

SUPPLEMENTARY MATERIAL

Synthesis of new 5-aryl-benzo[f][1,7]naphthyridines via a cascade process (Ugi-3CR / intramolecular aza Diels-Alder cycloaddition) / aromatization

Óscar Vázquez-Vera ¹, Daniel Segura-Olvera ², Mónica A. Rincón-Guevara ³, Atilano Gutiérrez-Carrillo ², Miguel A. García-Sánchez ², Ilich A. Ibarra ⁴, Leticia Lomas-Romero ^{2,*}, Alejandro Islas-Jácome ^{2,*}, and Eduardo González-Zamora ^{2,*}

¹ Unidad Profesional Interdisciplinaria de Biotecnología, Instituto Politécnico Nacional, Av. Acueducto de Guadalupe S/N, Barr. La Laguna Ticomán, C.P. 07340, Gustavo A Madero, Ciudad de México; vaveos@yahoo.com.mx (O.V.-V.)

² Departamento de Química, Universidad Autónoma Metropolitana-Iztapalapa, San Rafael Atlixco 186, Col. Vicentina, C.P. 09340, Iztapalapa, Ciudad de México; mudo-2@hotmail.com (D.S.-O.); agrmn@xanum.uam.mx (A.G.-C.); mags@xanum.uam.mx (M.A.G.-S.)

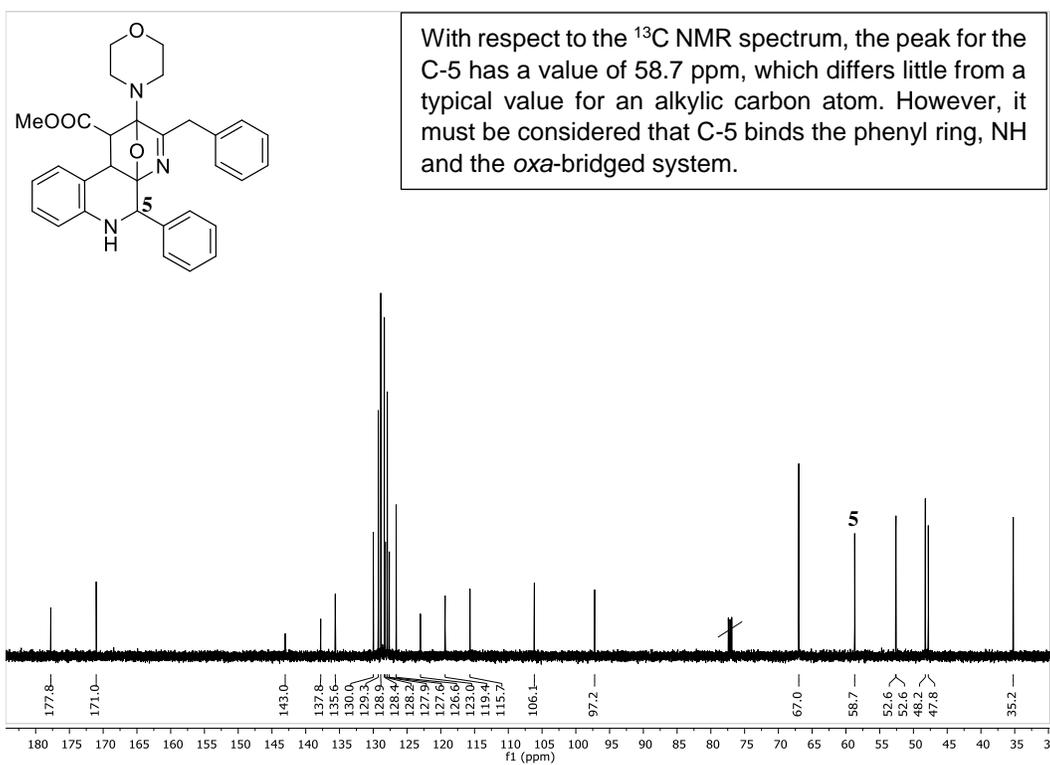
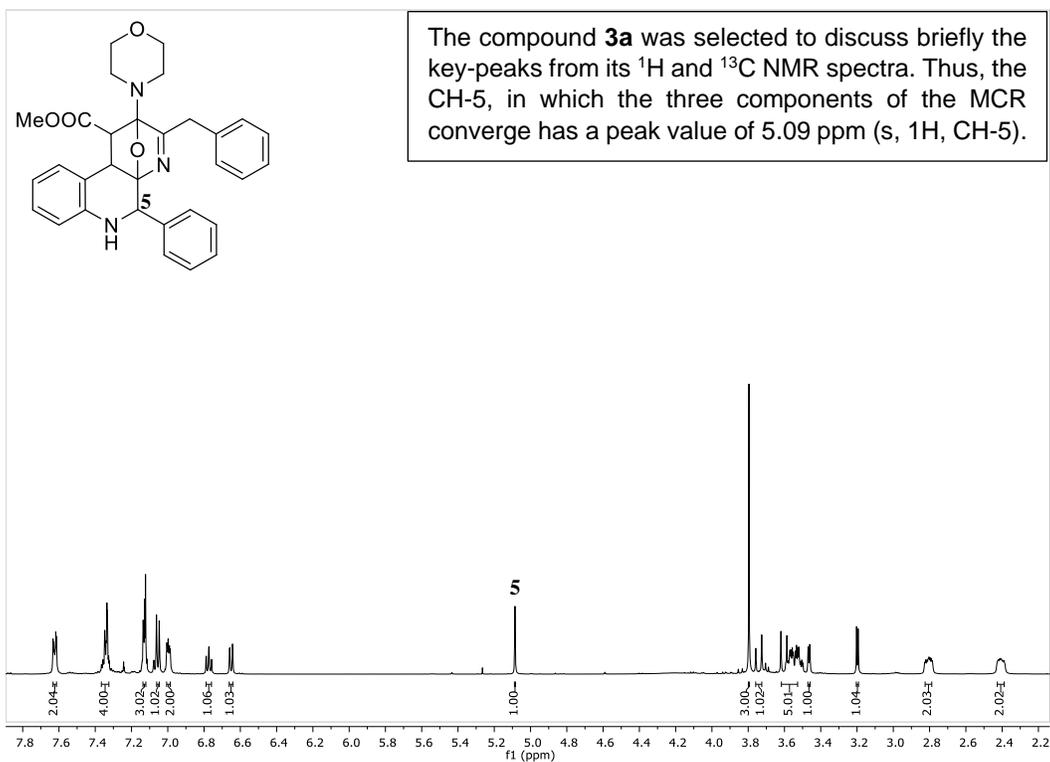
³ Departamento de Biotecnología, Universidad Autónoma Metropolitana-Iztapalapa, San Rafael Atlixco 186, Col. Vicentina, C.P. 09340, Iztapalapa, Ciudad de México; monicarinconguevara@gmail.com (M.A.R.-G.)

⁴ Laboratorio de Físicoquímica y Reactividad de Superficies, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Circuito Exterior S/N, Ciudad Universitaria, C.P. 04510, Coyoacán, Ciudad de México; argel@unam.mx (I.A.I.)

* Correspondence: llr@xanum.uam.mx (L.L.-R.); aij@xanum.uam.mx (A.I.-J.); egz@xanum.uam.mx (E.G.-Z.); Tel.: +52-55-5804-4913 (L.L.-R.; A.I.-J.; E.G.-Z.)

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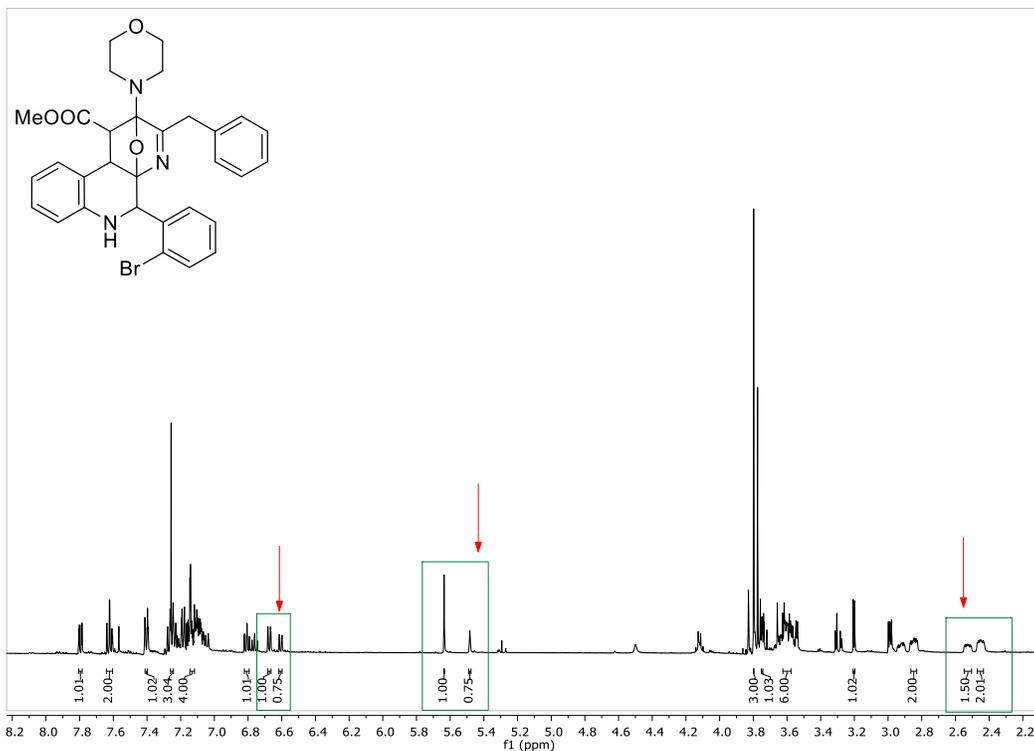


Figure S3. ^1H NMR spectrum of the product **3b** (mixture of inseparable diastereoisomers $r = 4:3$)

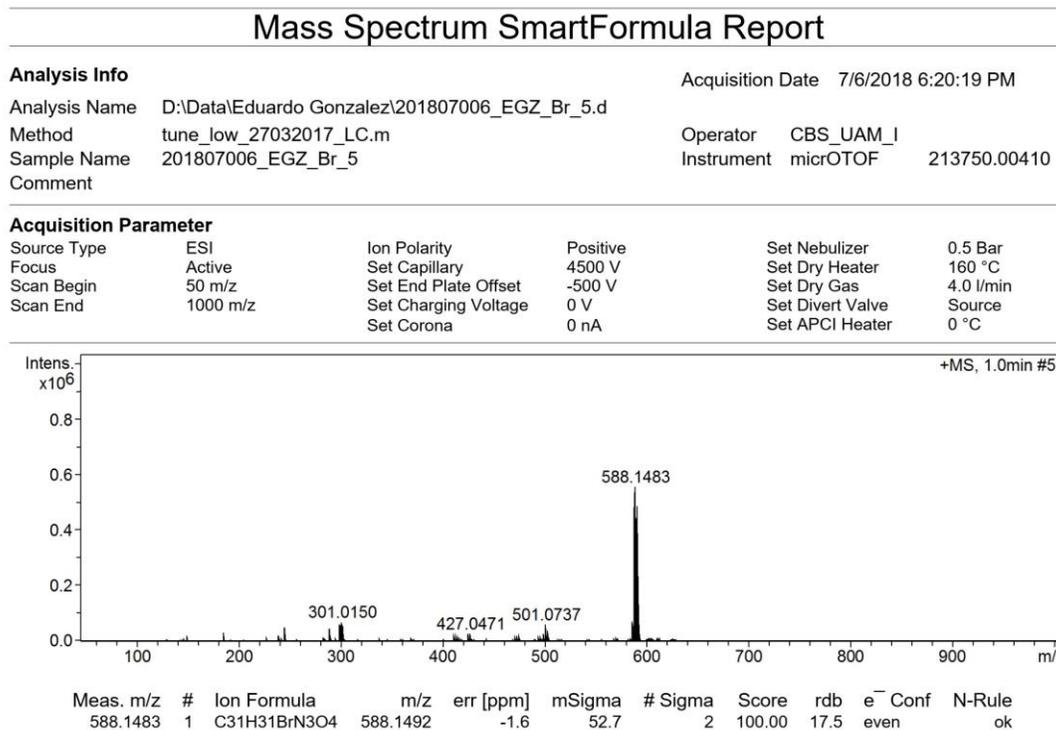


Figure S4. HRMS spectrum of the product **3b**

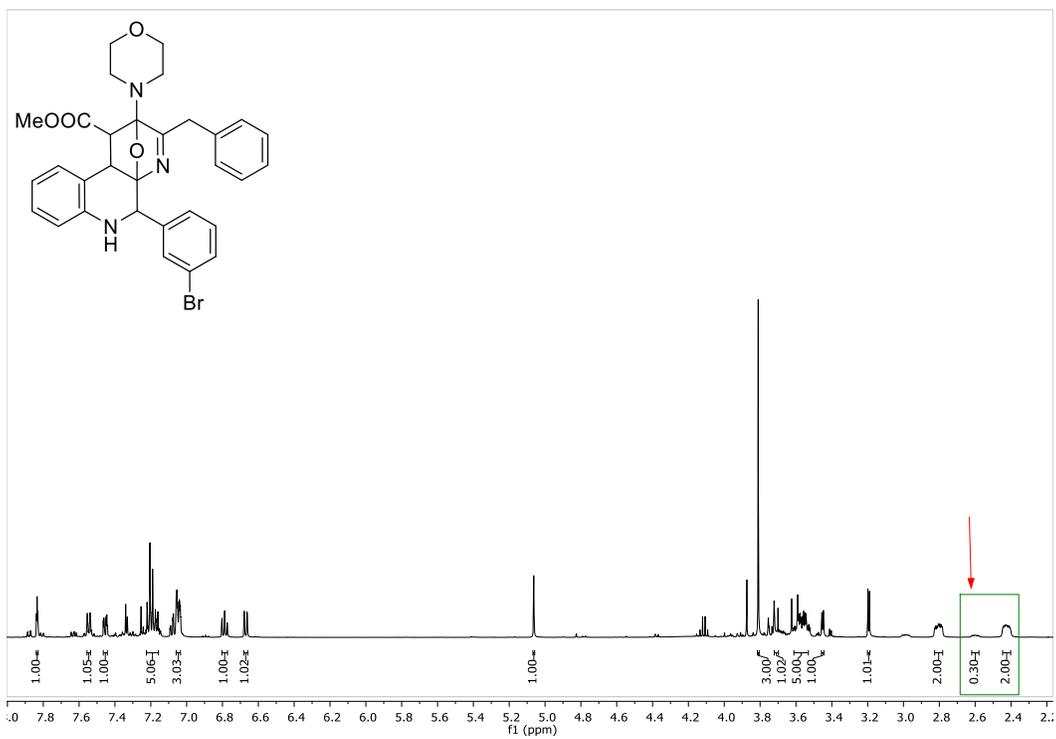


Figure S5. ^1H NMR spectrum of the product **3c** (mixture of inseparable diastereoisomers $r = 20:3$)

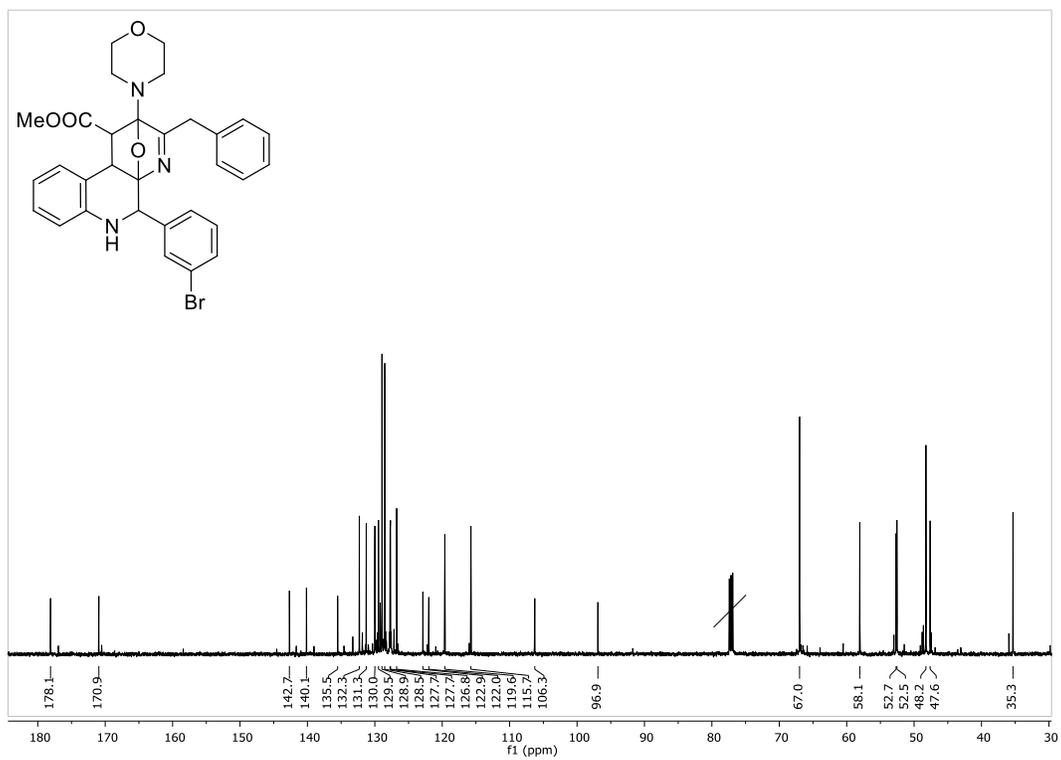


Figure S6. ^{13}C NMR spectrum of the product **3c**

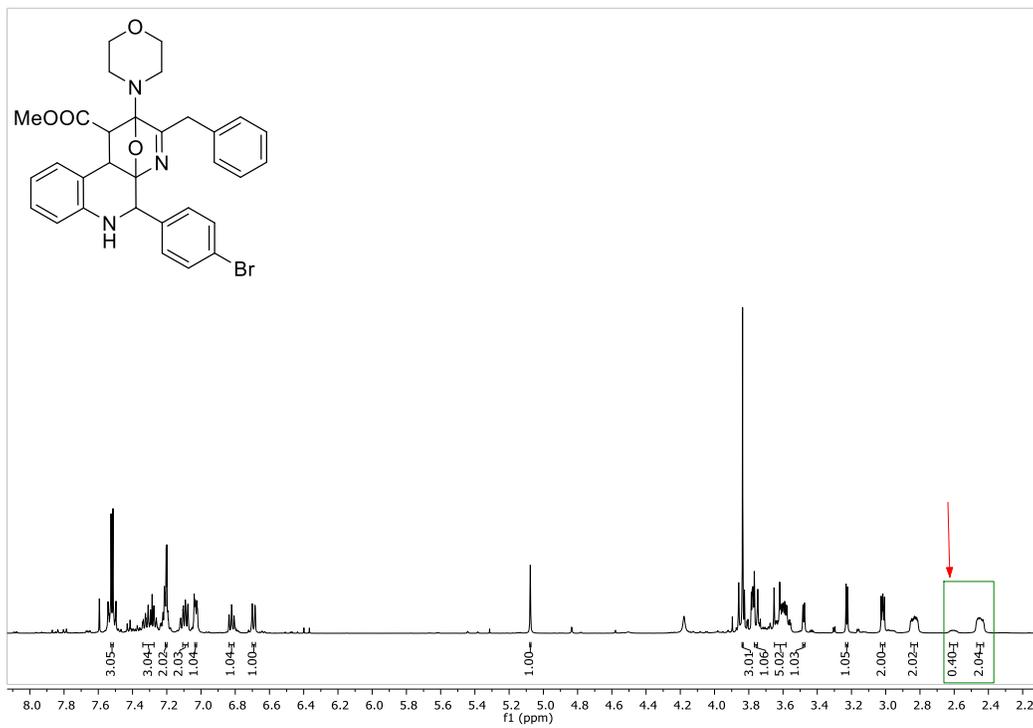


Figure S7. ^1H NMR spectrum of the product **3d** (mixture of inseparable diastereoisomers $r = 5:1$)

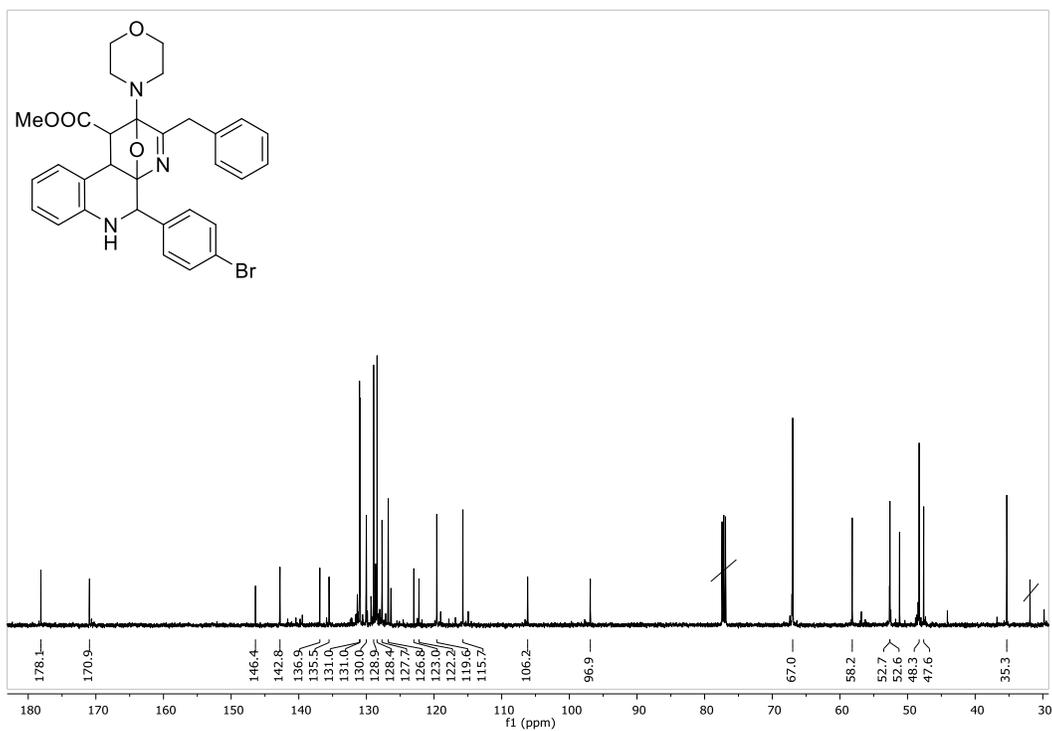


Figure S8. ^{13}C NMR spectrum of the product **3d**

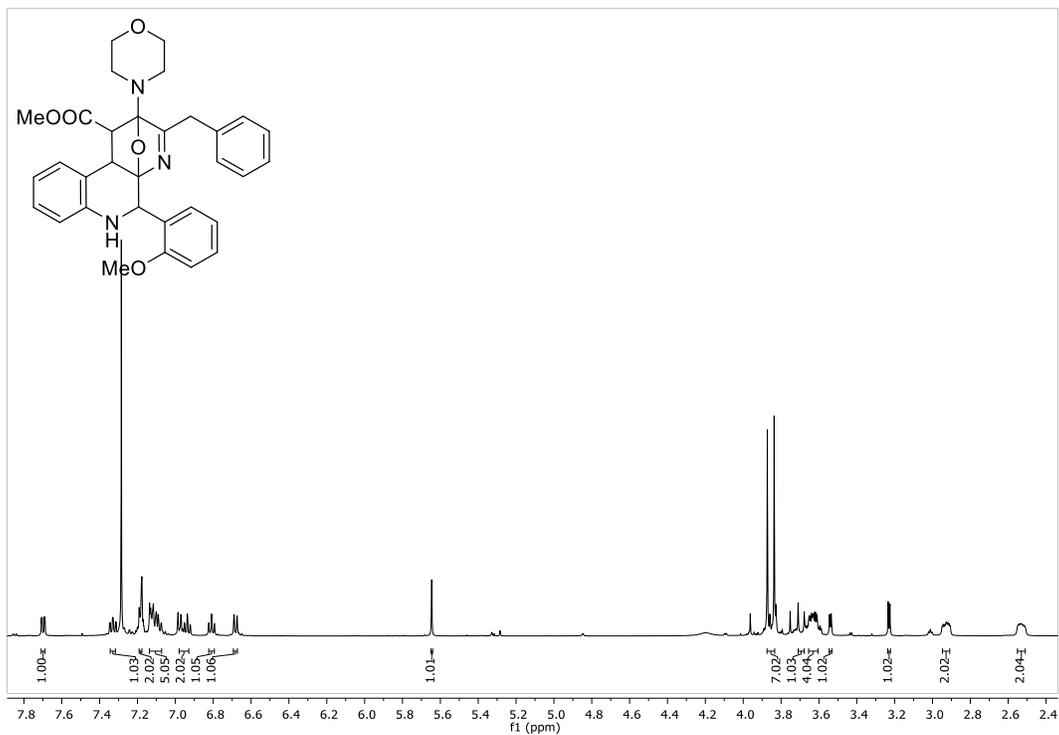


Figure S9. ^1H NMR spectrum of the product **3e**

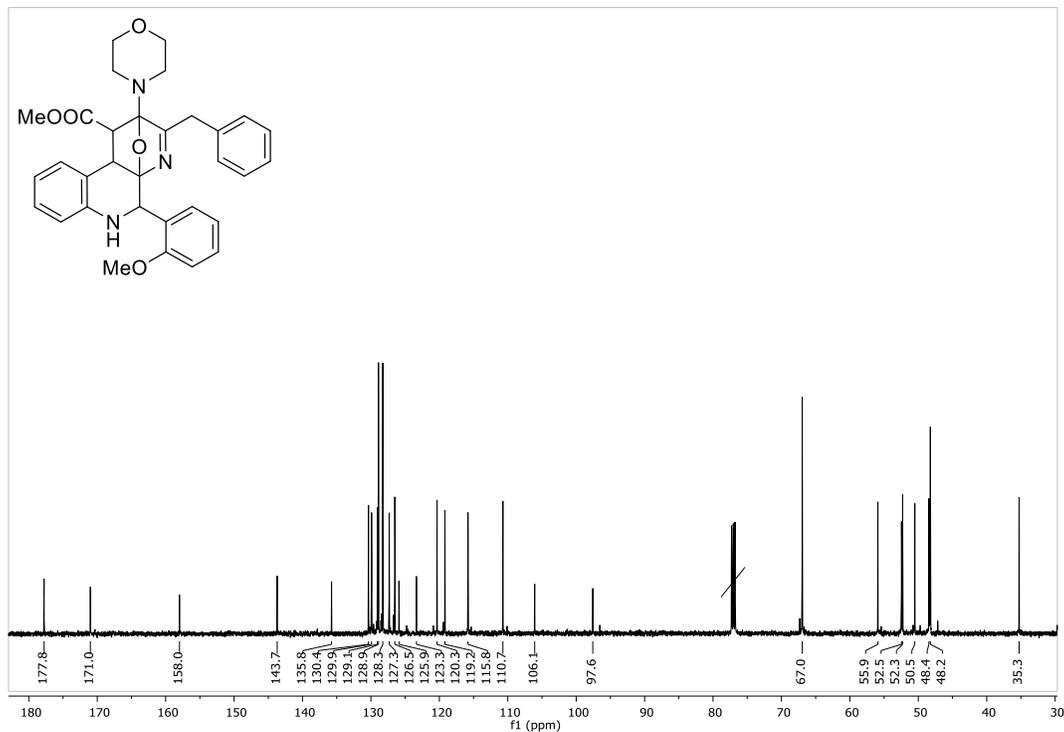


Figure S10. ^{13}C NMR spectrum of the product **3e**

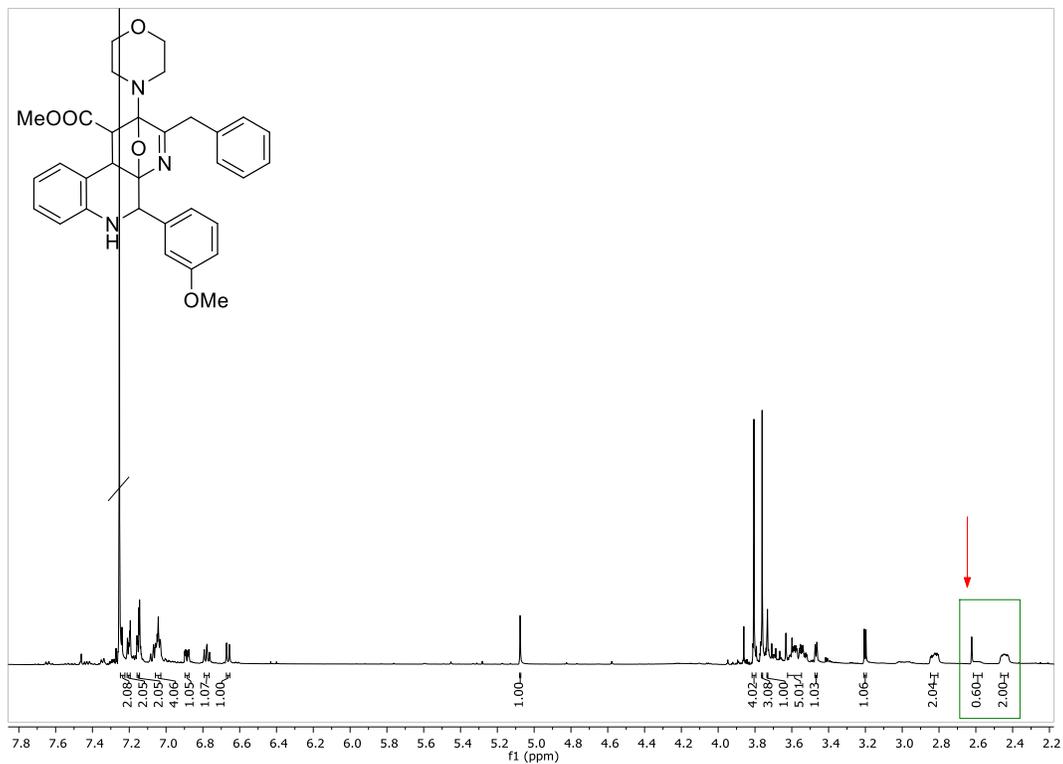


Figure S11. ^1H NMR spectrum of the product **3f** (mixture of inseparable diastereoisomers $r = 10:3$)

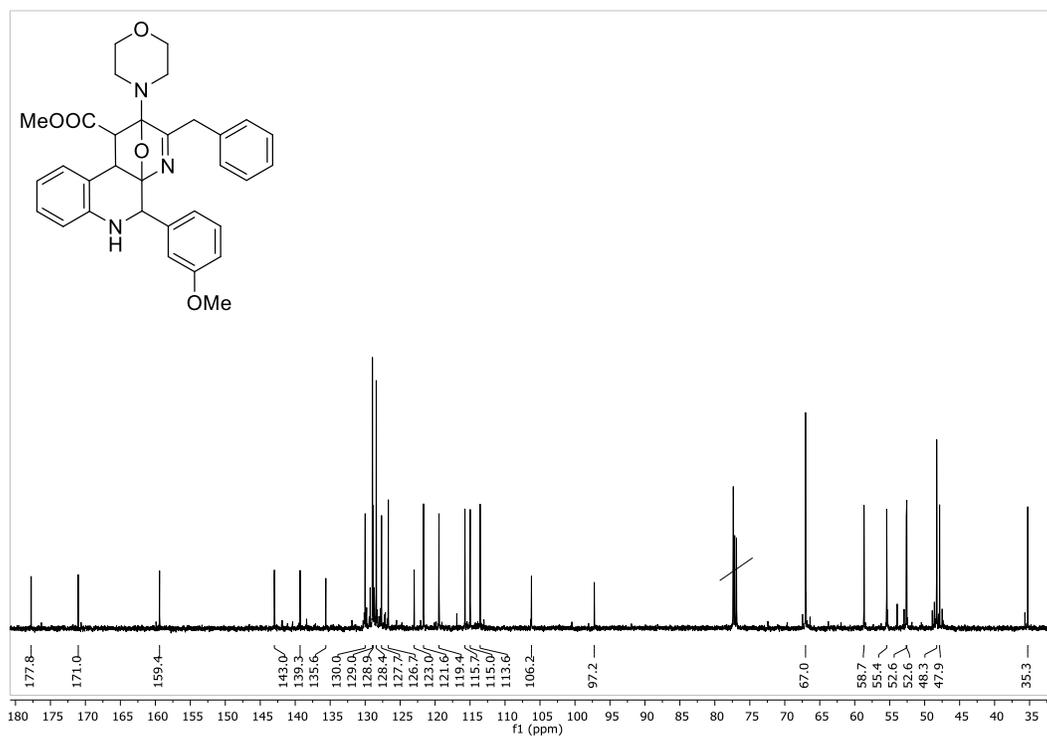


Figure S12. ^{13}C NMR spectrum of the product **3f**

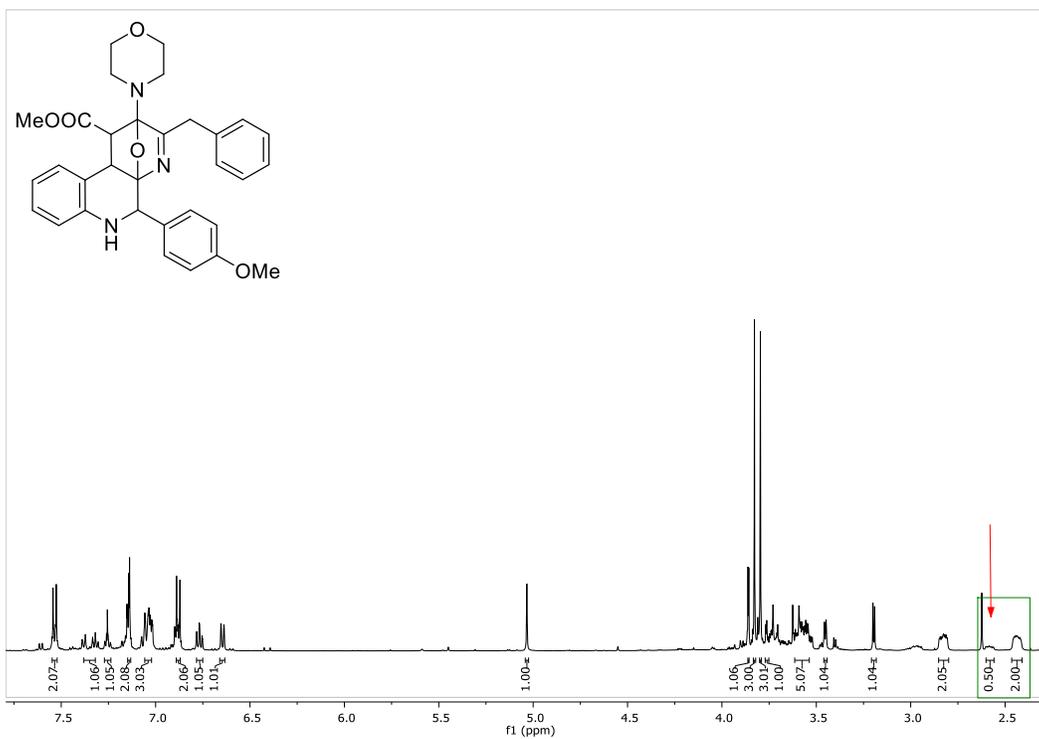


Figure S13. ^1H NMR spectrum of the product **3g** (mixture of inseparable diastereoisomers $r = 4:1$)

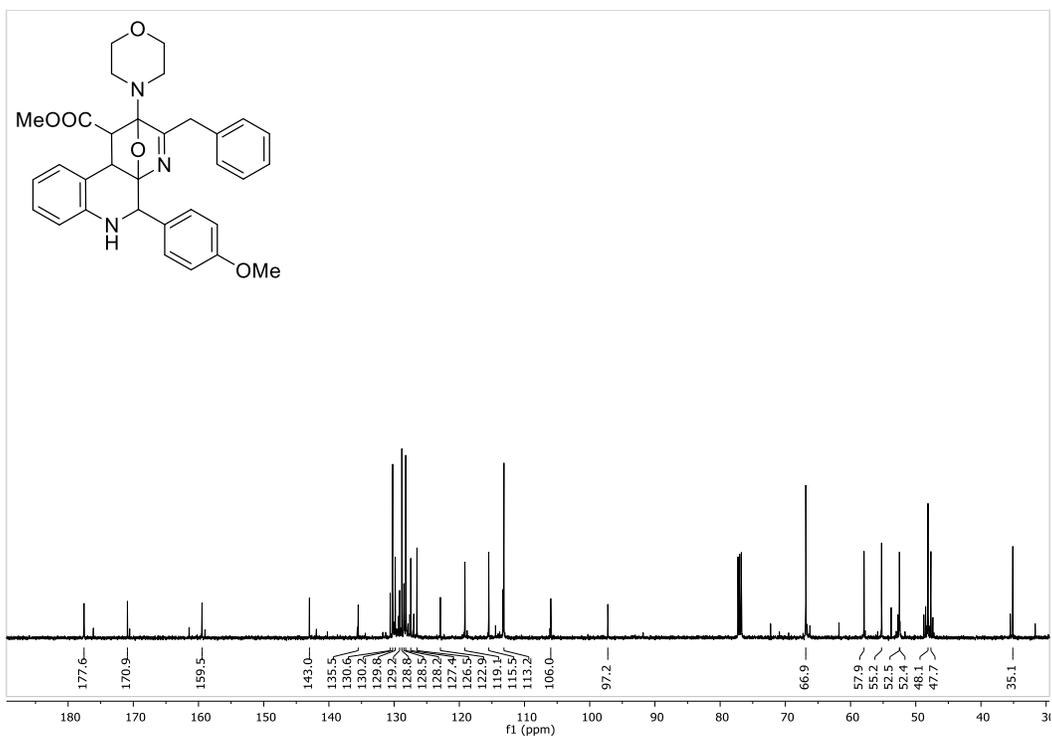


Figure S14. ^{13}C NMR spectrum of the product **3g**

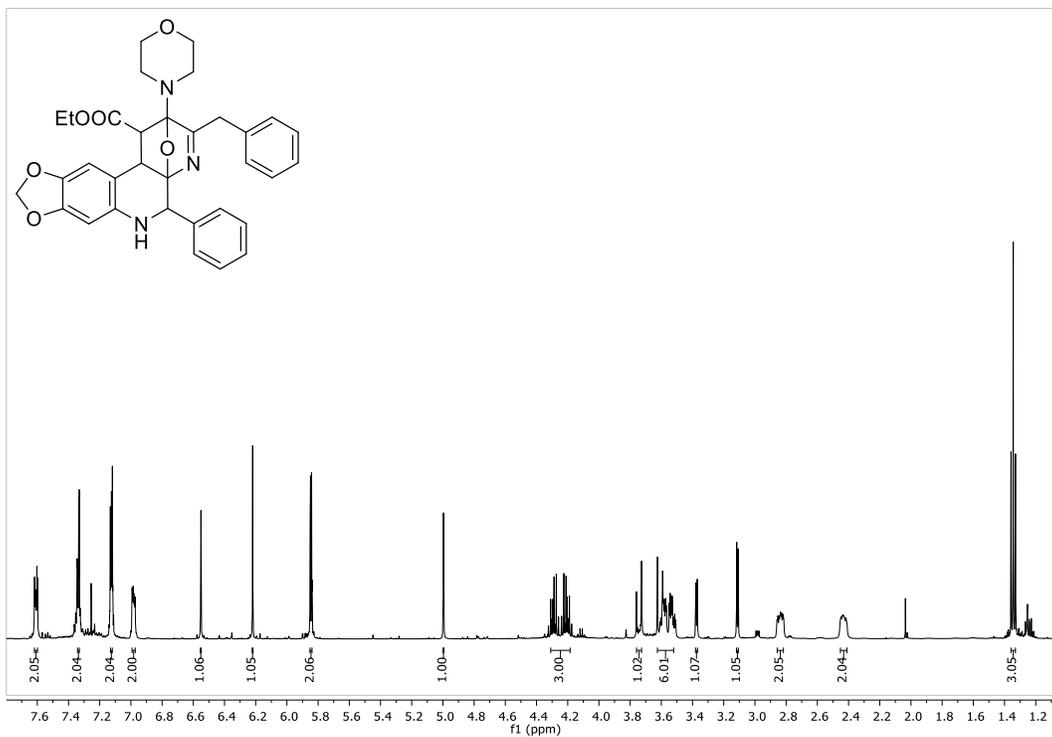


Figure S15. ^1H NMR spectrum of the product **3h**

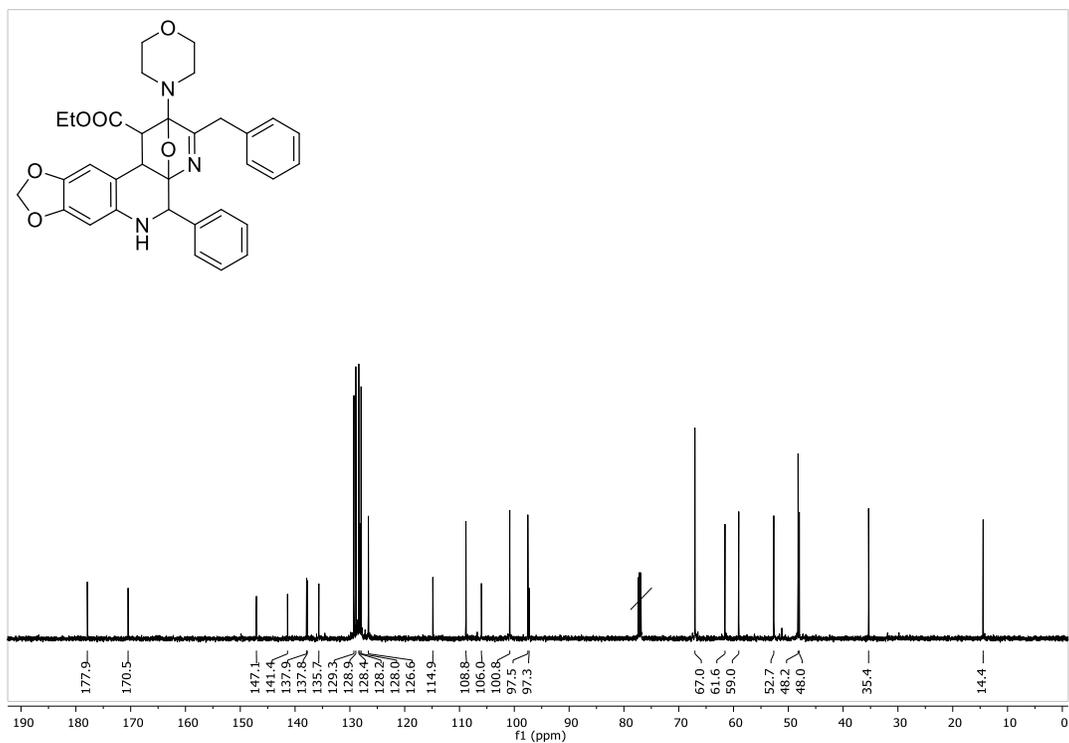
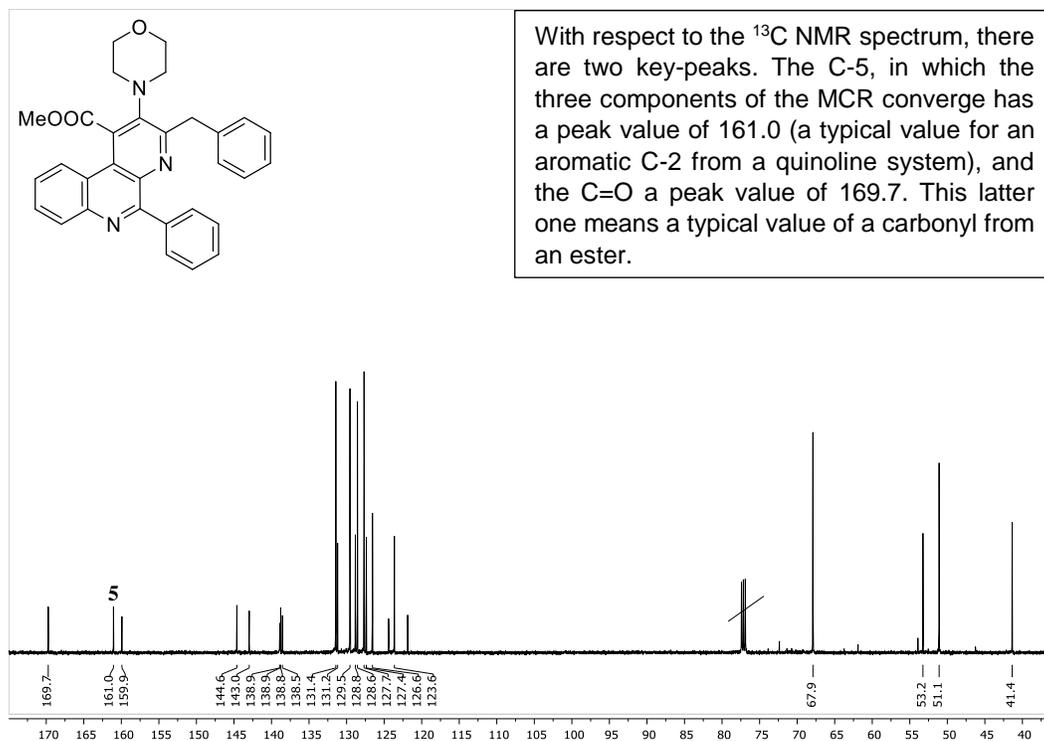
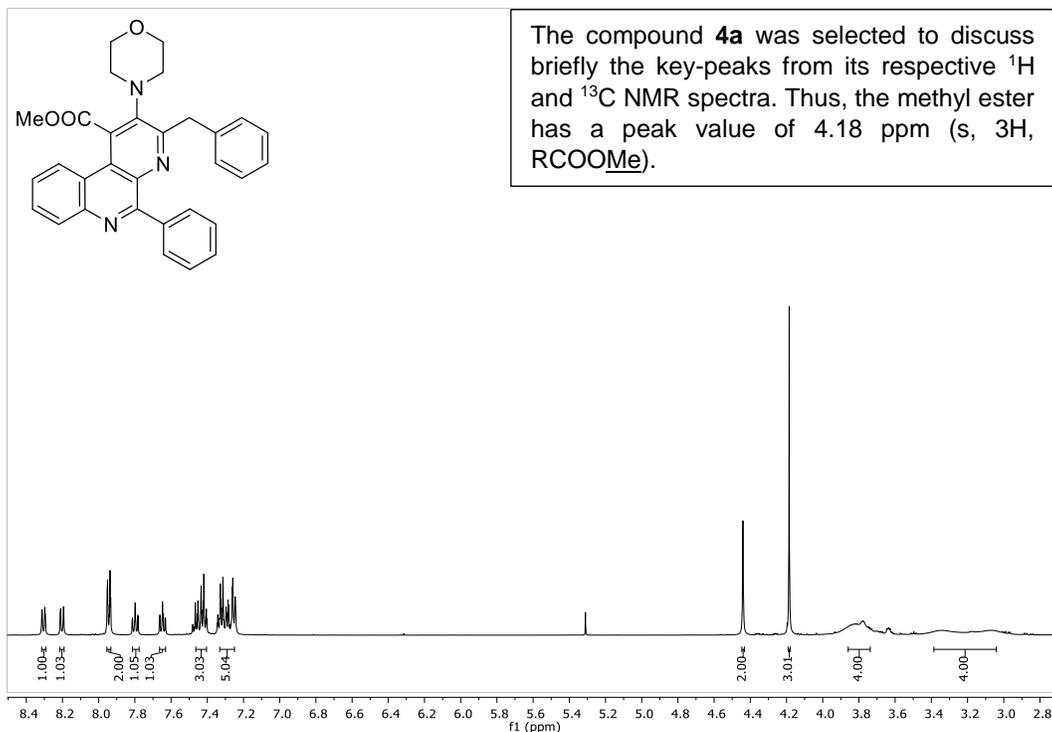


Figure S16. ^{13}C NMR spectrum of the product **3h**



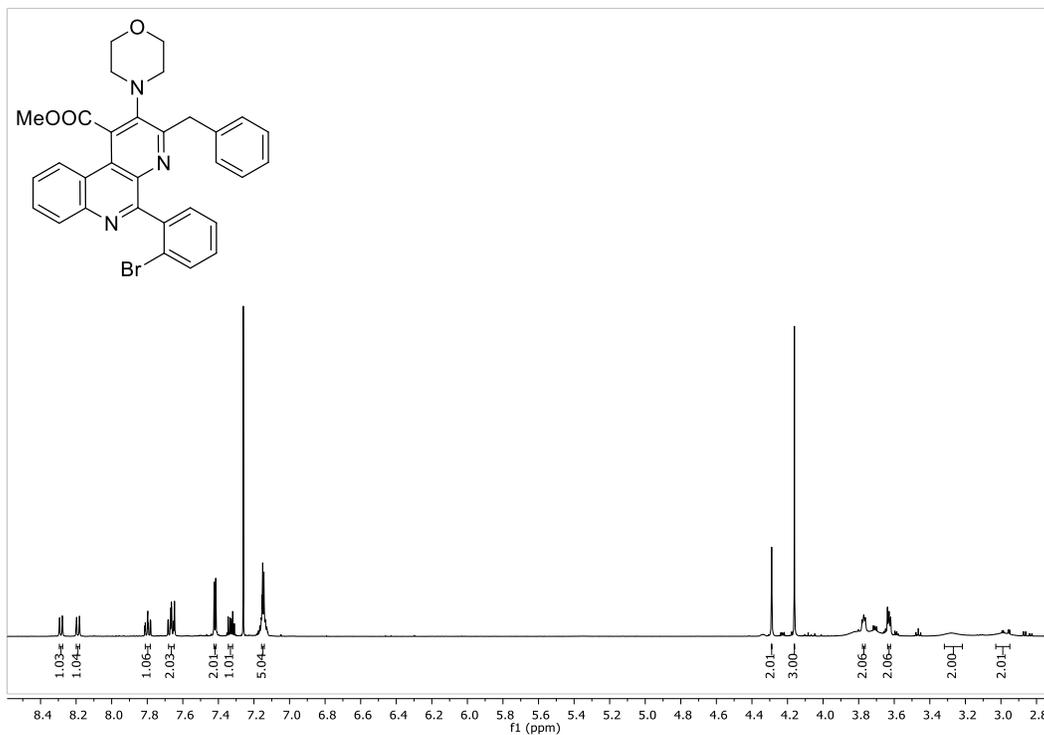


Figure S19. ^1H NMR spectrum of the product **4b**

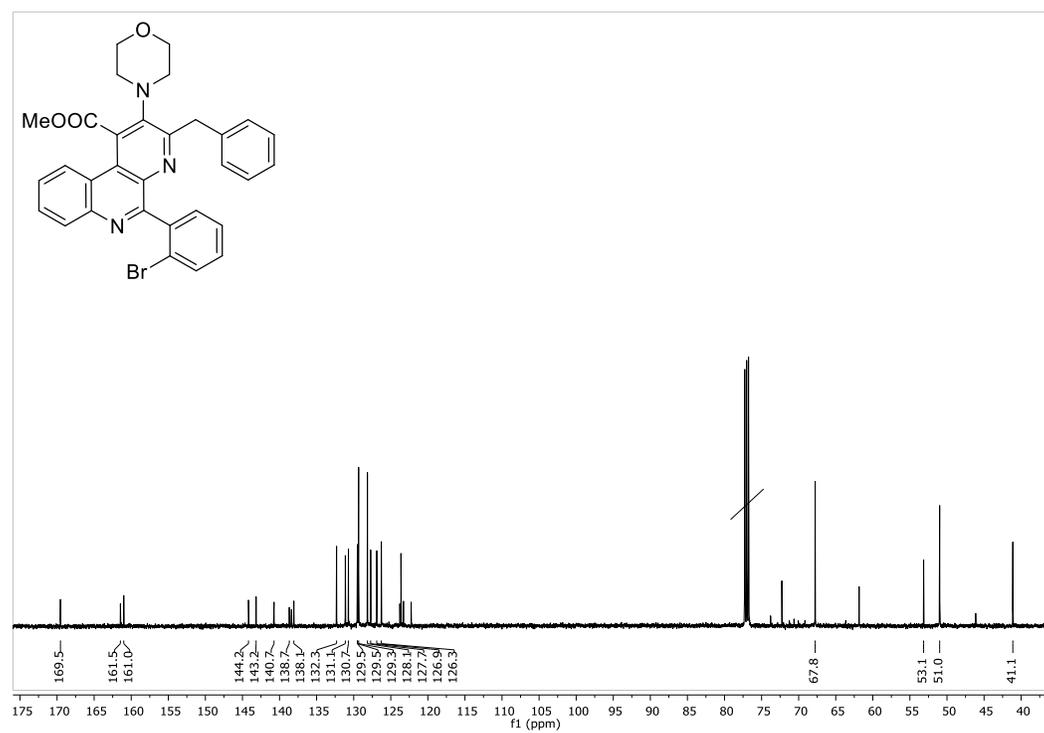


Figure S20. ^{13}C NMR spectrum of the product **4b**

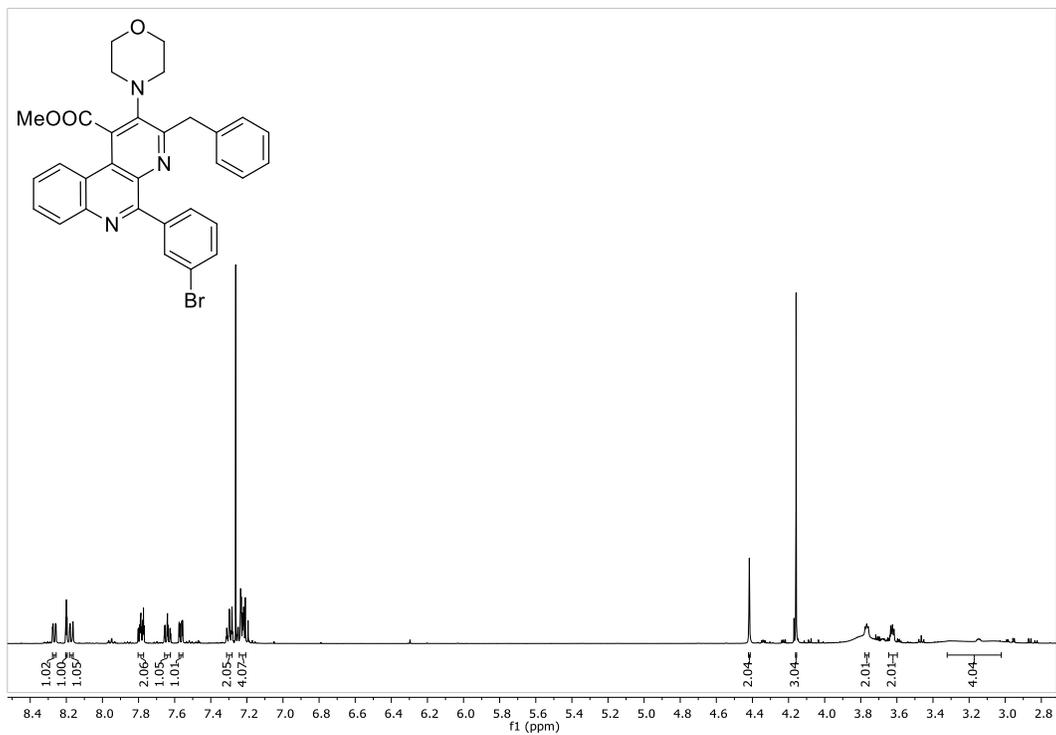


Figure S21. ^1H NMR spectrum of the product **4c**

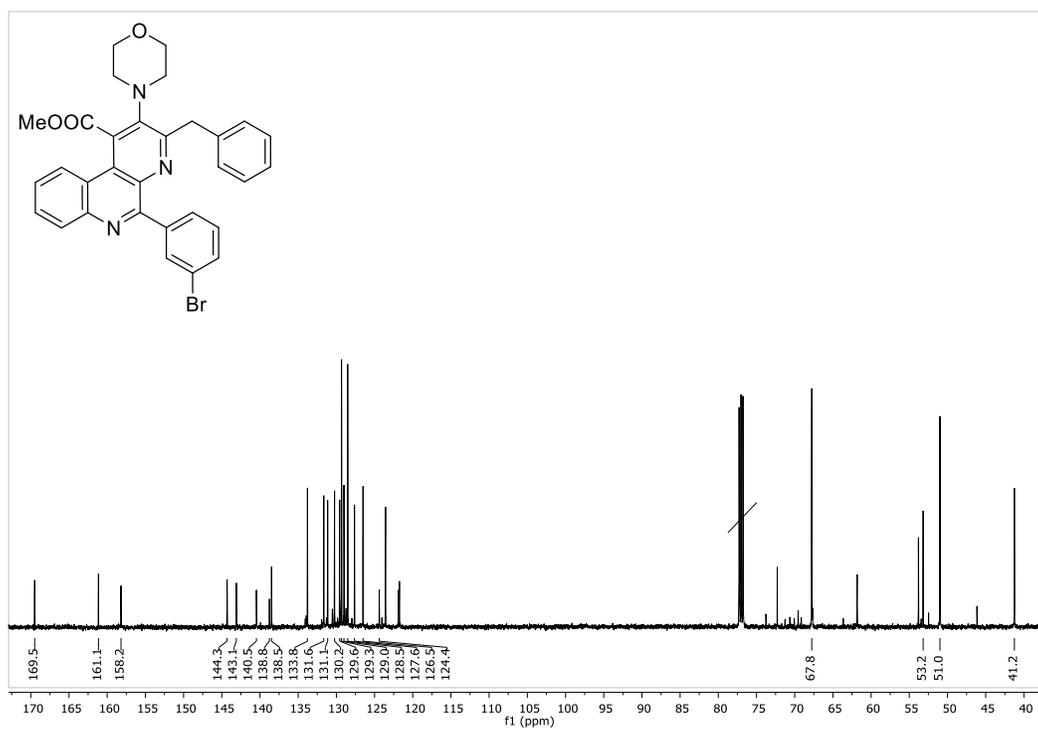


Figure S22. ^{13}C NMR spectrum of the product **4c**

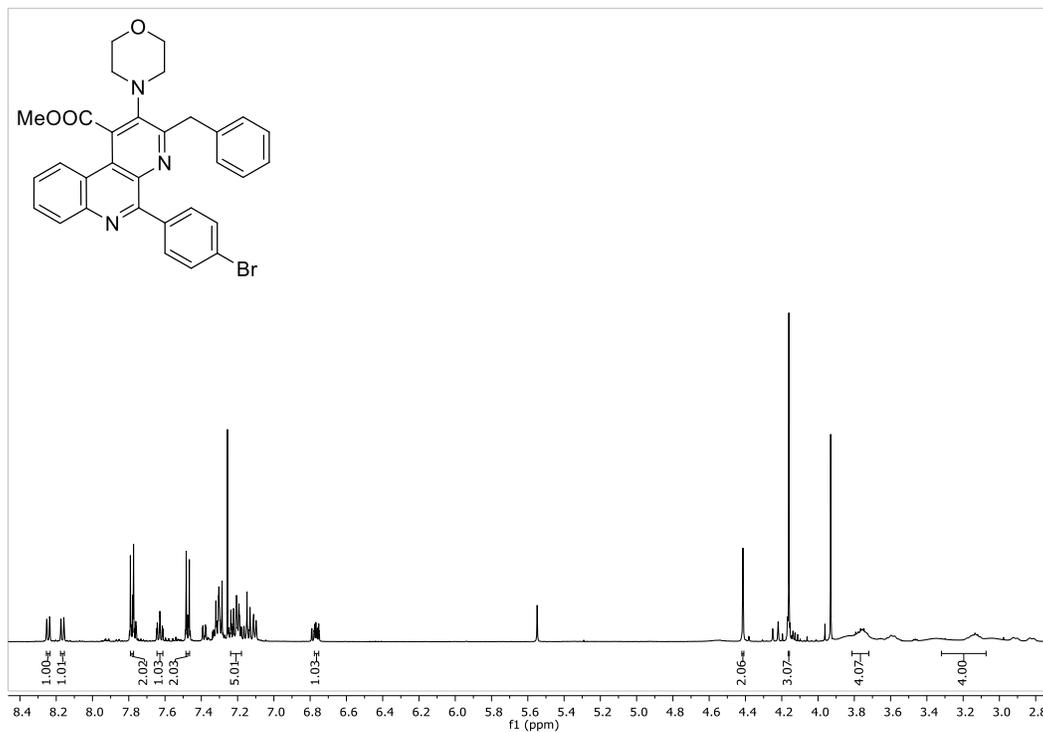


Figure S23. ^1H NMR spectrum of the product **4d**

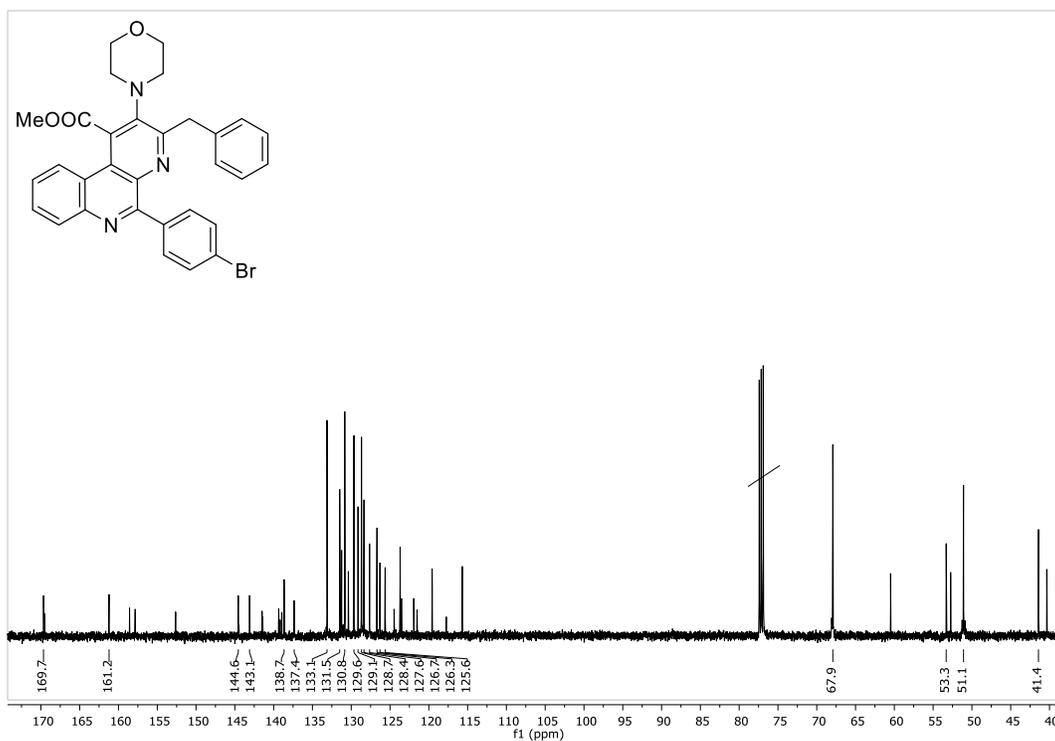


Figure S24. ^{13}C NMR spectrum of the product **4d**

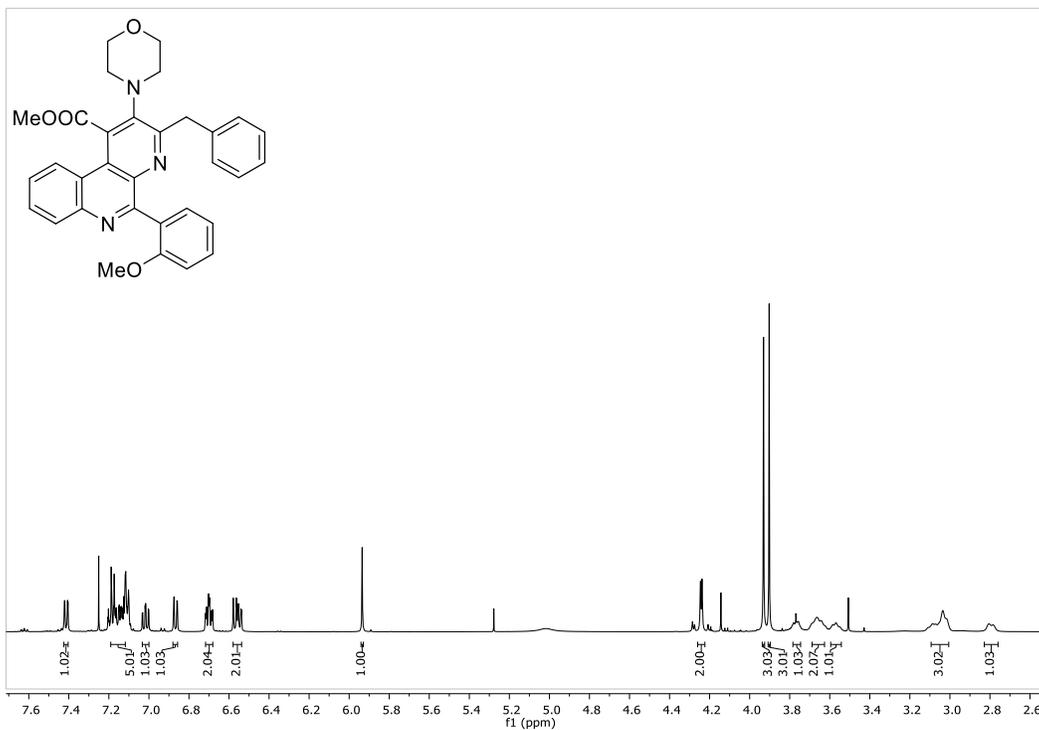


Figure S25. ¹H NMR spectrum of the product **4e**

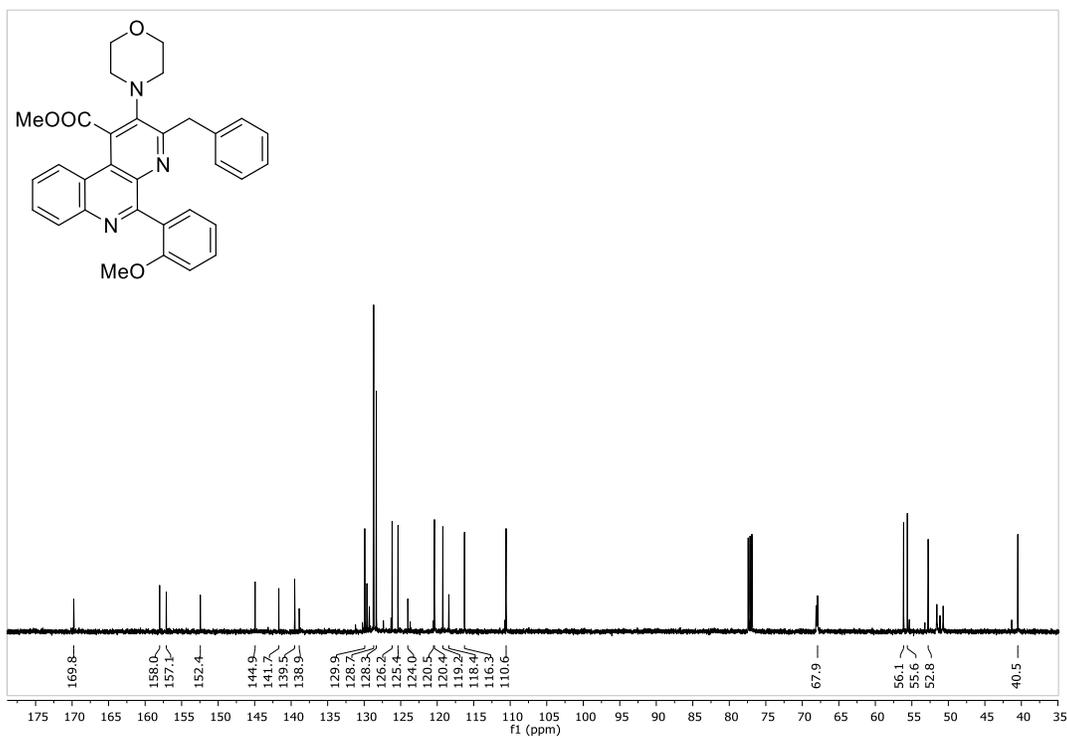


Figure S26. ¹³C NMR spectrum of the product **4e**

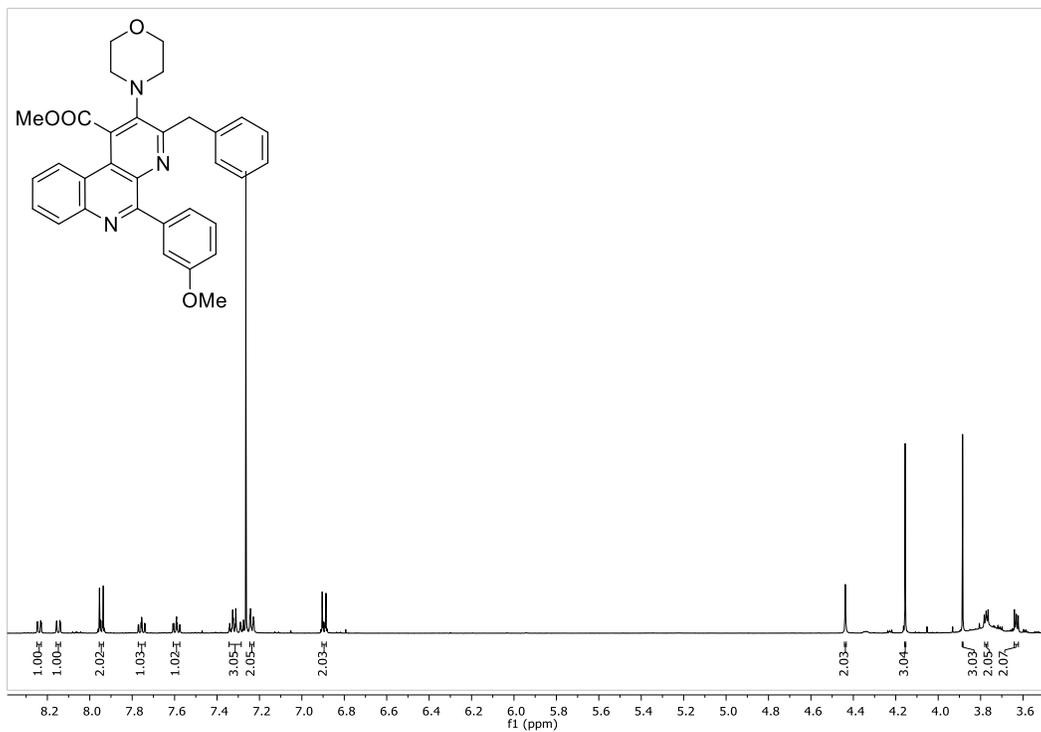


Figure S27. ^1H NMR spectrum of the product **4f**

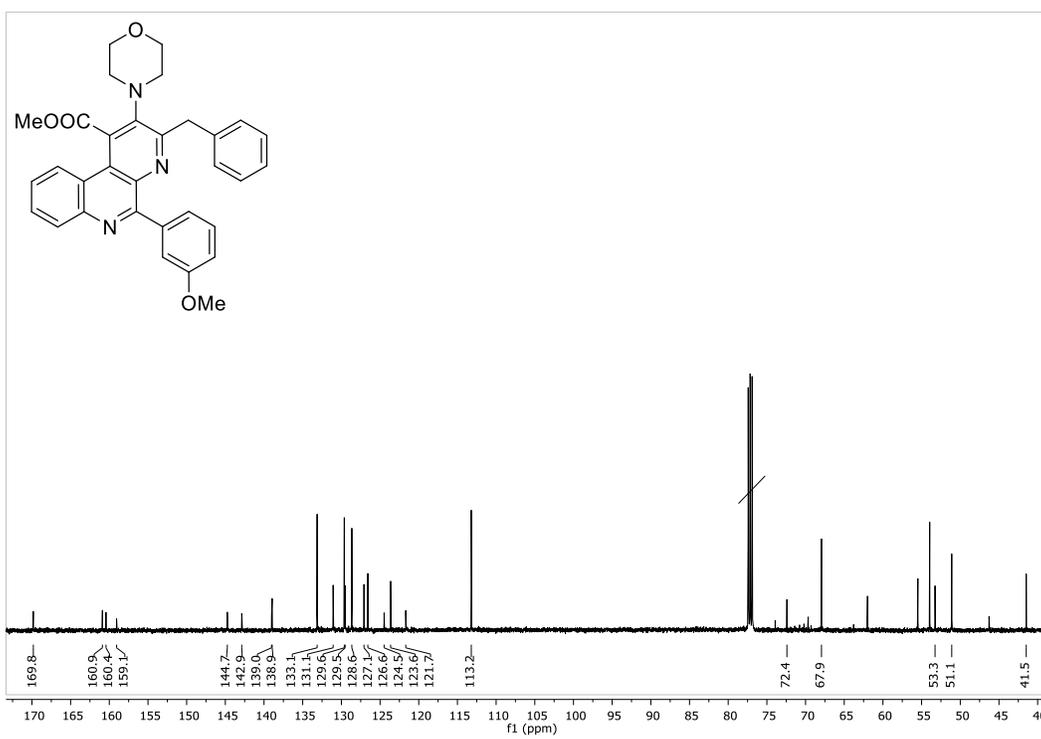


Figure S28. ^{13}C NMR spectrum of the product **4f**

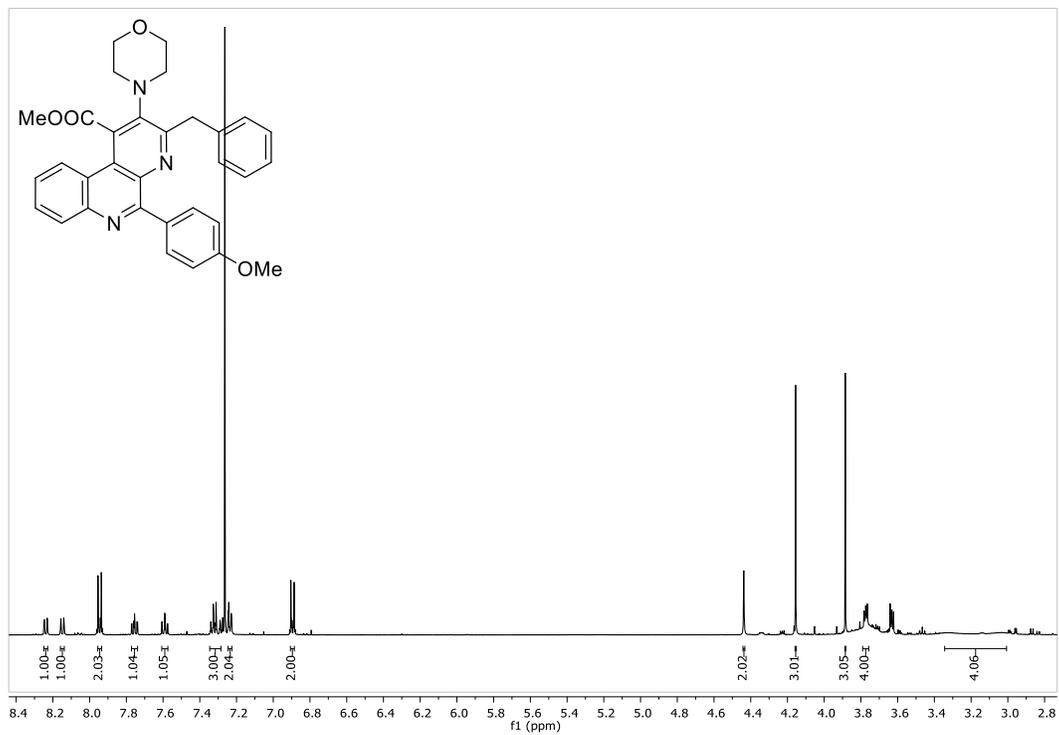


Figure S29. ^1H NMR spectrum of the product **4g**

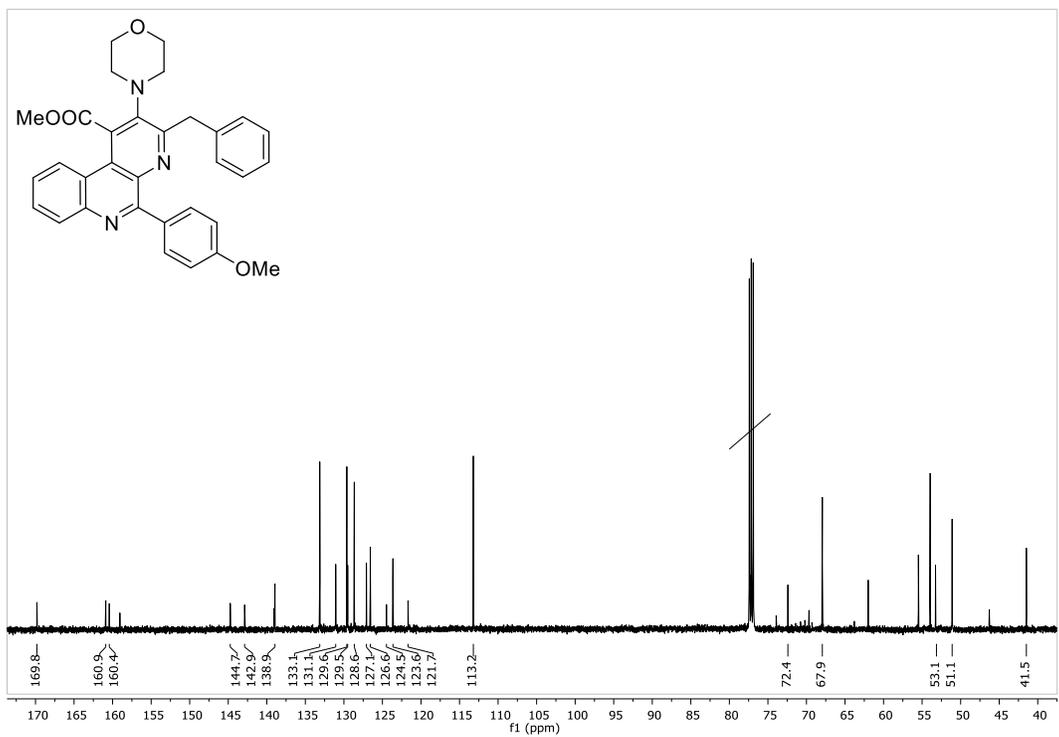


Figure S30. ^{13}C NMR spectrum of the product **4g**

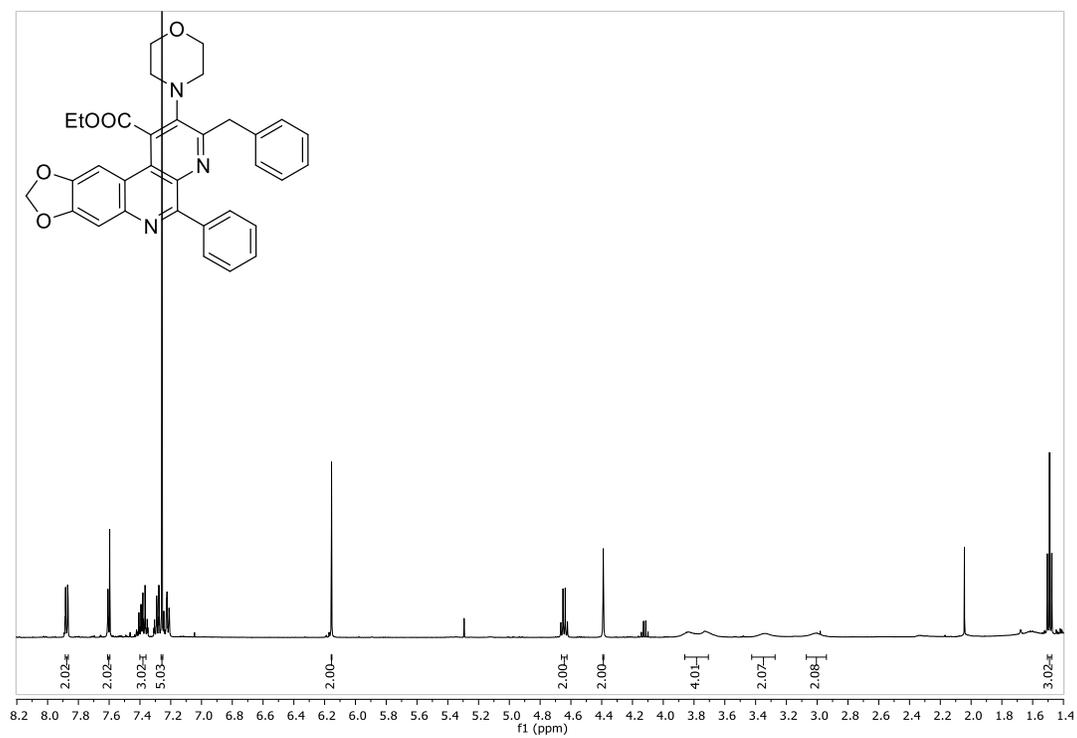


Figure S31. ^1H NMR spectrum of the product **4h**

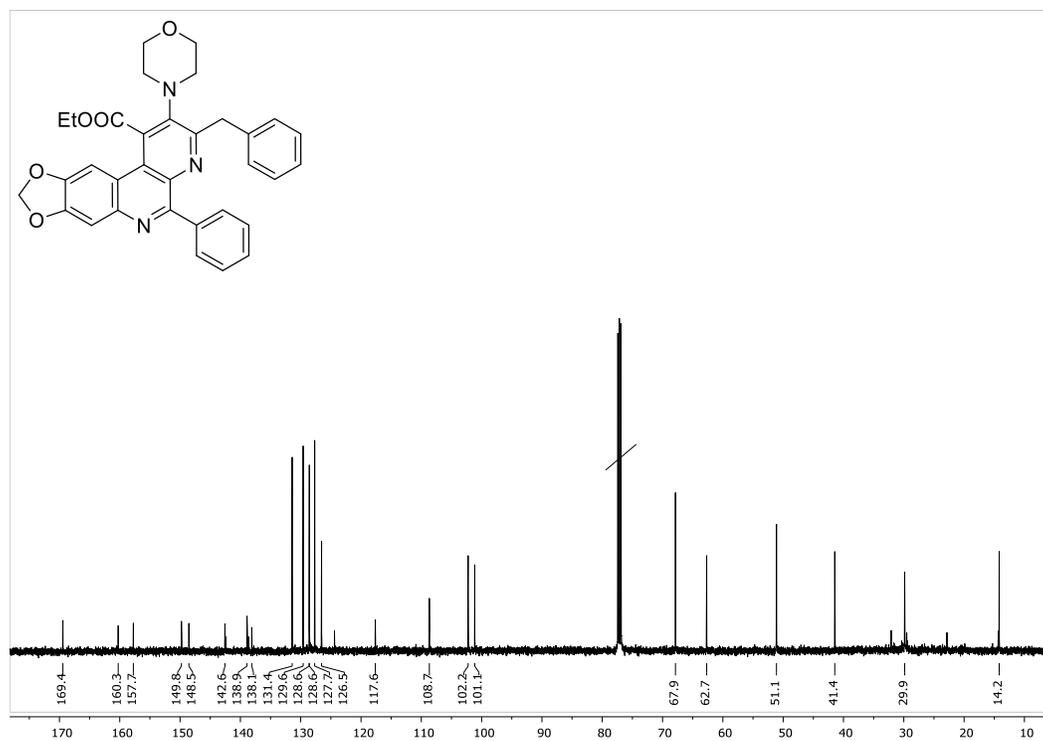


Figure S32. ^{13}C NMR spectrum of the product **4h**

2D-NMR spectra for the products 3a, 3c-h

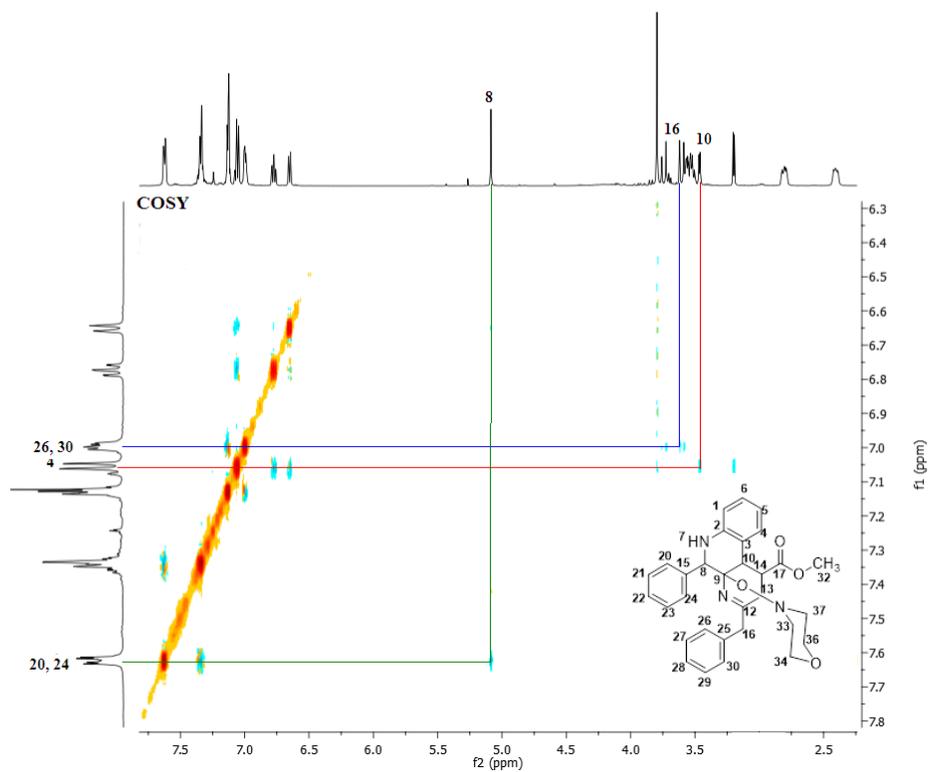


Figure S33. COSY spectrum of the product 3a

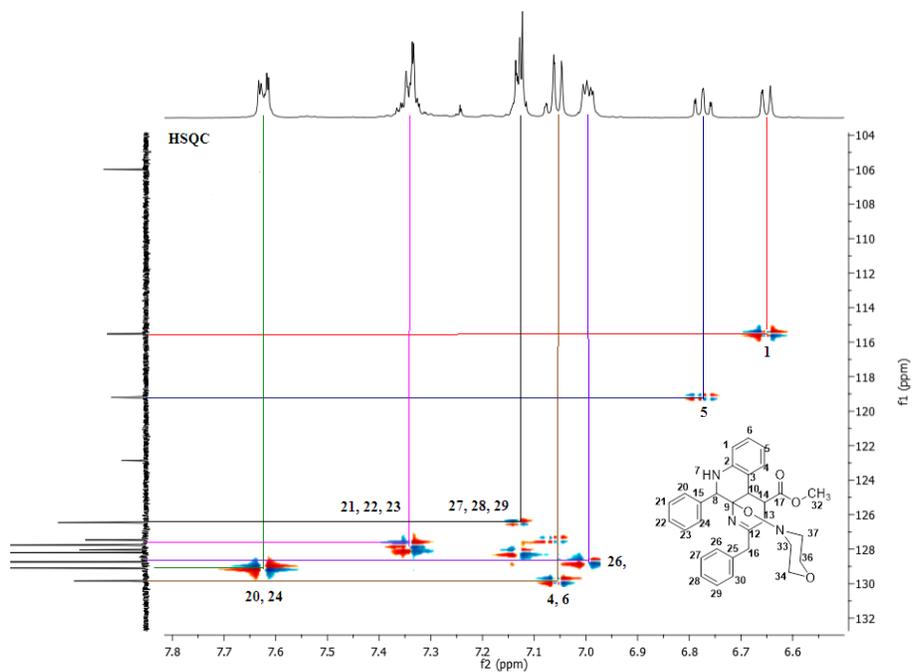


Figure S34. HSQC spectrum of the product 3a

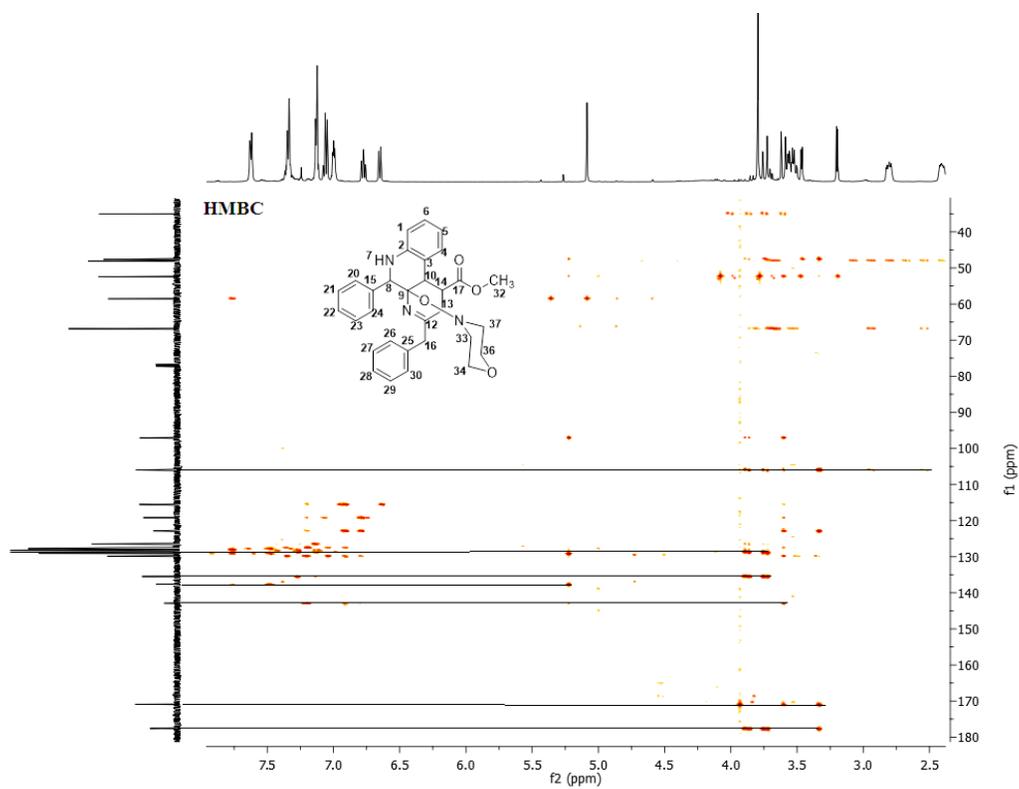


Figure S35. HMBC spectrum of the product 3a

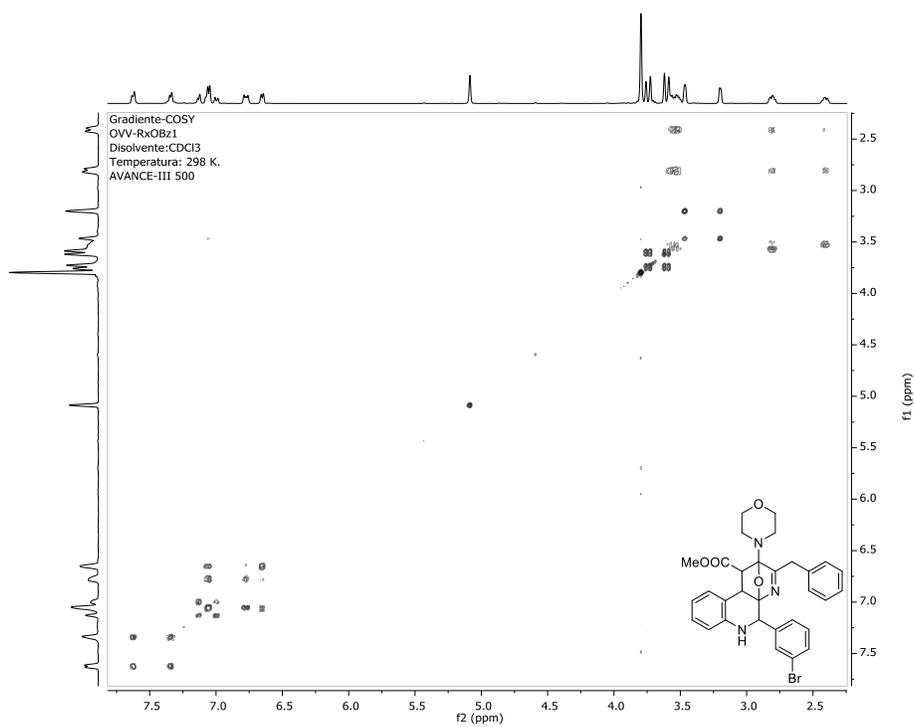


Figure S36. COSY spectrum of the product 3c

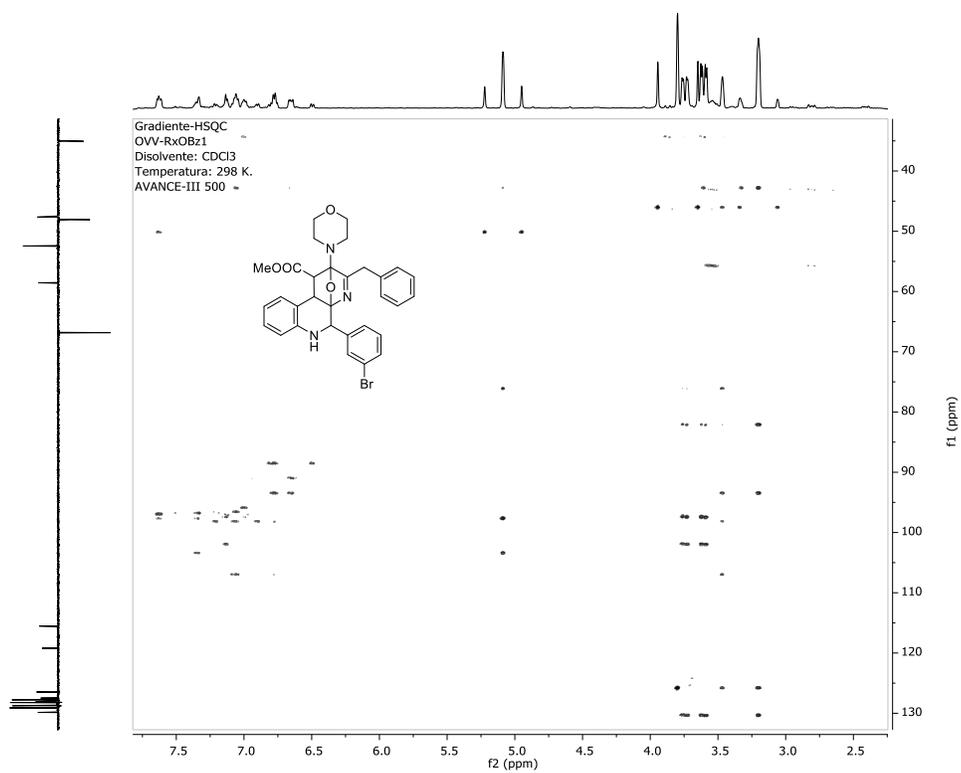


Figure S37. HSQC spectrum of the product **3c**

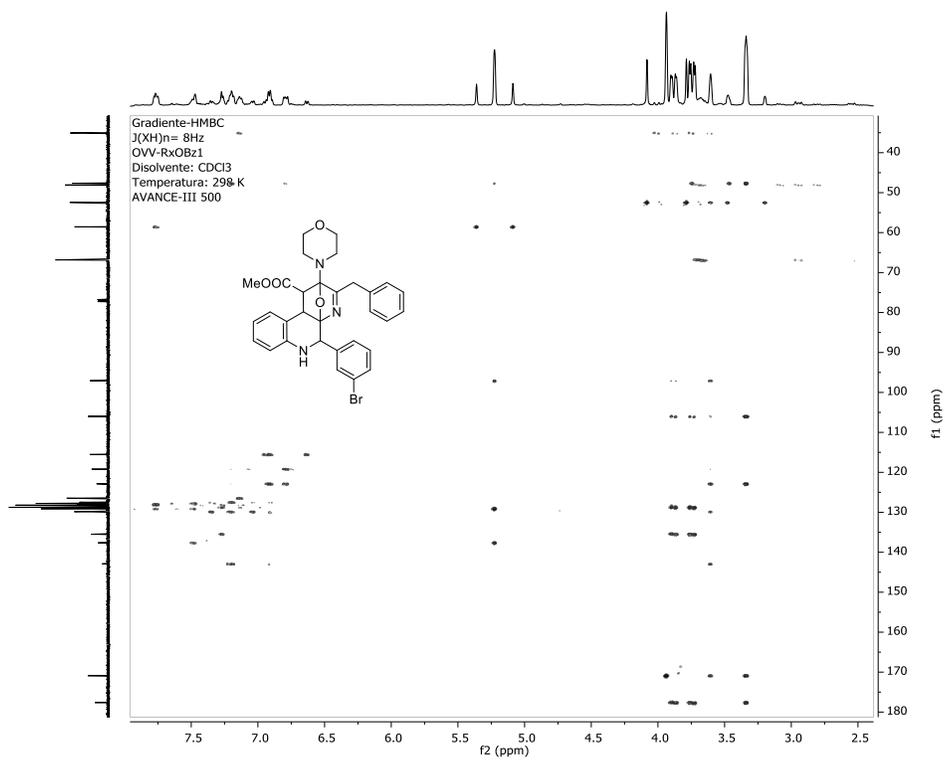


Figure S38. HMBC spectrum of the product **3c**

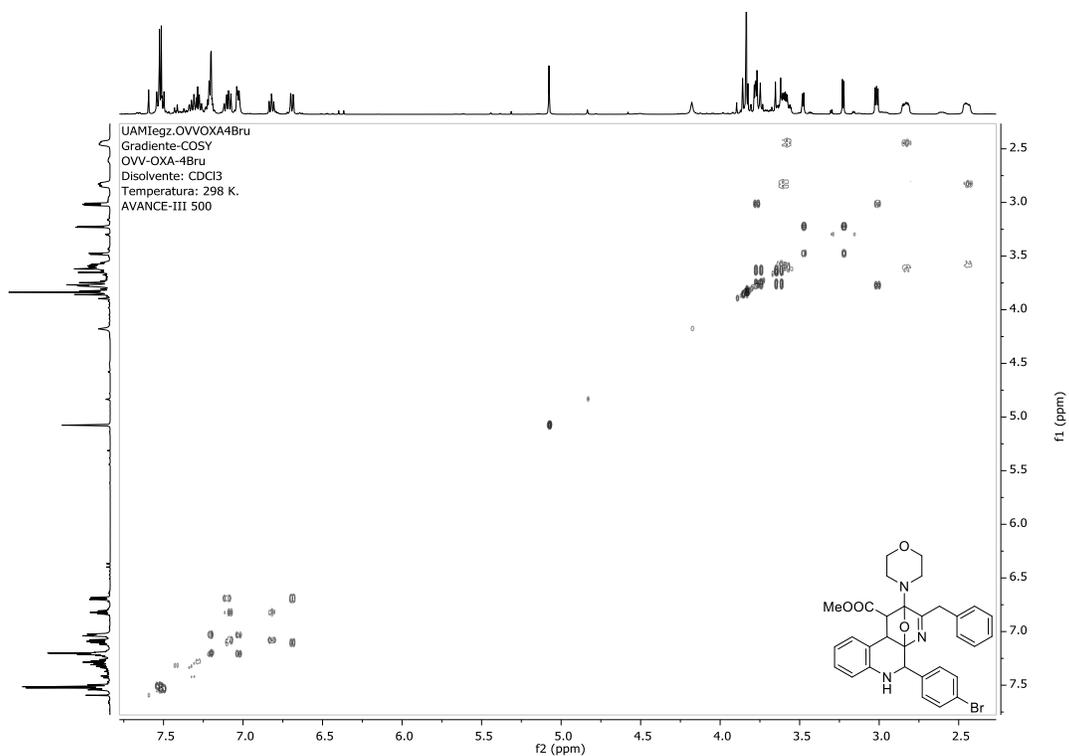


Figure S39. COSY spectrum of the product **3d**

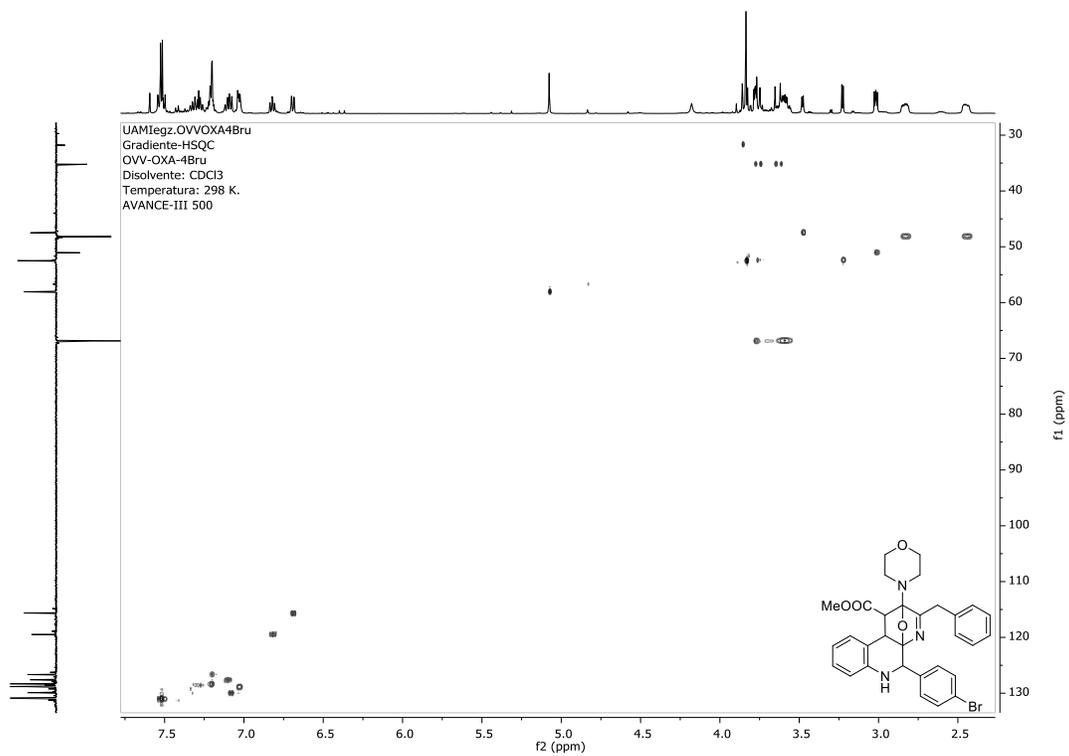


Figure S40. HSQC spectrum of the product **3d**

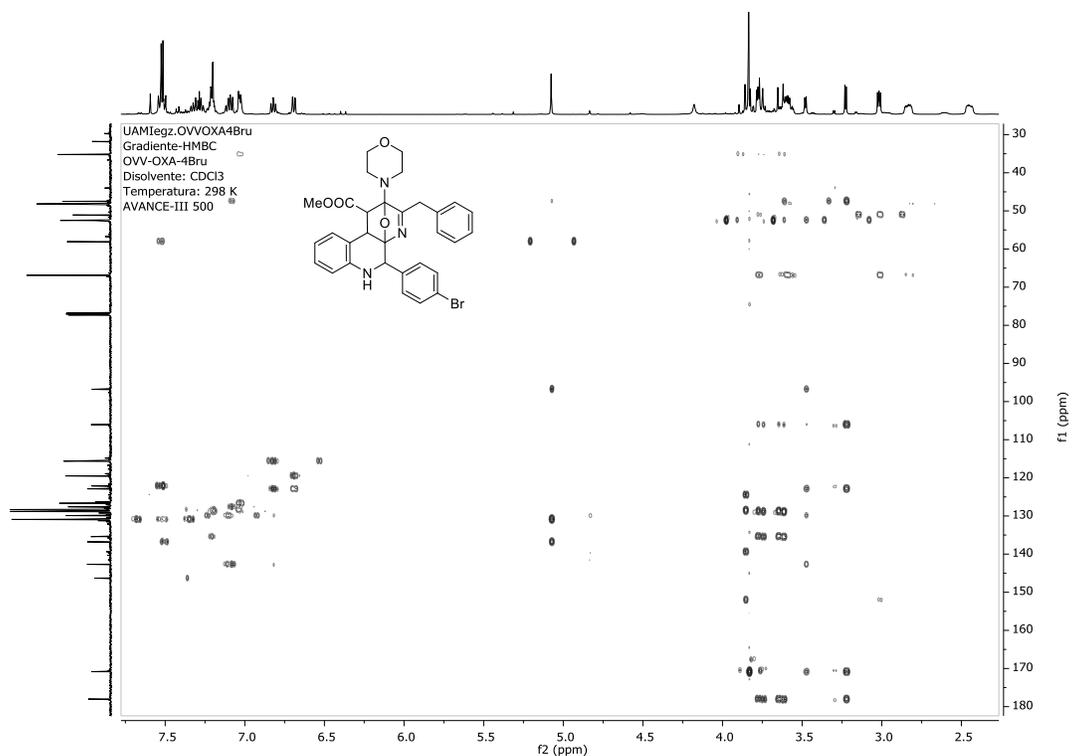


Figure S41. HMBC spectrum of the product **3d**

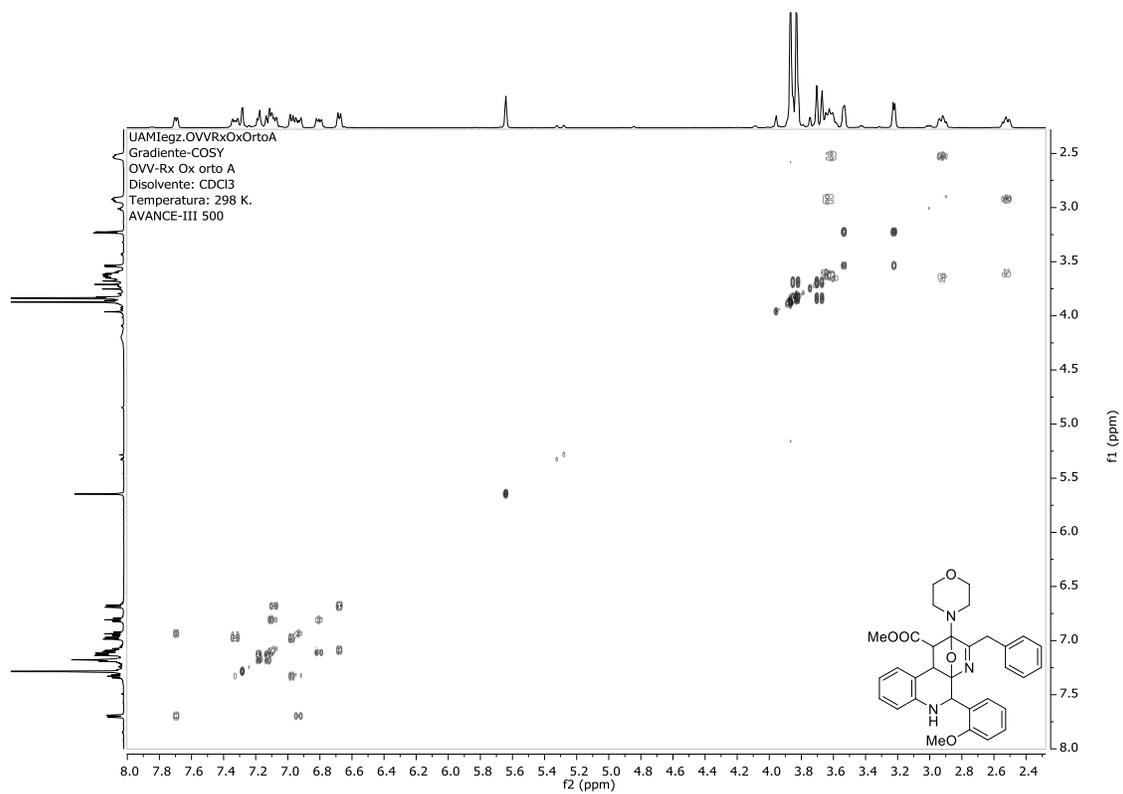


Figure S42. COSY spectrum of the product **3e**

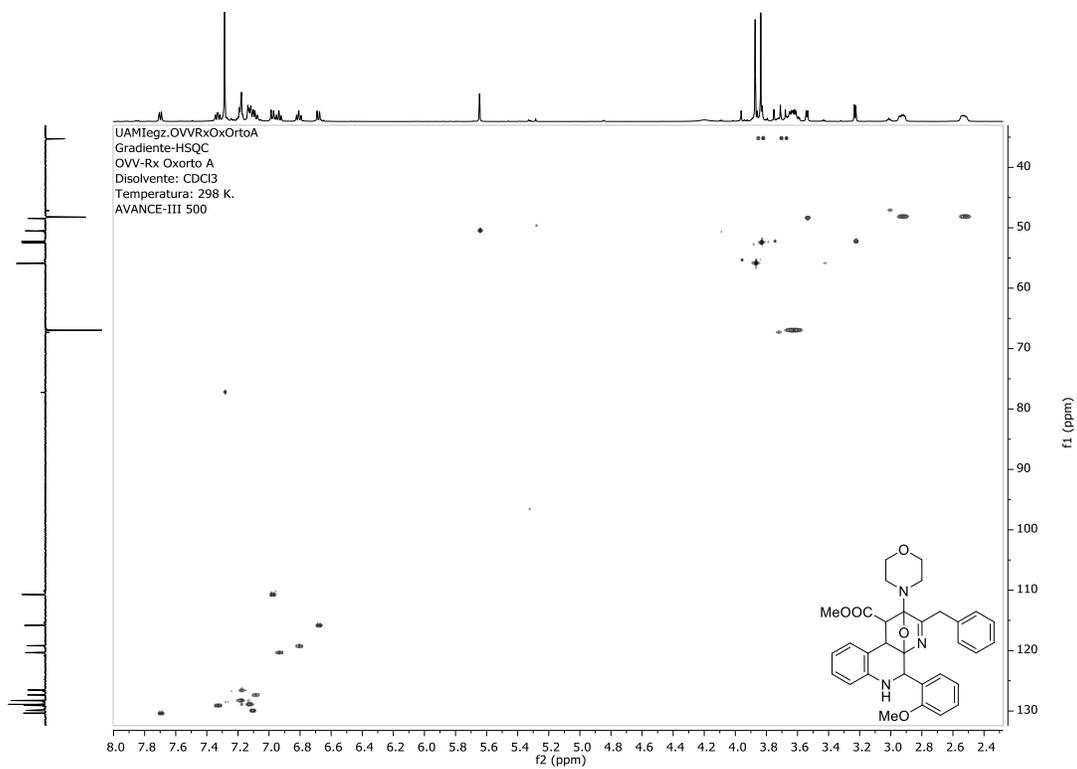


Figure S43. HSQC spectrum of the product **3e**

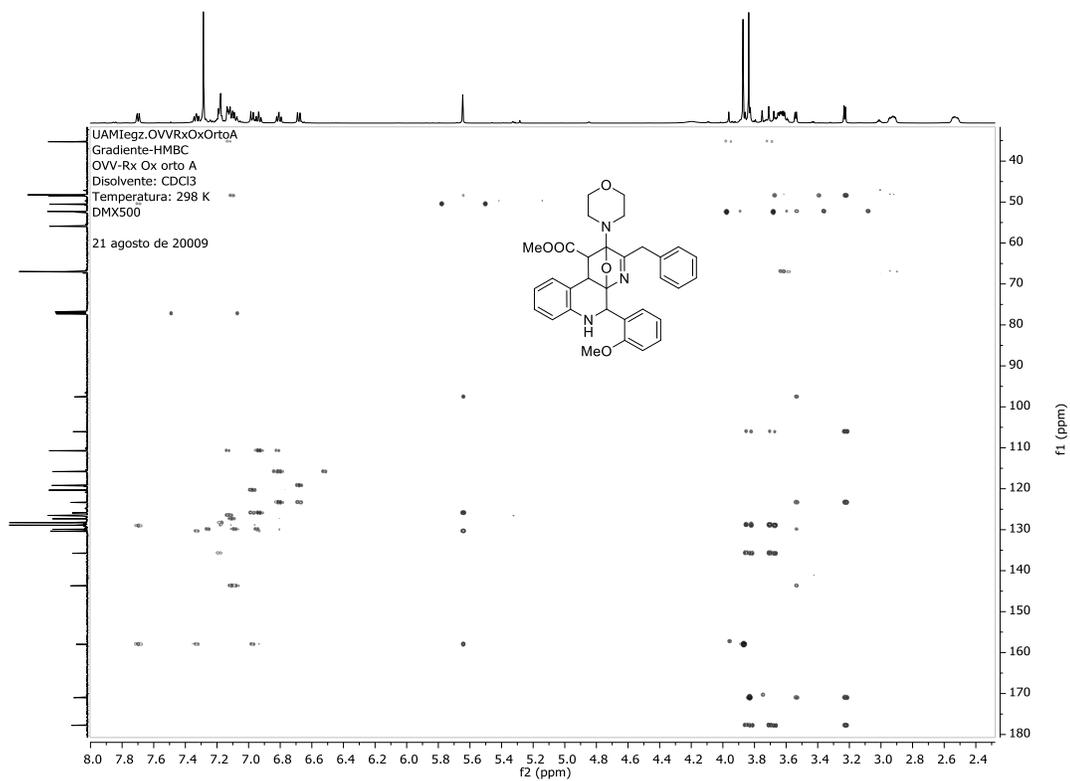


Figure S44. HMBC spectrum of the product **3e**

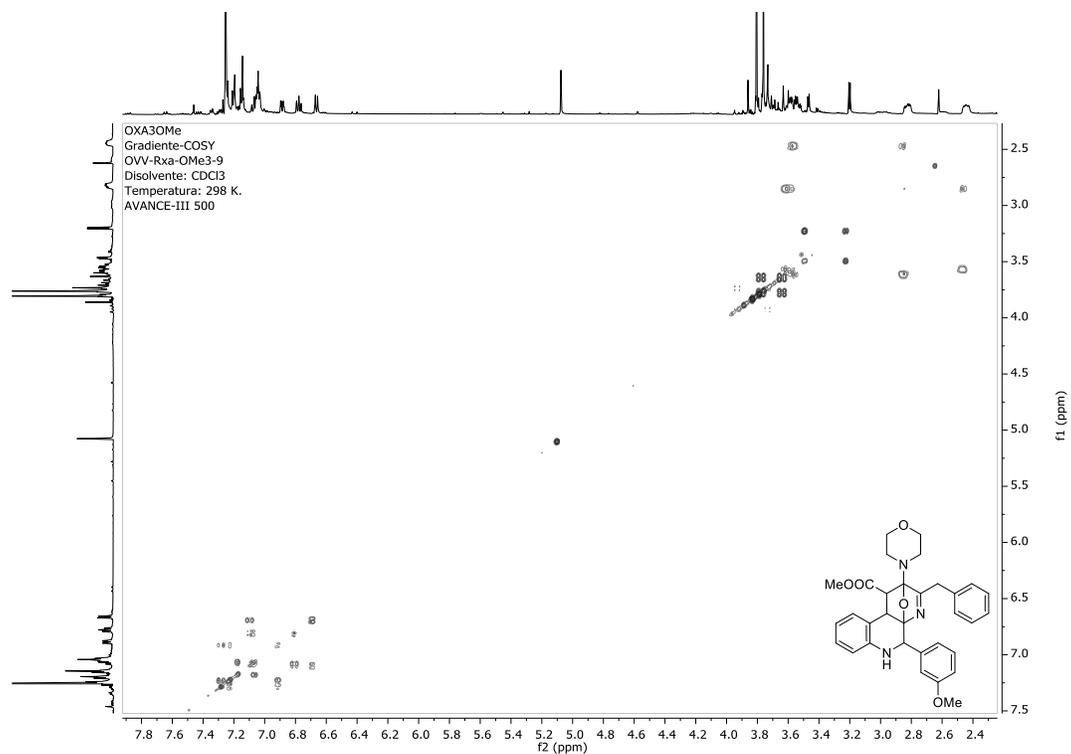


Figure S45. COSY spectrum of the product **3f**

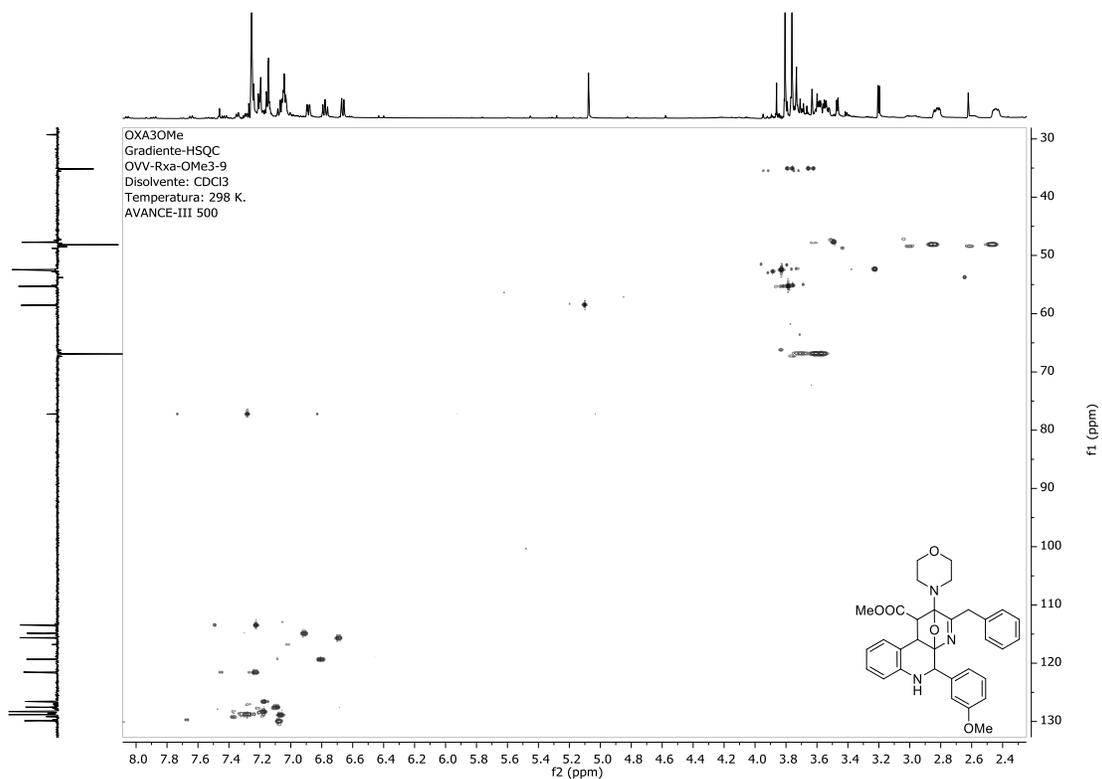


Figure S46. HSQC spectrum of the product **3f**

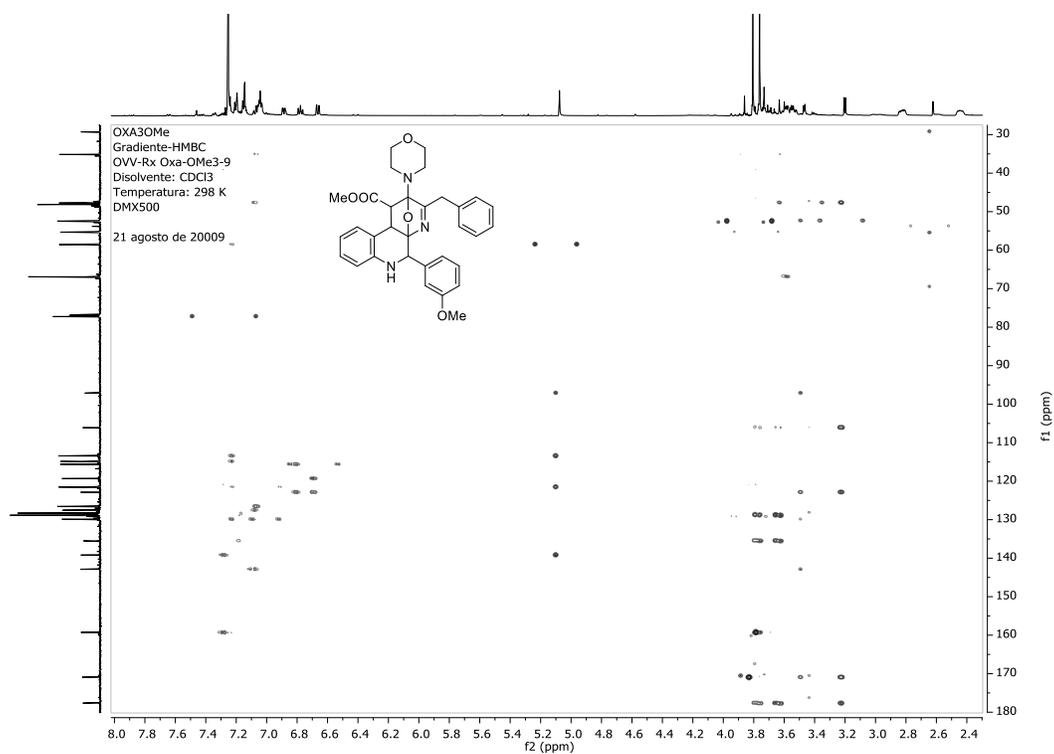


Figure S47. HMBC spectrum of the product **3f**

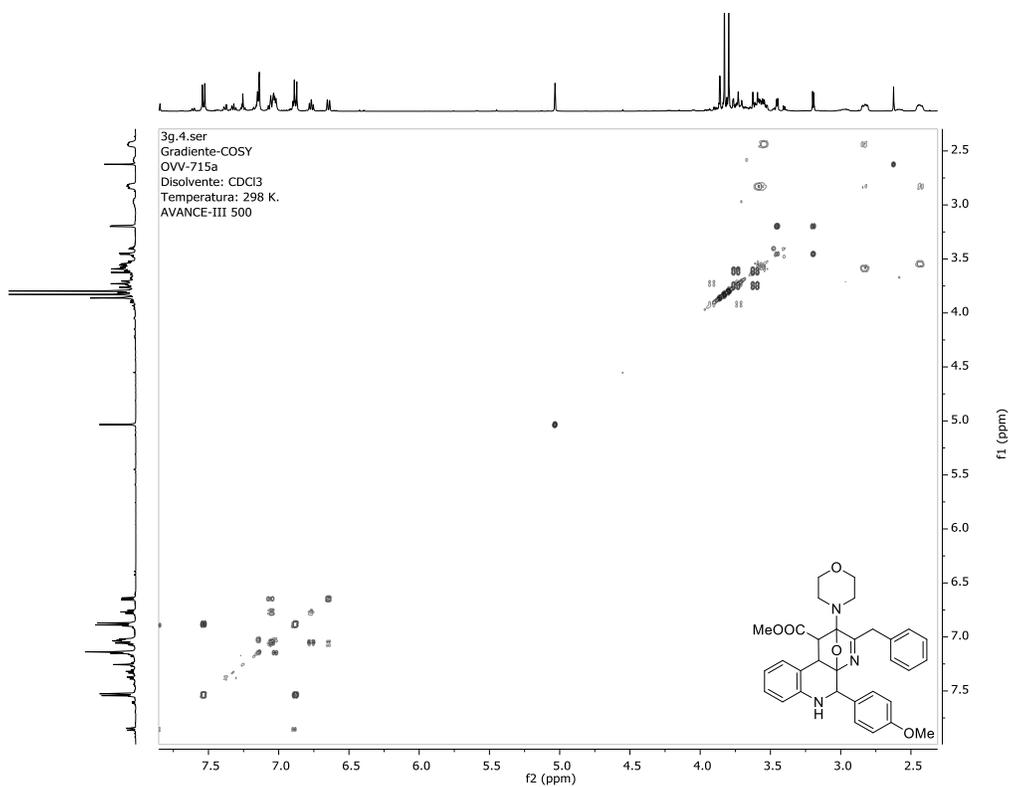


Figure S48. COSY spectrum of the product **3g**

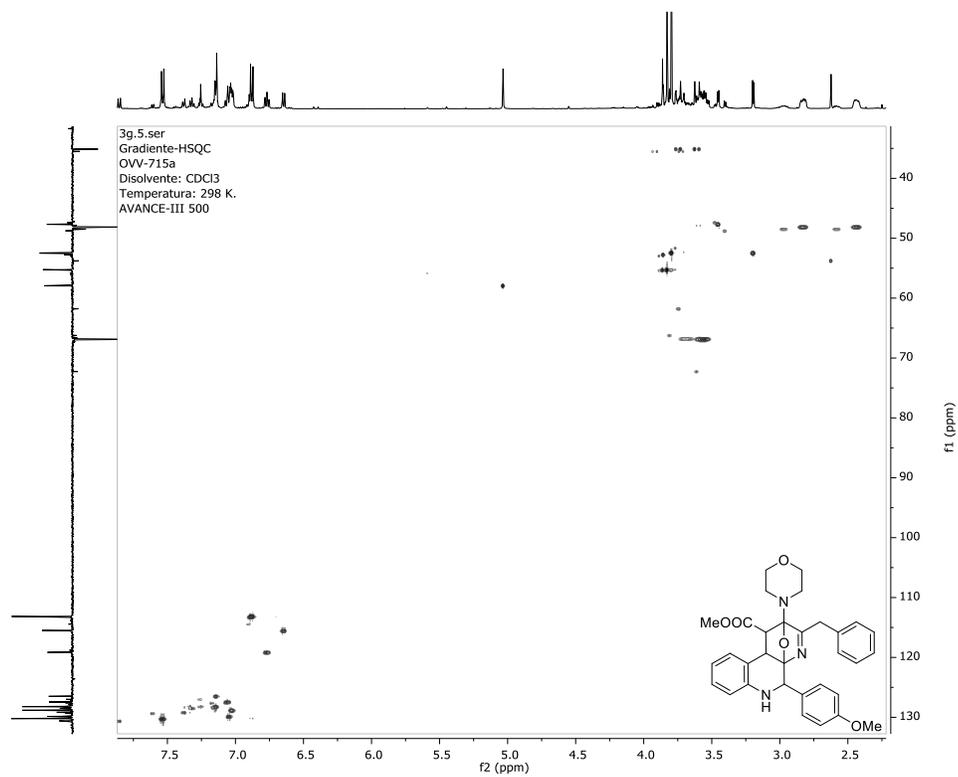


Figure S49. HSQC spectrum of the product **3g**

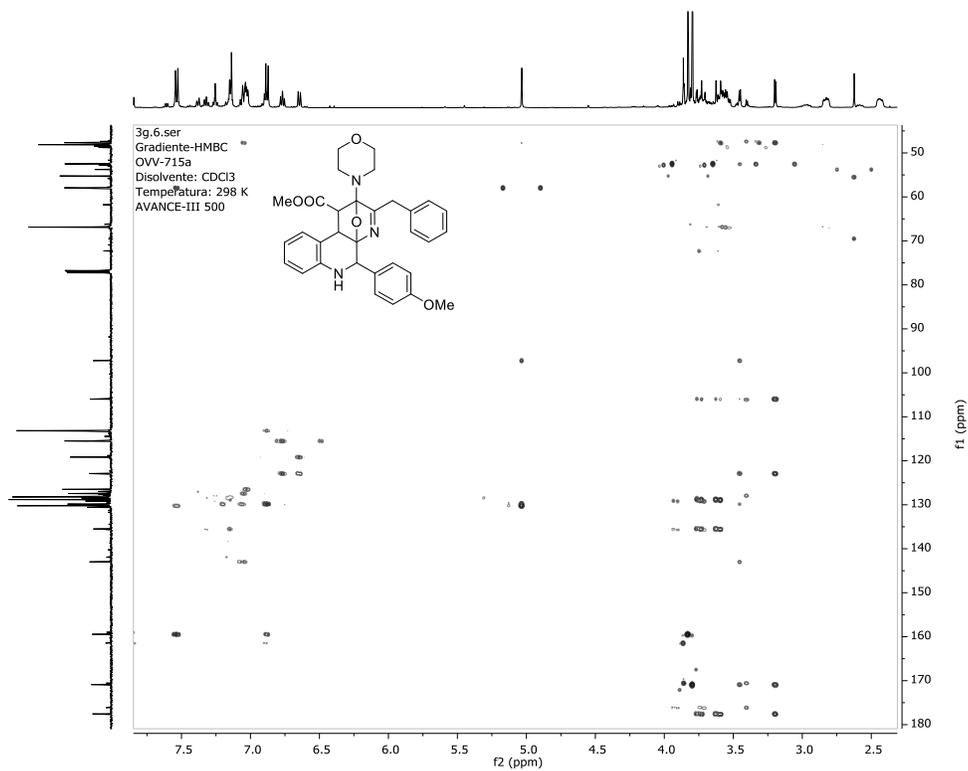


Figure S50. HMBC spectrum of the product **3g**

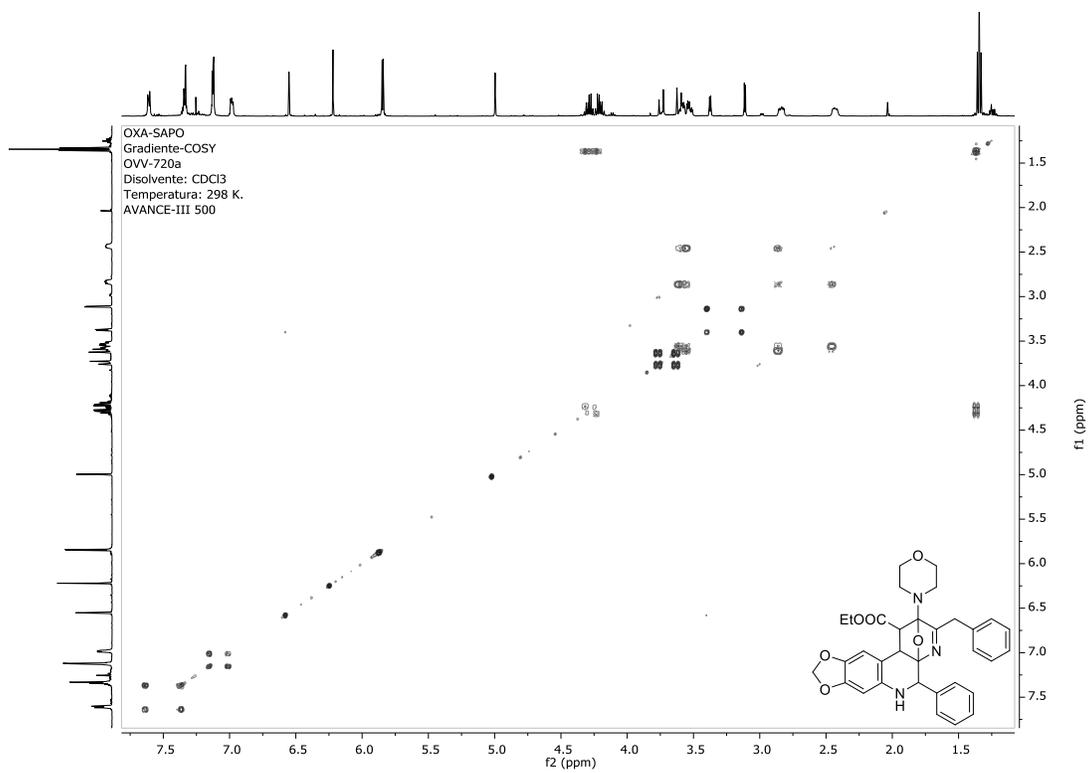


Figure S51. COSY spectrum of the product **3h**

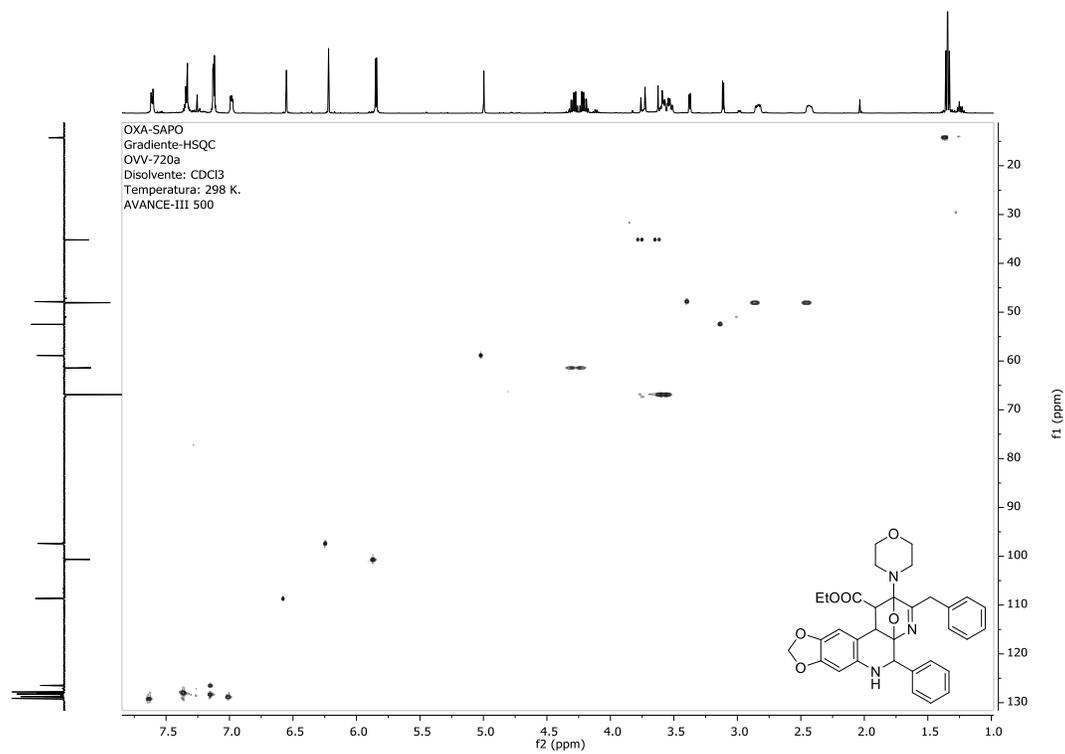


Figure S52. HSQC spectrum of the product **3h**

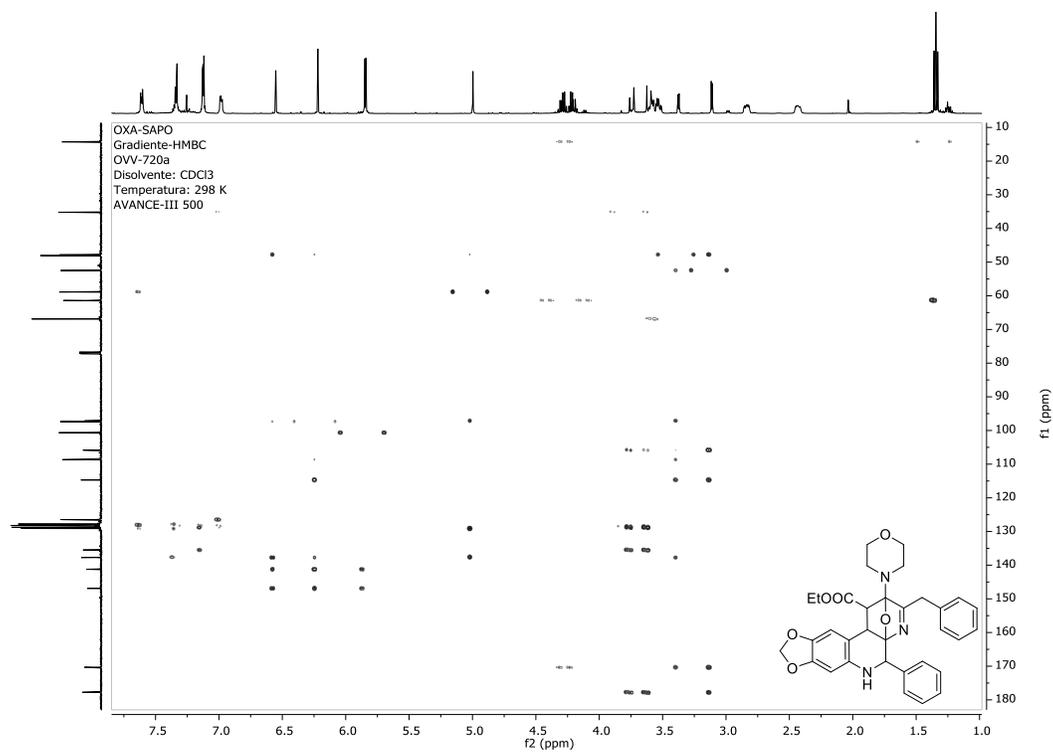


Figure S53. HMBC spectrum of the product **3h**

2D-NMR spectra for the products **4a–h**

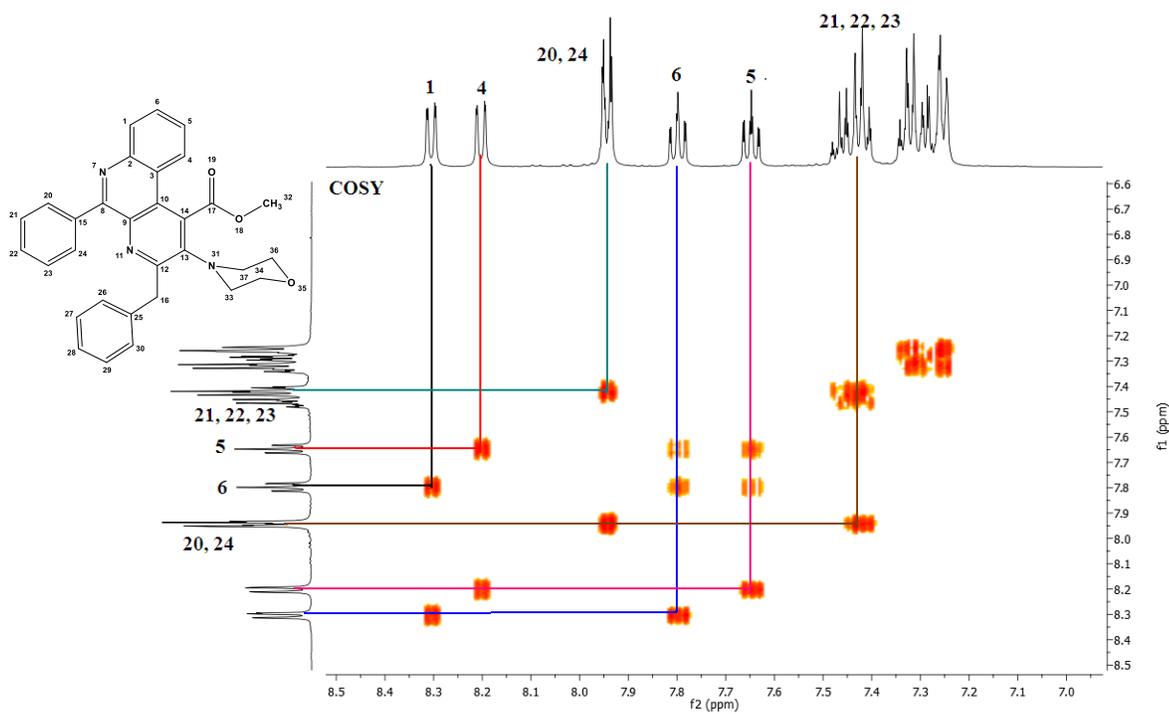


Figure S54. COSY spectrum of the product **4a**

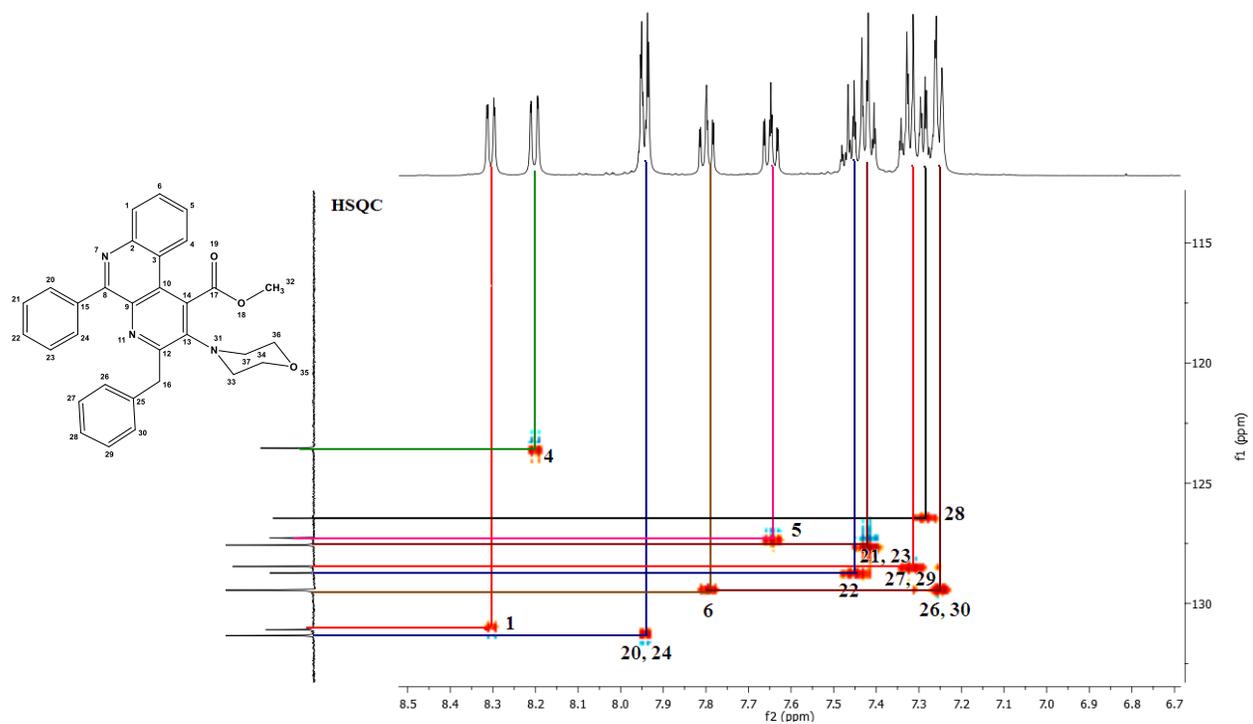


Figure S55. HSQC spectrum of the product **4a**

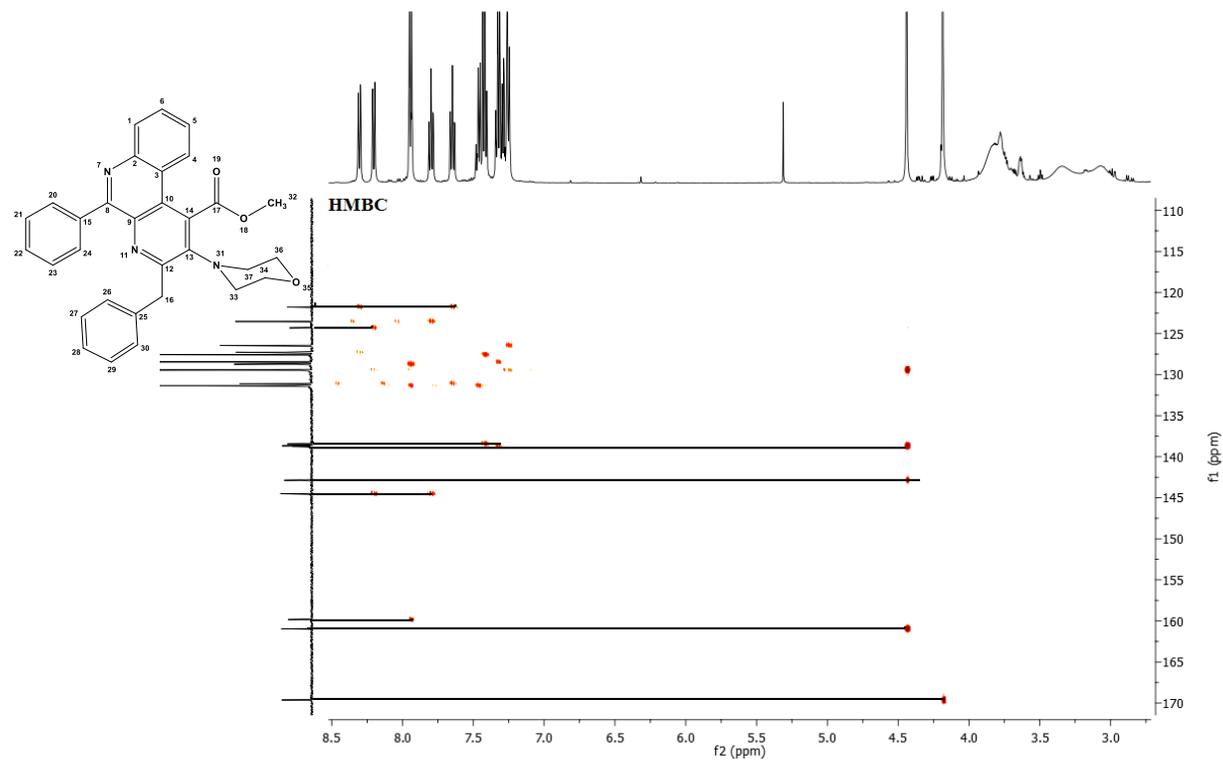


Figure S56. HMBC spectrum of the product **4a**

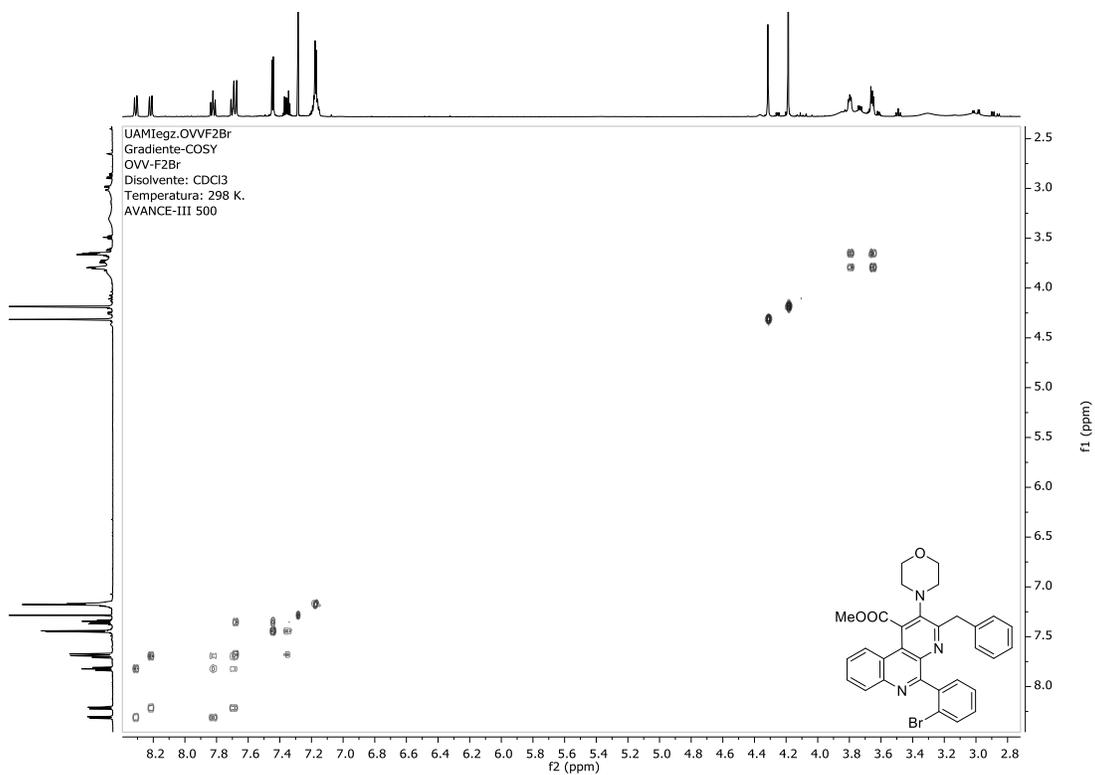


Figure S57. COSY spectrum of the product **4b**

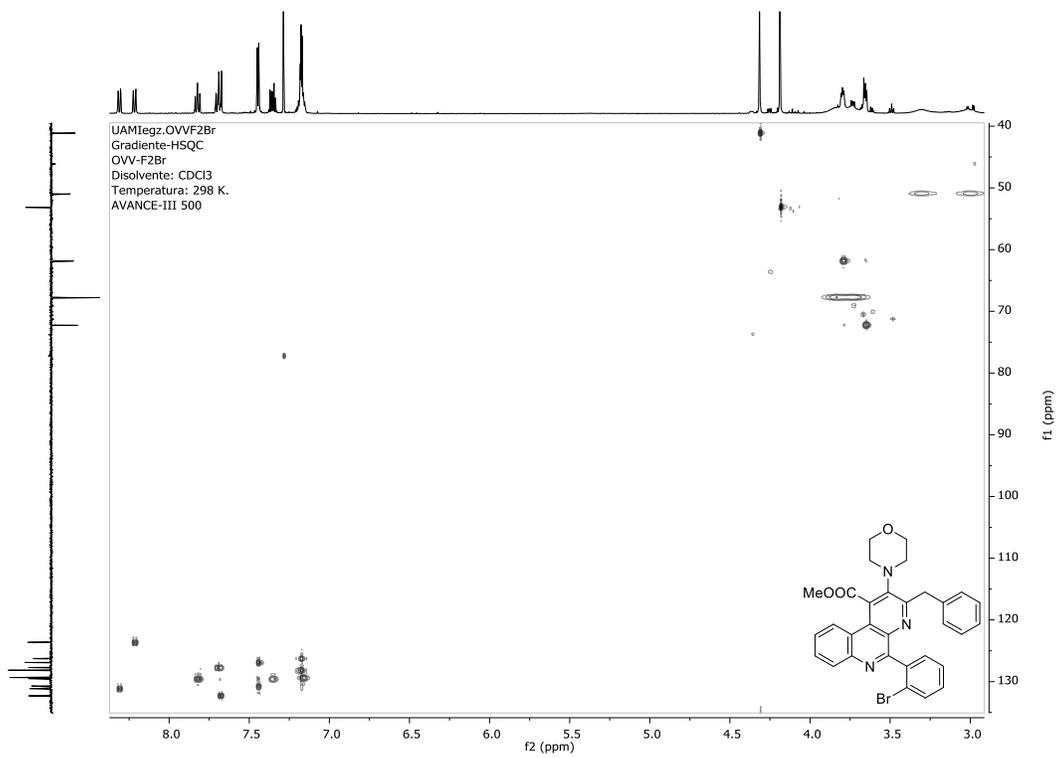


Figure S58. HSQC spectrum of the product **4b**

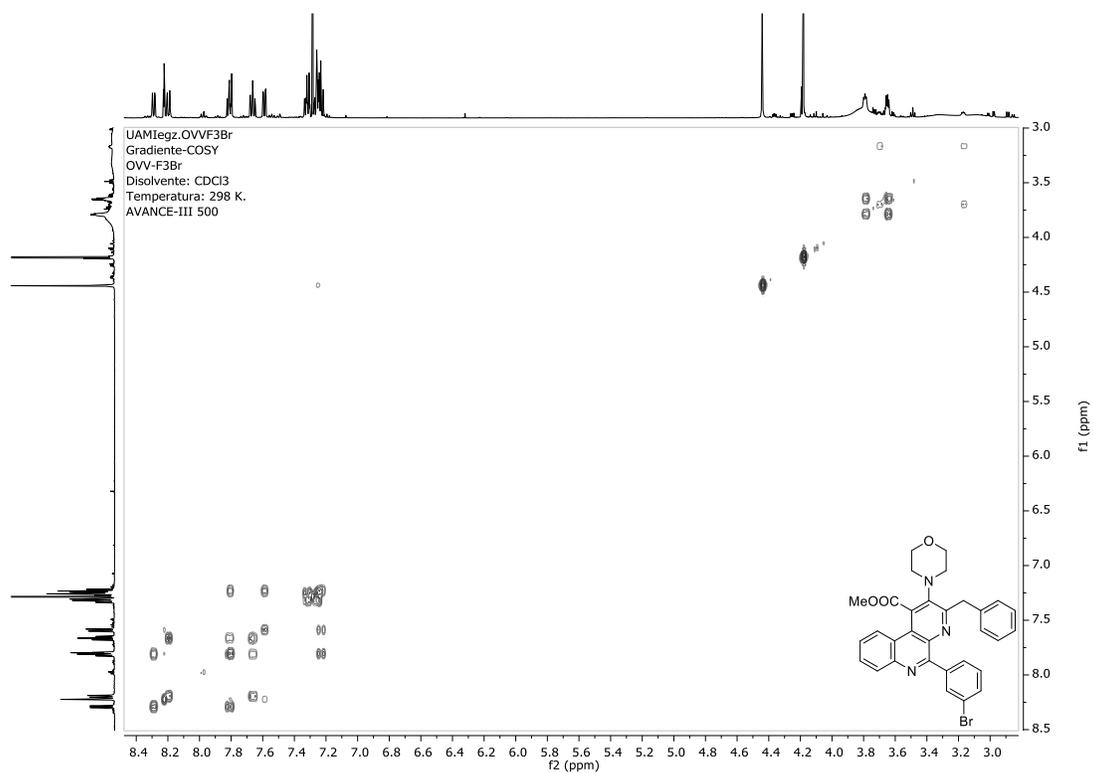
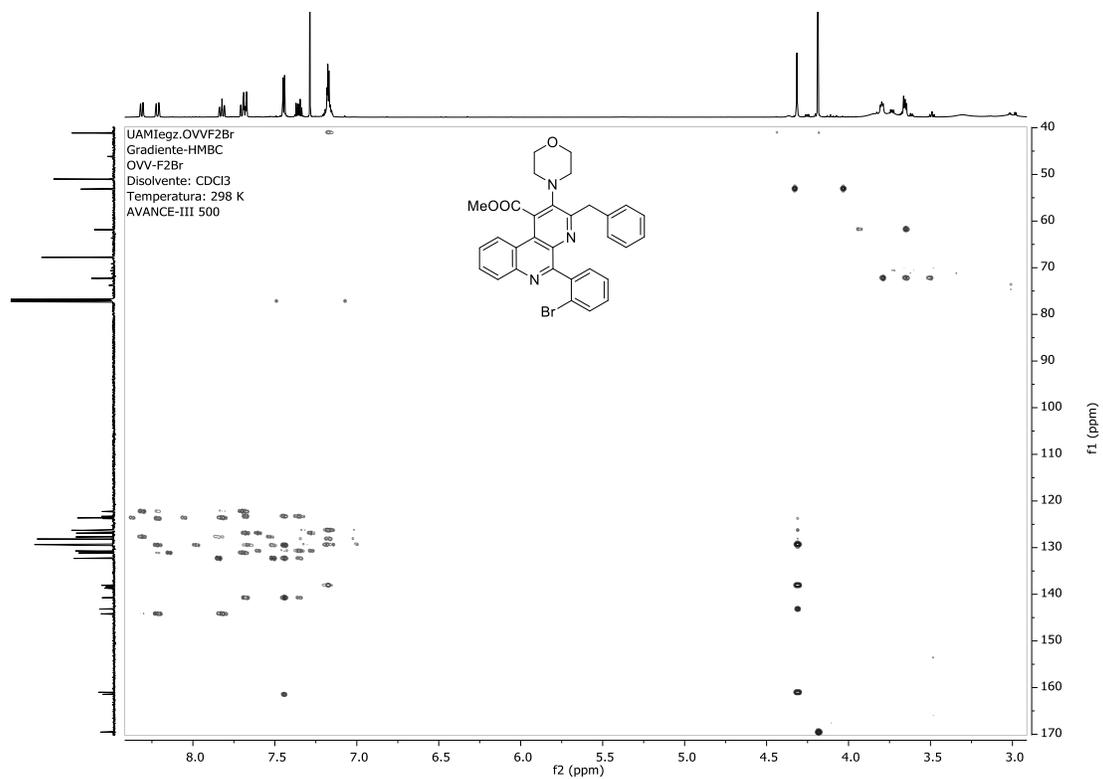


Figure S60. COSY spectrum of the product **4c**

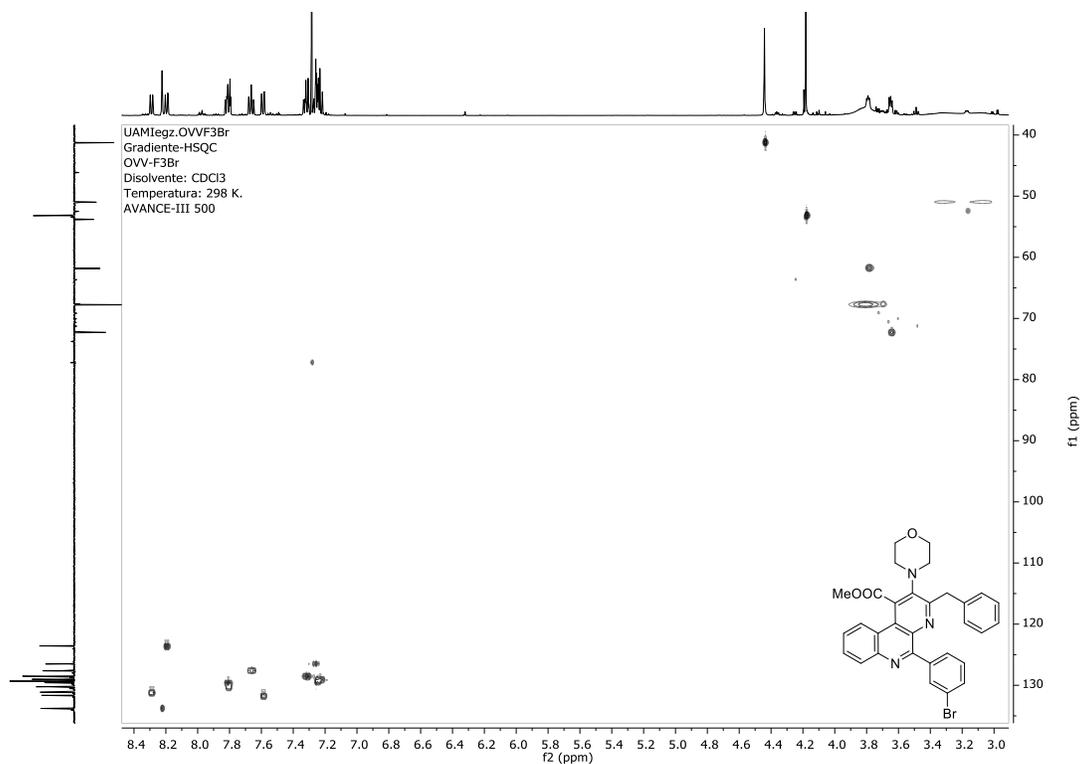


Figure S61. HSQC spectrum of the product **4c**

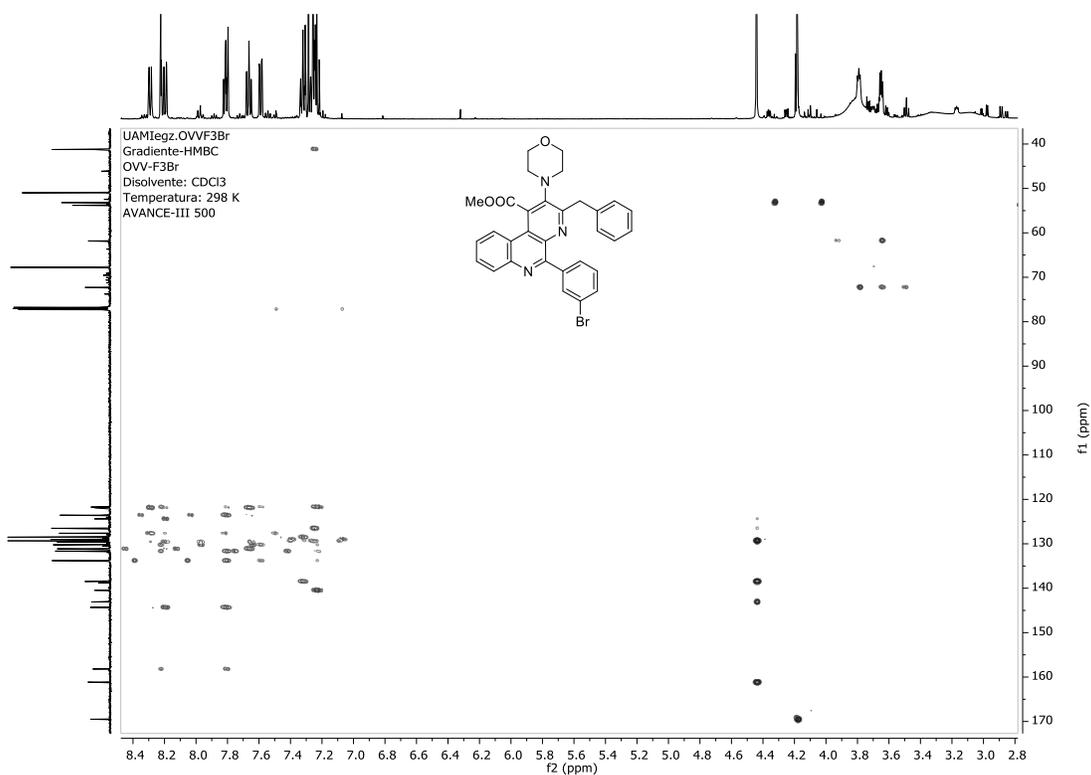


Figure S62. HMBC spectrum of the product **4c**

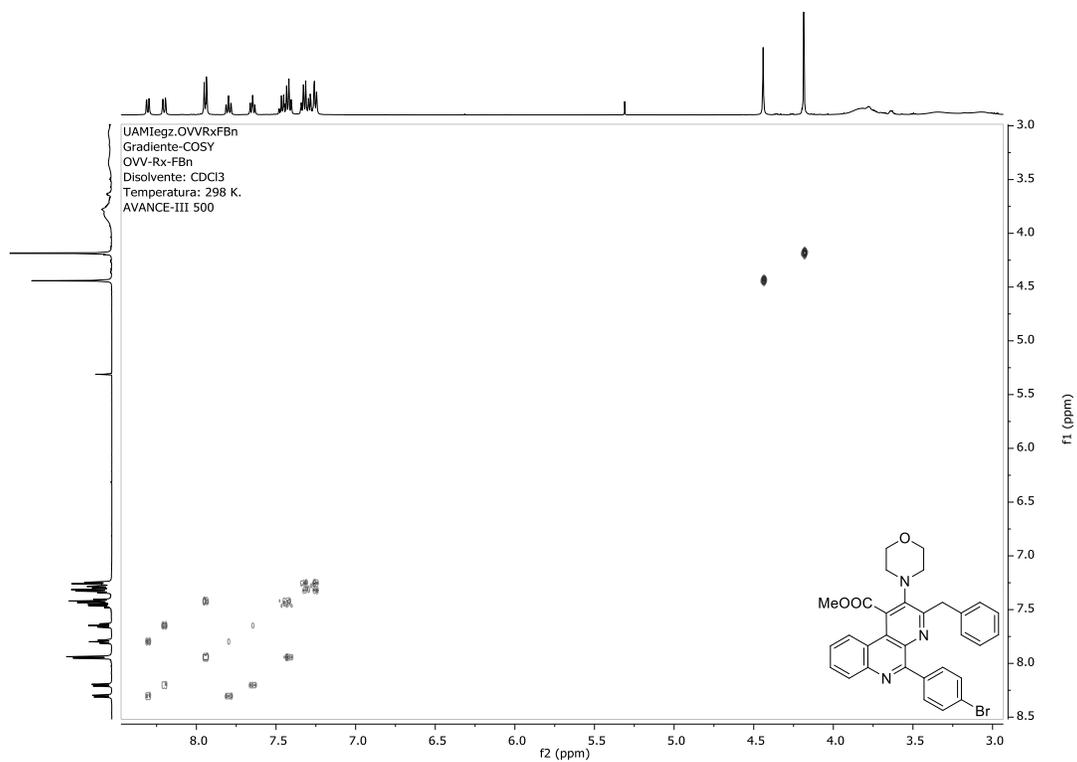


Figure S63. COSY spectrum of the product **4d**

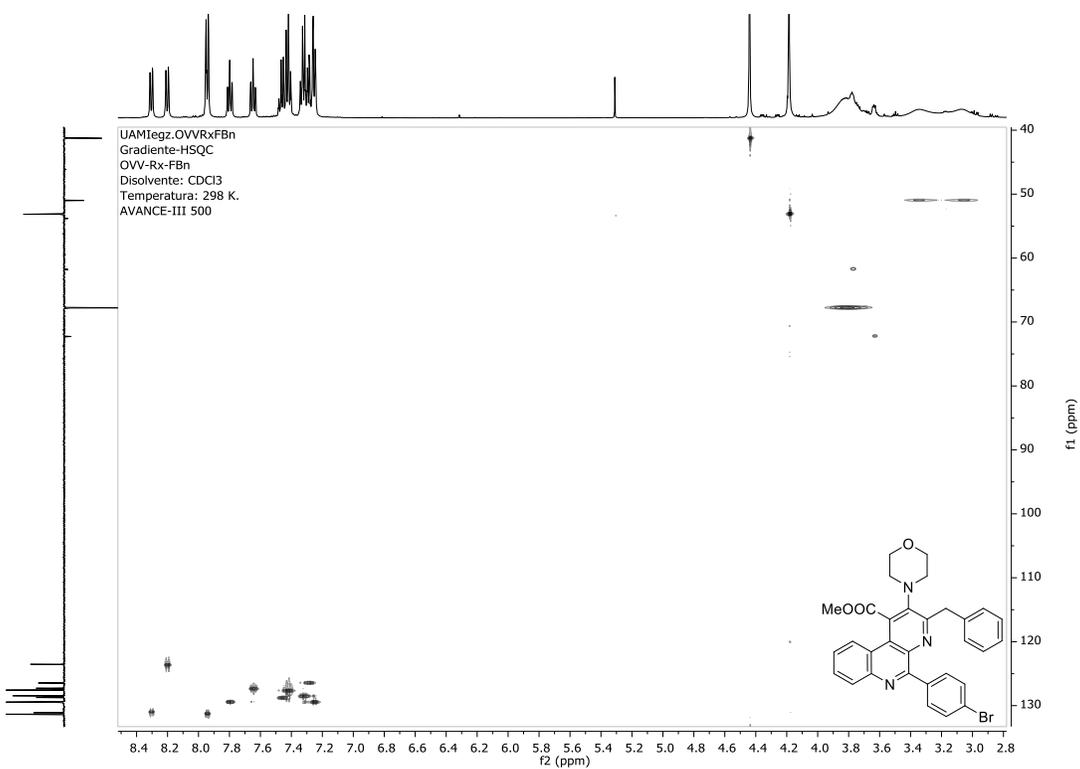


Figure S64. HSQC spectrum of the product **4d**

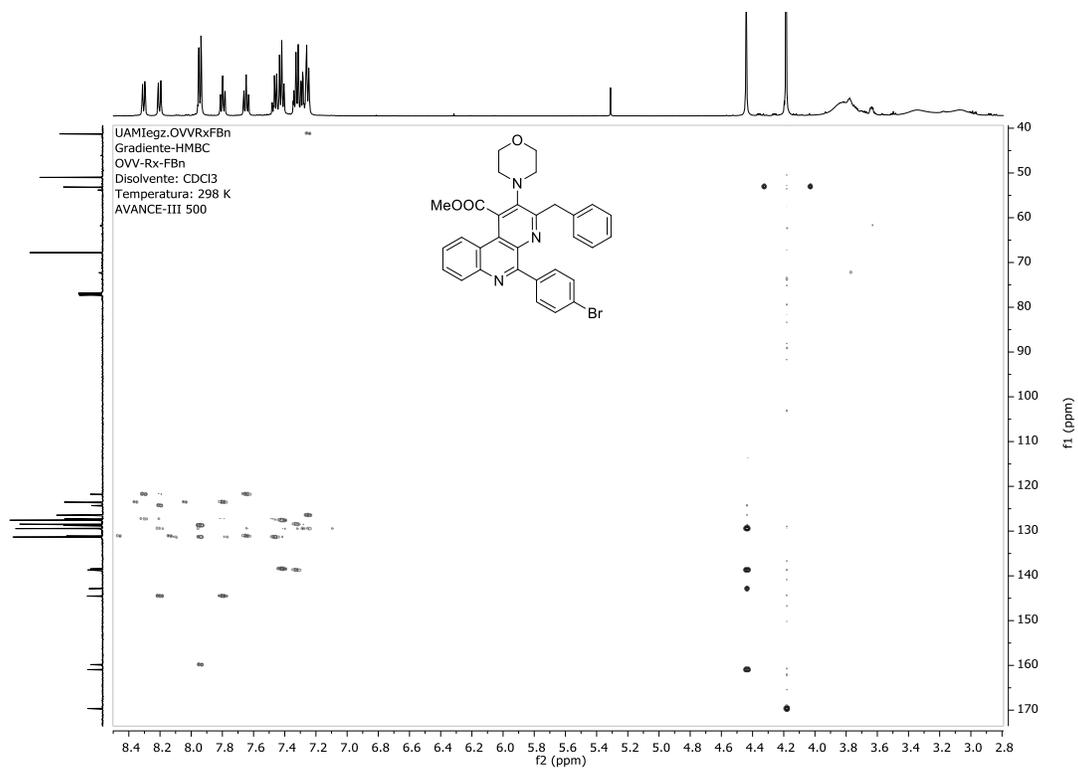


Figure S65. HMBC spectrum of the product **4d**

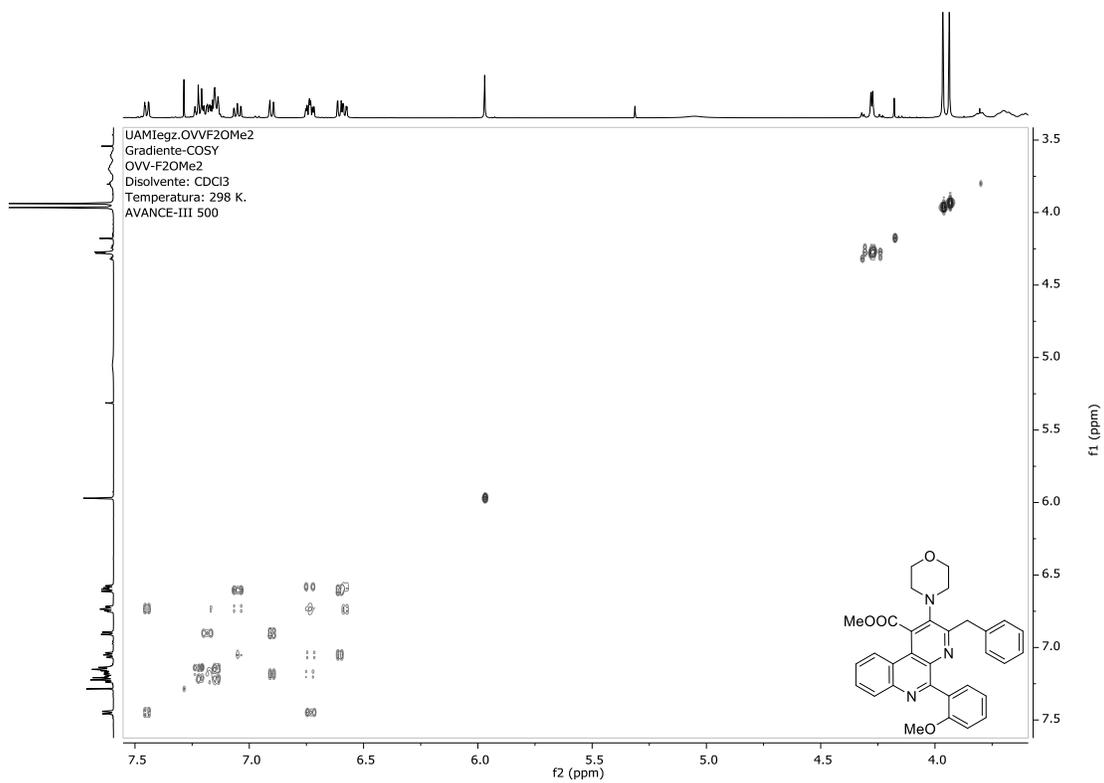


Figure S66. COSY spectrum of the product **4e**

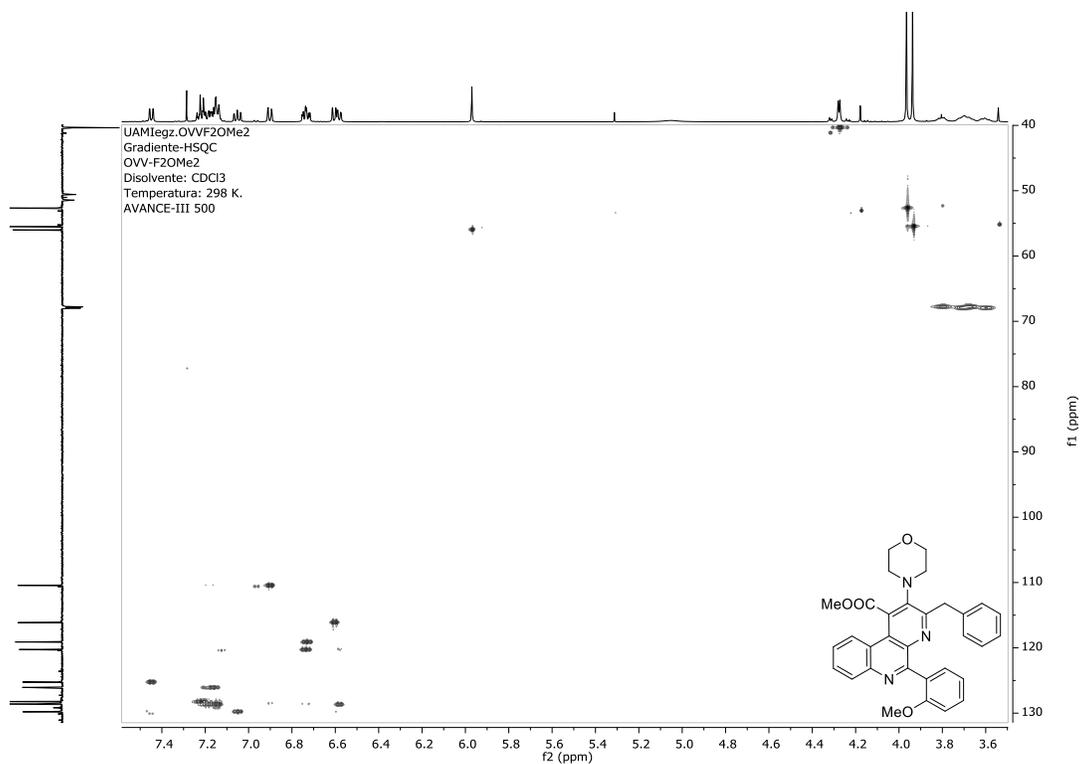


Figure S67. HSQC spectrum of the product **4e**

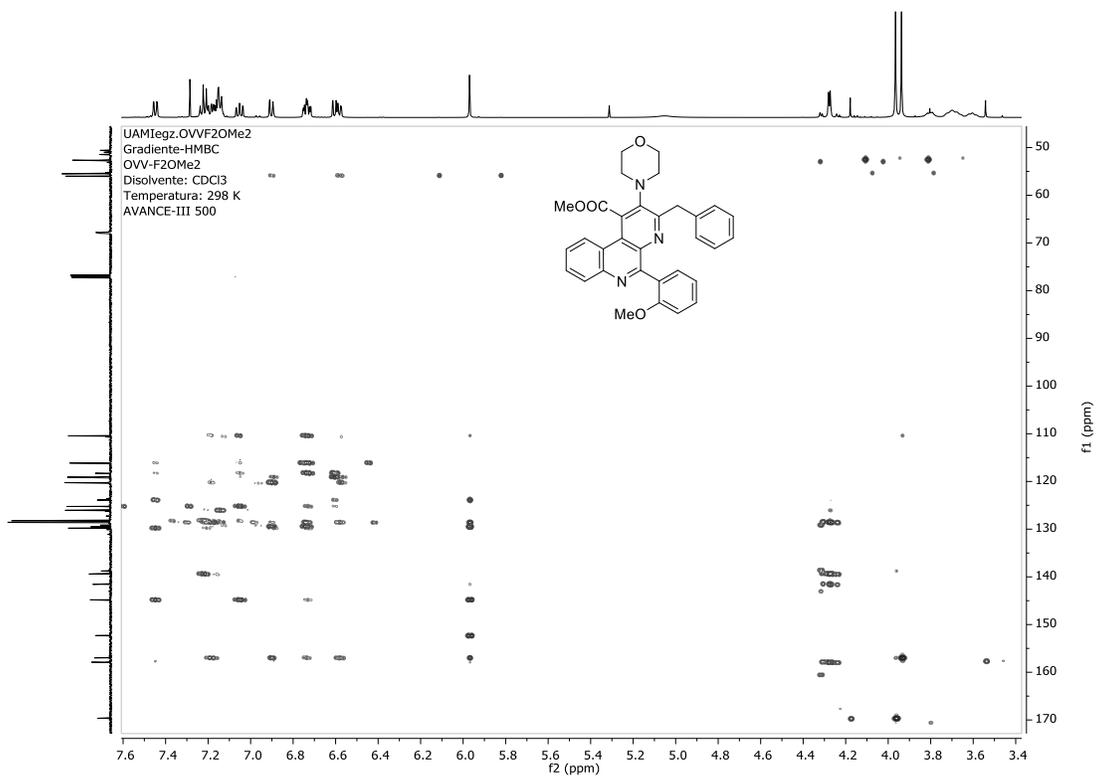


Figure S68. HMBC spectrum of the product **4e**

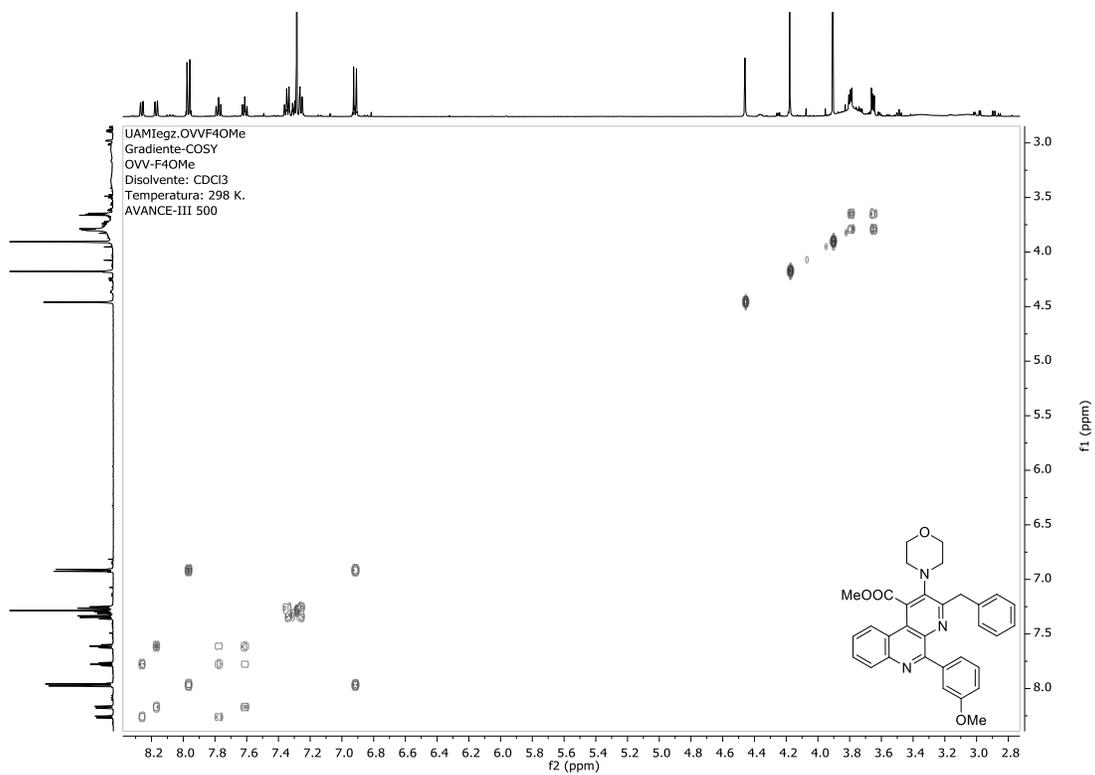


Figure S69. COSY spectrum of the product **4f**

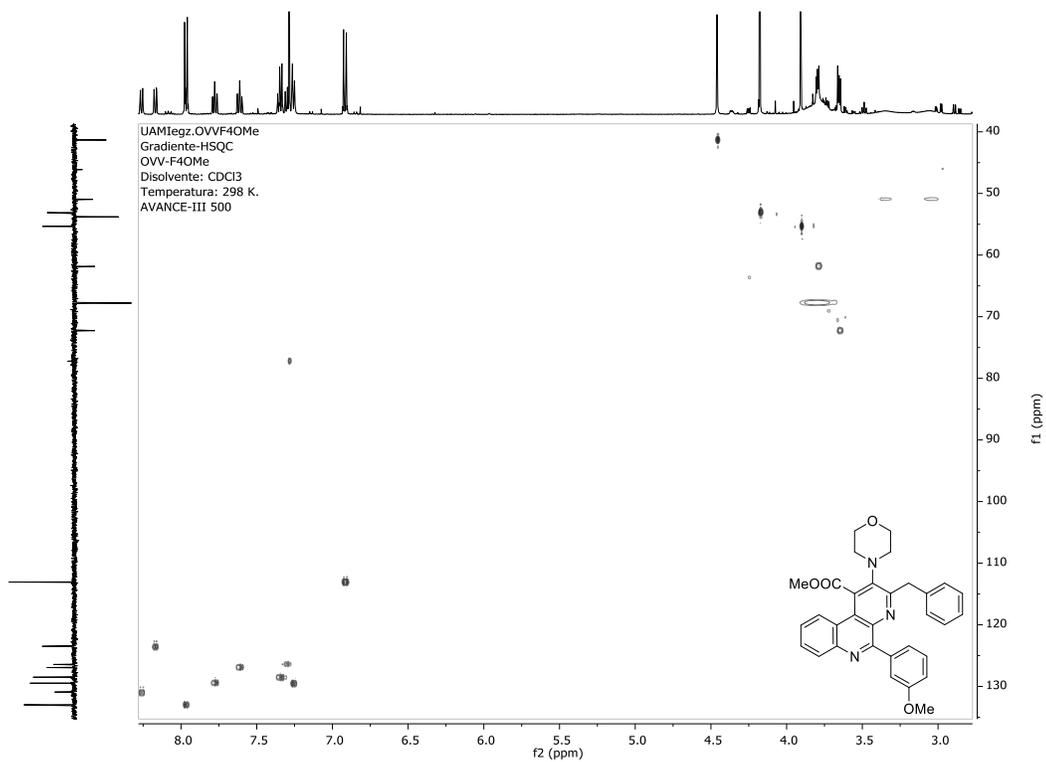


Figure S70. HSQC spectrum of the product **4f**

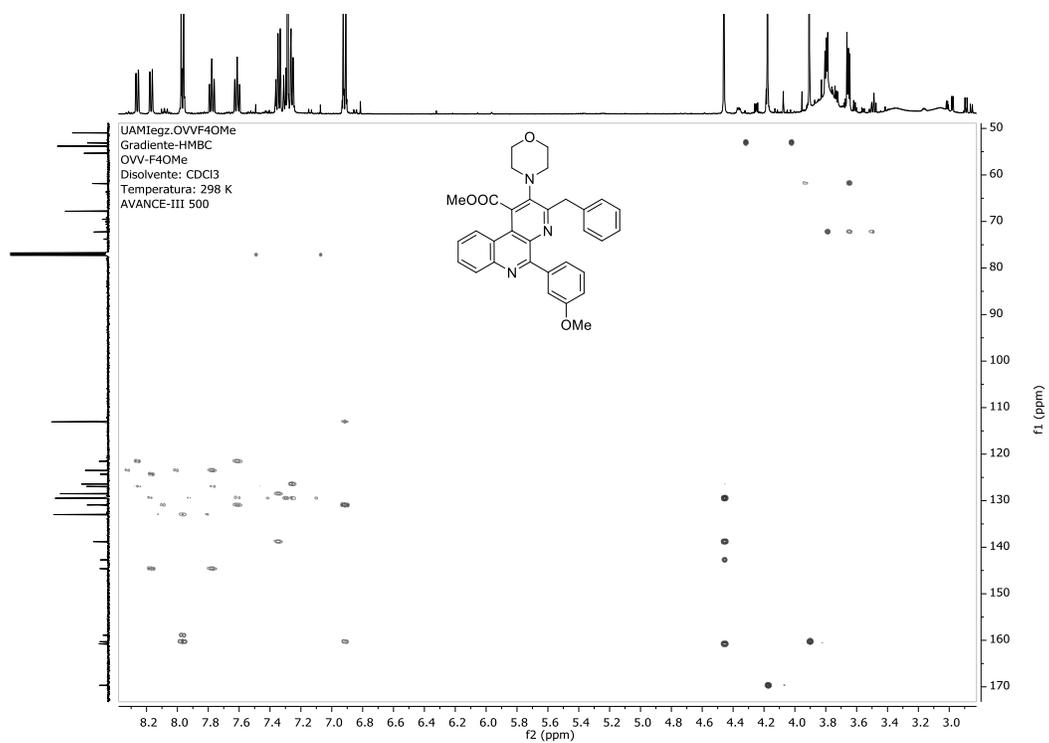


Figure S71. HMBC spectrum of the product **4f**

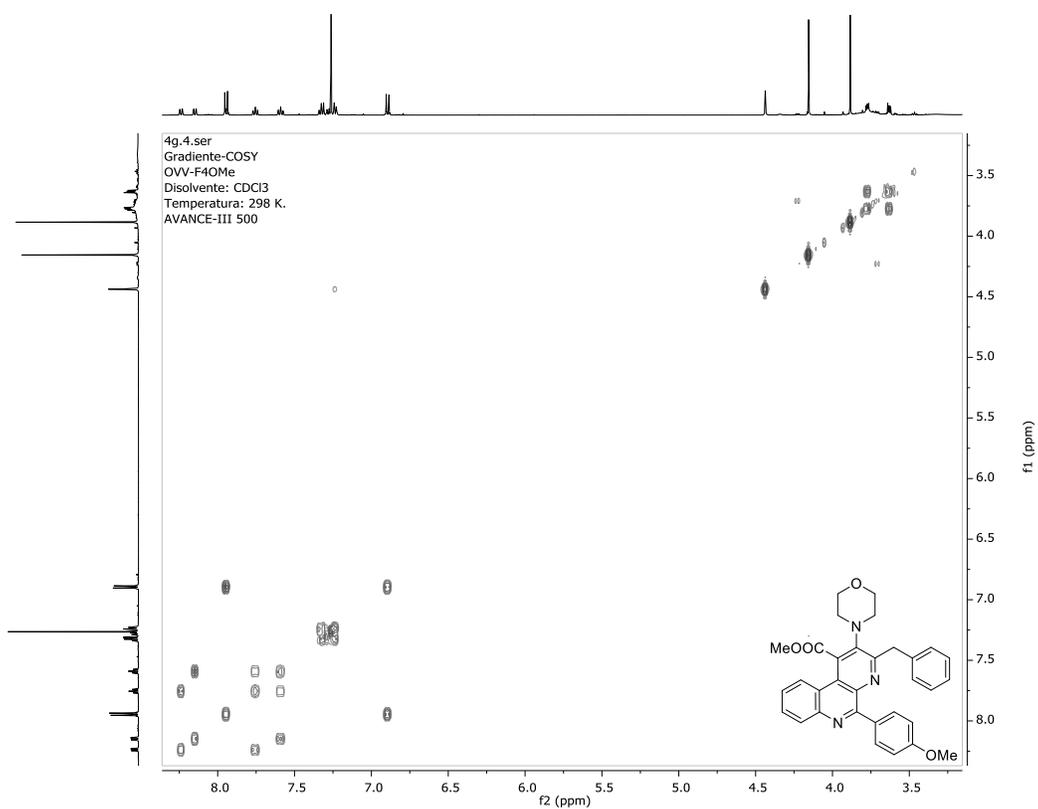


Figure S72. COSY spectrum of the product **4g**

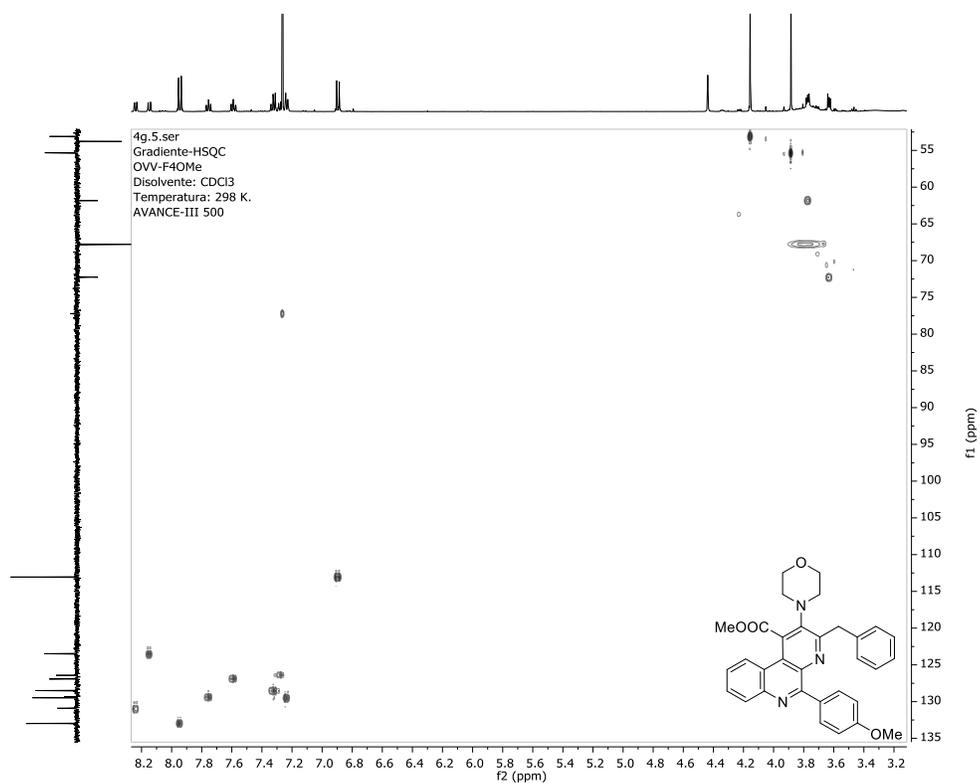


Figure S73. HSQC spectrum of the product **4g**

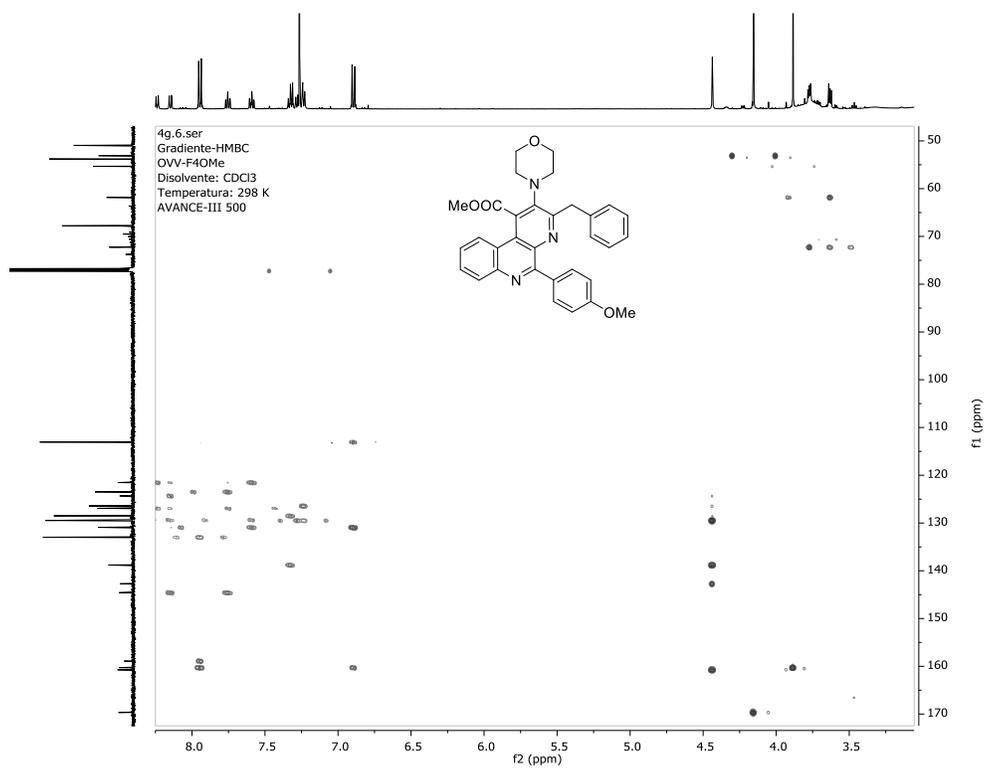


Figure S74. HMBC spectrum of the product **4g**

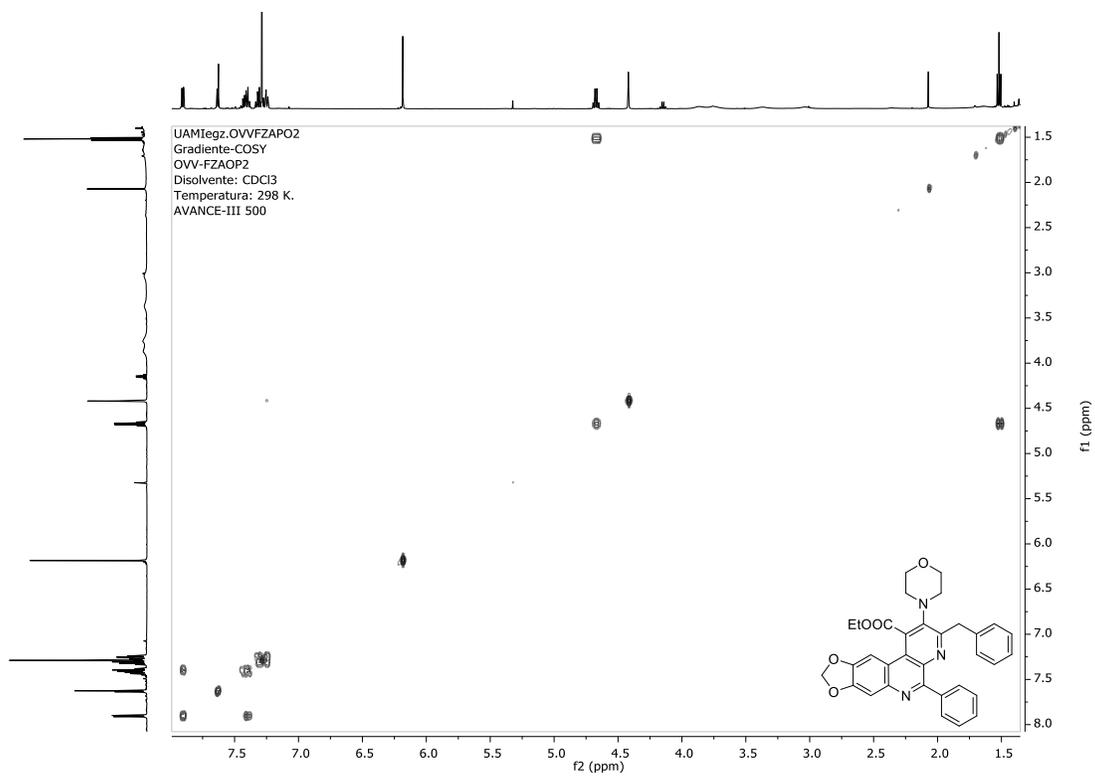


Figure S75. COSY spectrum of the product **4h**

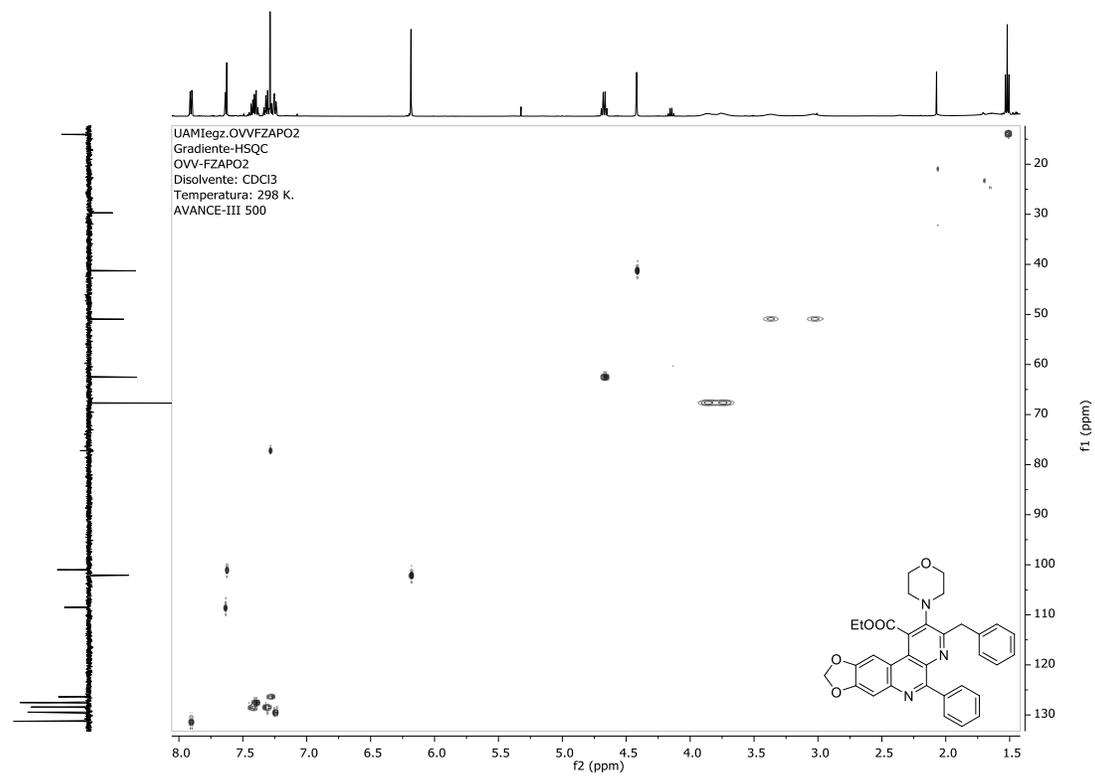


Figure S76. HSQC spectrum of the product **4h**

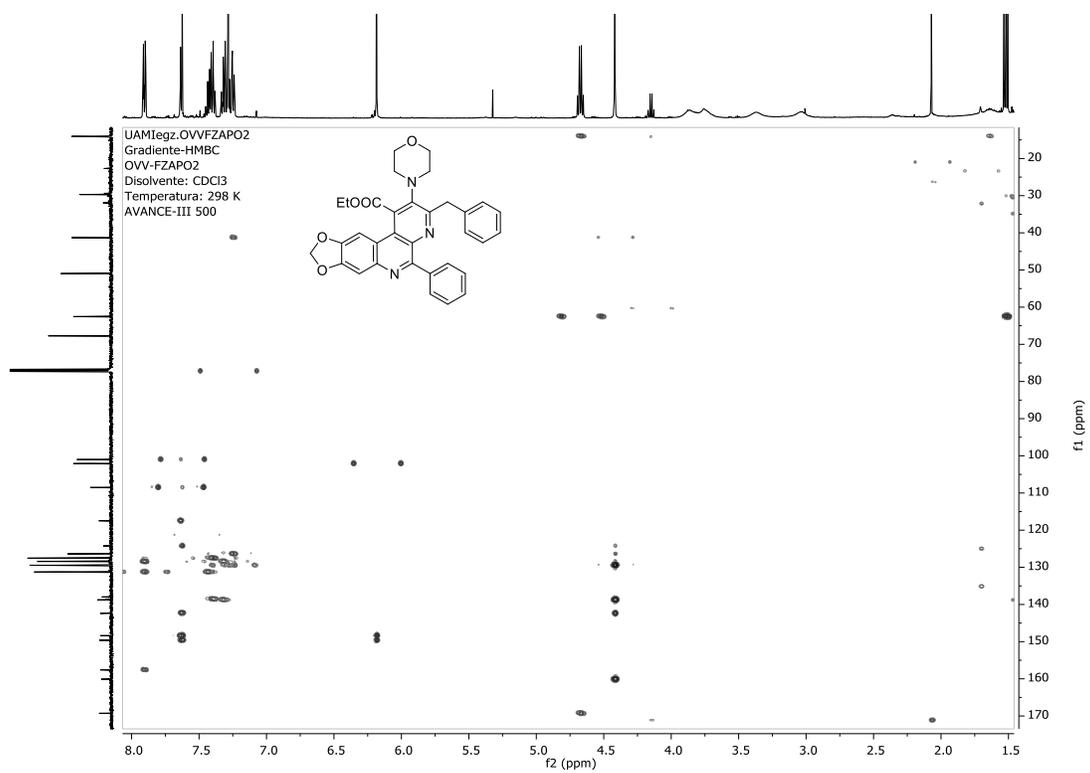


Figure S77. HMBC spectrum of the product **4h**