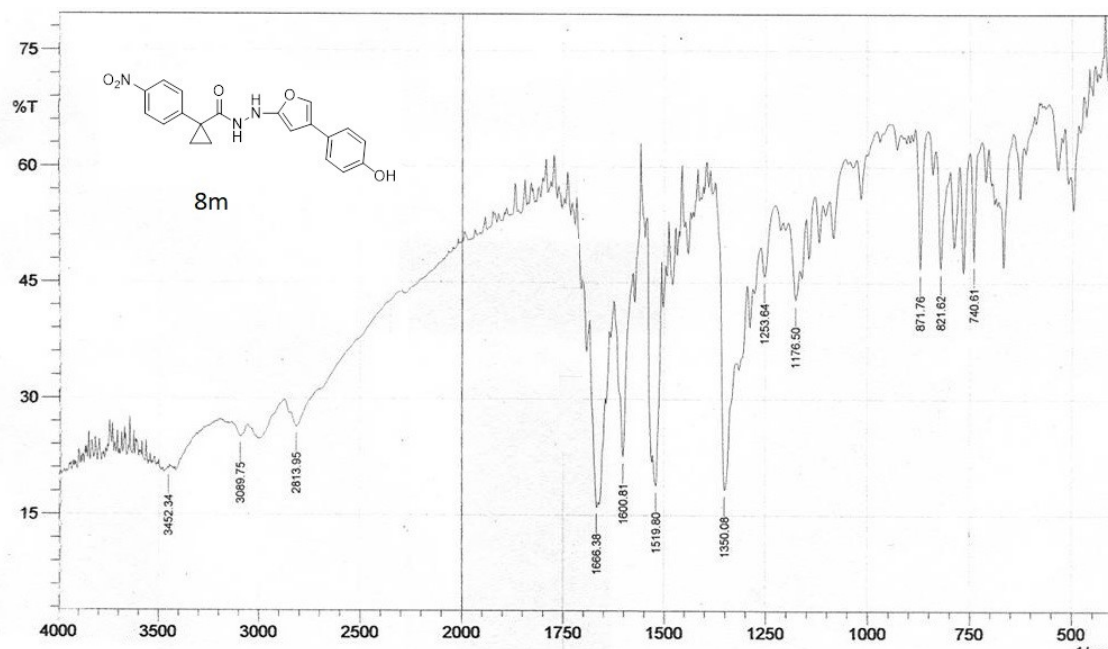


Figure S49. IR spectrum of **8m**

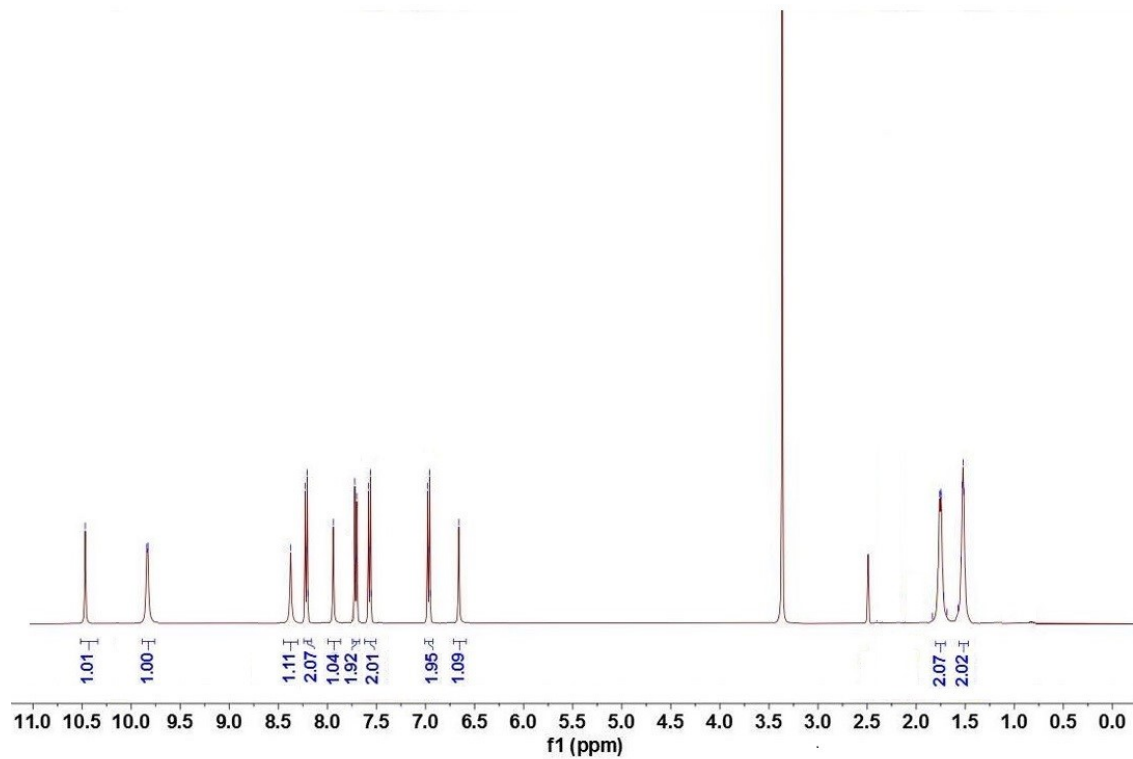


Figure S50. ¹H NMR spectrum of **8m**

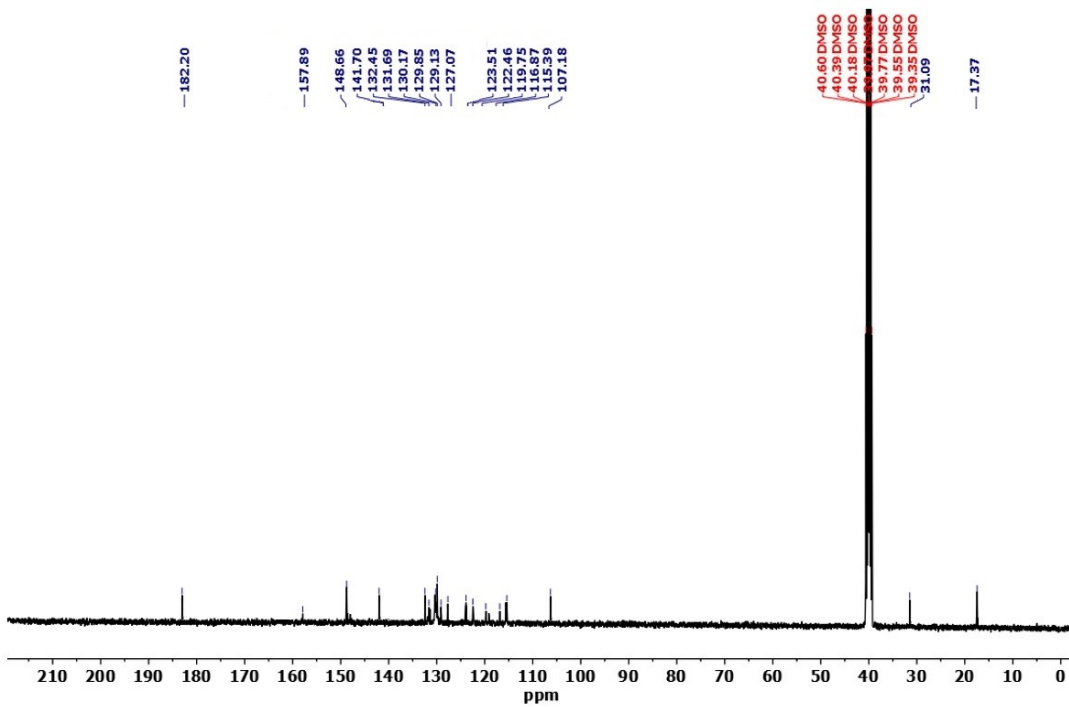


Figure S51. ^{13}C NMR spectrum of **8m**

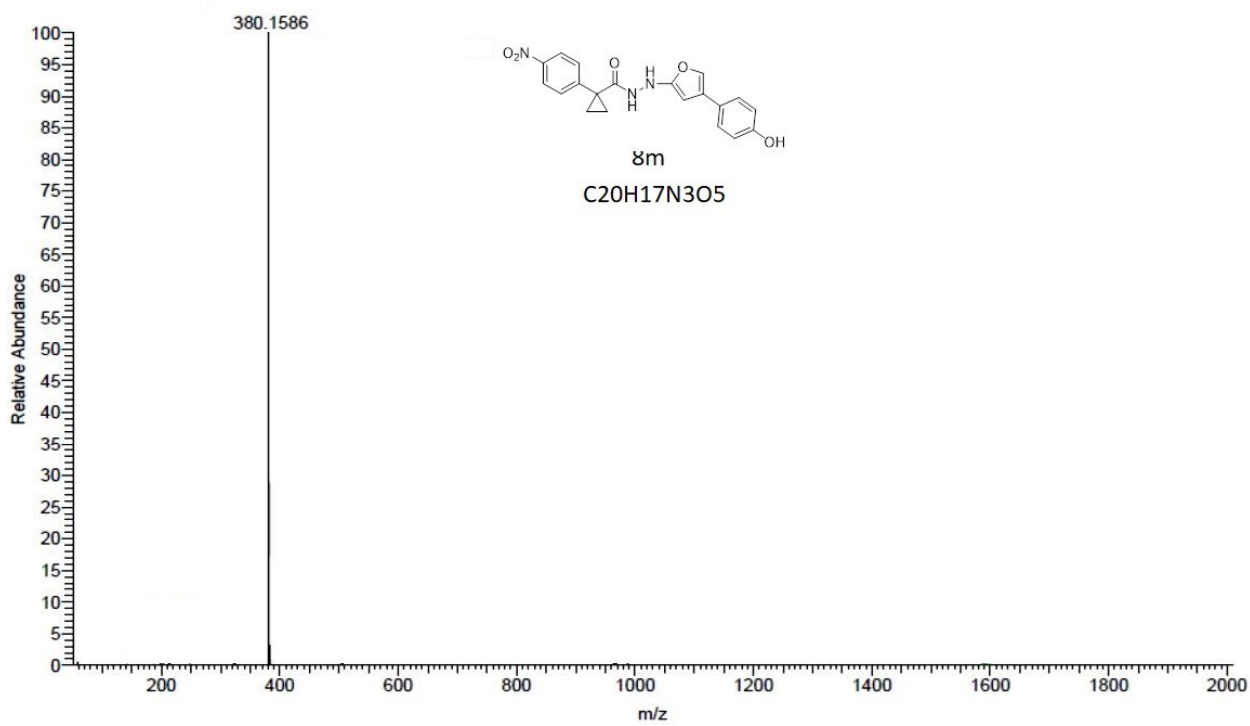


Figure S52. HRMS spectrum of **8m**

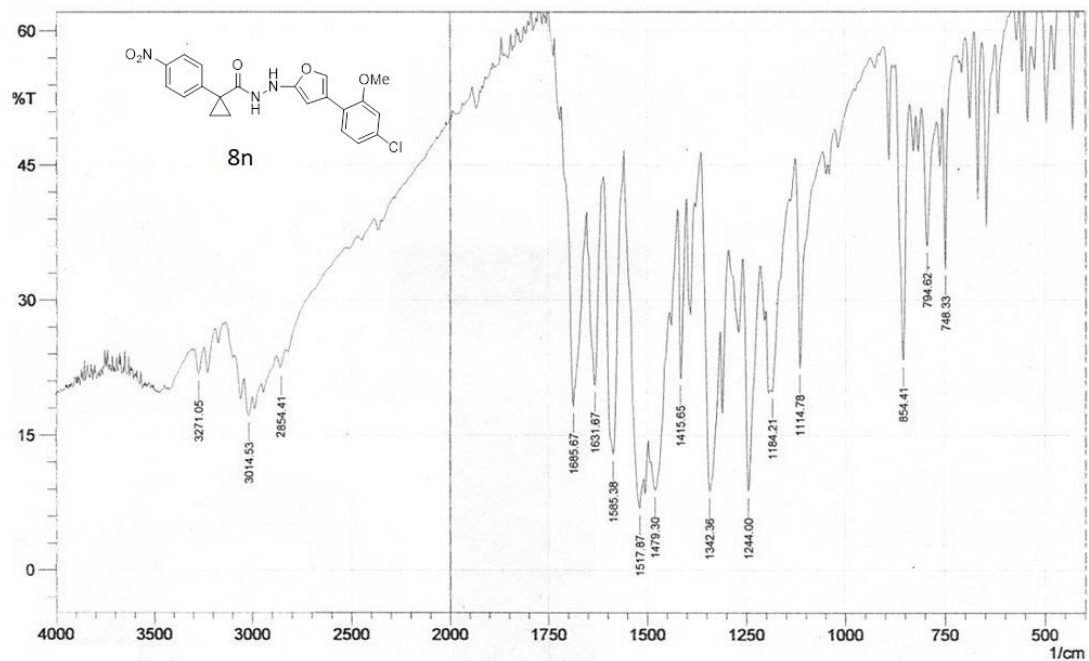


Figure S53. IR spectrum of **8n**

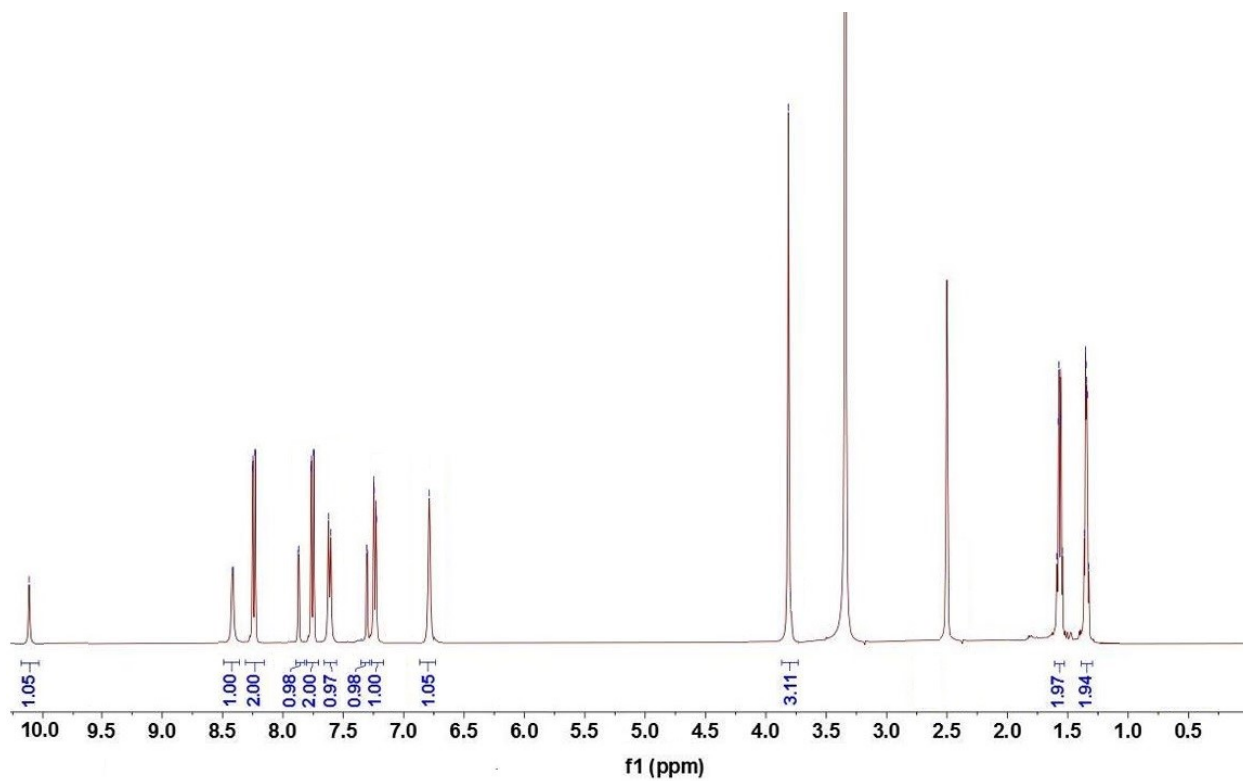


Figure S54. ^1H NMR spectrum of **8n**

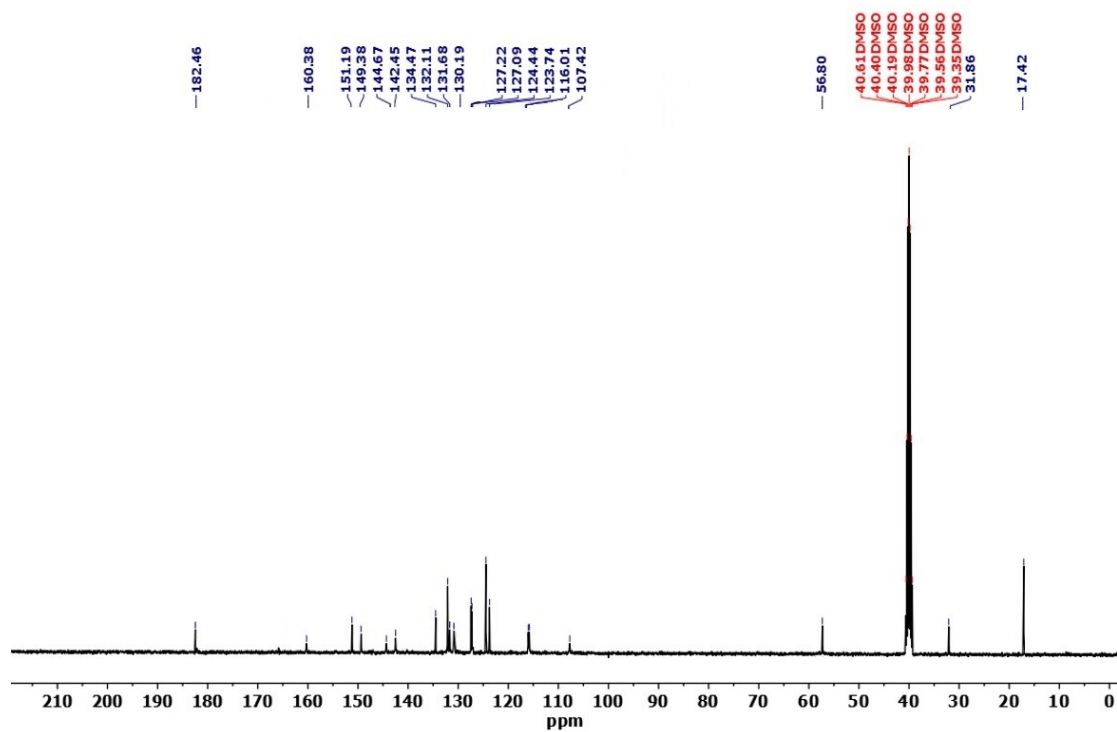


Figure S55. ^{13}C NMR spectrum of **8n**

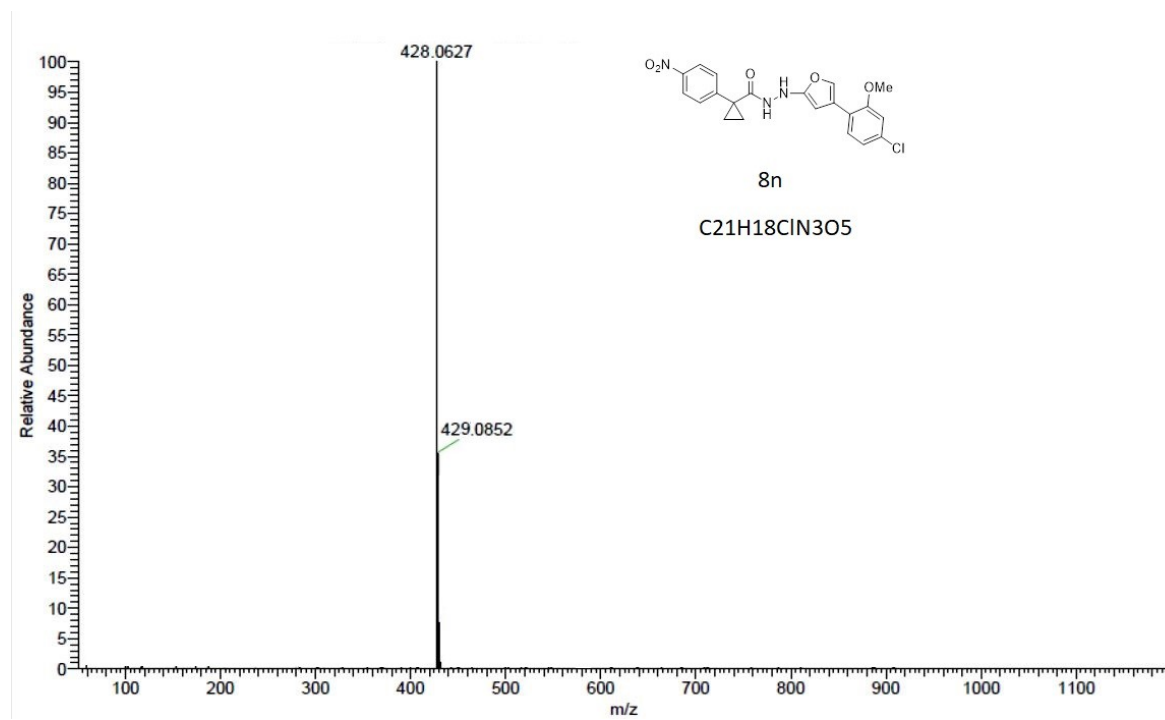


Figure S56. HRMS spectrum of **8n**

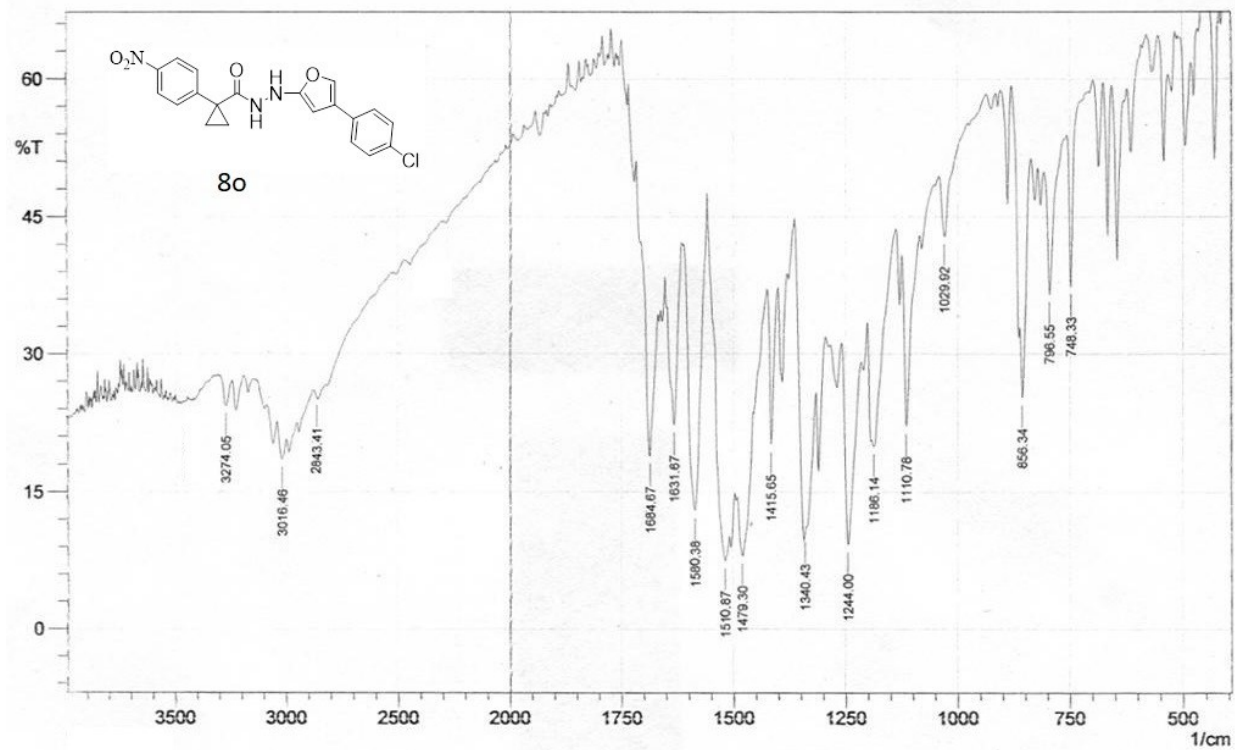


Figure S57. IR spectrum of **80**

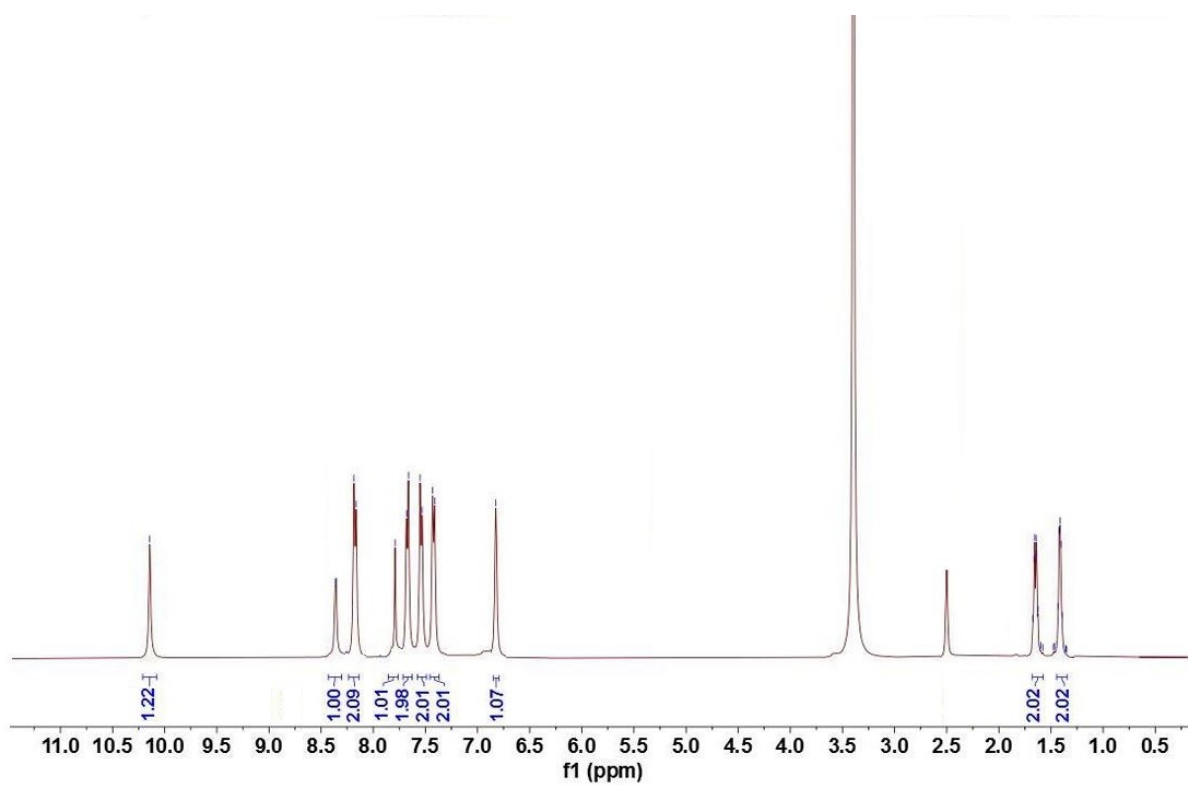
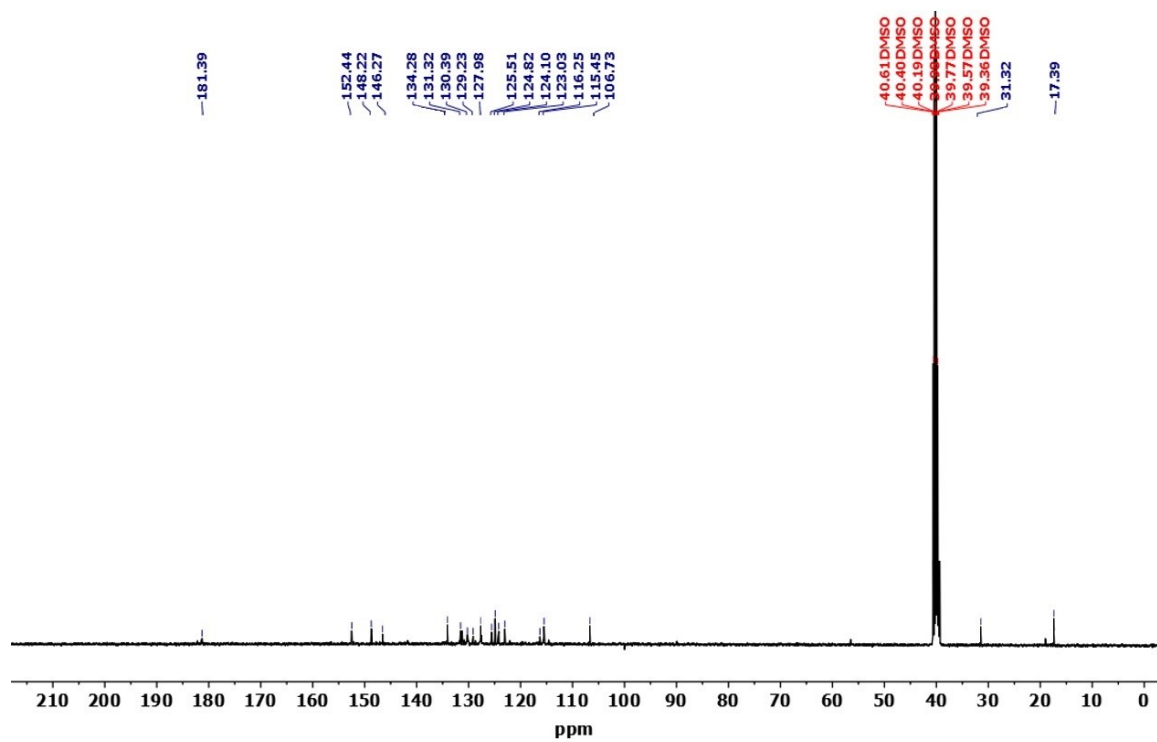


Figure S58. ¹H NMR spectrum of **80**



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e S59. ¹³C NMR spectrum of 8o

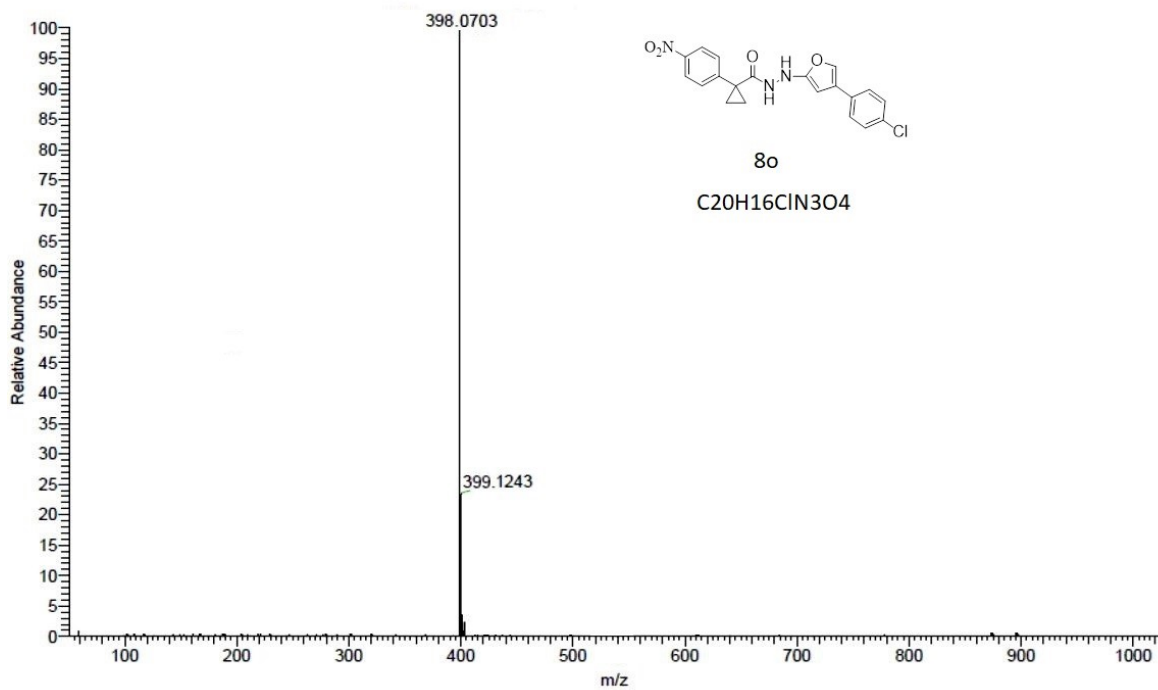


Figure S60. HRMS spectrum of 8o