

Synthesis of 3,5-Bis(trifluoromethyl)phenyl-Substituted Pyrazole Derivatives as Potent Growth Inhibitors of Drug-Resistant Bacteria

Ibrahim S. Alkhaibari¹, Hansa Raj KC¹, Subrata Roy¹, Mohd. K. Abu-gazleh¹, David F. Gilmore², Mohammad A. Alam^{1*}

¹ Department of Chemistry and Physics, The College of Sciences and Mathematics, Arkansas State University, Jonesboro, AR, United States

² Department of Biological Sciences, The College of Sciences and Mathematics, Arkansas State University, Jonesboro, AR, United States.

- Correspondence: malam@astate.edu

Characterization data (I-B)

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-formyl-pyrazol-1-yl] benzoic acid (III).

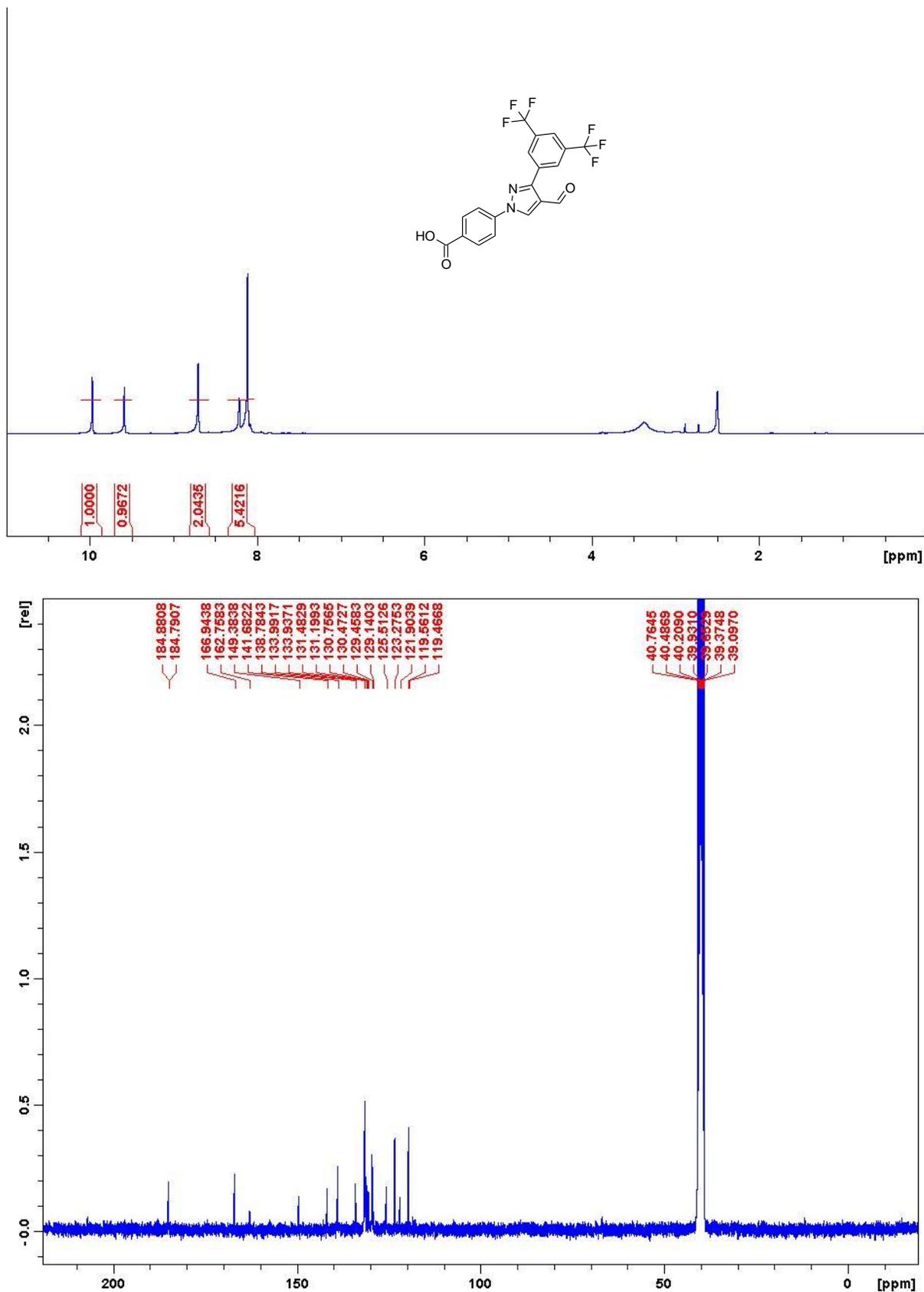


Figure S1. ^1H NMR and ^{13}C NMR spectra of compound III

4-[4-(Anilinomethyl)-3-[3,5-bis(trifluoromethyl) phenyl] pyrazol-1-yl] benzoic acid (1).

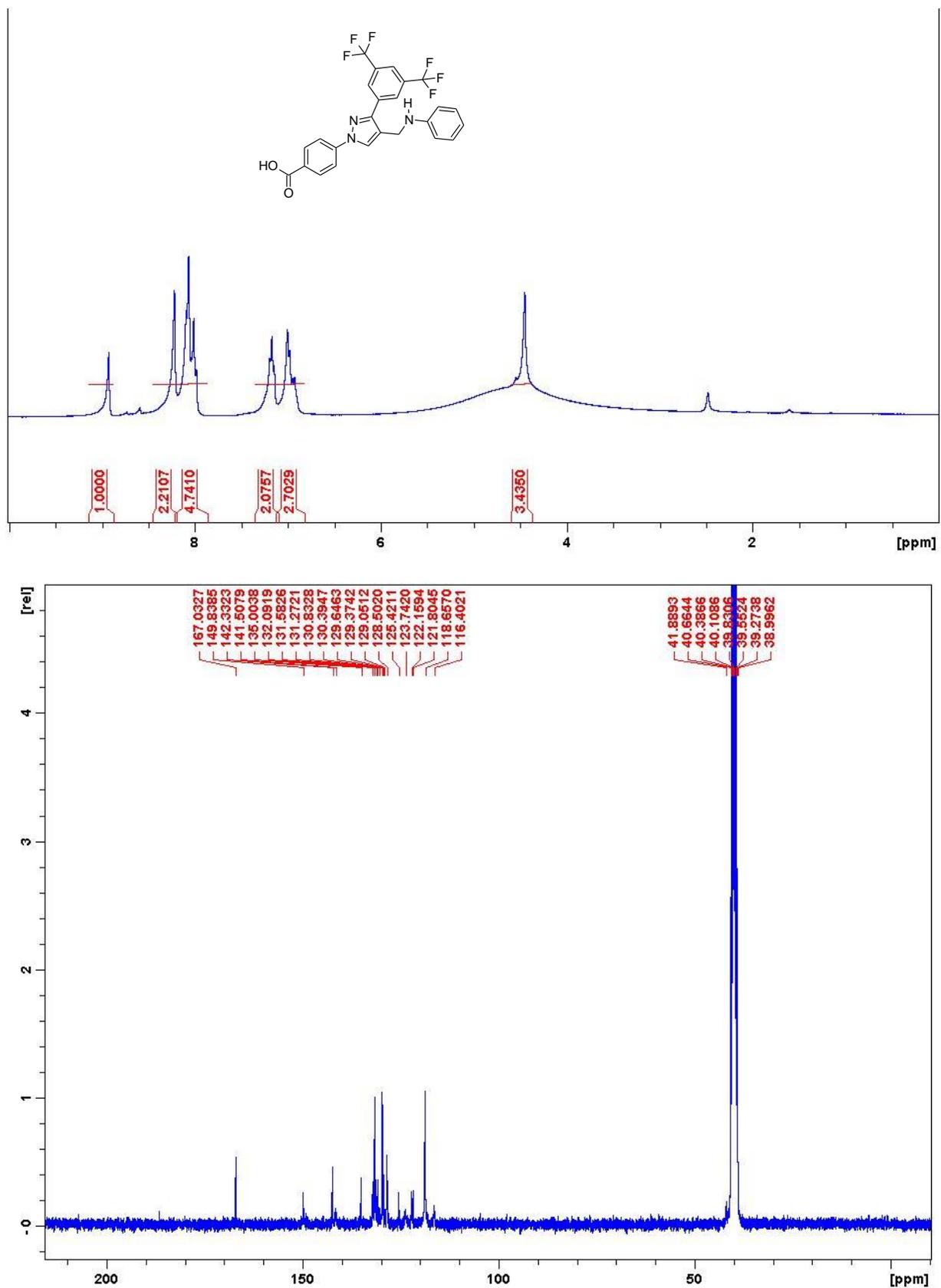


Figure S2. ¹H NMR and ¹³C NMR spectra of compound 1

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(4-isopropylanilino) methyl] pyrazol-1-yl] benzoic acid (2).

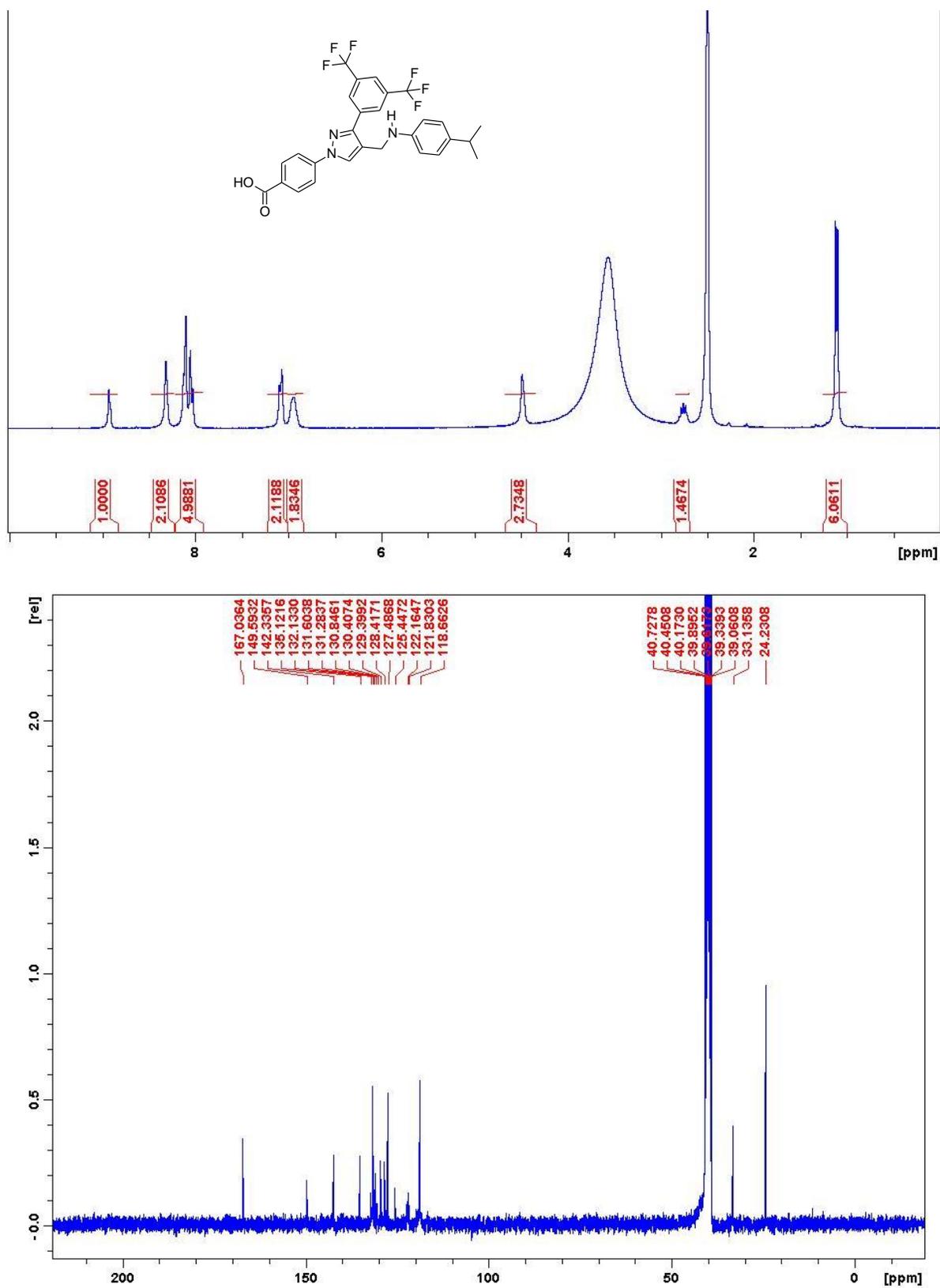


Figure S3. ¹H NMR and ¹³C NMR spectra of compound 2

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(4-tert-butylanilino) methyl] pyrazol-1-yl] benzoic acid (3).

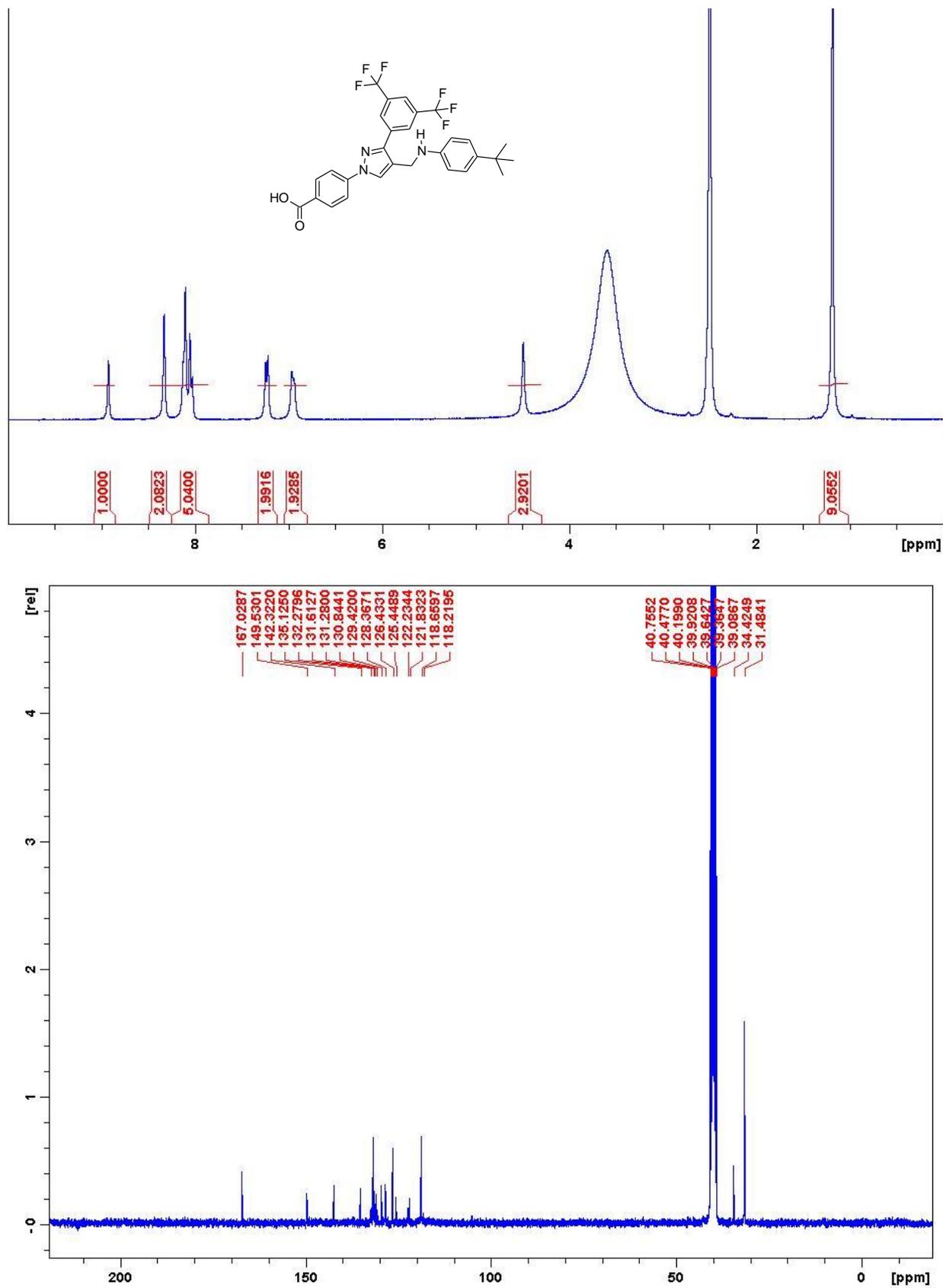


Figure S4. ¹H NMR and ¹³C NMR spectra of compound 3

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(4-methoxyanilino) methyl] pyrazol-1-yl] benzoic acid (4).

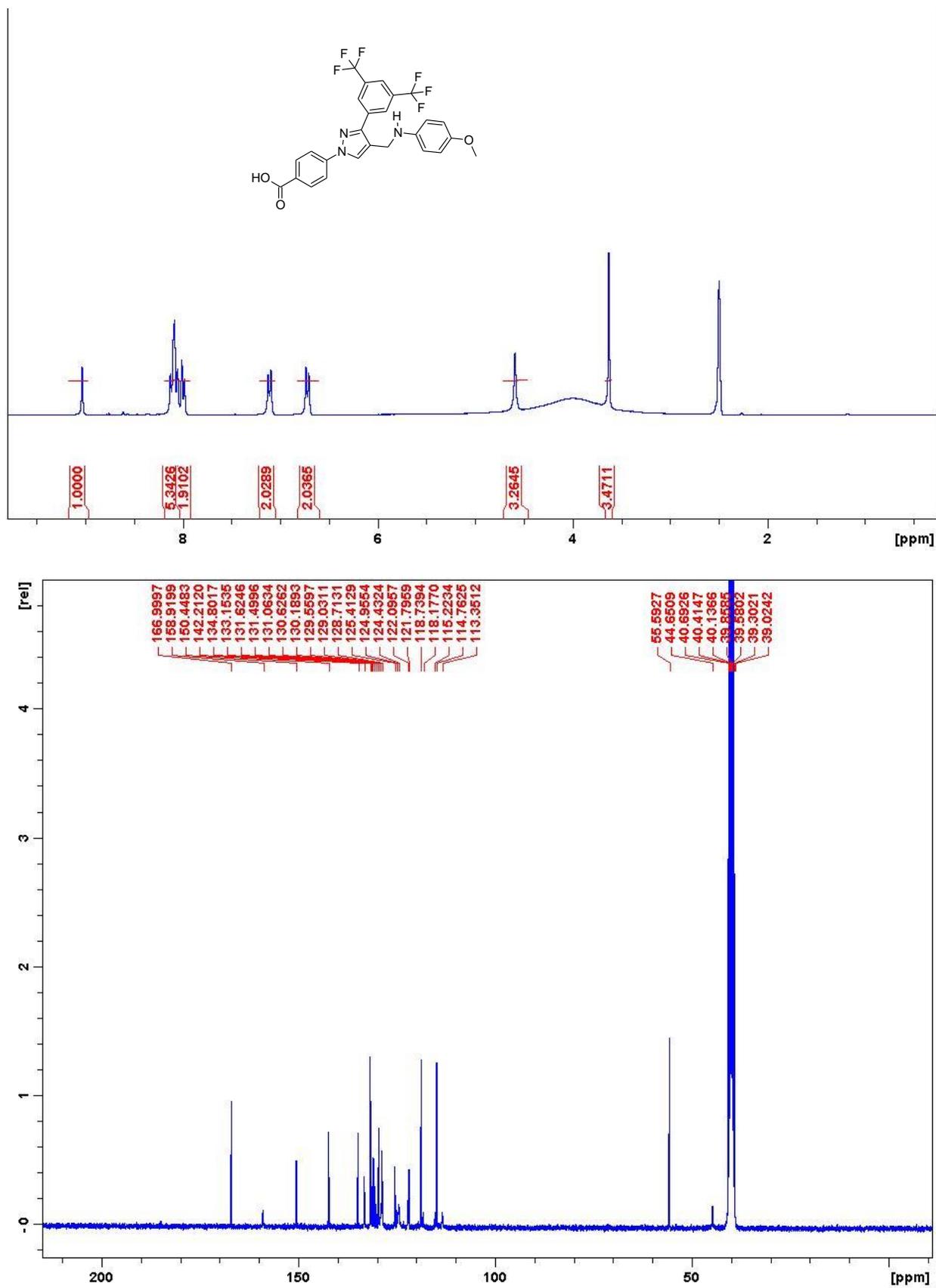


Figure S5. ^1H NMR and ^{13}C NMR spectra of compound 4

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(4-phenoxyanilino) methyl] pyrazol-1-yl] benzoic acid (5).

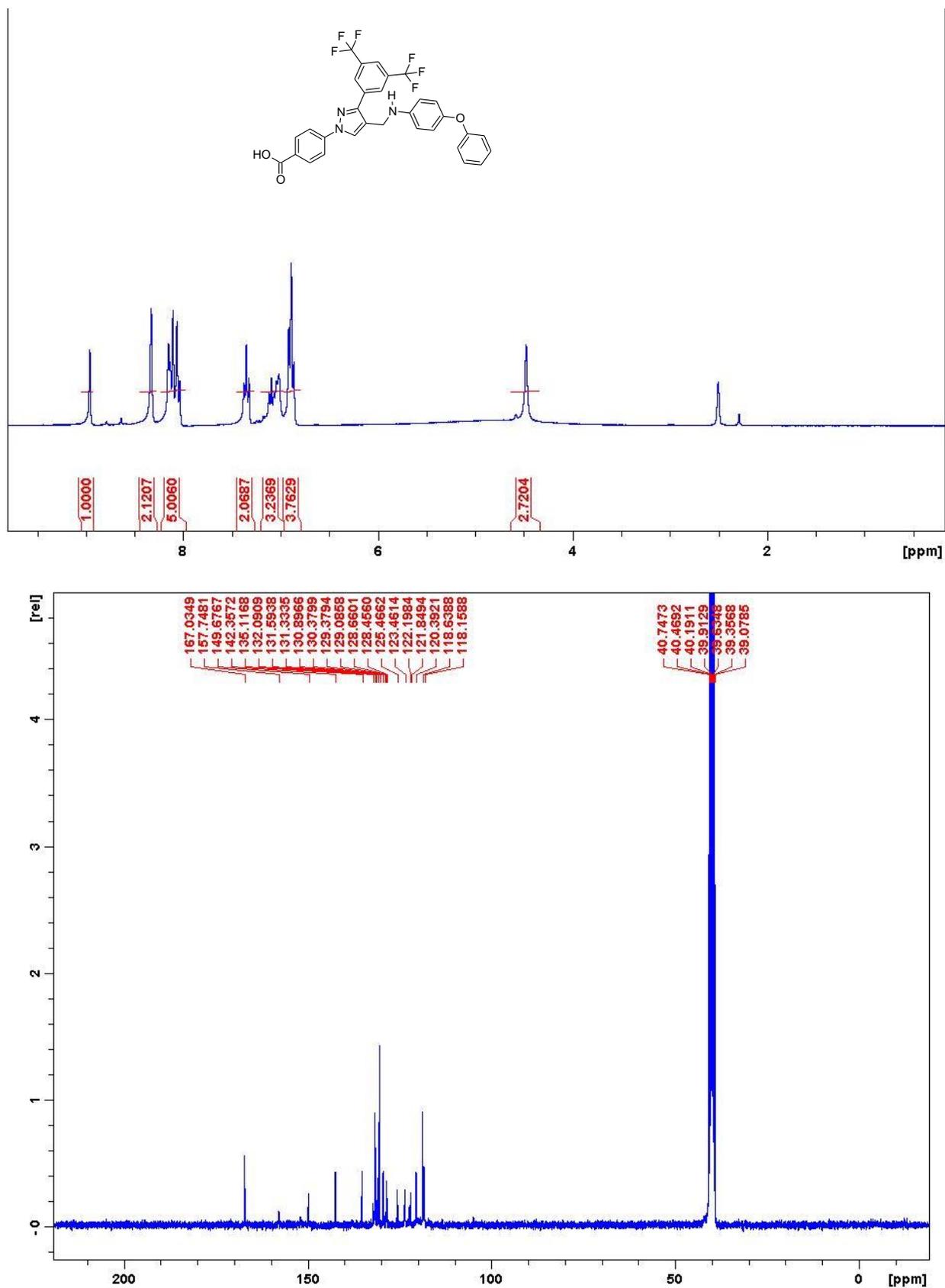


Figure S6. ¹H NMR and ¹³C NMR spectra of compound 5

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(4-methylsulfanyl) methyl] pyrazol-1-yl] benzoic acid (6).

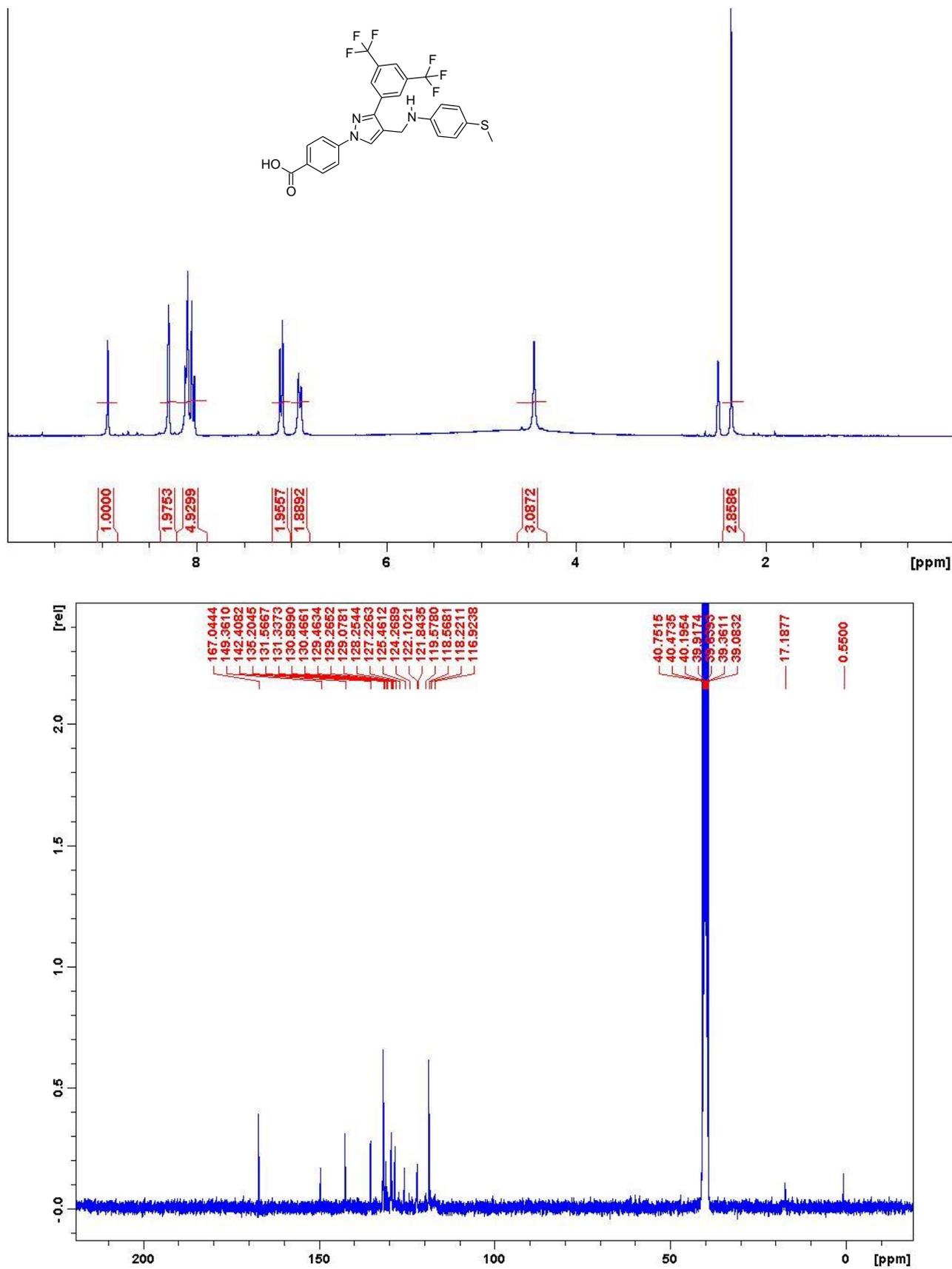


Figure S7. ¹H NMR and ¹³C NMR spectra of compound 6

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(3-fluoroanilino) methyl] pyrazol-1-yl] benzoic acid (7).

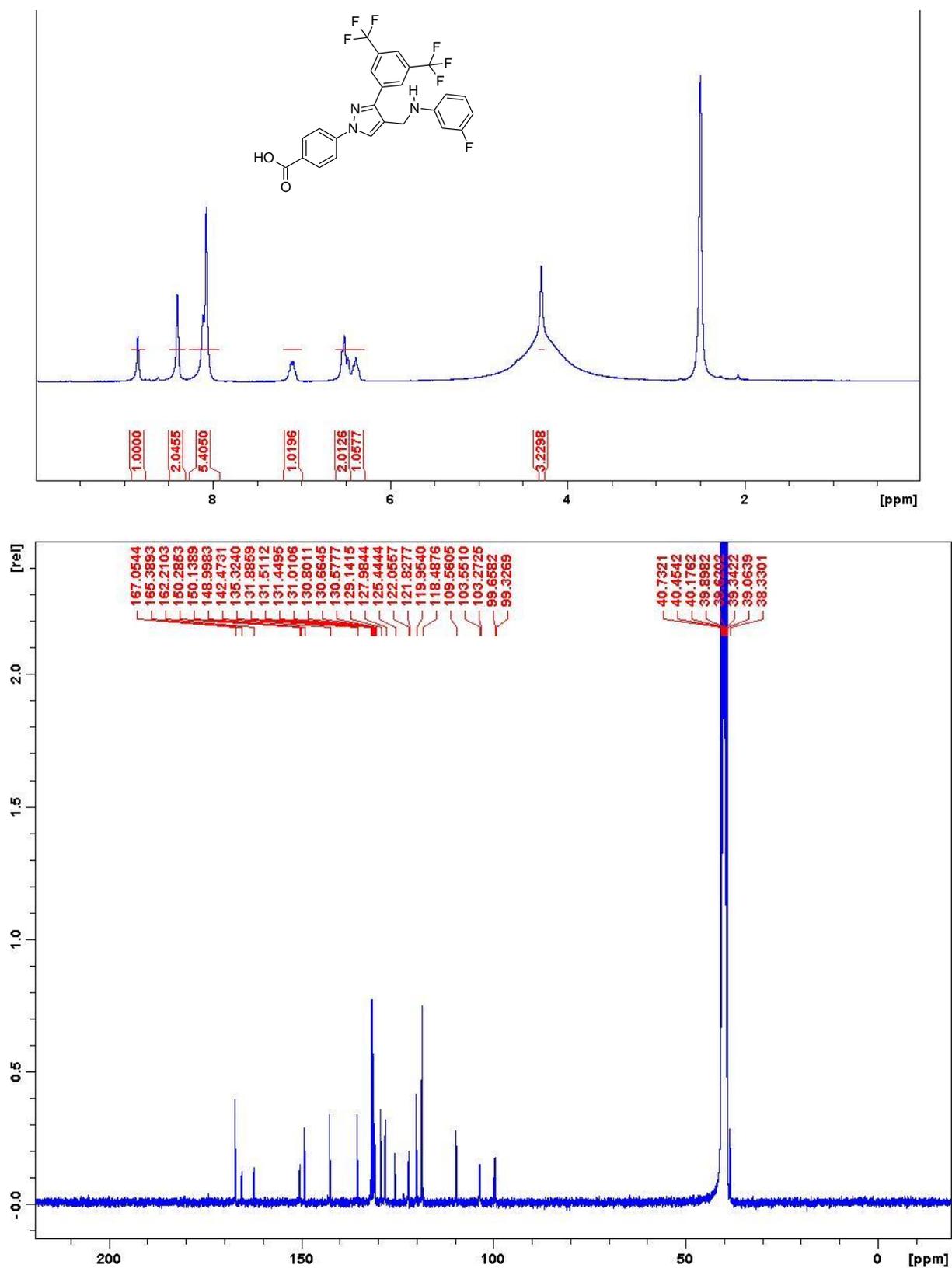


Figure S8. ¹H NMR and ¹³C NMR spectra of compound 7

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(4-fluoroanilino) methyl] pyrazol-1-yl] benzoic acid (8).

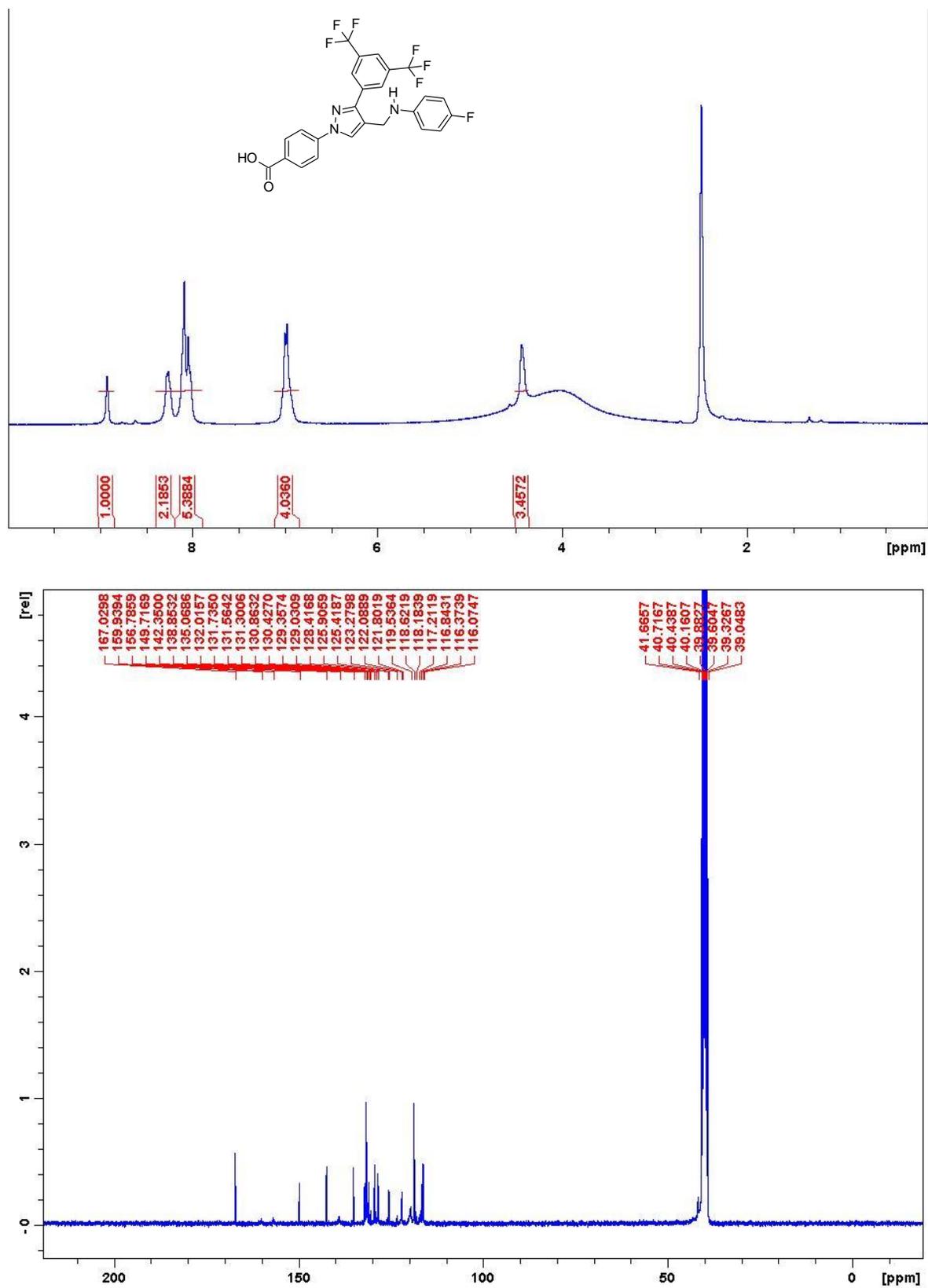


Figure S9. ¹H NMR and ¹³C NMR spectra of compound 8

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(4-chloroanilino) methyl] pyrazol-1-yl] benzoic acid (9).

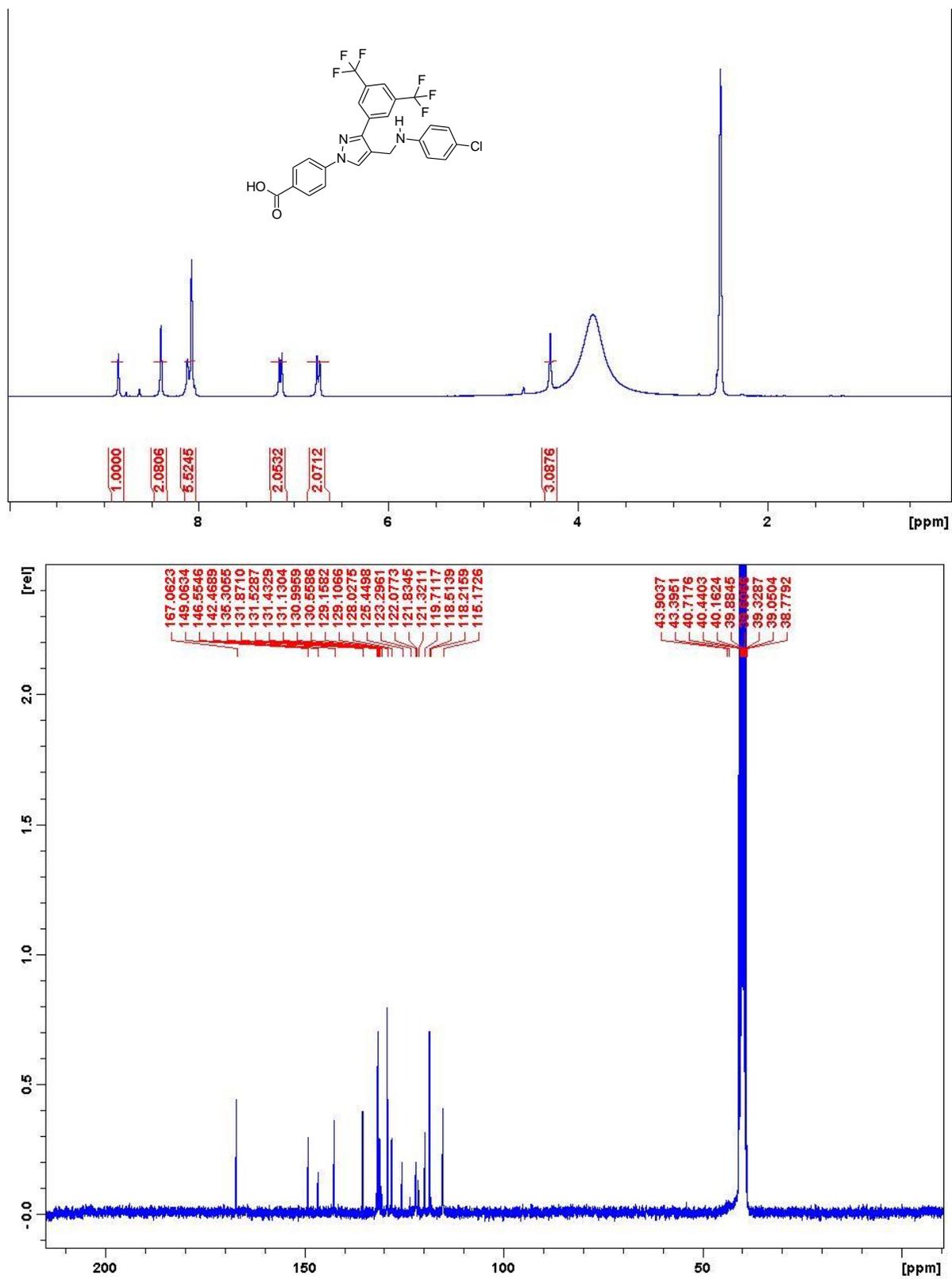


Figure S10. ^1H NMR and ^{13}C NMR spectra of compound 9

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(3-bromoanilino) methyl] pyrazol-1-yl] benzoic acid (10).

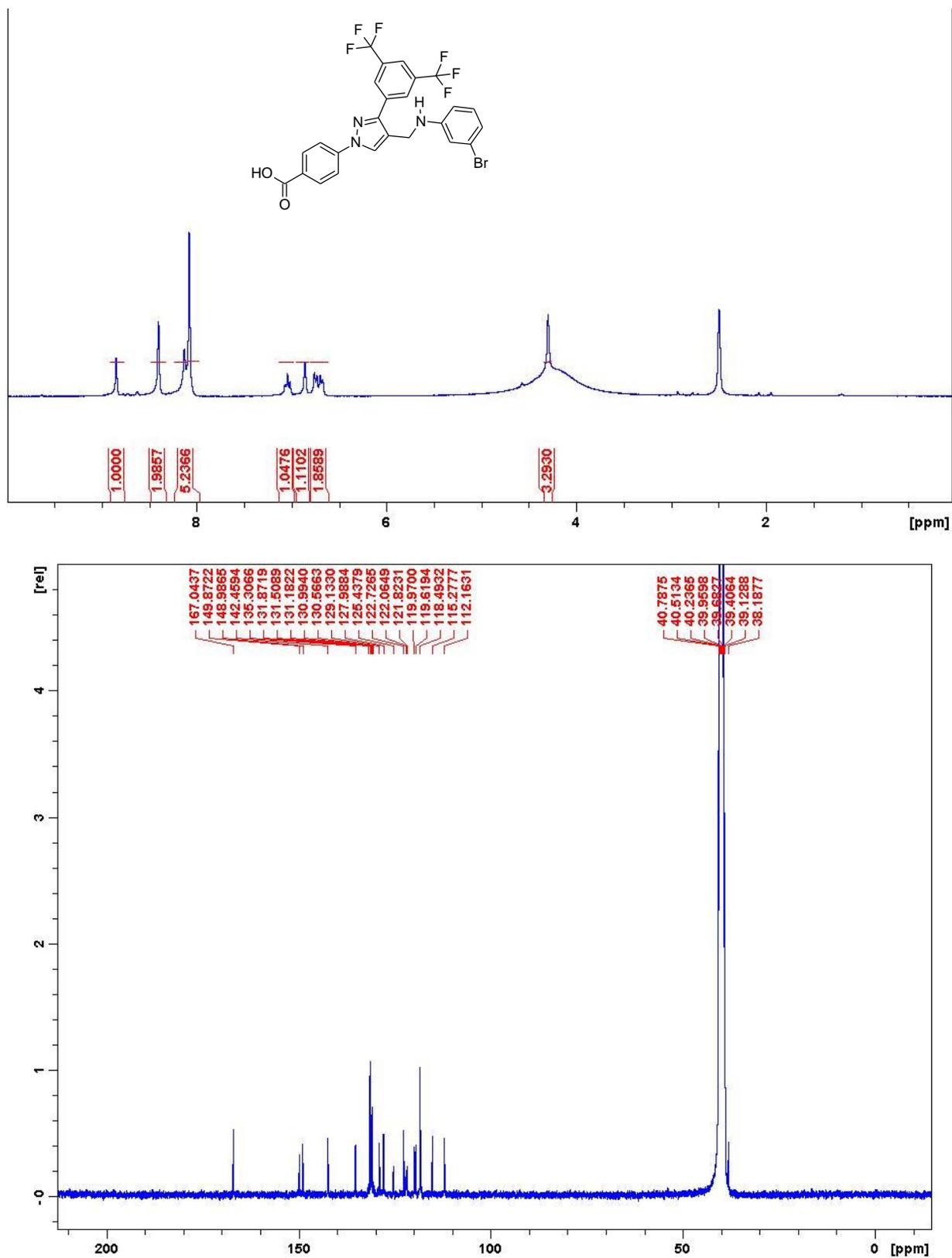


Figure S11. ¹H NMR and ¹³C NMR spectra of compound 10

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-(4-bromoanilino) methyl] pyrazol-1-yl] benzoic acid (11).

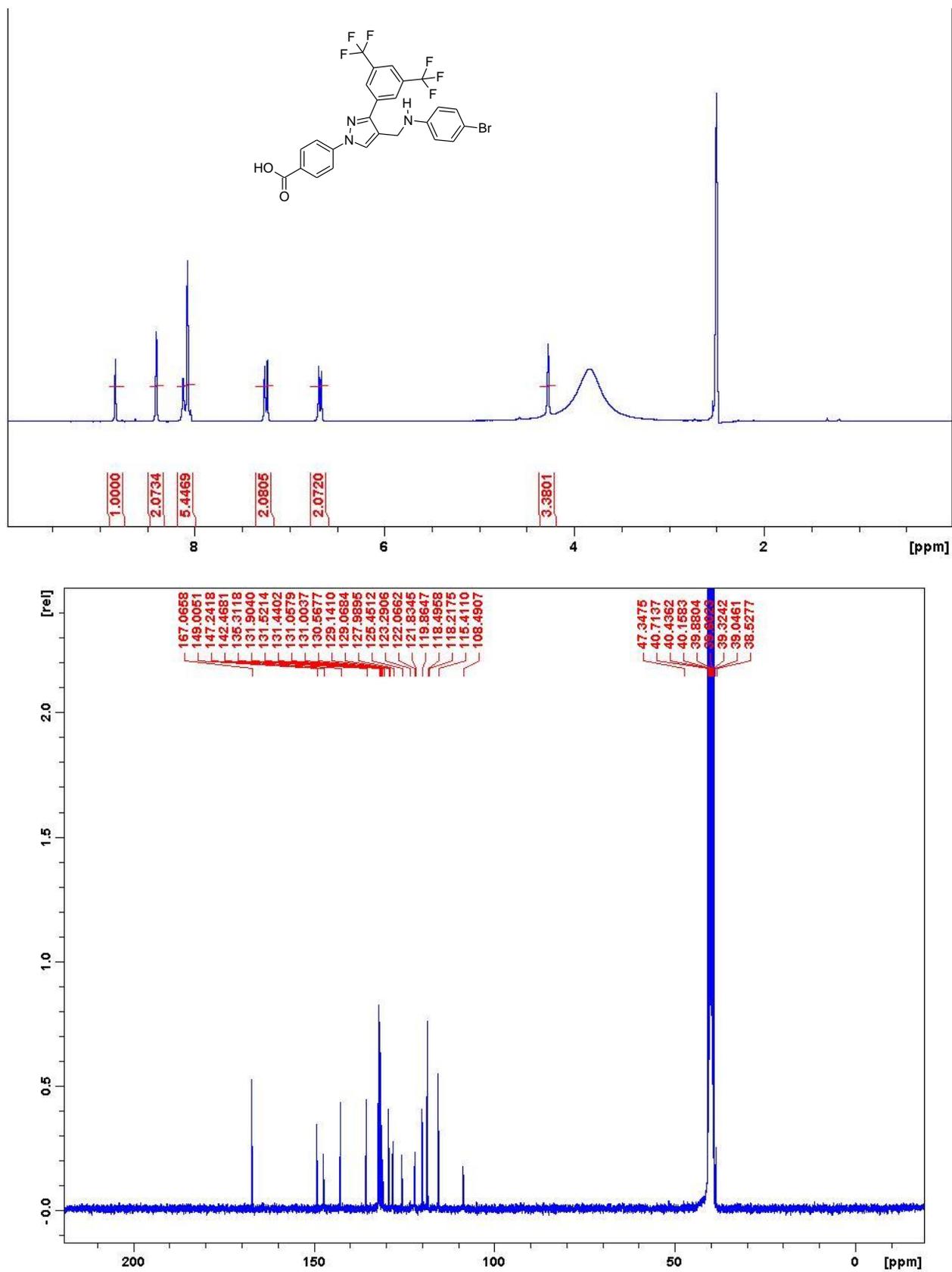


Figure S12. ¹H NMR and ¹³C NMR spectra of compound 11

3-[[3-[3,5-Bis(trifluoromethyl)phenyl]-1-(4-carboxyphenyl)pyrazol-4-yl]methylamino] benzoic acid (12).

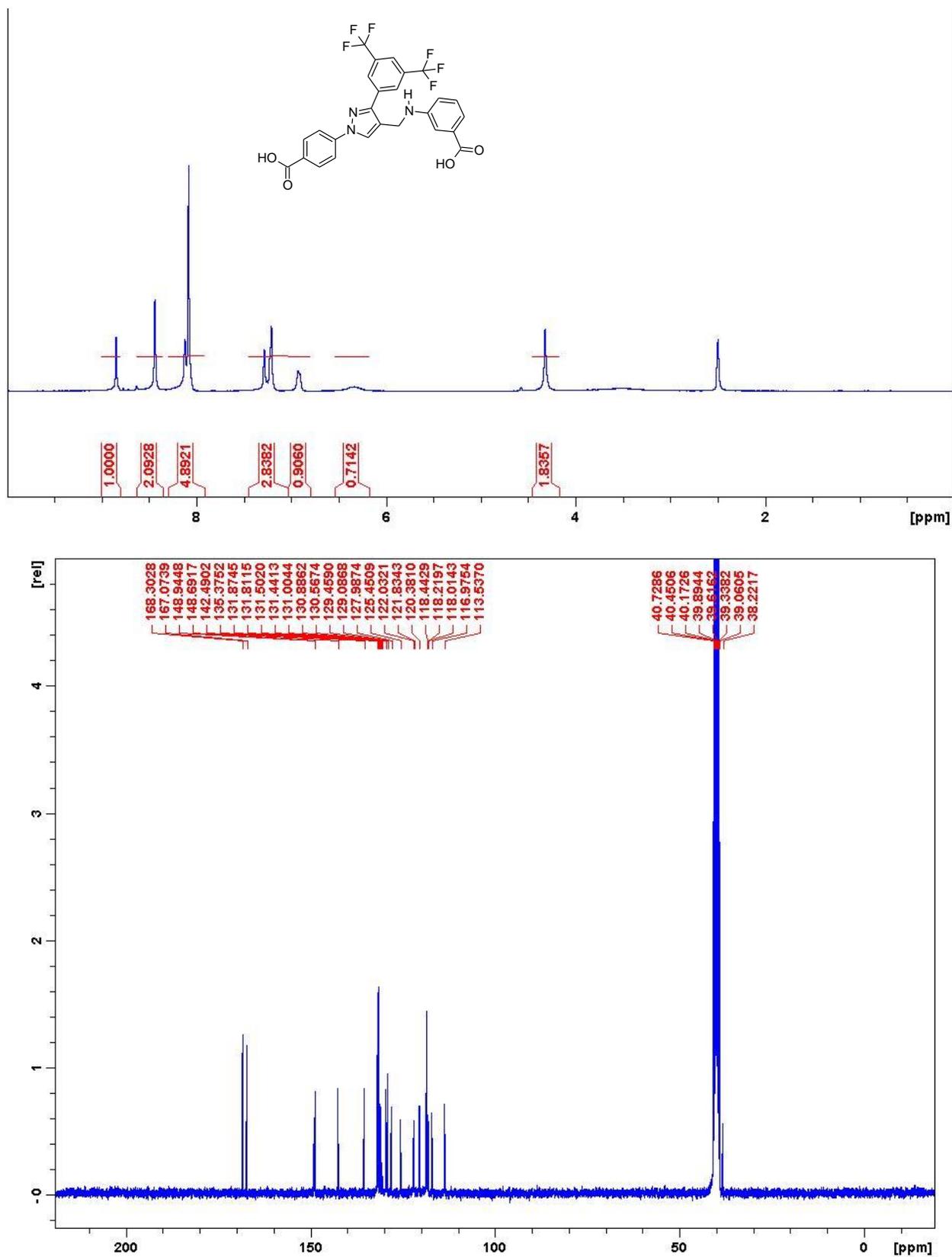


Figure S13. ¹H NMR and ¹³C NMR spectra of compound 12

4-[[3-[3,5-Bis(trifluoromethyl) phenyl]-1-(4-carboxyphenyl) pyrazol-4-yl] methylamino] benzoic acid (13).

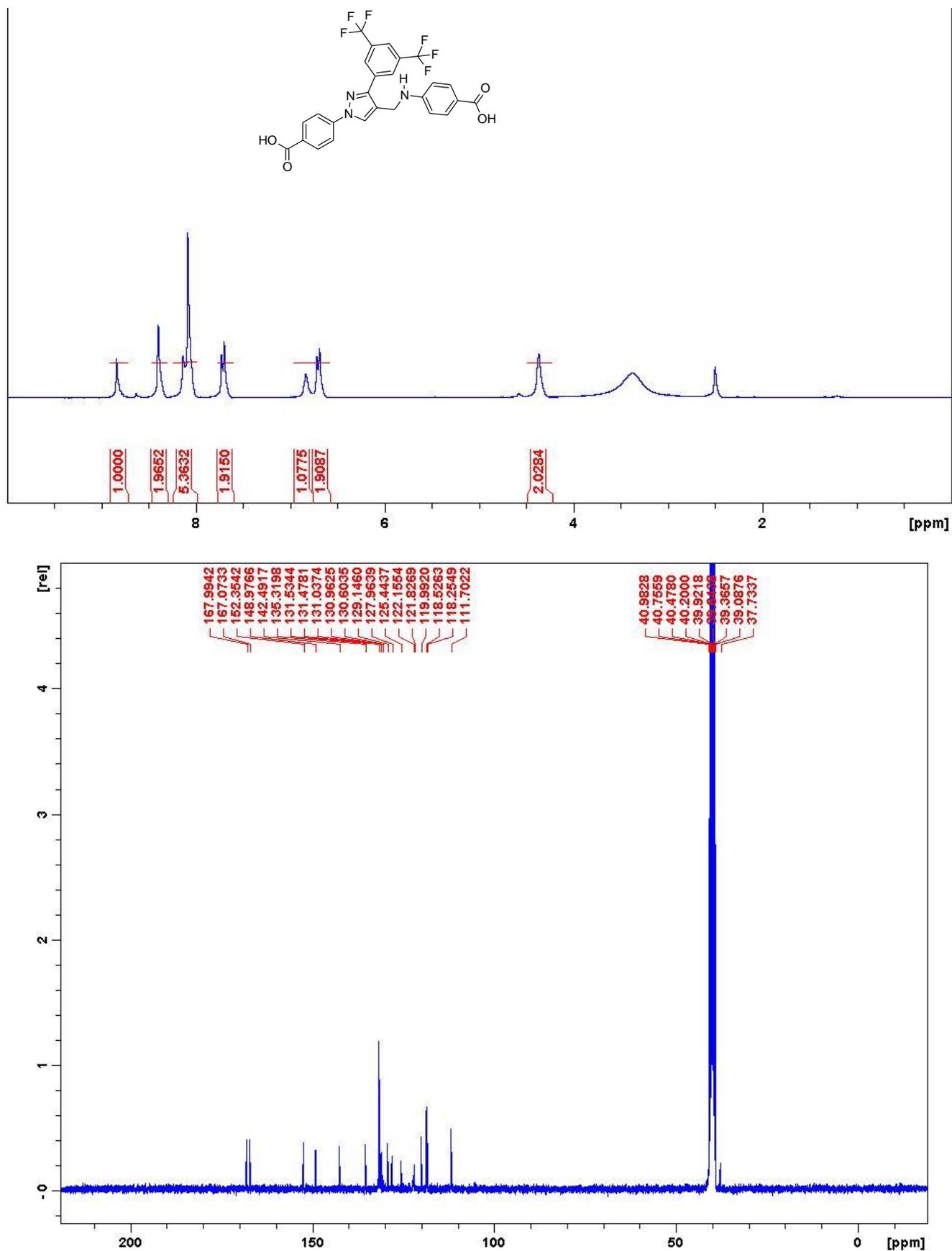


Figure S14. ¹H NMR and ¹³C NMR spectra of compound 13

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(4-fluoro-3-methyl-anilino)methyl]pyrazol-1-yl] benzoic acid (14).

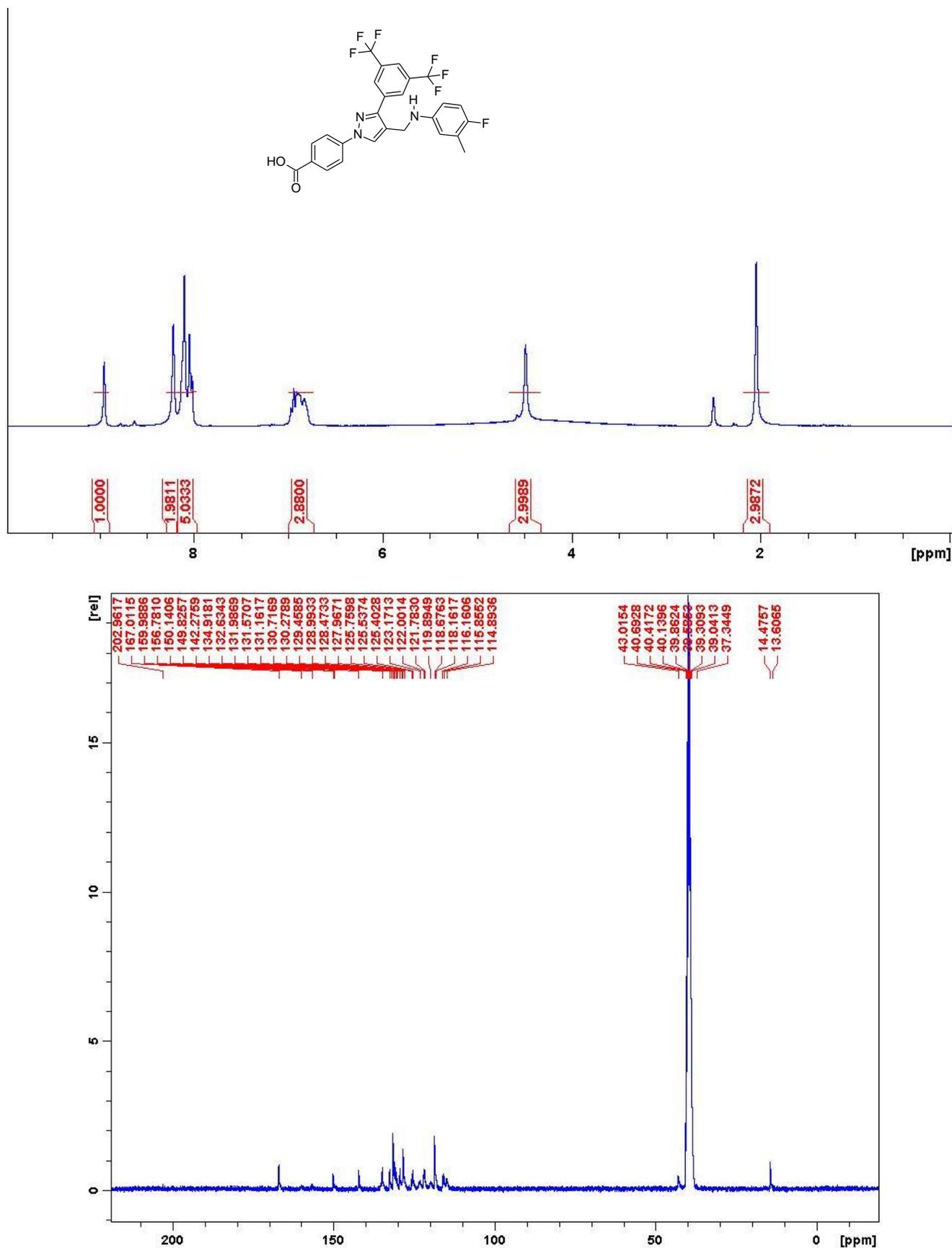


Figure S15. ¹H NMR and ¹³C NMR spectra of compound 14

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(3-chloro-4-methyl-anilino)methyl]pyrazol-1-yl] benzoic acid

(15).

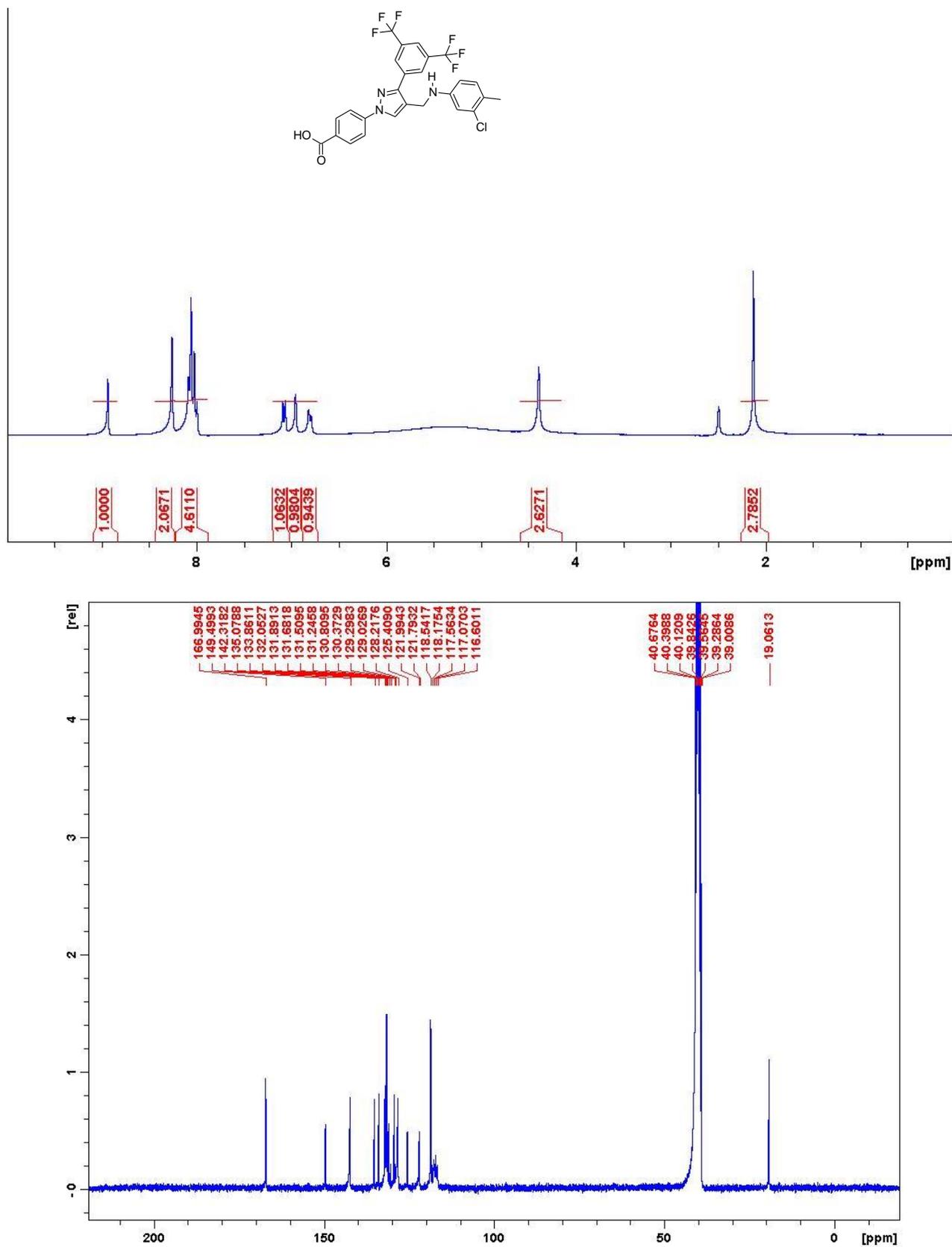


Figure S16. ¹H NMR and ¹³C NMR spectra of compound 15

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(4-bromo-3-methyl-anilino)methyl]pyrazol-1-yl]benzoic acid (16).

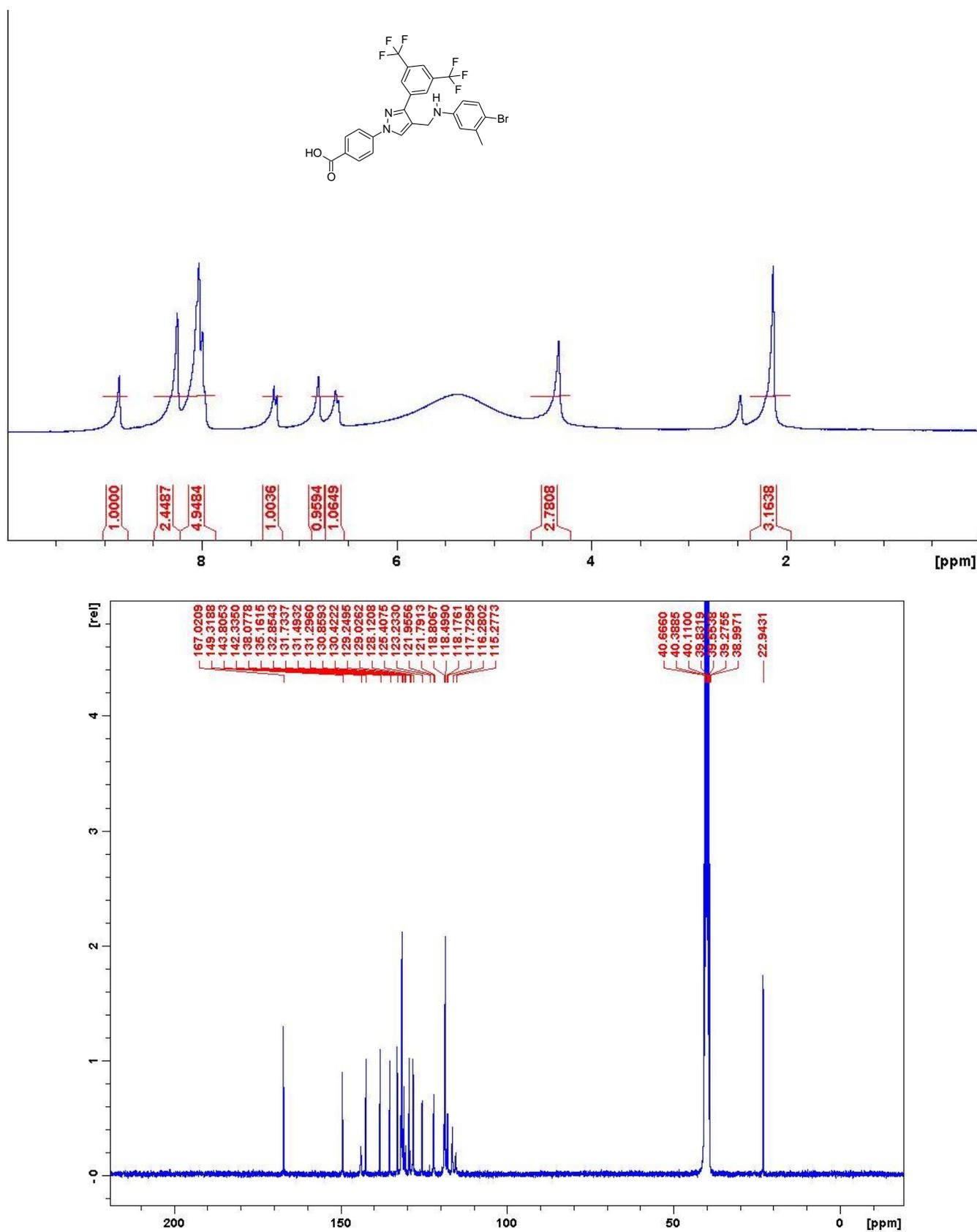


Figure S17. ¹H NMR and ¹³C NMR spectra of compound 16

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(3,4-difluoroanilino) methyl] pyrazol-1-yl] benzoic acid (17).

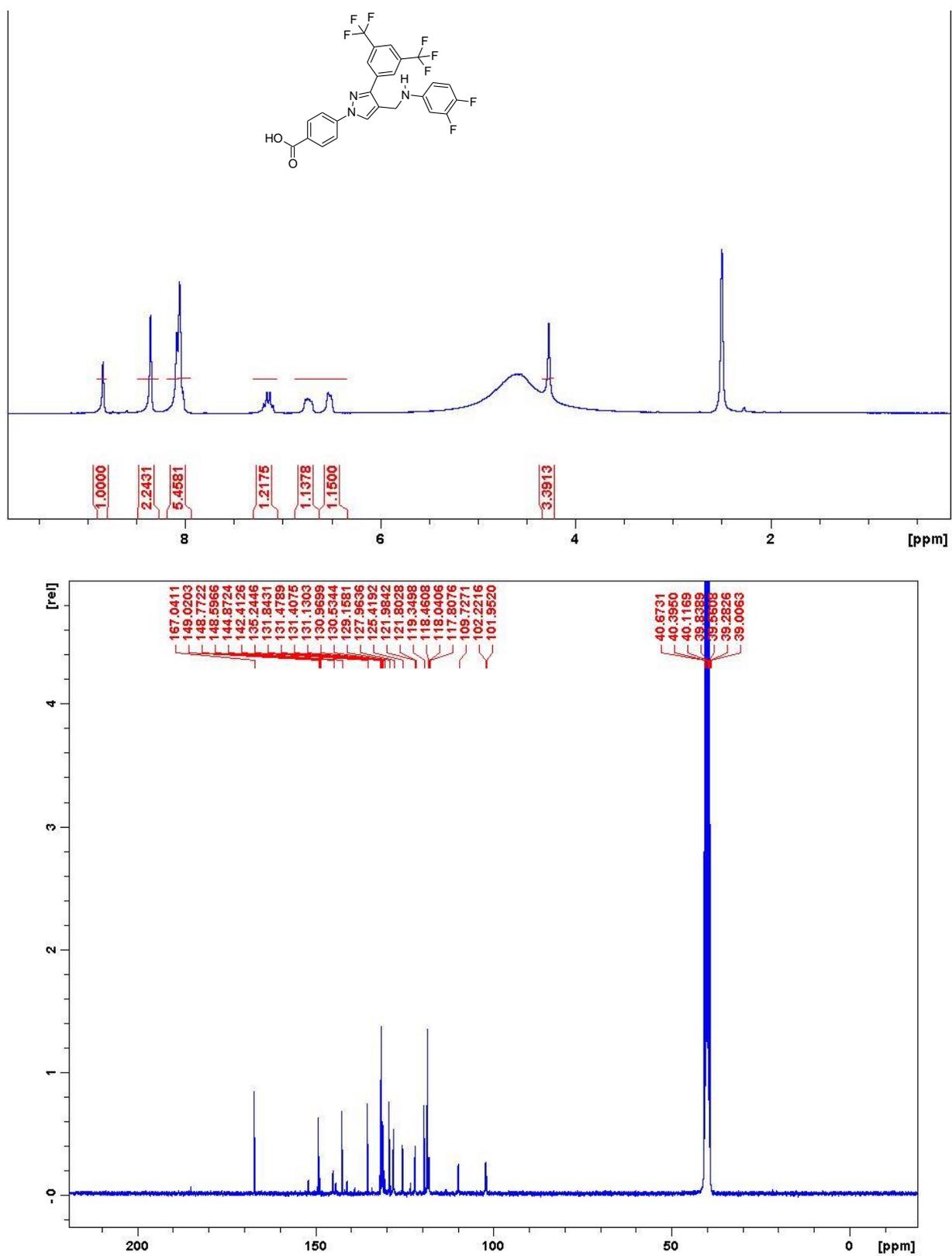


Figure S18. ¹H NMR and ¹³C NMR spectra of compound 17

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(3-chloro-4-fluoro-anilino)methyl]pyrazol-1-yl] benzoic acid (18).

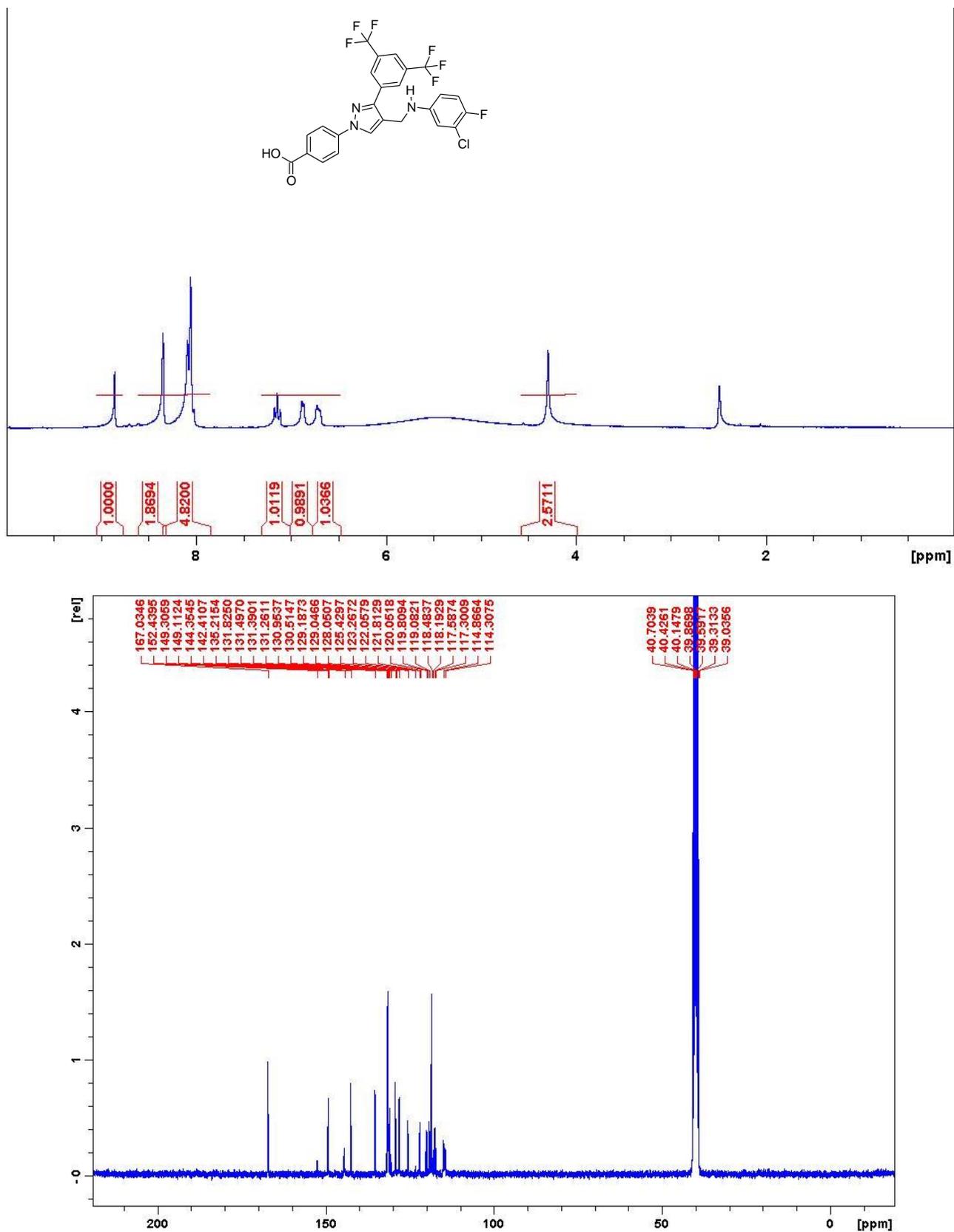


Figure S19. ^1H NMR and ^{13}C NMR spectra of compound 18

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(3,4-dichloroanilino)methyl]pyrazol-1-yl] benzoic acid (19).

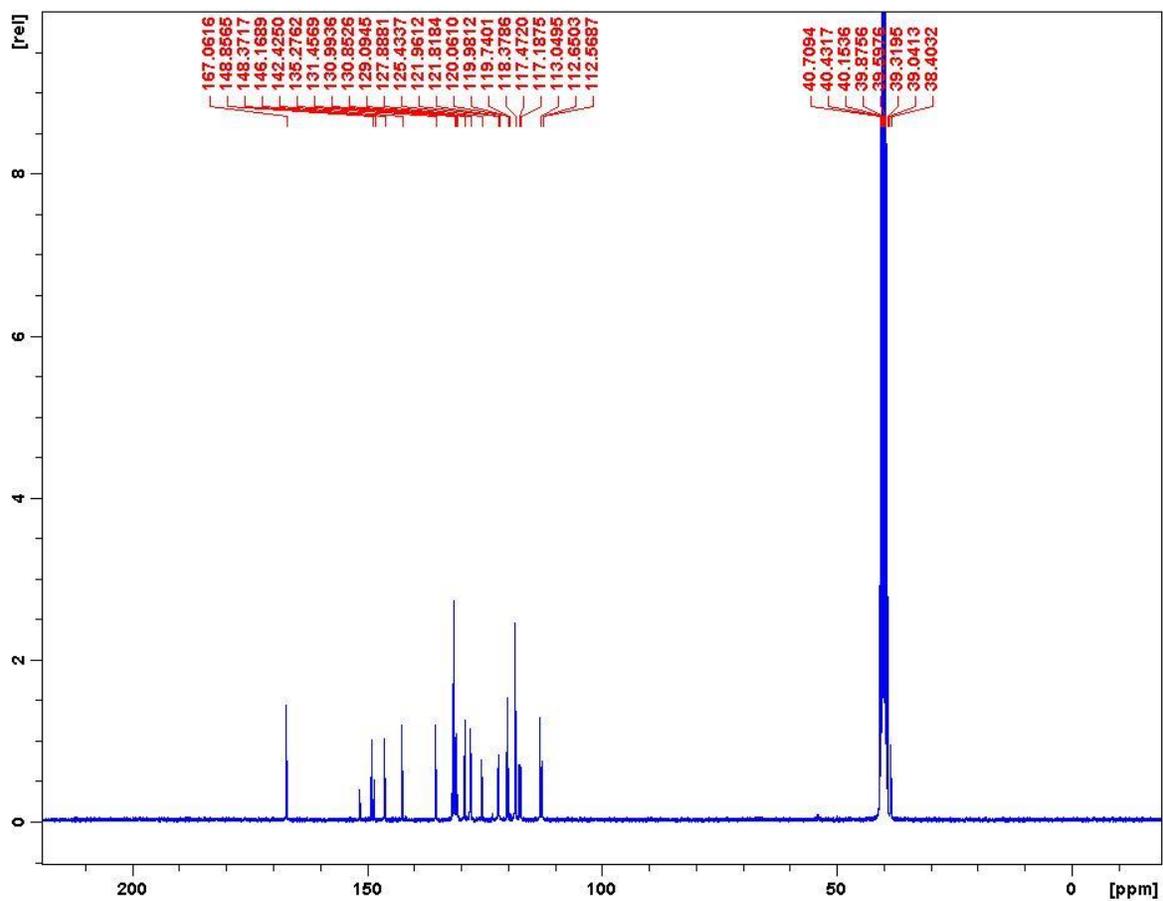
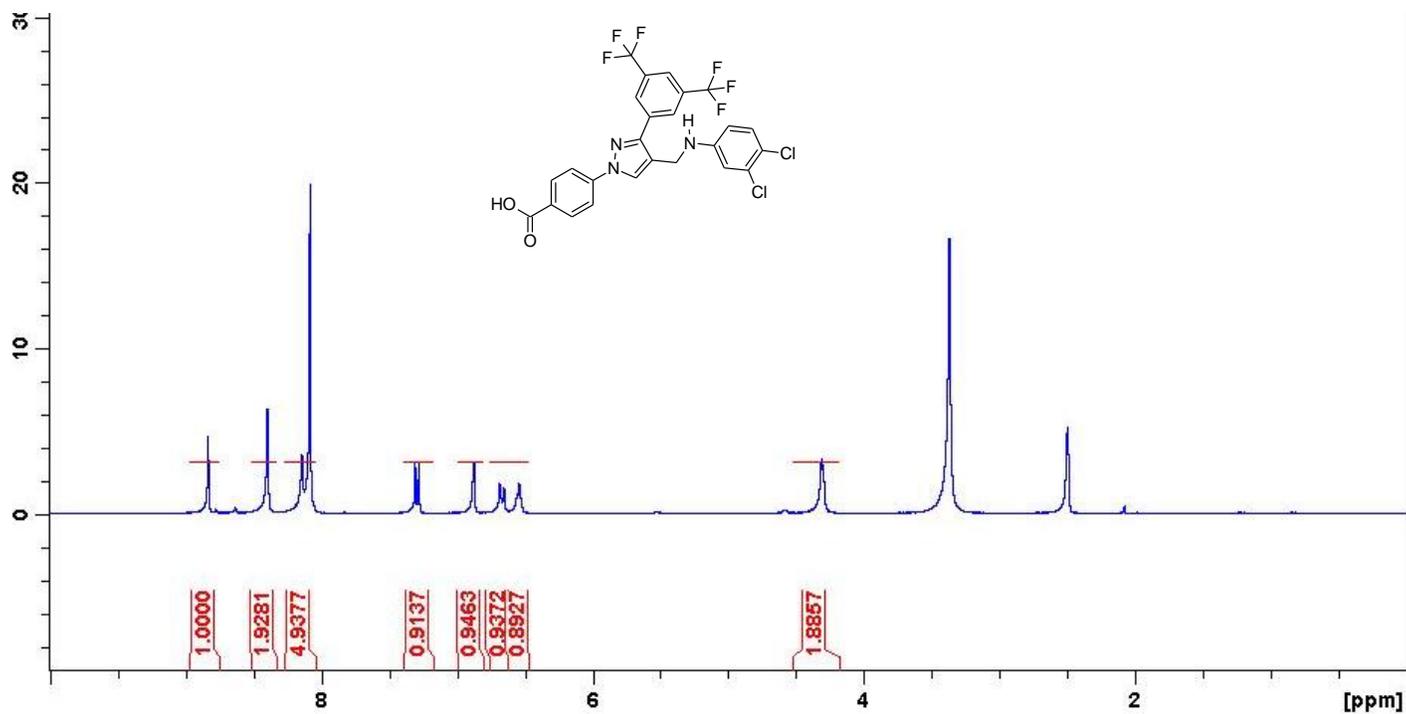


Figure S20. ^1H NMR and ^{13}C NMR spectra of compound 19

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(3,5-dichloroanilino) methyl] pyrazol-1-yl] benzoic acid (20).

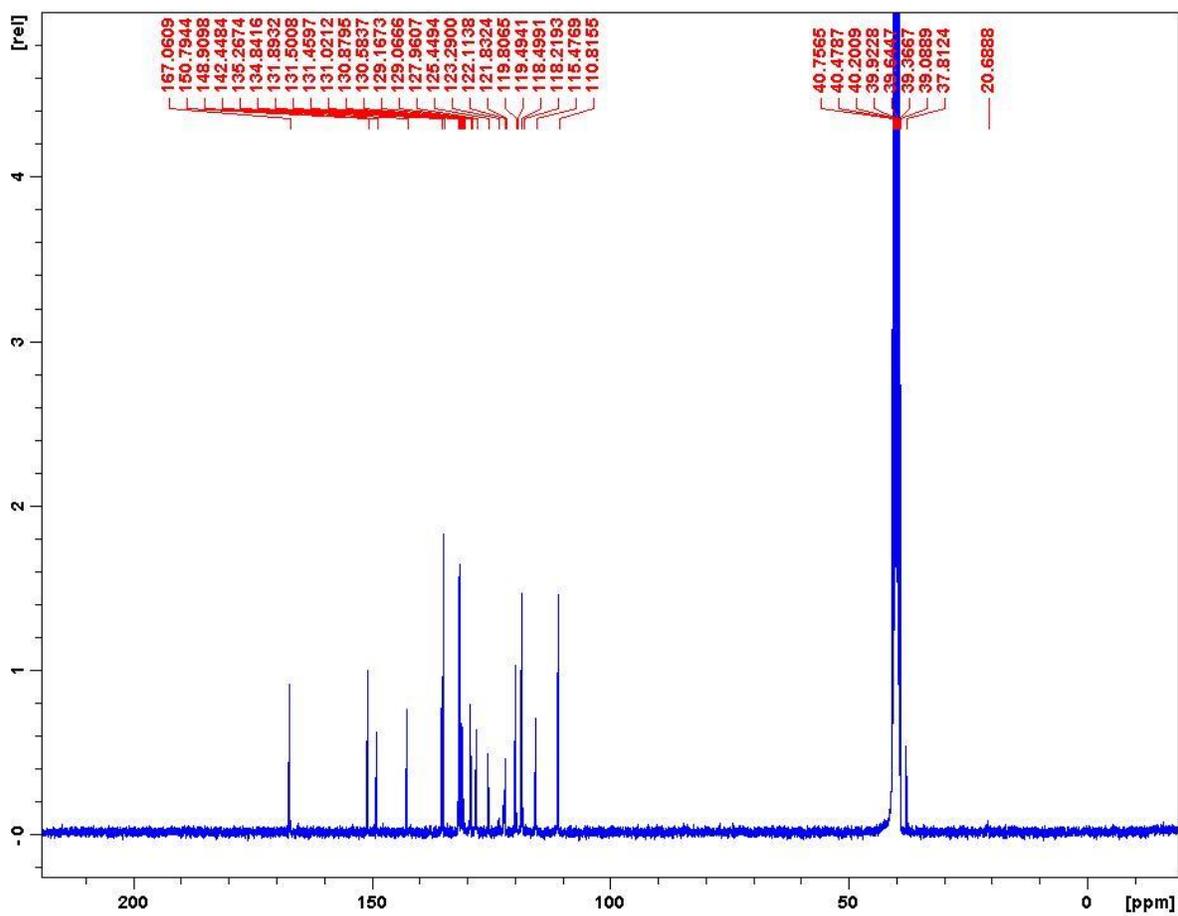
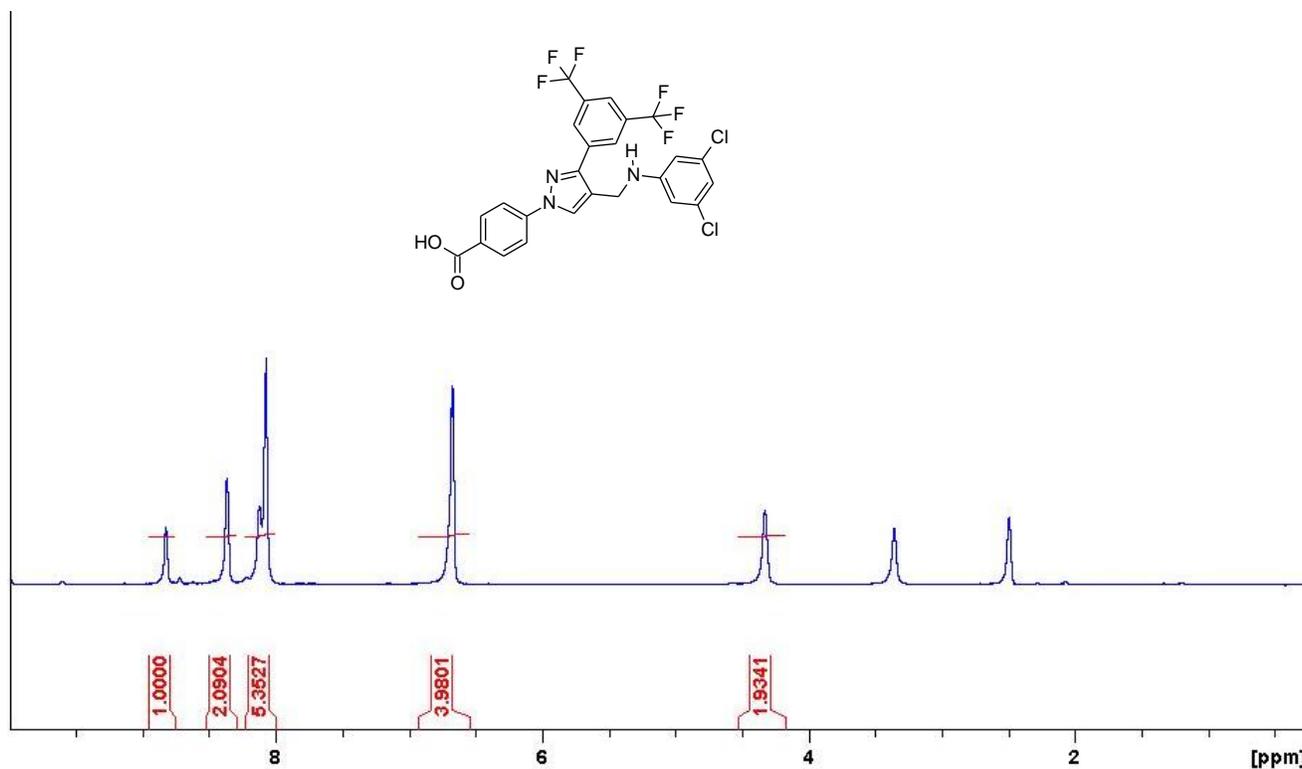


Figure S21. ¹H NMR and ¹³C NMR spectra of compound 20

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(4-bromo-3-chloro-anilino)methyl]pyrazol-1-yl]benzoic acid (21).

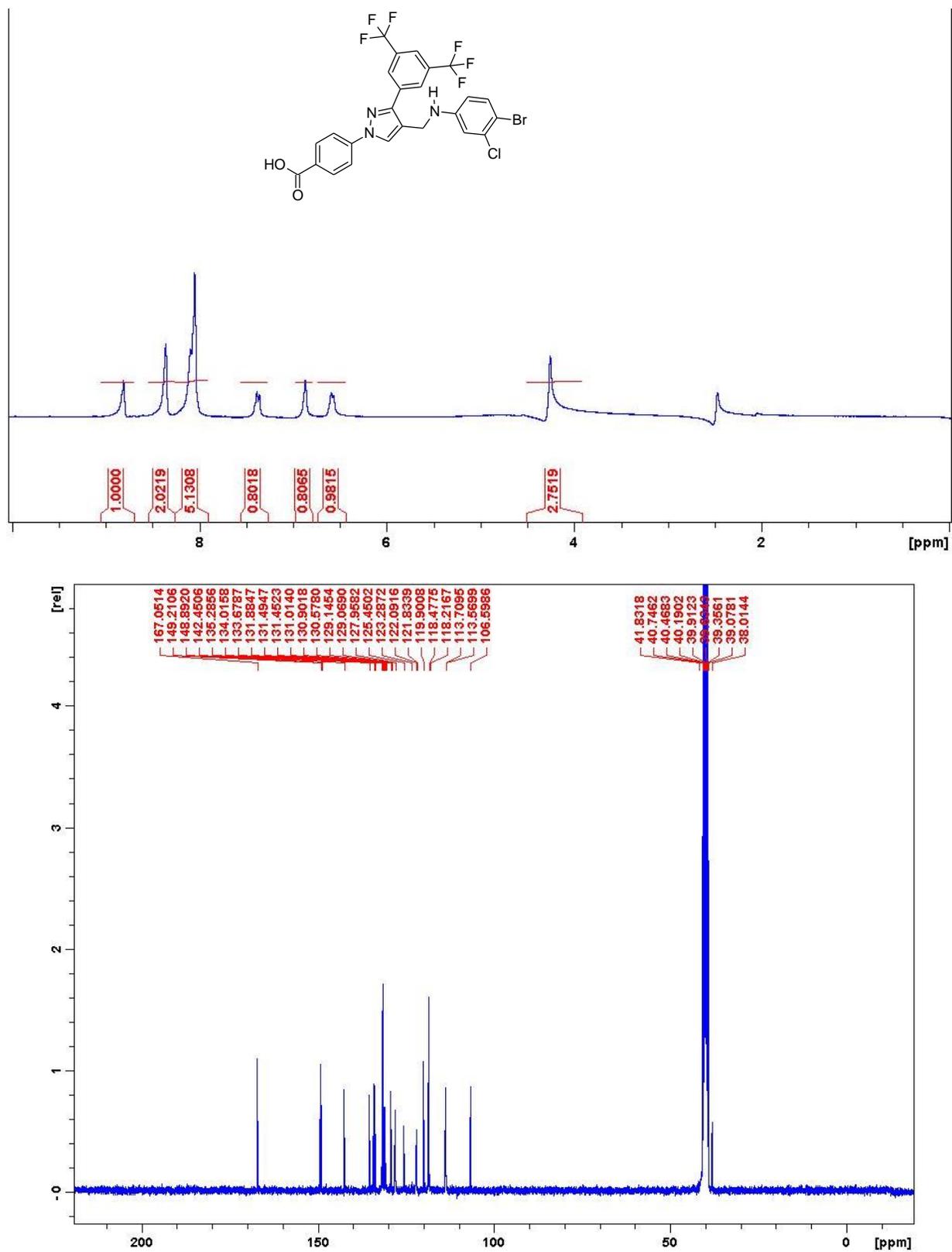


Figure S22. ¹H NMR and ¹³C NMR spectra of compound 21

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[[4-fluoro-3-(trifluoromethyl)anilino]methyl]pyrazol-1-yl] benzoic acid (22).

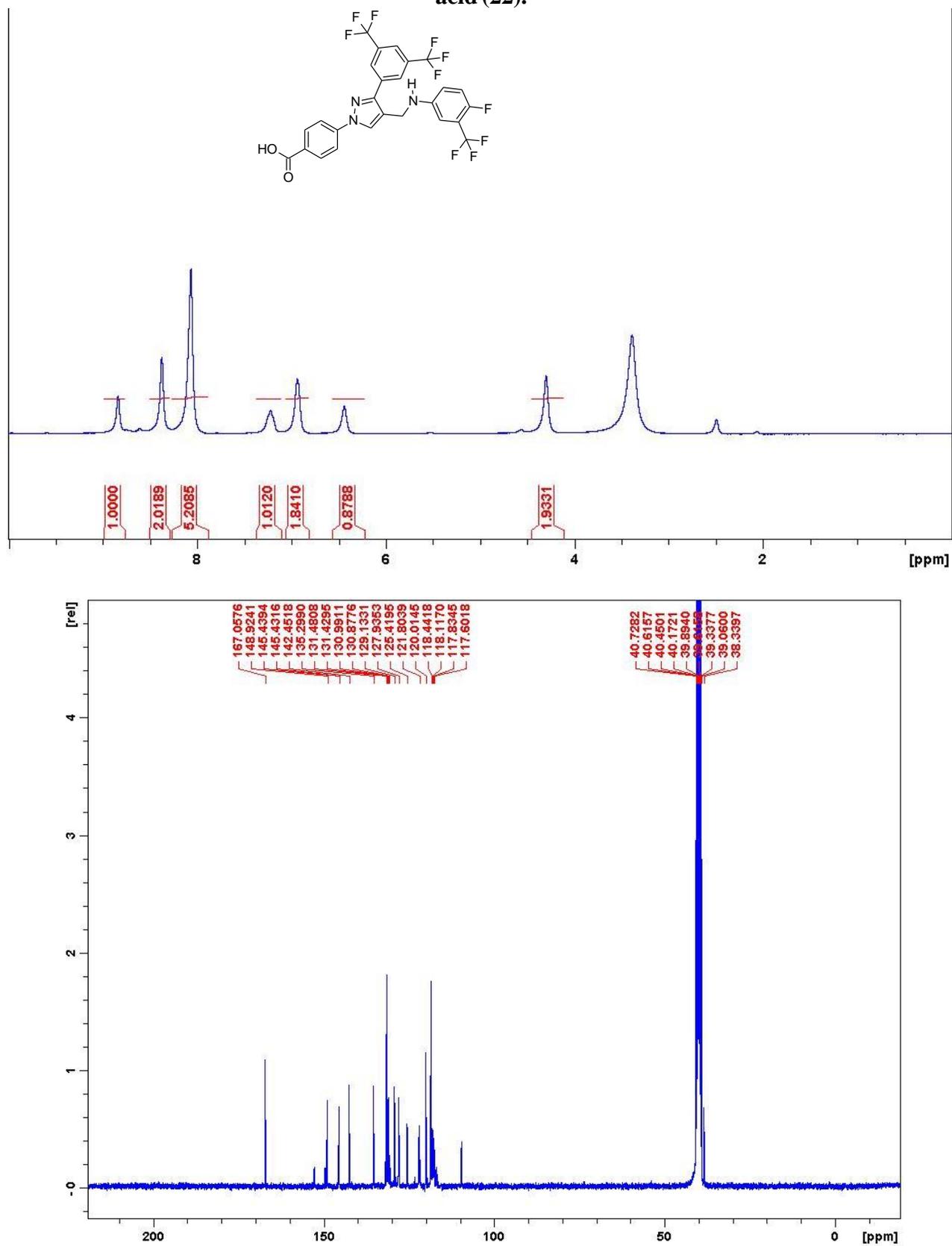


Figure S23. ¹H NMR and ¹³C NMR spectra of compound 22

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[[4-bromo-3-(trifluoromethyl)anilino]methyl]pyrazol-1-yl] benzoic acid (23).

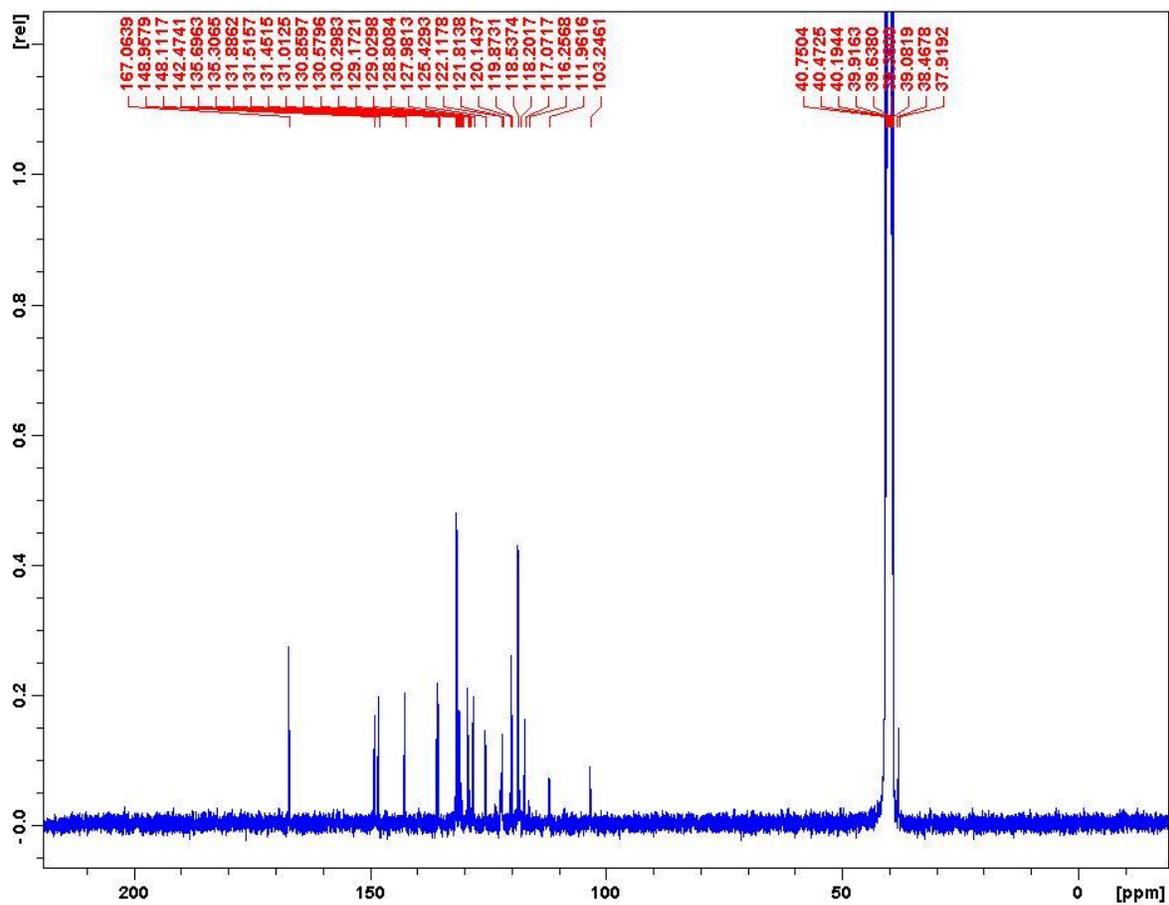
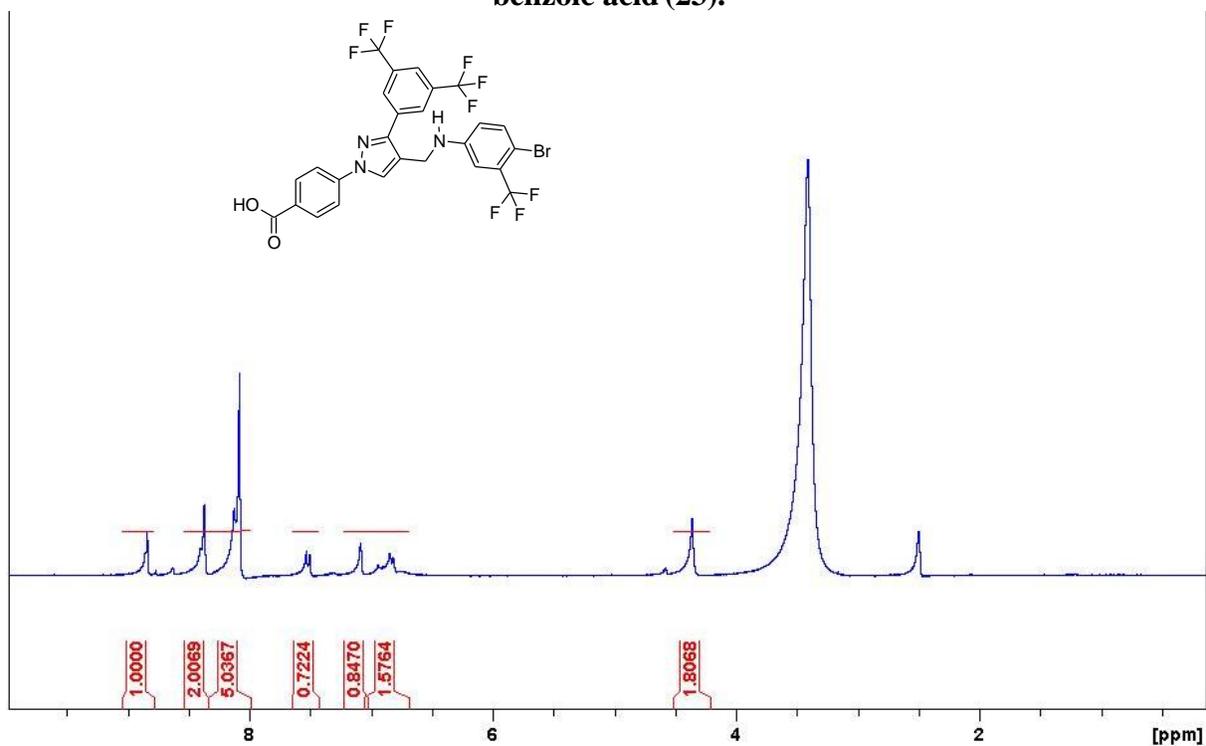


Figure S24. ¹H NMR and ¹³C NMR spectra of compound 23

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(2,3,4-trifluoroanilino) methyl] pyrazol-1-yl] benzoic acid (24).

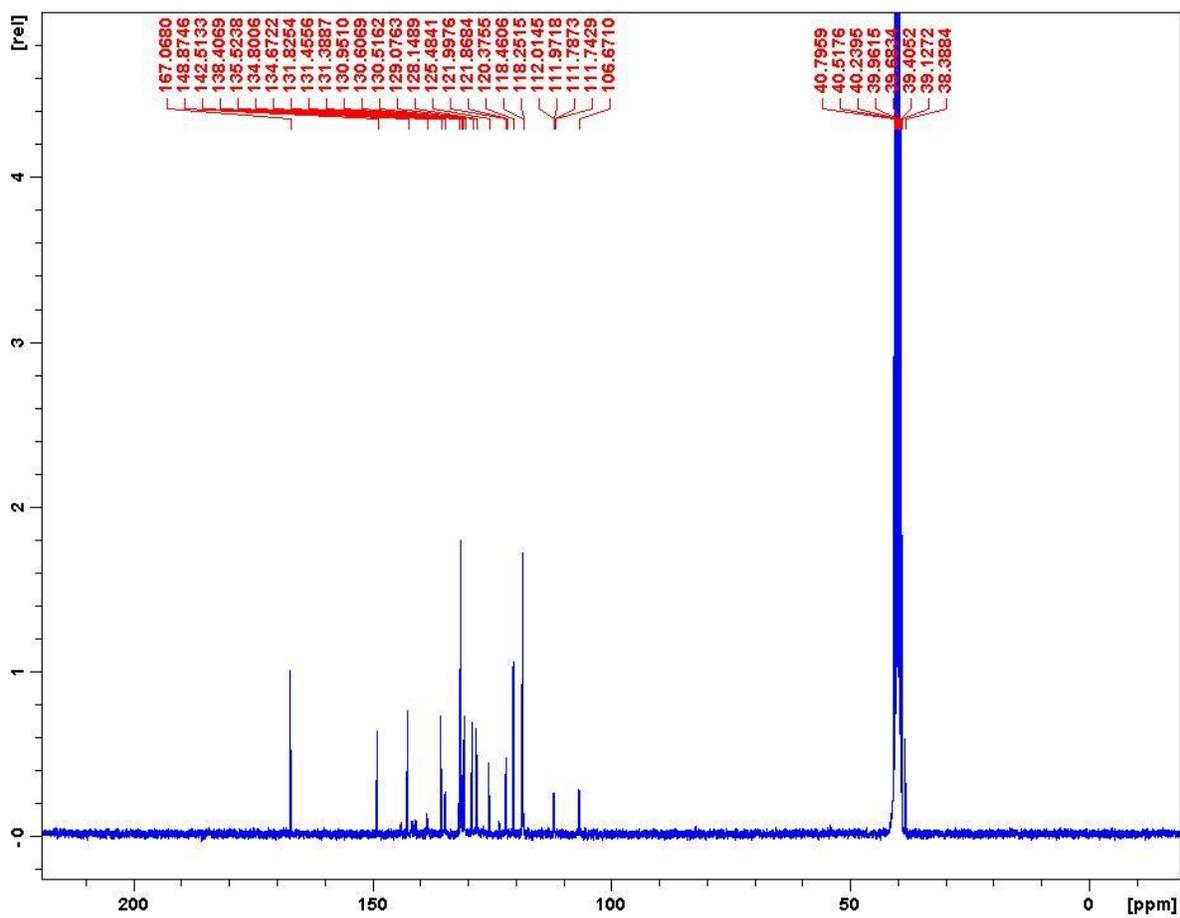
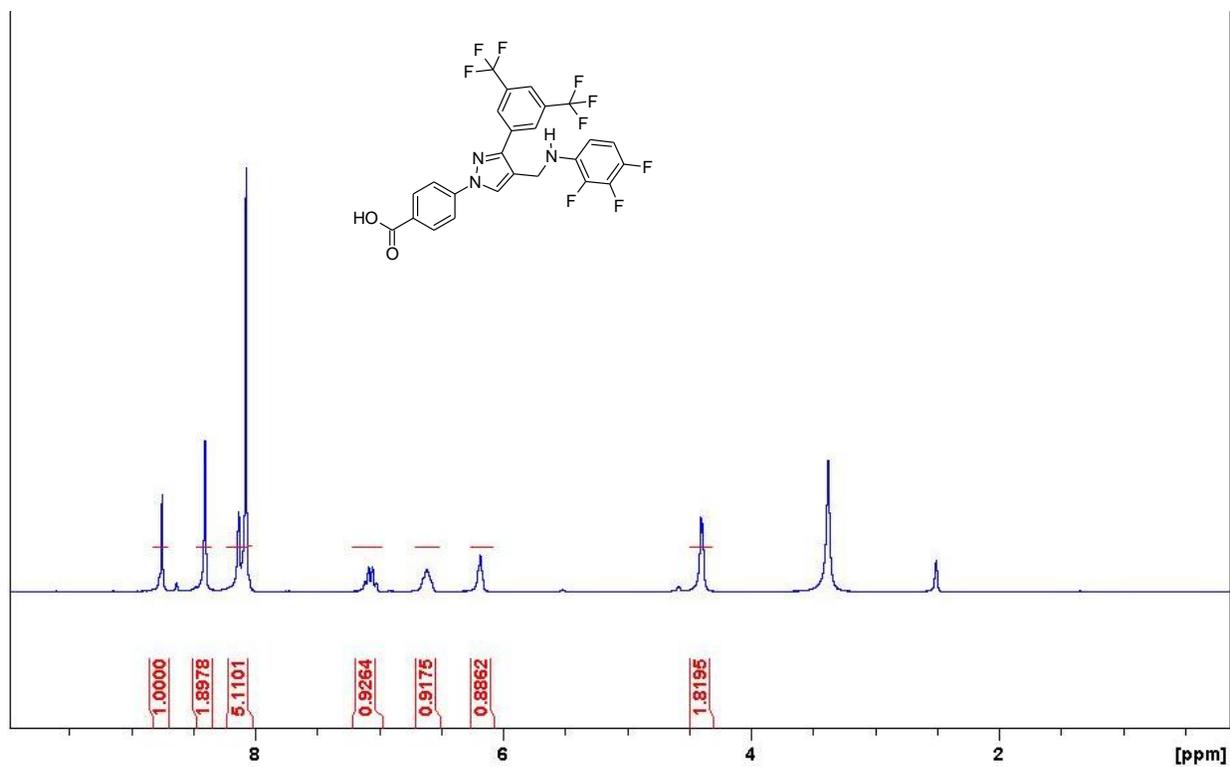


Figure S25. ¹H NMR and ¹³C NMR spectra of compound 24

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(3,4,5-trifluoroanilino) methyl]pyrazol-1-yl]benzoic acid (25).

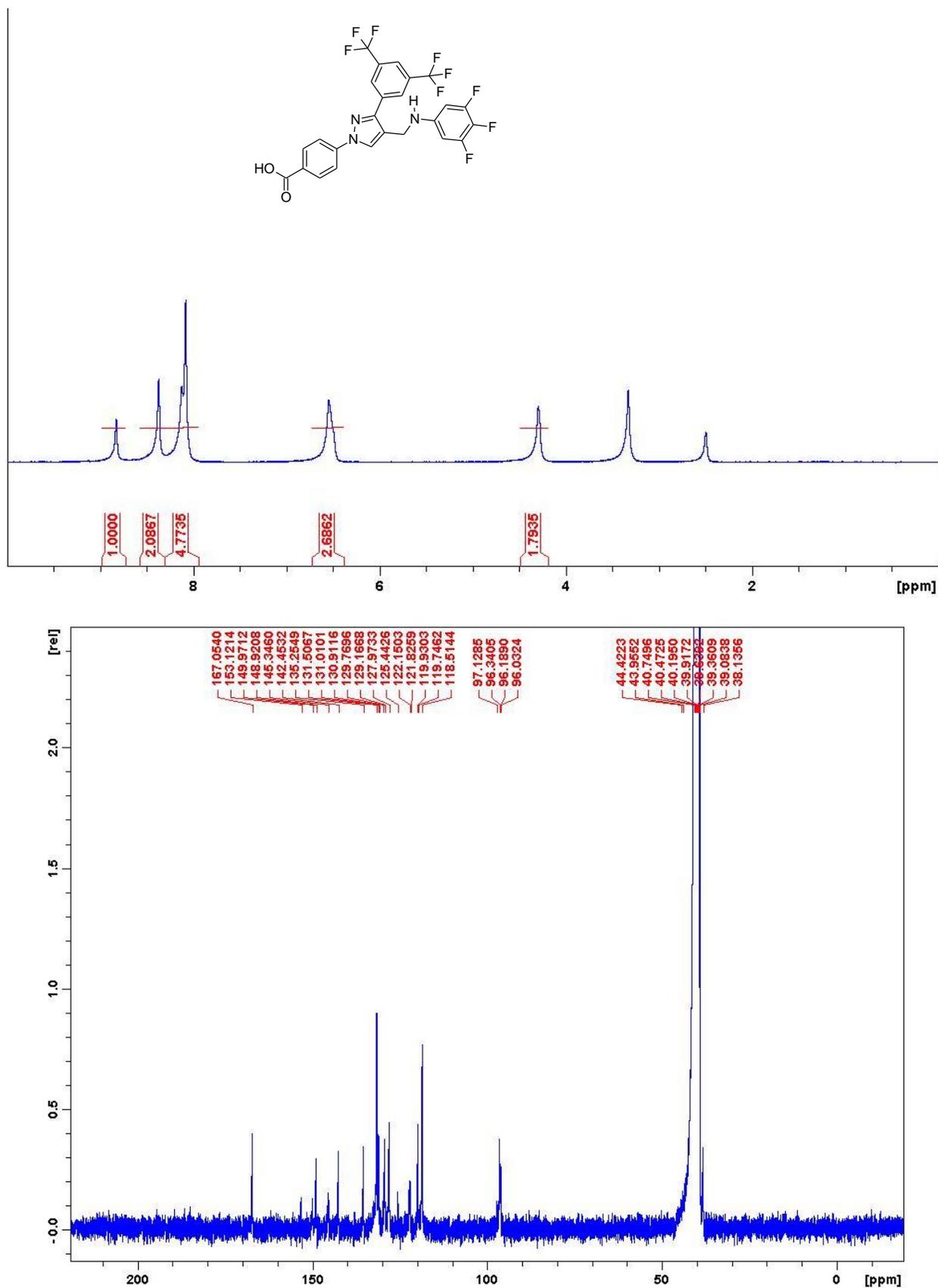


Figure S26. ¹H NMR and ¹³C NMR spectra of compound 25

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(5-chloro-2,4-difluoro-anilino) methyl]pyrazol-1-yl] benzoic acid (26).

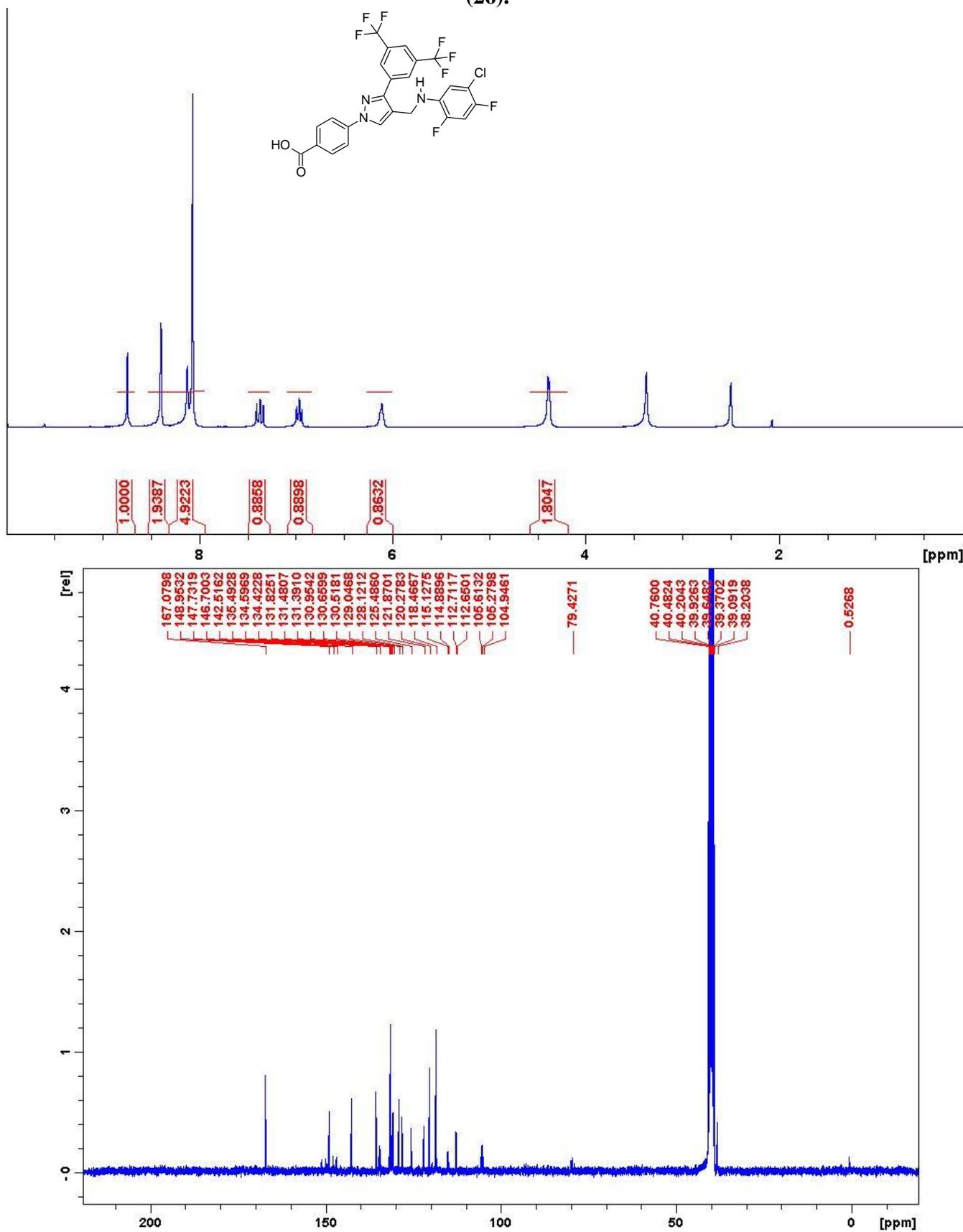


Figure S27. ¹H NMR and ¹³C NMR spectra of compound 26

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(3-chloro-2,4-difluoro-anilino) methyl] pyrazol-1-yl] benzoic acid (27).

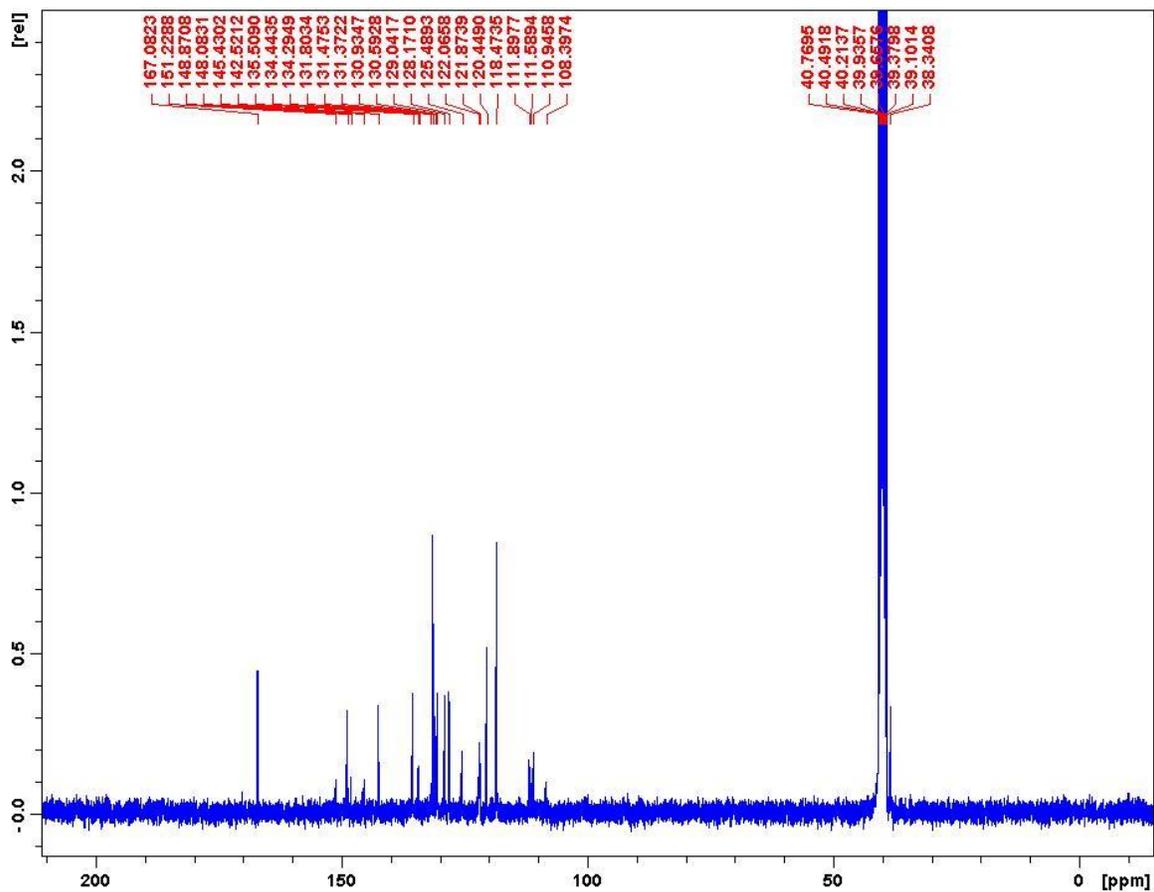
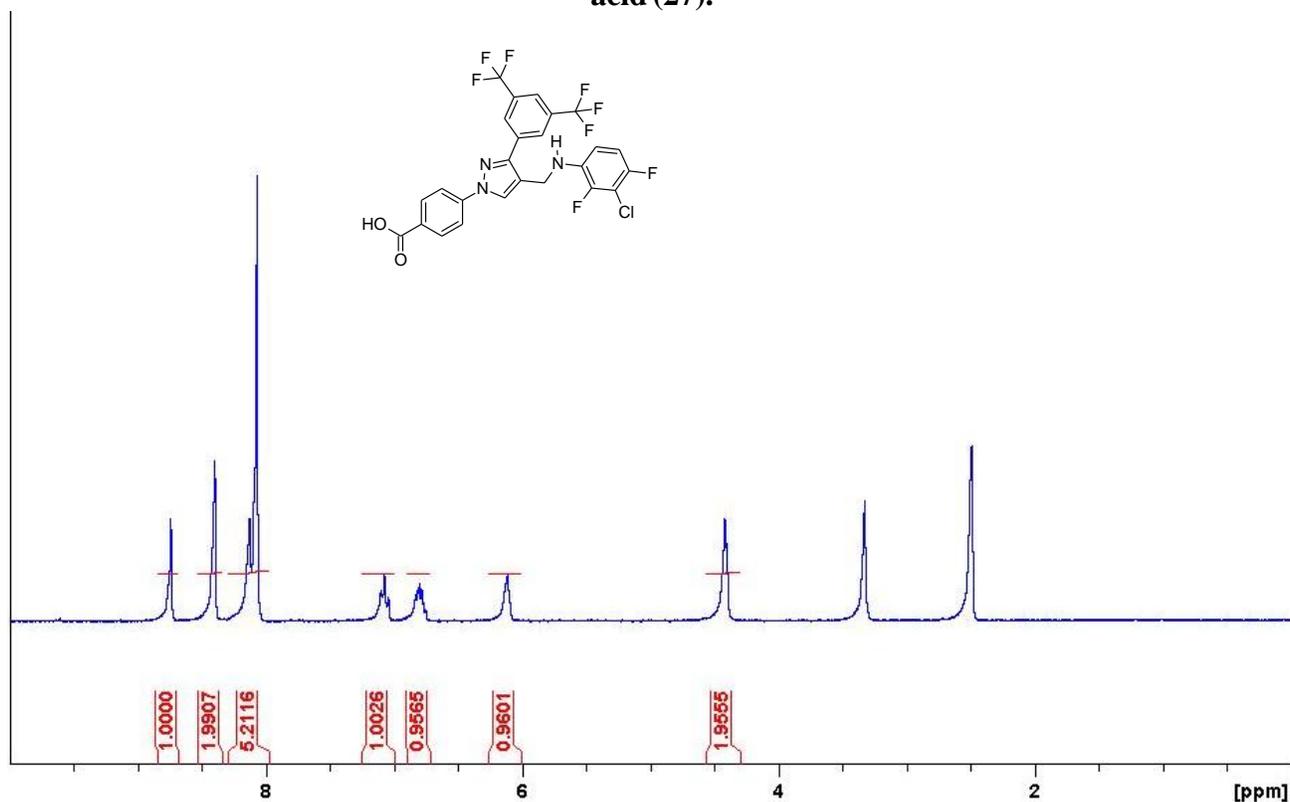


Figure S28. ¹H NMR and ¹³C NMR spectra of compound 27

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(3,5-dichloro-4-fluoro-anilino)methyl]pyrazol-1-yl]benzoic acid (28).

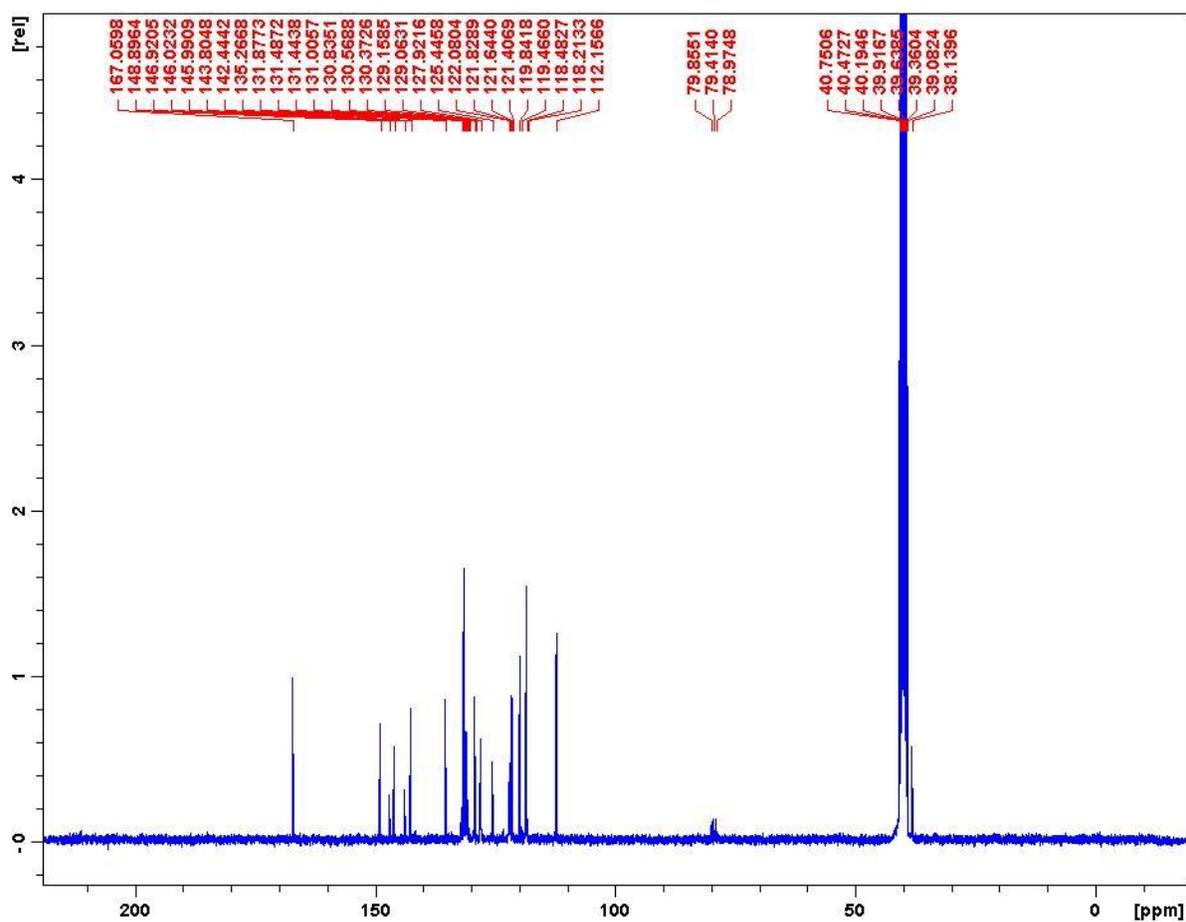
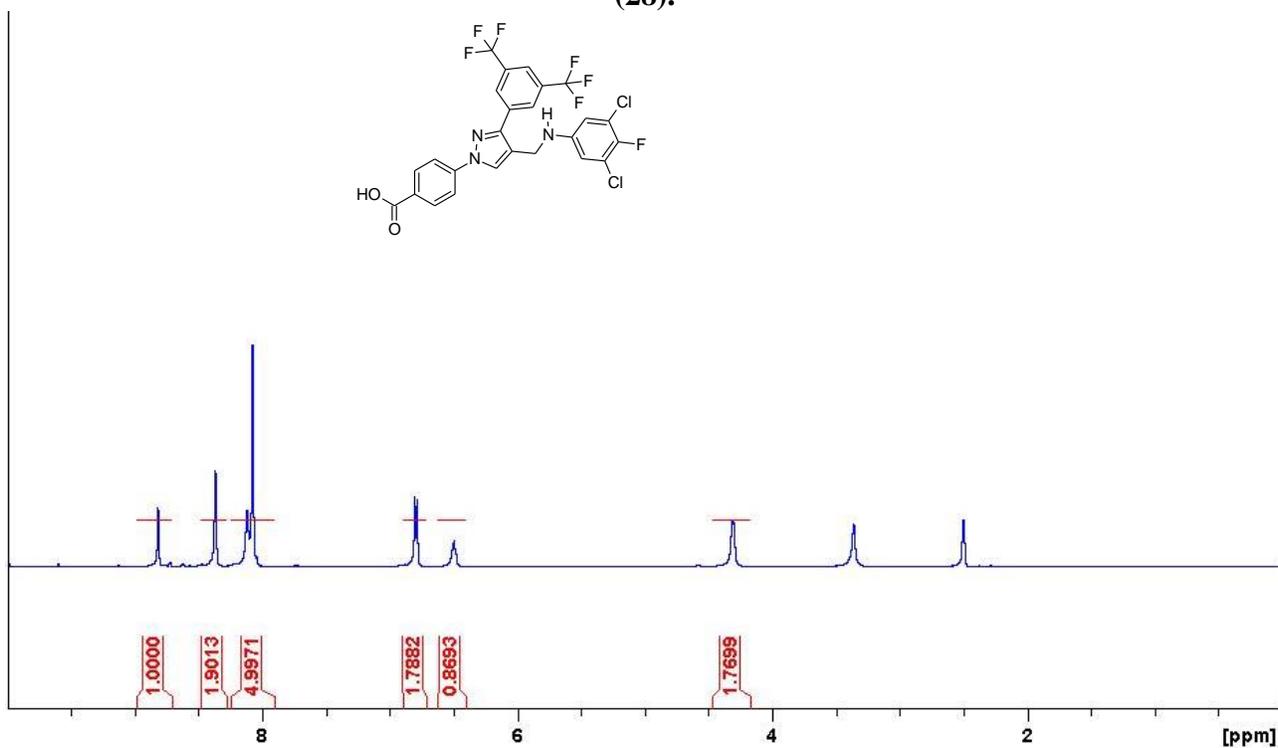


Figure S29. ¹H NMR and ¹³C NMR spectra of compound 28

4-[3-[3,5-Bis(trifluoromethyl) phenyl]-4-[(4-bromo-3-chloro-2-fluoro-anilino)methyl]pyrazol-1-yl] benzoic acid (29).

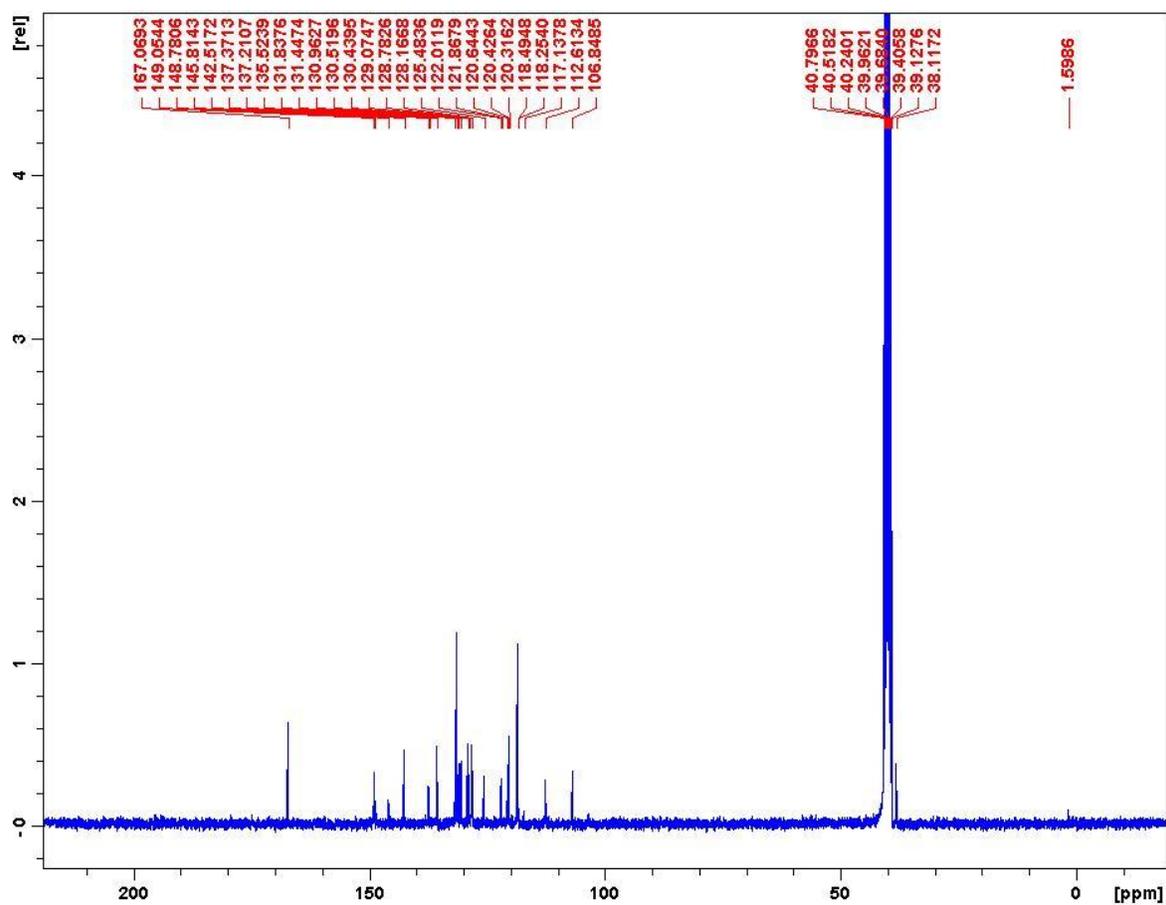
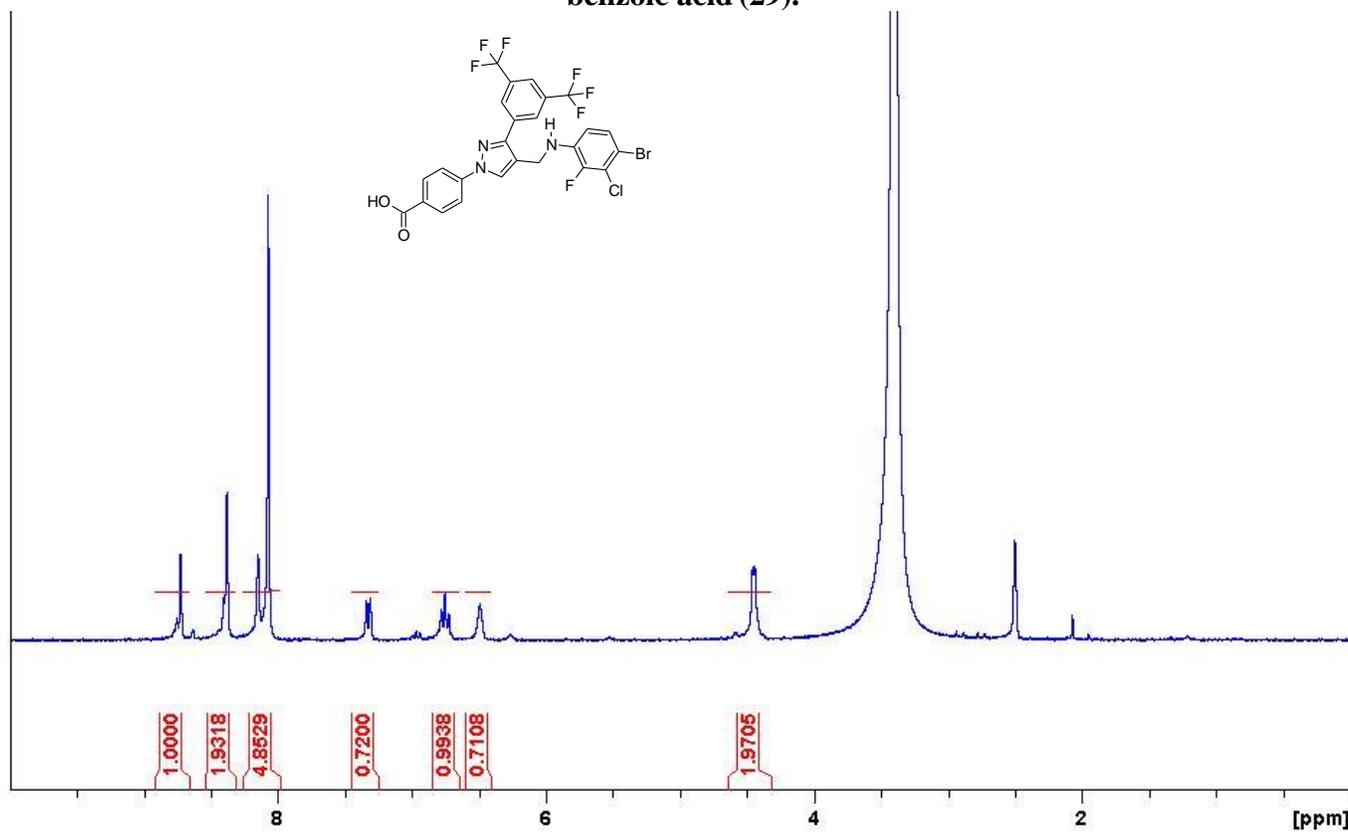


Figure S30. ¹H NMR and ¹³C NMR spectra of compound 29

4-[3-[3,5-Bis(trifluoromethyl)phenyl]-4-[(3,5-dichloro-2,4-difluoro-anilino)methyl] pyrazol-1-yl] benzoic acid (30).

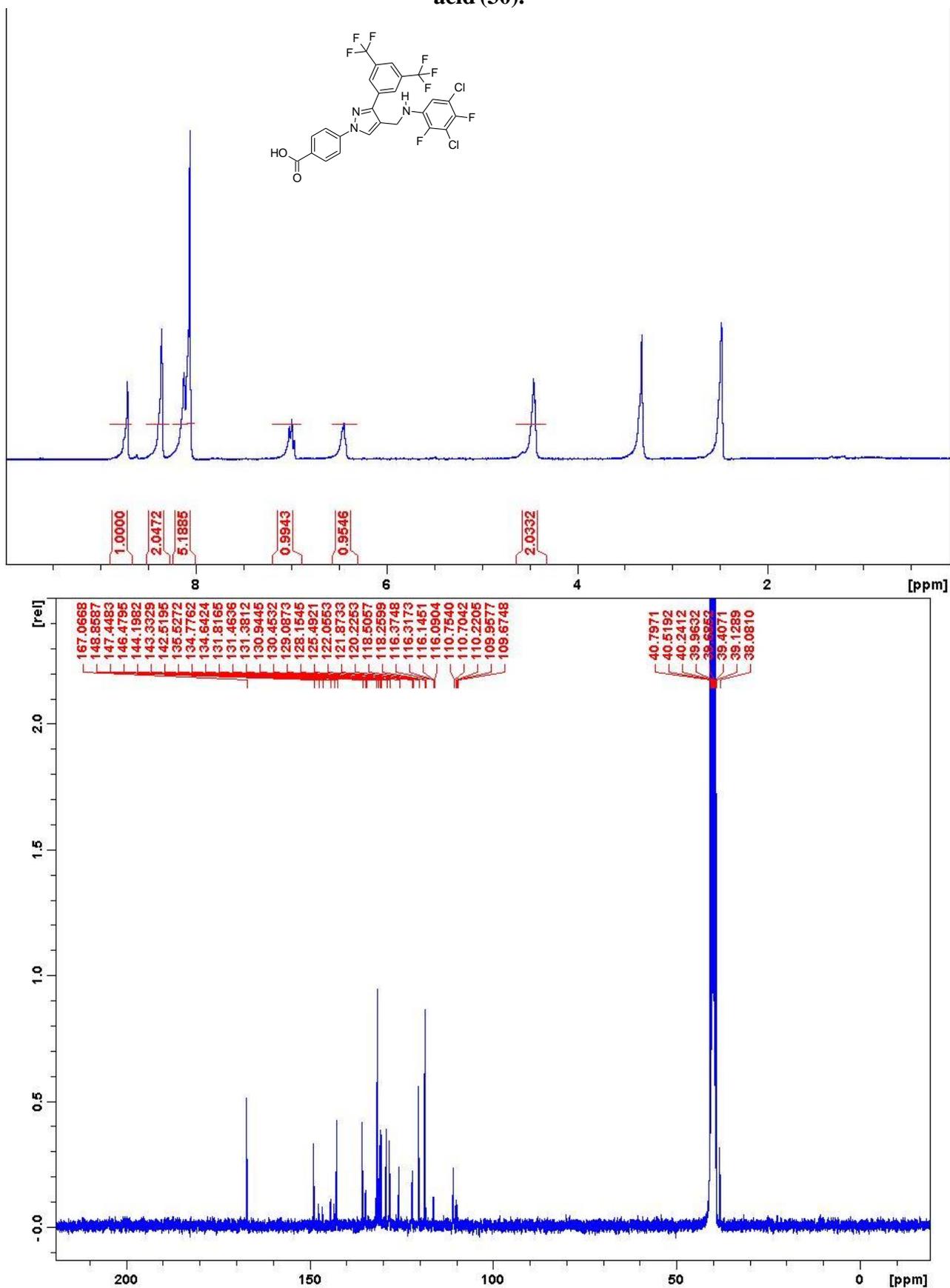


Figure S31. ¹H NMR and ¹³C NMR spectra of compound 30