

Supplementary Information

New In/SiO₂ composite catalyst in the solvent-free multicomponent synthesis of Ca²⁺ channel blockers Nifedipine and Nemadipine B.

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1. Characterization of the In/SiO₂ Composite

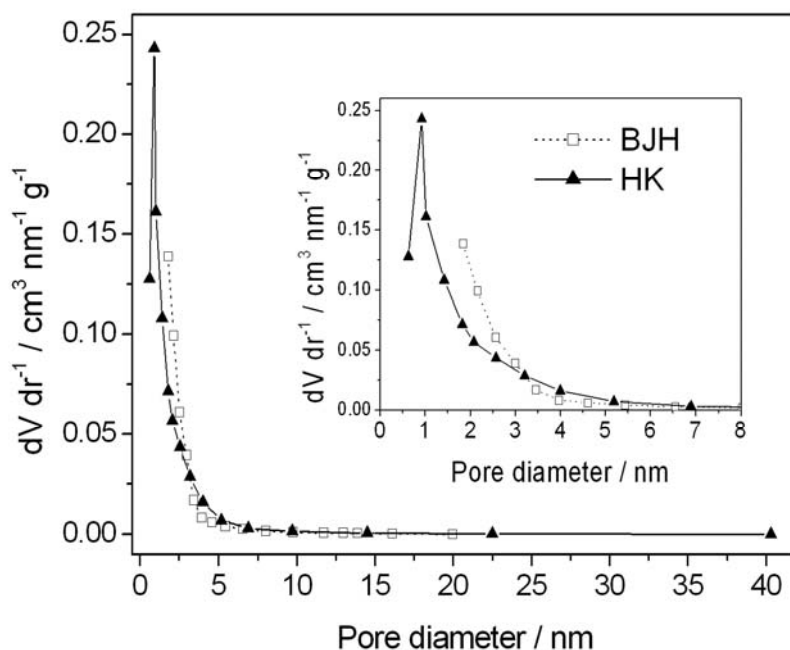


Figure S1. Comparison of pore size distribution curves of In/SiO₂ composite, obtained from BJH(Barret, Joyner and Halenda) method and from HK (Horvath Kawazoe) method.

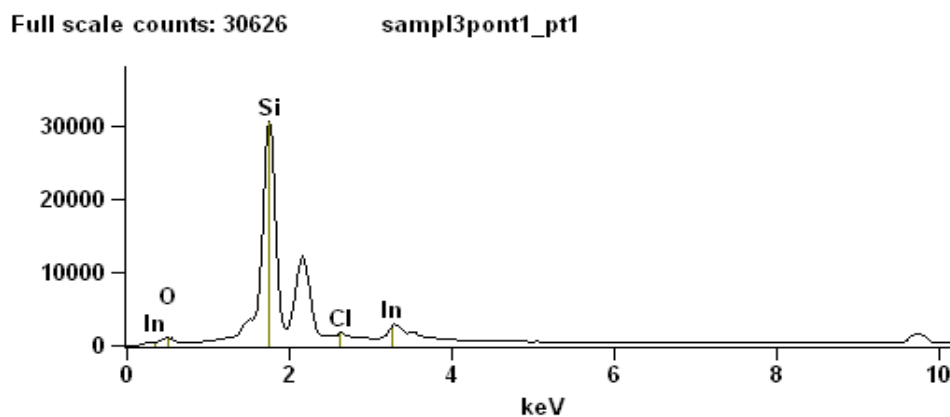


Figure S2. EDS (Energy Dispersive Spectroscopy) of a In/SiO₂ sample.

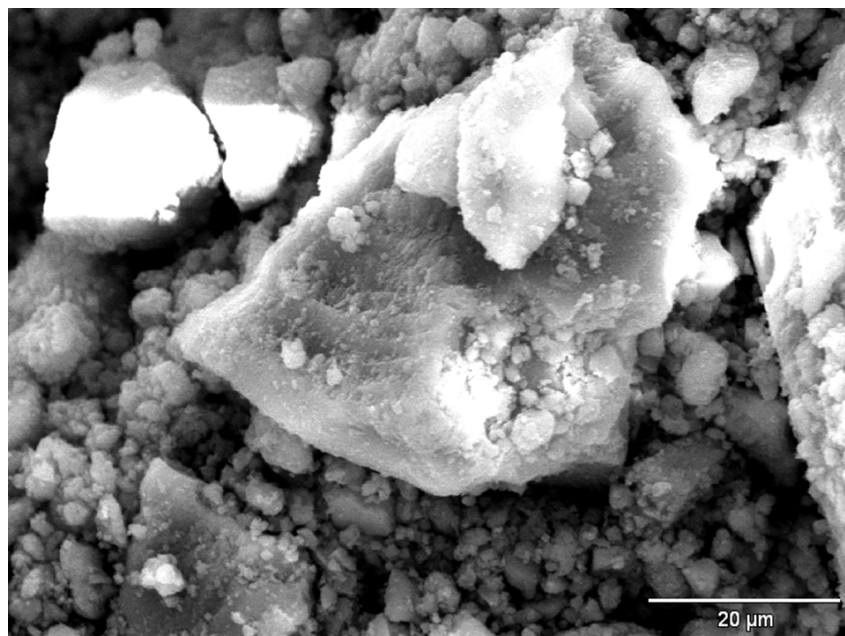


Figure S3. SEM (Scanning Electron Microscopy) image of In/SiO₂ composite, obtained with 1000x of magnification.



Figure S4. Pictures of In/SiO₂ composite as xerogel monolith and powder forms.

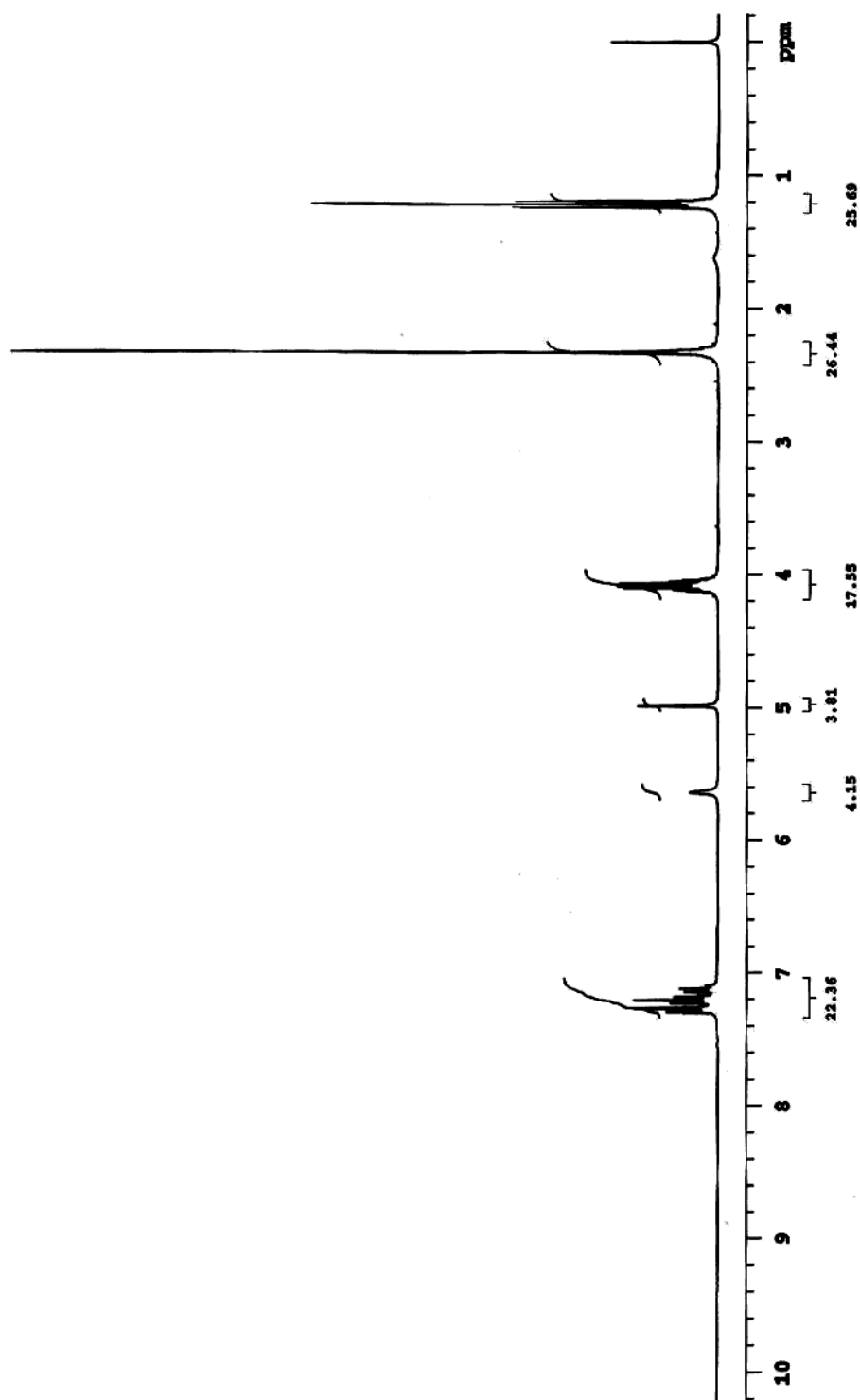


Figure S5. ^1H NMR (300 MHz, CDCl_3) - Compound 12a

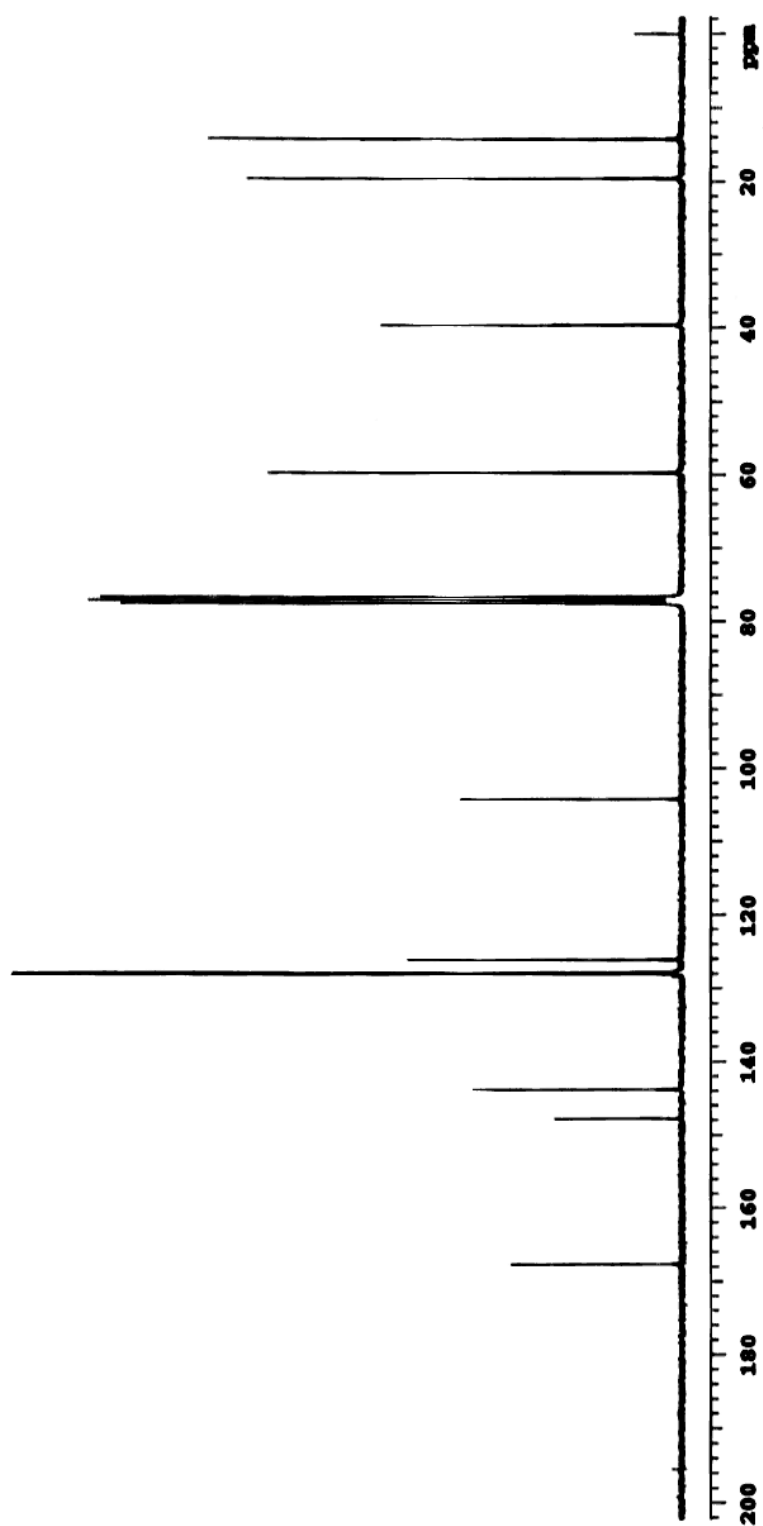


Figura S6. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12a

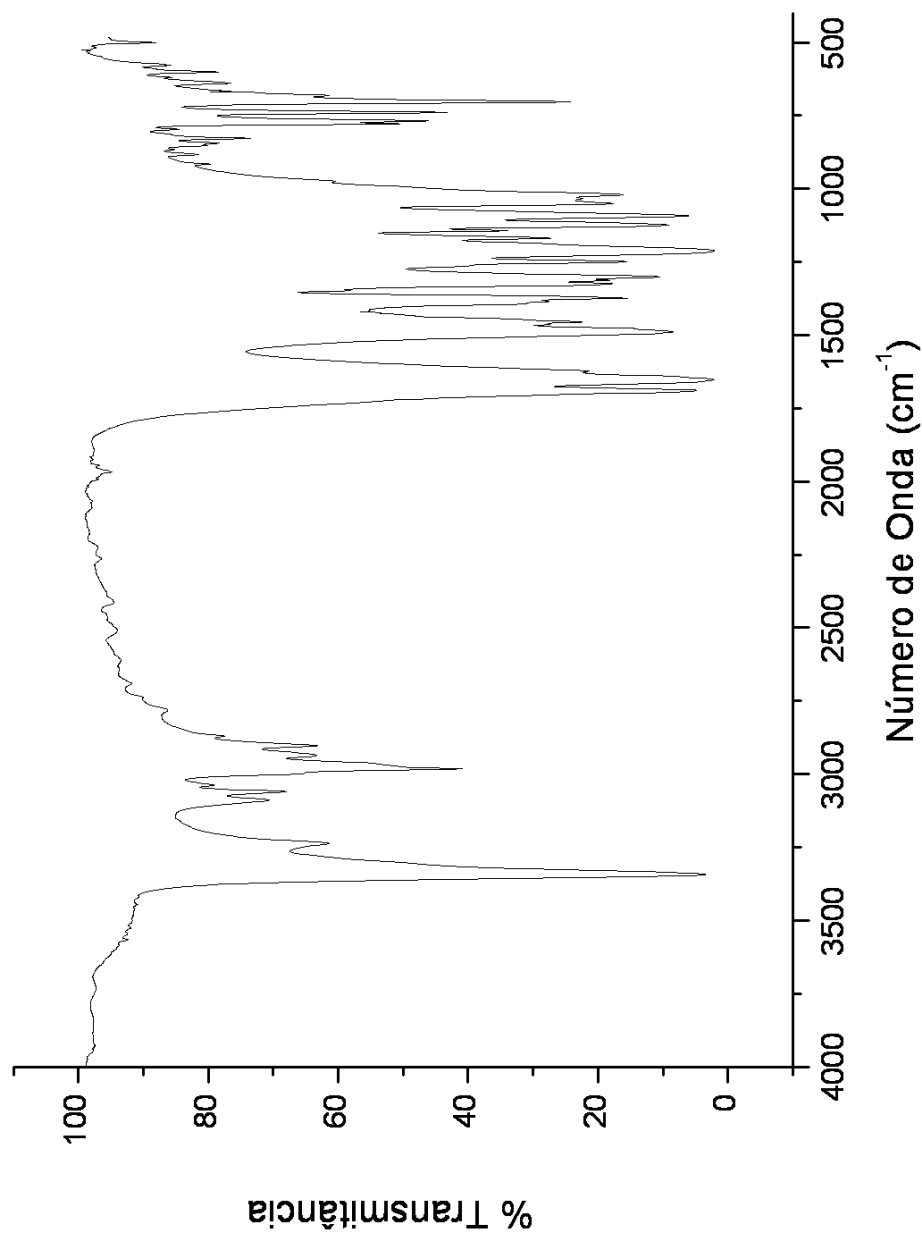


Figure S7. IR (KBr, cm⁻¹) – Compound **12a**

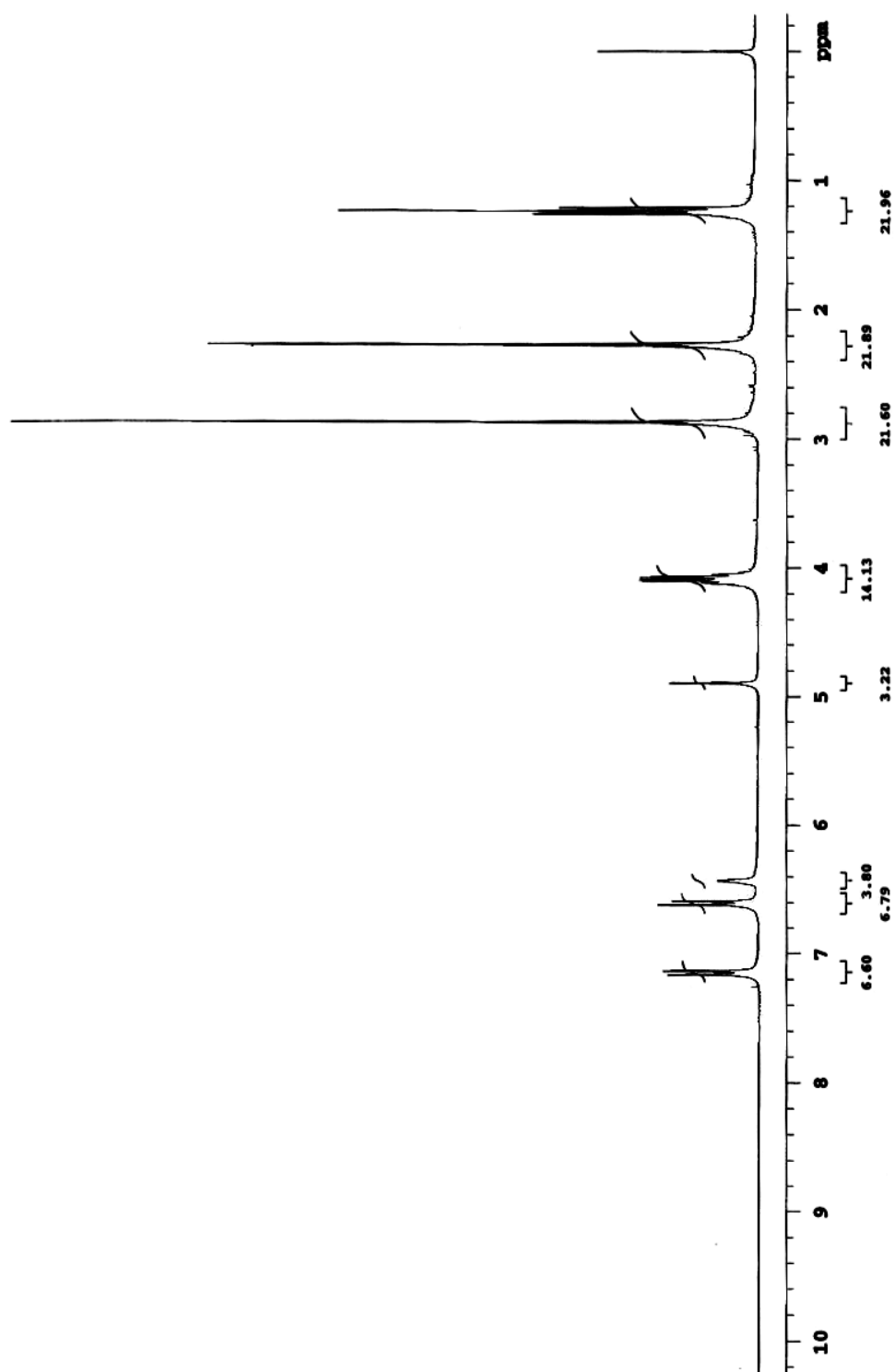


Figure S8. ^1H NMR (300 MHz, CDCl_3) - Compound 12b

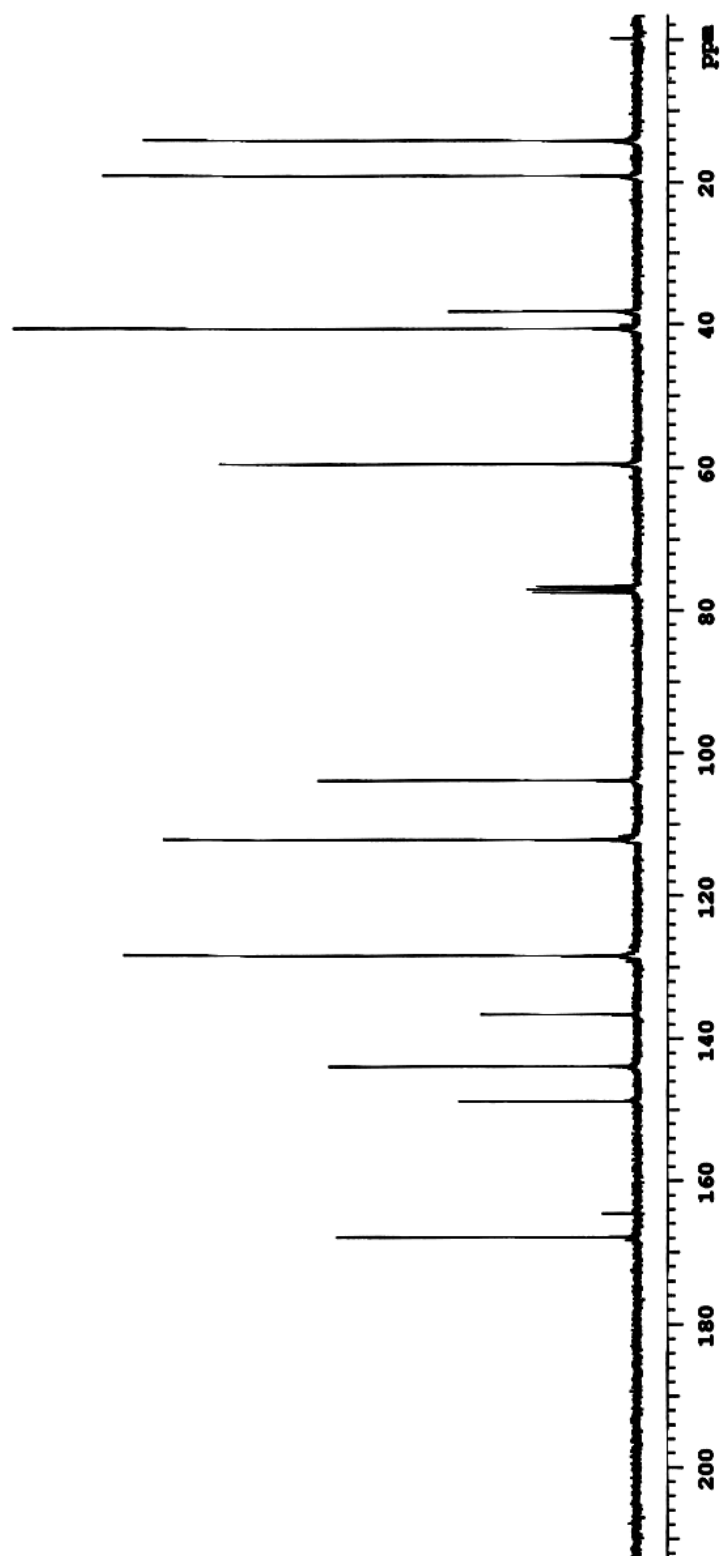


Figura S9. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12b

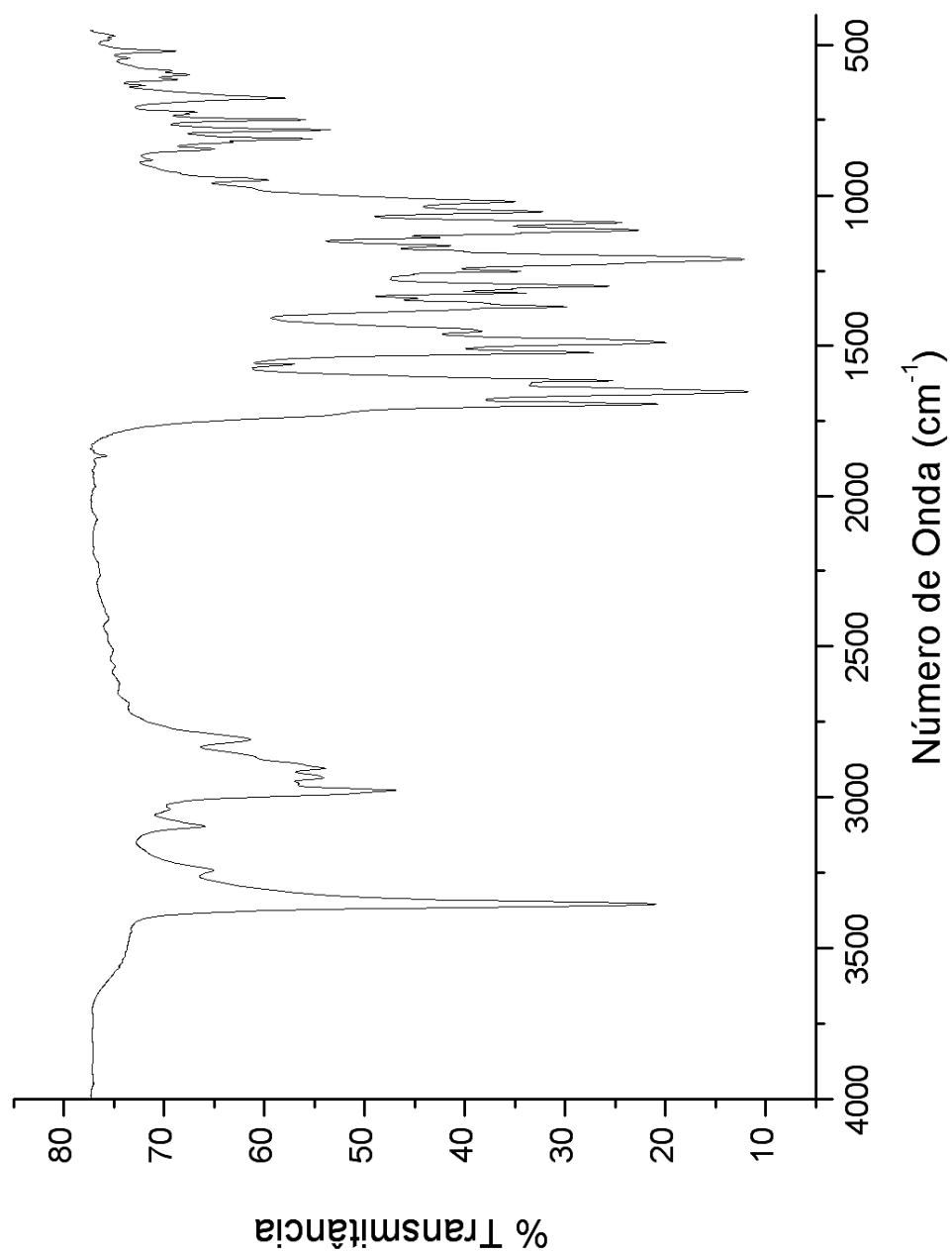


Figure S10. IR (KBr, cm⁻¹) – Compound **12b**

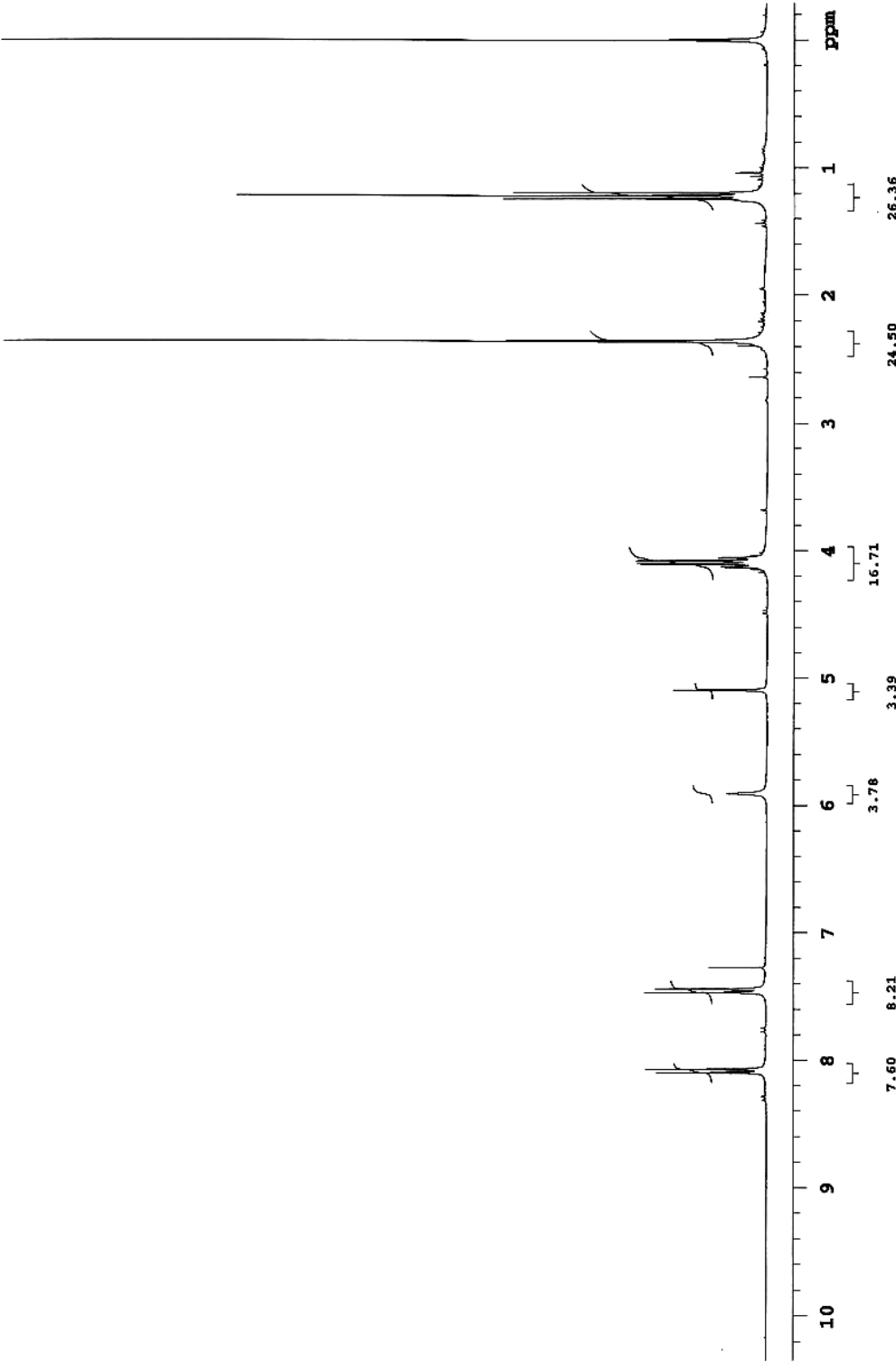


Figure S11. ^1H NMR (300 MHz, CDCl_3) - Compound 12c

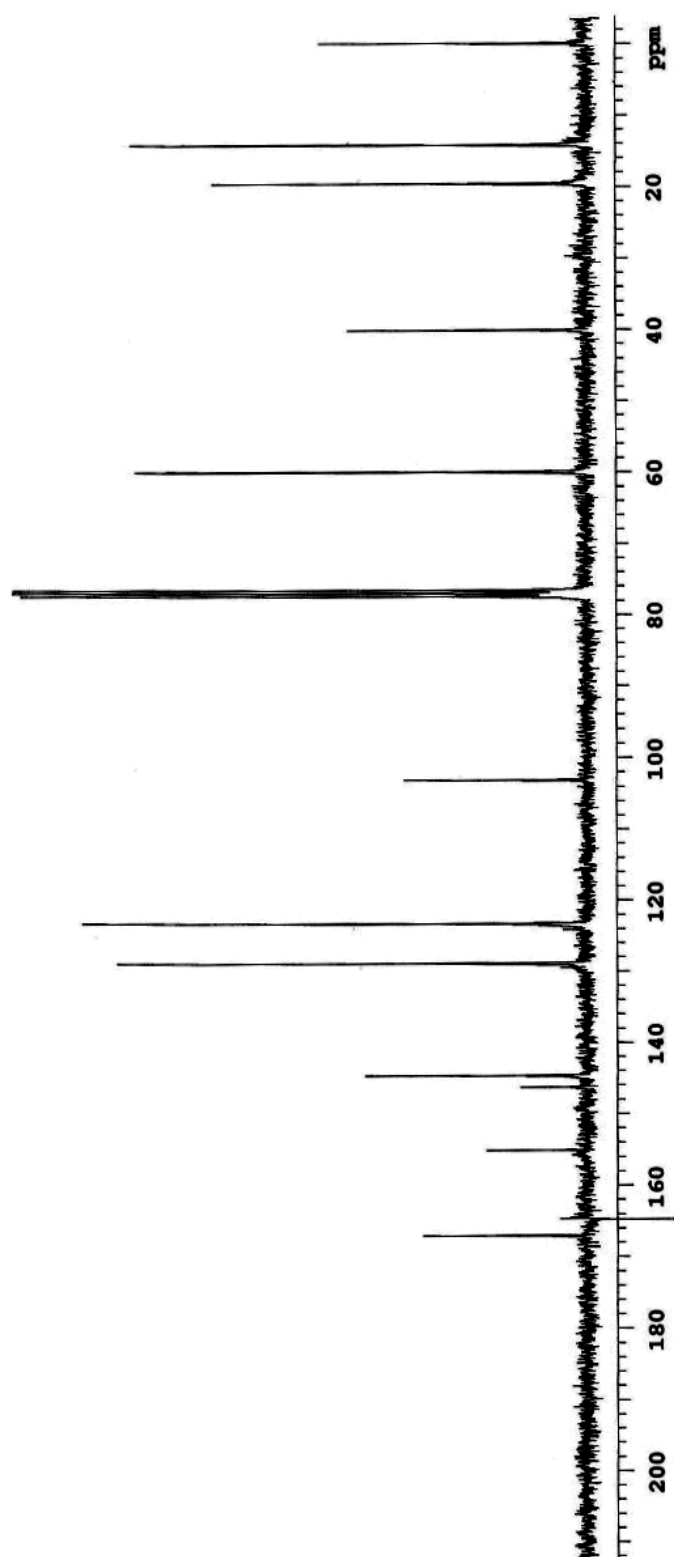


Figura S12. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12c

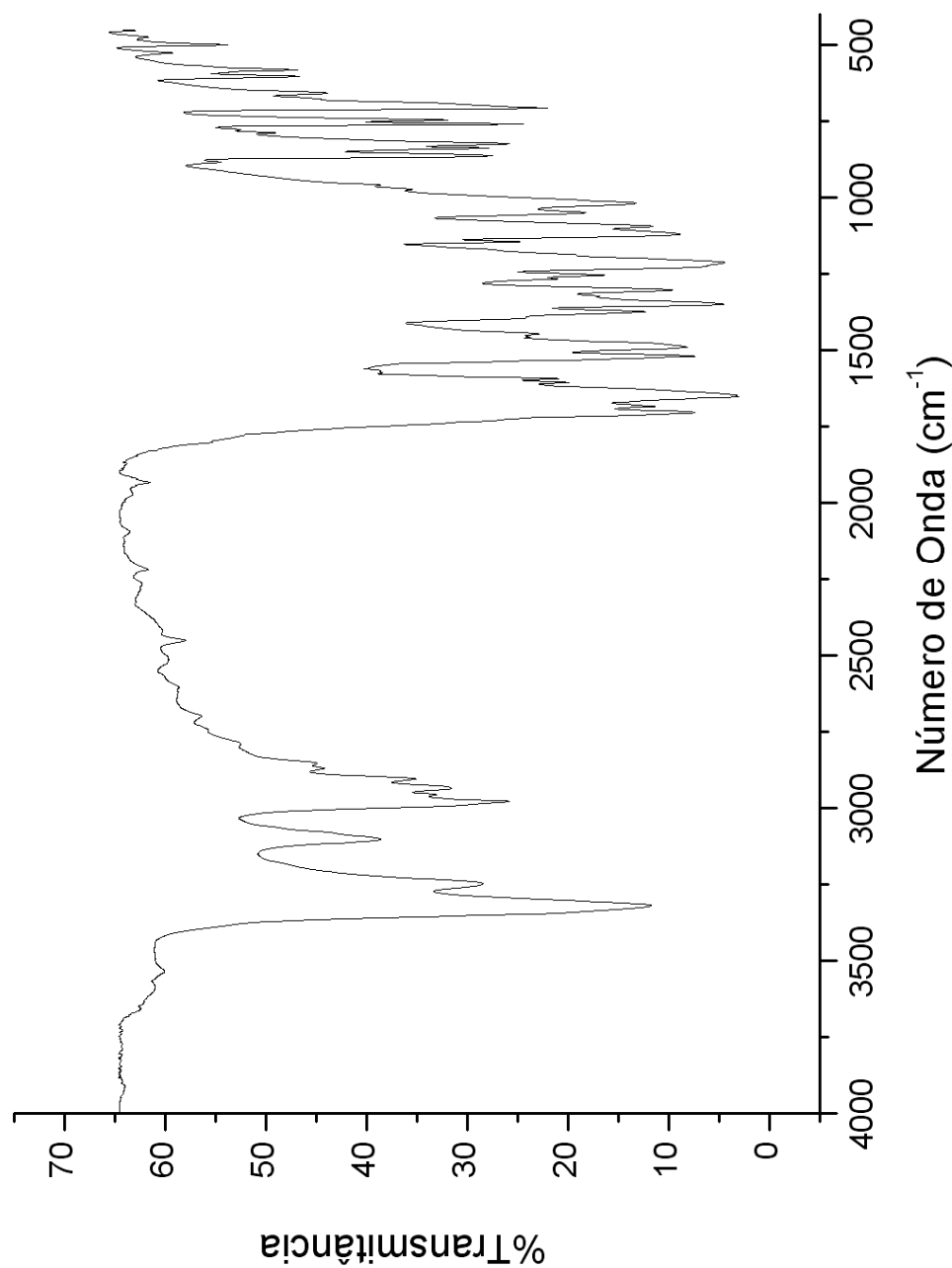


Figure S13. IR (KBr, cm⁻¹) – Compound **12c**

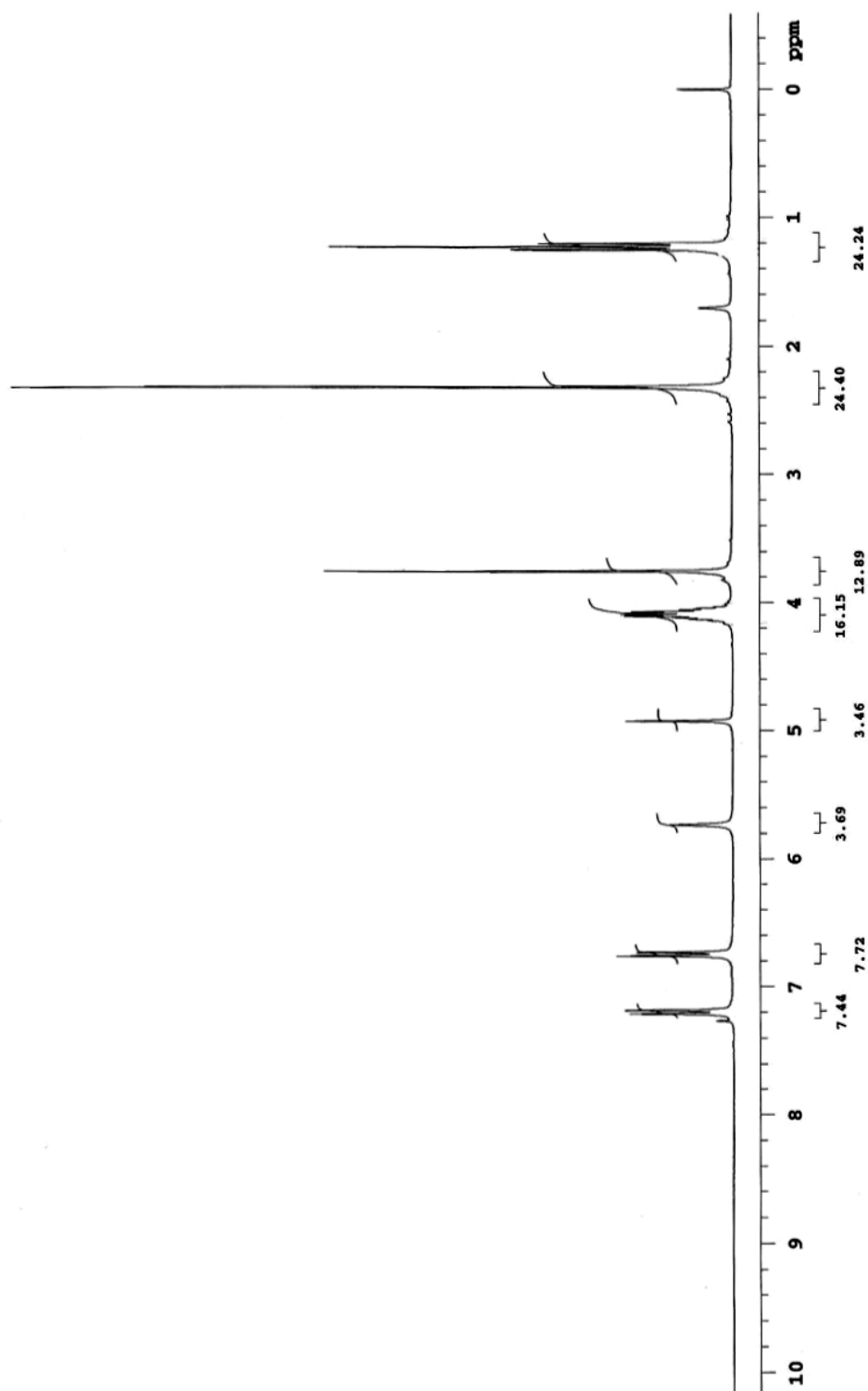


Figure S14. ^1H NMR (300 MHz, CDCl_3) - Compound 12d

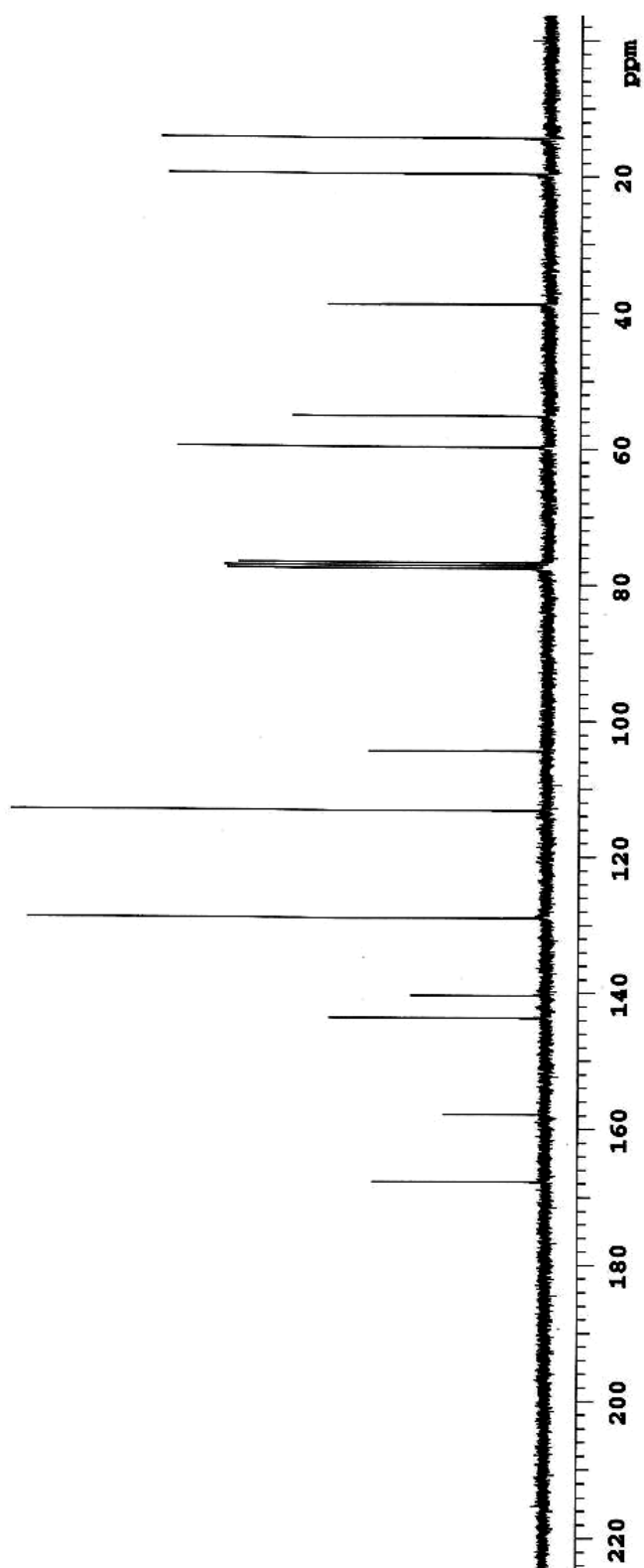


Figura S15. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12d

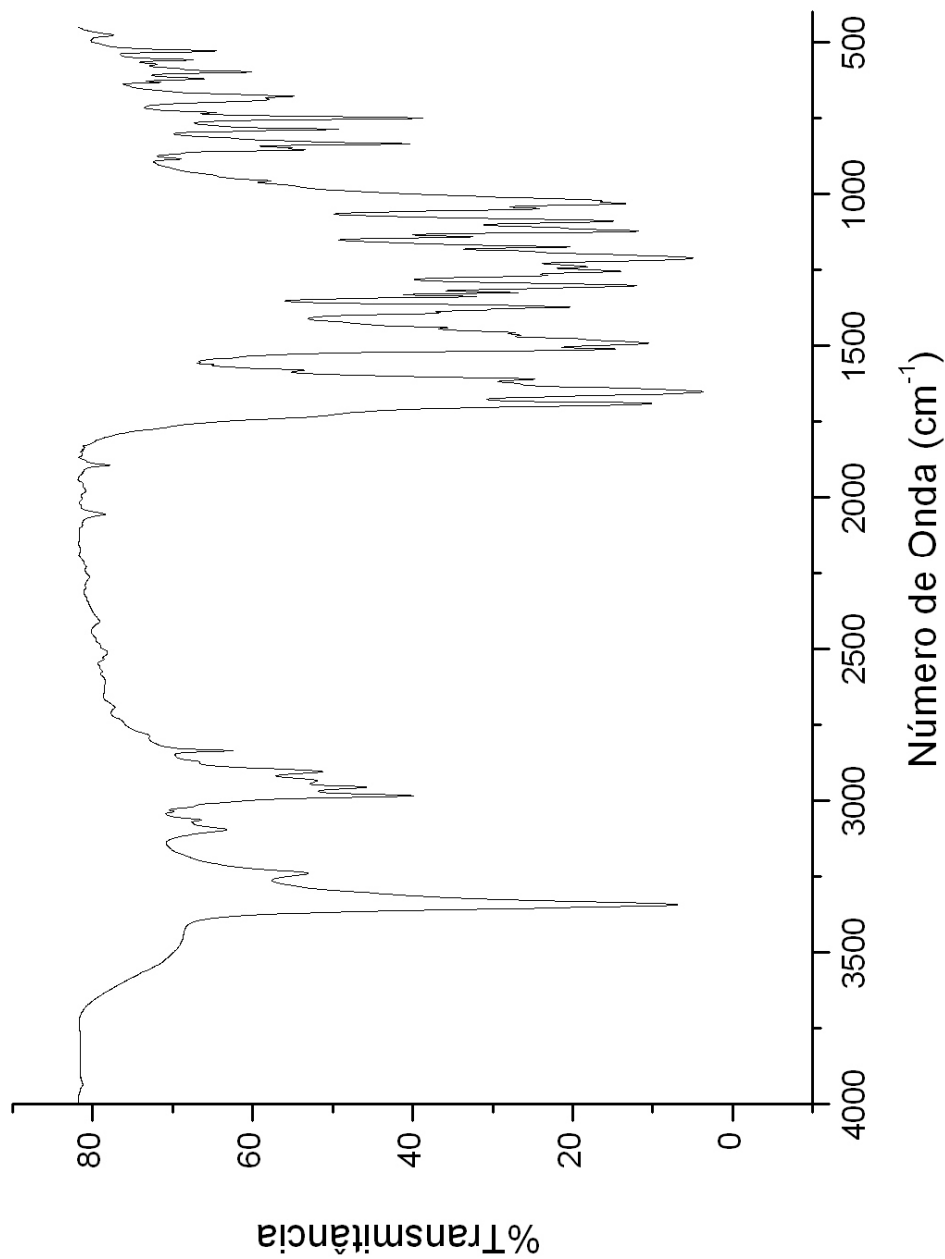


Figure S16. IR (KBr, cm⁻¹) – Compound **12d**

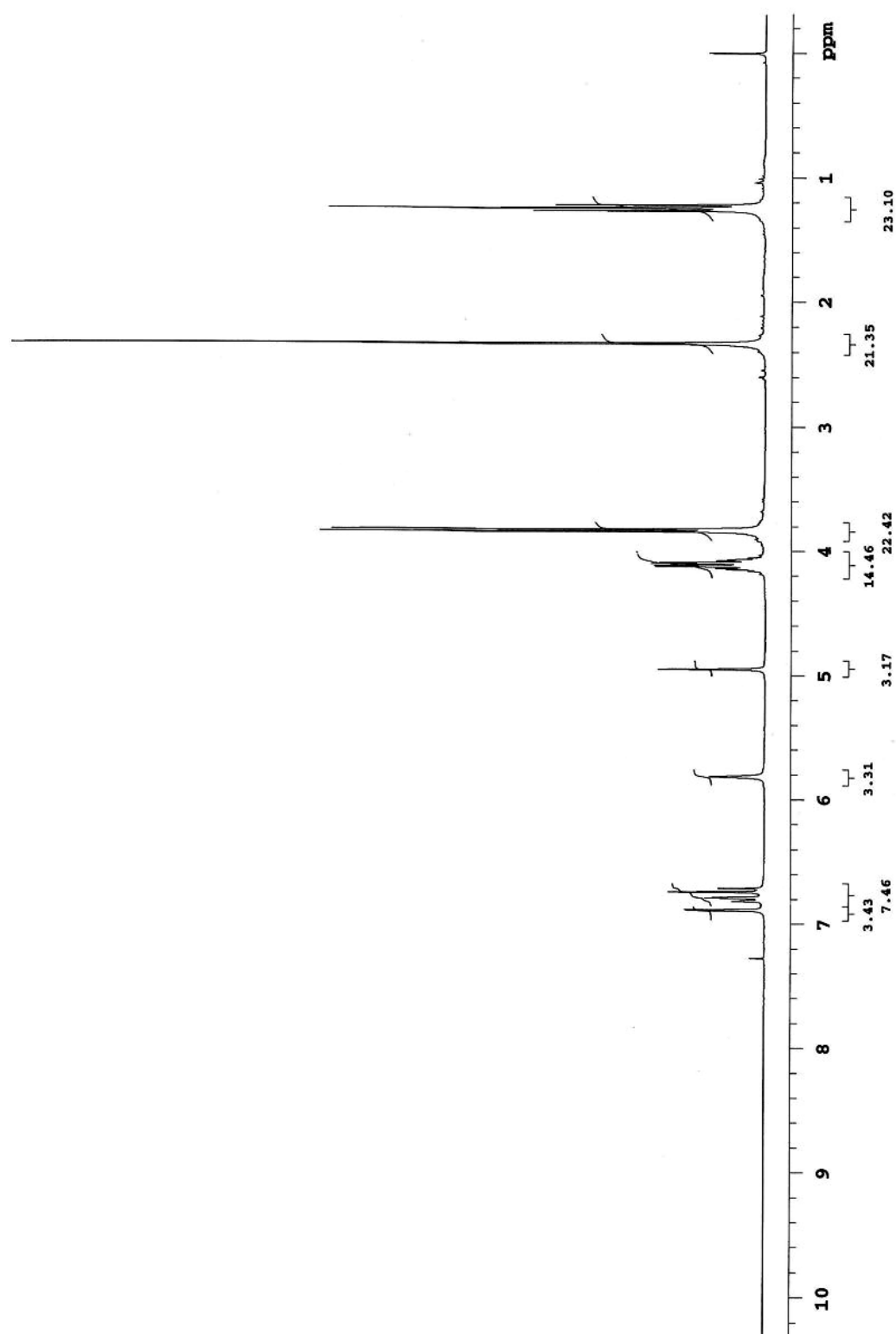


Figure S17. ¹H NMR (300 MHz, CDCl₃) - Compound 12e

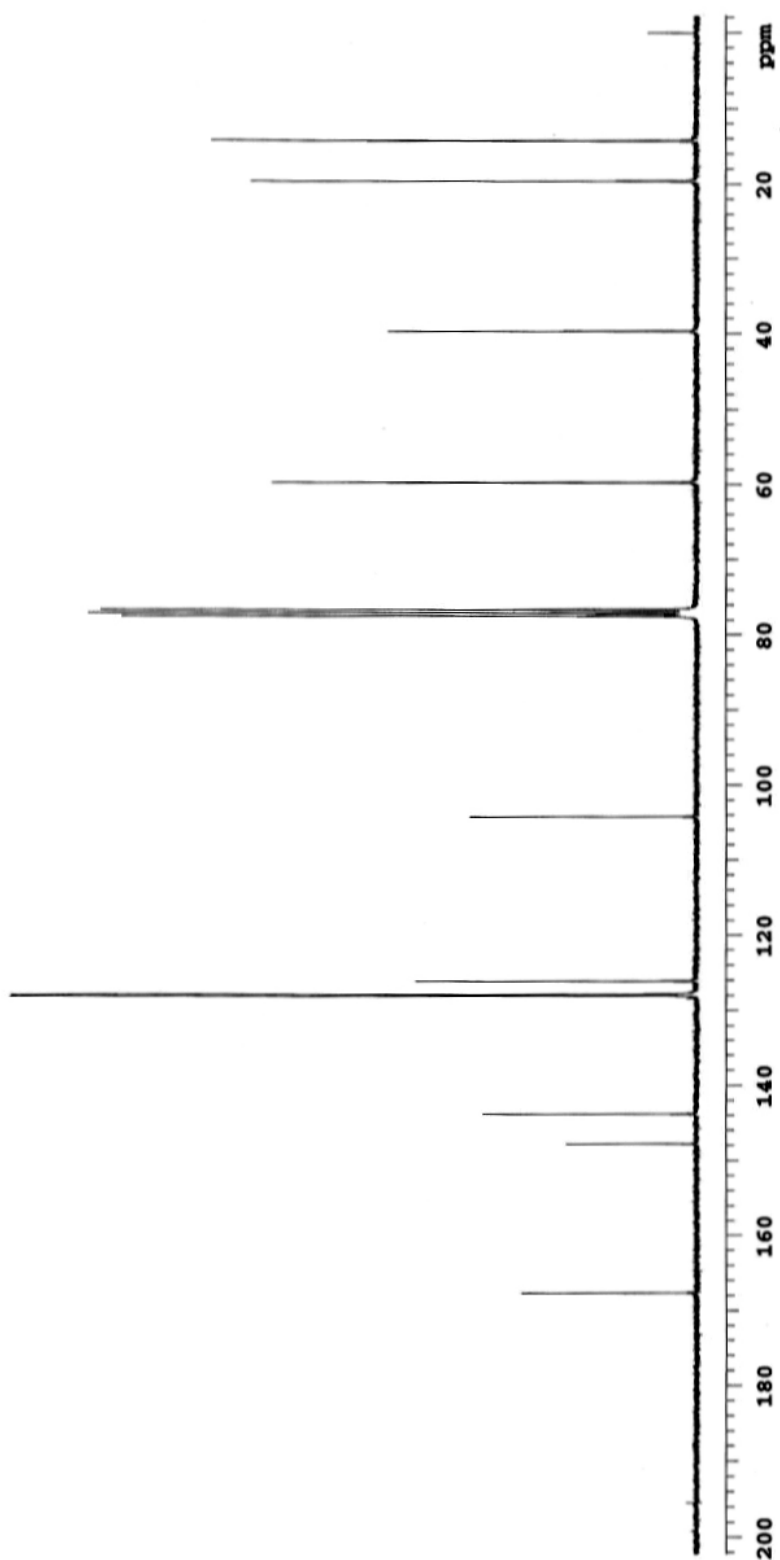


Figura S18. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12e

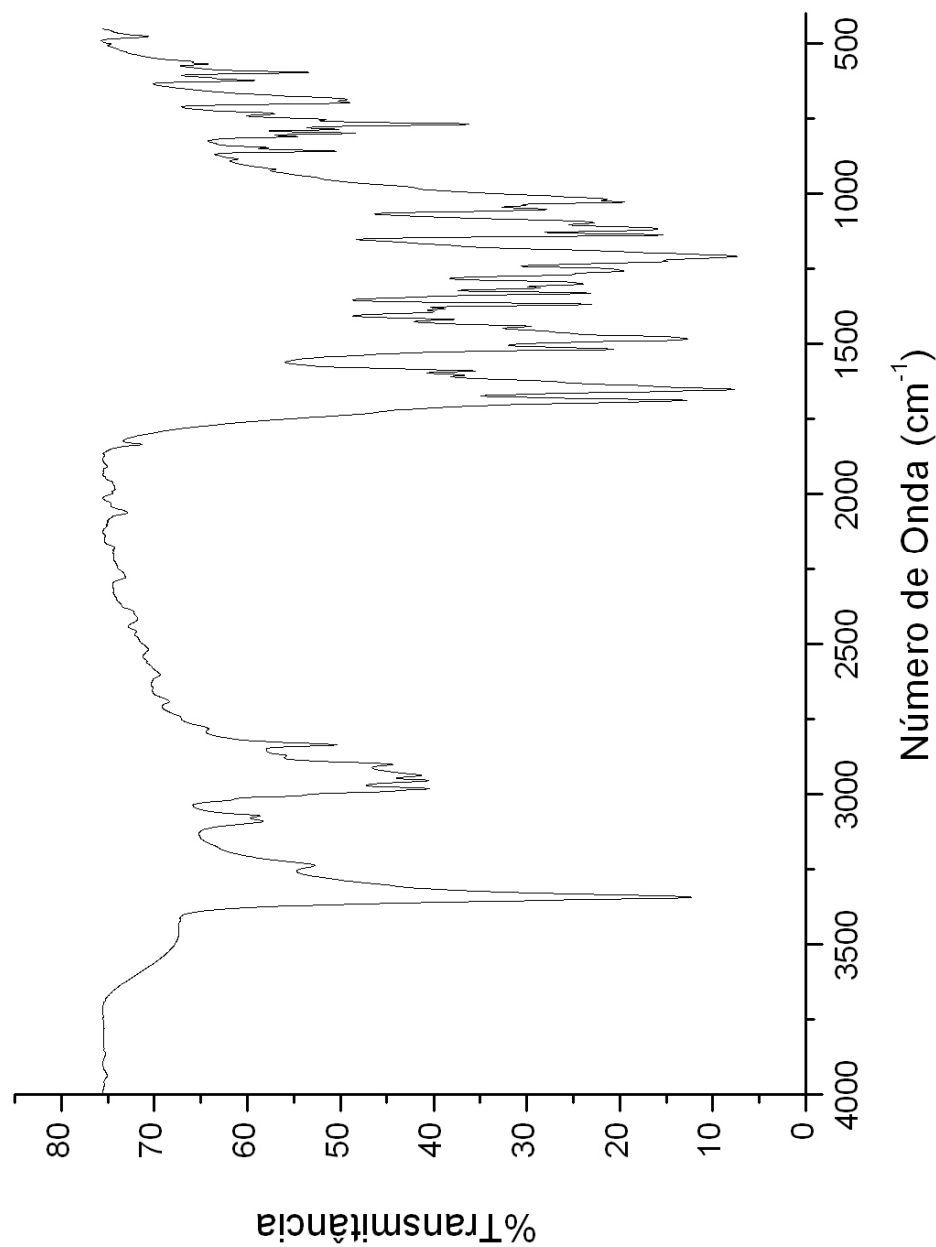


Figure S19. IR (KBr, cm⁻¹) – Compound **12e**

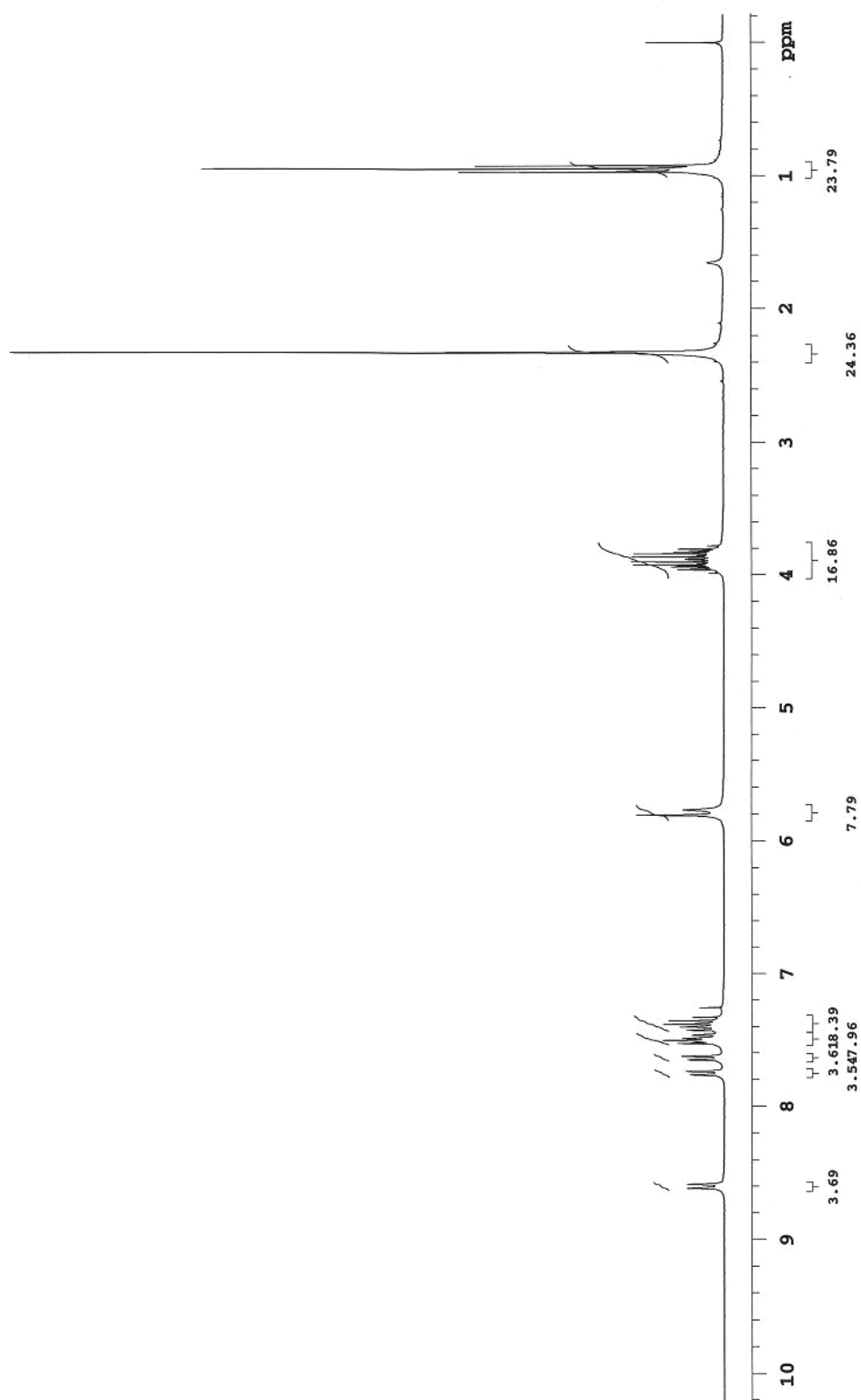


Figure S20. ¹H NMR (300 MHz, CDCl₃) - Compound 12f

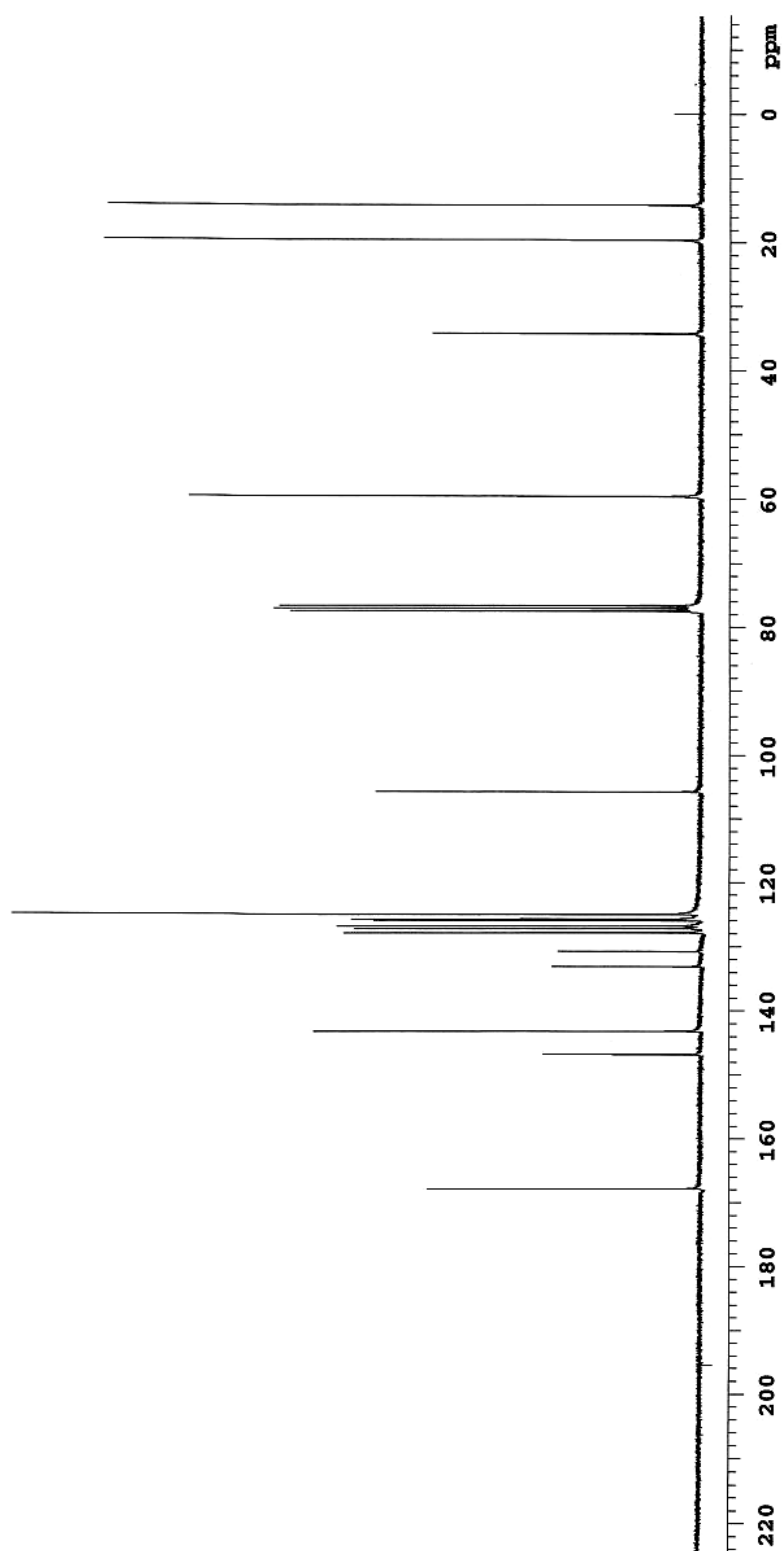


Figura S21. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12f

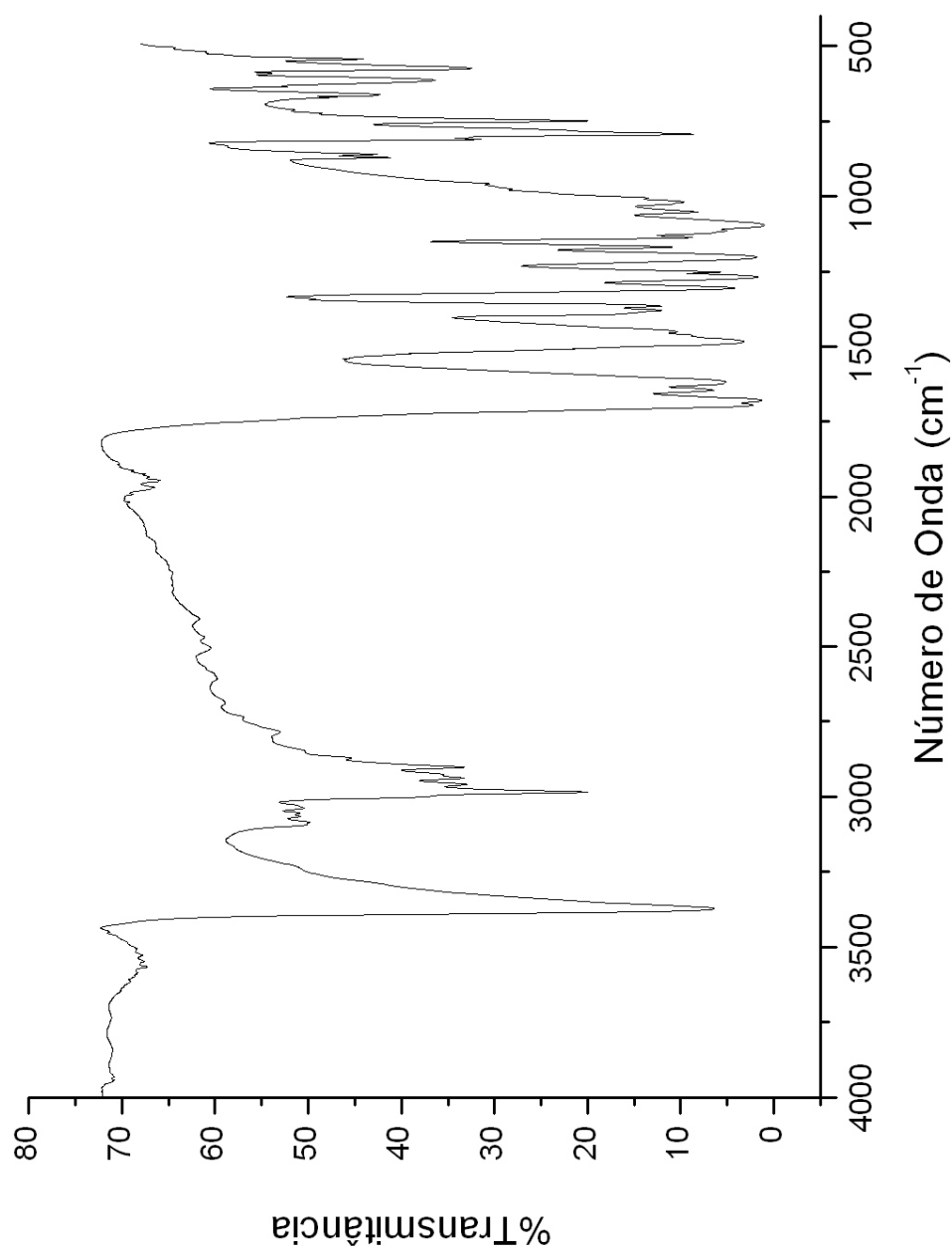


Figure S22. IR (KBr, cm⁻¹) – Compound **12f**

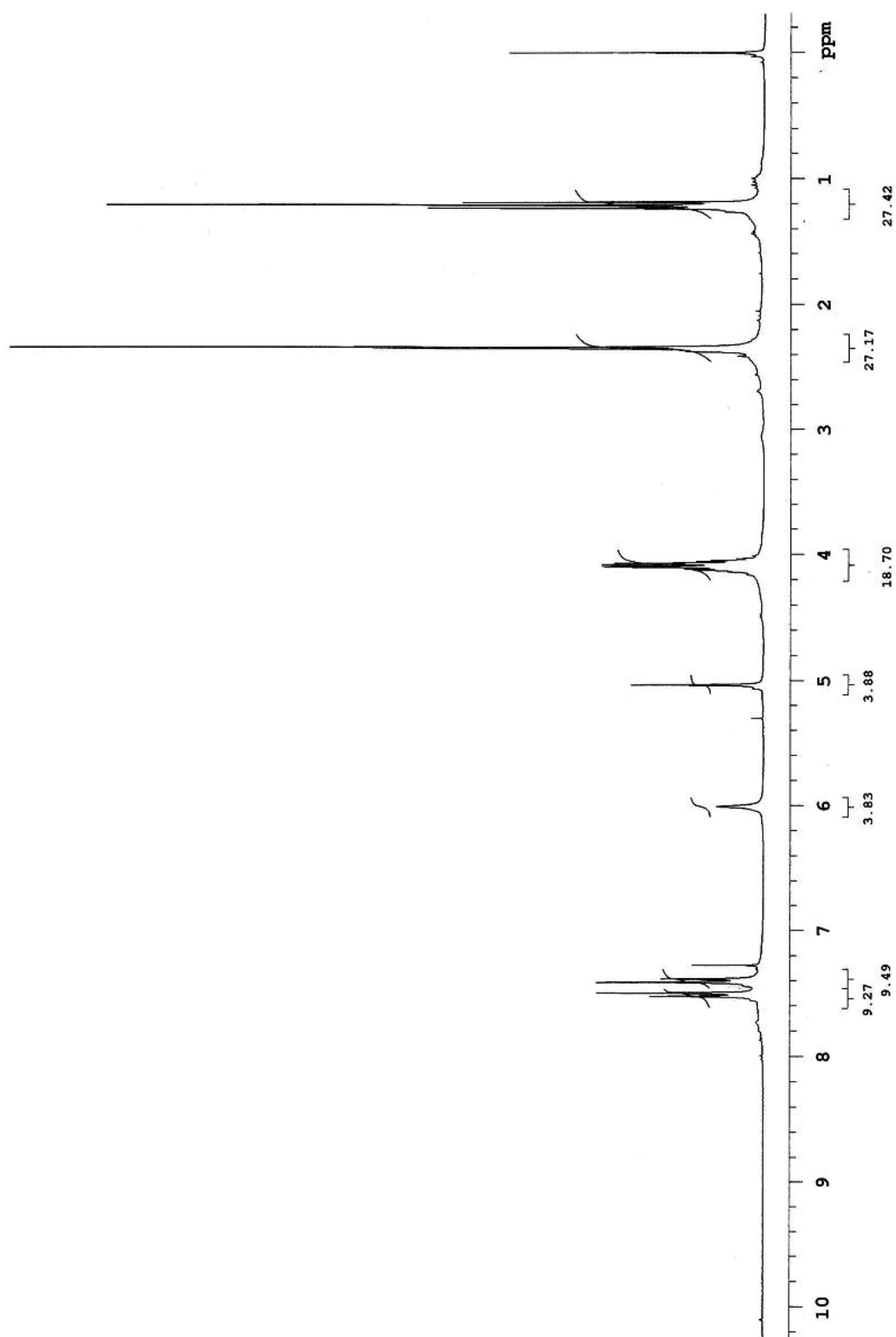


Figure S23. ¹H NMR (300 MHz, CDCl₃) - Compound **12g**

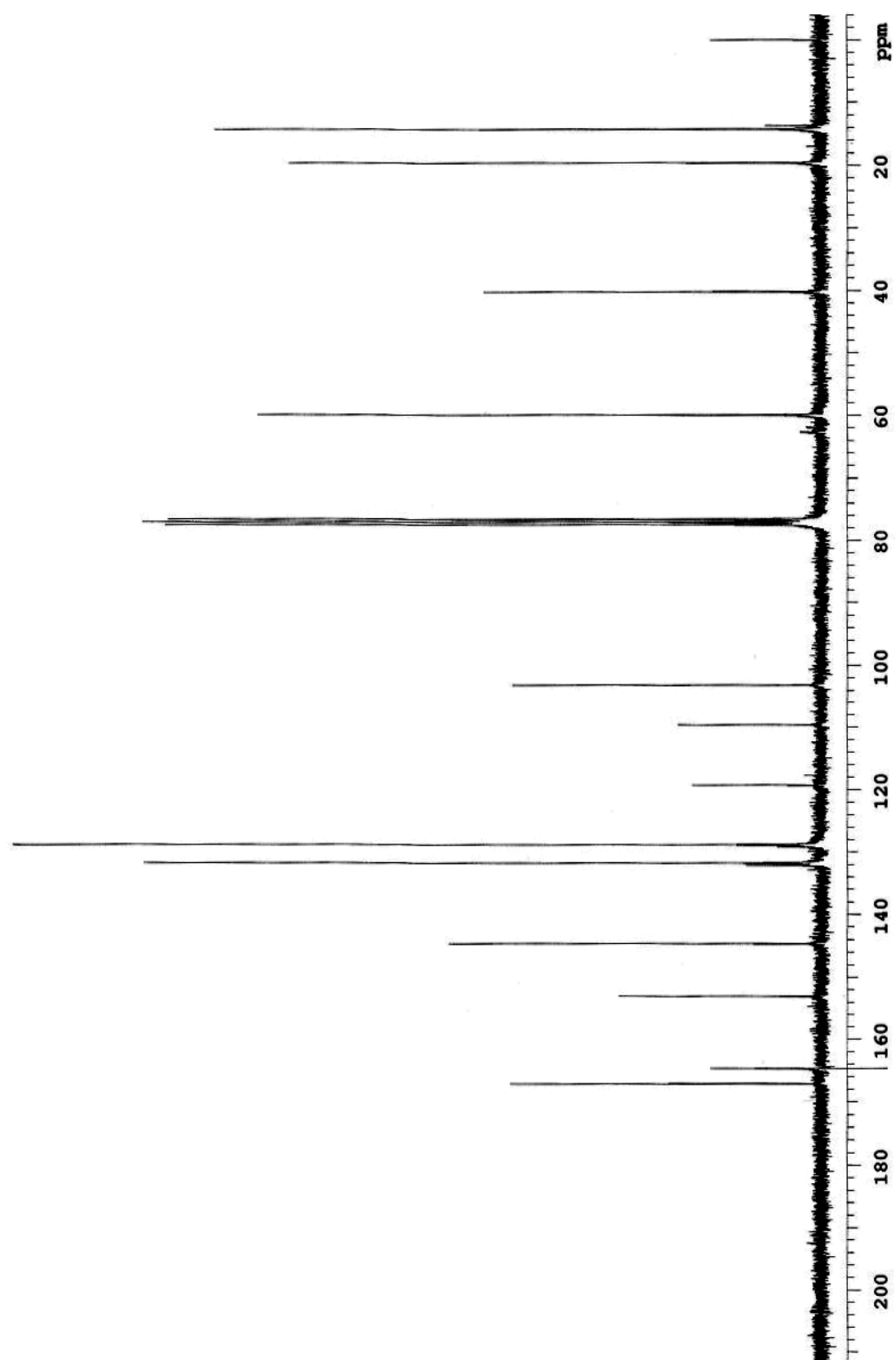


Figura S24. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12g

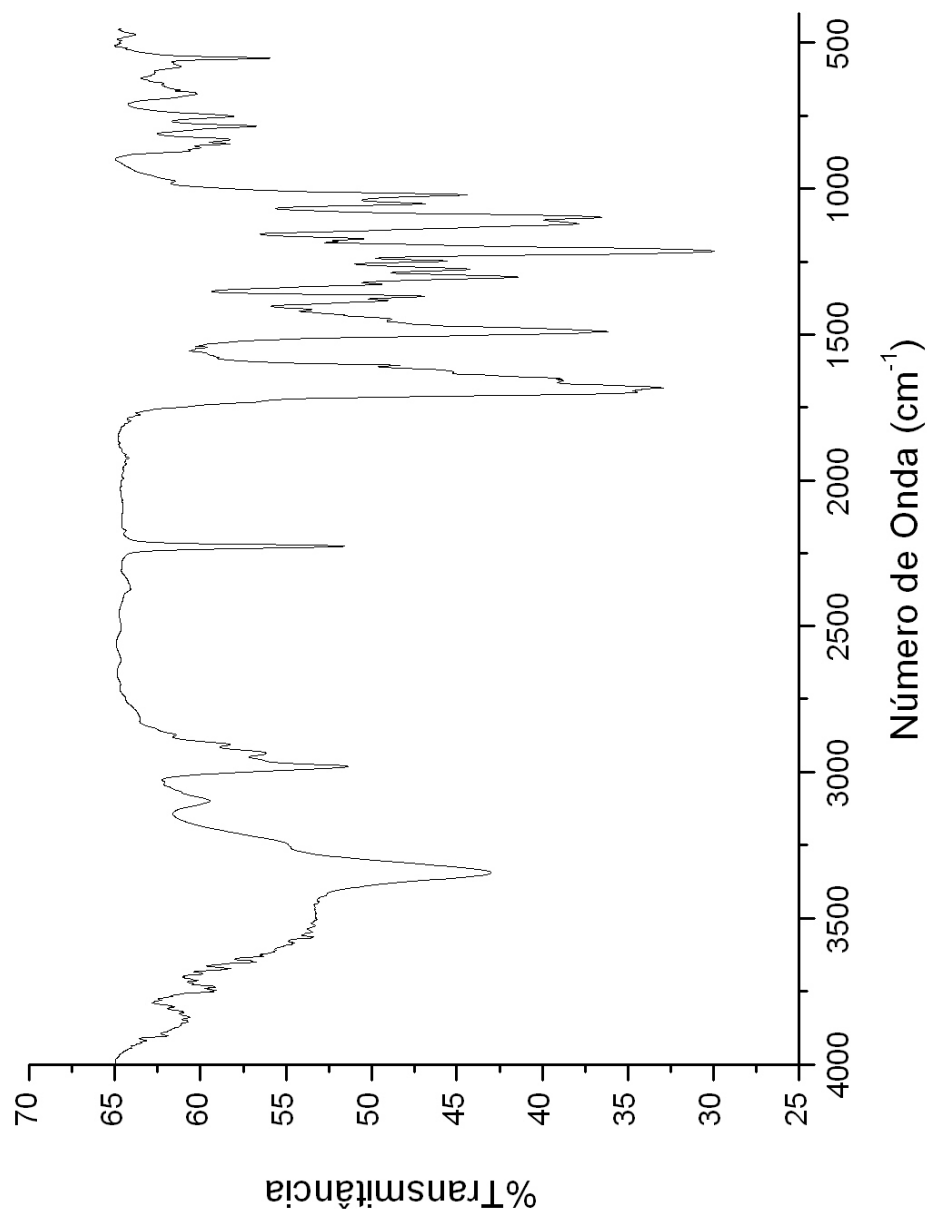


Figure S25. IR (KBr, cm⁻¹) – Compound **12g**

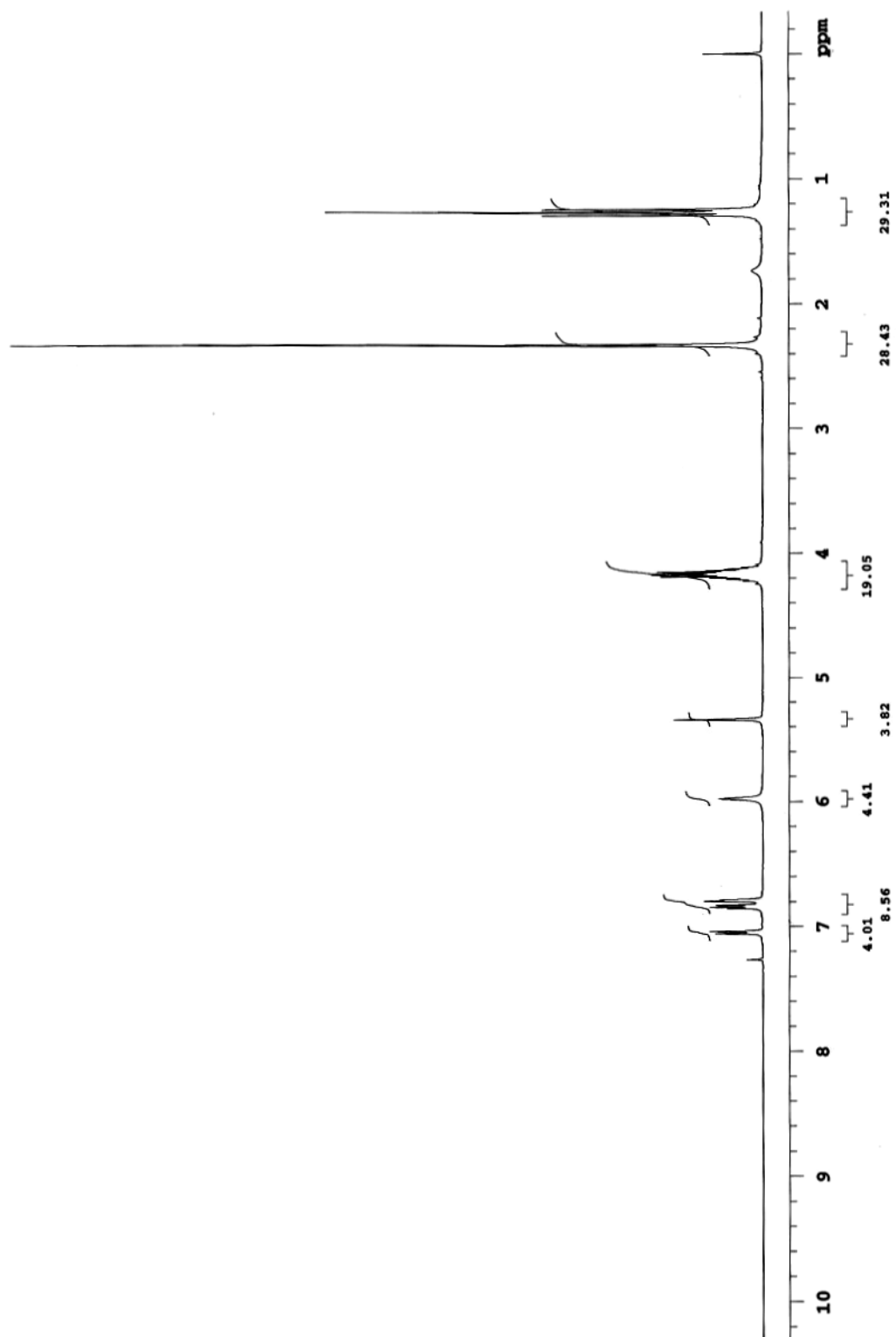


Figure S26. ^1H NMR (300 MHz, CDCl_3) - Compound **12h**

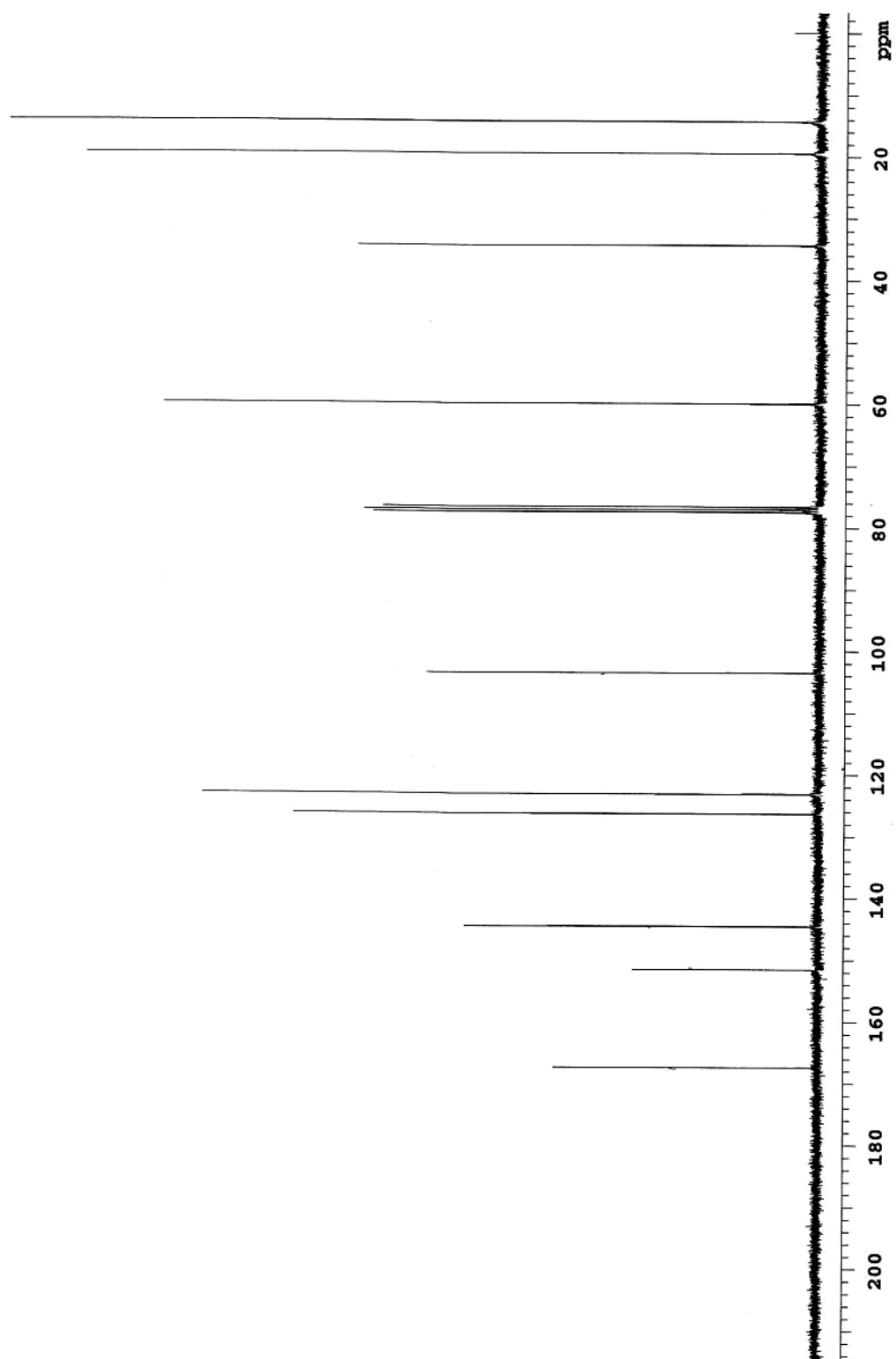


Figura S27. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12h

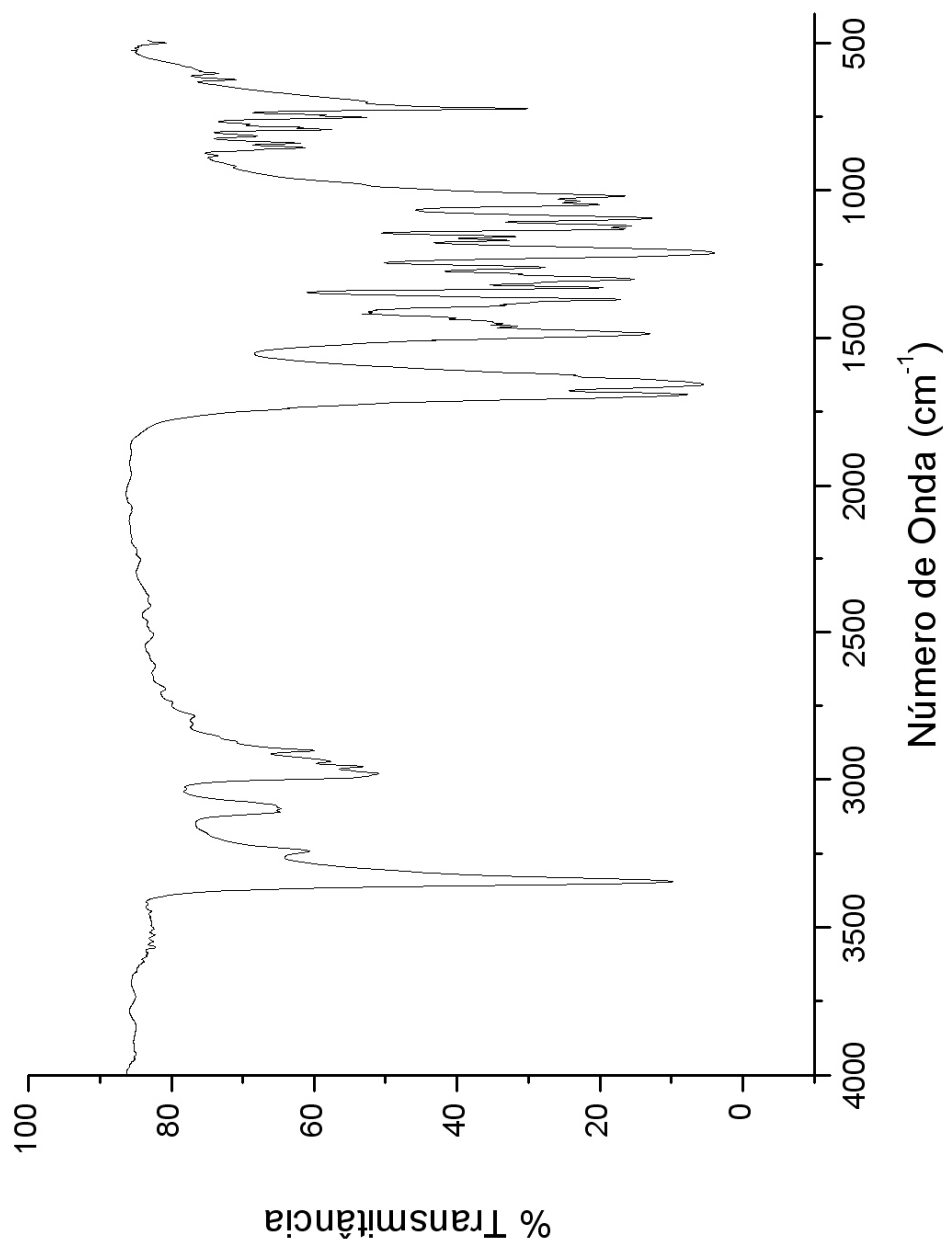


Figure S28. IR (KBr, cm⁻¹) – Compound **12h**

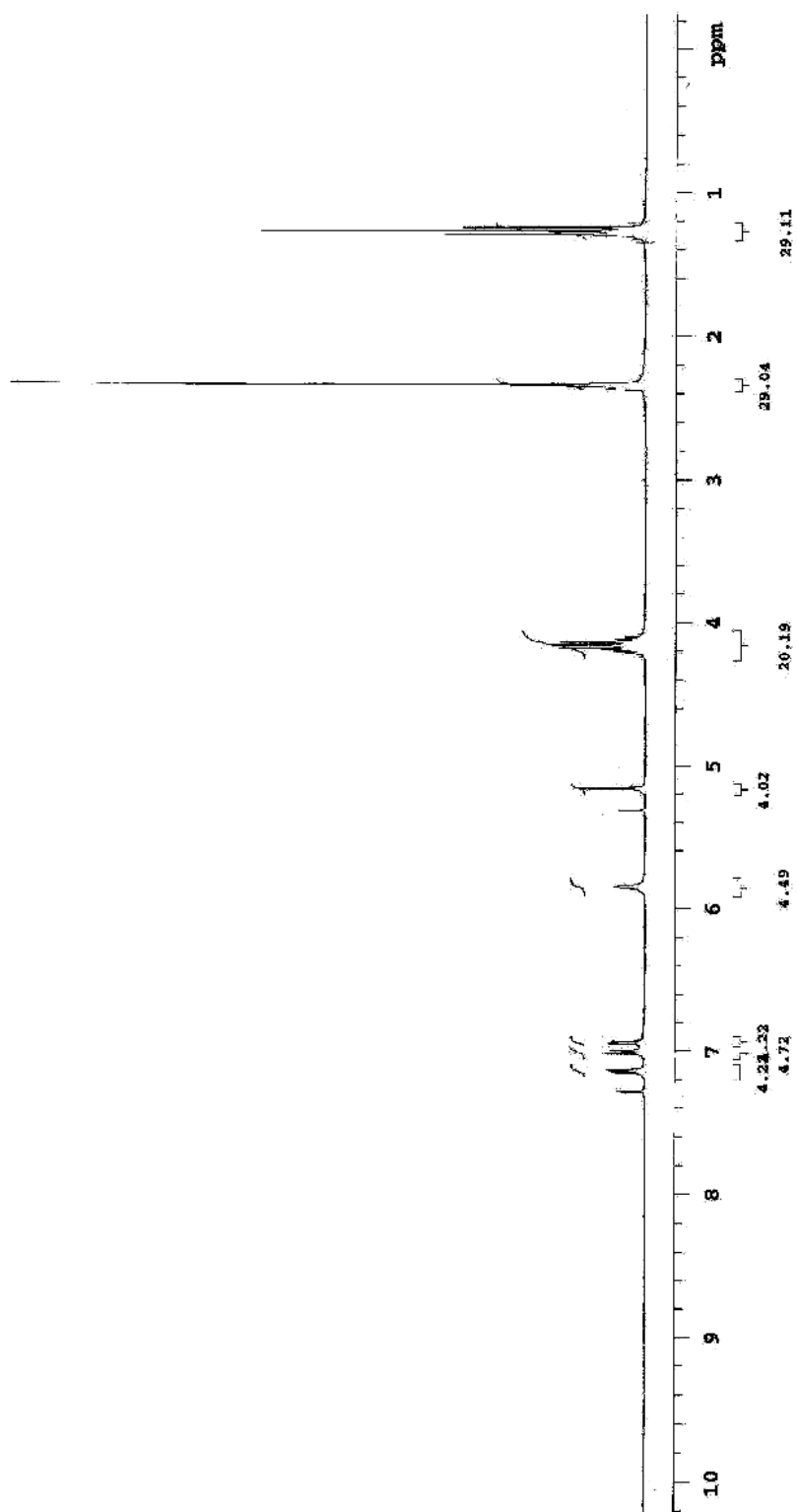


Figure S29. ¹H NMR (300 MHz, CDCl₃) - Compound 12i

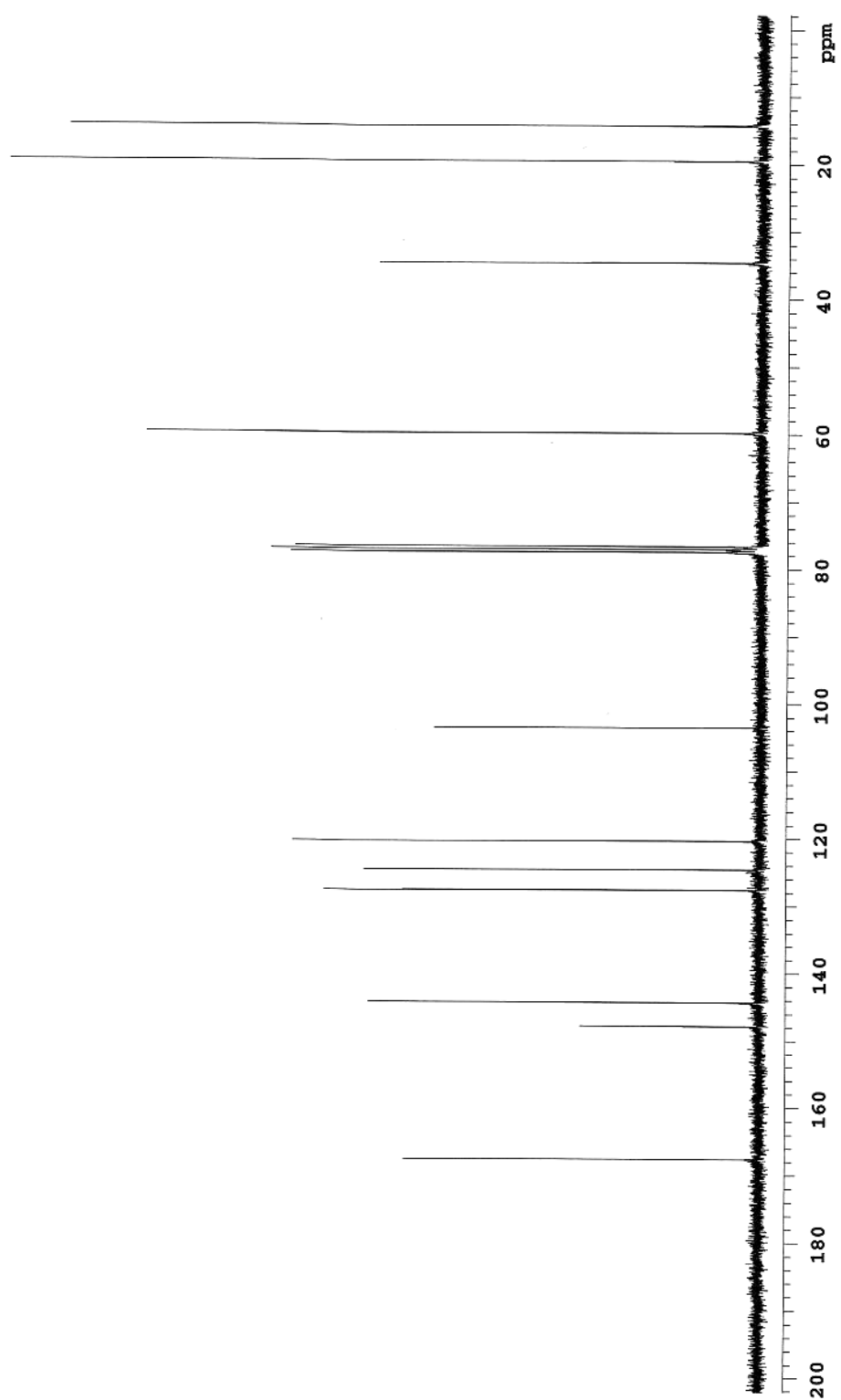


Figura S30. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12i

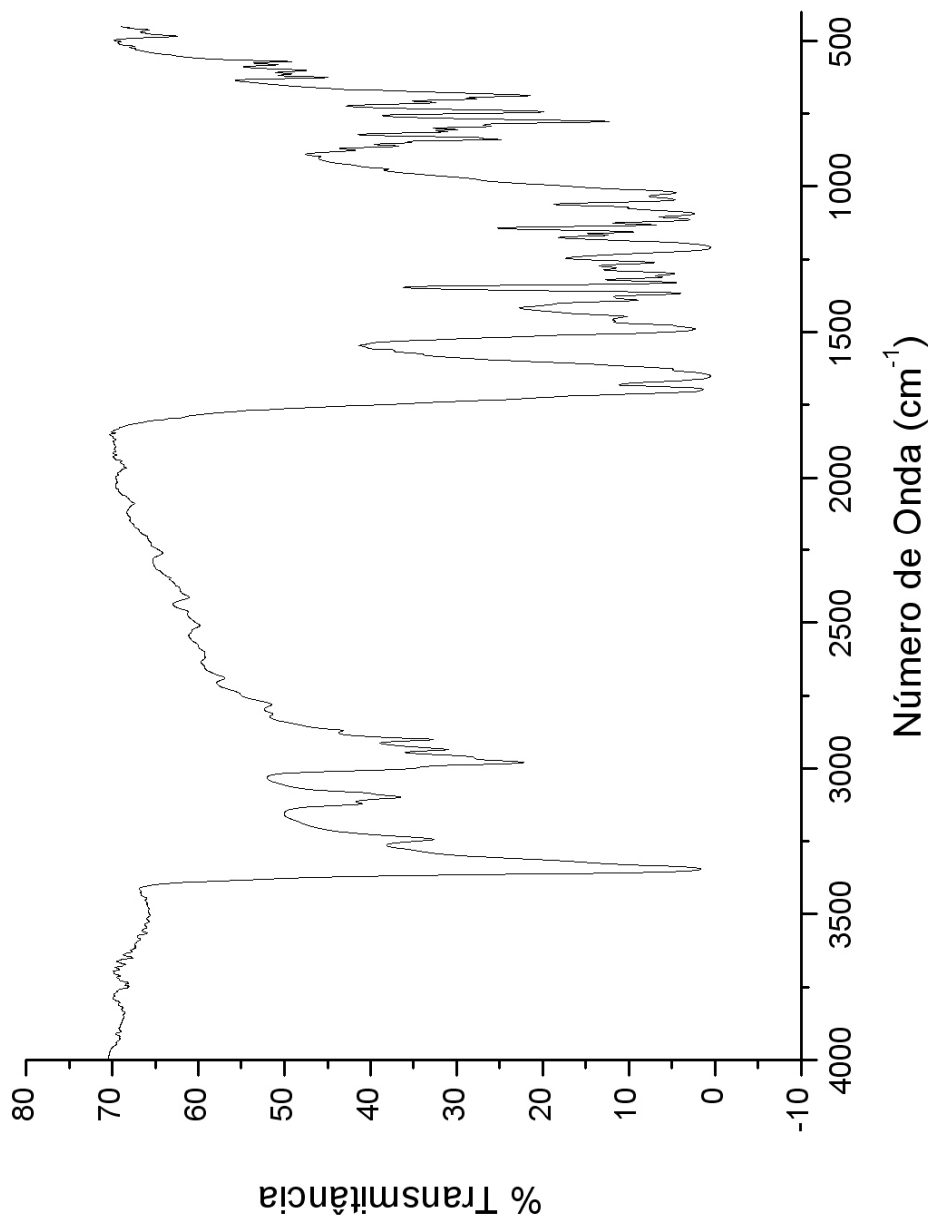


Figure S31. IR (KBr, cm⁻¹) – Compound **12i**

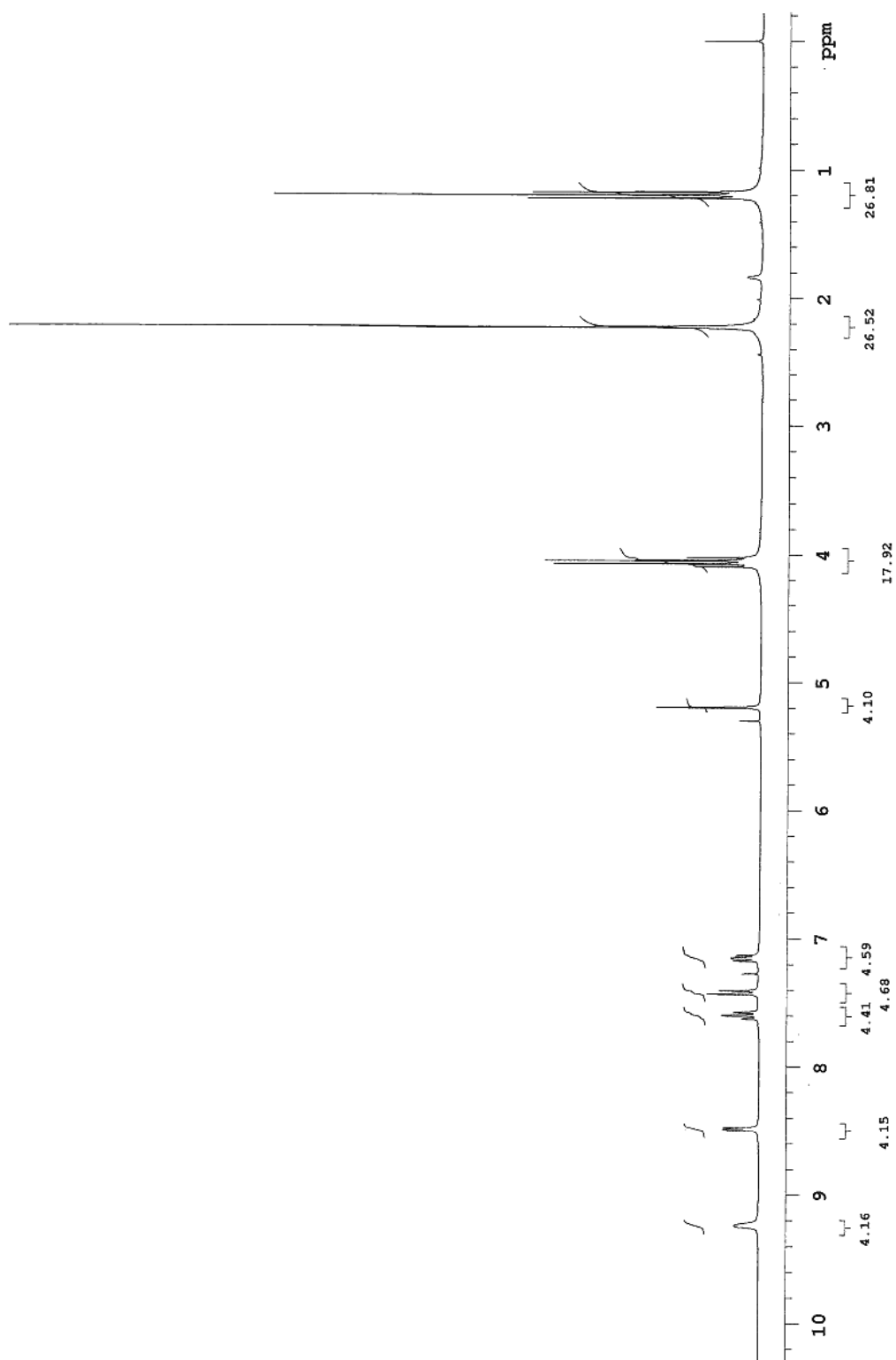


Figure S32. ¹H NMR (300 MHz, CDCl₃) - Compound 12j

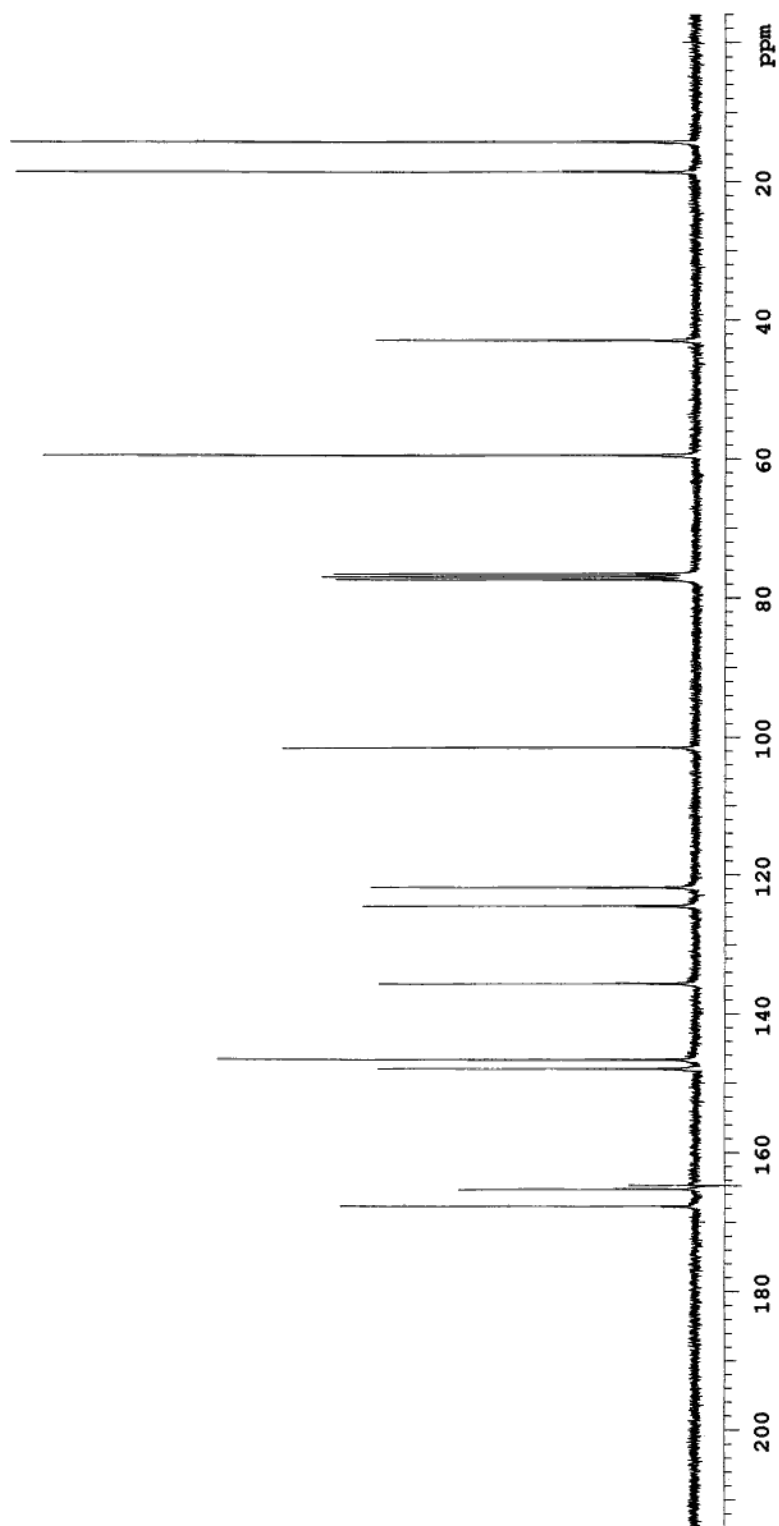


Figura S33. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12j

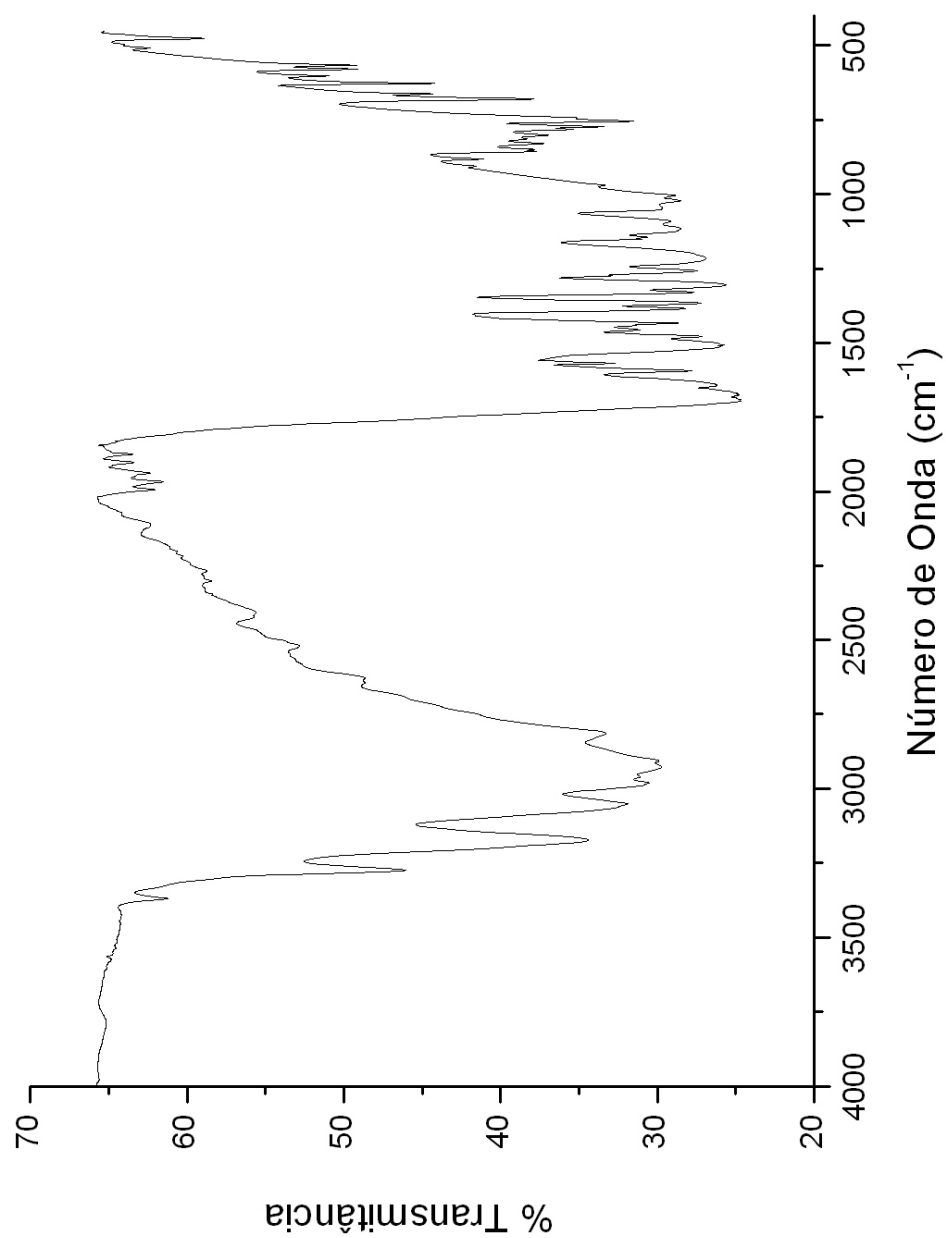


Figure S34. IR (KBr, cm⁻¹) – Compound **12j**

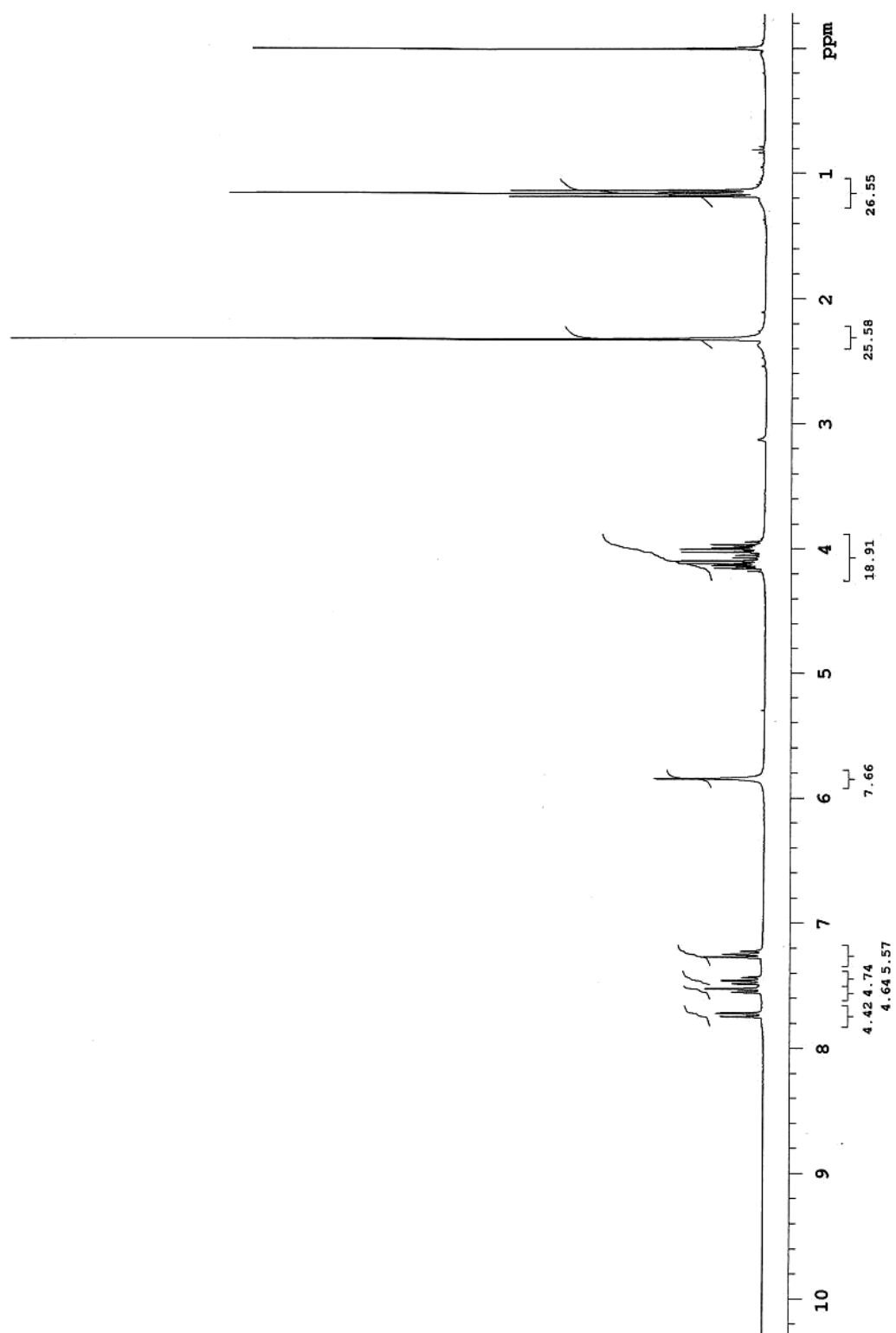


Figure S35. ^1H NMR (300 MHz, CDCl_3) - Compound 12k

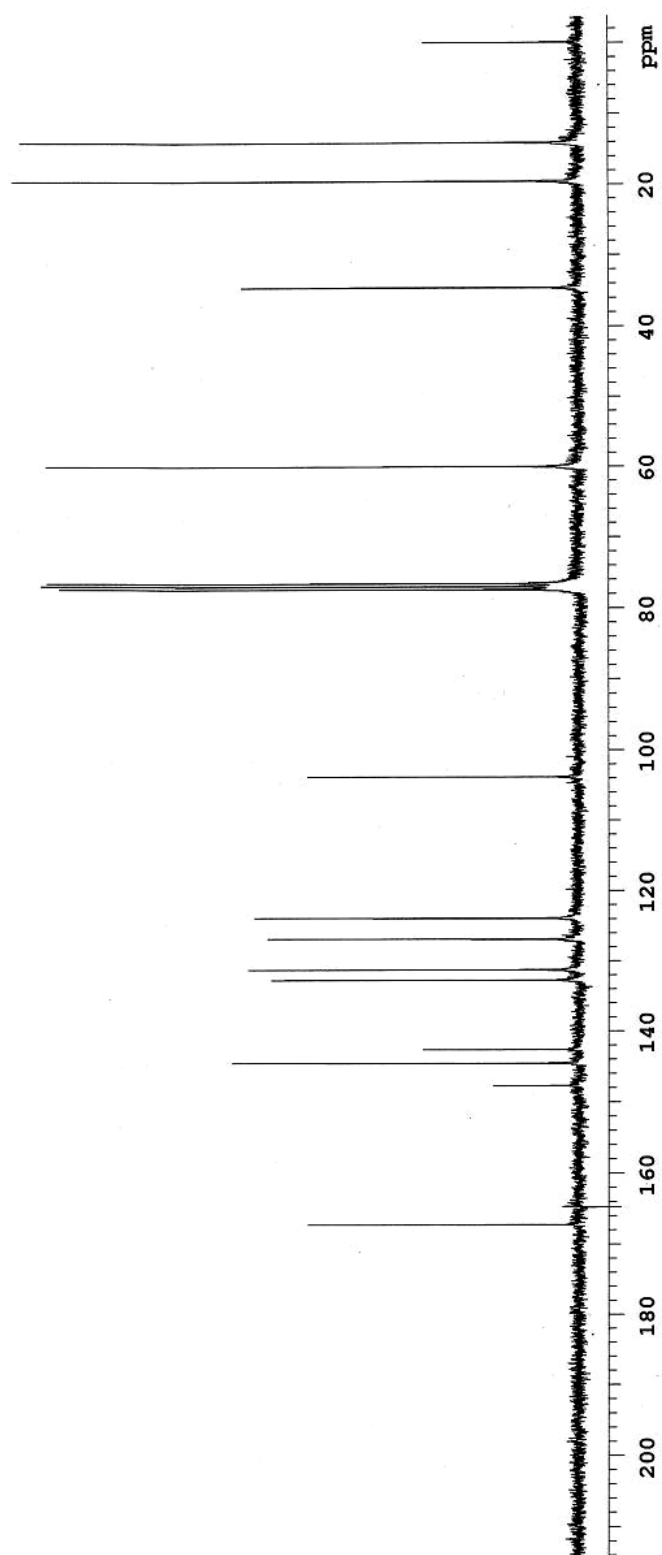


Figura S36. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12k

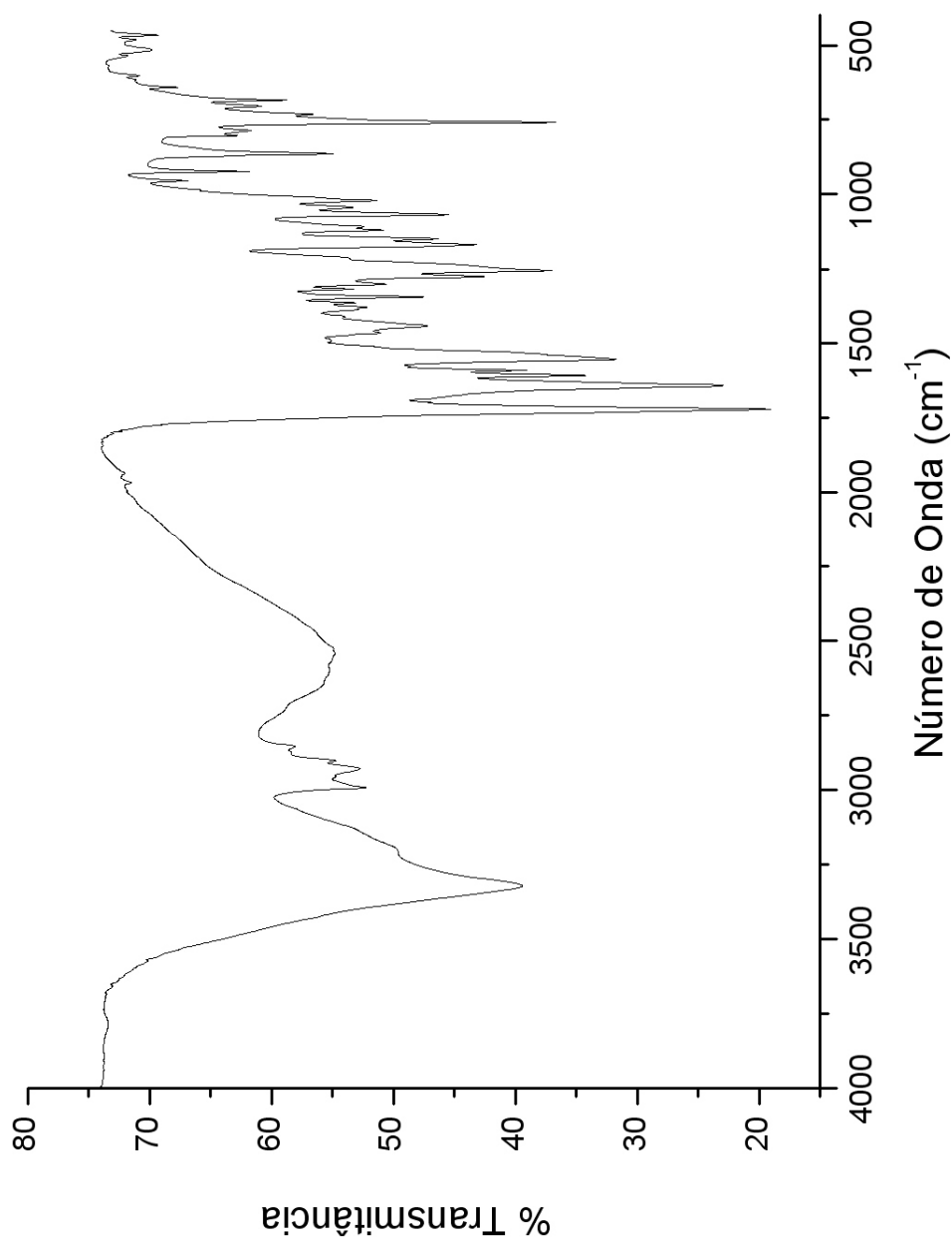


Figure S37. IR (KBr, cm⁻¹) – Compound **12k**

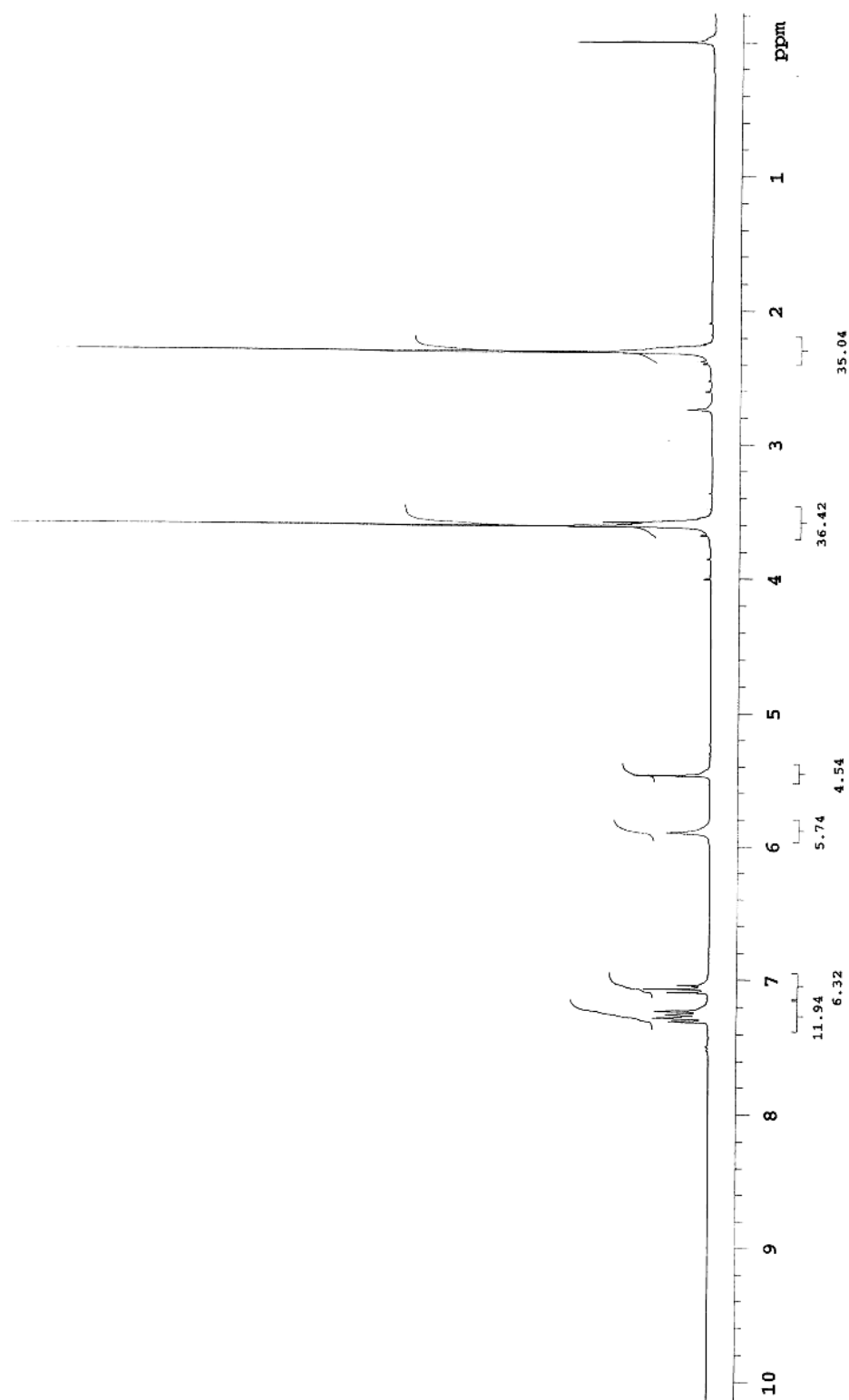


Figure S38. ^1H NMR (300 MHz, CDCl_3) - Compound 12I

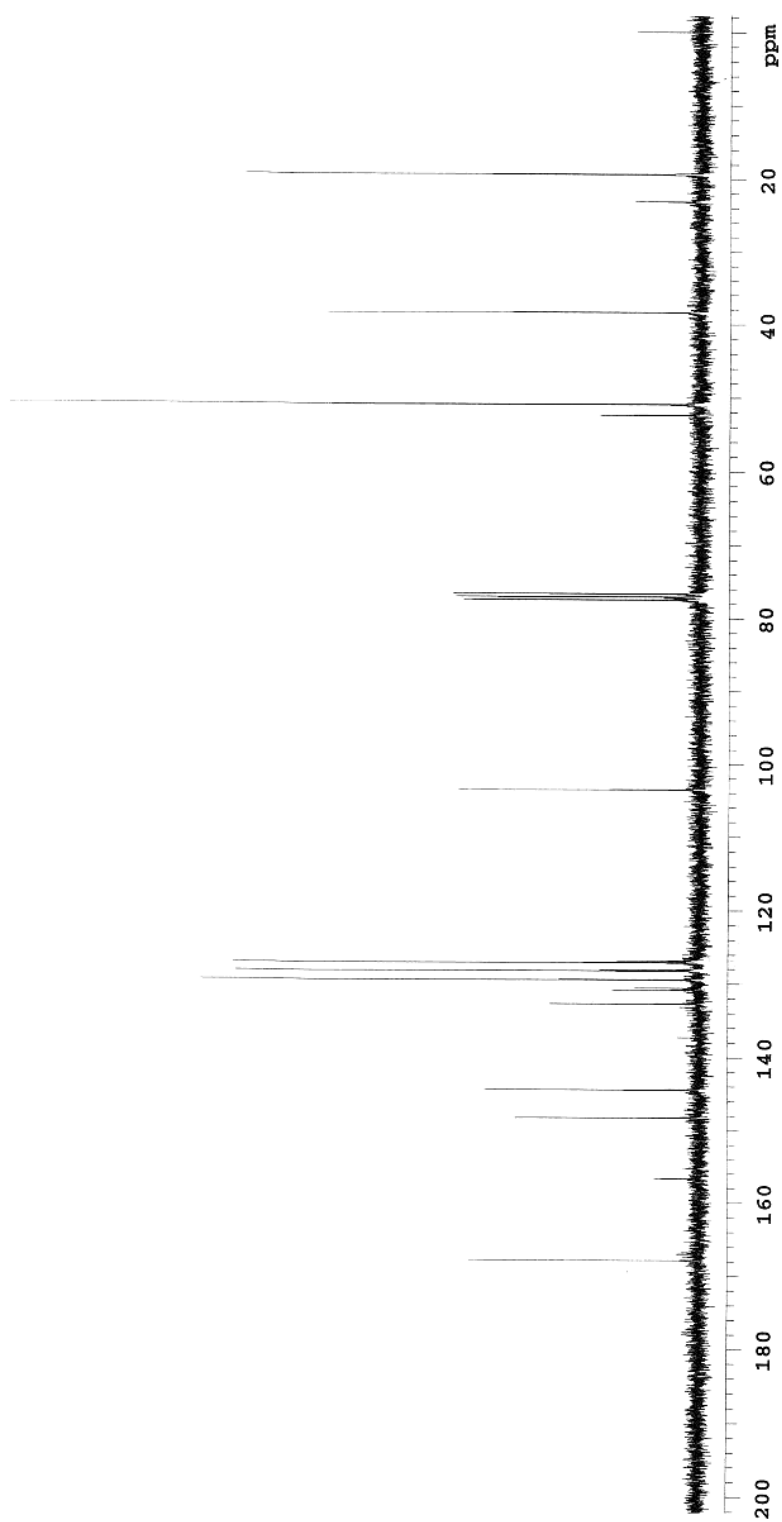


Figura S39. ^{13}C NMR (75 MHz, CDCl_3) – Compound 12l

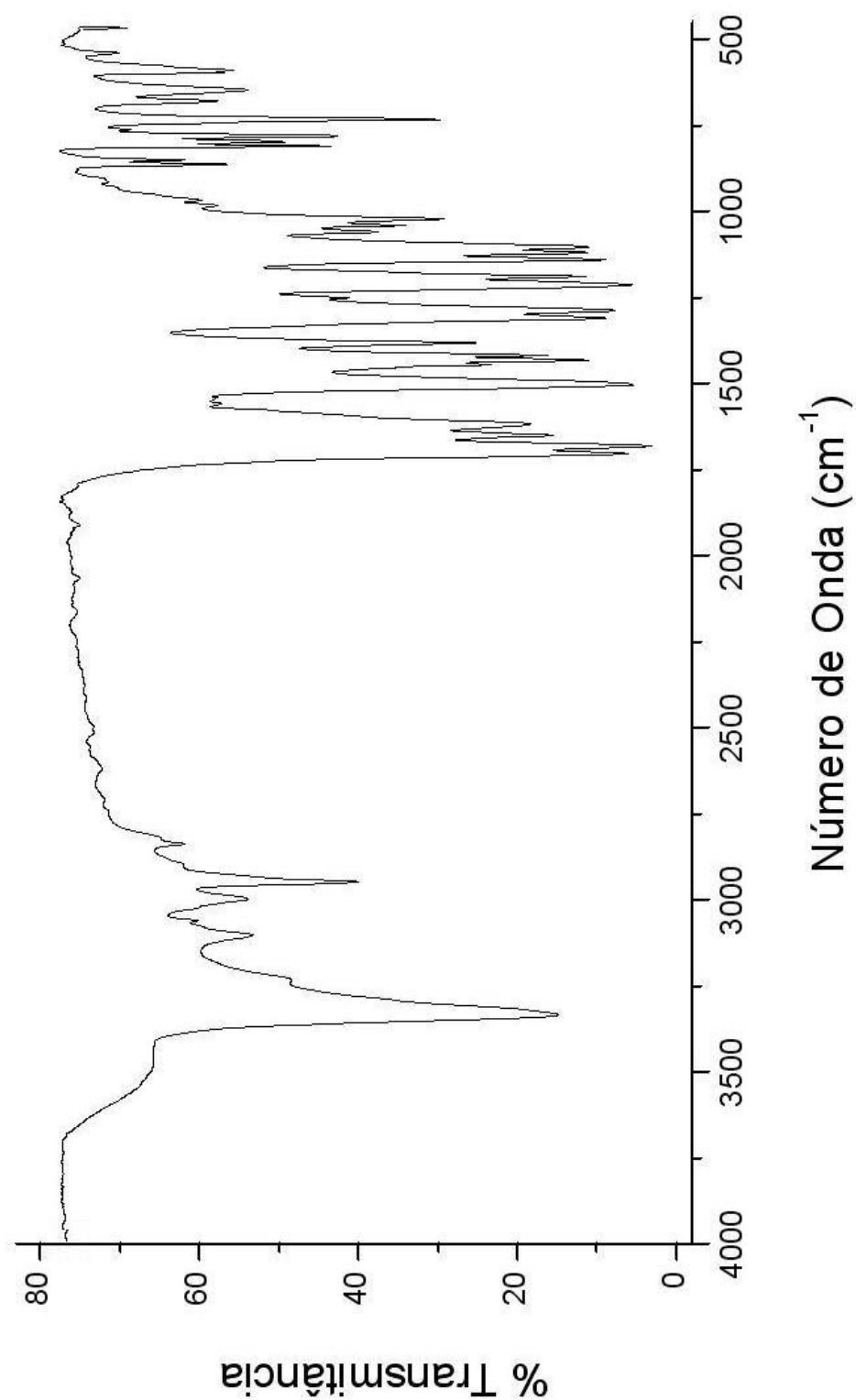


Figure S40. IR (KBr, cm⁻¹) – Compound 12I

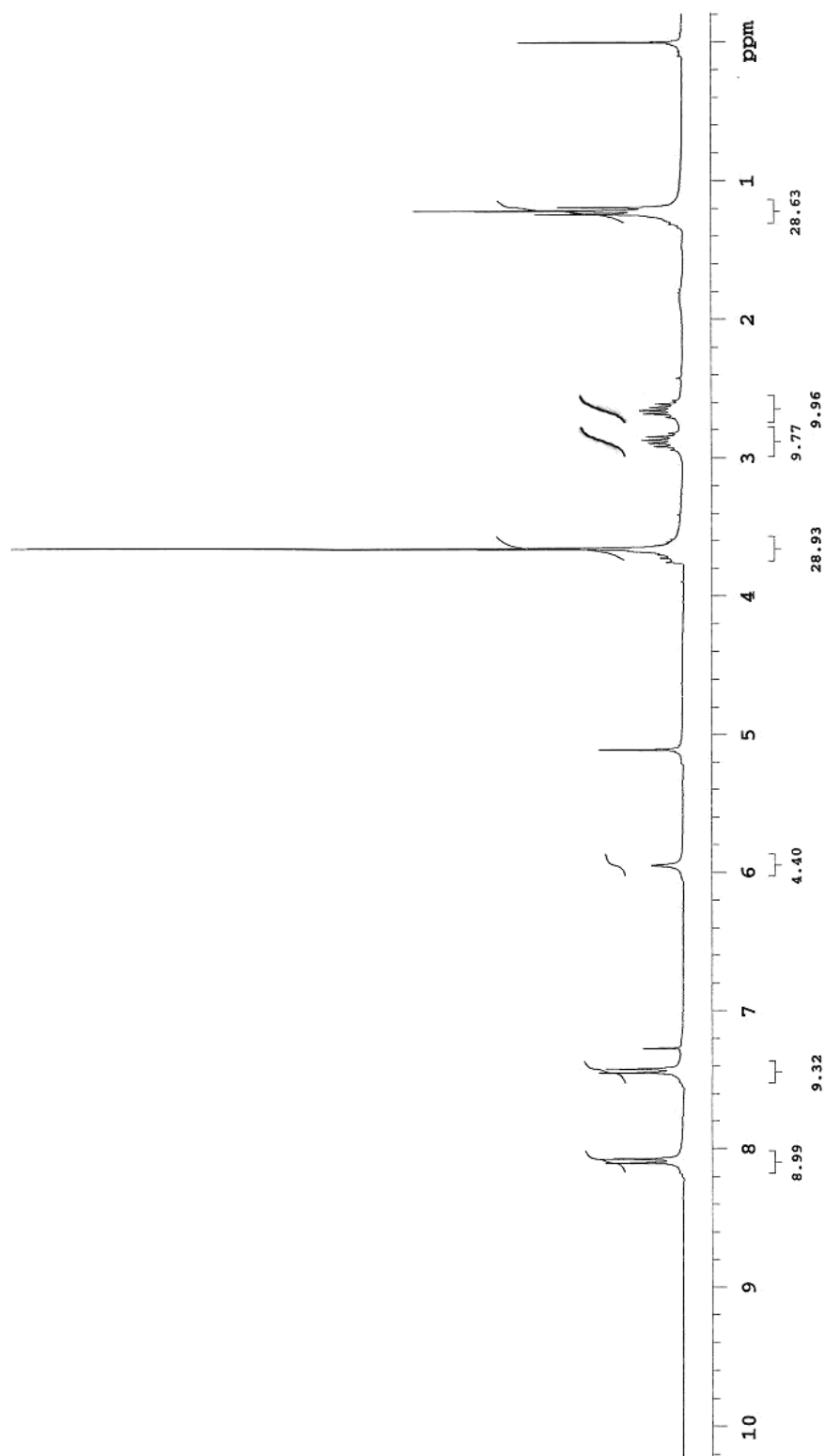


Figure S41. ^1H NMR (300 MHz, CDCl_3) - Compound **12m**

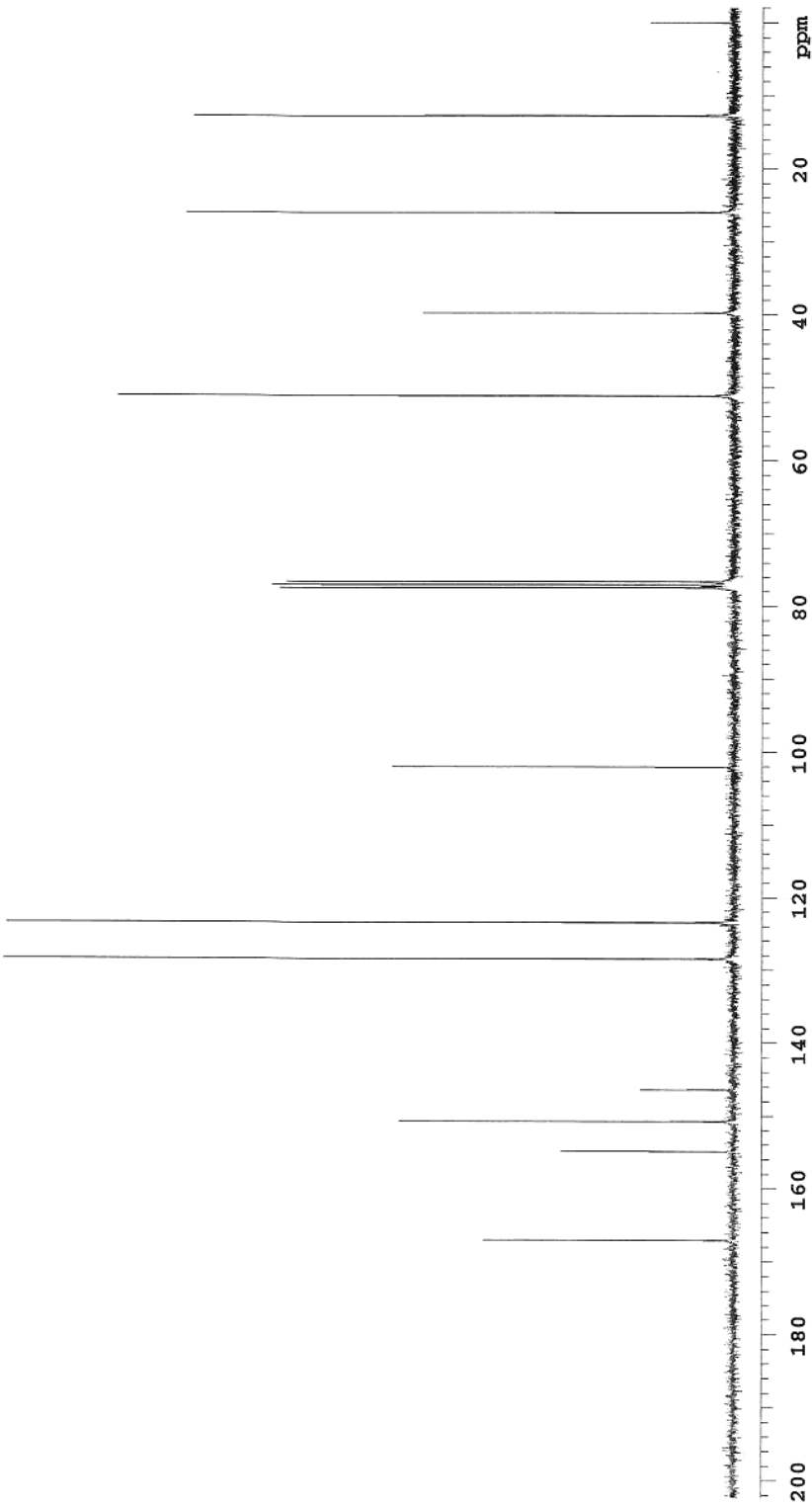


Figura S42. ^{13}C NMR (75 MHz, CDCl_3) – Compound **12m**

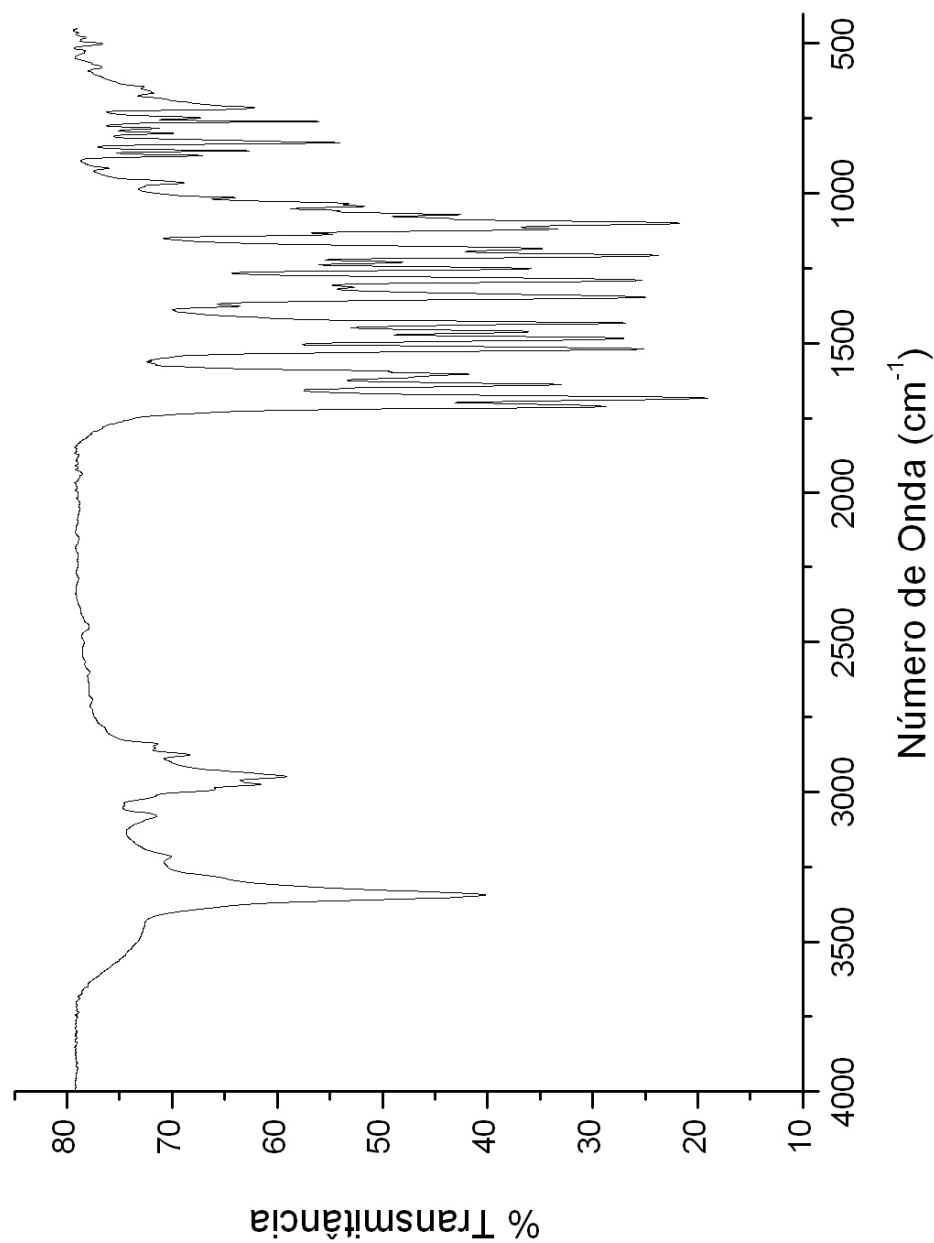


Figure S43. IR (KBr, cm⁻¹) – Compound **12m**

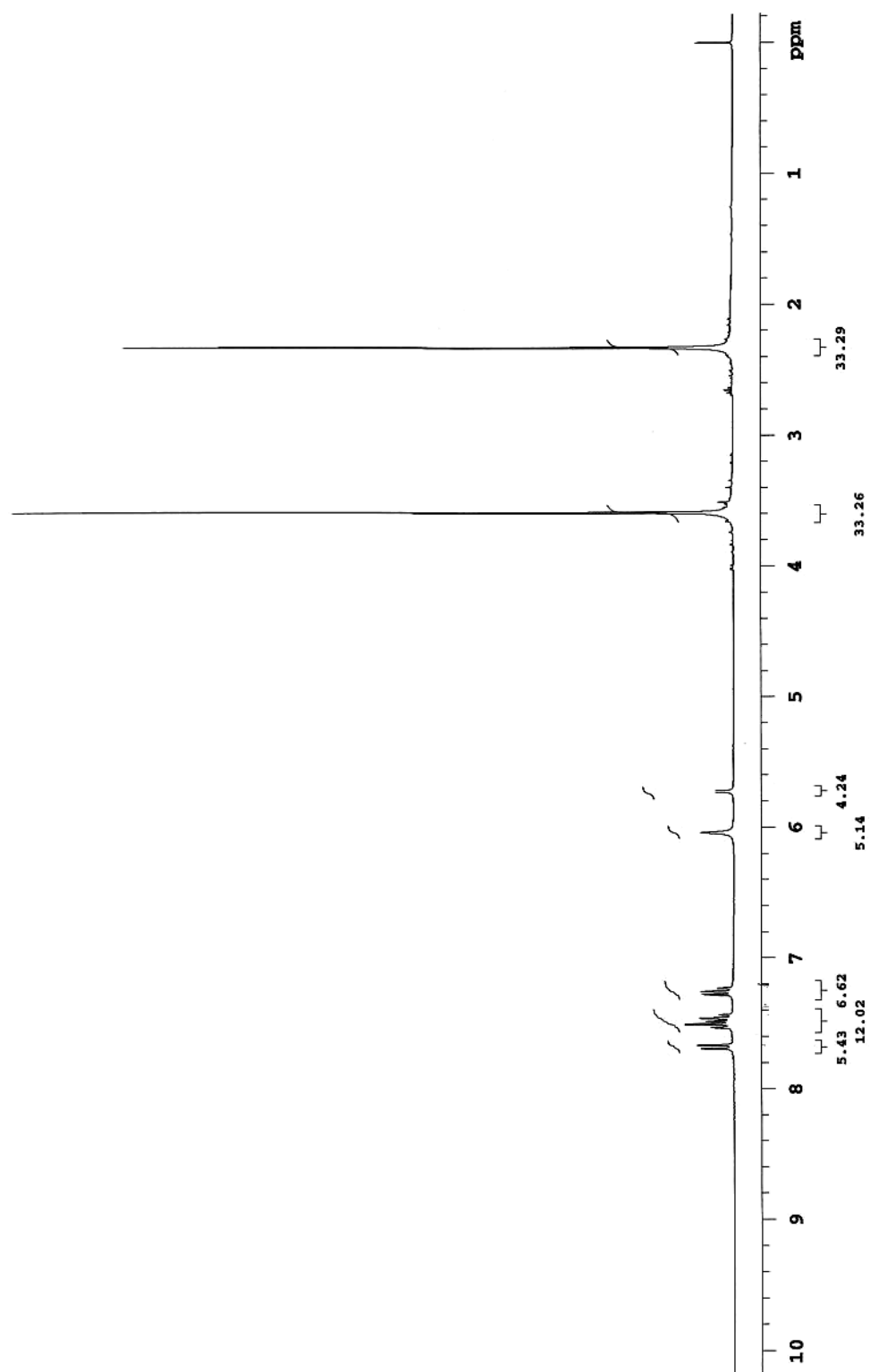


Figure S44. ^1H NMR (300 MHz, CDCl_3) - Compound 7 (Nifedipine)

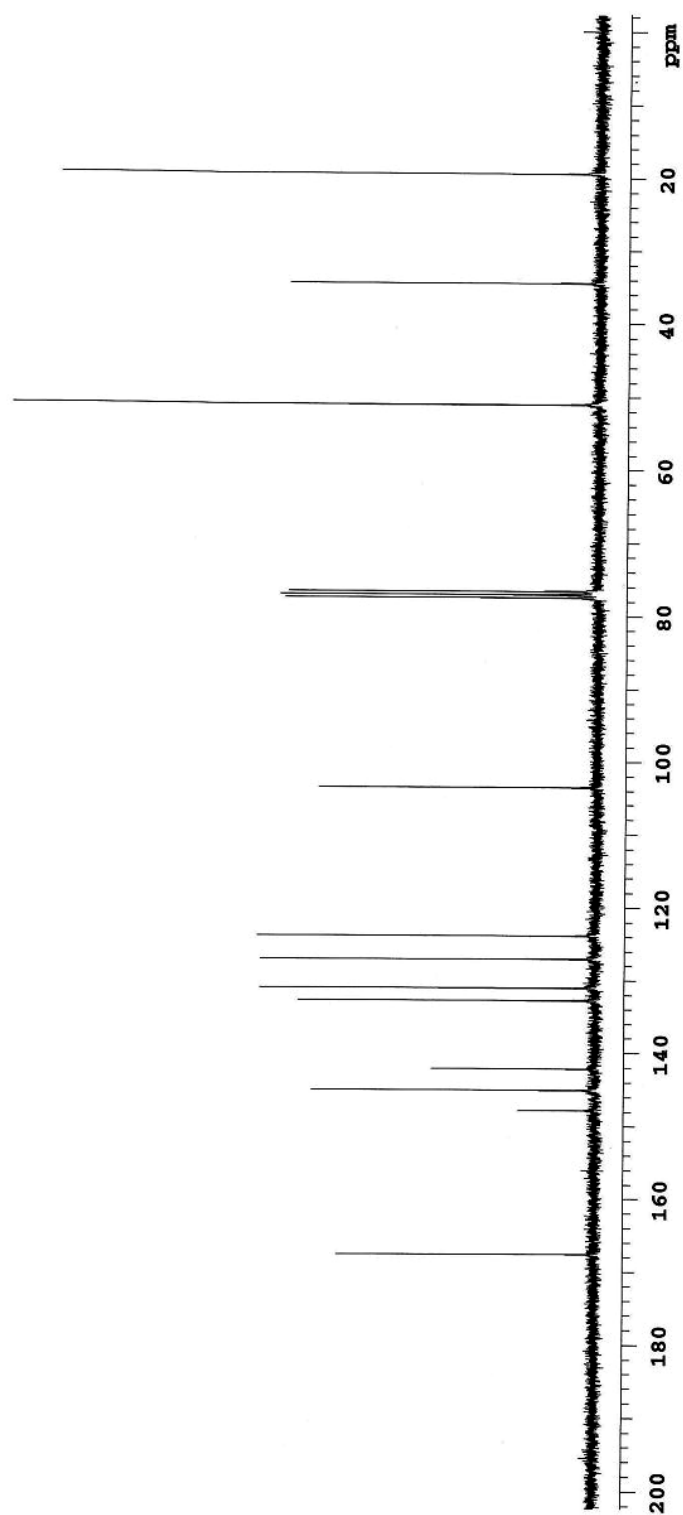


Figura S45. ^{13}C NMR (75 MHz, CDCl_3) – Compound 7 (Nifedipine)

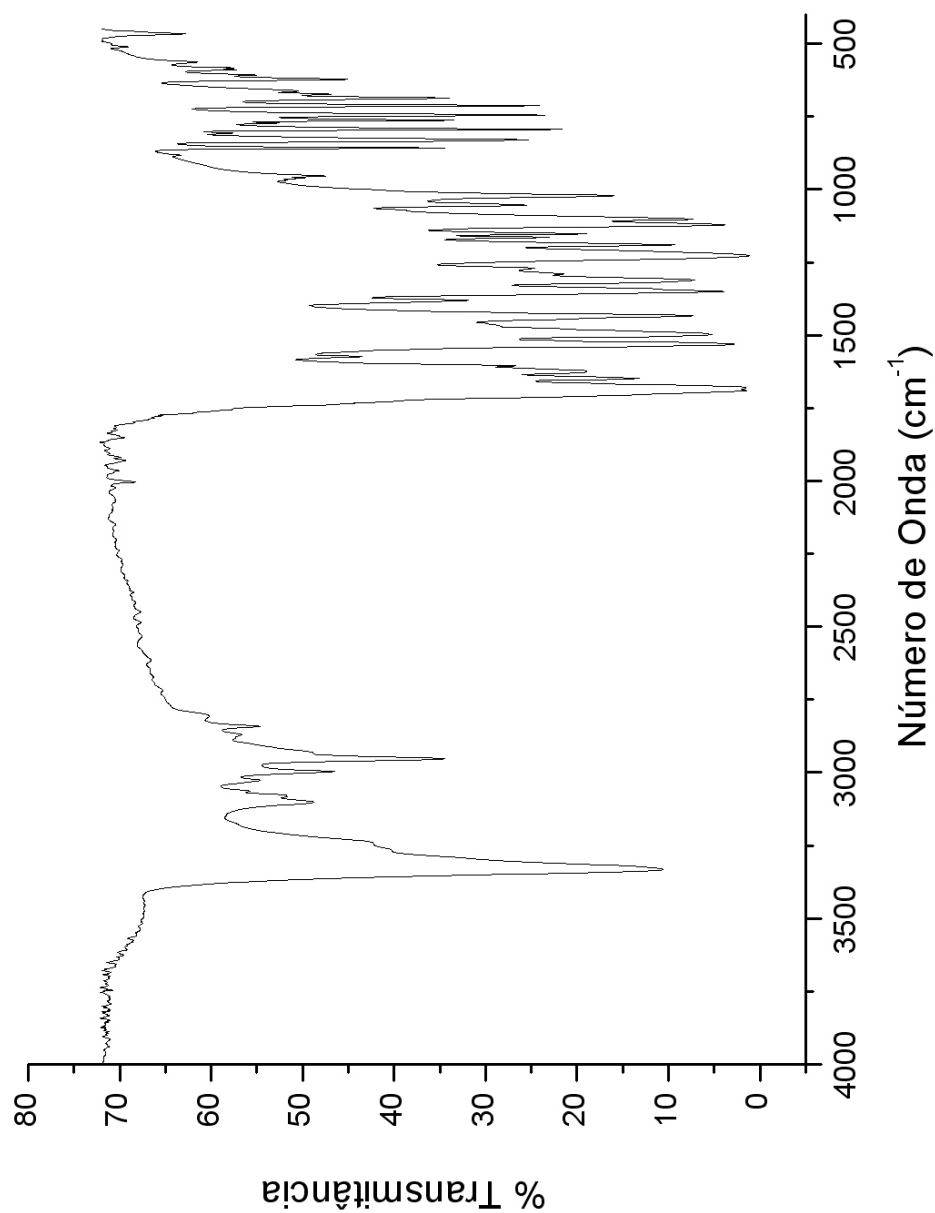


Figure S46. IR (KBr, cm⁻¹) – Compound 7 (Nifedipine)

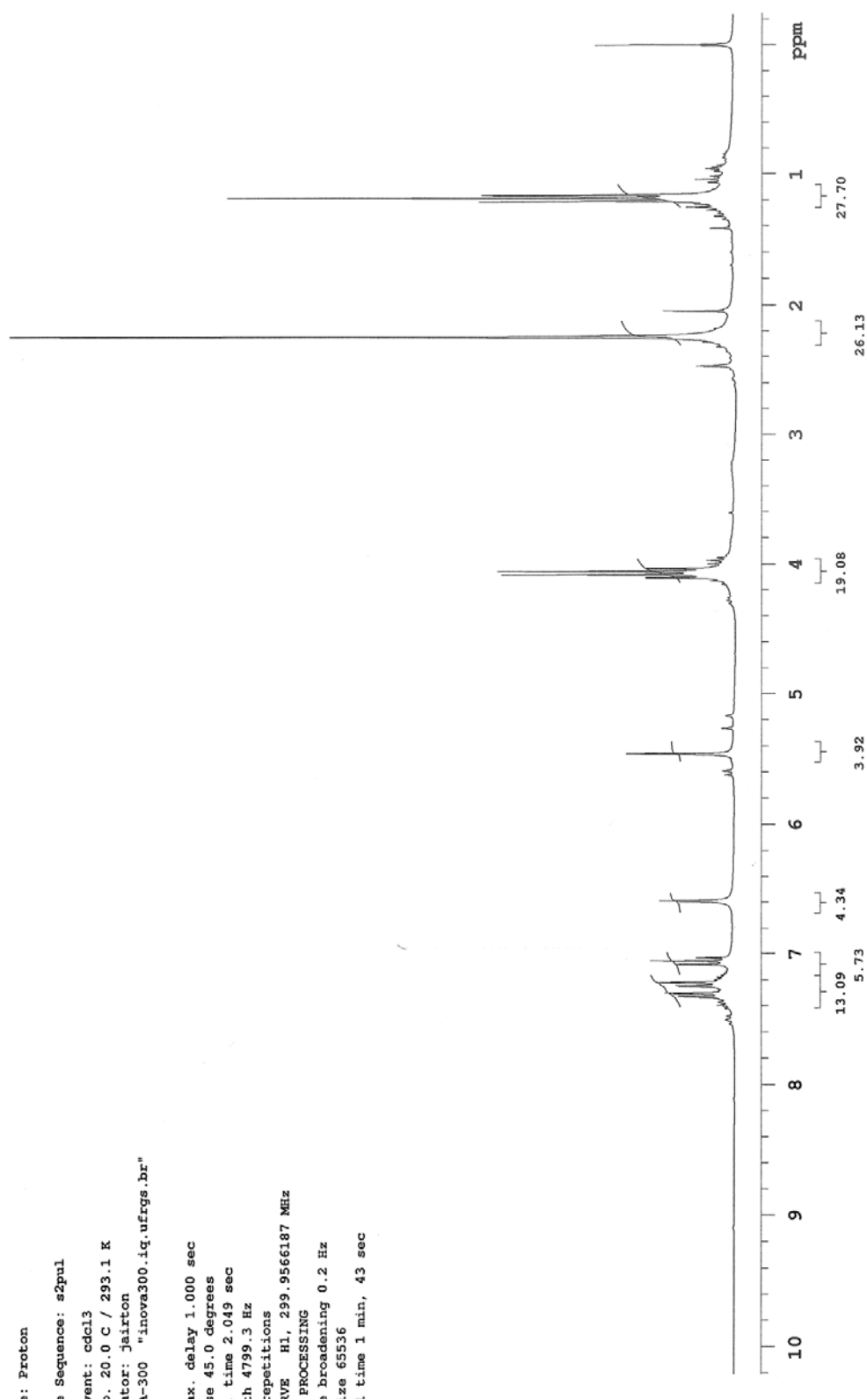


Figure S47. ^1H NMR (300 MHz, CDCl_3) - Compound **8** (Nemadipine B)

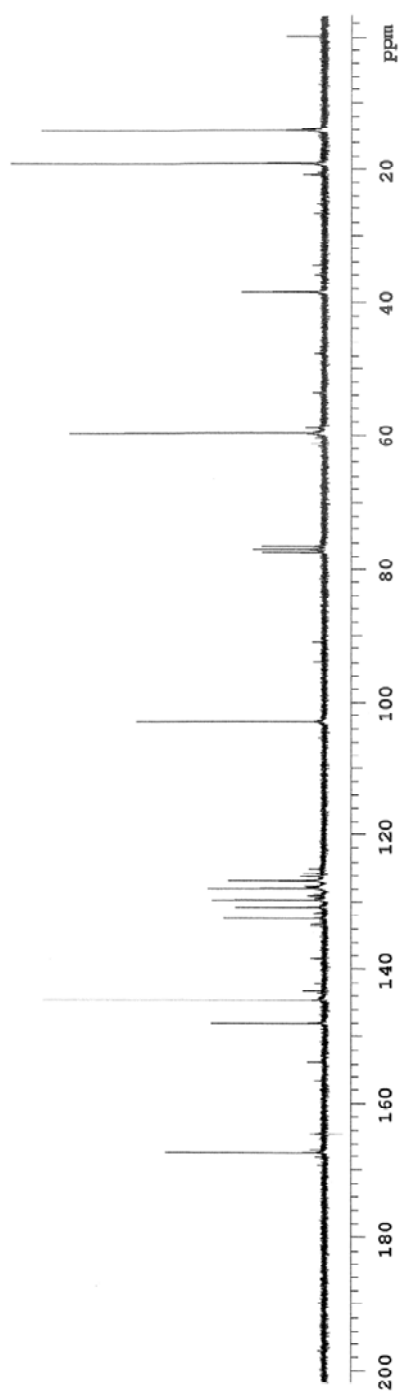


Figura S48. ^{13}C NMR (75 MHz, CDCl_3) – Compound **8** (Niemadipine B)

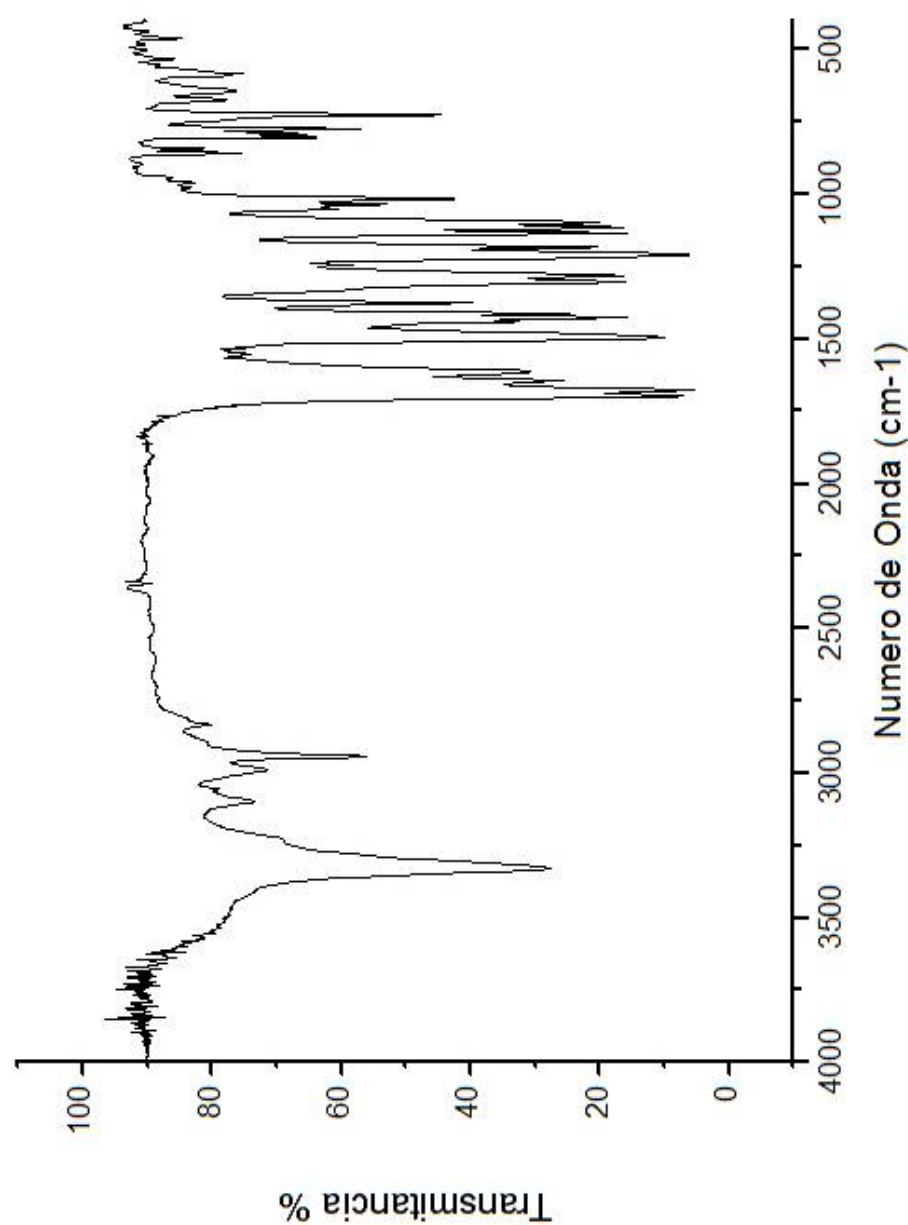


Figure S49. IR (KBr, cm⁻¹) – Compound **8** (Nemadipene B)

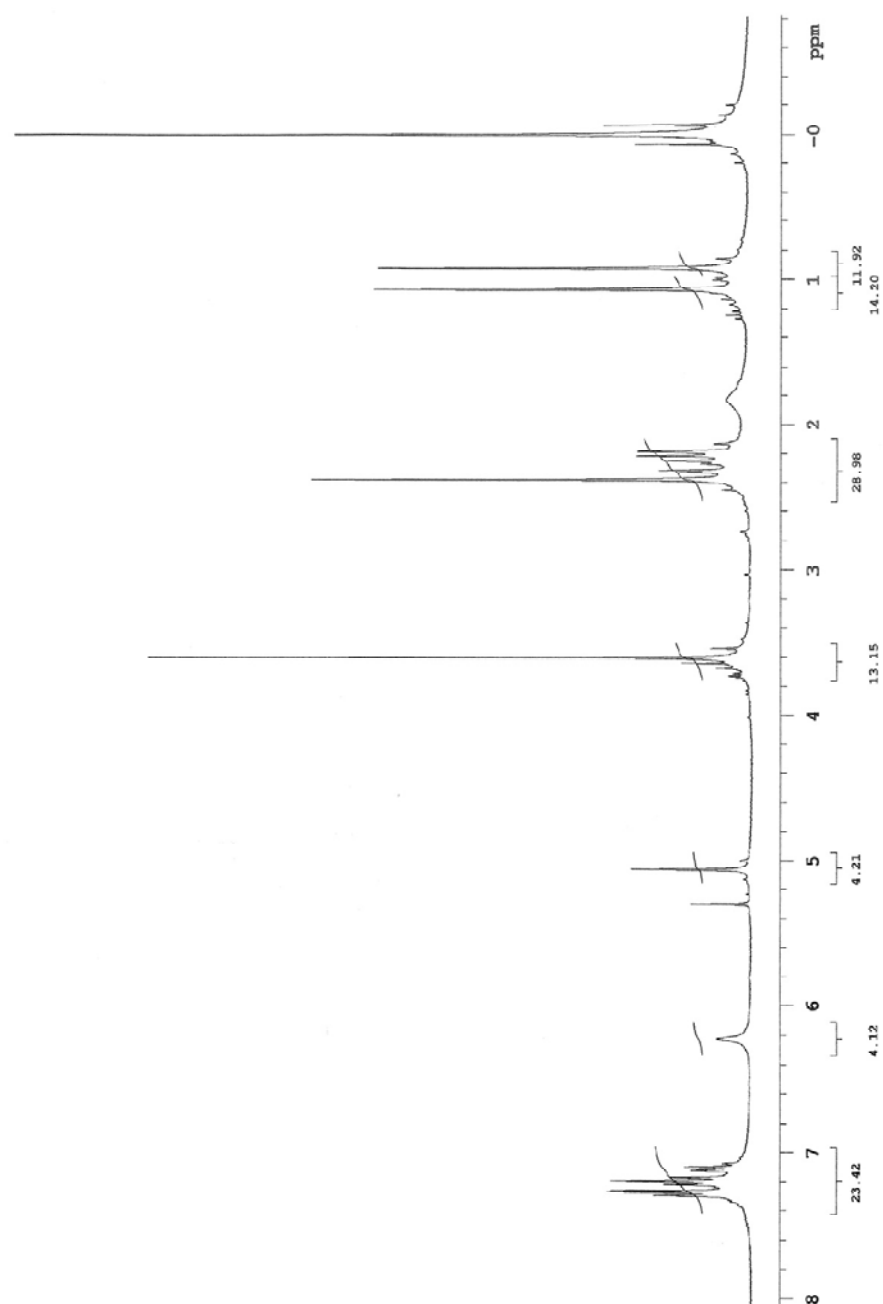


Figura S50. ^1H NMR (300 MHz, CDCl_3) – Compound 14a

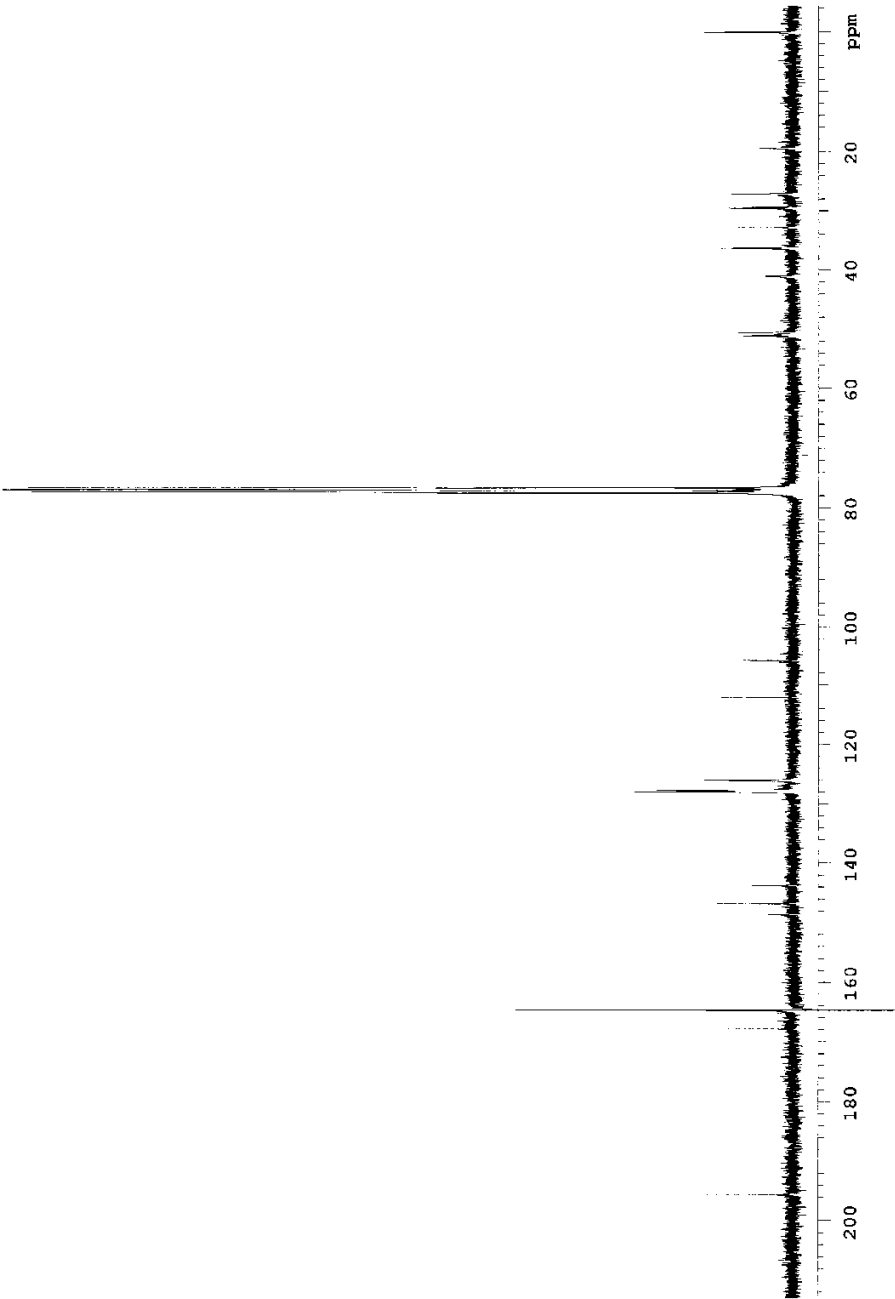


Figura S51. ^{13}C NMR (75 MHz, CDCl_3) – Compound 14a

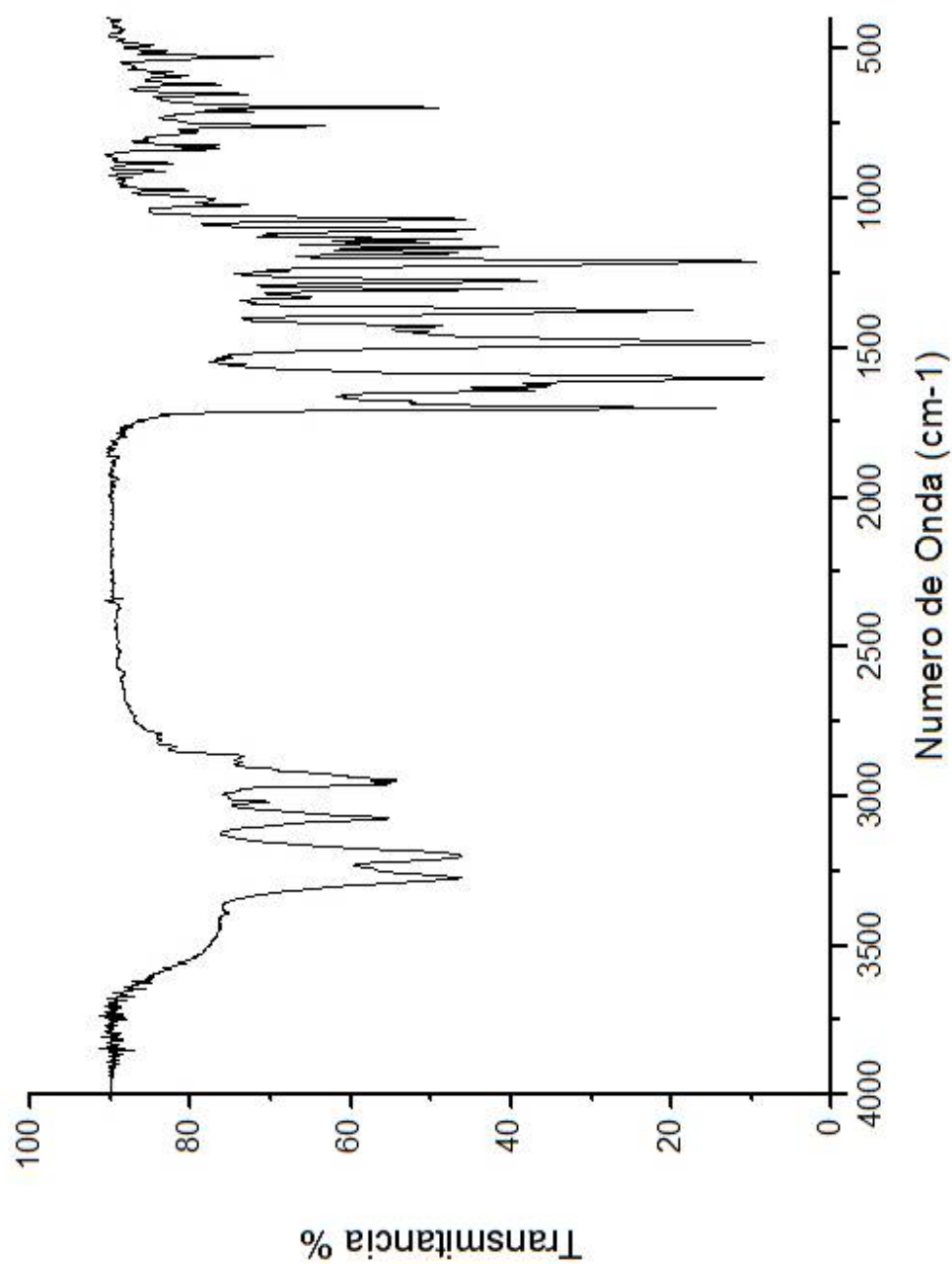


Figure S52. IR (KBr, cm⁻¹) – Compound **14a**

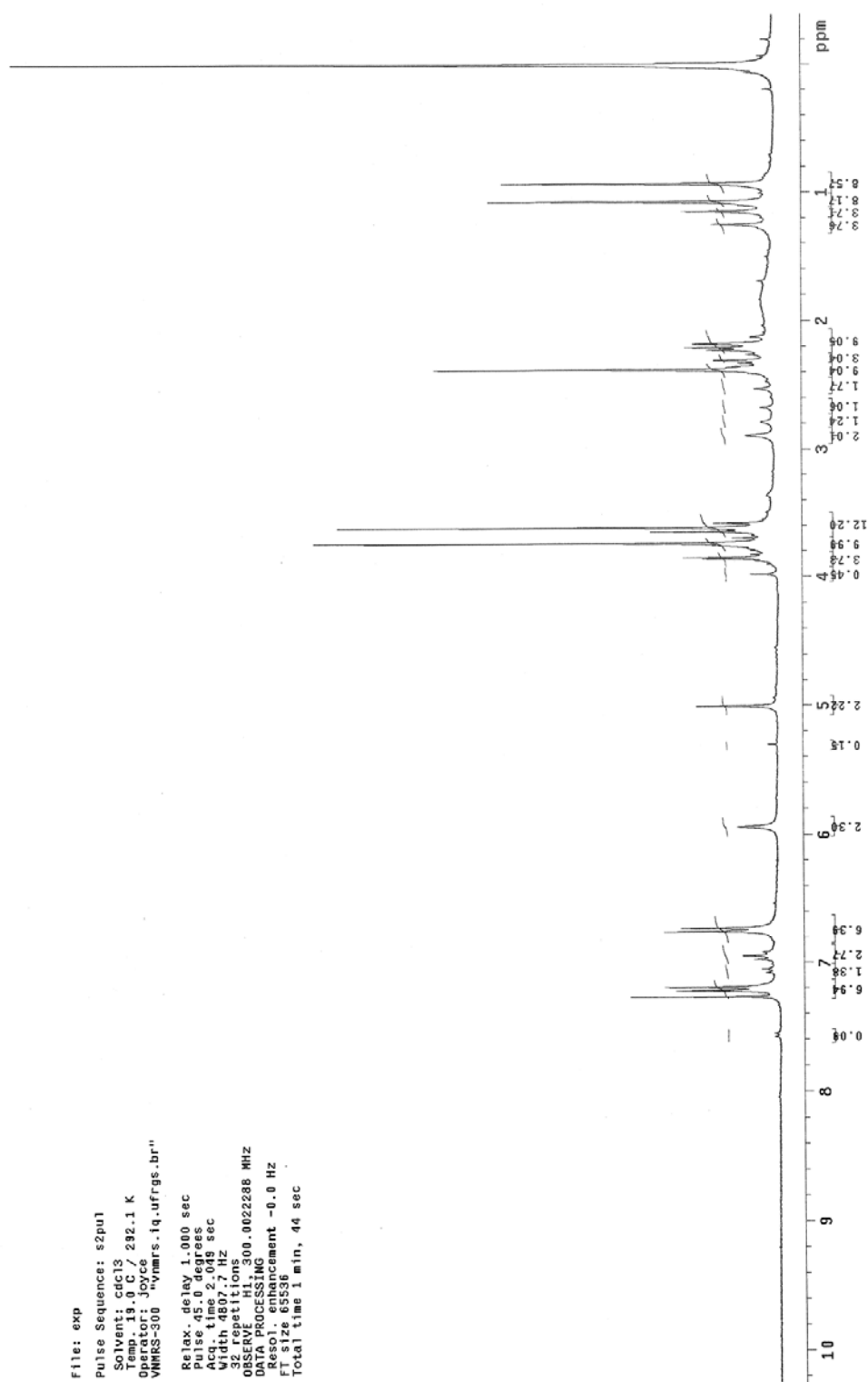


Figure S53. ^1H NMR (300 MHz, CDCl_3) - Compound **14b**

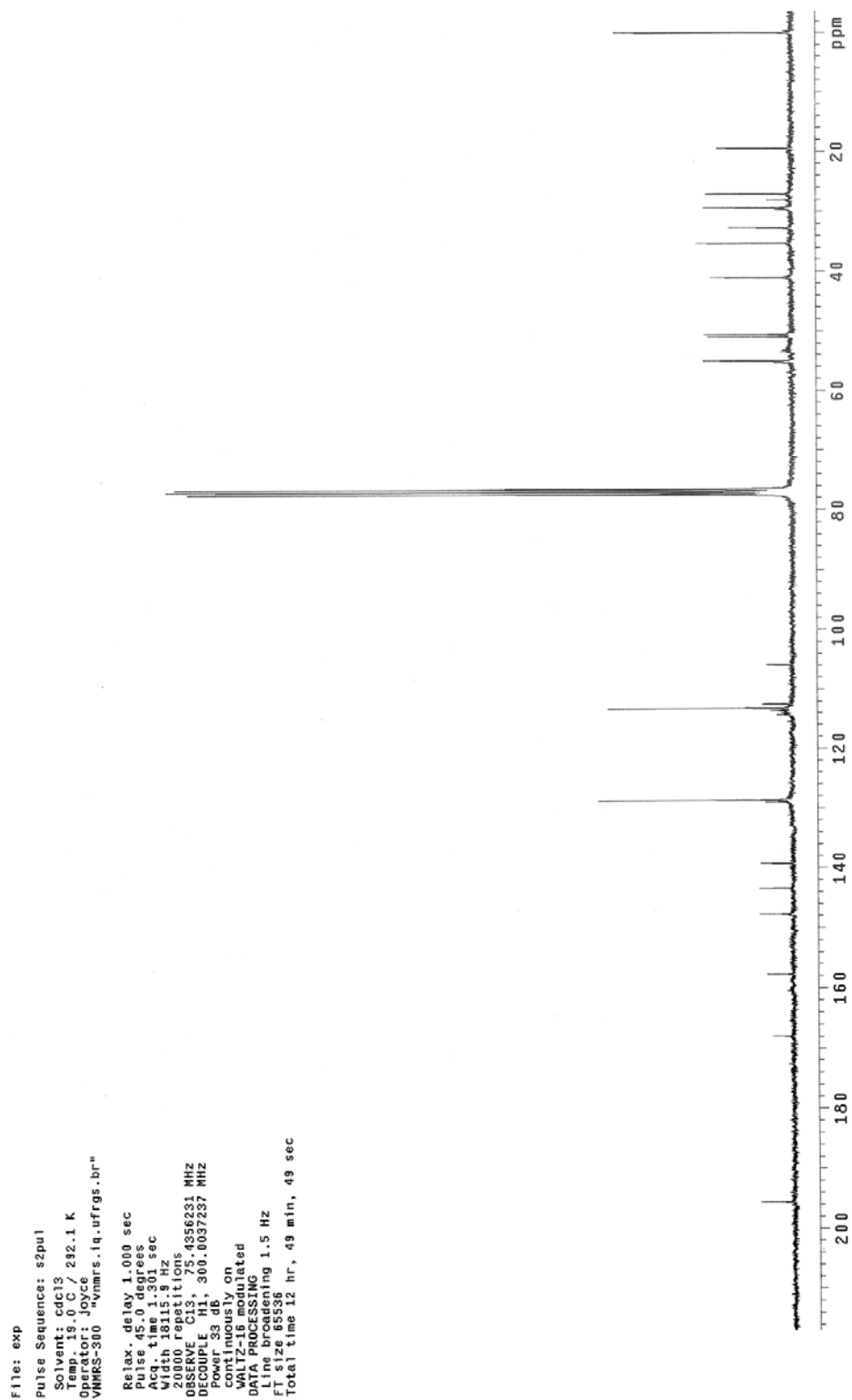


Figura S54. ^{13}C NMR (75 MHz, CDCl_3) – Compound **14b**

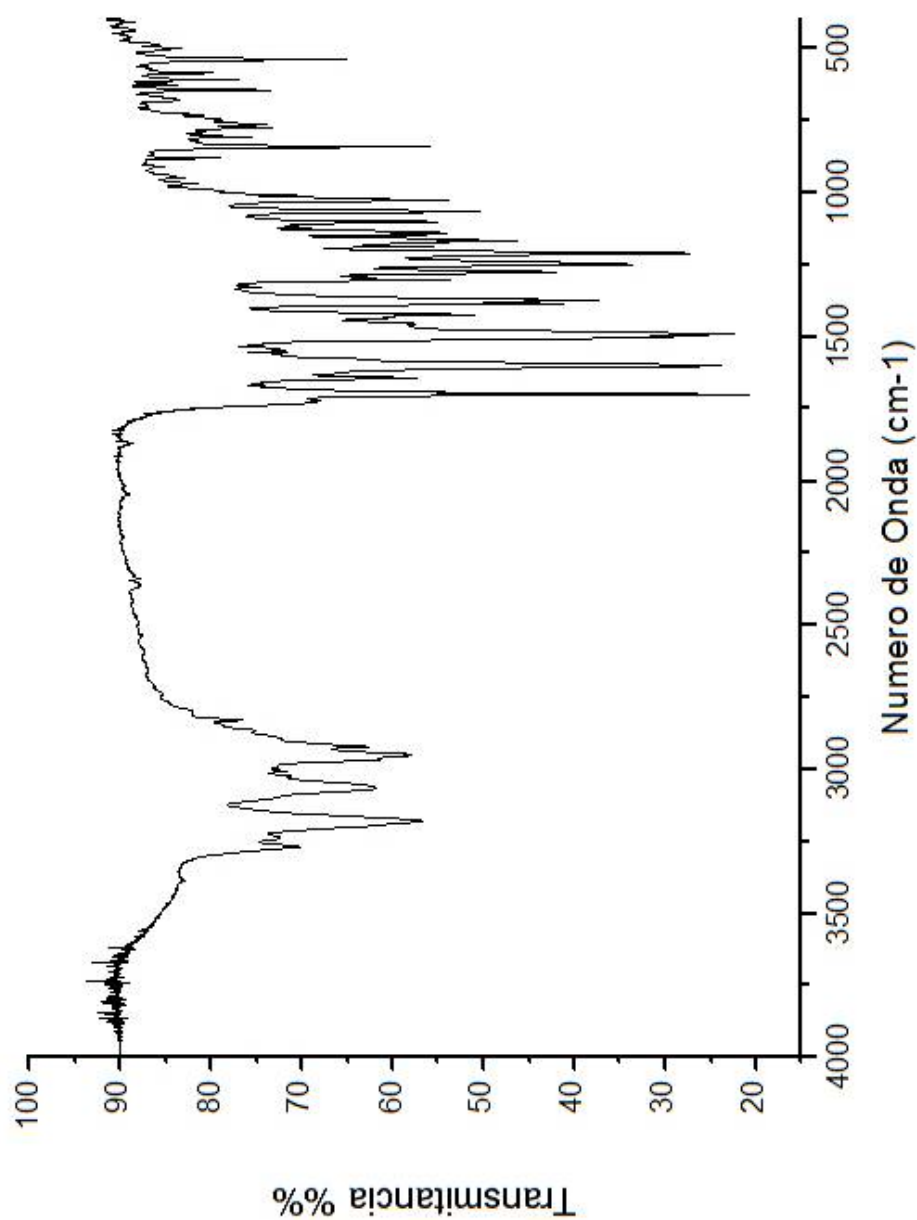


Figure S55. IR (KBr, cm⁻¹) – Compound **14b**

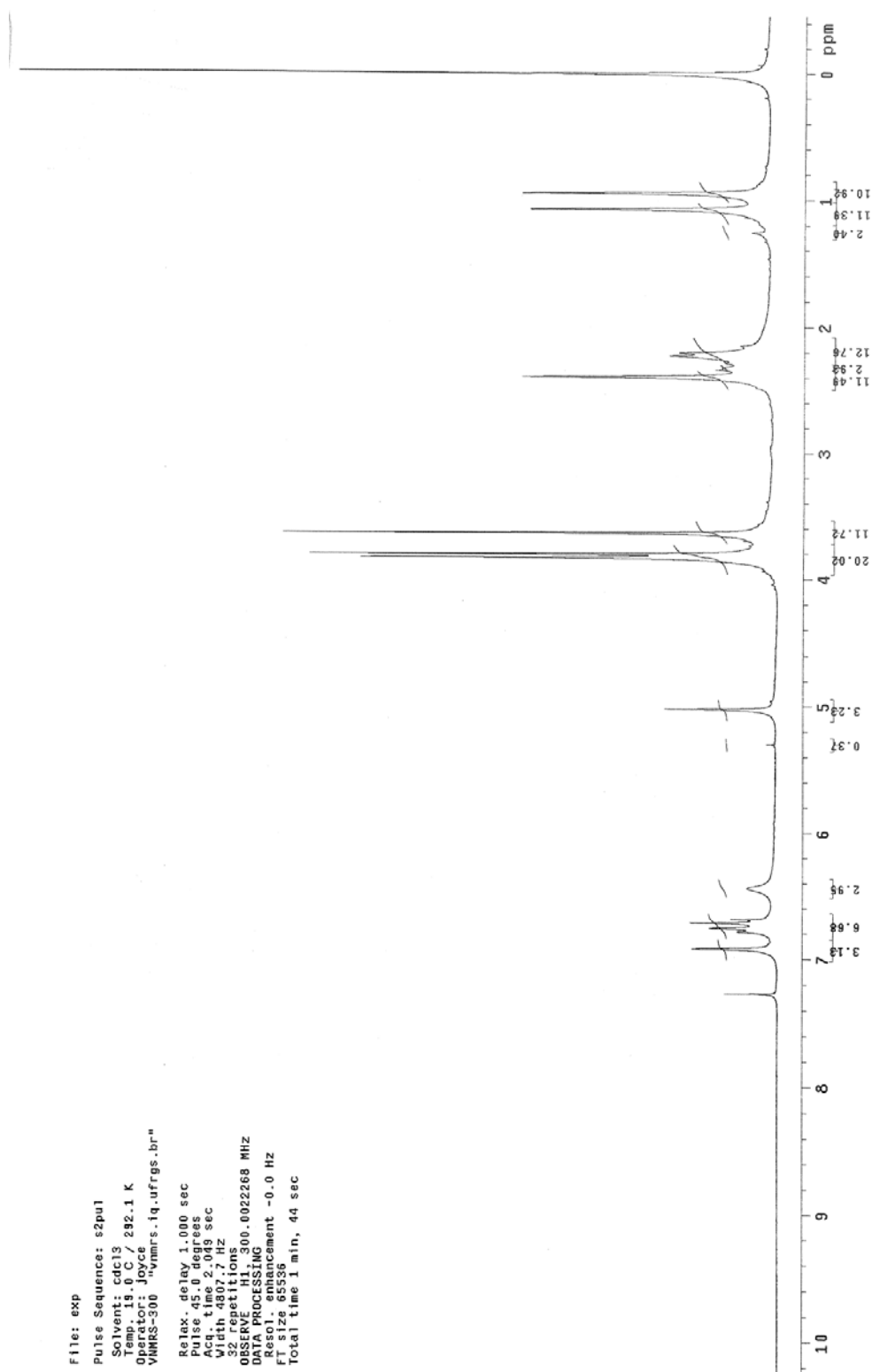


Figure S56. ^1H NMR (300 MHz, CDCl_3) - Compound **14c**

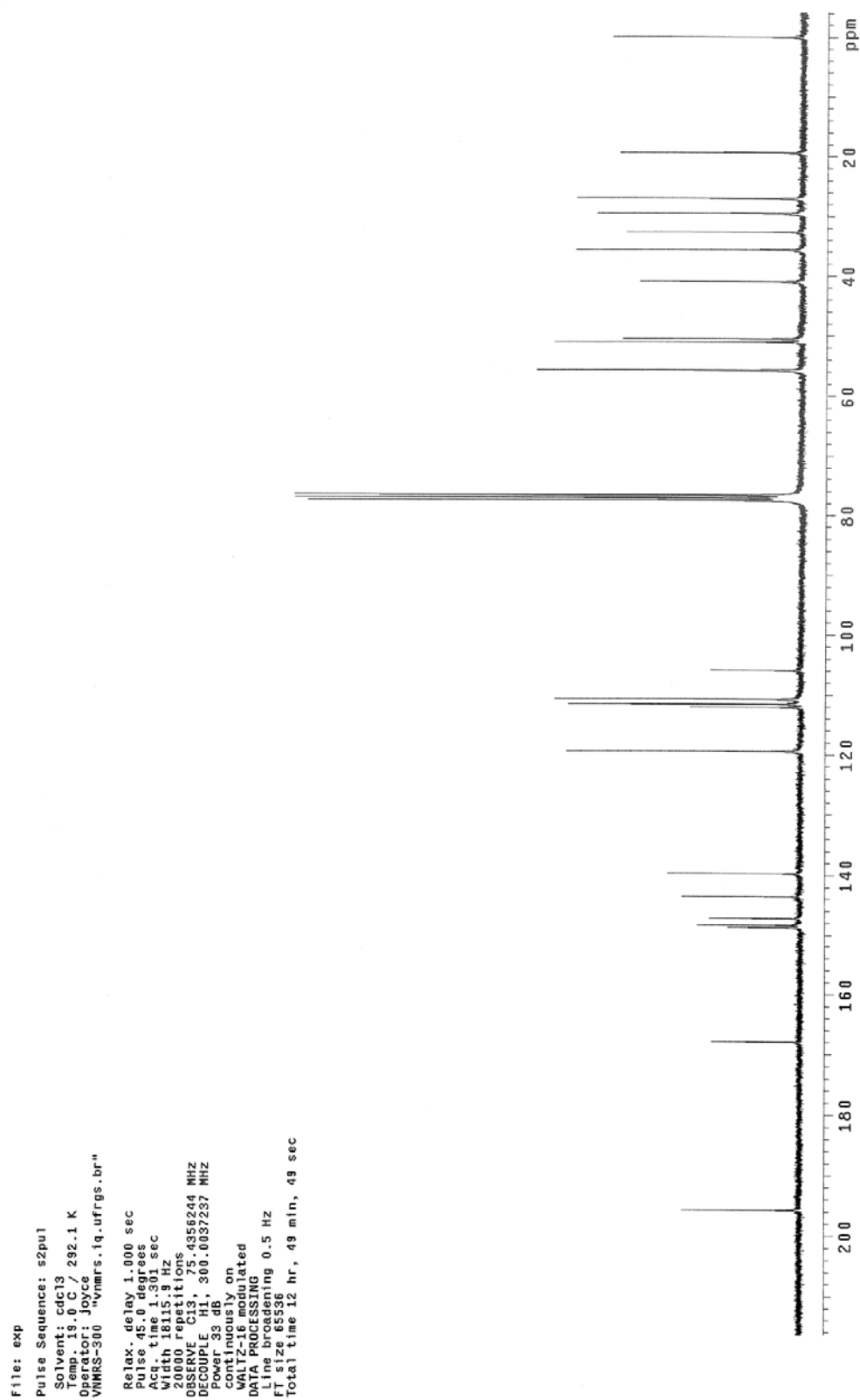


Figura S57. ^{13}C NMR (75 MHz, CDCl_3) – Compound 14c

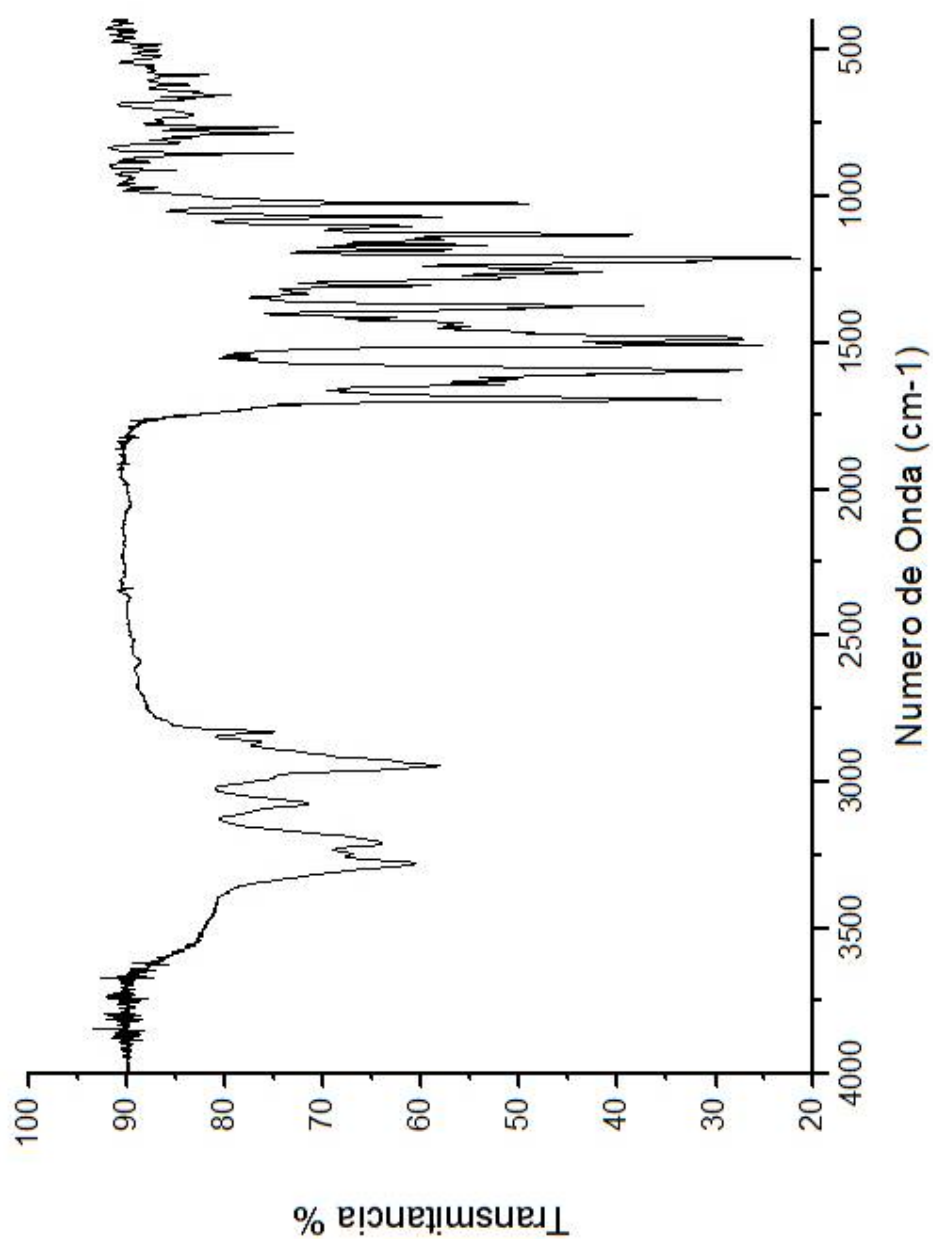


Figure S58. IR (KBr, cm⁻¹) – Compound **14c**

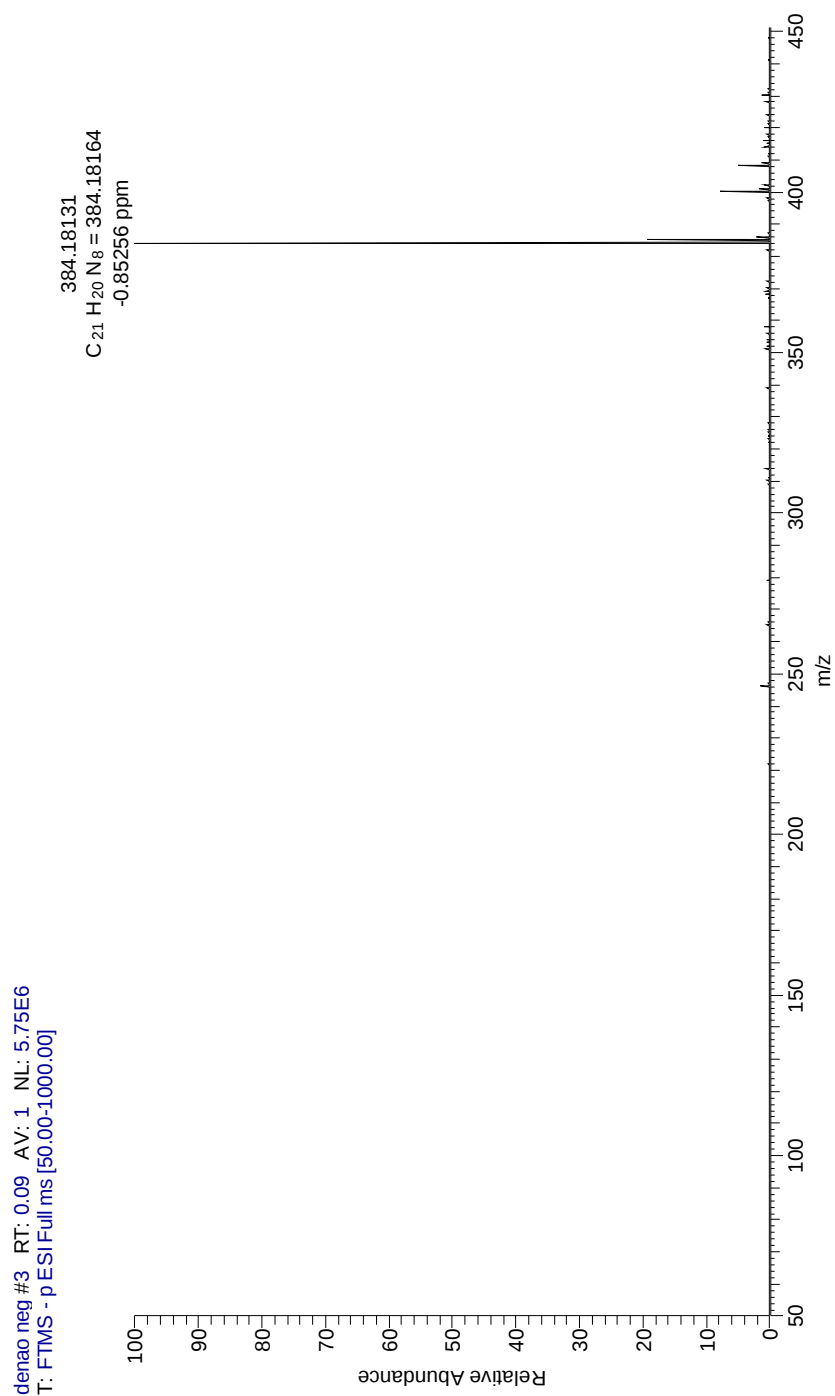


Figure S59. HRMS – Compound 14c

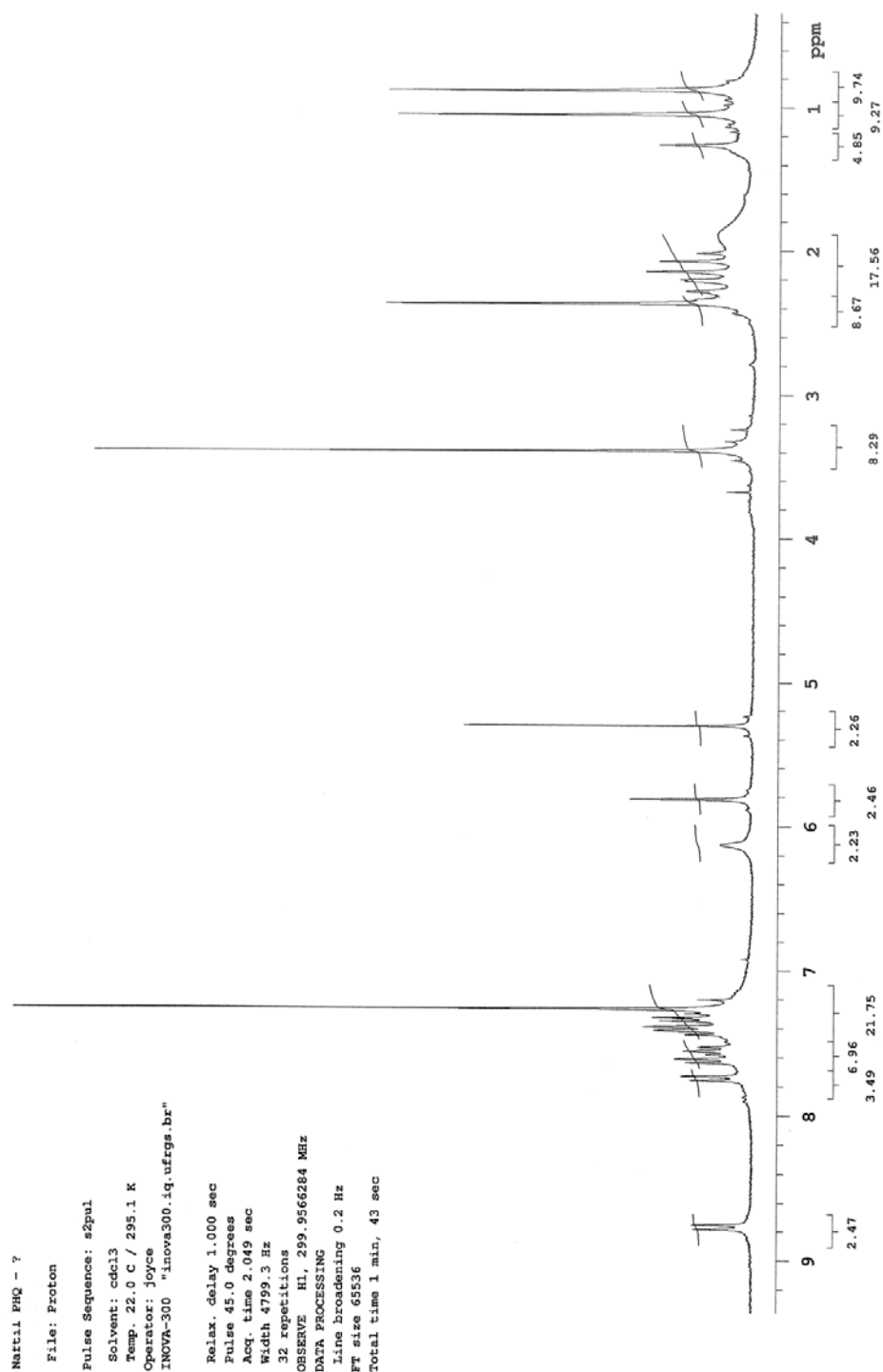


Figure S60. ^1H NMR (300 MHz, CDCl_3) - Compound **14d**

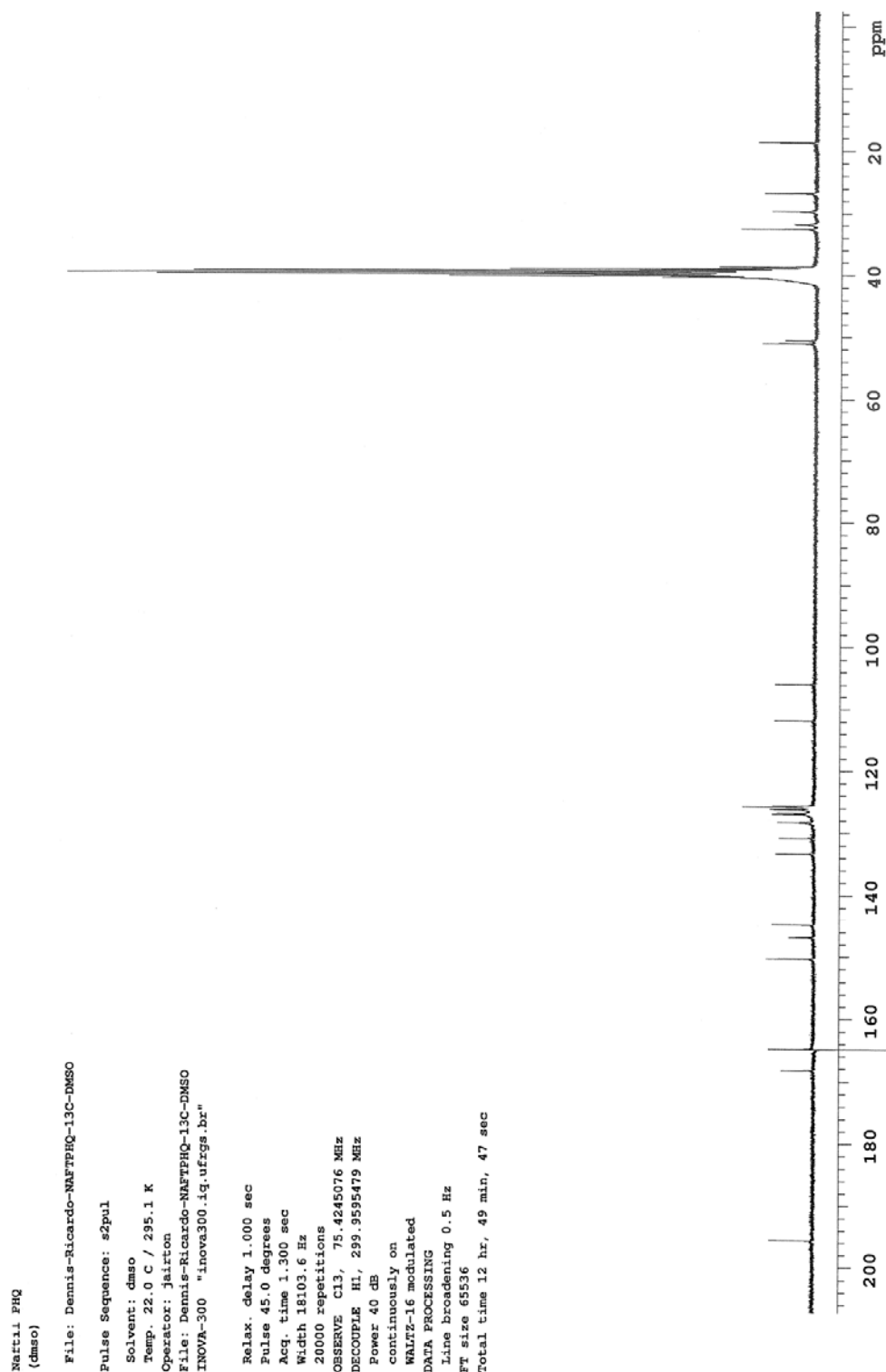


Figura S61. ^{13}C NMR (75 MHz, CDCl_3) – Compound **14d**

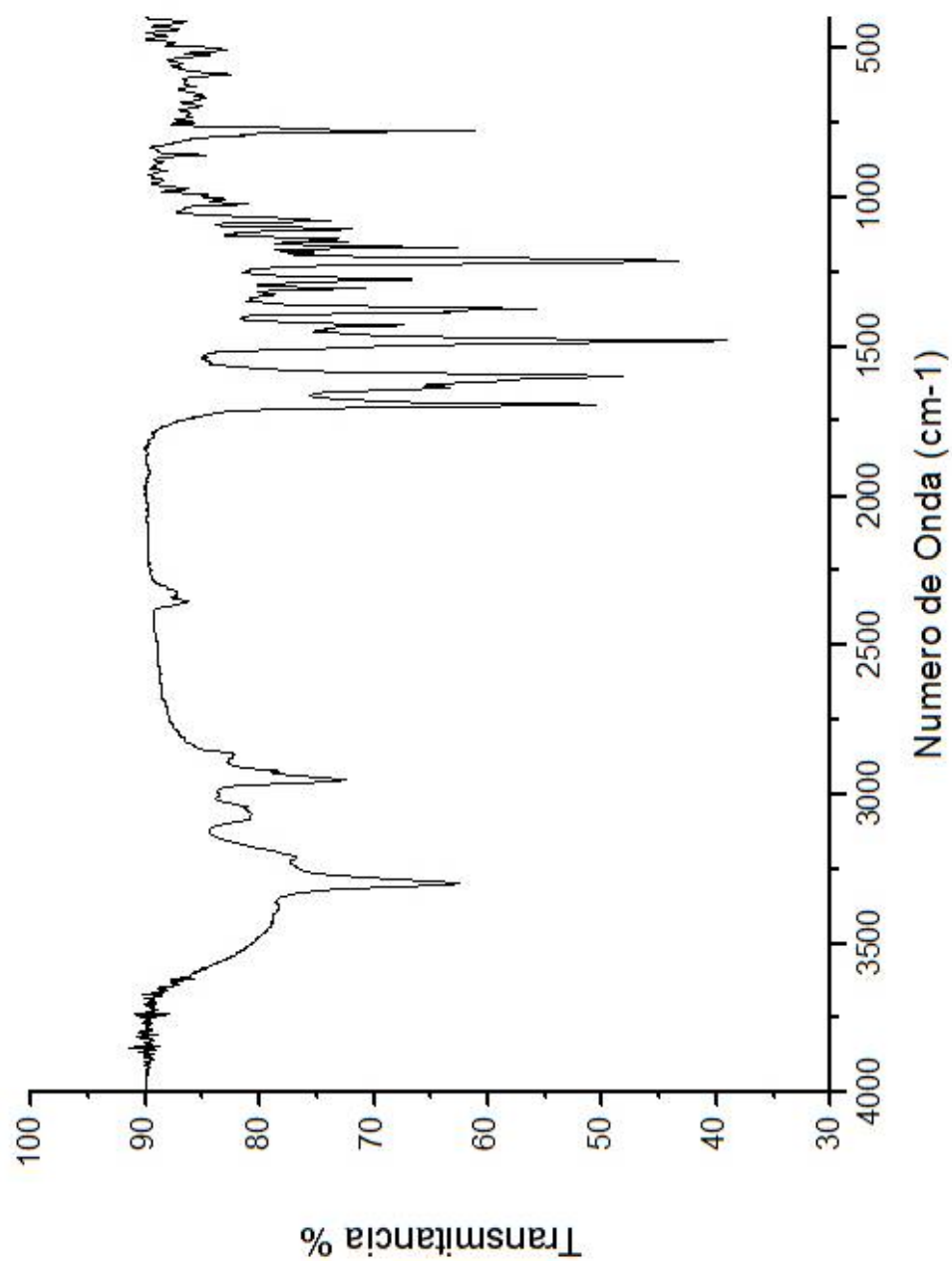


Figure S62. IR (KBr, cm⁻¹) – Compound **14d**

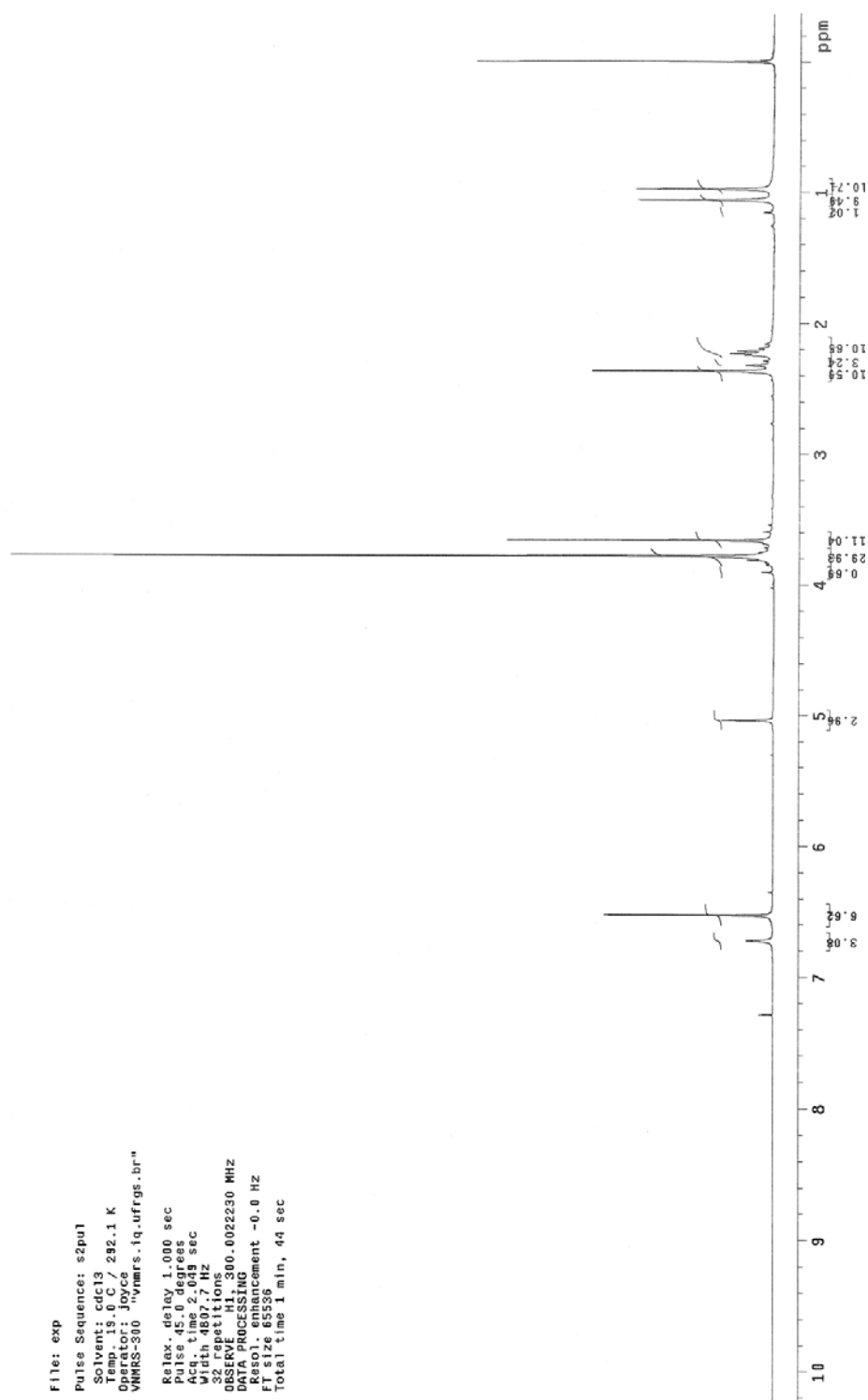


Figure S63. ^1H NMR (300 MHz, CDCl_3) - Compound **14e**

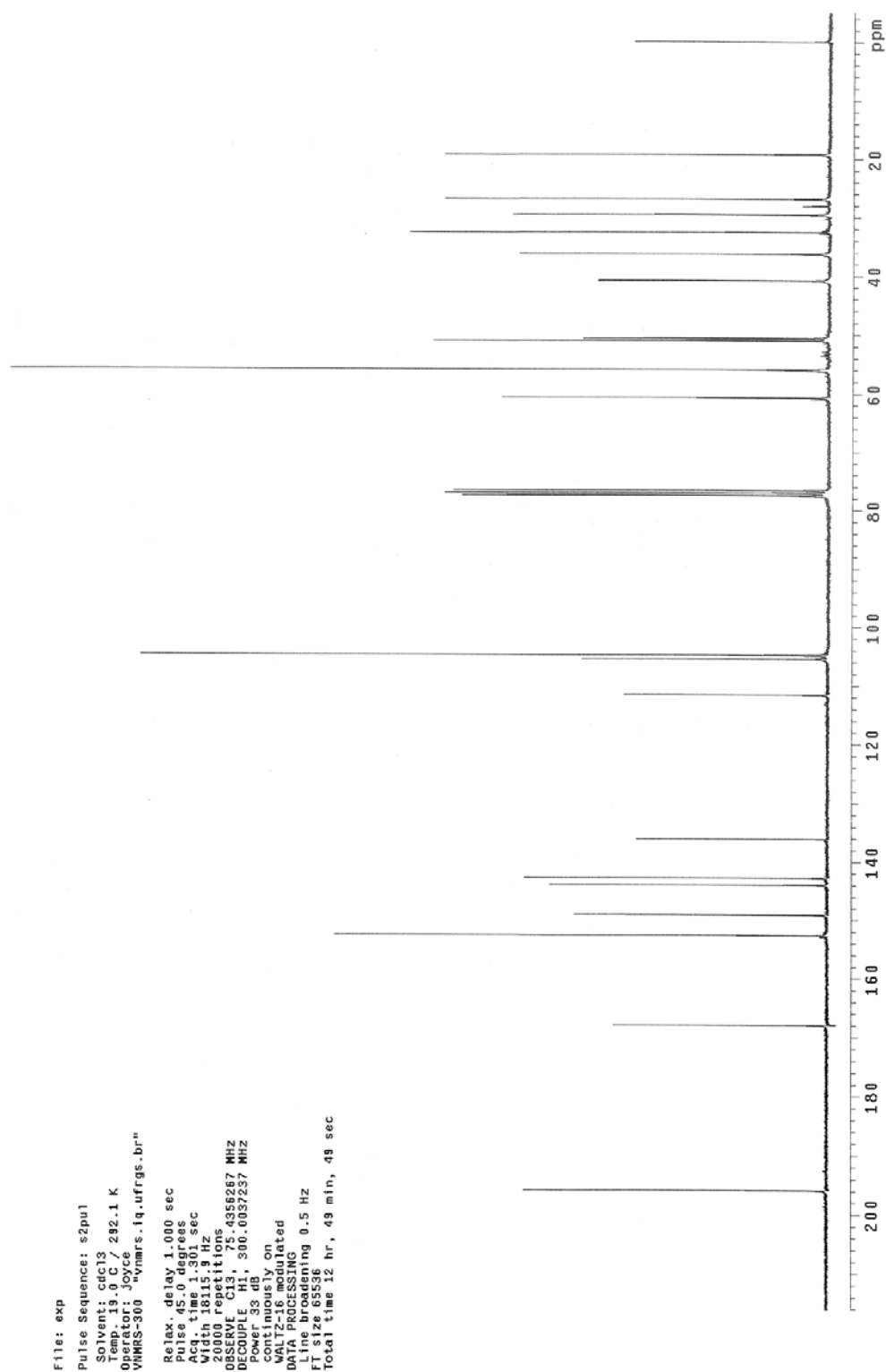


Figura S64. ^{13}C NMR (75 MHz, CDCl_3) – Compound **14e**

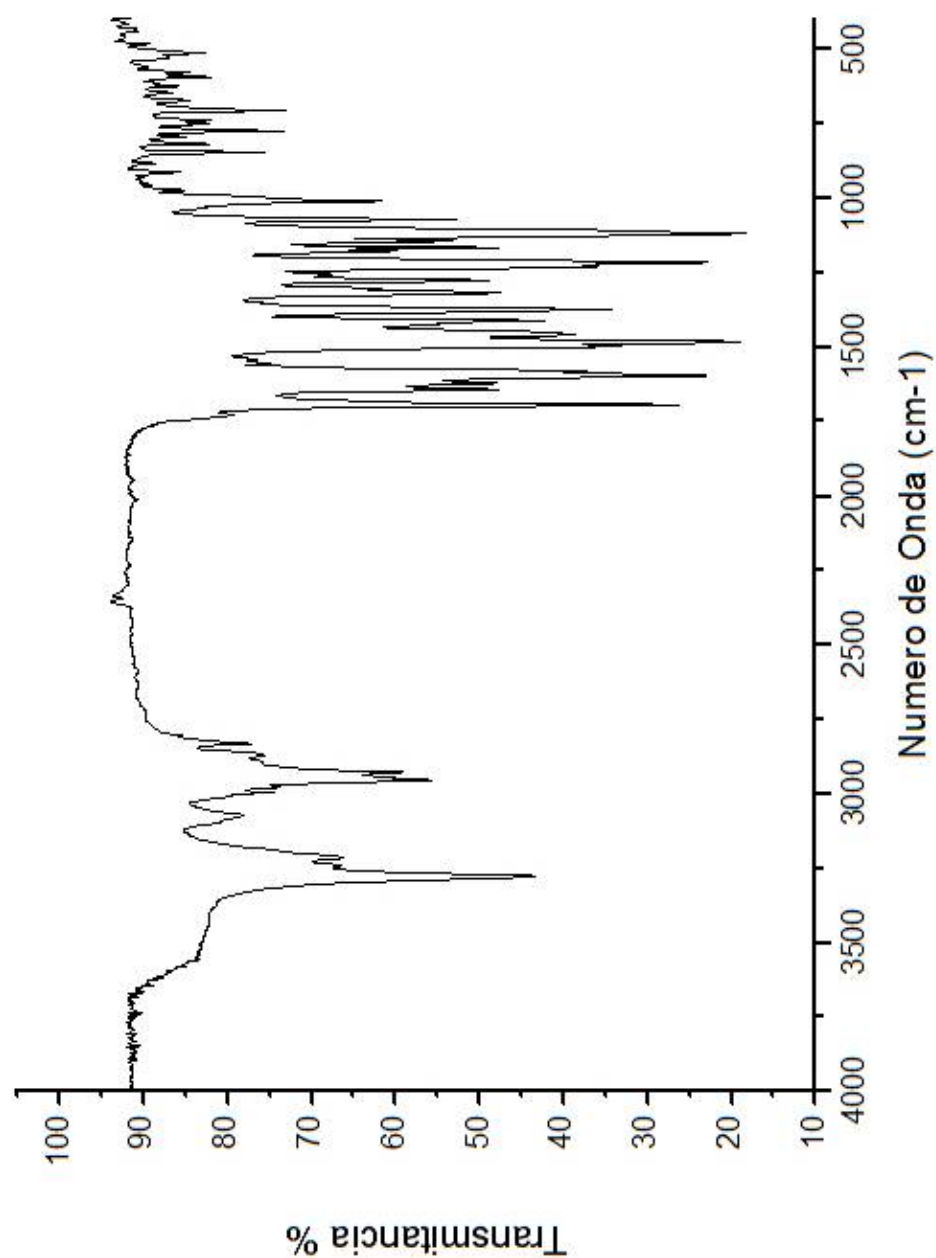


Figure S65. IR (KBr, cm⁻¹) – Compound **14e**

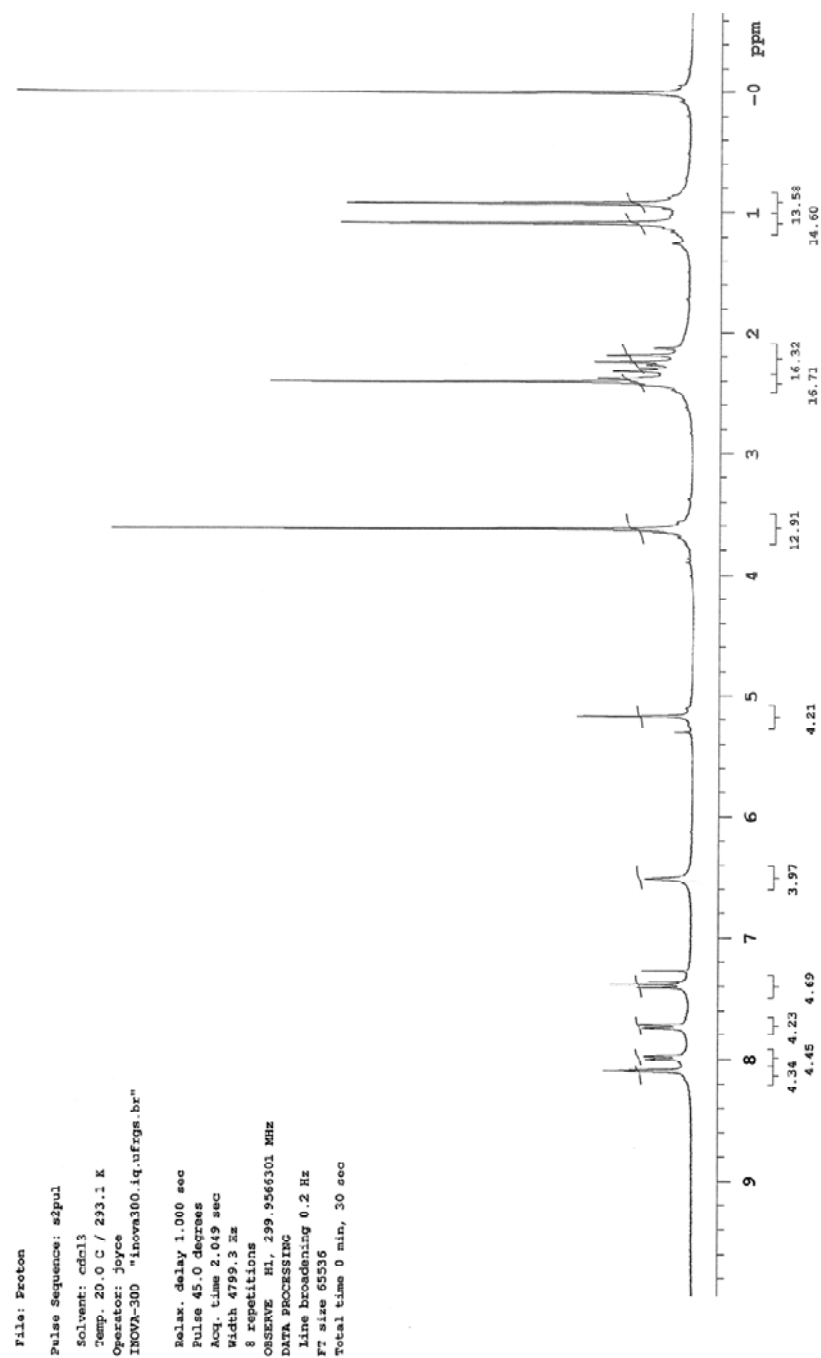


Figure S66. ^1H NMR (300 MHz, CDCl_3) - Compound **14f**

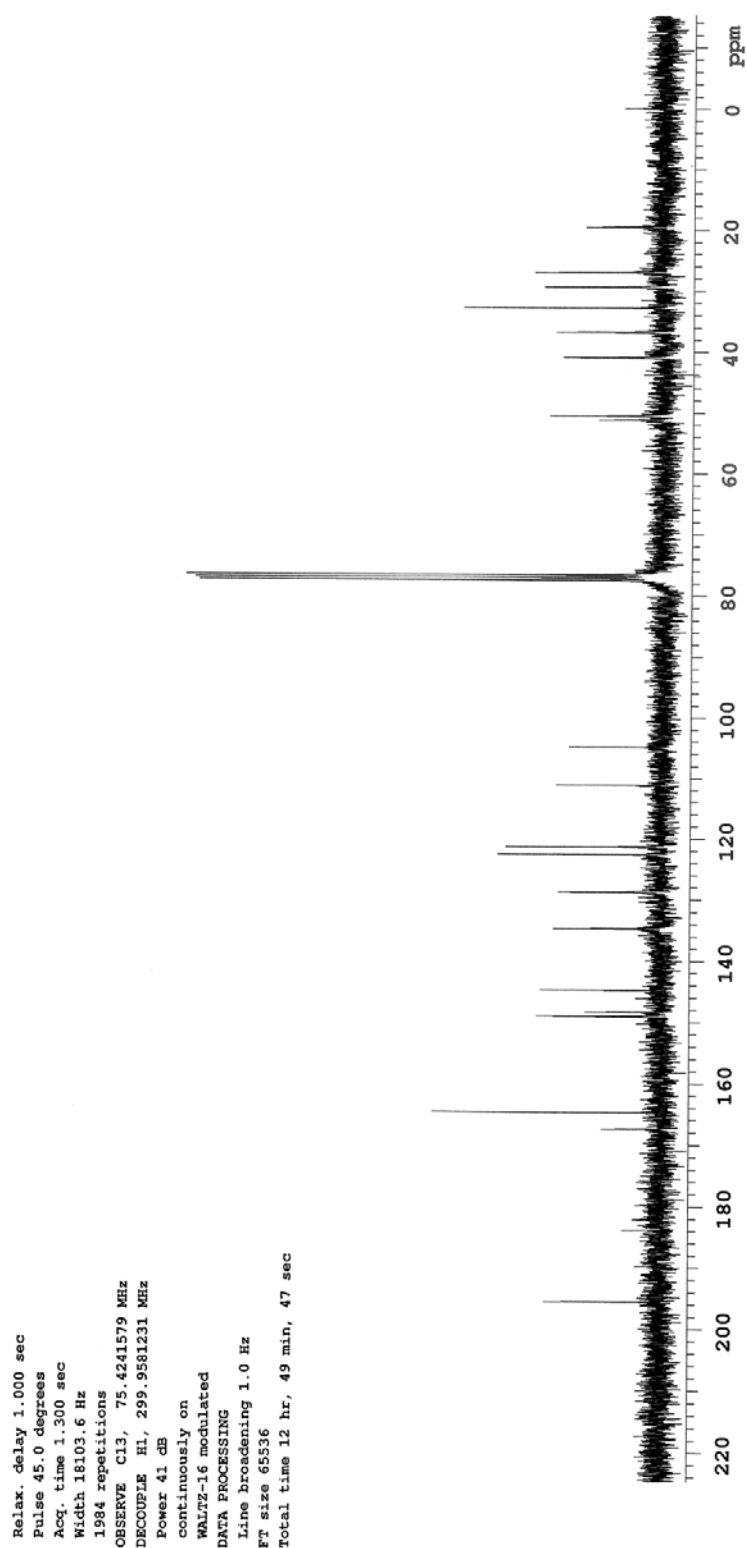


Figure S67. ^{13}C NMR (75 MHz, CDCl_3) - Compound **14f**

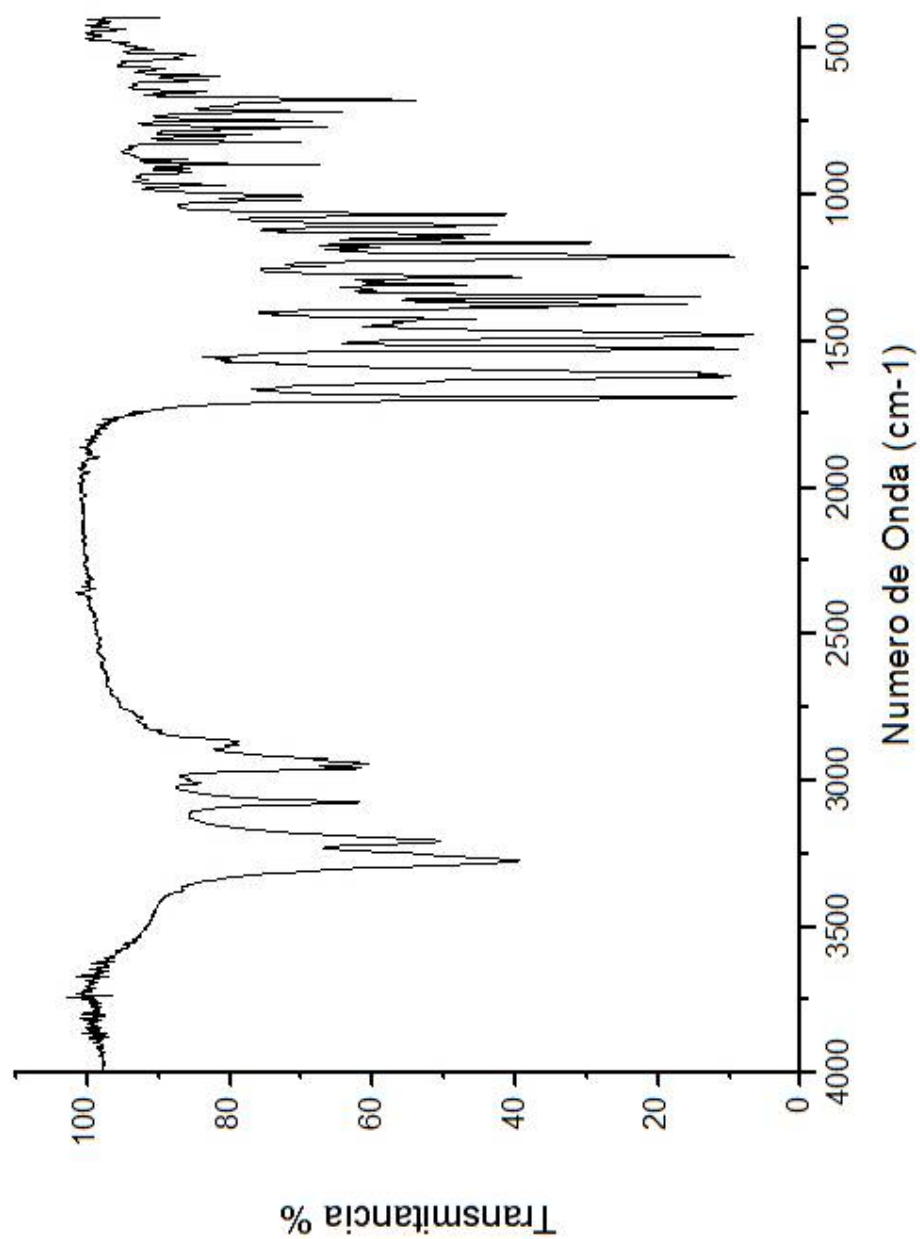


Figure S68. IR (KBr, cm⁻¹) – Compound **14f**

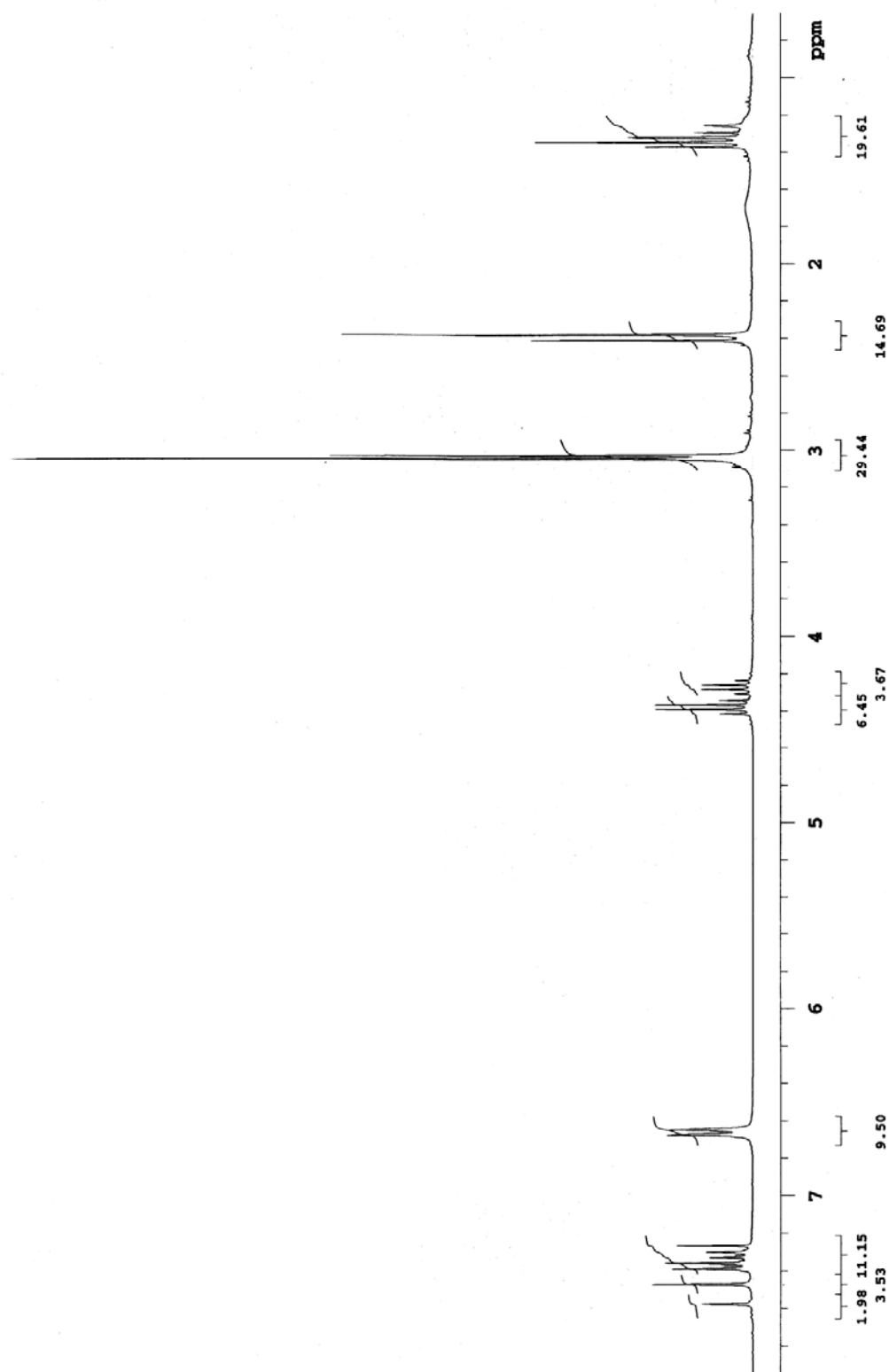


Figure S69. ¹H NMR (300 MHz, CDCl₃) – Compound 15 (*E,Z* isomeric mixture)

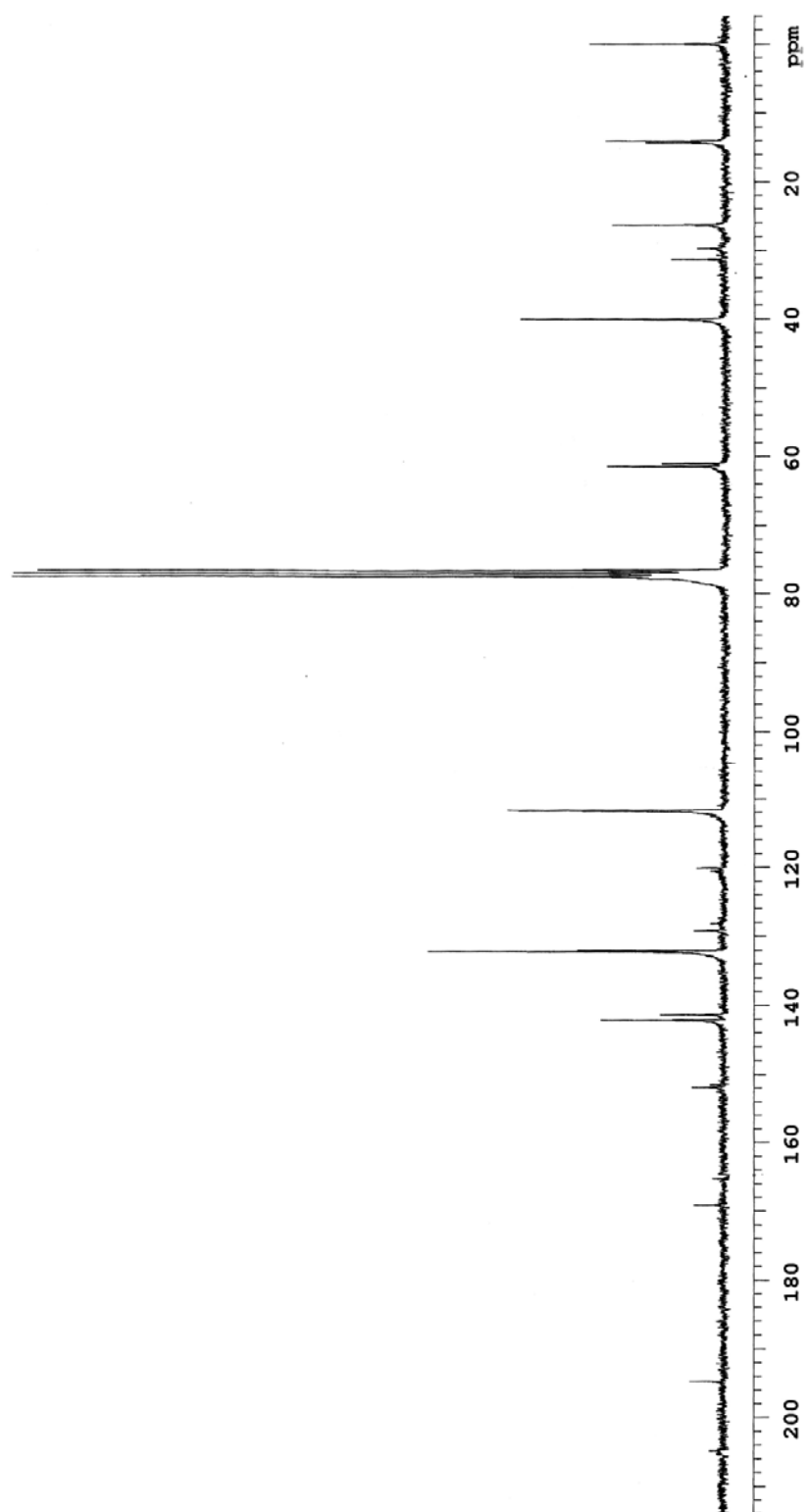


Figure S70. ^{13}C NMR (75 MHz, CDCl_3) – Compound **15** (E,Z isomeric mixture)