

Supporting information for

# Bacterial Tyrosinase Inhibition, Hemolytic and Thrombolytic Screening and In Silico Modeling of Rationally Designed Tosyl Piperazine Engrafted Dithiocarbamate Derivatives

Ameer Fawad Zahoor <sup>1</sup>, Freeha Hafeez <sup>1,2</sup>, Asim Mansha <sup>1,\*</sup>, Shagufta Kamal <sup>3</sup>, Muhammad Naveed Anjum <sup>4</sup>, Zohaib Raza <sup>5</sup>, Samreen Gul Khan <sup>1</sup>, Jamila Javid <sup>6</sup>, Ali Irfan <sup>1</sup> and Mashooq Ahmad Bhat <sup>7,\*</sup>

<sup>1</sup> Department of Chemistry, Government College University Faisalabad, 38000-Faisalabad, Pakistan. freeha.hafeez@riphahfsd.edu.pk (F.H.); asimmansha@gcuf.edu.pk (A.M.); fawad.zahoor@gcuf.edu.pk (A.F.Z.); samreengul@gcuf.edu.pk (S.G.K.); raaliirfan@gmail.com (A.I)

<sup>2</sup> Department of Chemistry, Riphah International University Faisalabad, 38000-Faisalabad, Pakistan.

<sup>3</sup> Department of Biochemistry, Government College University Faisalabad, 38000-Faisalabad, Pakistan. shaguftakamal81@gmail.com (S.K.)

<sup>4</sup> Department of Applied Chemistry, Government College University Faisalabad, 38000-Faisalabad, Pakistan. anjumccj@hotmail.com (M.N.A.)

<sup>5</sup> Department of Chemistry, School of Physical Sciences, University of Adelaide, Adelaide, South Australia 5000, Australia. zohaib.raza@adelaide.edu.au (Z.R)

<sup>6</sup> Department of Chemistry, University of Sialkot, Sialkot, Pakistan. jamila.javid@uskt.edu.pk (J.J.)

<sup>7</sup> Department of Pharmaceutical Chemistry, College of Pharmacy, King Saud University, Riyadh 11451, Saudi Arabia. mabhat@ksu.edu.sa; (M.A.B.)

\* Correspondence: asimmansha@gcuf.edu.pk (A.M.); mabhat@ksu.edu.sa;(M.A.B.)

<sup>1</sup>H and <sup>13</sup>C NMR spectra of compound **4a-j**

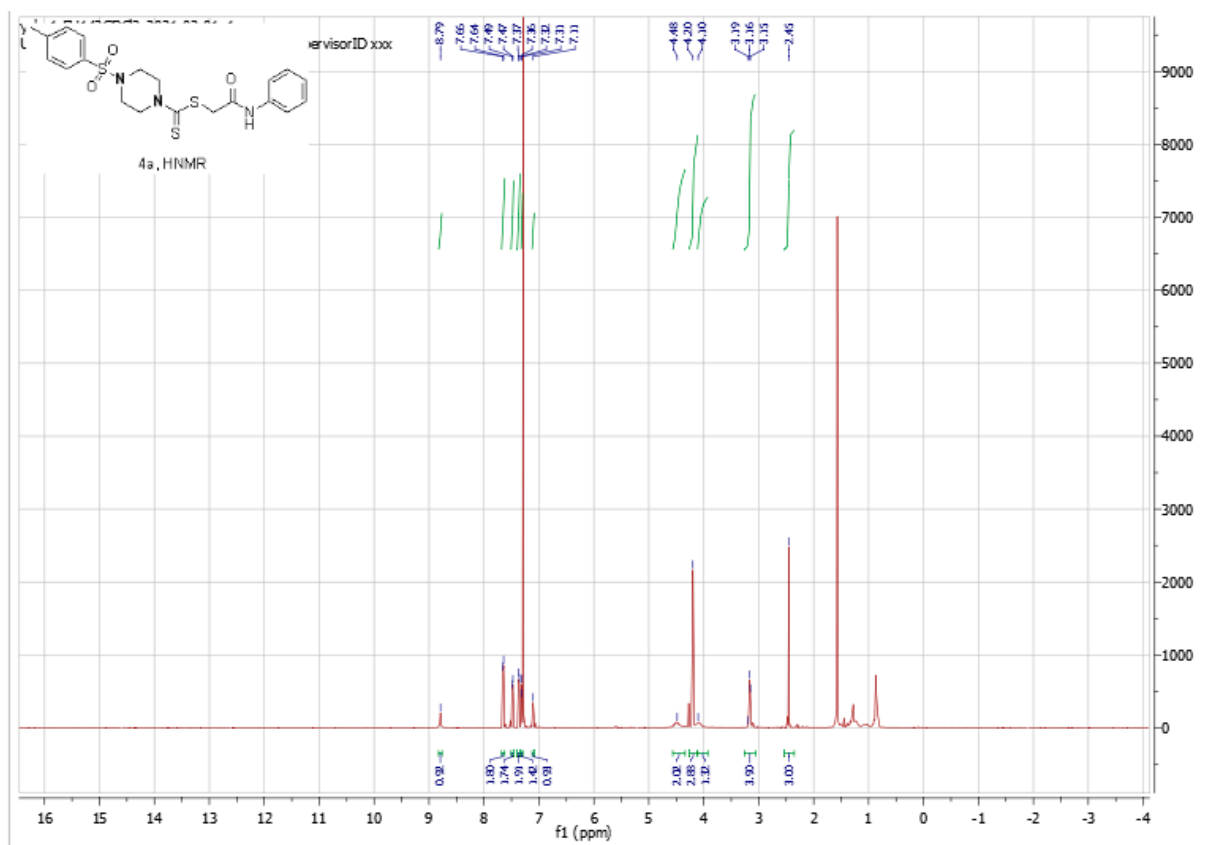


Figure S1: <sup>1</sup>H NMR spectrum of compound **4a**.

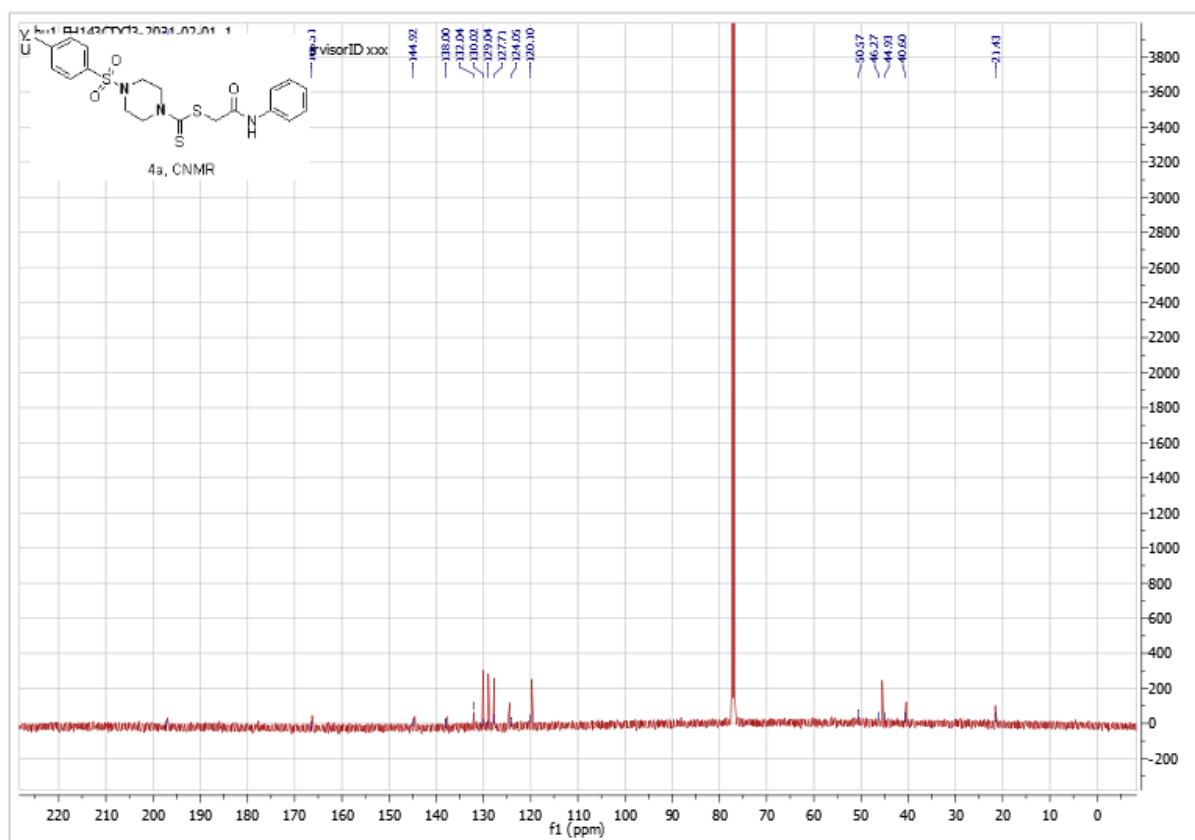


Figure S2:  $^{13}\text{C}$  NMR spectrum of compound 4a.

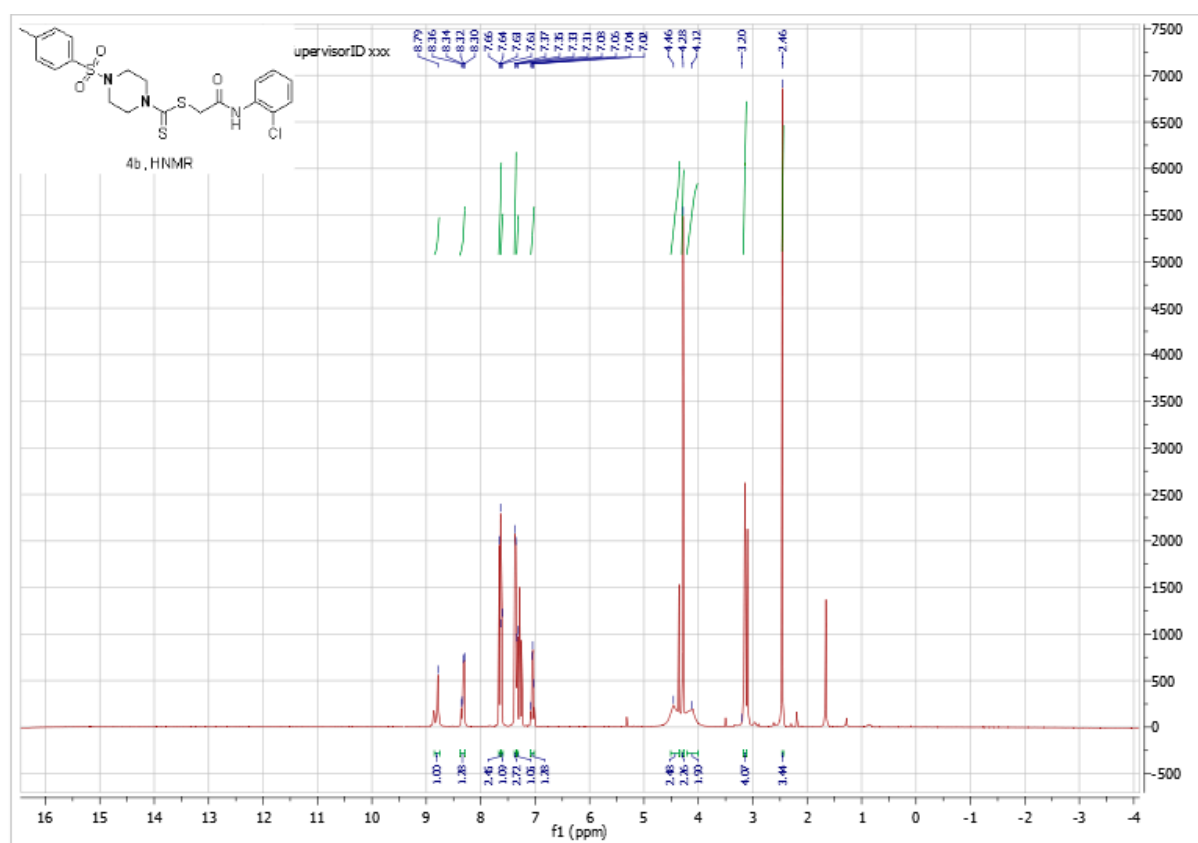


Figure S3:  $^1\text{H}$  NMR spectrum of compound **4b**.

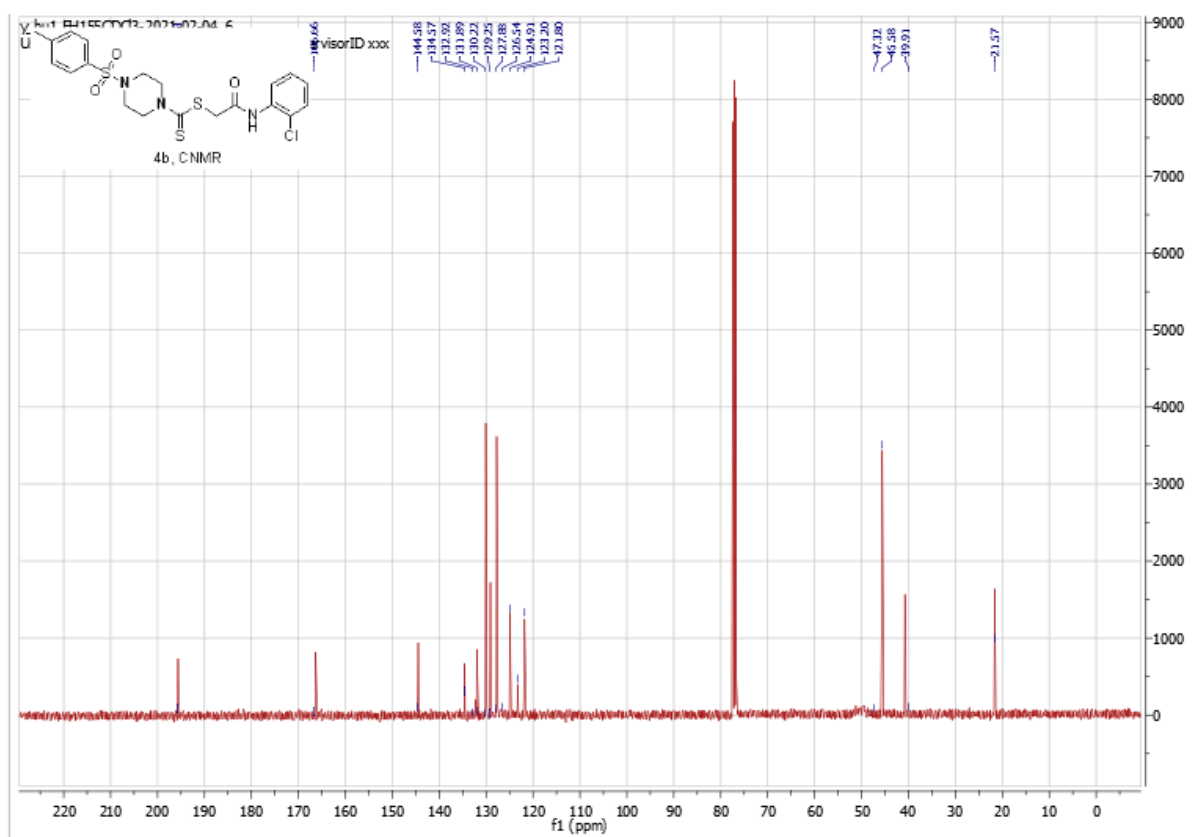


Figure S4:  $^{13}\text{C}$  NMR spectrum of compound **4b**.



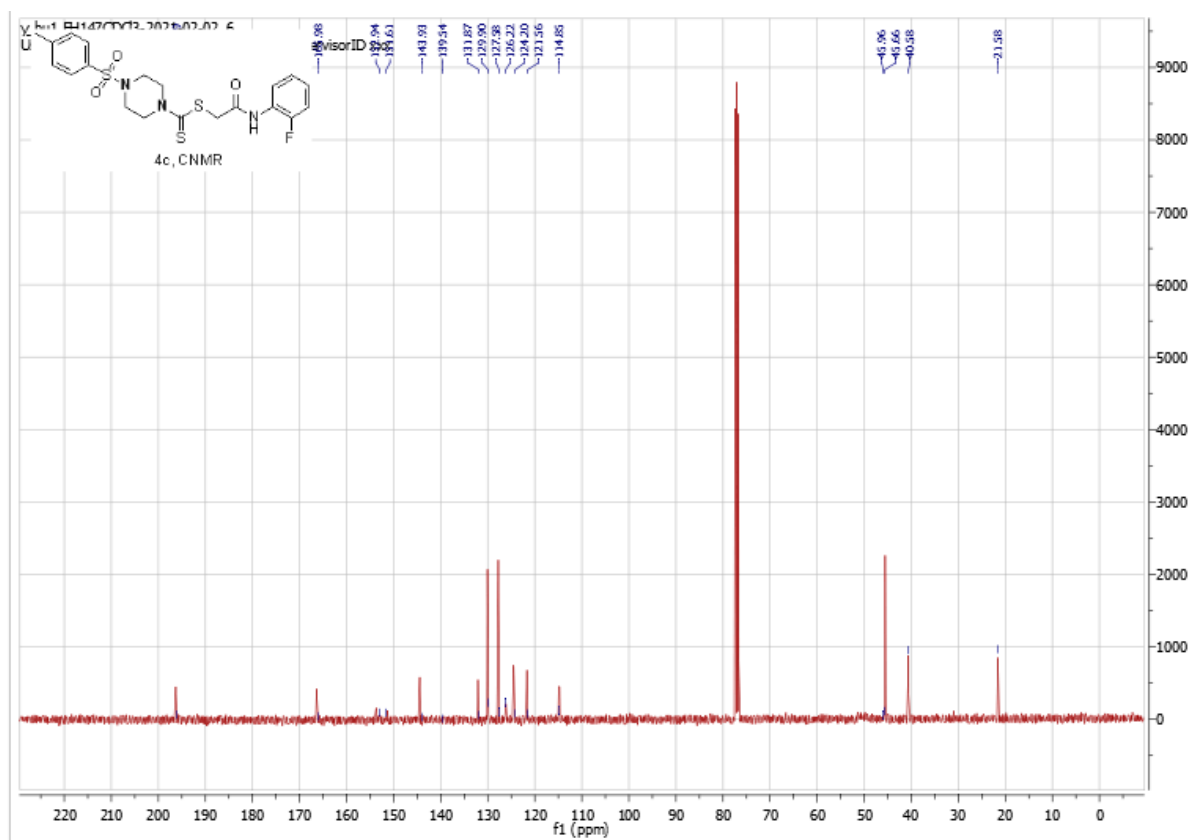


Figure S6: <sup>13</sup>C NMR spectrum of compound 4c.

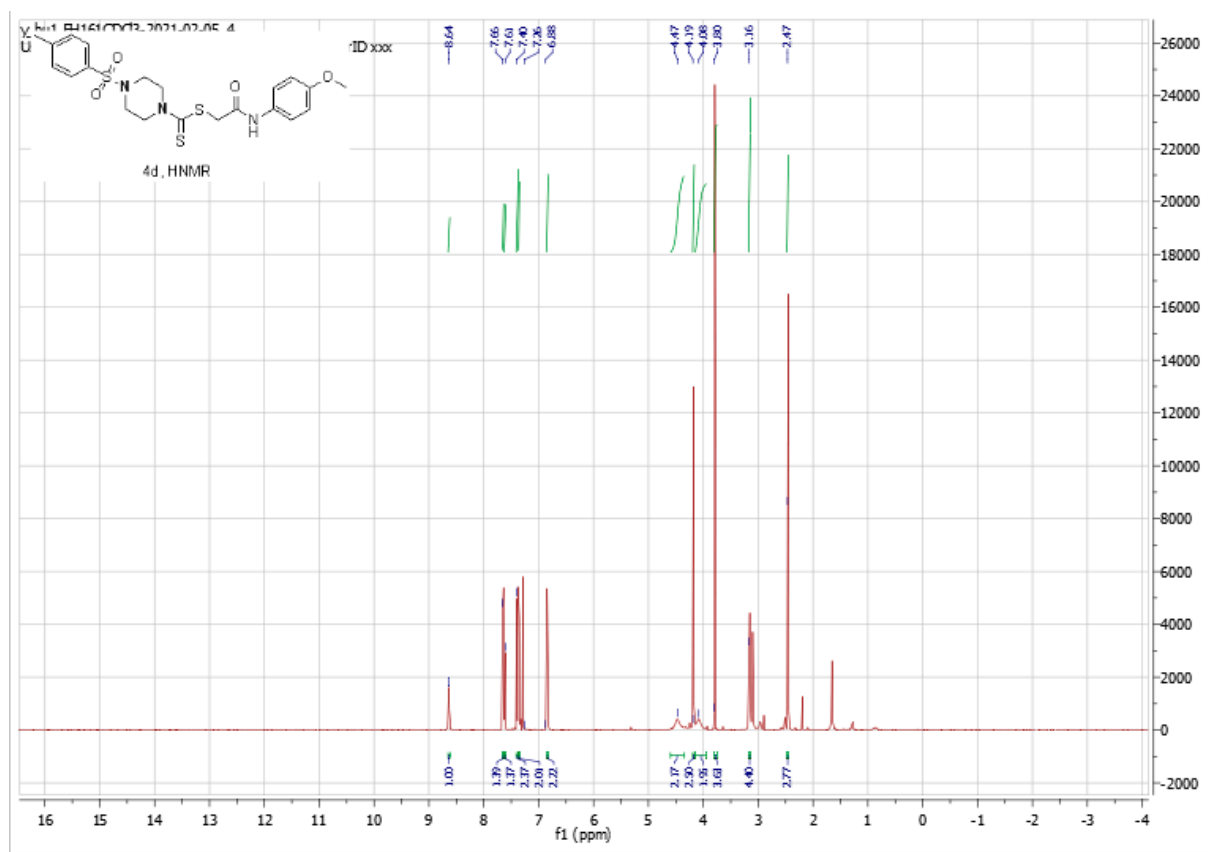


Figure S7: <sup>1</sup>H NMR spectrum of compound 4d.



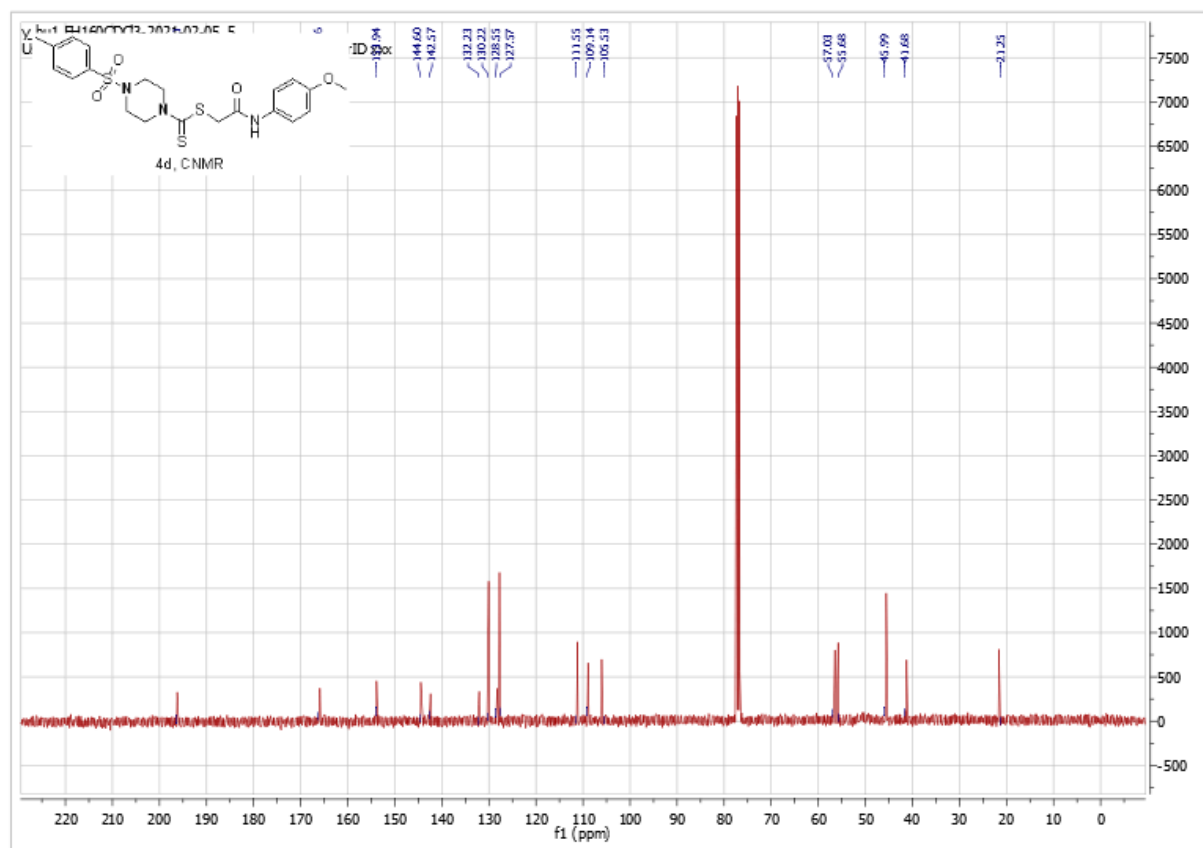


Figure S8: <sup>13</sup>C NMR spectrum of compound **4d**.

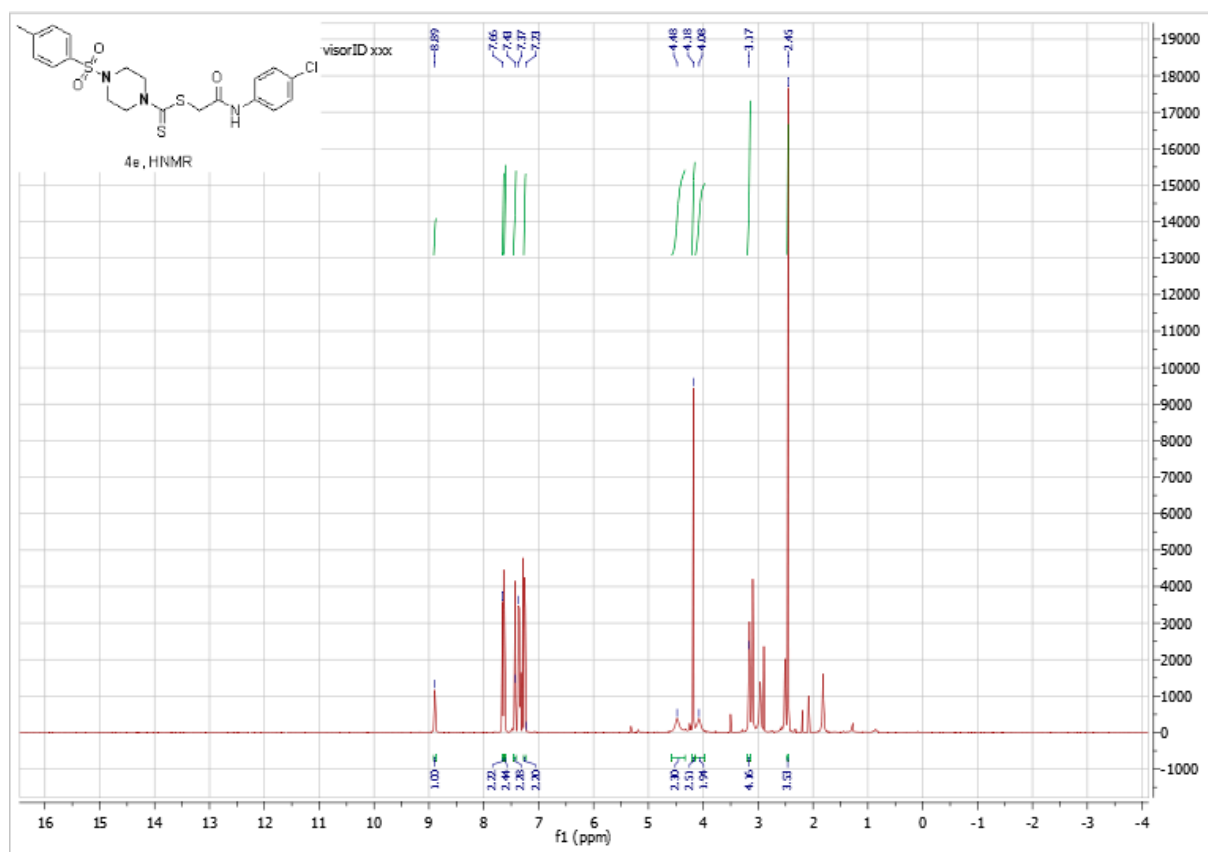


Figure S9:  $^1\text{H}$  NMR spectrum of compound **4e**.

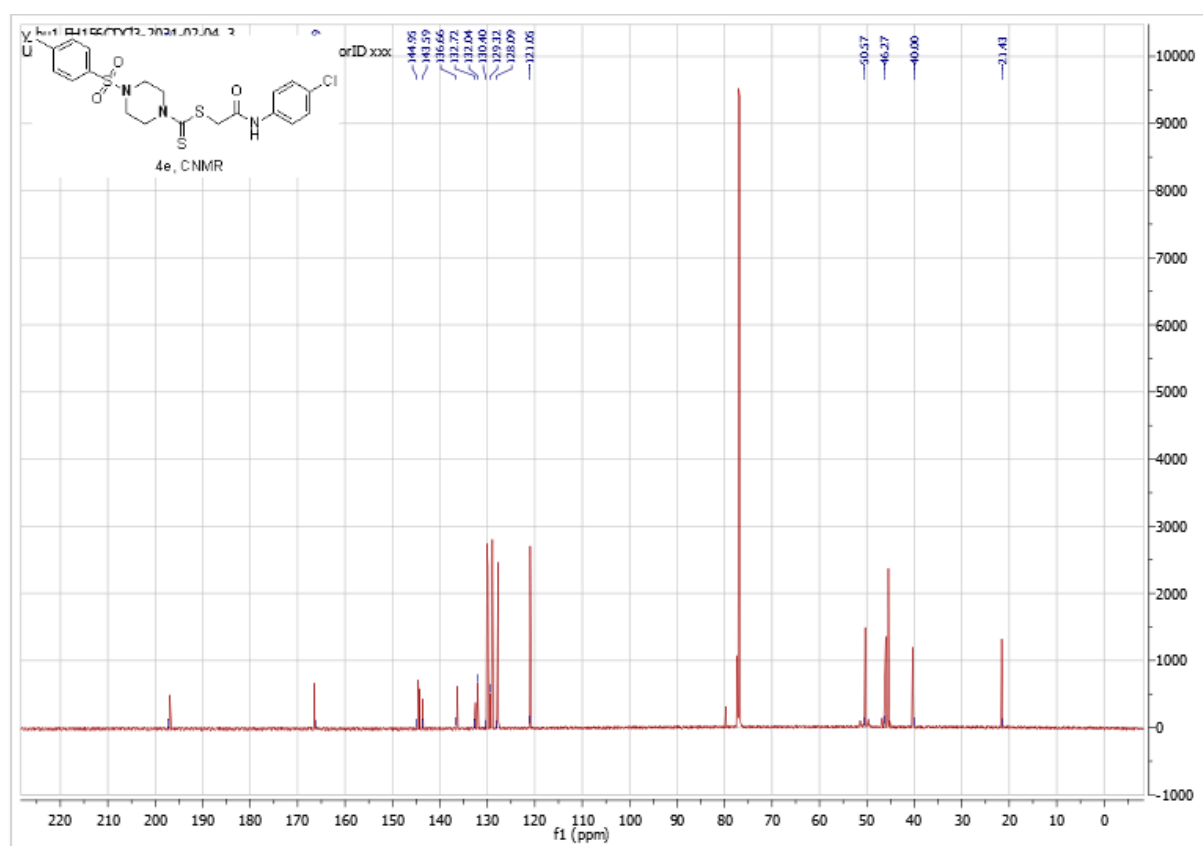


Figure S10:  $^{13}\text{C}$  NMR spectrum of compound **4e**.

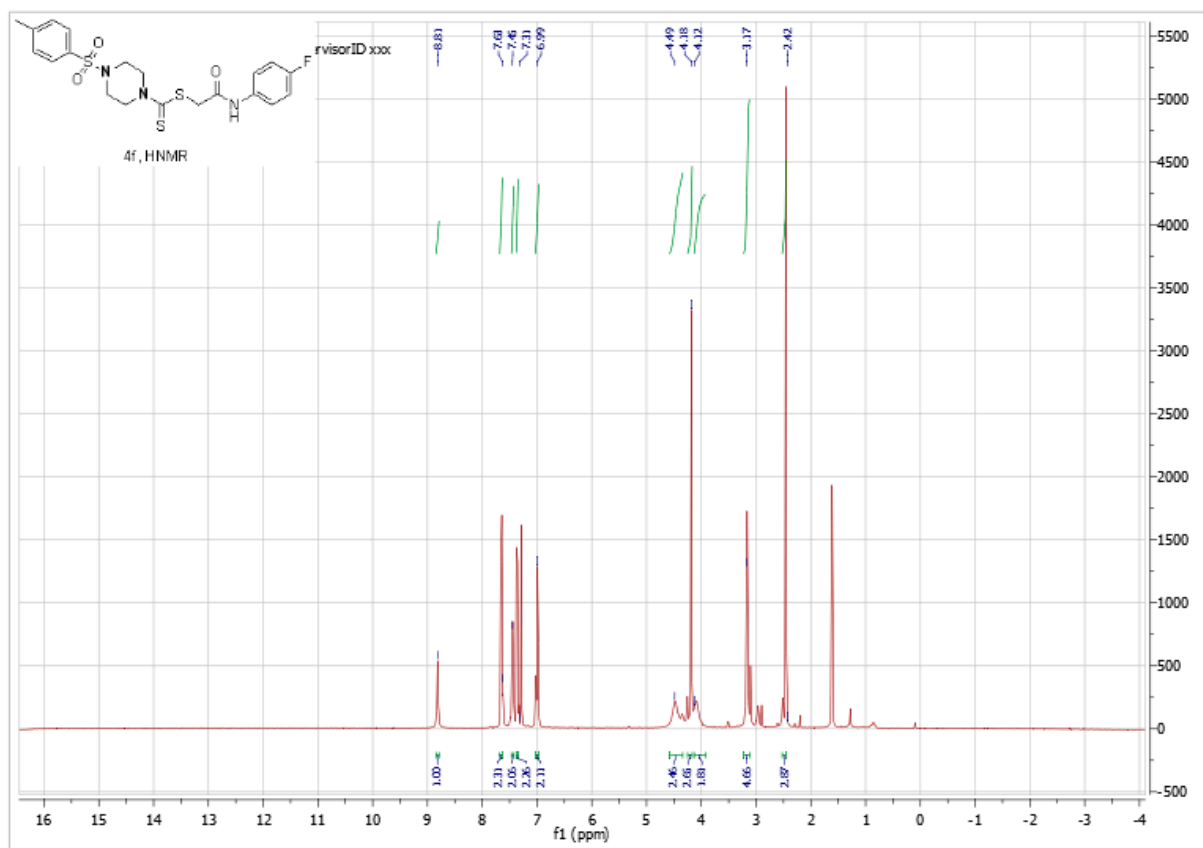


Figure S11:  $^1\text{H}$  NMR spectrum of compound **4f**.

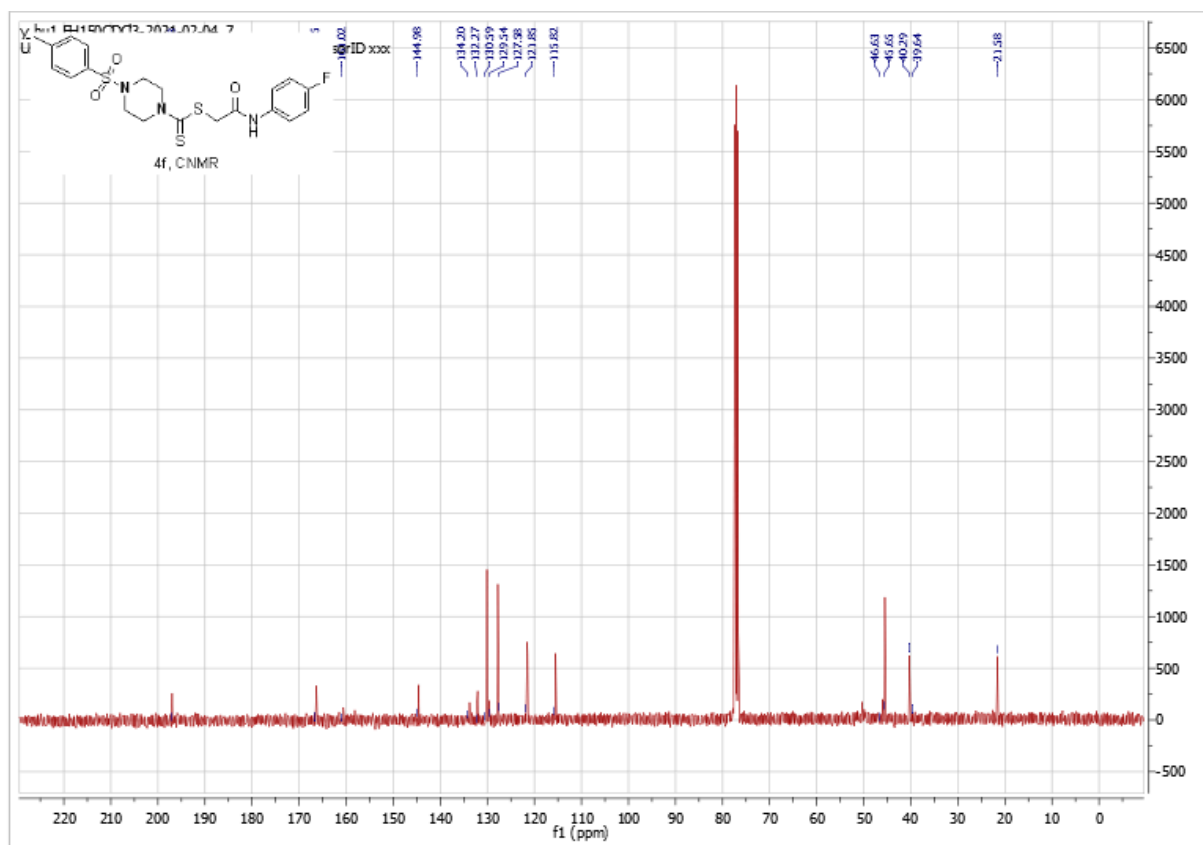


Figure S12:  $^{13}\text{C}$  NMR spectrum of compound **4f**.



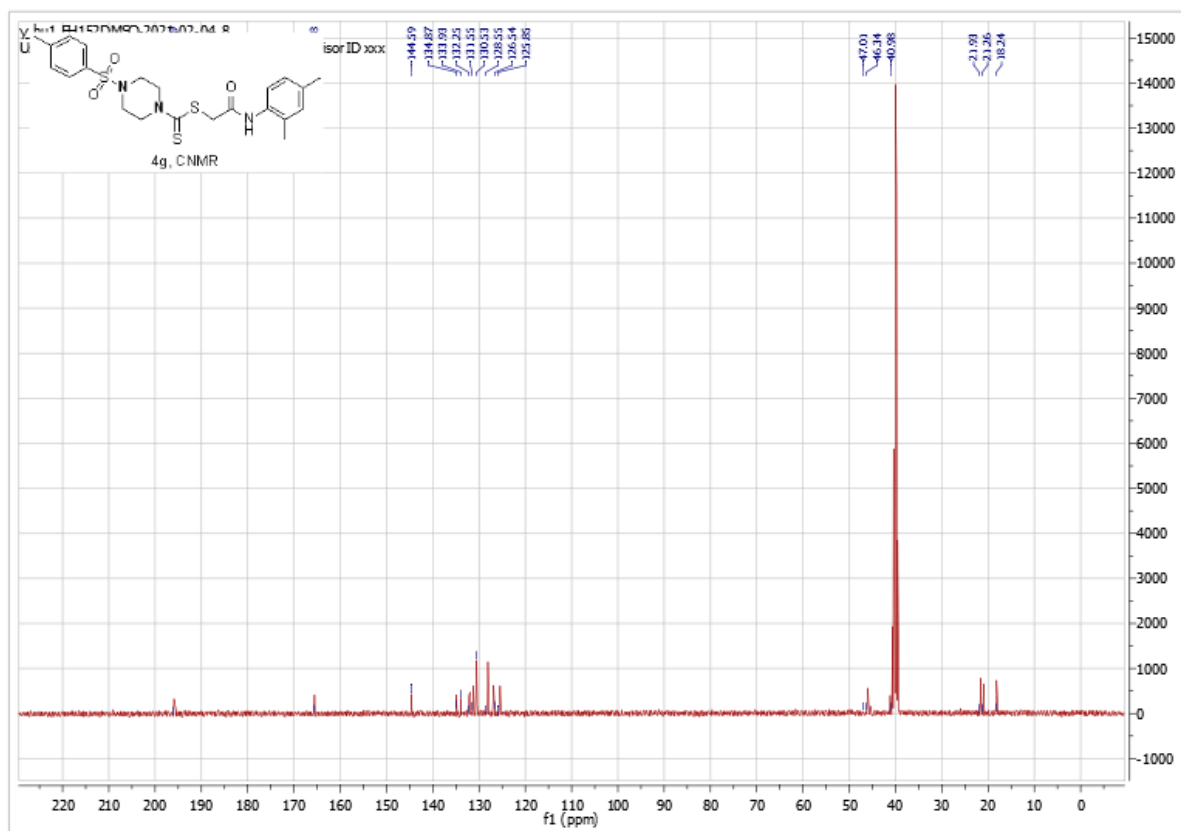


Figure S14: <sup>13</sup>C NMR spectrum of compound **4g**.

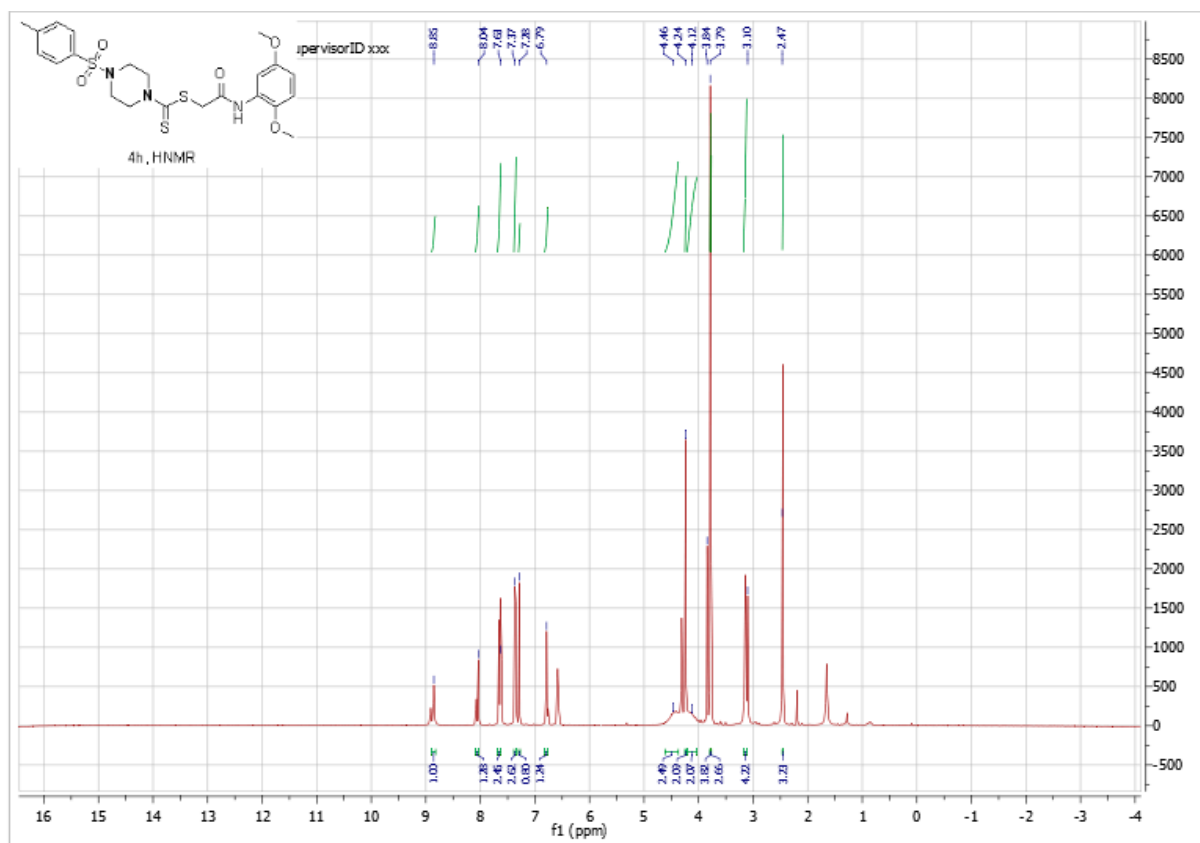


Figure S15:  $^1\text{H}$  NMR spectrum of compound **4h**.



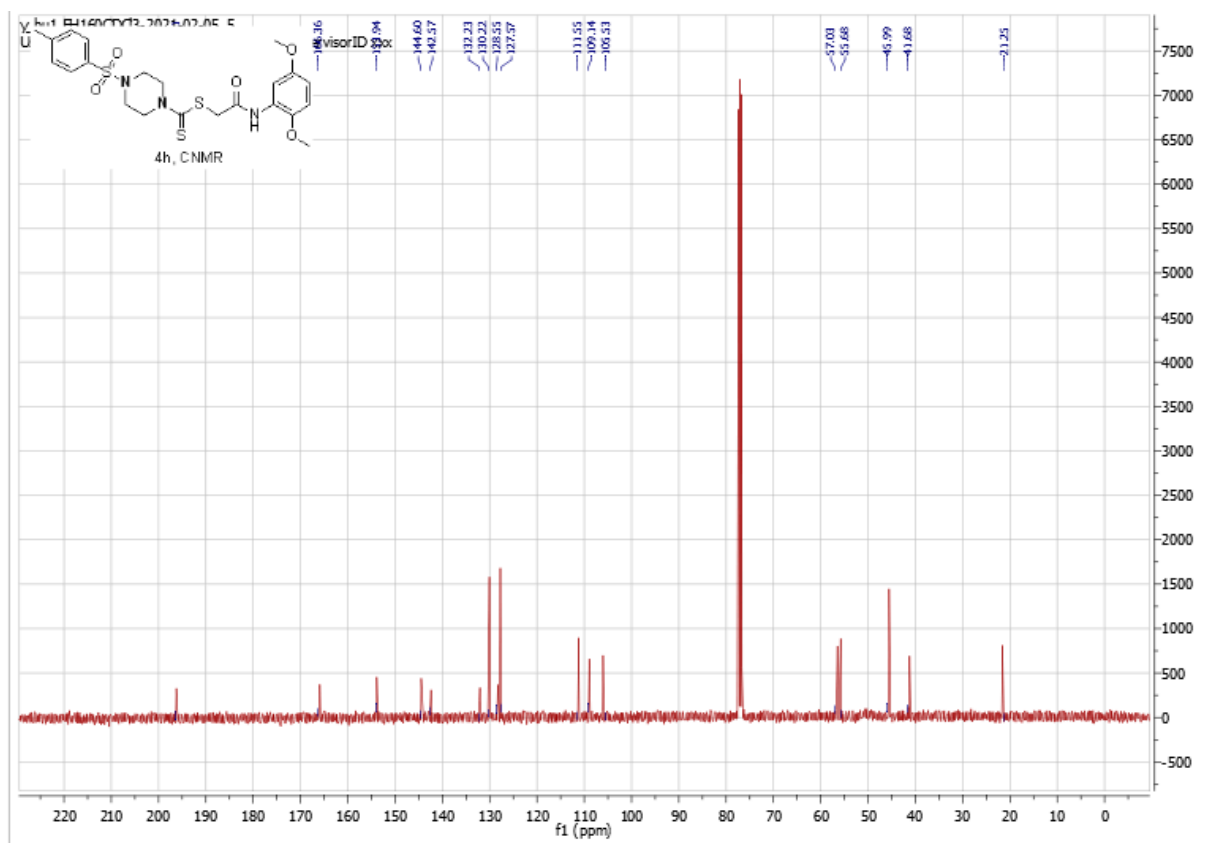


Figure S16:  $^{13}\text{C}$  NMR spectrum of compound **4h**.

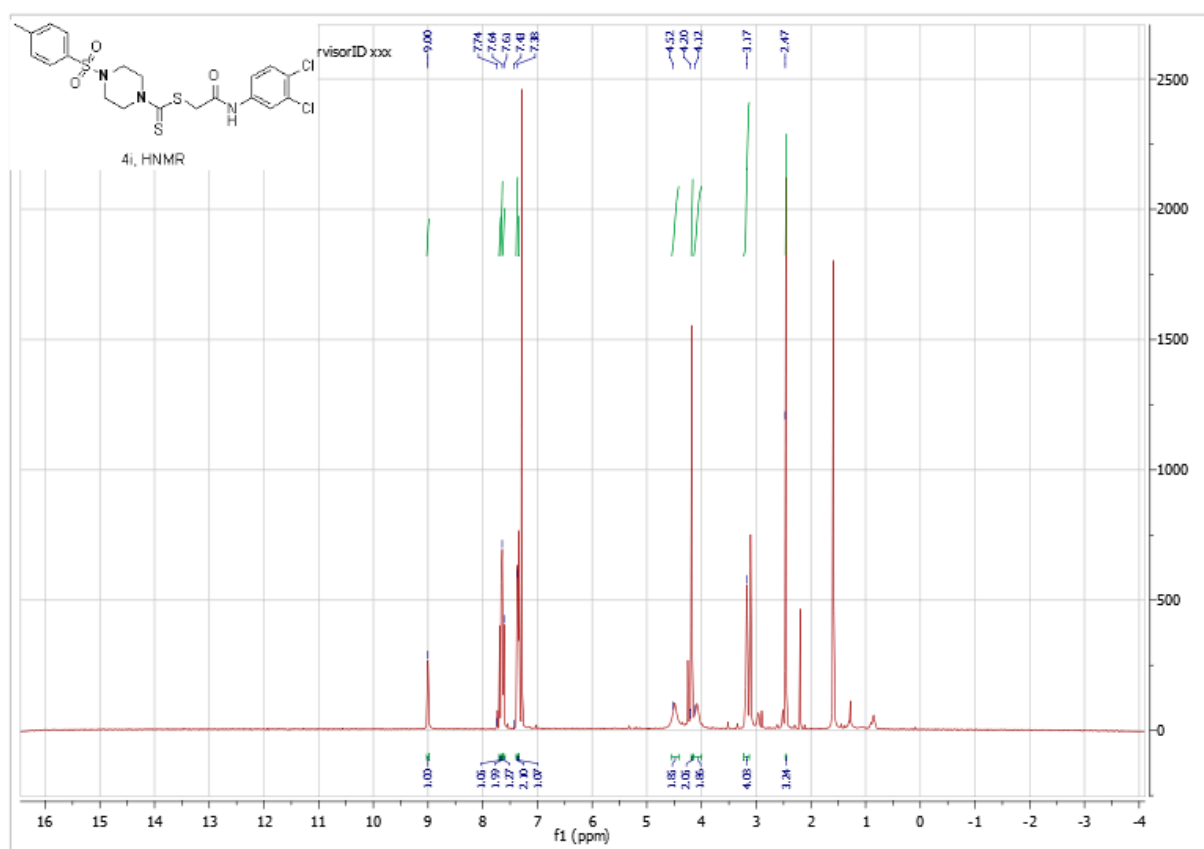


Figure S17:  $^1\text{H}$  NMR spectrum of compound **4i**.

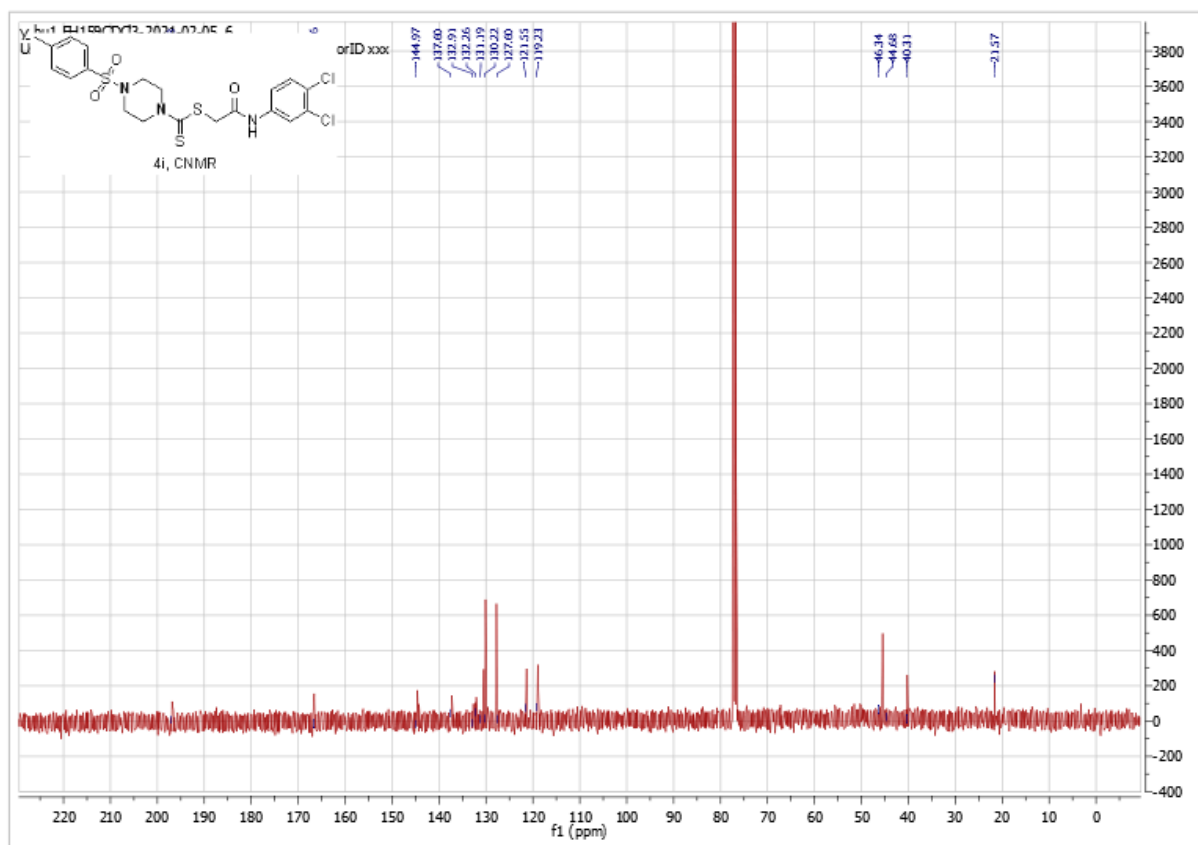


Figure S18:  $^{13}\text{C}$  NMR spectrum of compound **4i**.

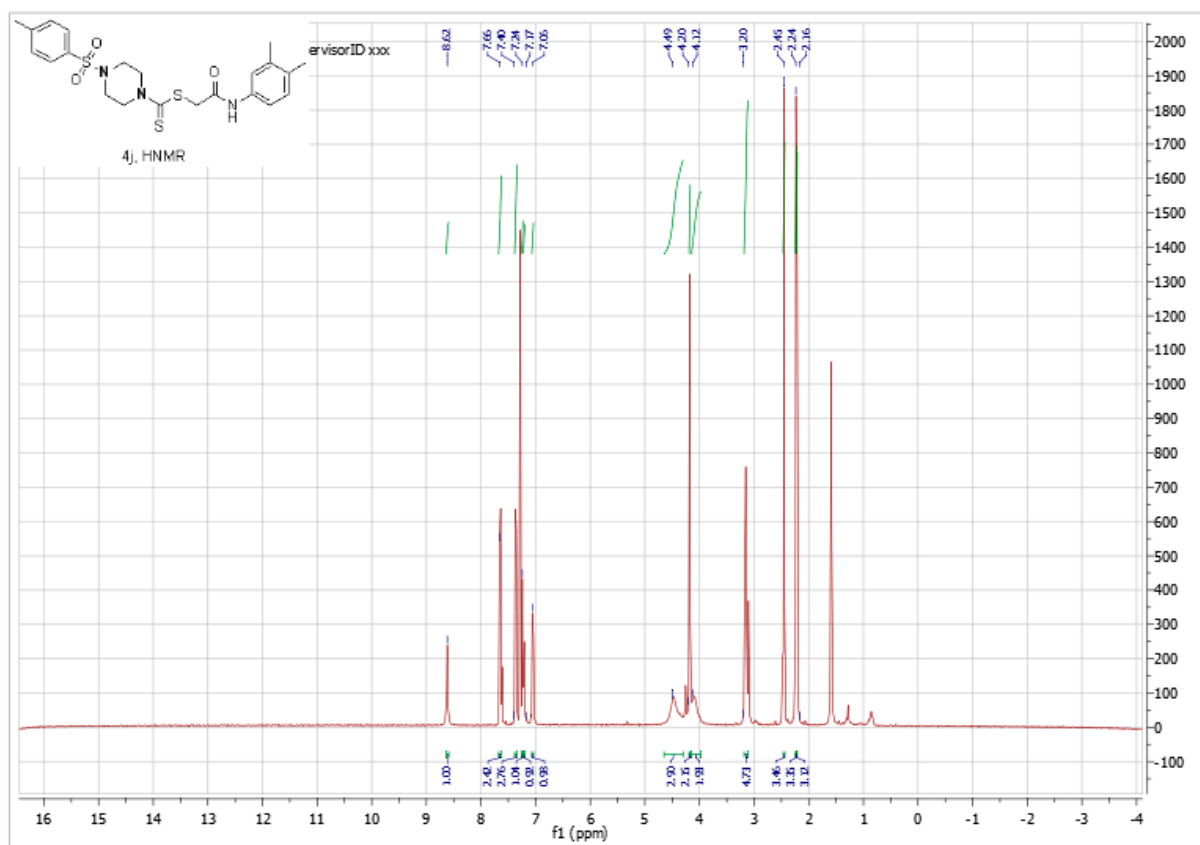


Figure S19: <sup>1</sup>H NMR spectrum of compound **4j**.

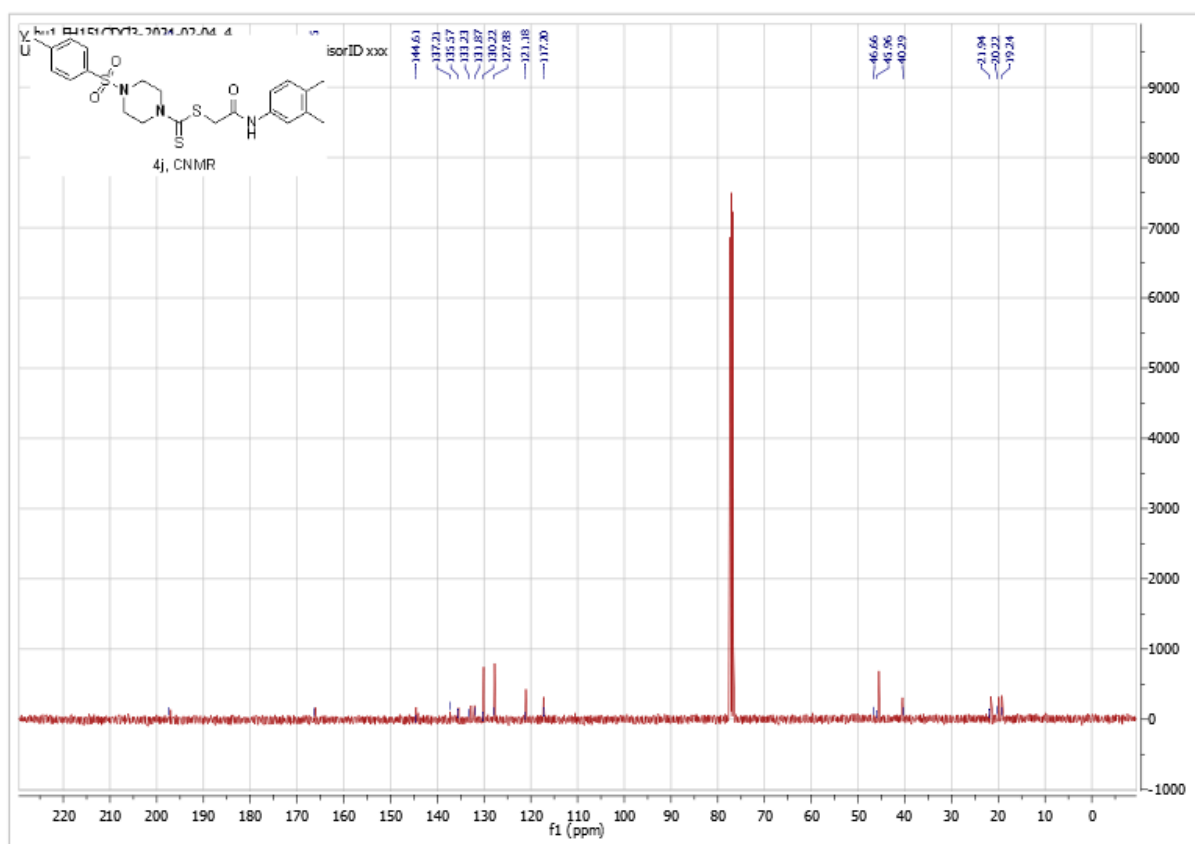


Figure S20:  $^{13}\text{C}$  NMR spectrum of compound **4j**.