

NMR Spectra

Gene Conversion-Associated Successive Engineering of Modular Polyketide Synthases

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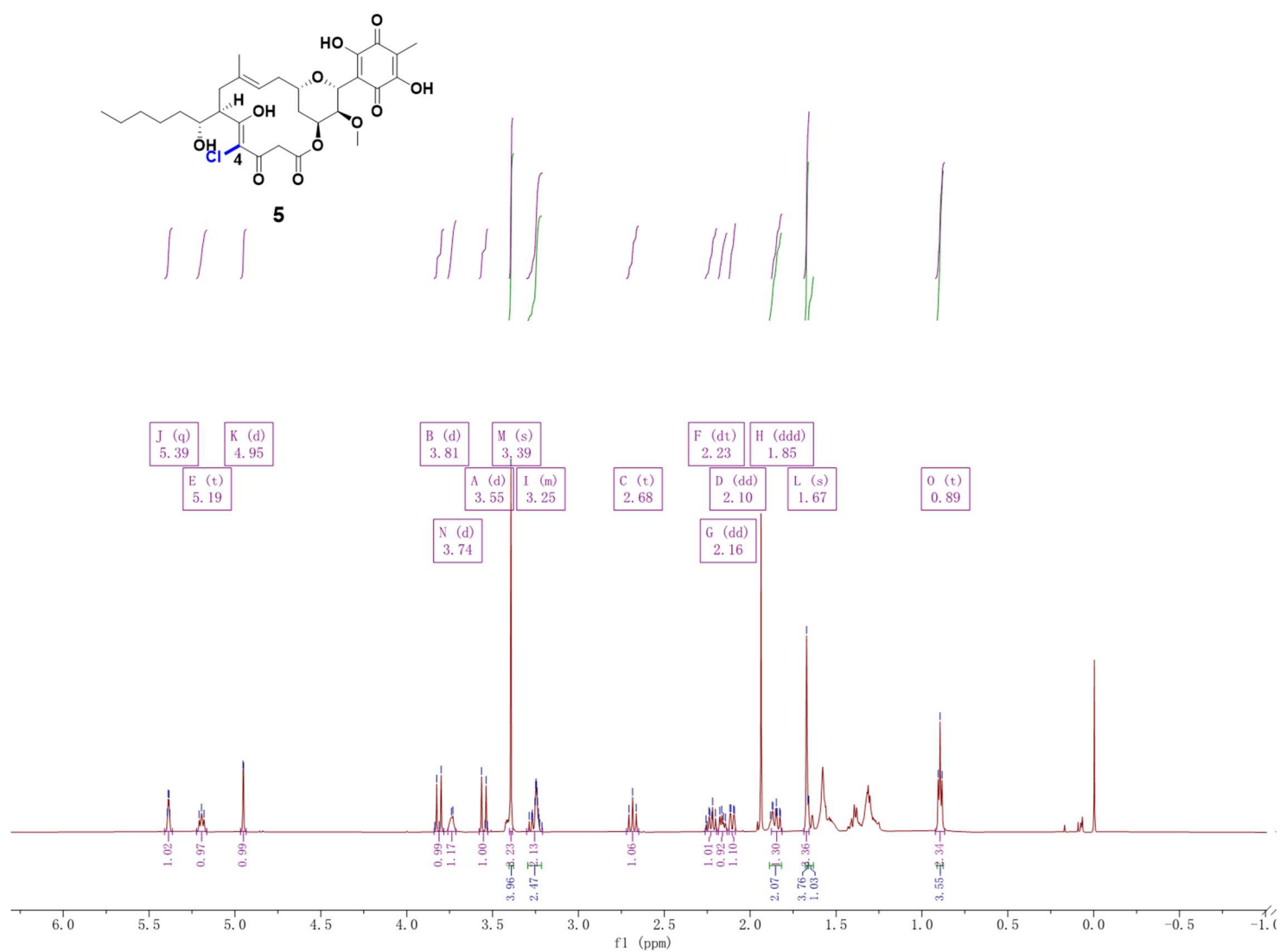


Fig. 1. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **5**.

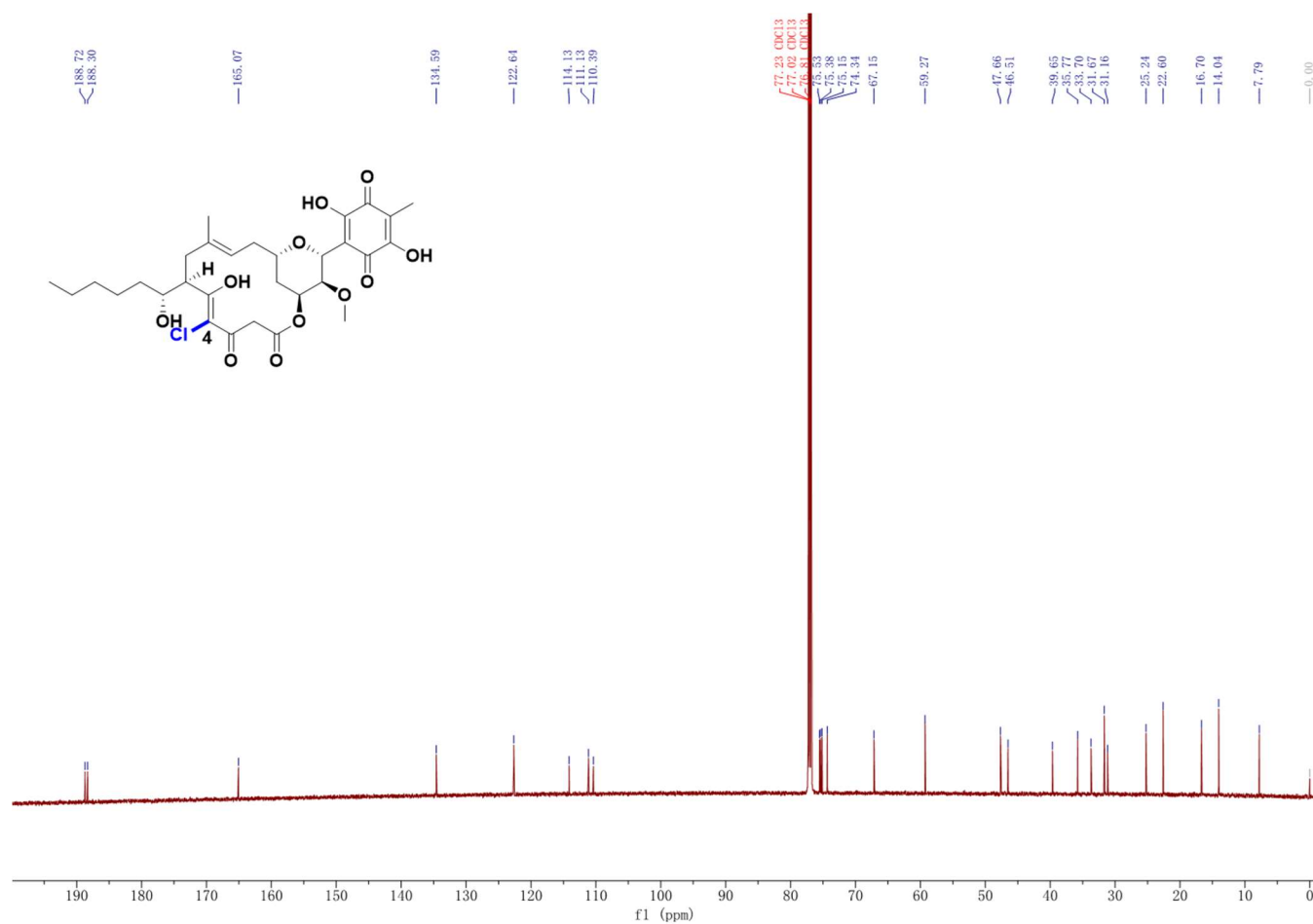


Fig. 2. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **5**.

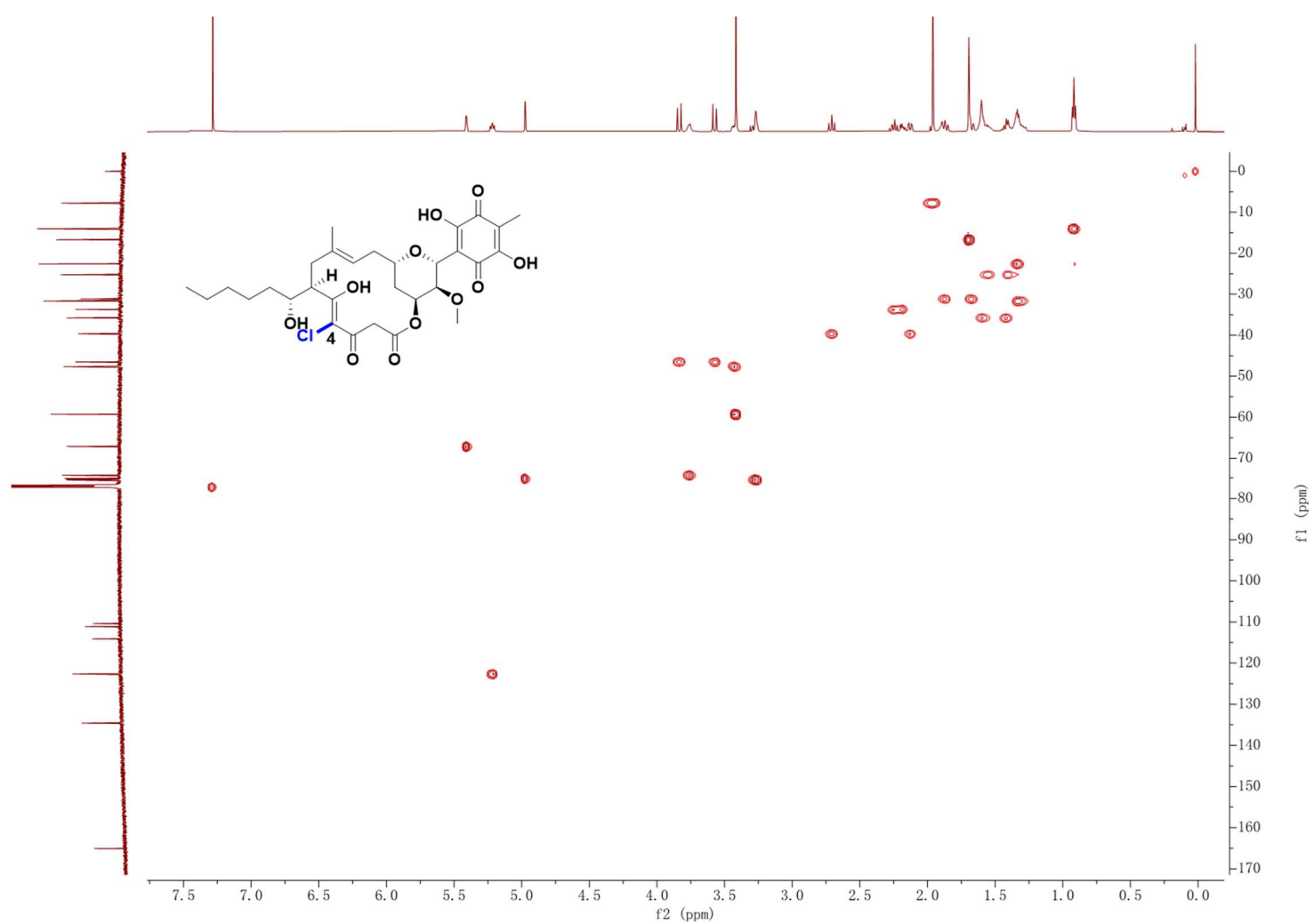


Fig. 3. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **5**.

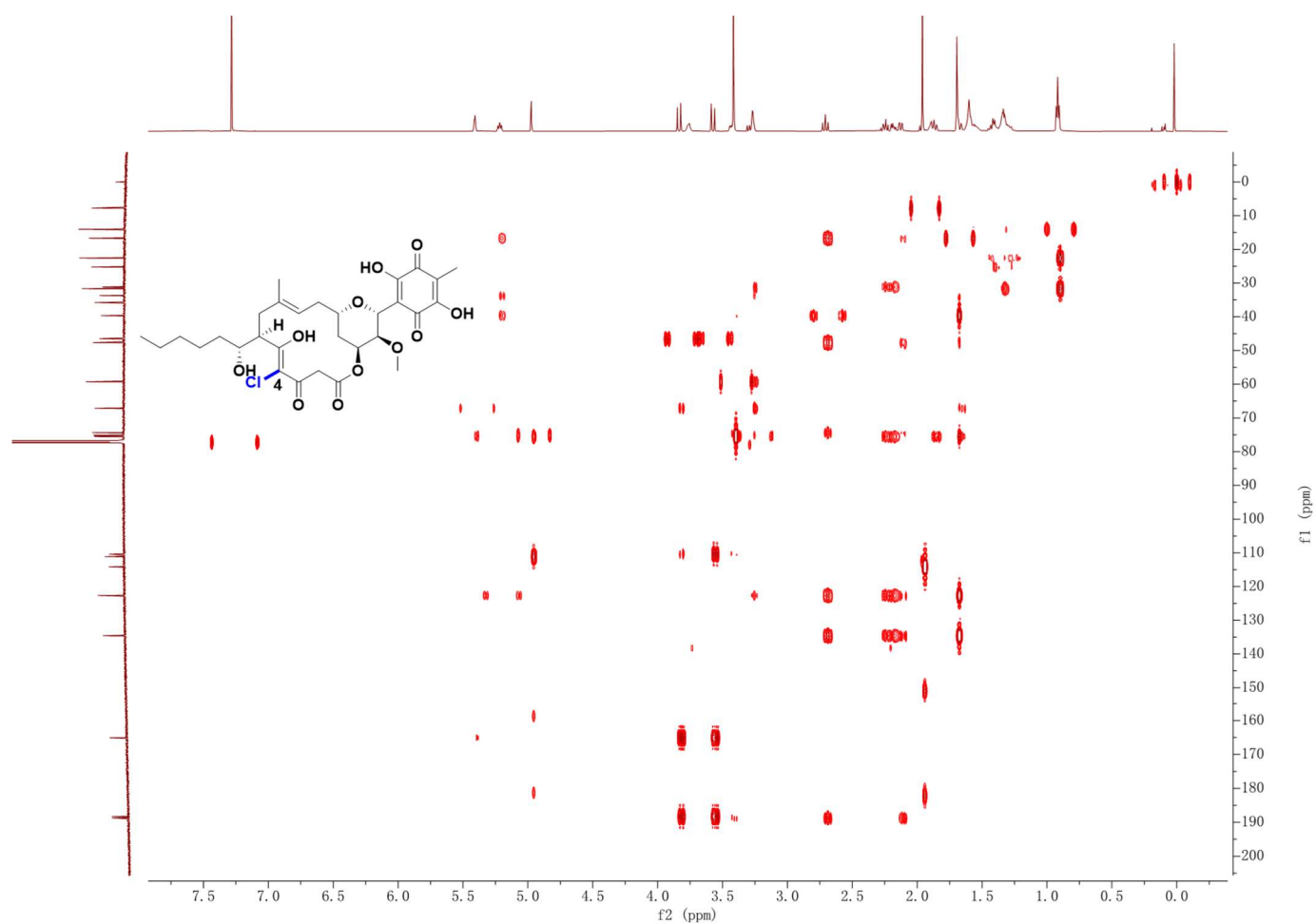


Fig. 4. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **5**.

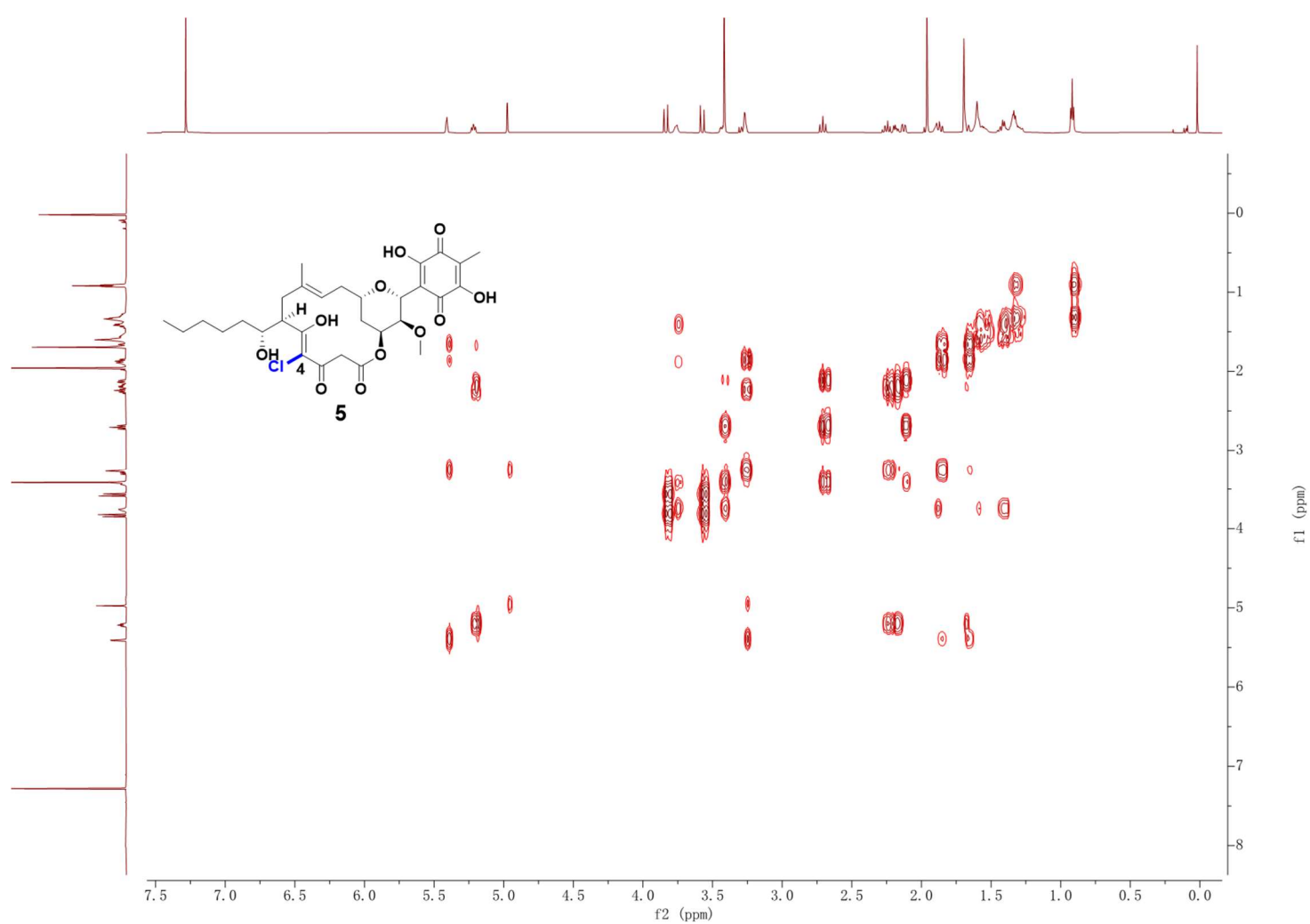


Fig. 5. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **5**.

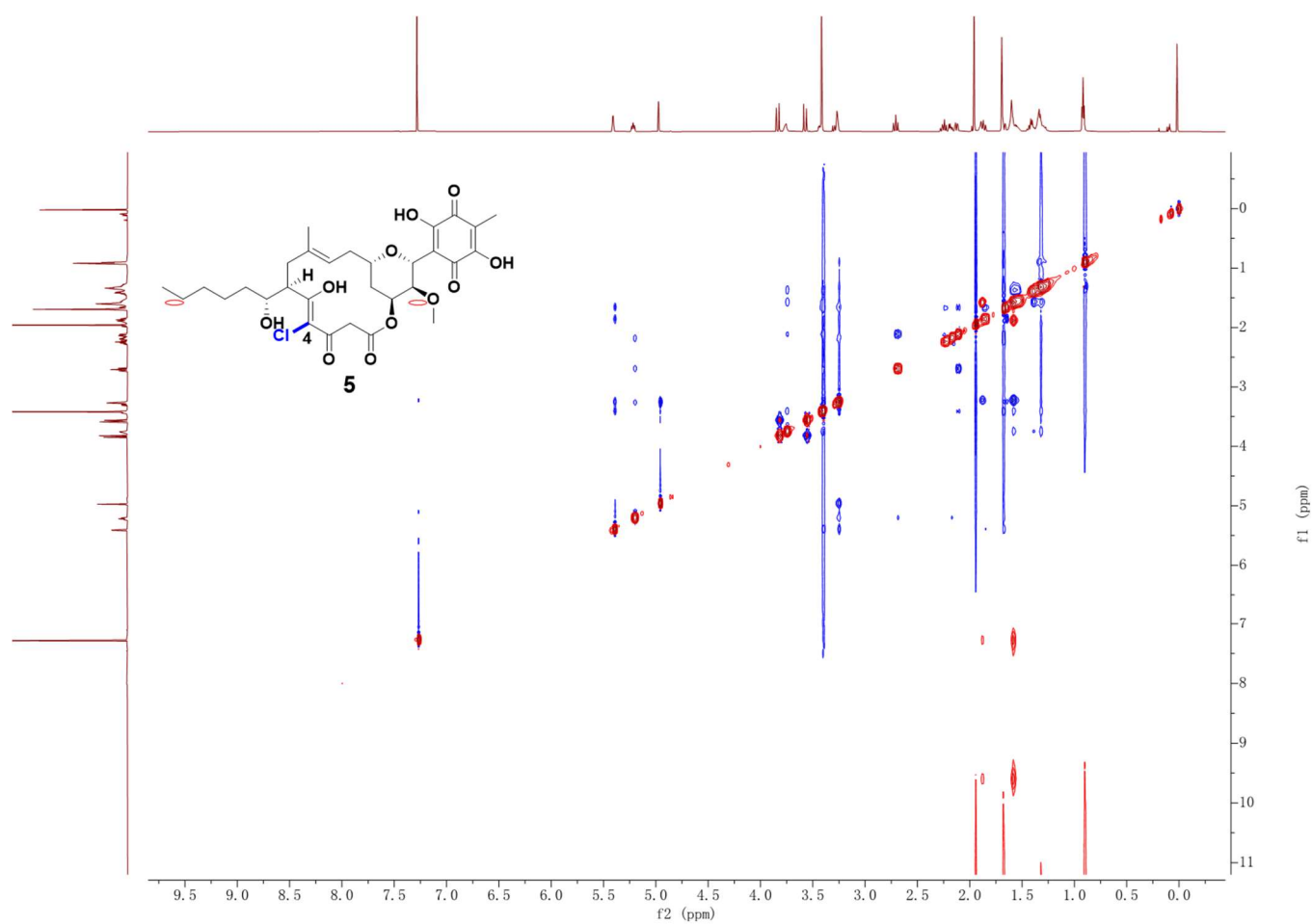


Fig. 6. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **5**.

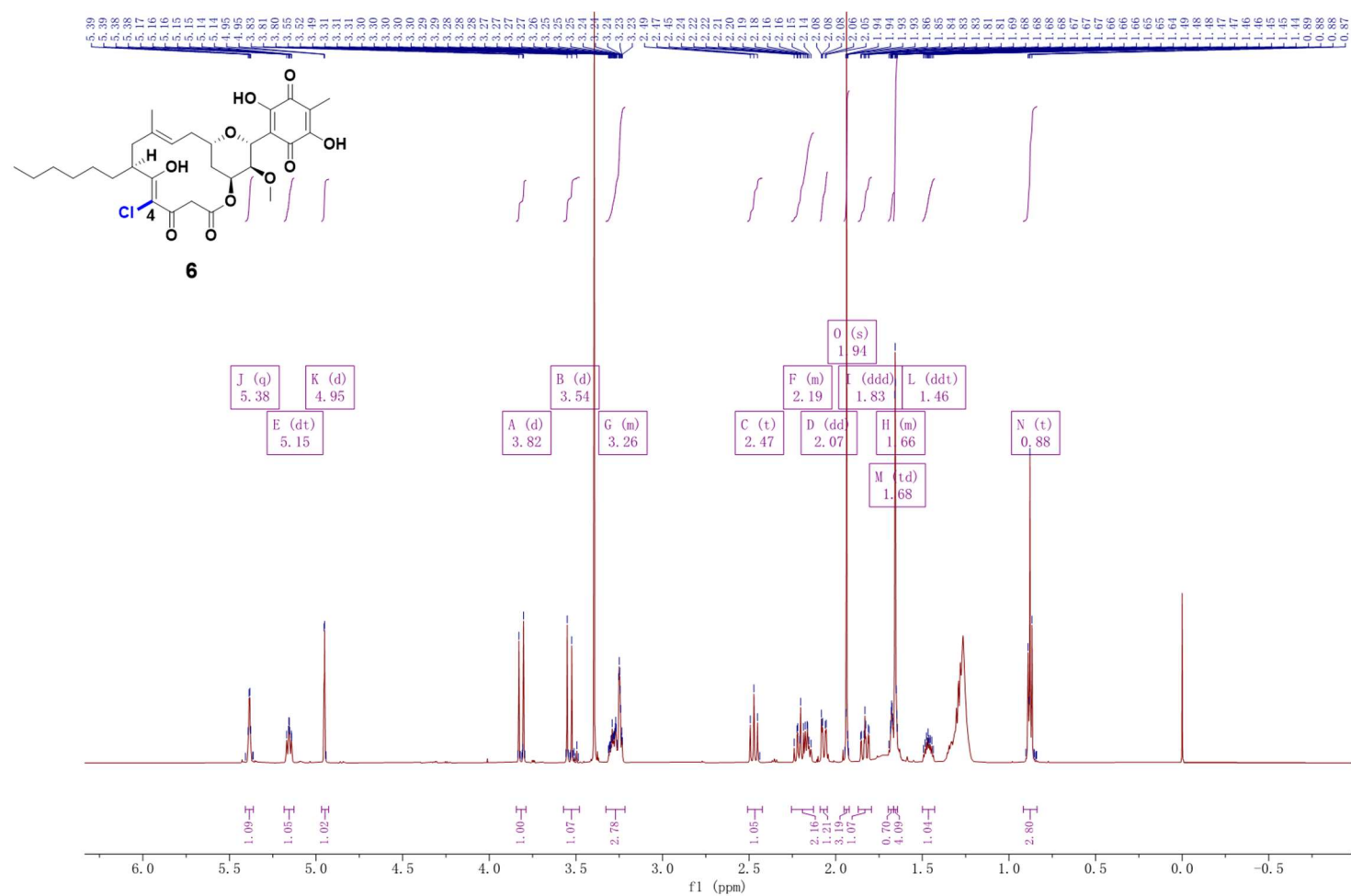


Fig. 7. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **6**.

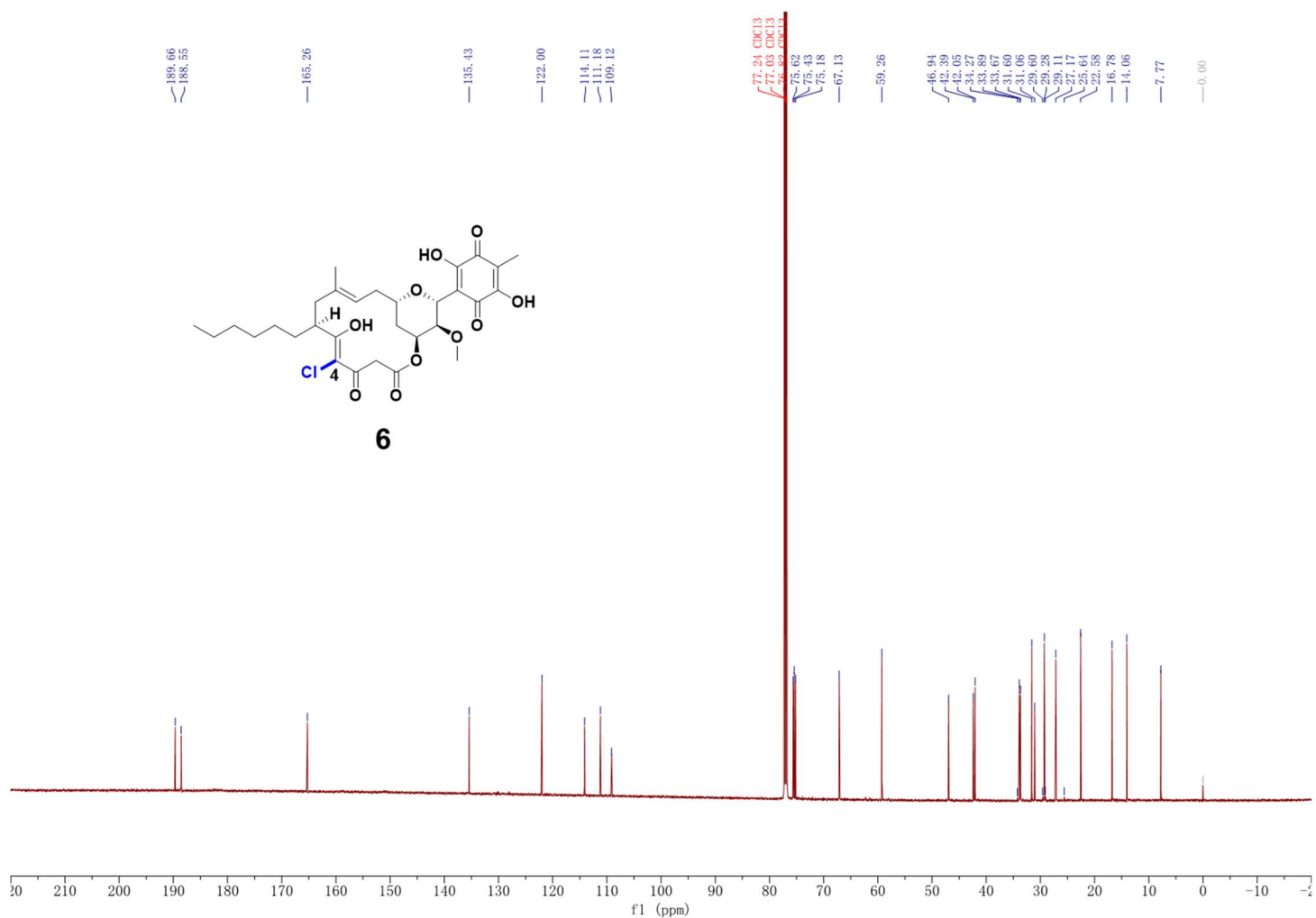


Fig. 8. ¹³C NMR spectrum (150 MHz, CDCl₃) of compound **6**.

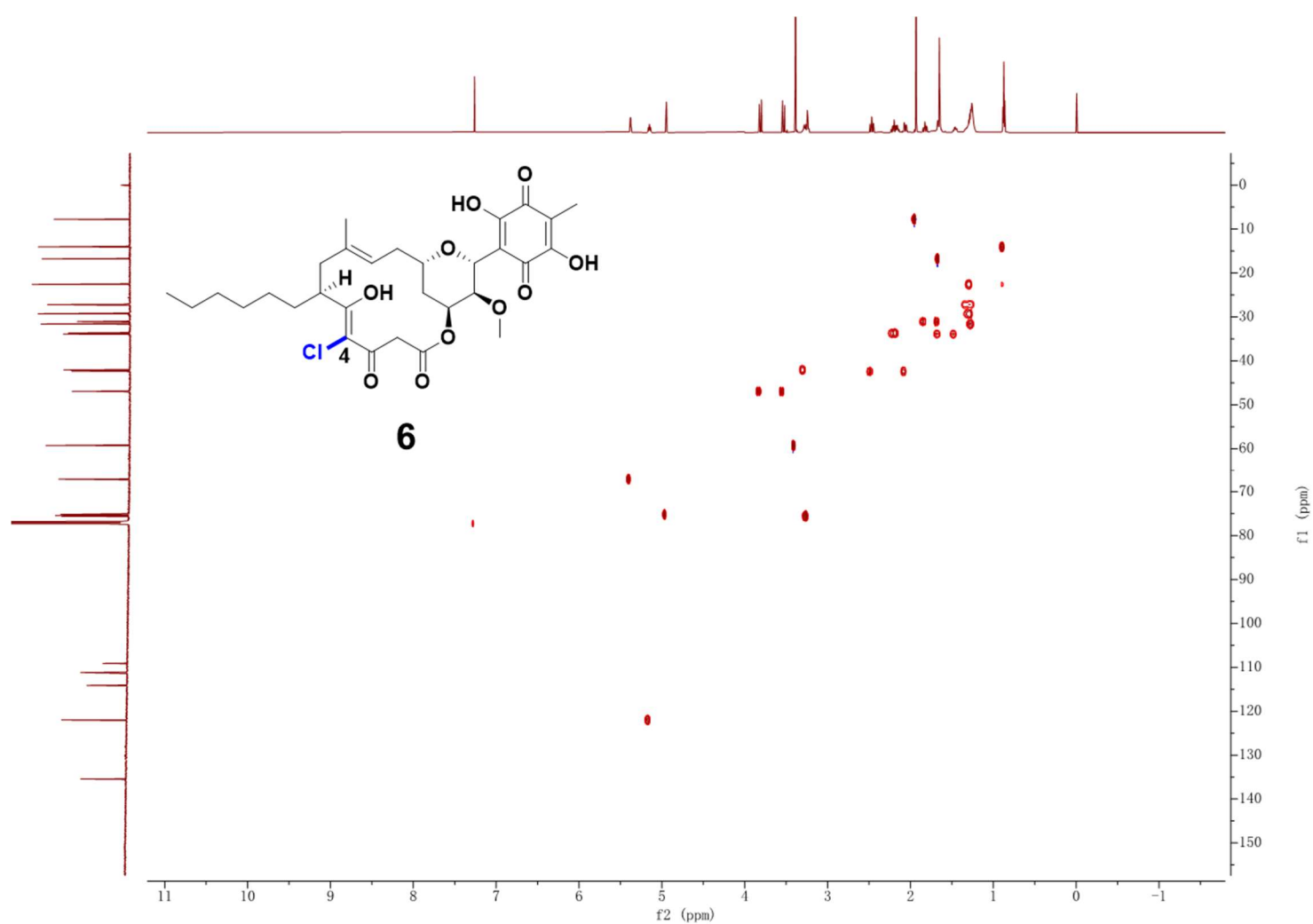


Fig. 9. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **6**.

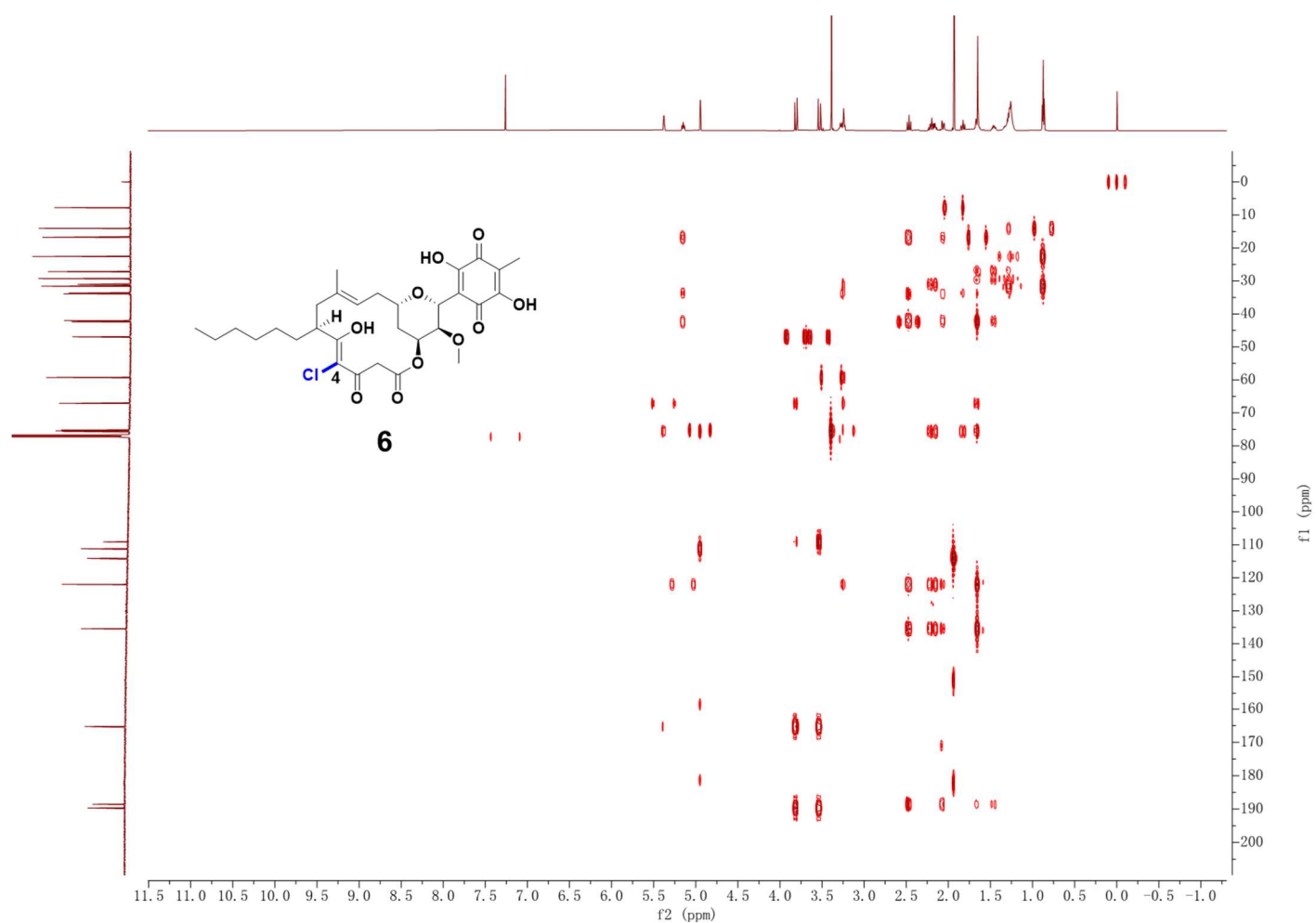


Fig. 10. HMBC NMR spectrum (600 MHz, CDCl₃) of compound **6**.

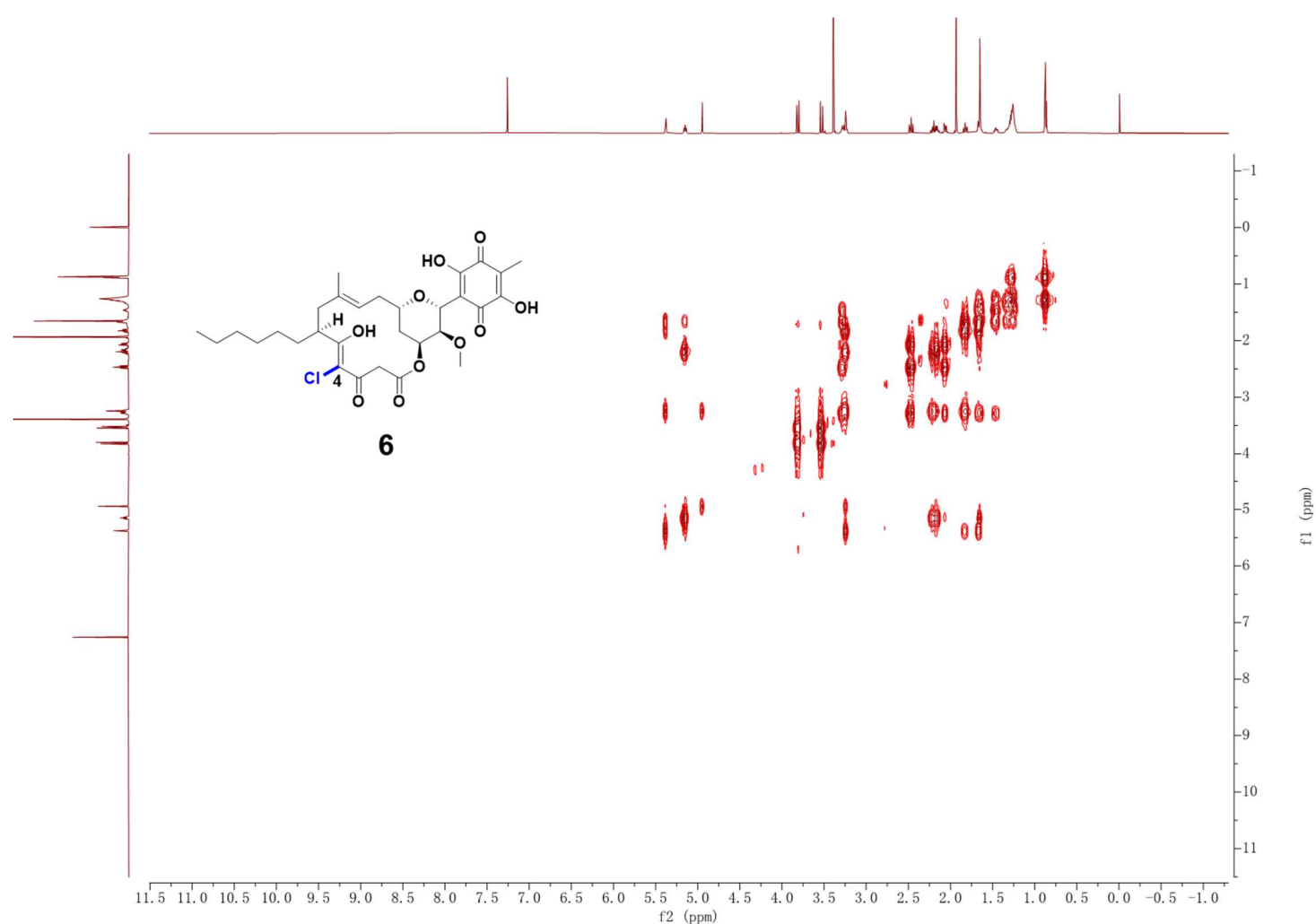


Fig. 11. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **6**.

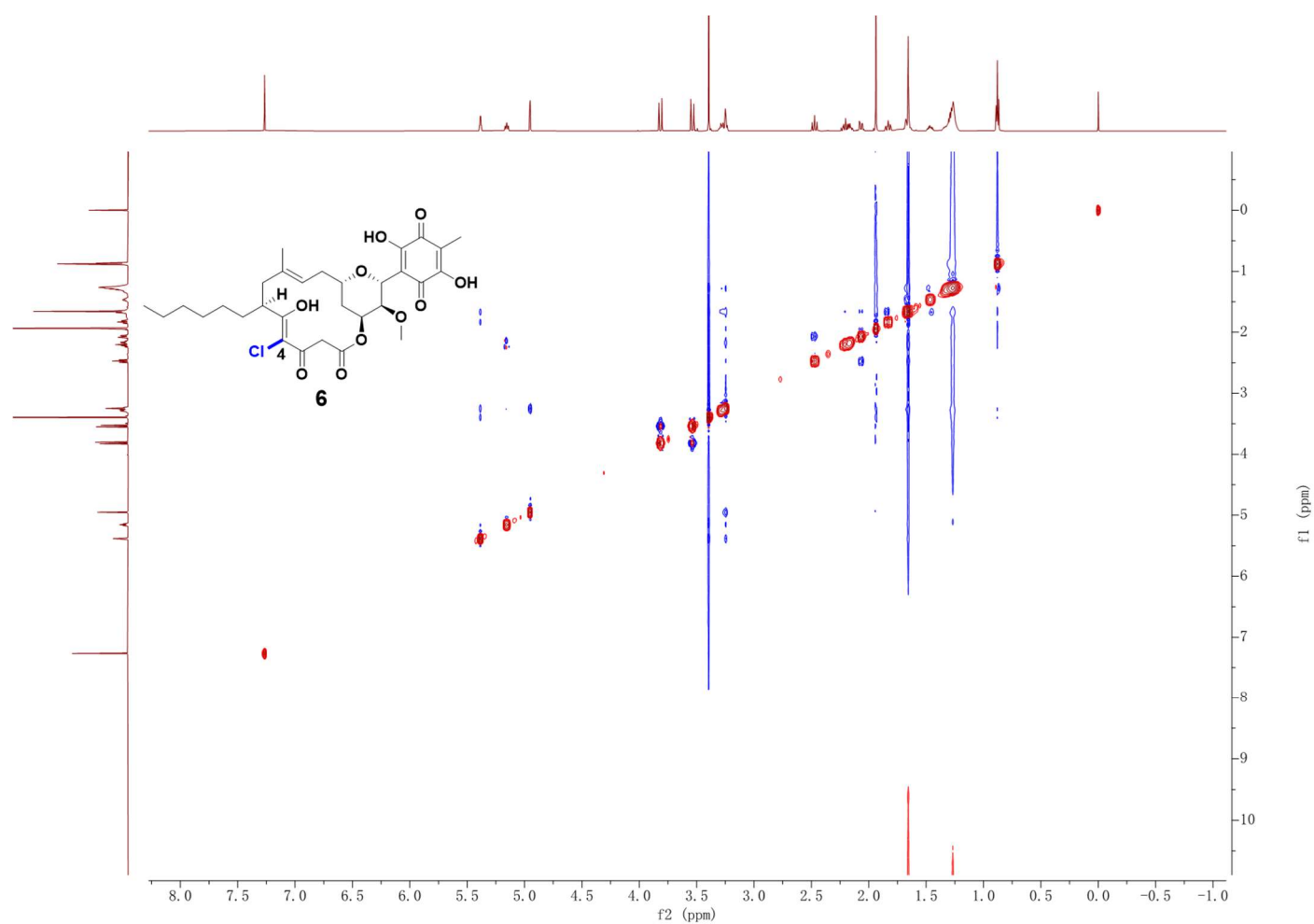


Fig. 12. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **6**.

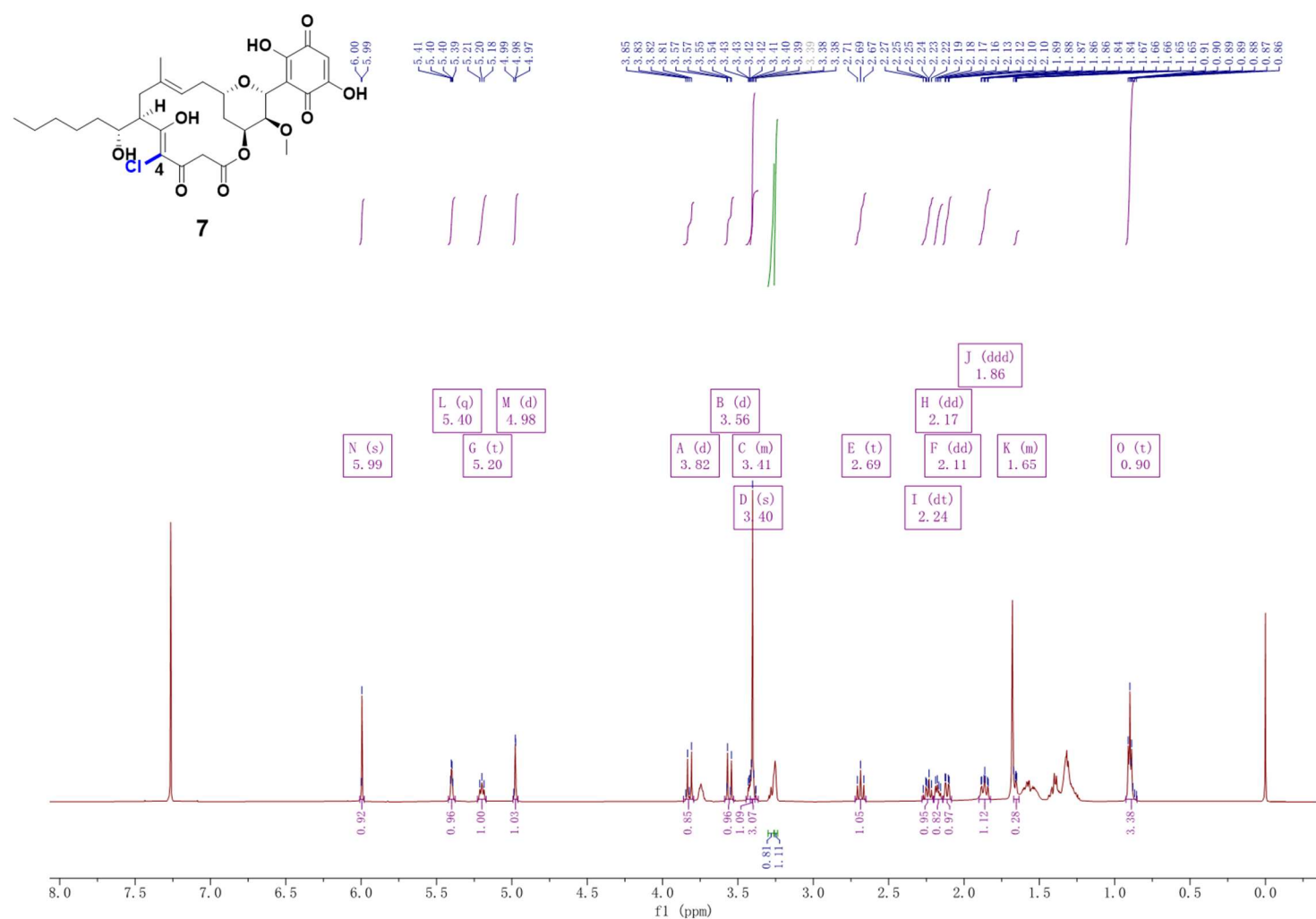


Fig. 13. ^1H NMR spectrum (600 MHz, CDCl_3) of compound 7.

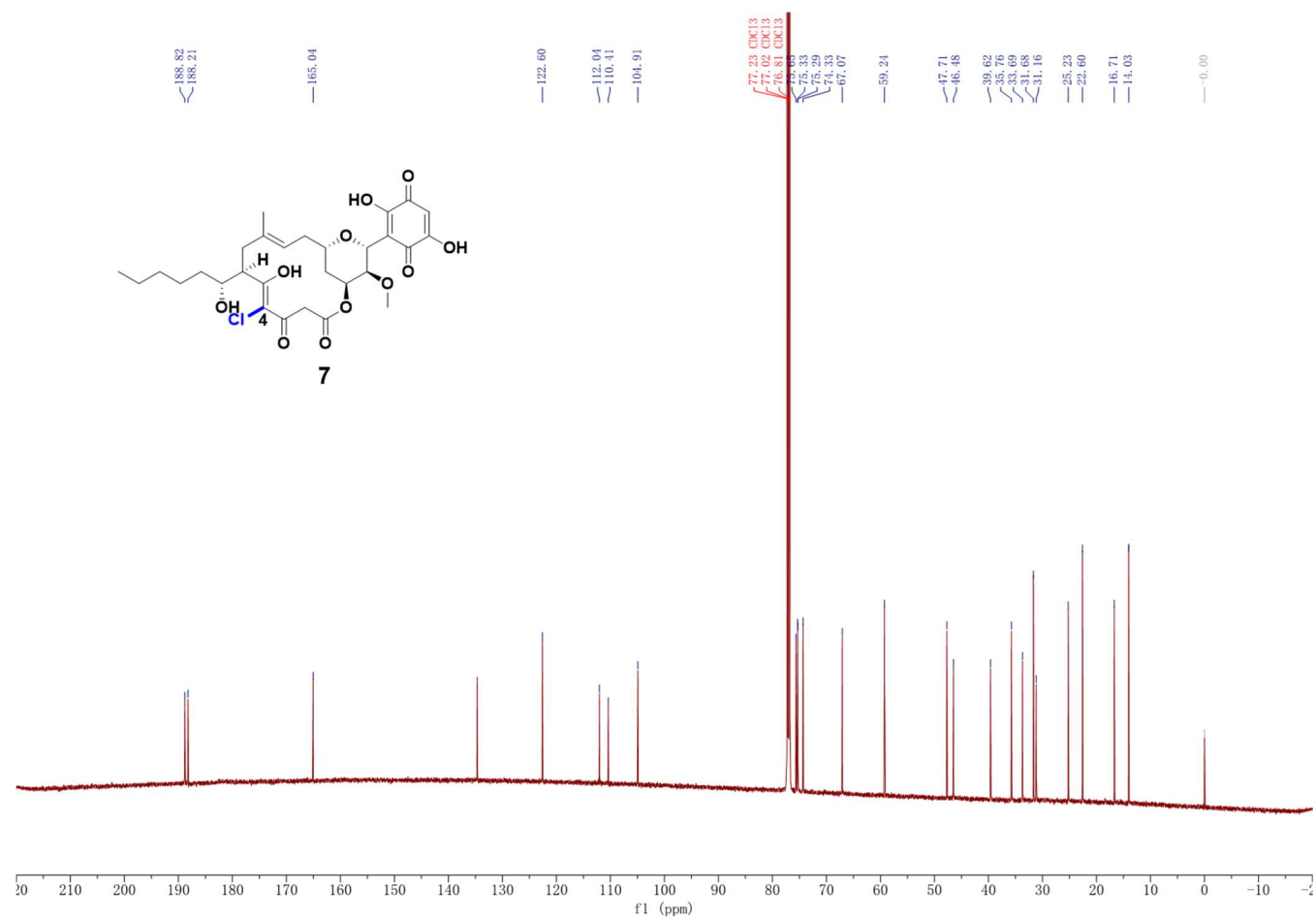


Fig. 14. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound 7.

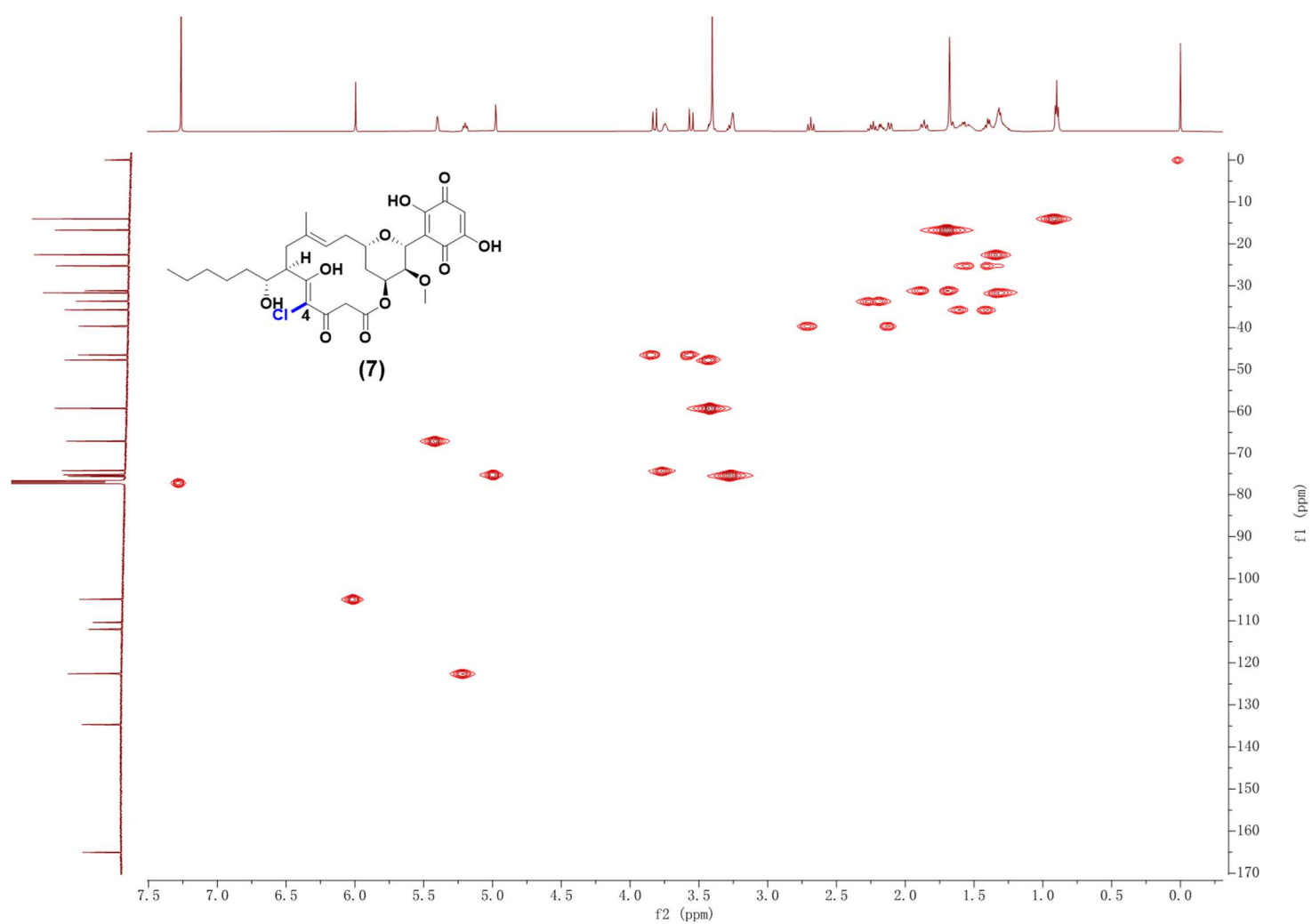


Fig. 15. HSQC NMR spectrum (600 MHz, CDCl₃) of compound 7.

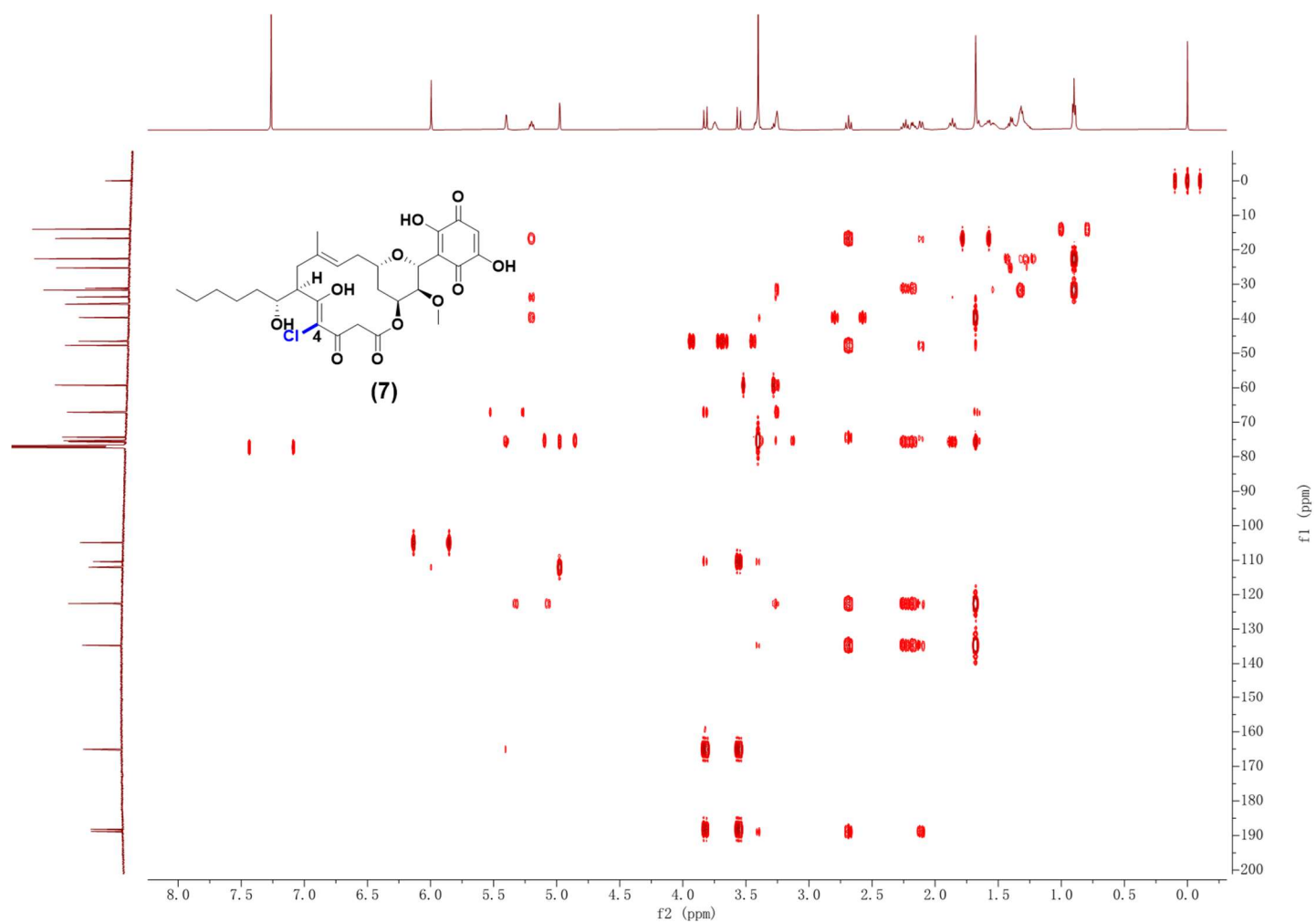


Fig. 16. HMBC NMR spectrum (600 MHz, CDCl₃) of compound 7.

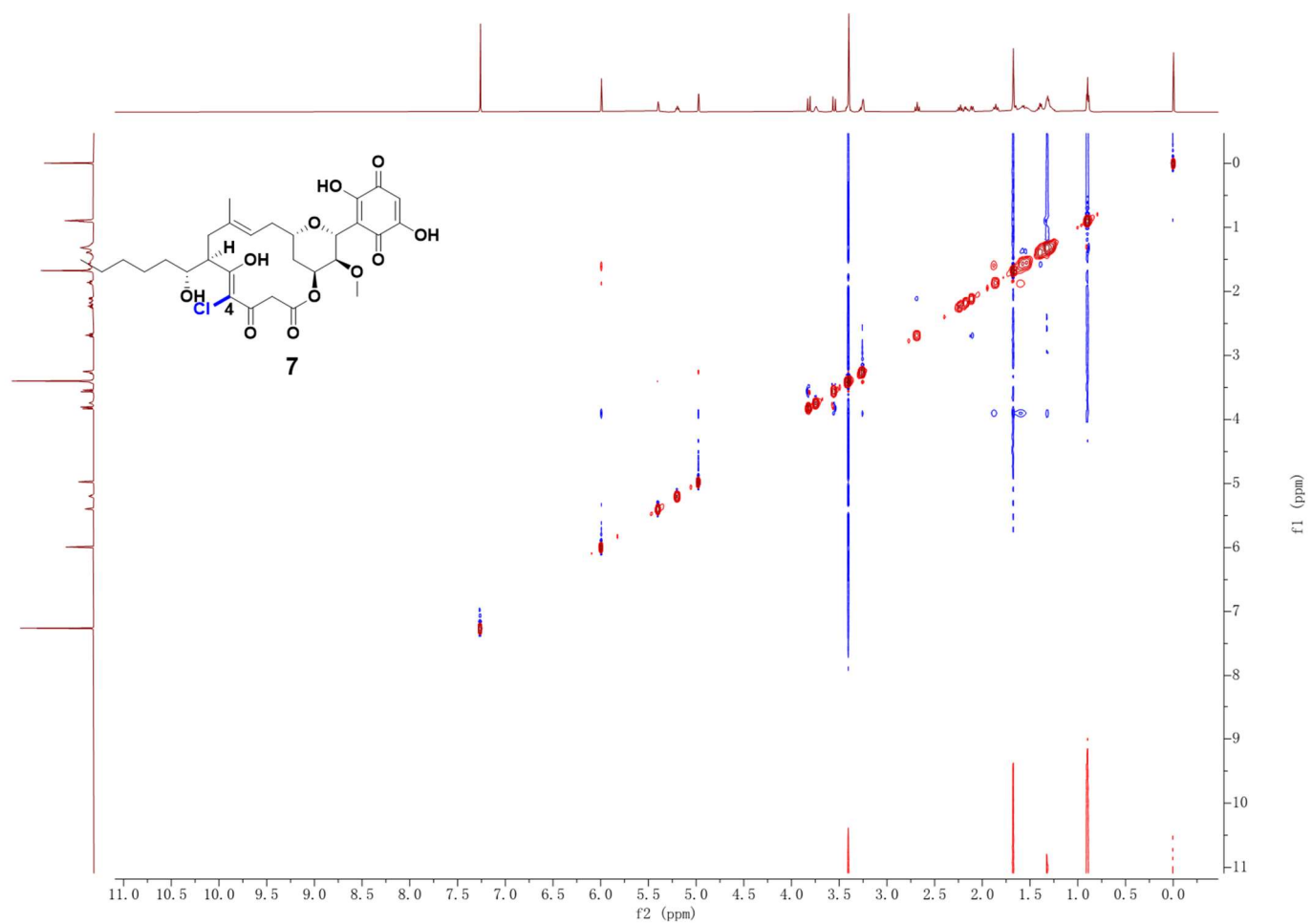


Fig. 17. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **7**.

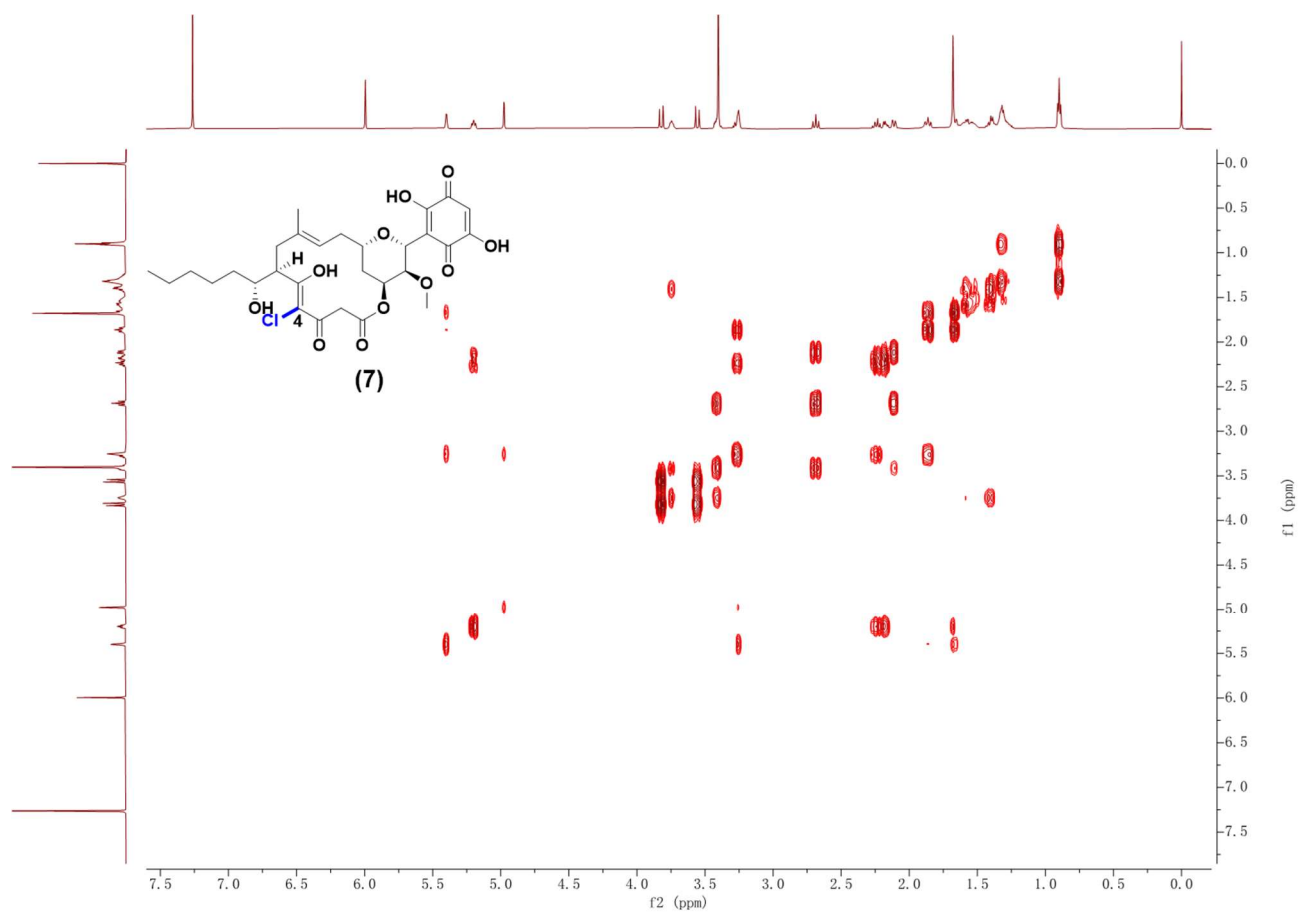


Fig. 18. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **7**.

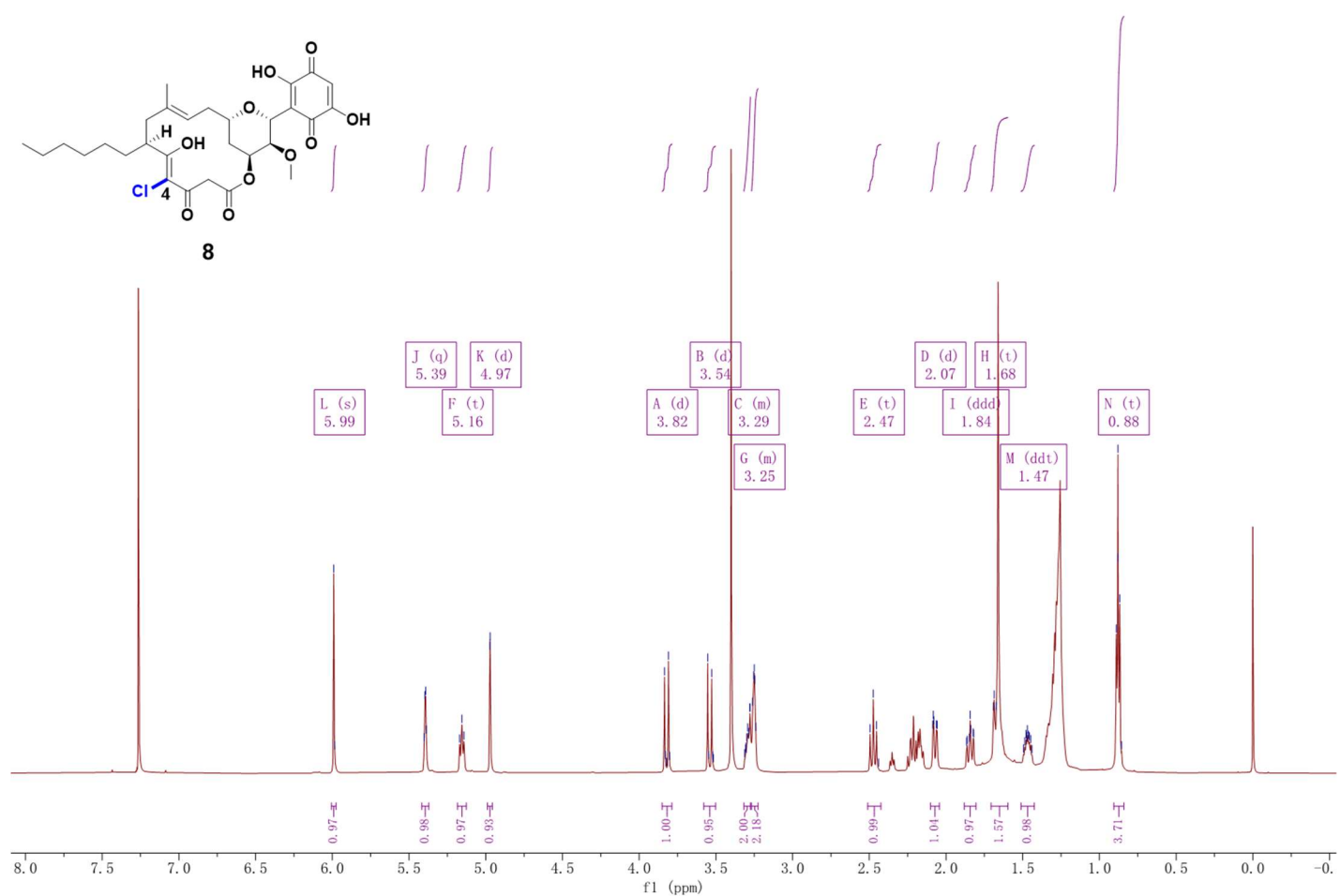


Fig. 19. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **8**.

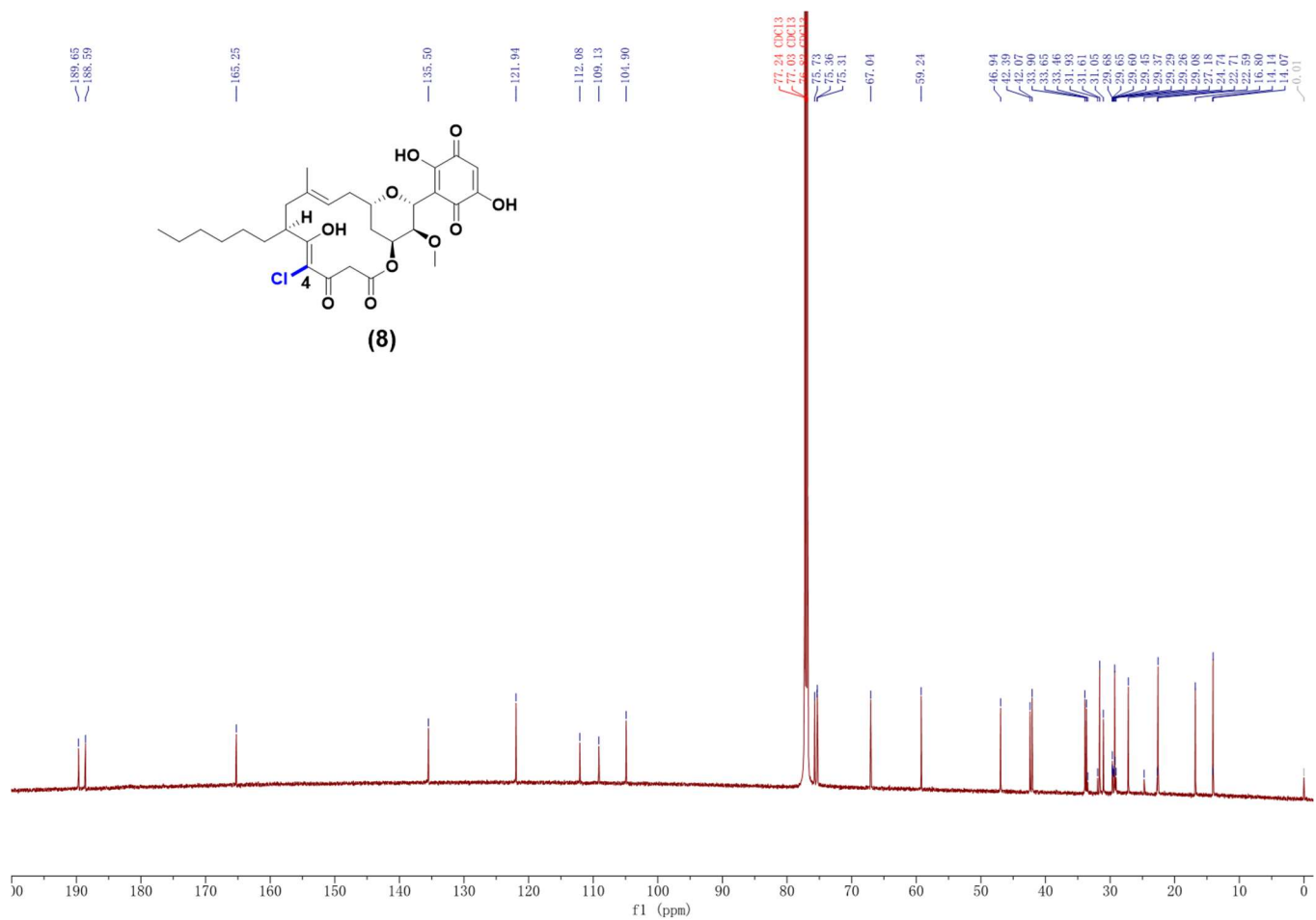


Fig. 20. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **8**.

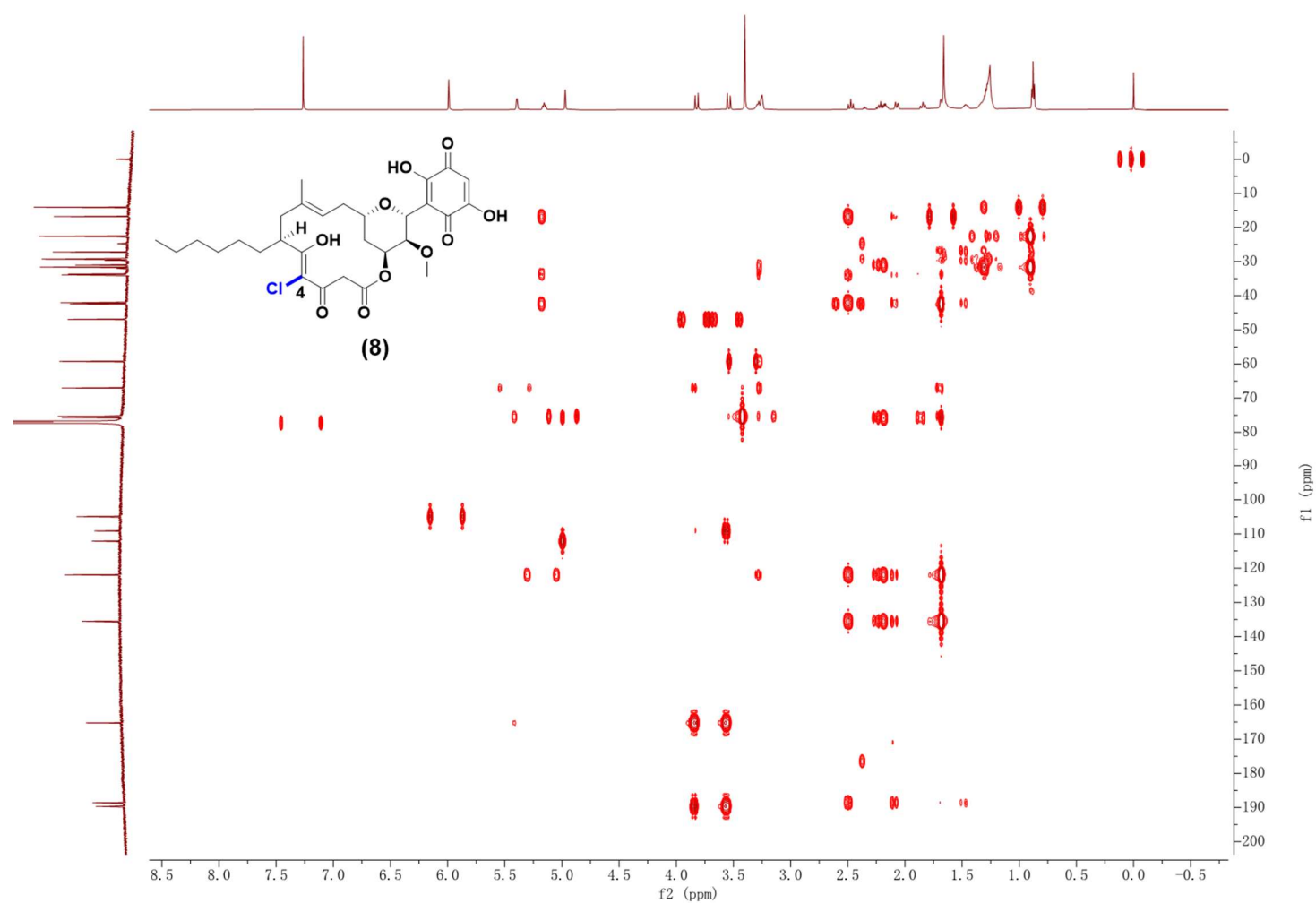


Fig. 21. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **8**.

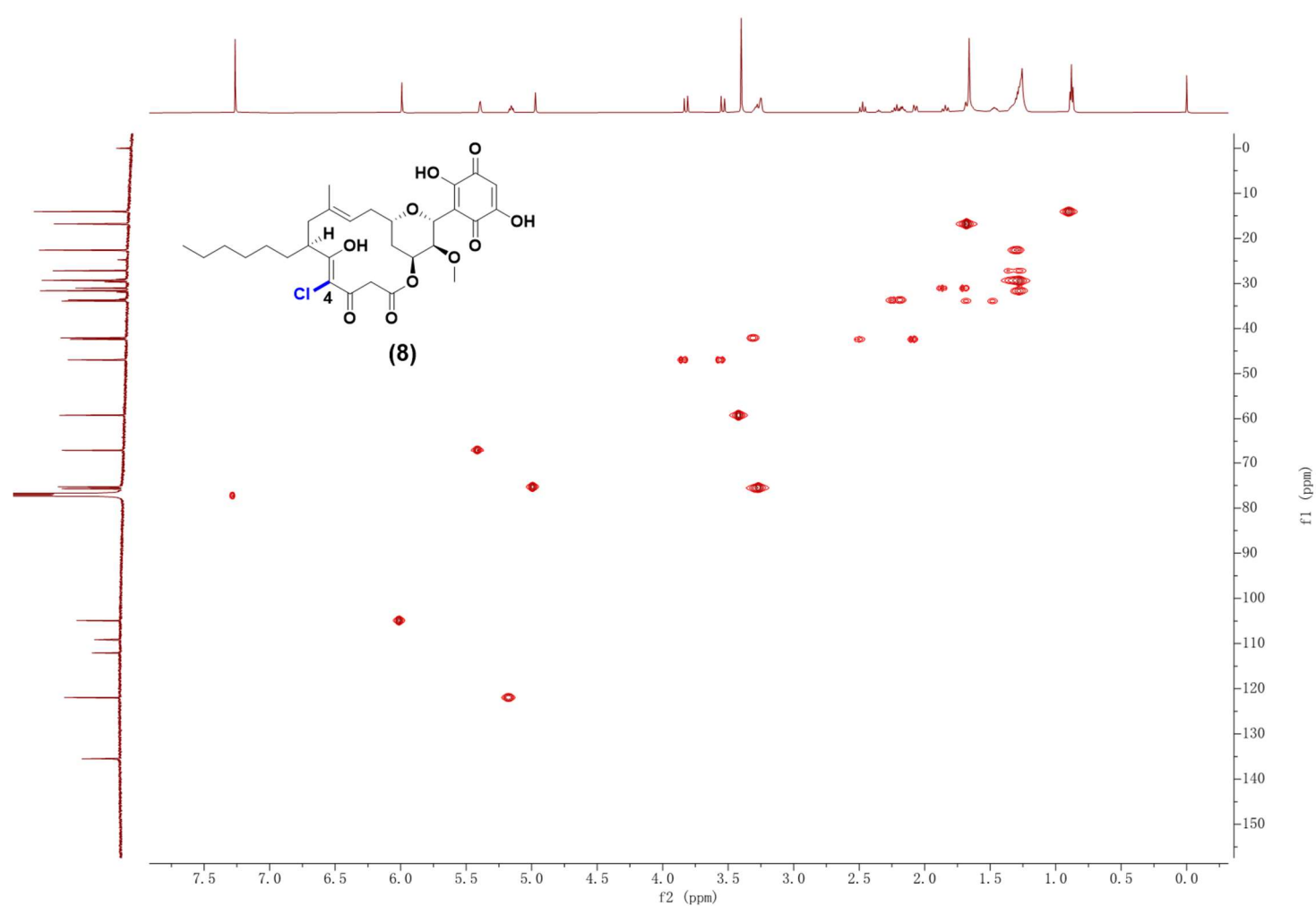


Fig. 22. HMBC NMR spectrum (600 MHz, CDCl₃) of compound **8**.

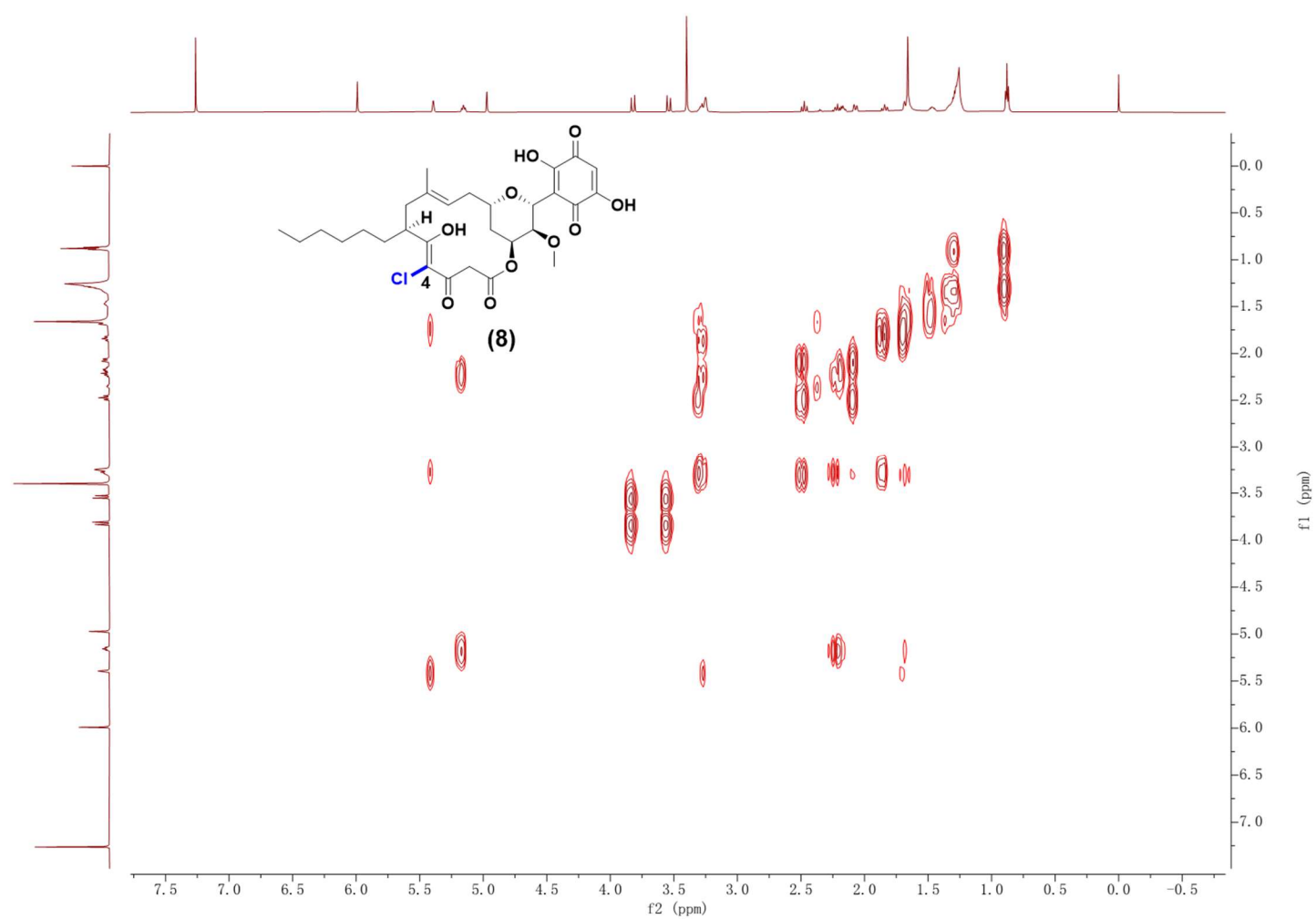


Fig. 23. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **8**.

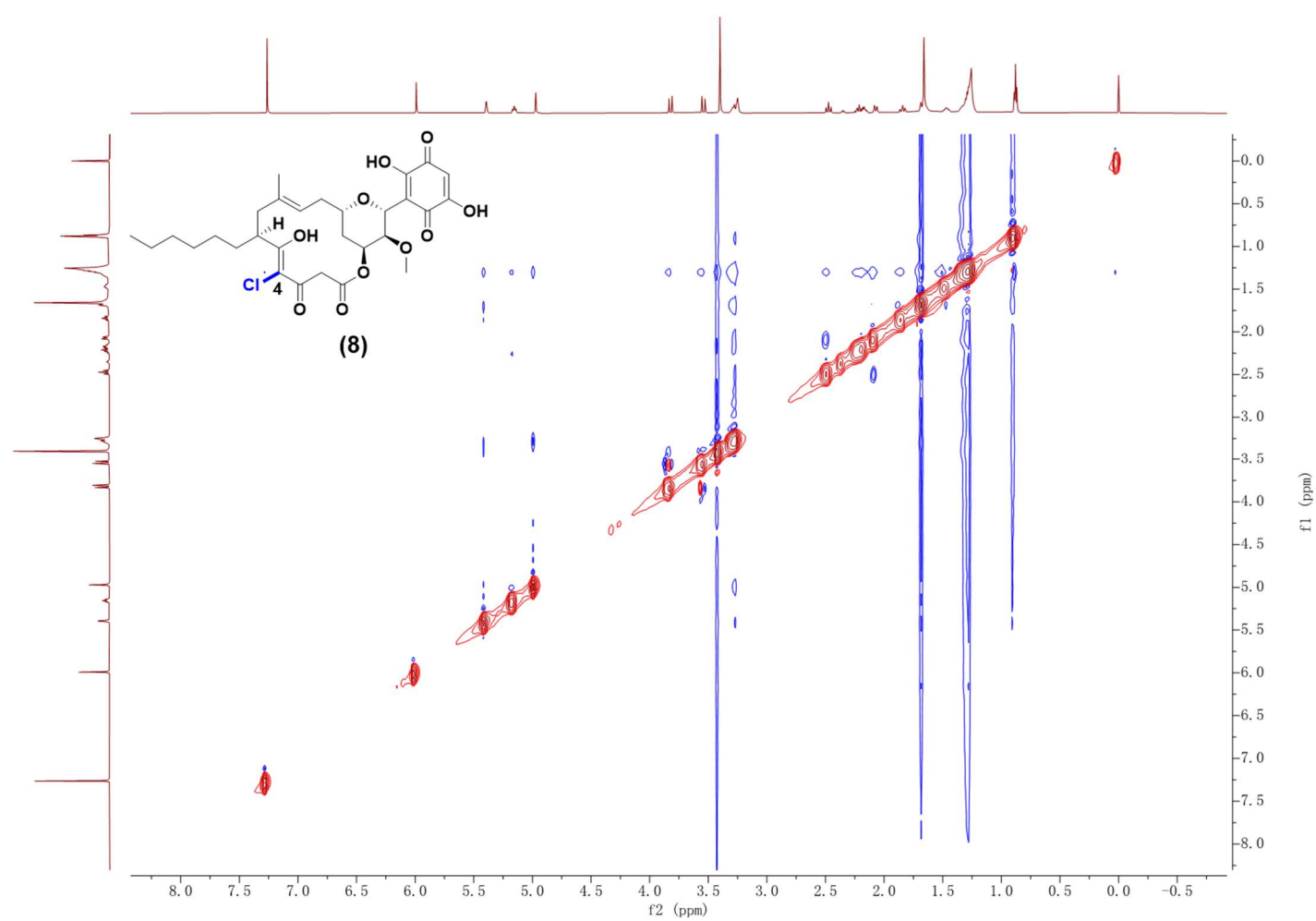


Fig. 24. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **8**.

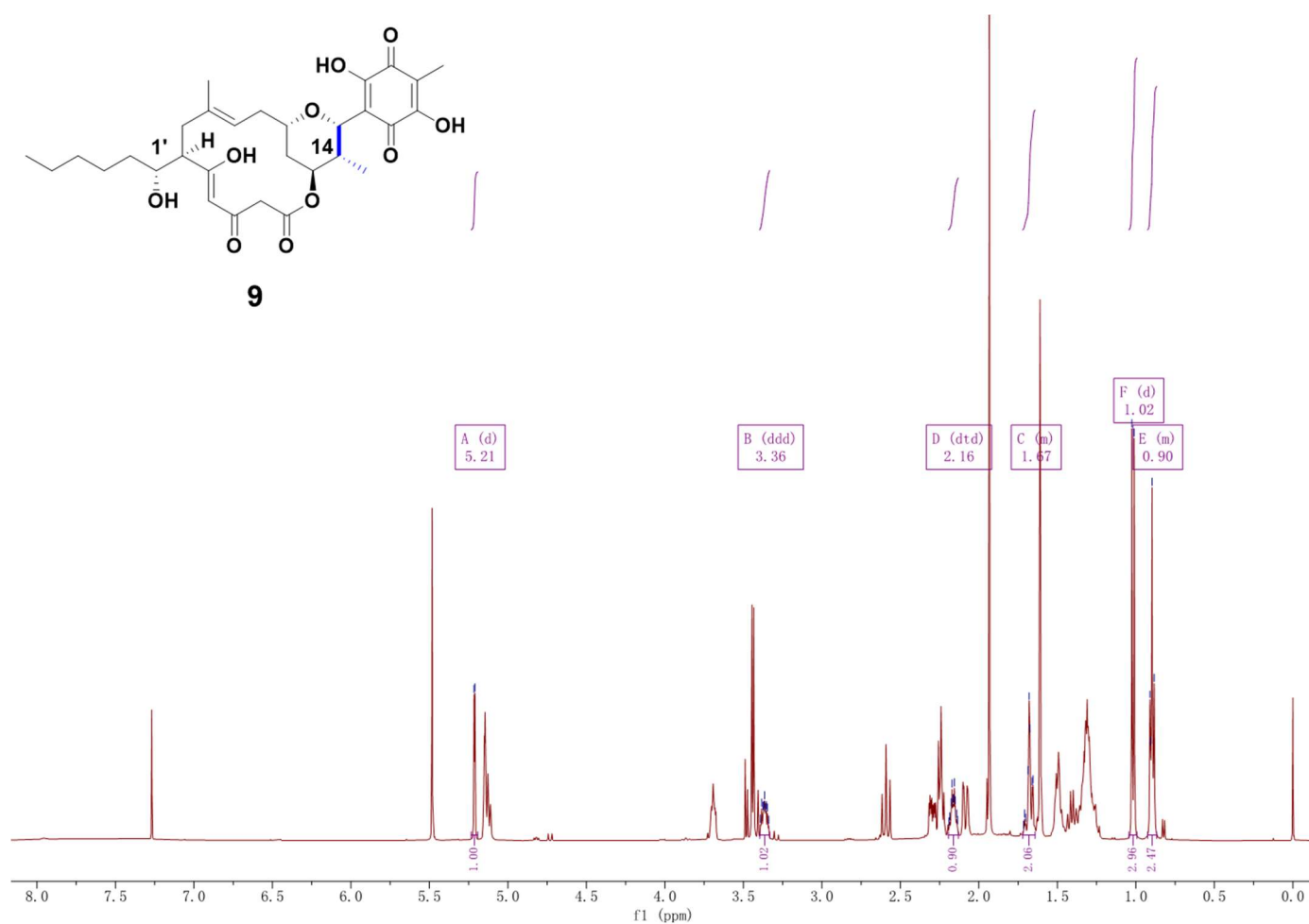


Fig. 25. ^1H NMR spectrum (500 MHz, CDCl_3) of compound **9**.

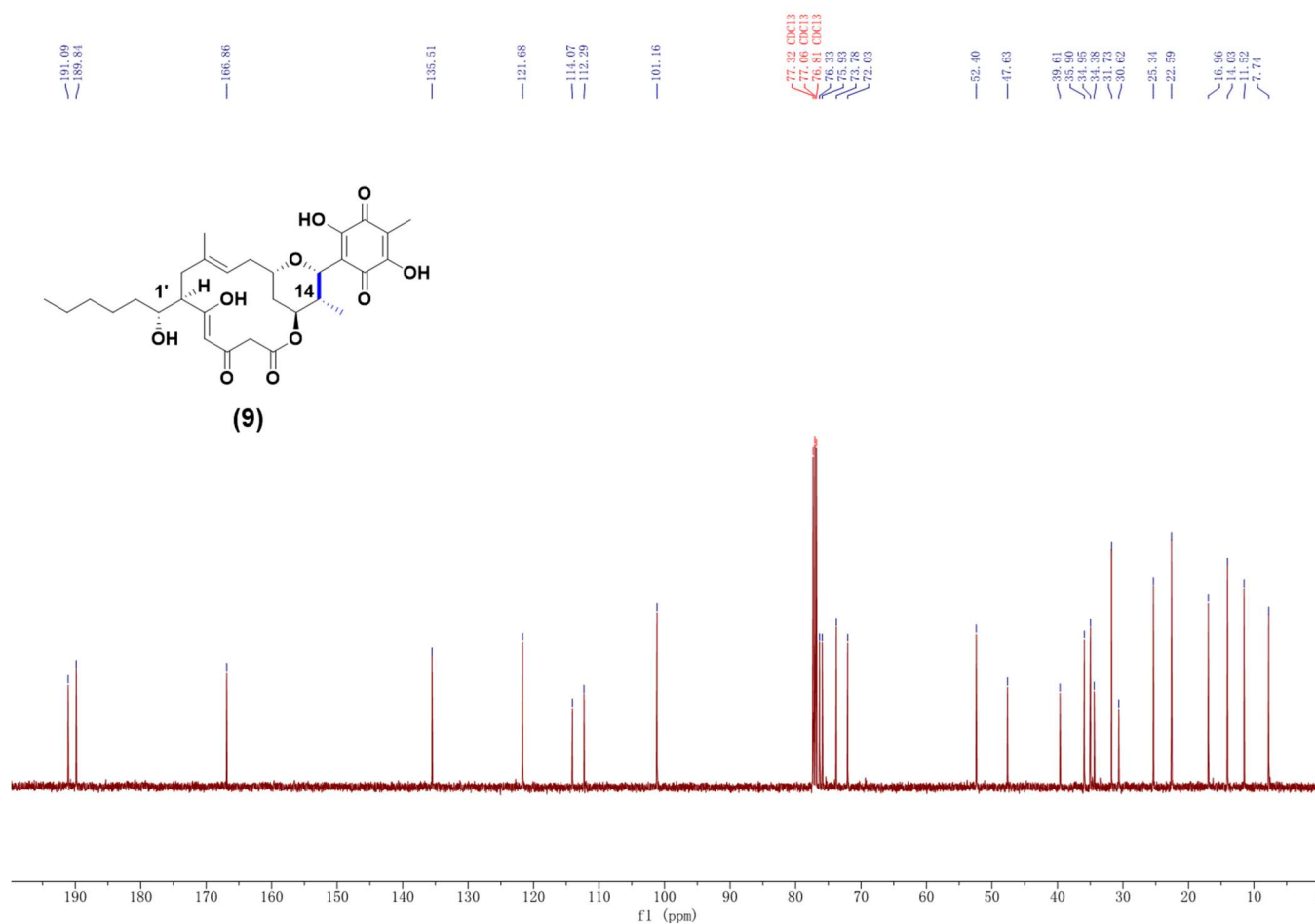


Fig. 26. ^{13}C NMR spectrum (125 MHz, CDCl_3) of compound **9**.

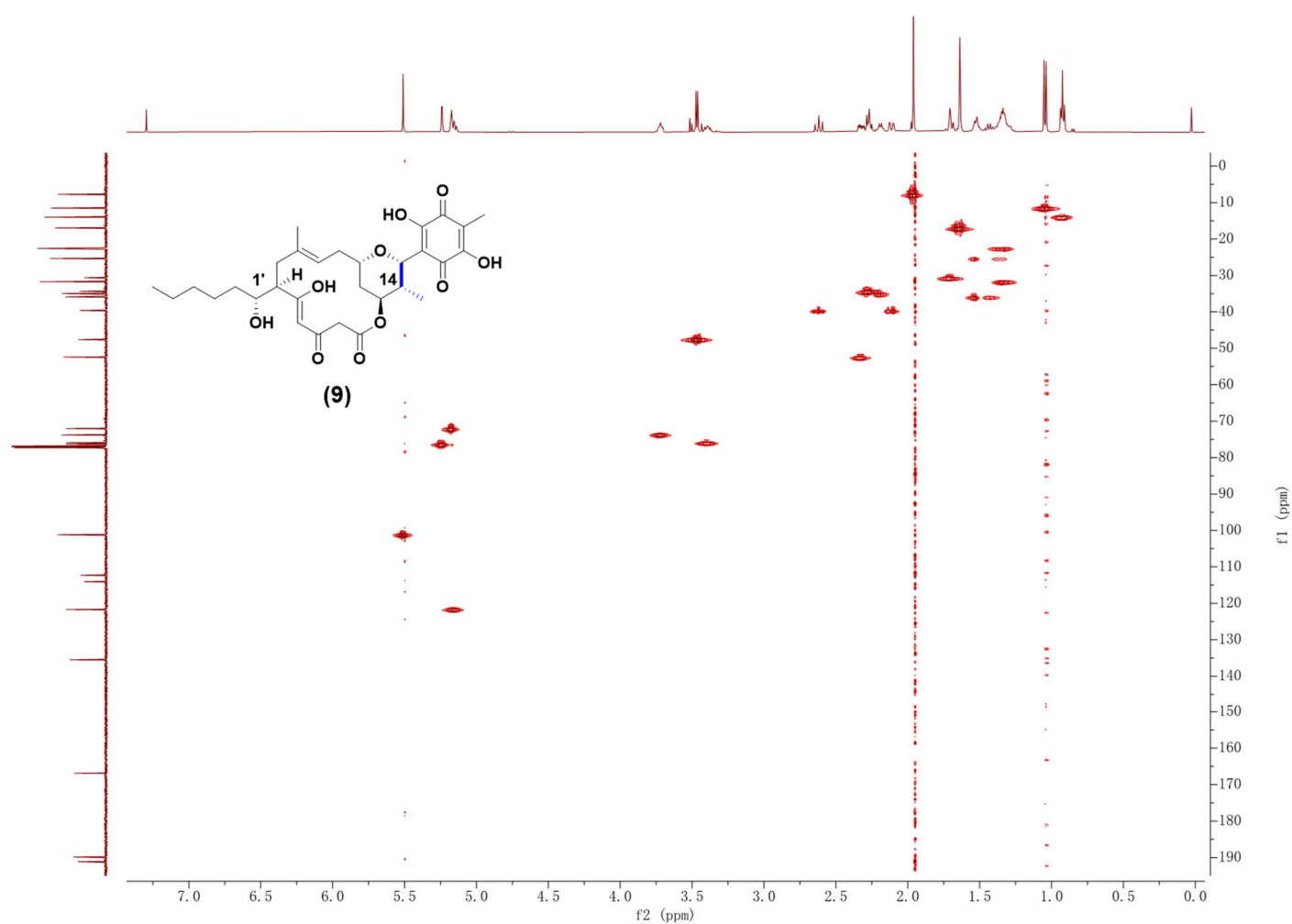


Fig. 27. HSQC NMR spectrum (500 MHz, CDCl_3) of compound **9**.

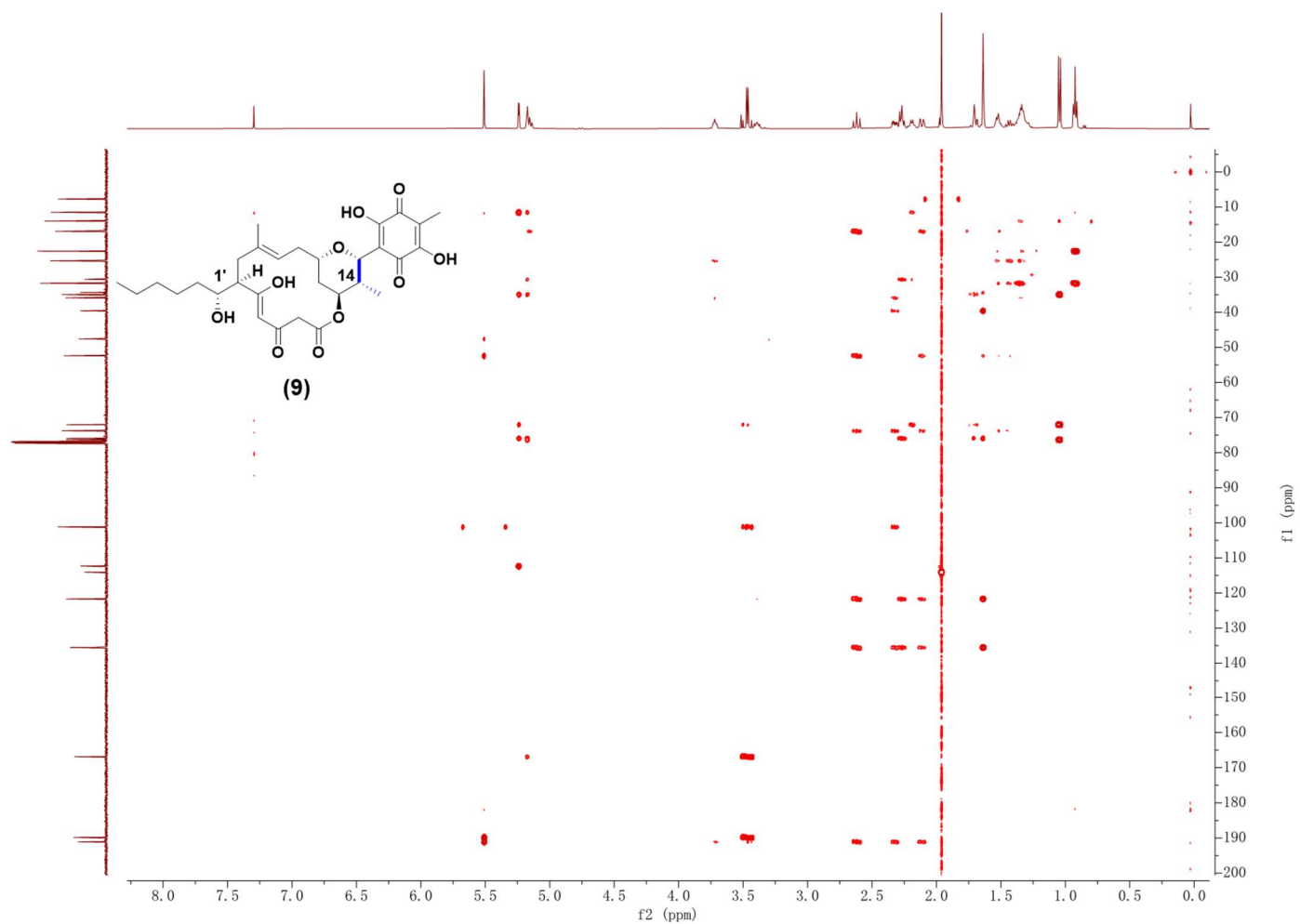


Fig. 28. HMBC NMR spectrum (500 MHz, CDCl_3) of compound **9**.

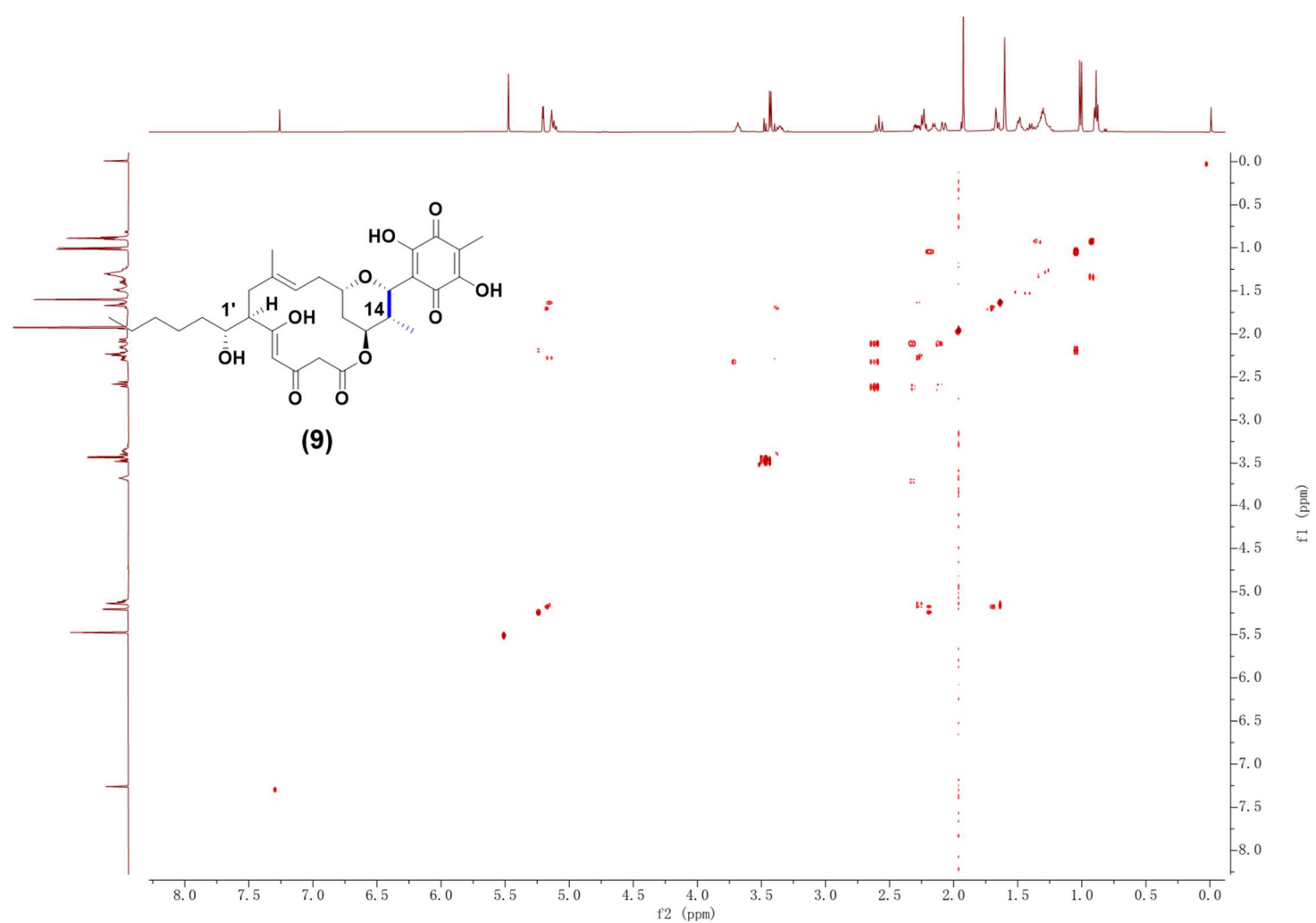


Fig. 29. ^1H - ^1H COSY NMR spectrum (500 MHz, CDCl_3) of compound **9**.

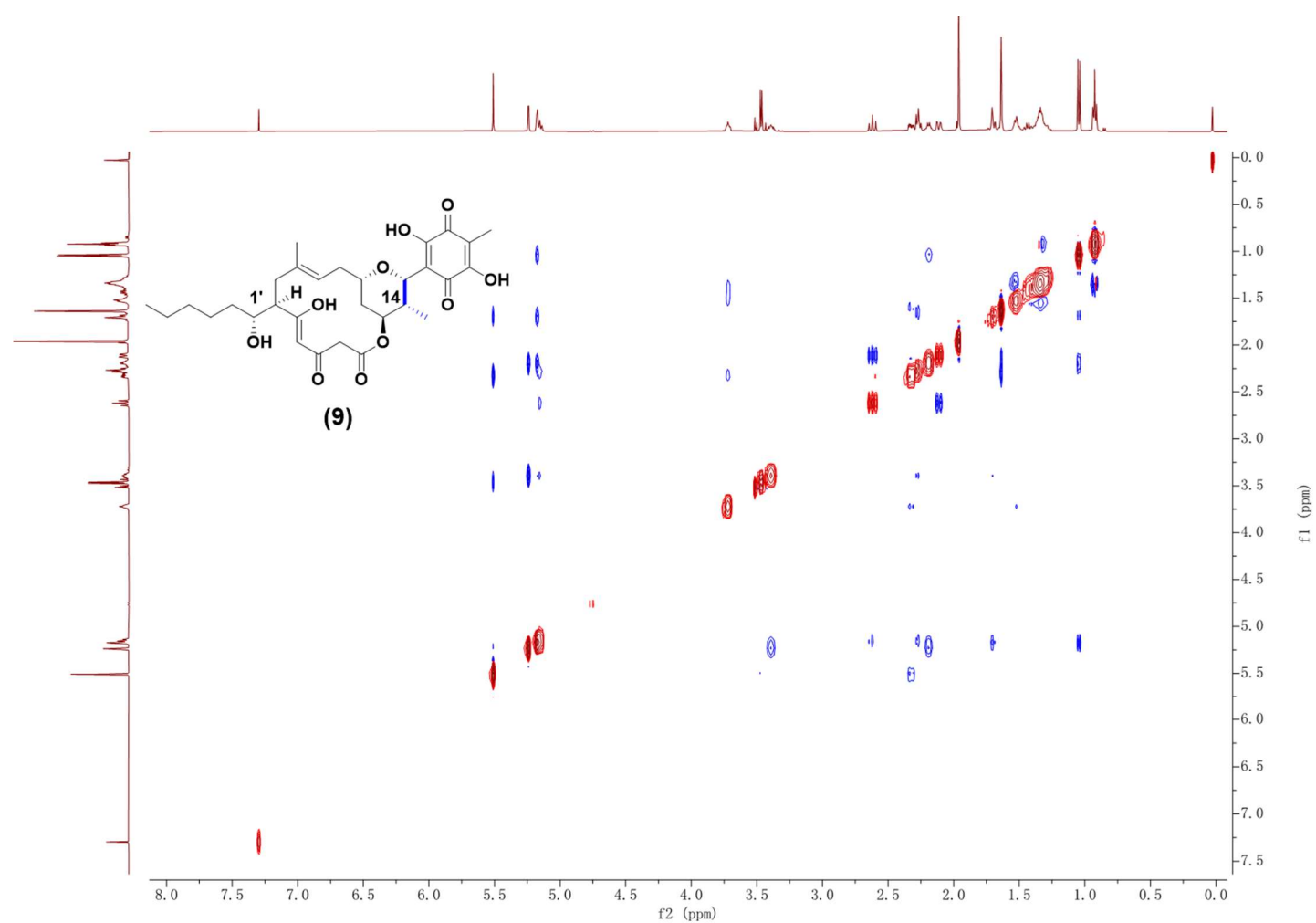


Fig. 30. NOESY NMR spectrum (500 MHz, CDCl_3) of compound **9**.

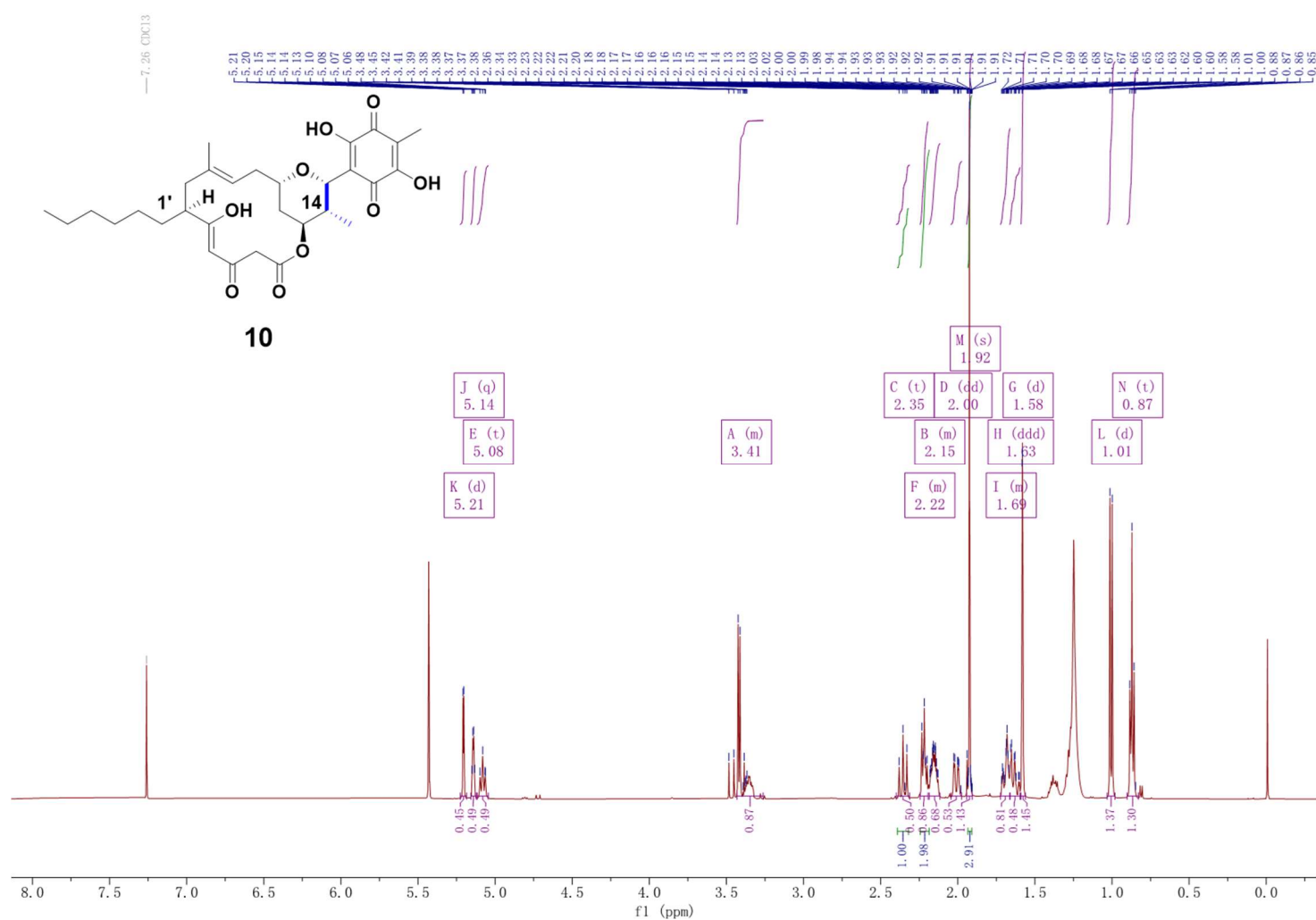


Fig. 31. ¹H NMR spectrum (500 MHz, CDCl₃) of compound **10**.

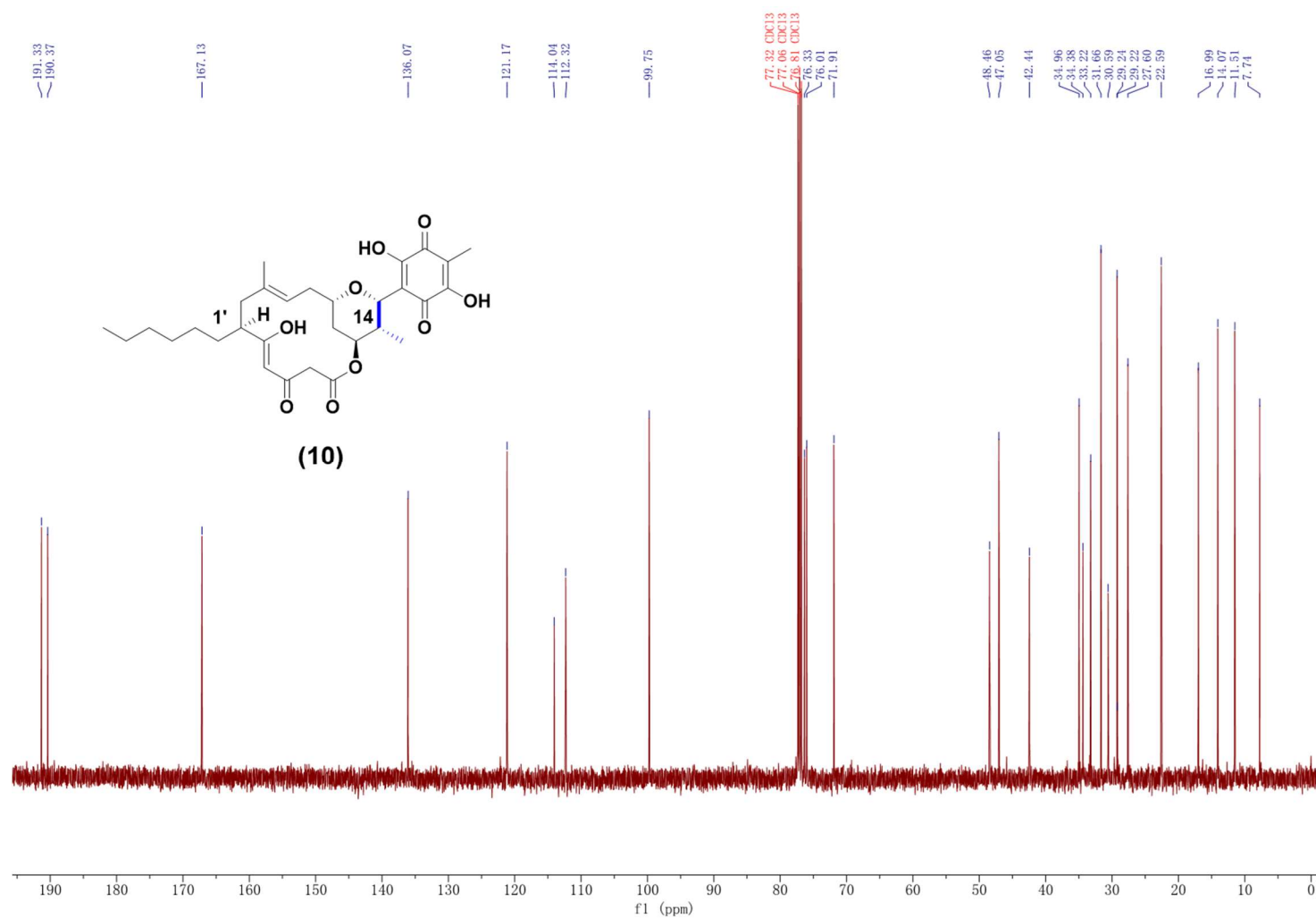


Fig. 32. ¹³C NMR spectrum (125 MHz, CDCl₃) of compound **10**.

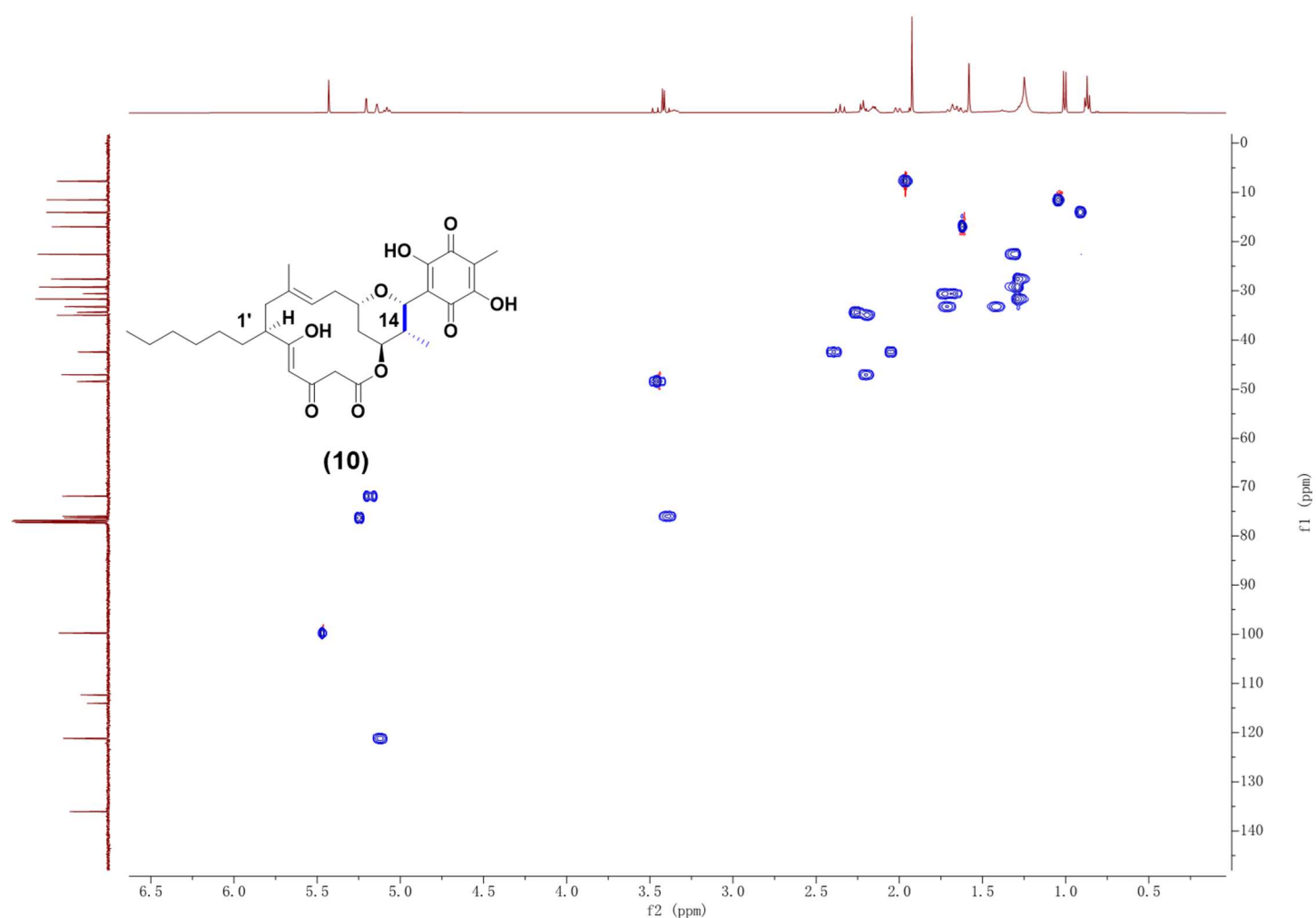


Fig. 33. HSQC NMR spectrum (500 MHz, CDCl₃) of compound **10**.

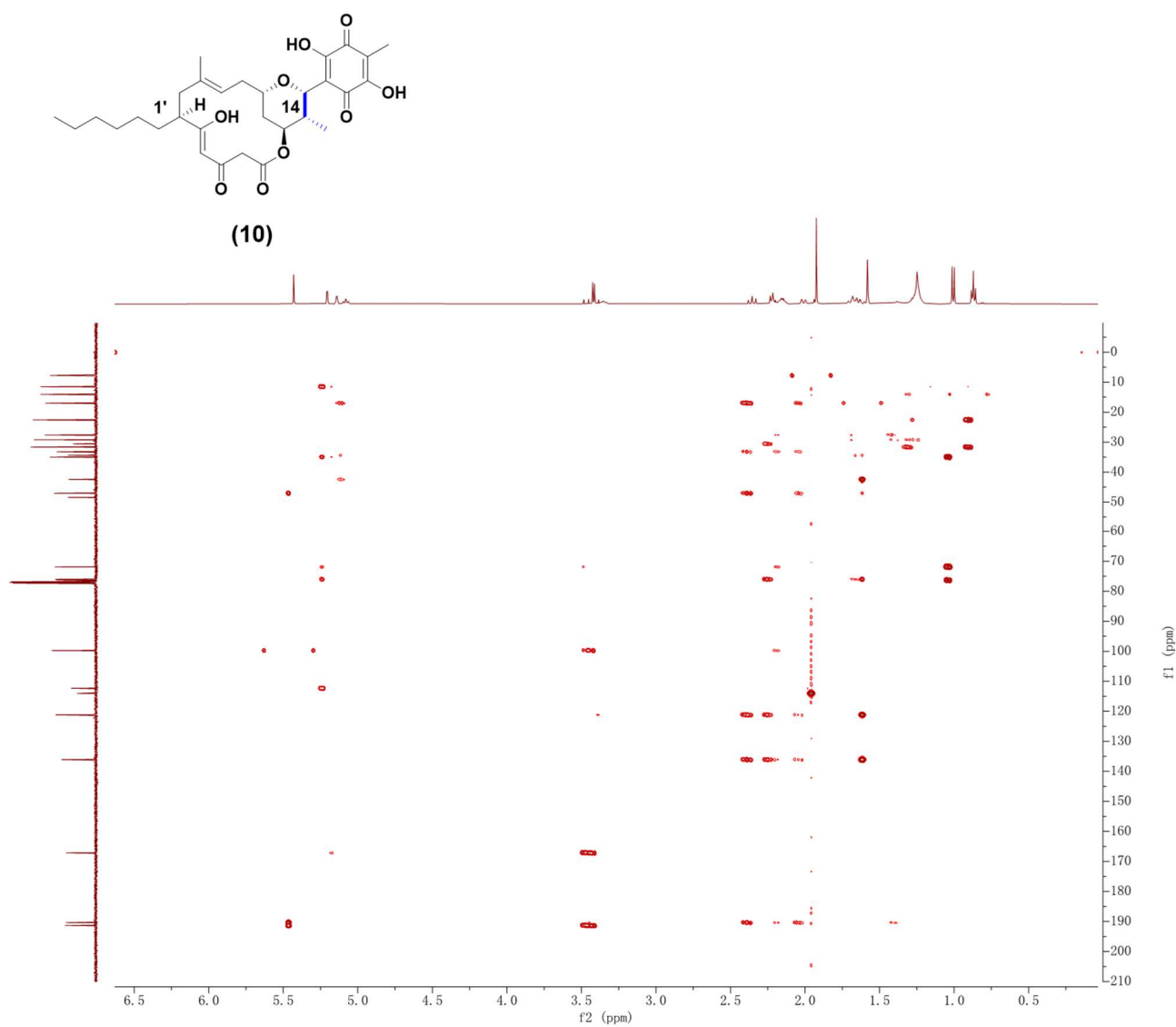


Fig. 34. HMBC NMR spectrum (500 MHz, CDCl₃) of compound **10**.

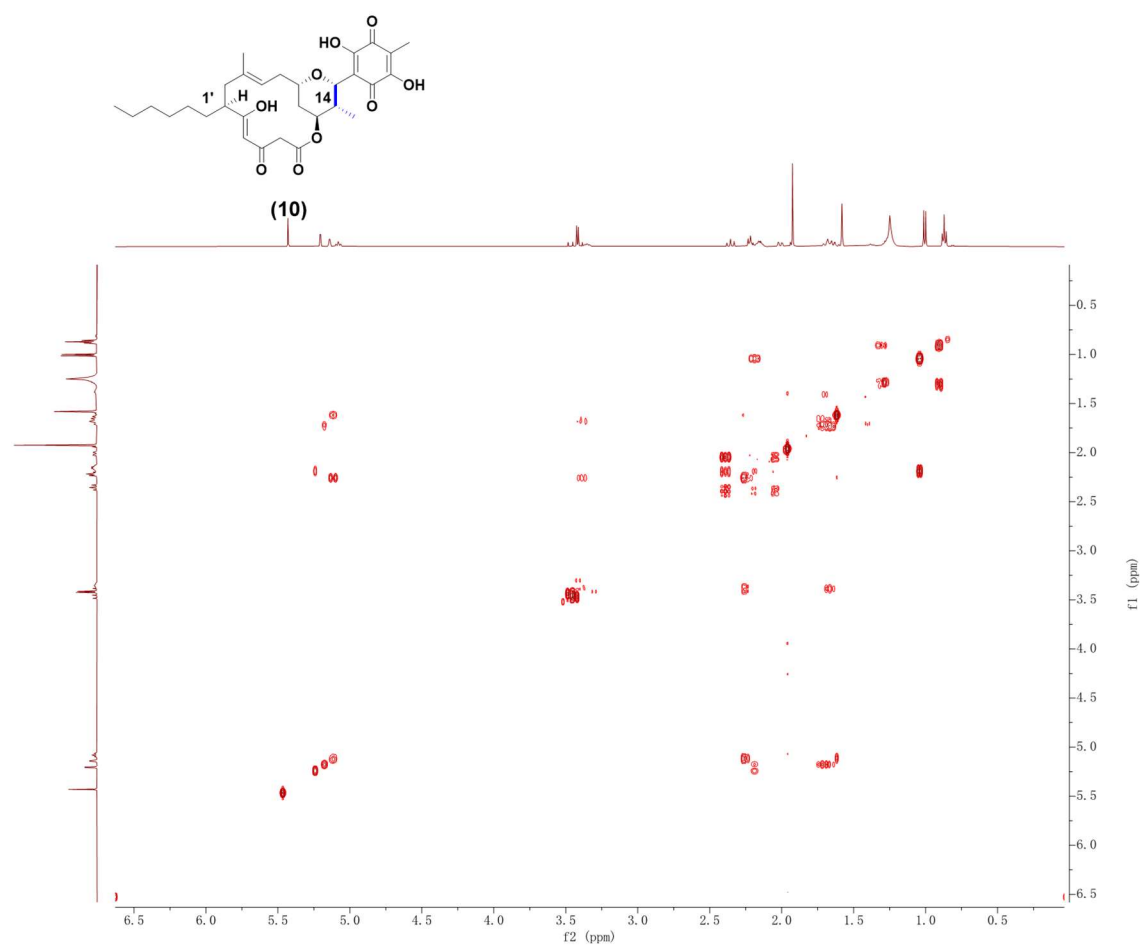


Fig. 35. ^1H - ^1H COSY NMR spectrum (500 MHz, CDCl_3) of compound **10**.

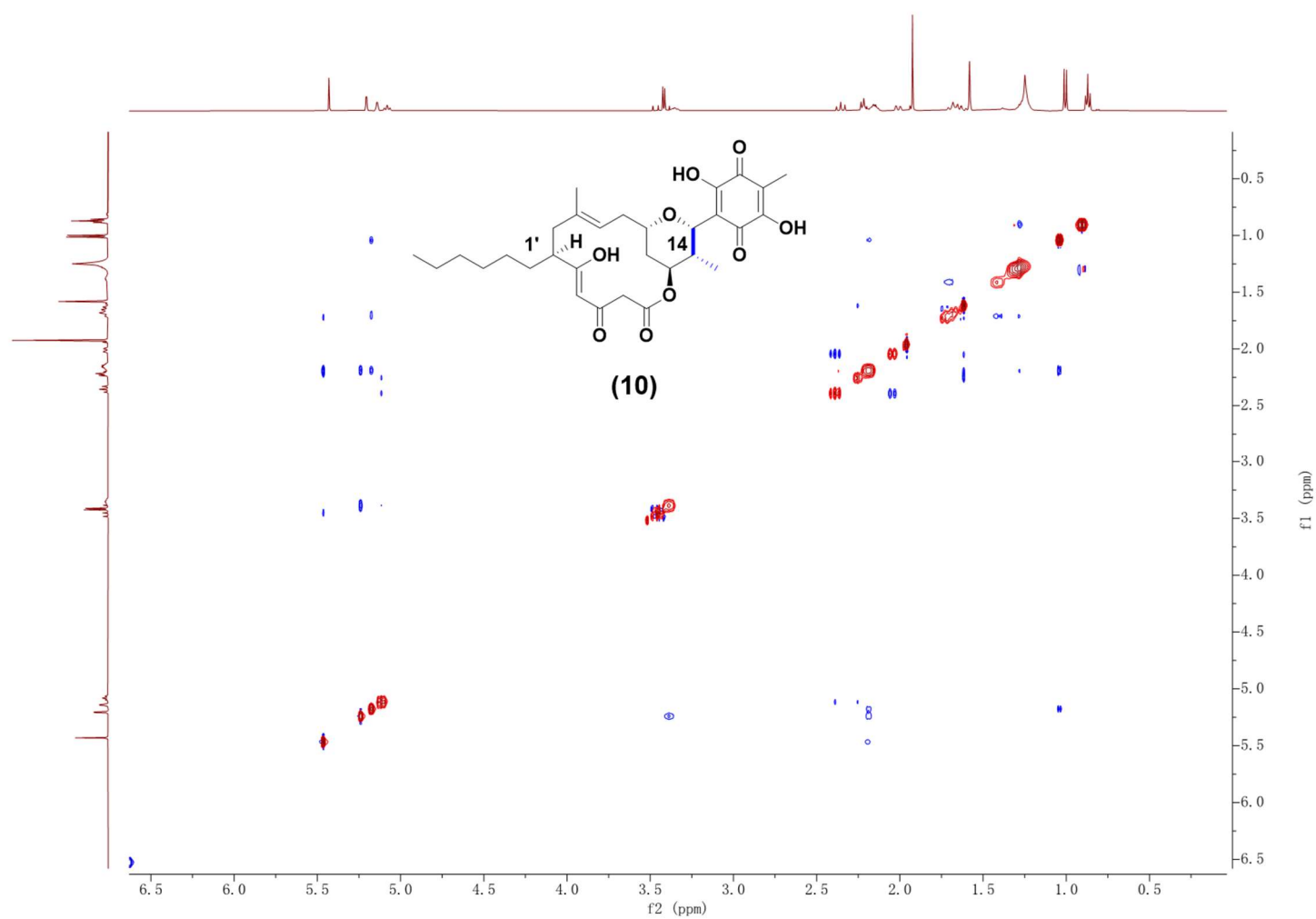


Fig. 36. NOESY NMR spectrum (500 MHz, CDCl_3) of compound **10**.

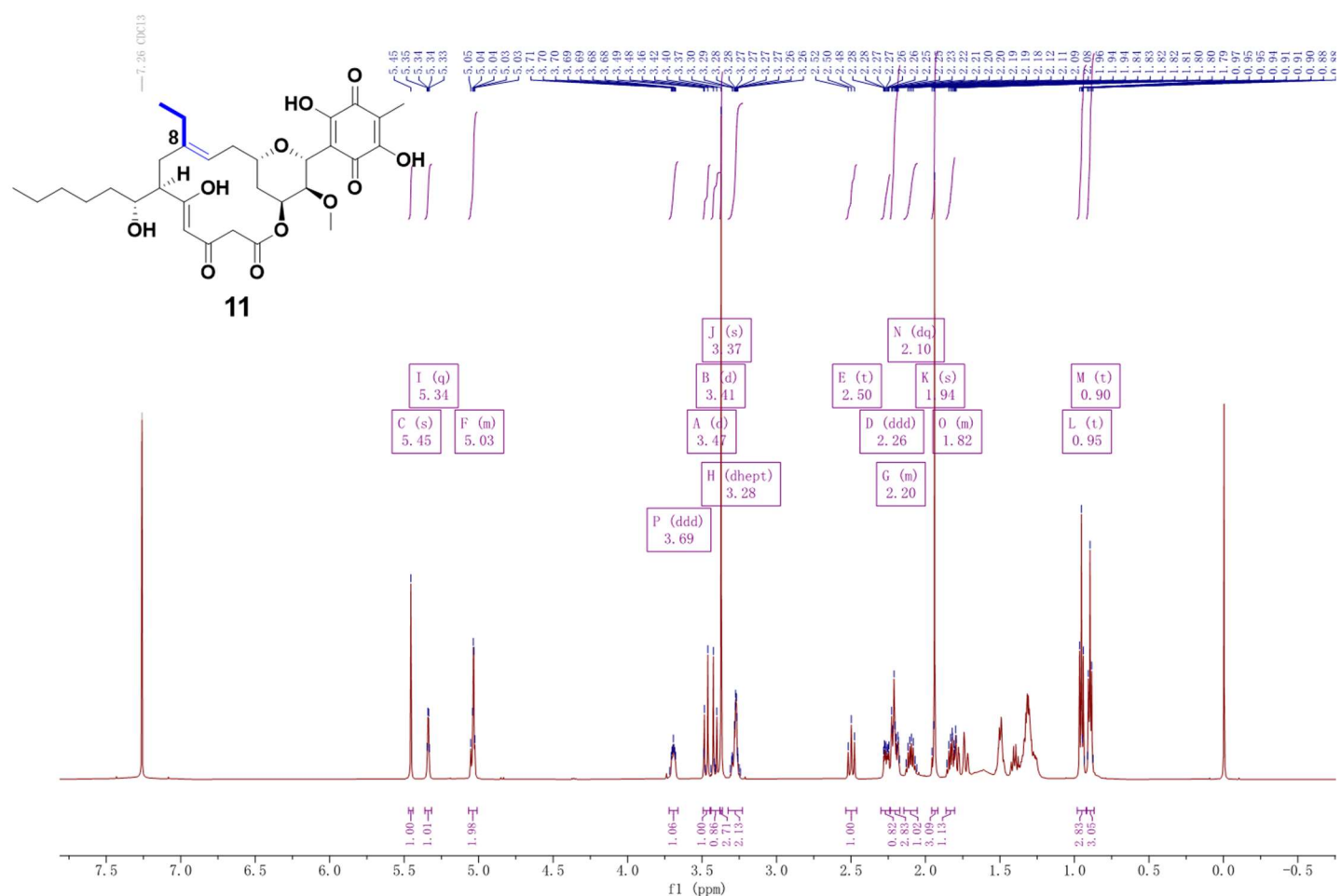


Fig. 37. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **11**.

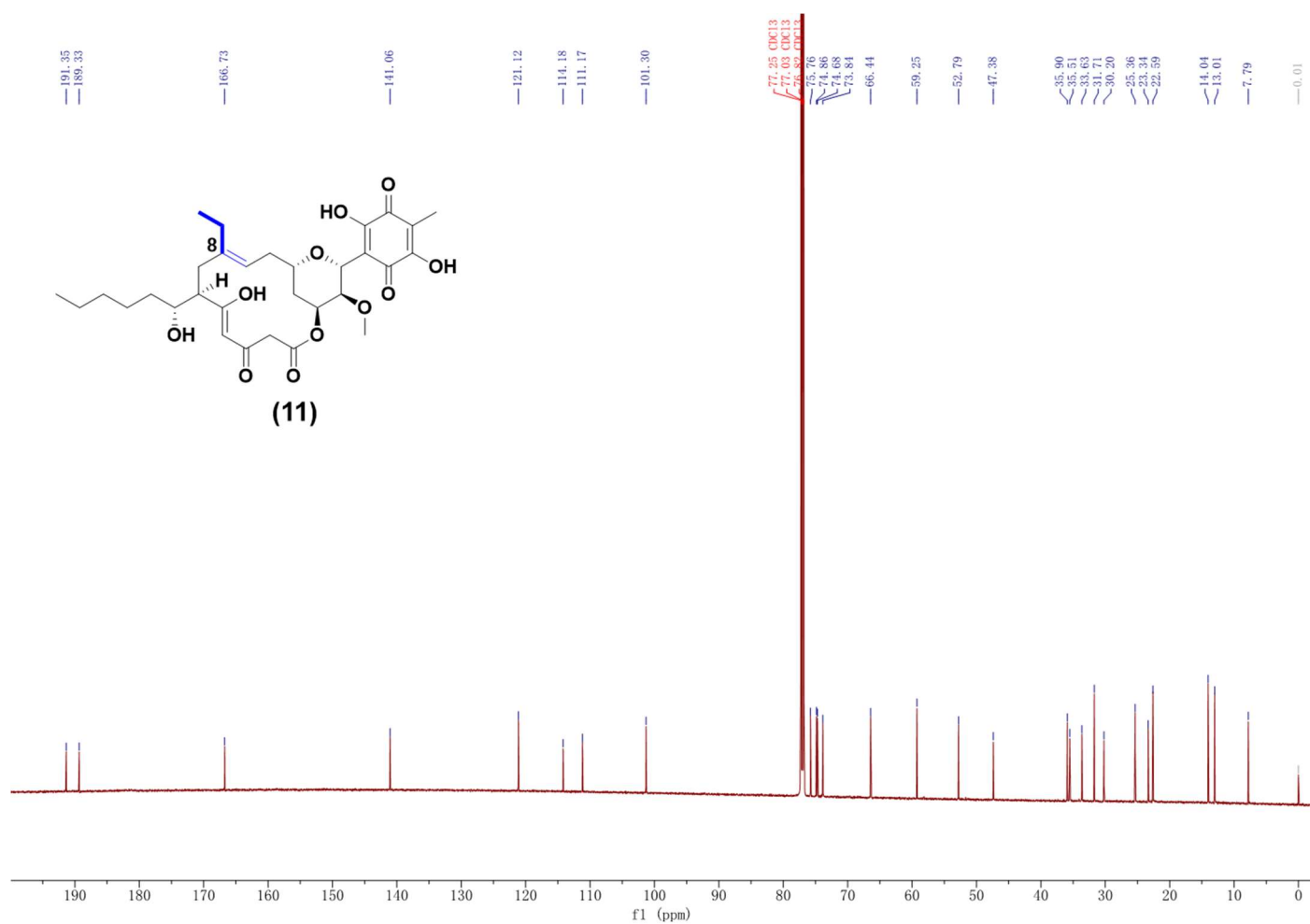


Fig. 38. ¹³C NMR spectrum (150 MHz, CDCl₃) of compound **11**.

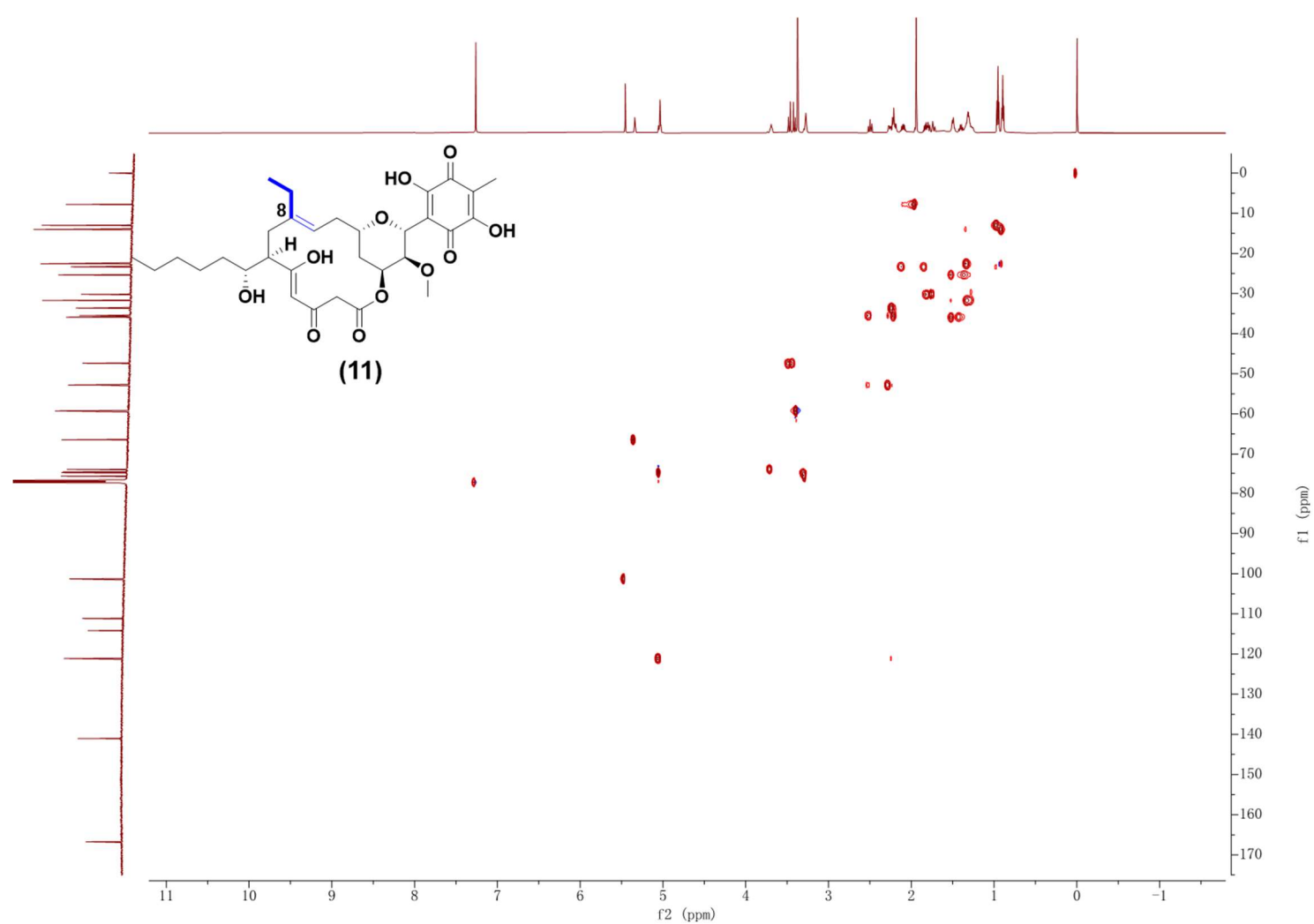


Fig. 39. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **11**.

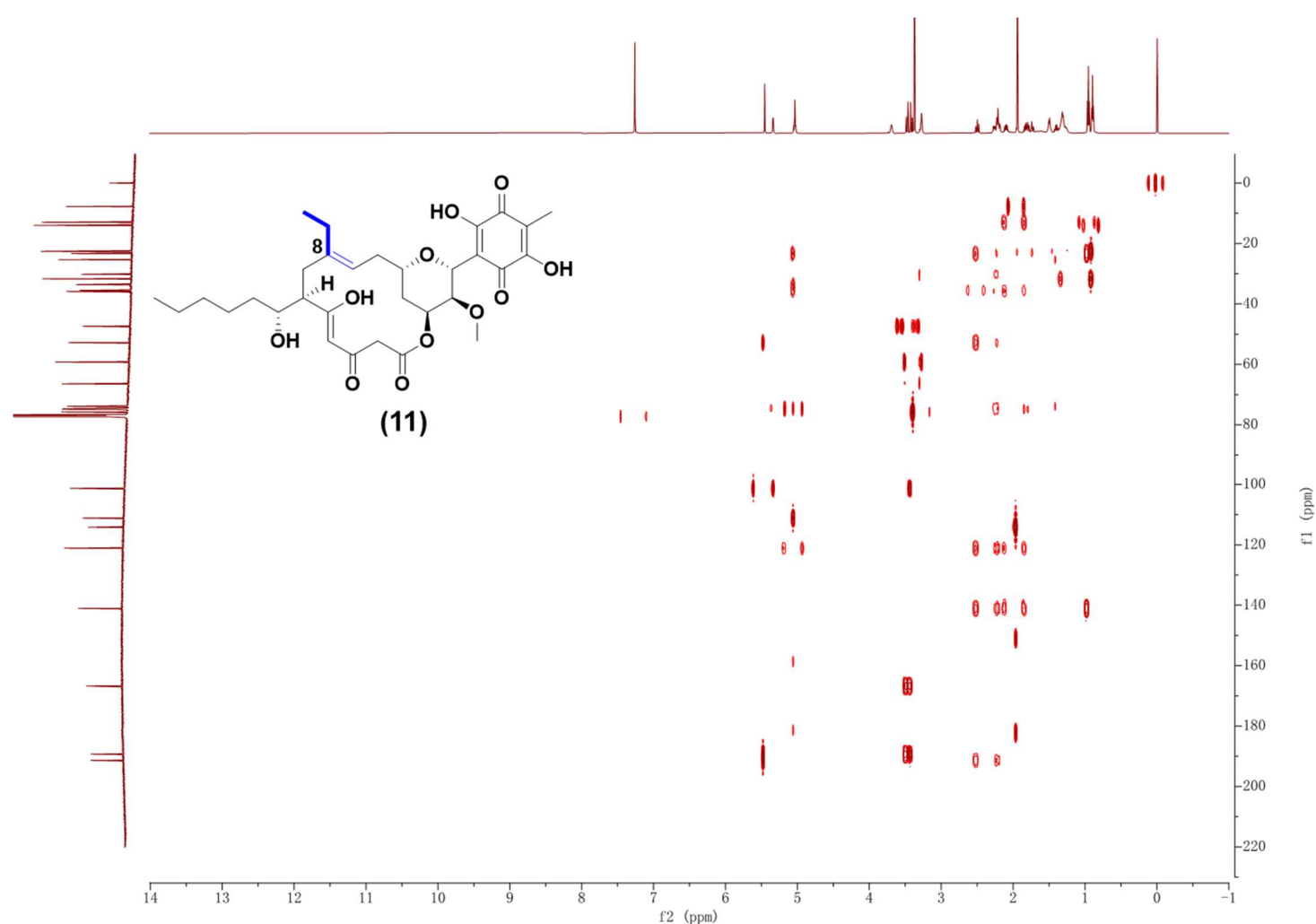


Fig. 40. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **11**.

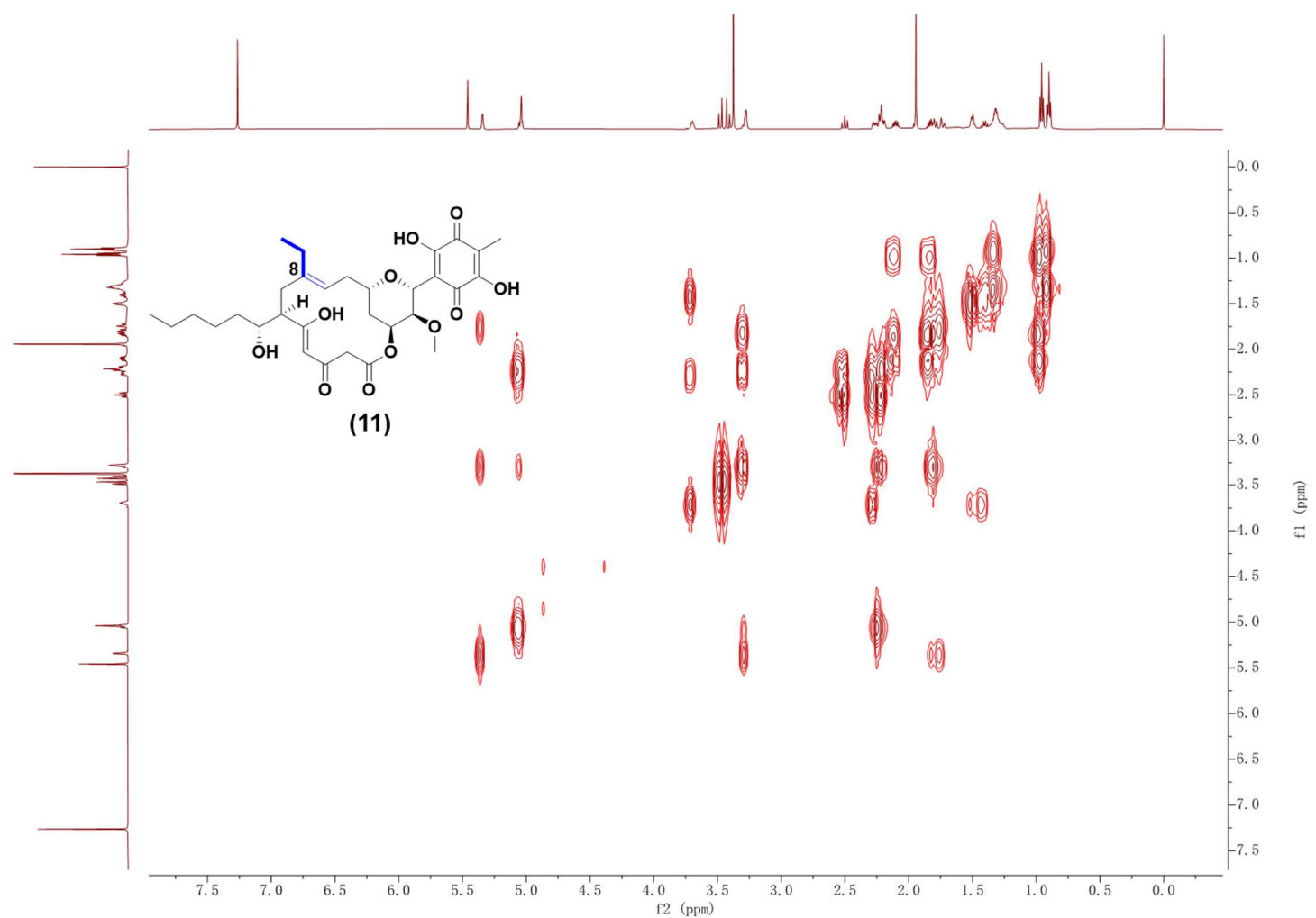
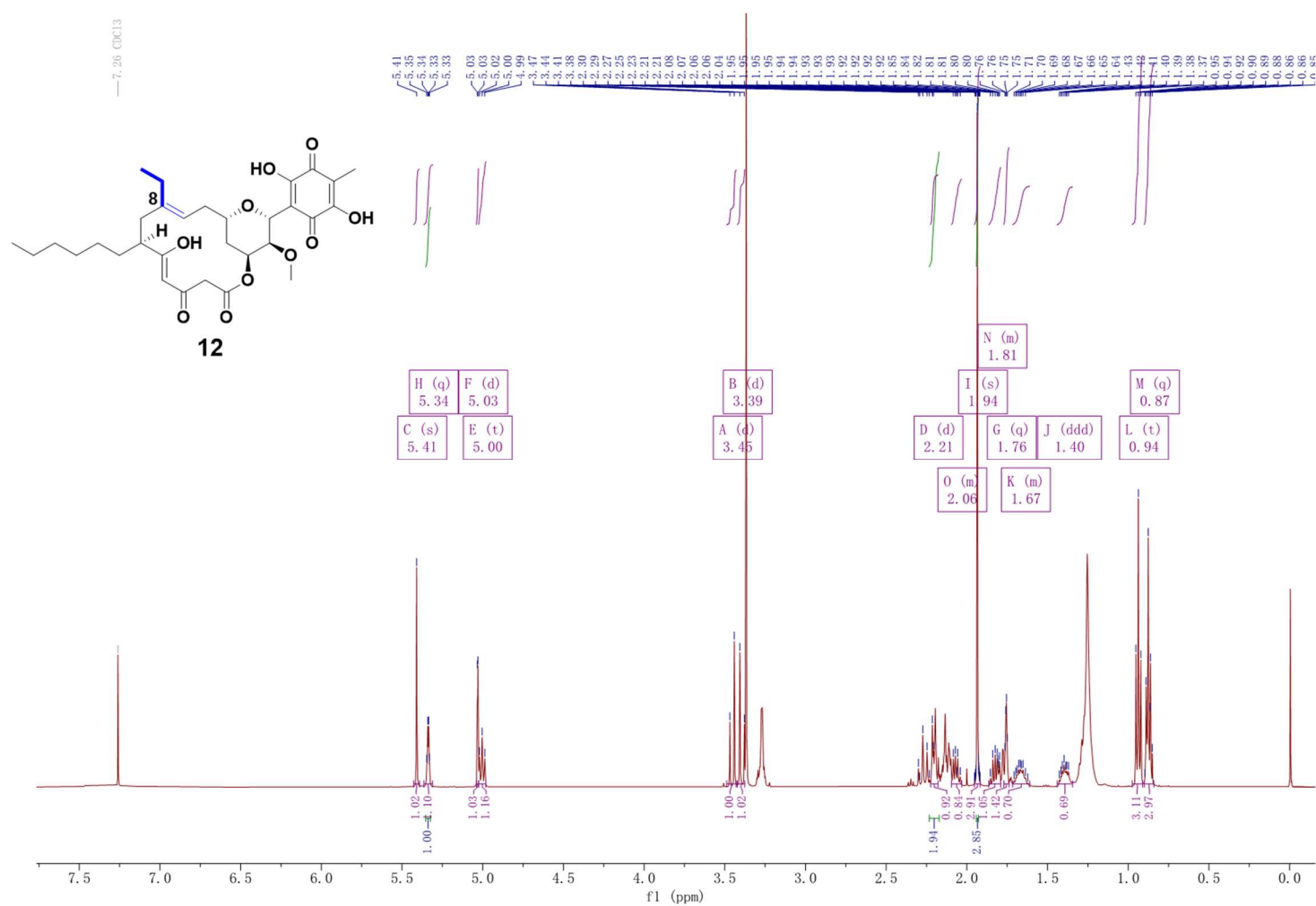
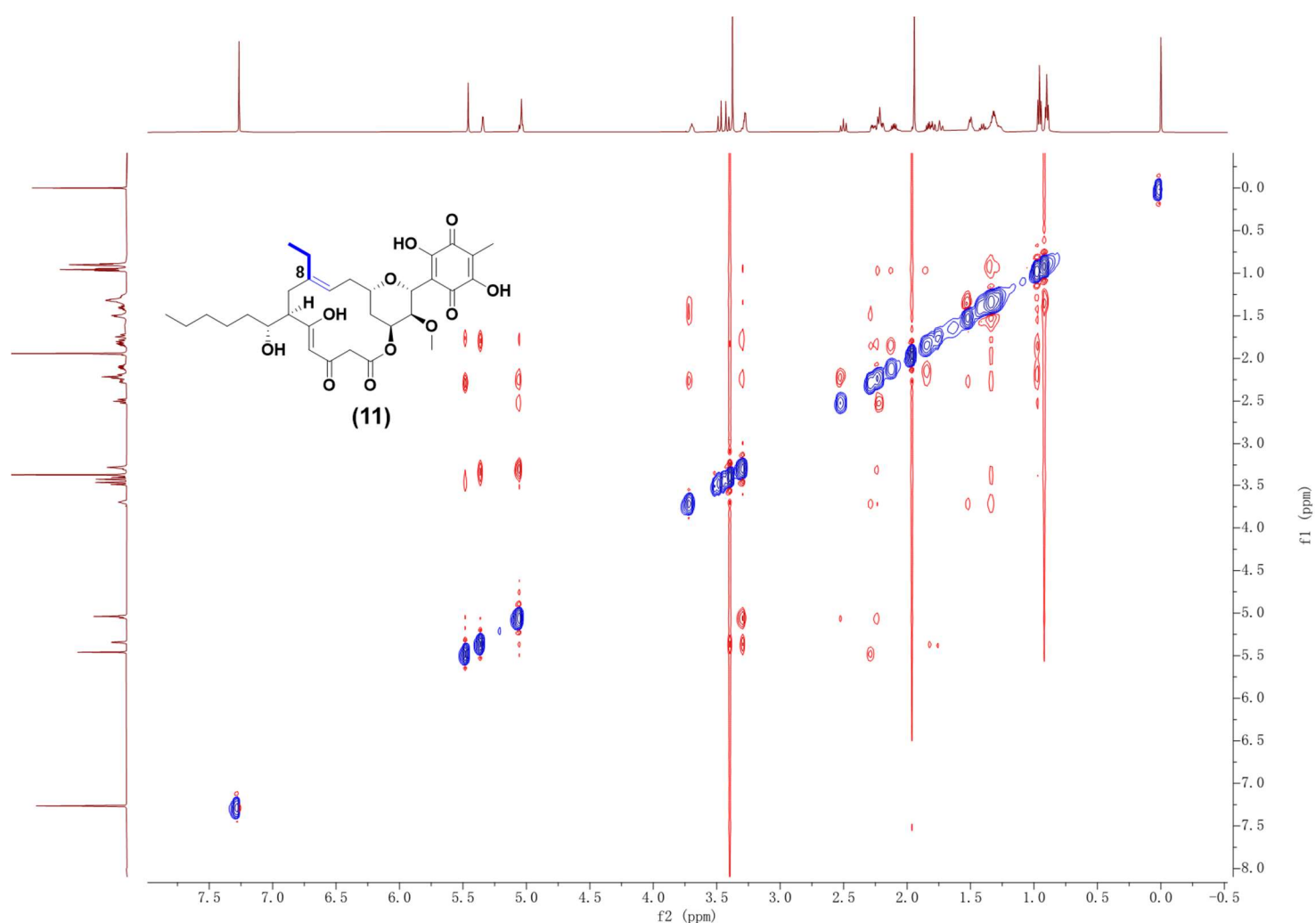


Fig. 41. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **11**.



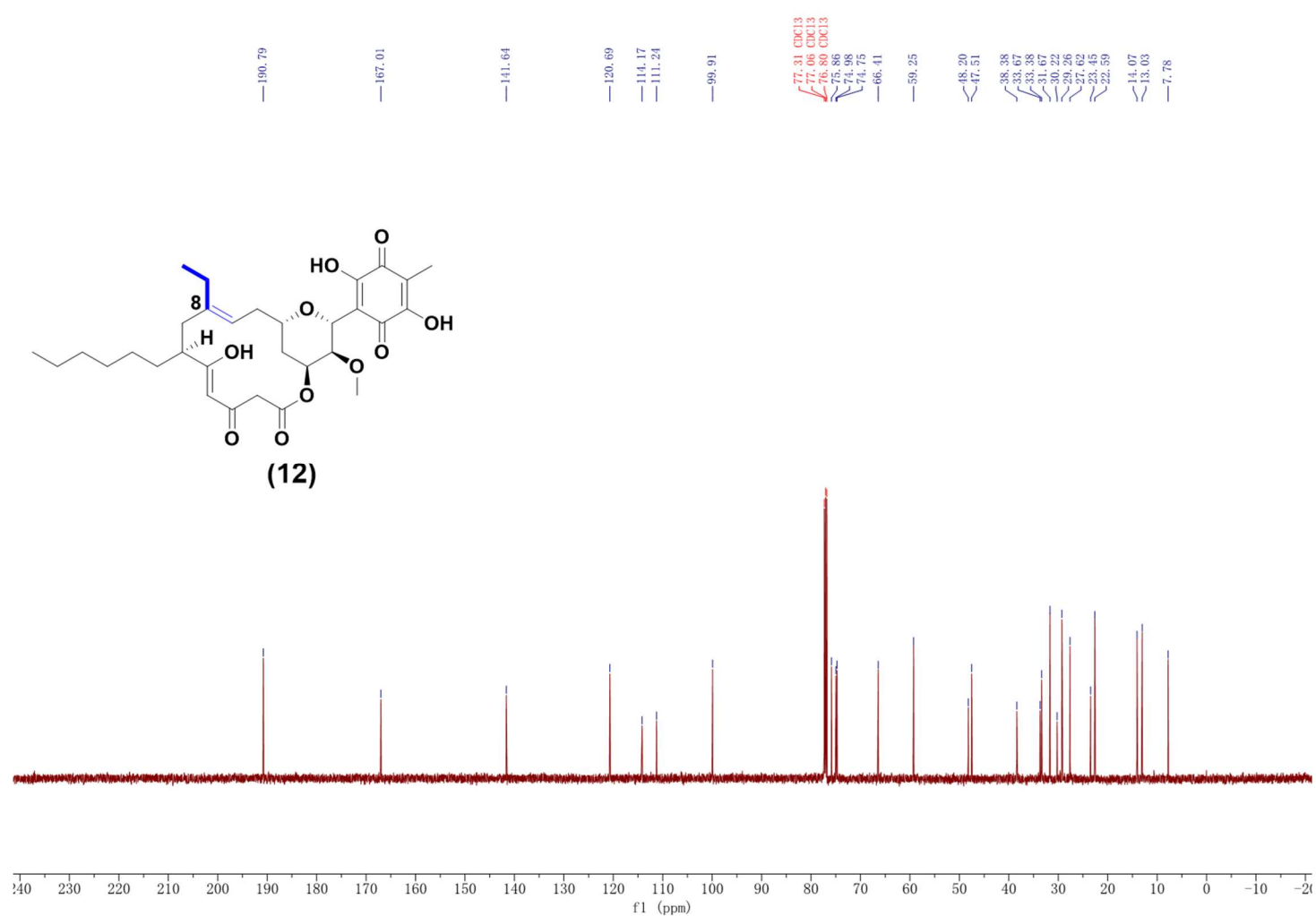


Fig. 44. ^{13}C NMR spectrum (125 MHz, CDCl_3) of compound **12**.

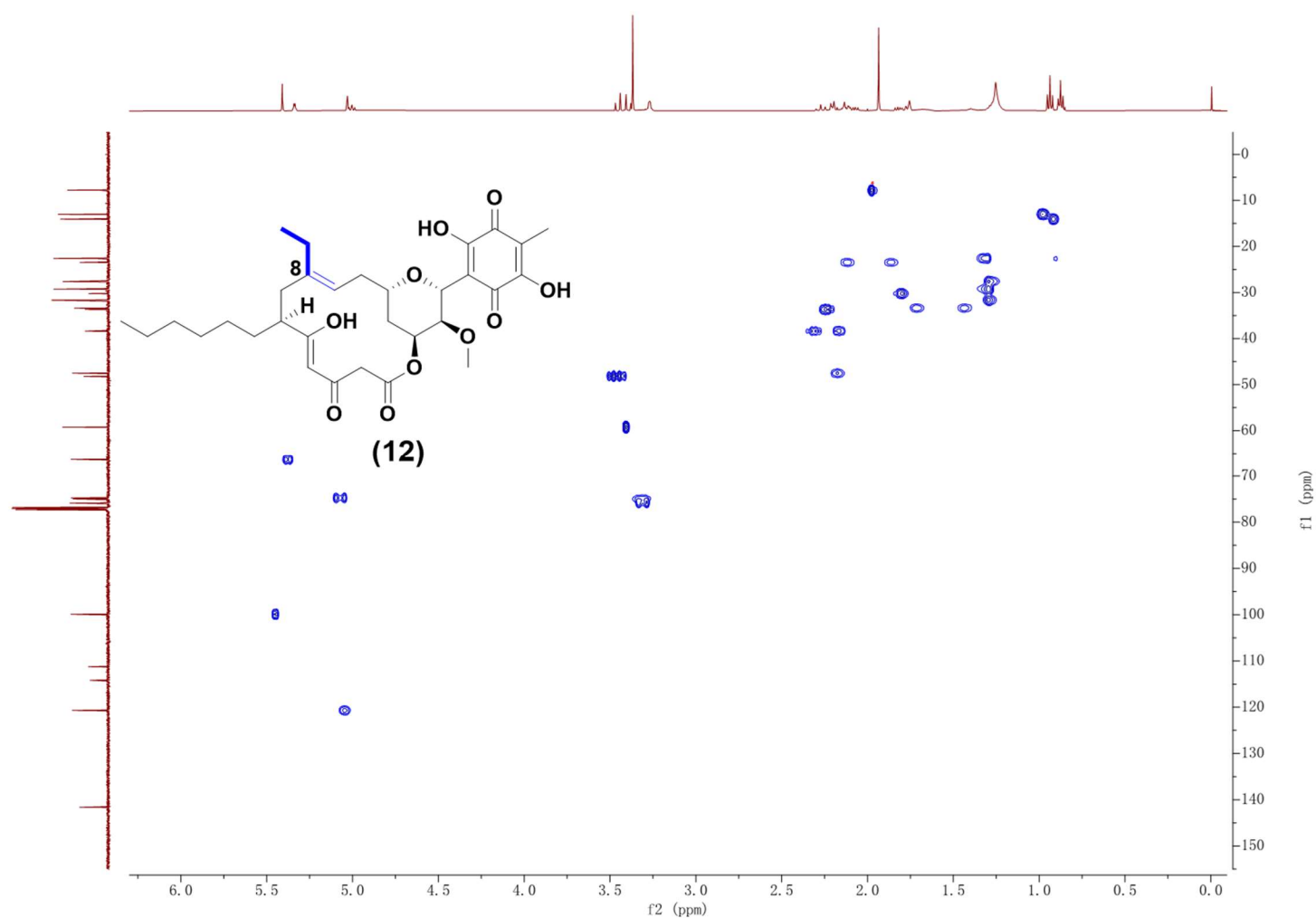


Fig. 45. HSQC NMR spectrum (500 MHz, CDCl_3) of compound **12**.

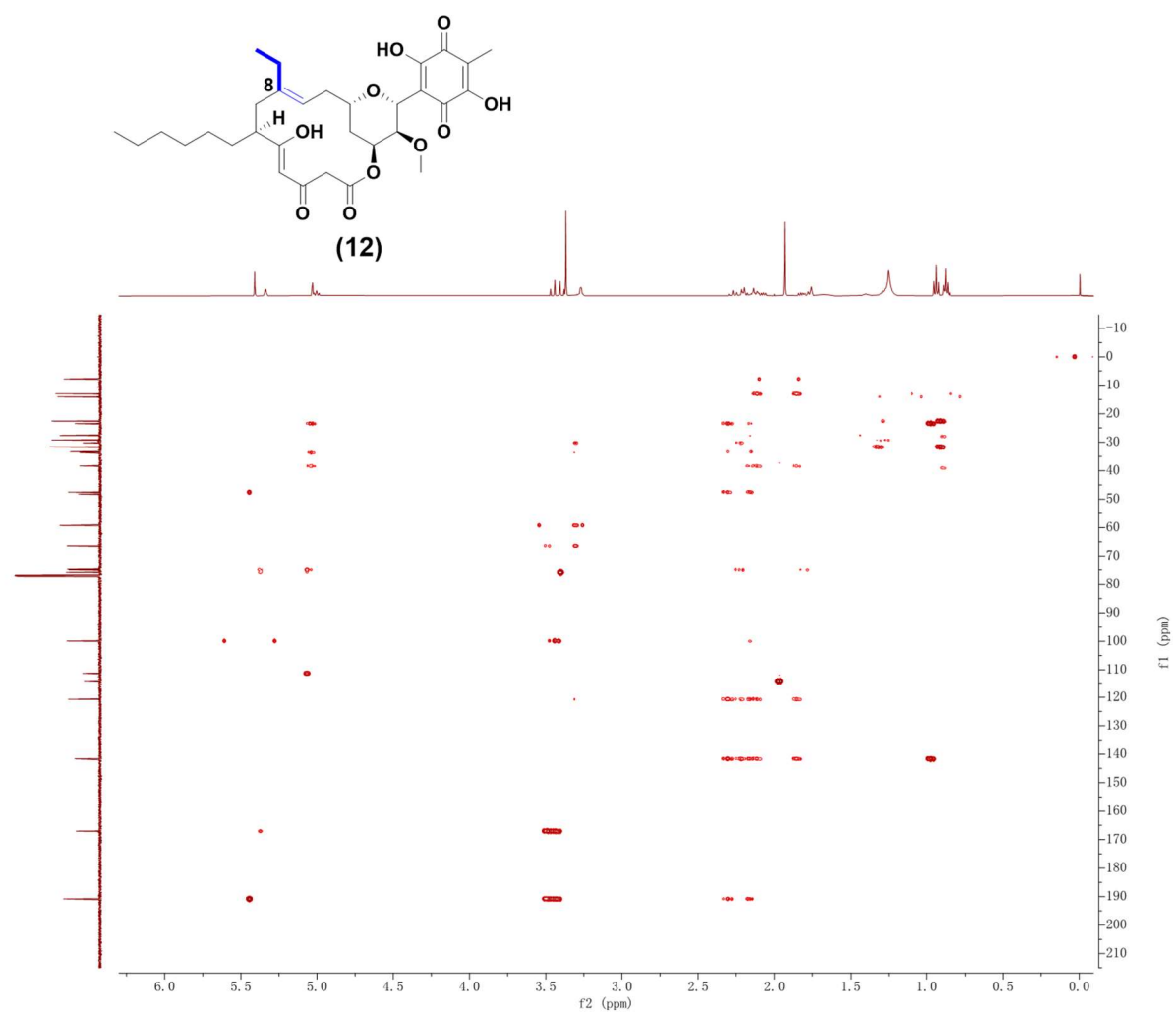


Fig. 46. HMBC NMR spectrum (500 MHz, CDCl_3) of compound **12**.

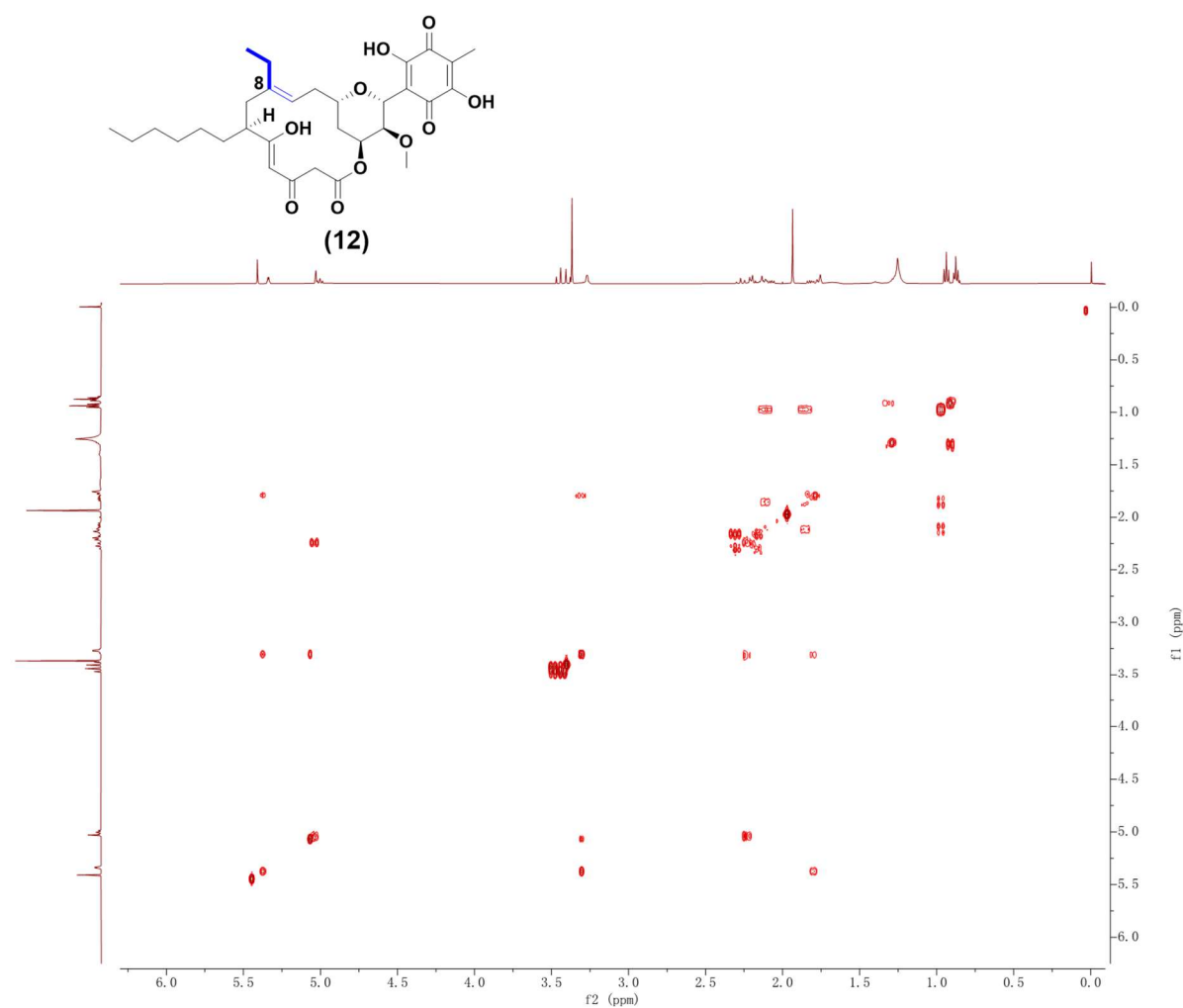


Fig. 47. ^1H - ^1H COSY NMR spectrum (500 MHz, CDCl_3) of compound **12**.

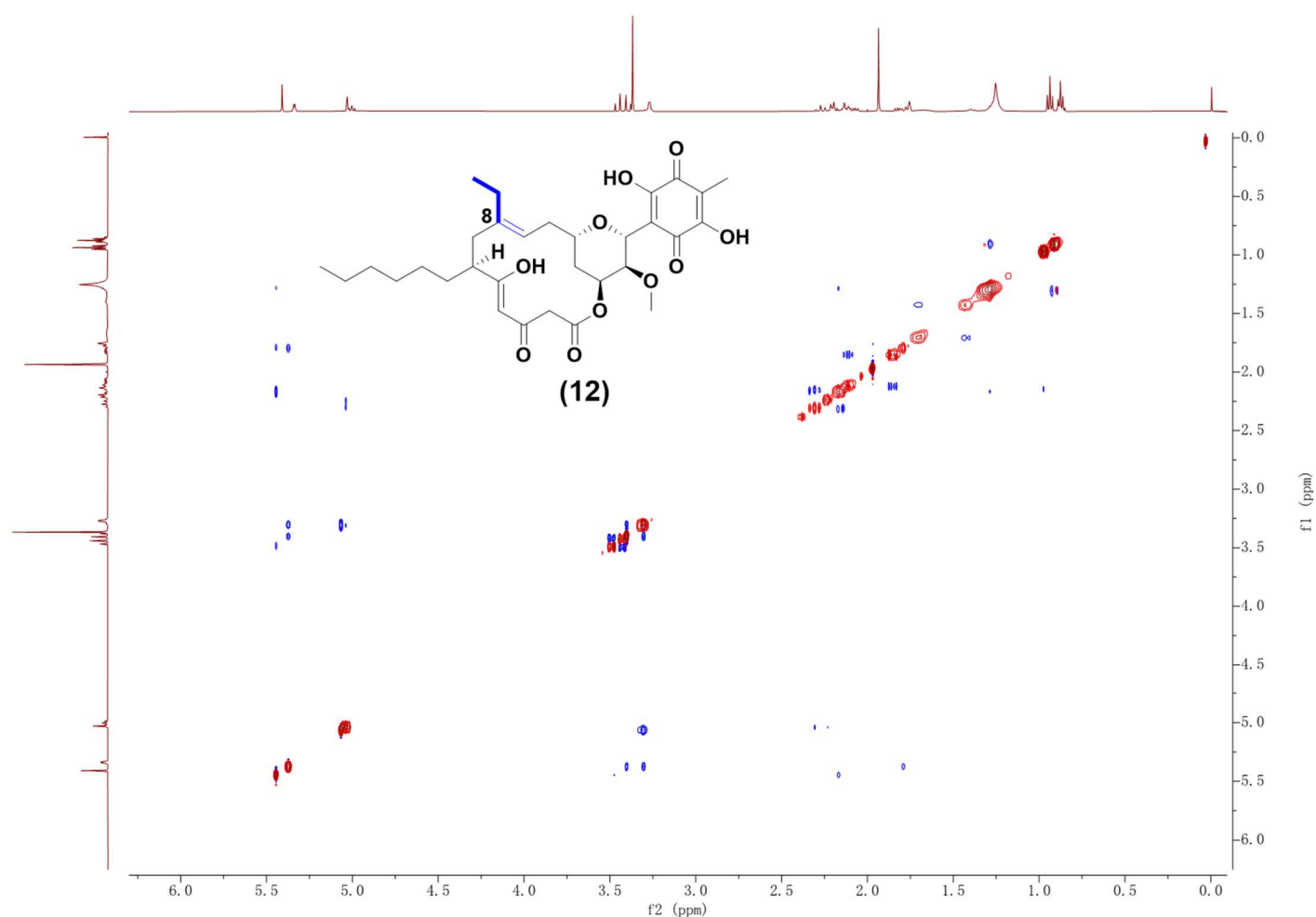


Fig. 48. NOESY NMR spectrum (500 MHz, CDCl_3) of compound **12**.

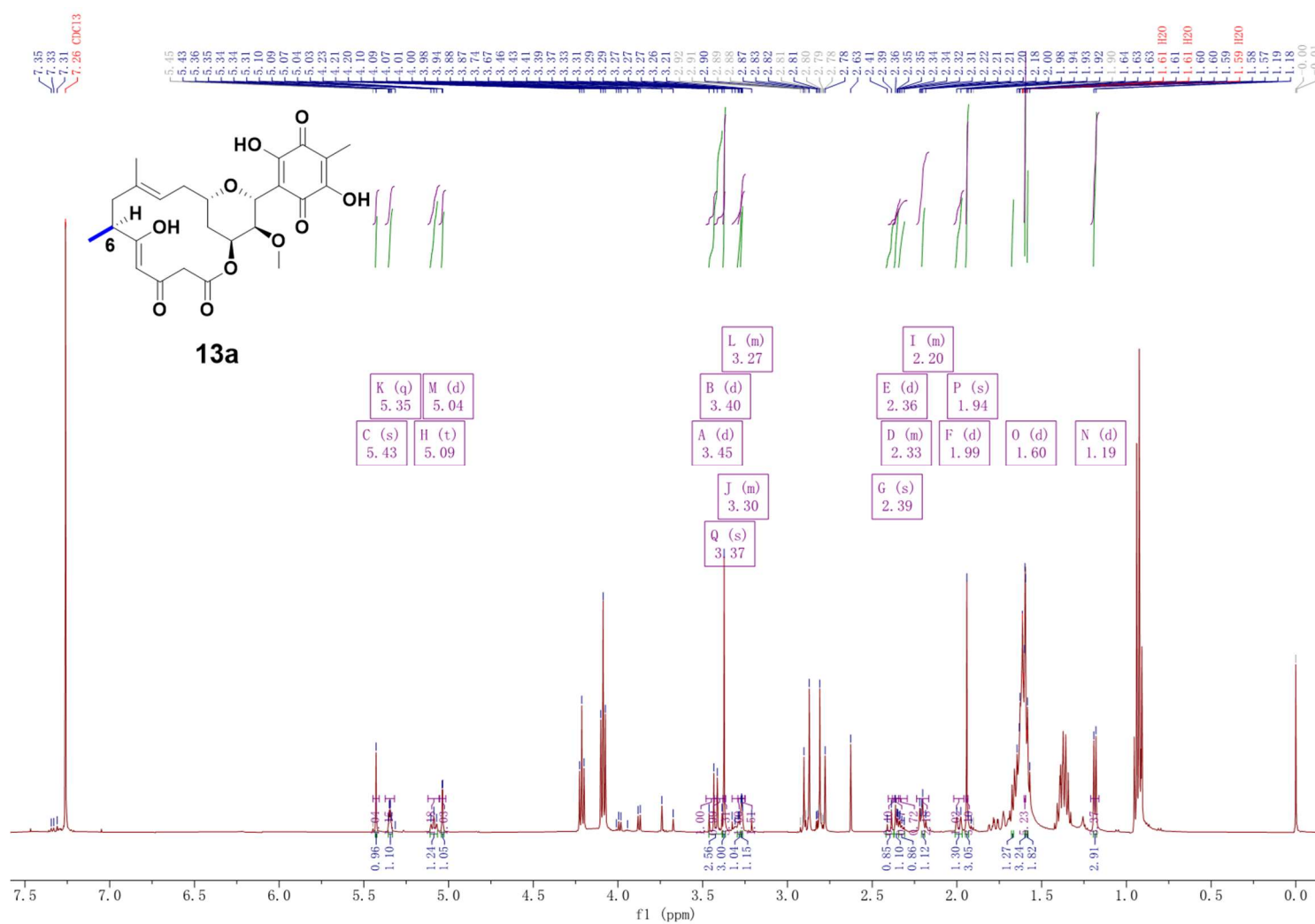


Fig. 49. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **13a**.

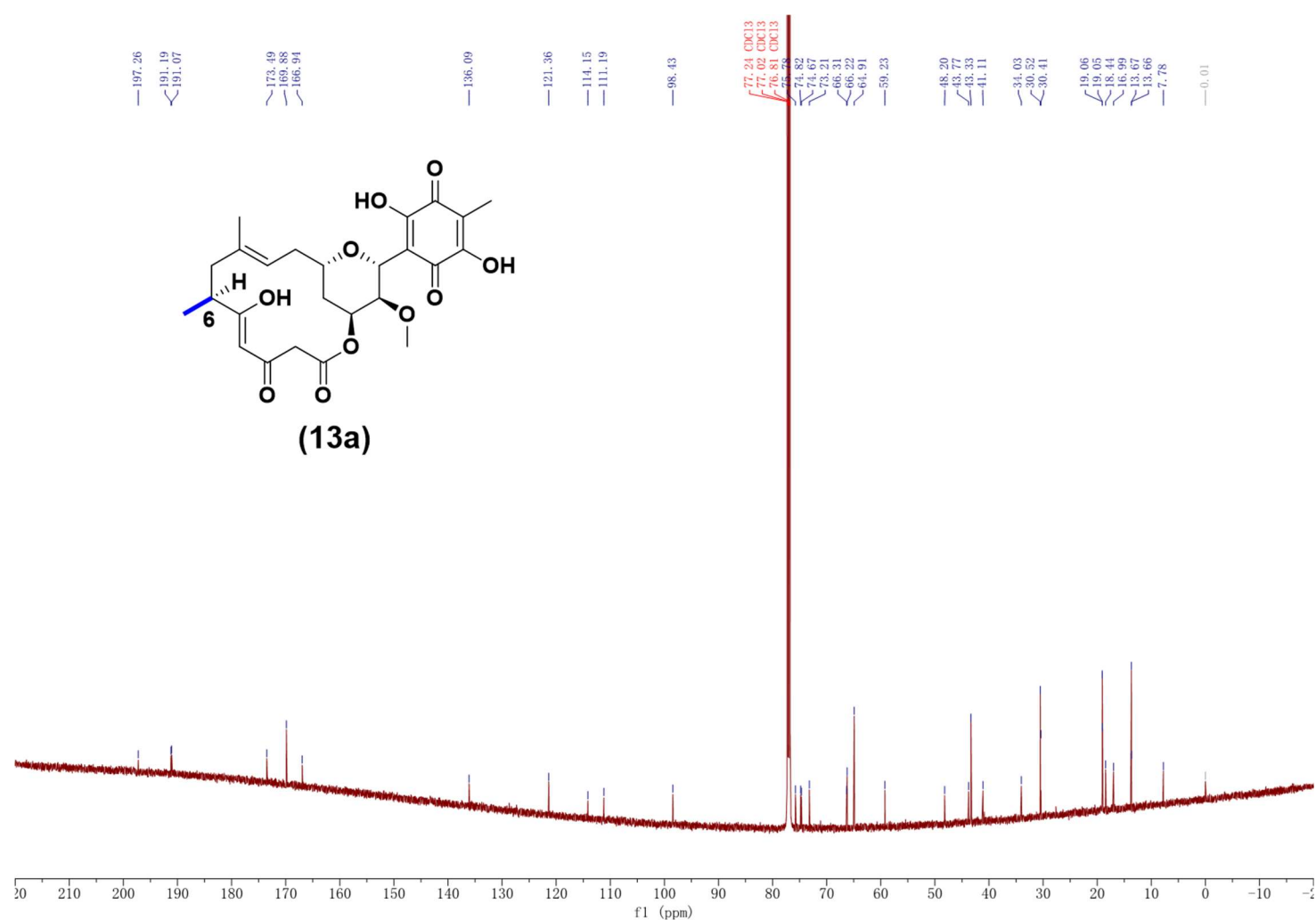


Fig. 50. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **13a**.

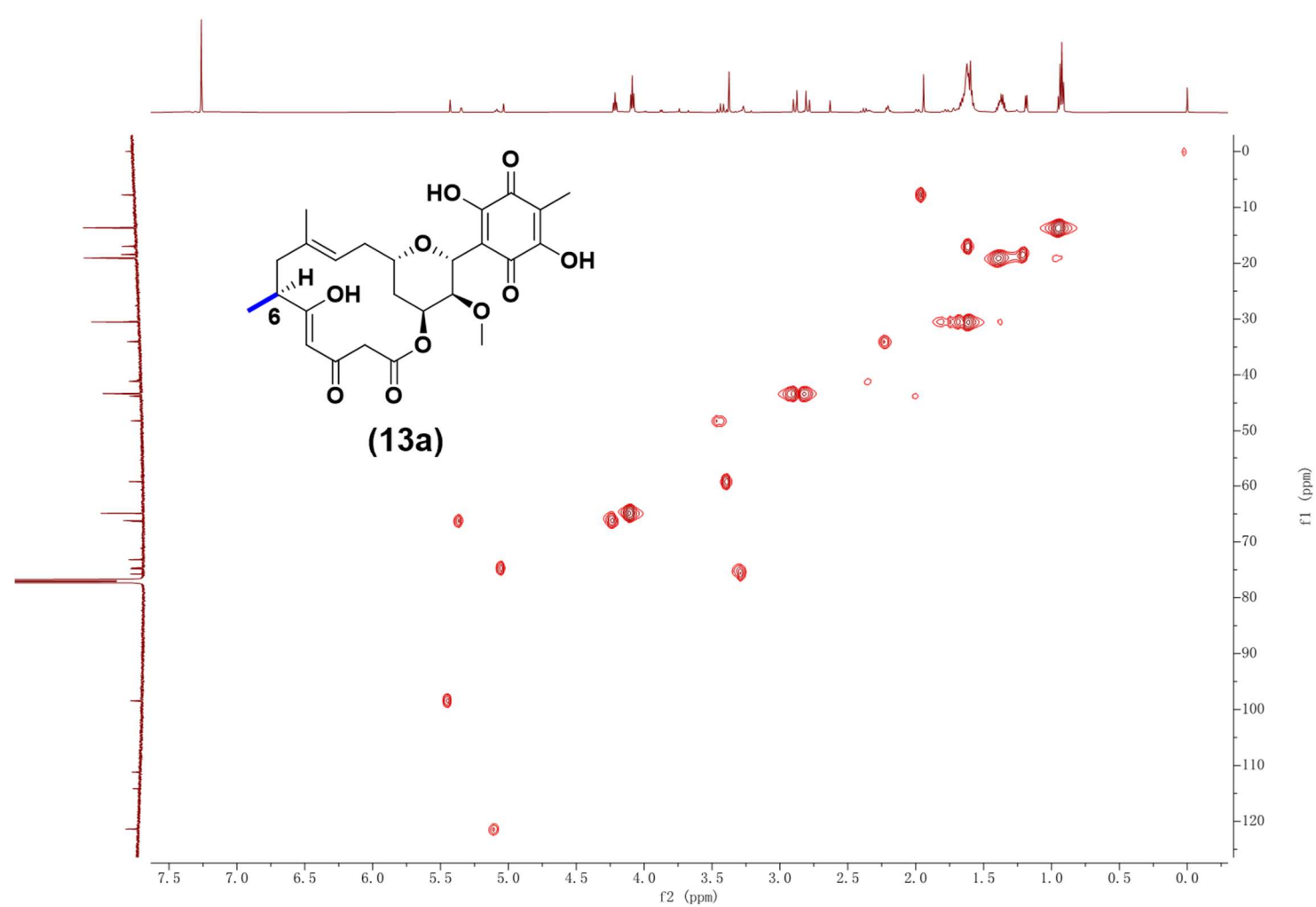


Fig. 51. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **13a**.

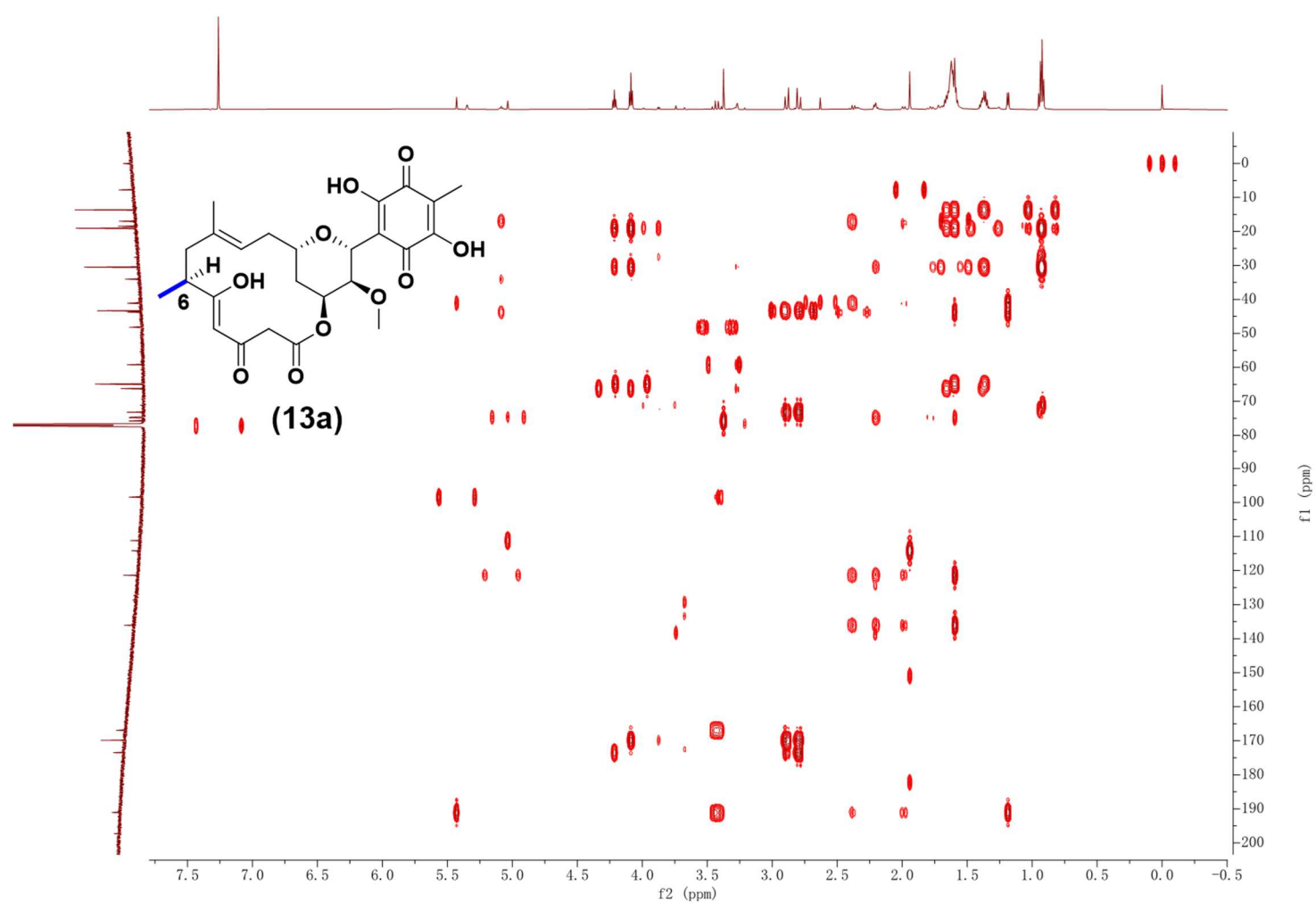


Fig. 52. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **13a**.

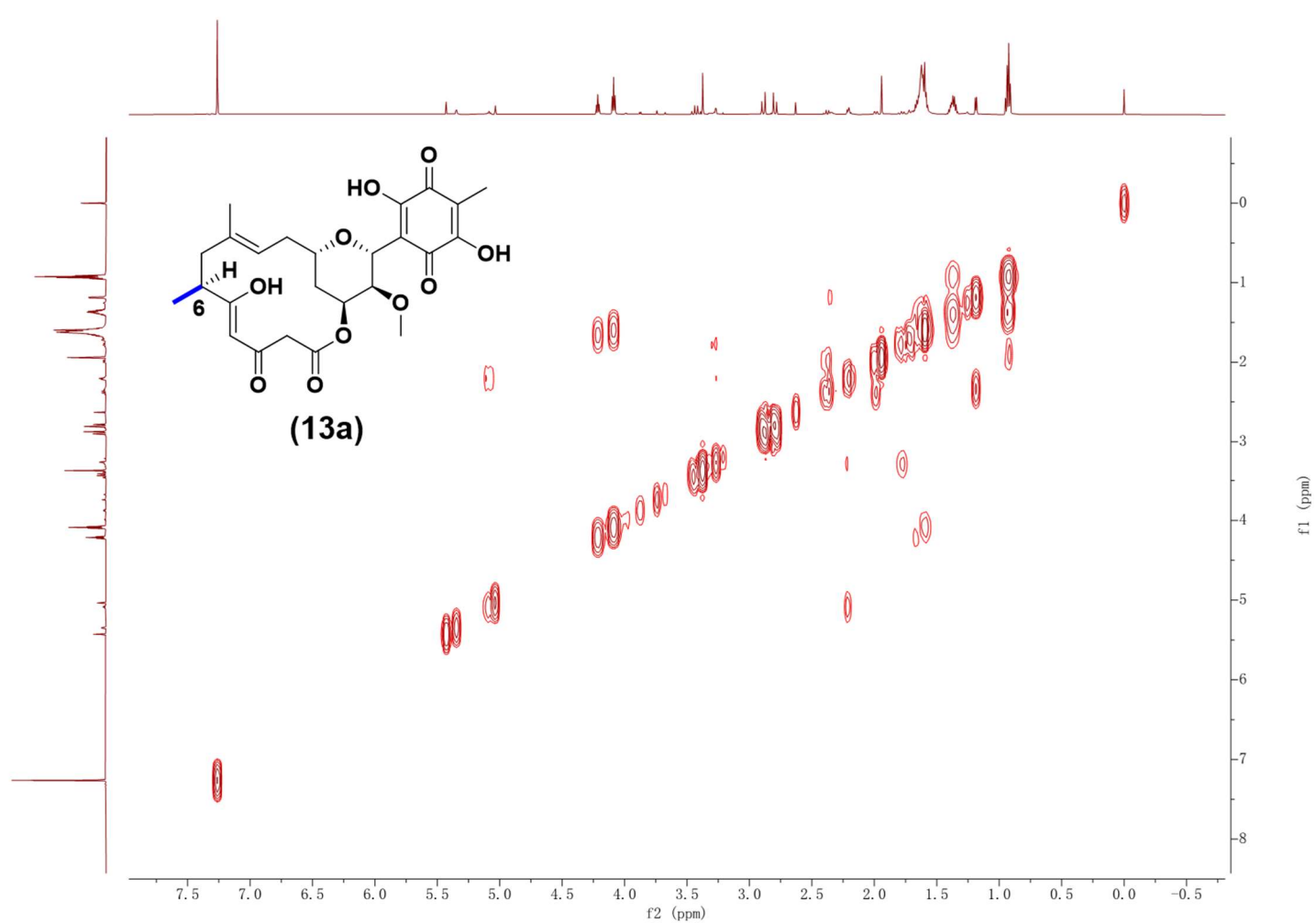


Fig. 53. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **13a**.

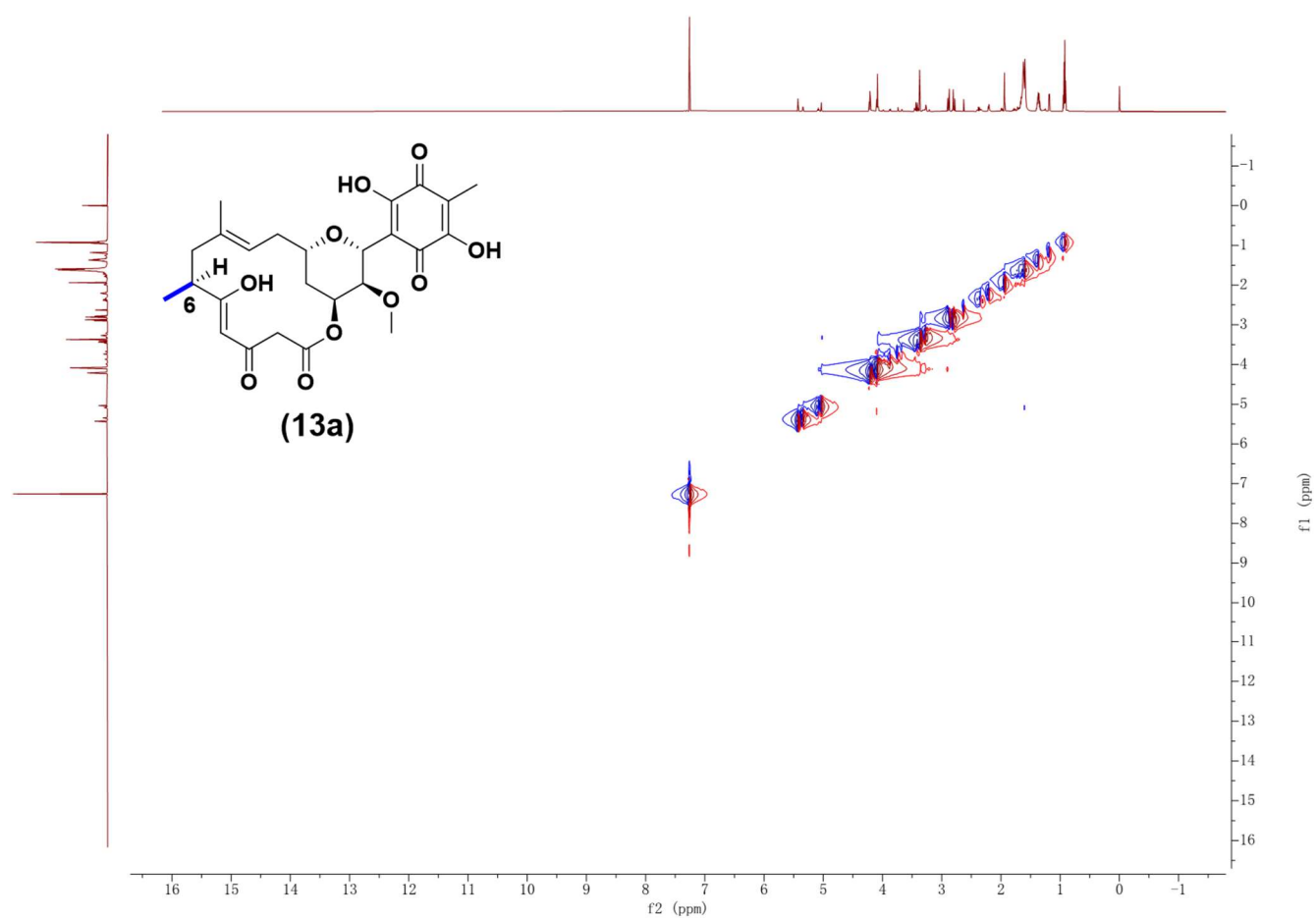


Fig. 54. ROESY NMR spectrum (600 MHz, CDCl₃) of compound **13a**.

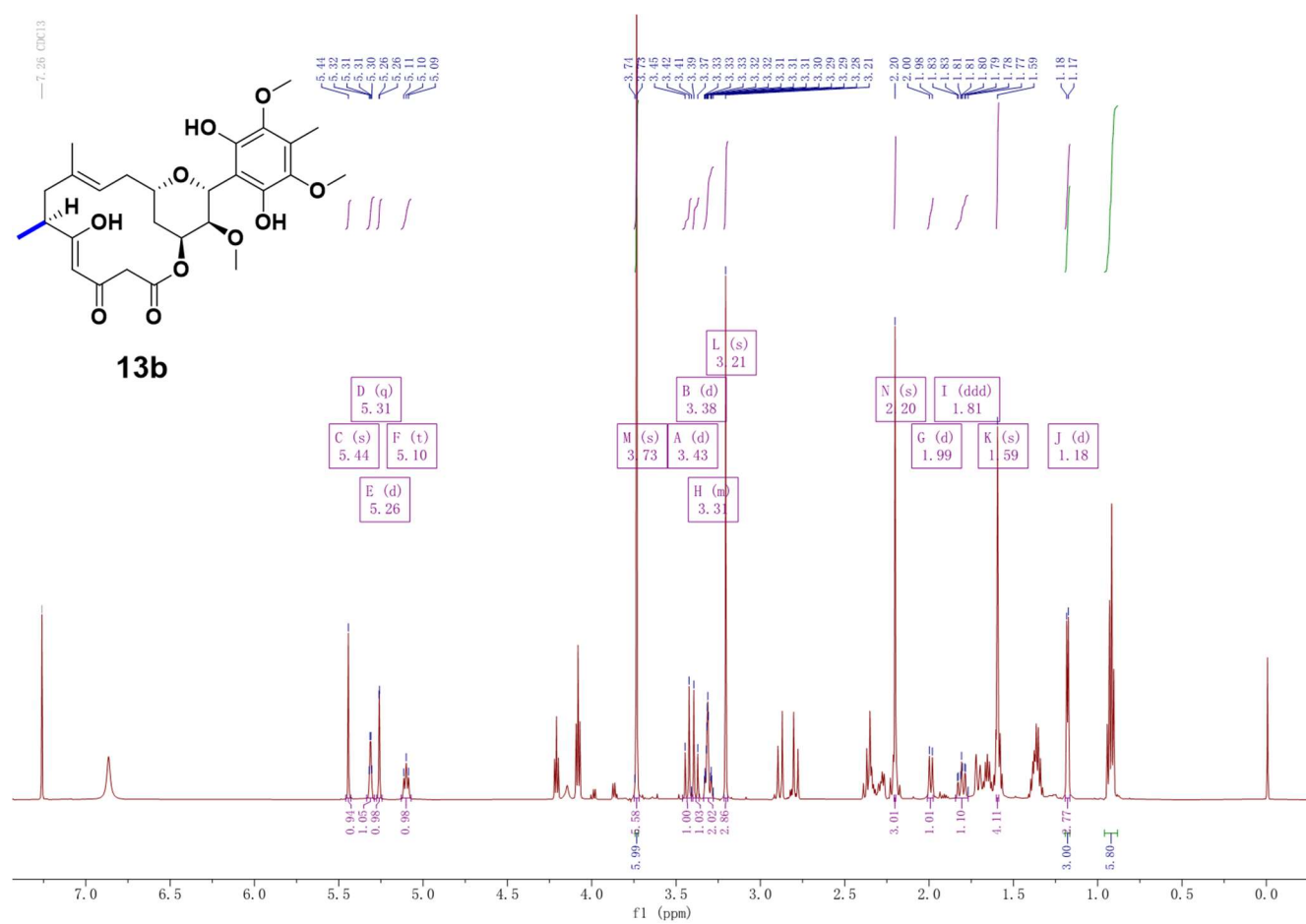


Fig. 55. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **13b**.

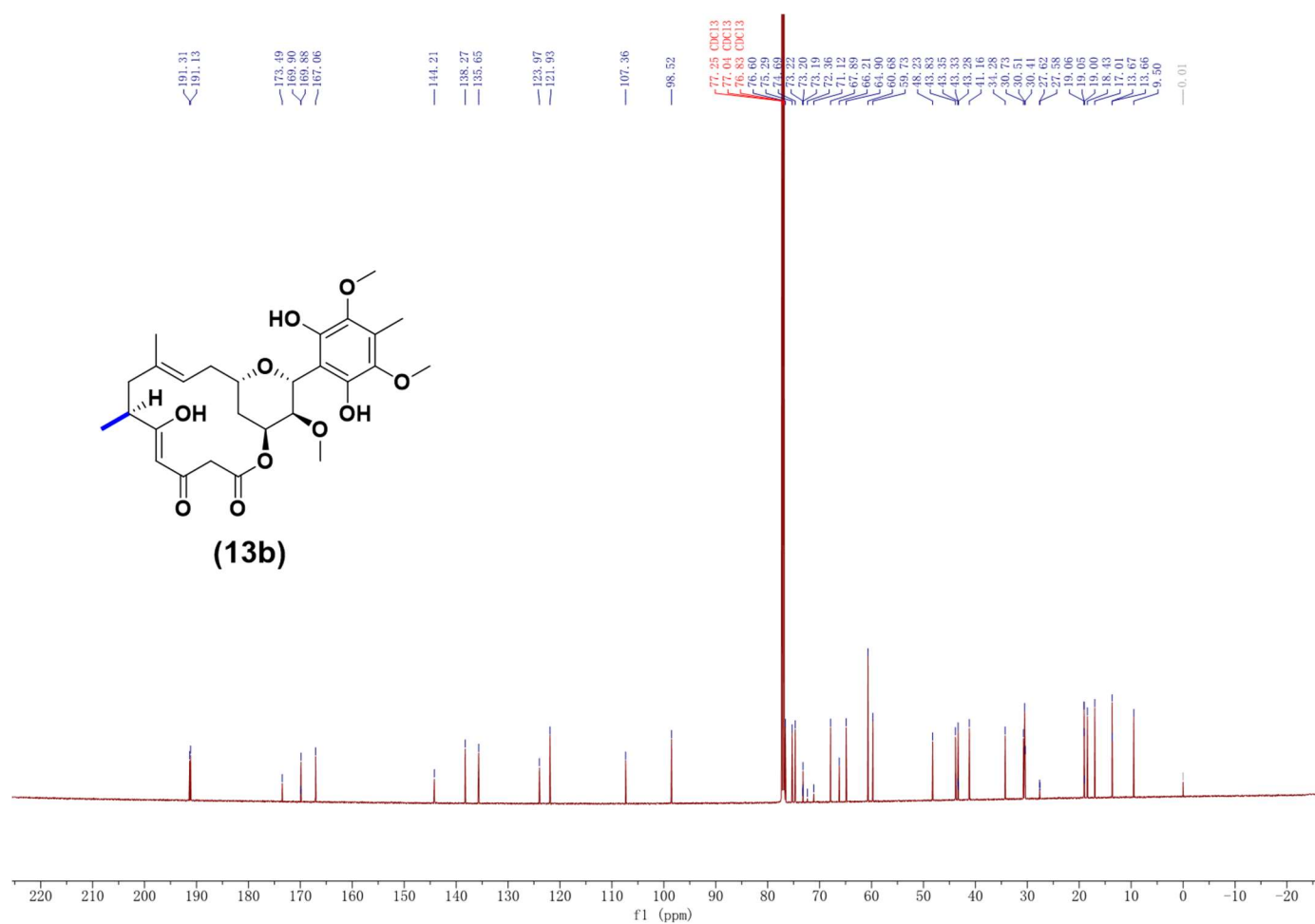


Fig. 56. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **13b**.

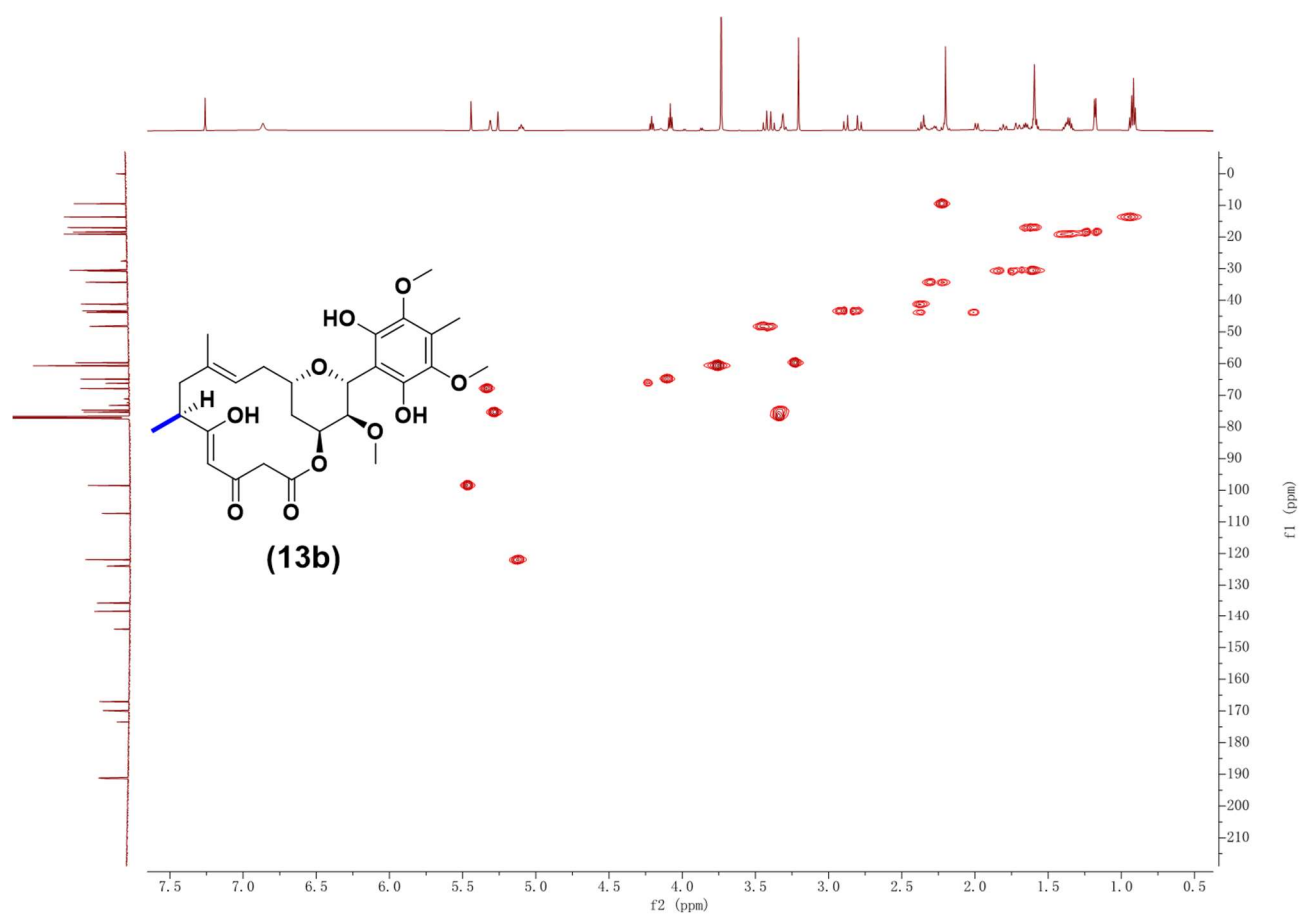


Fig. 57. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **13b**.

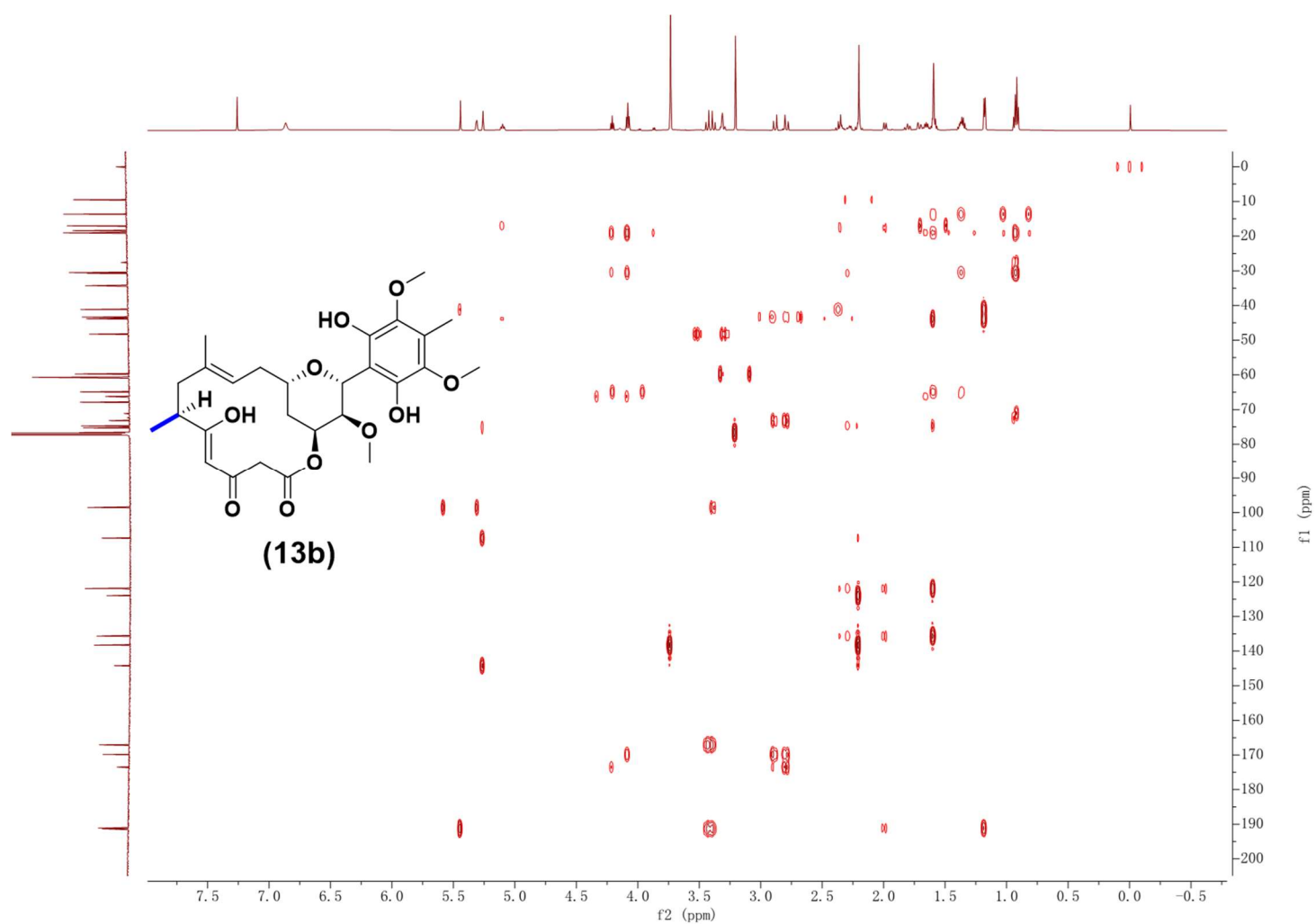


Fig. 58. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **13b**.

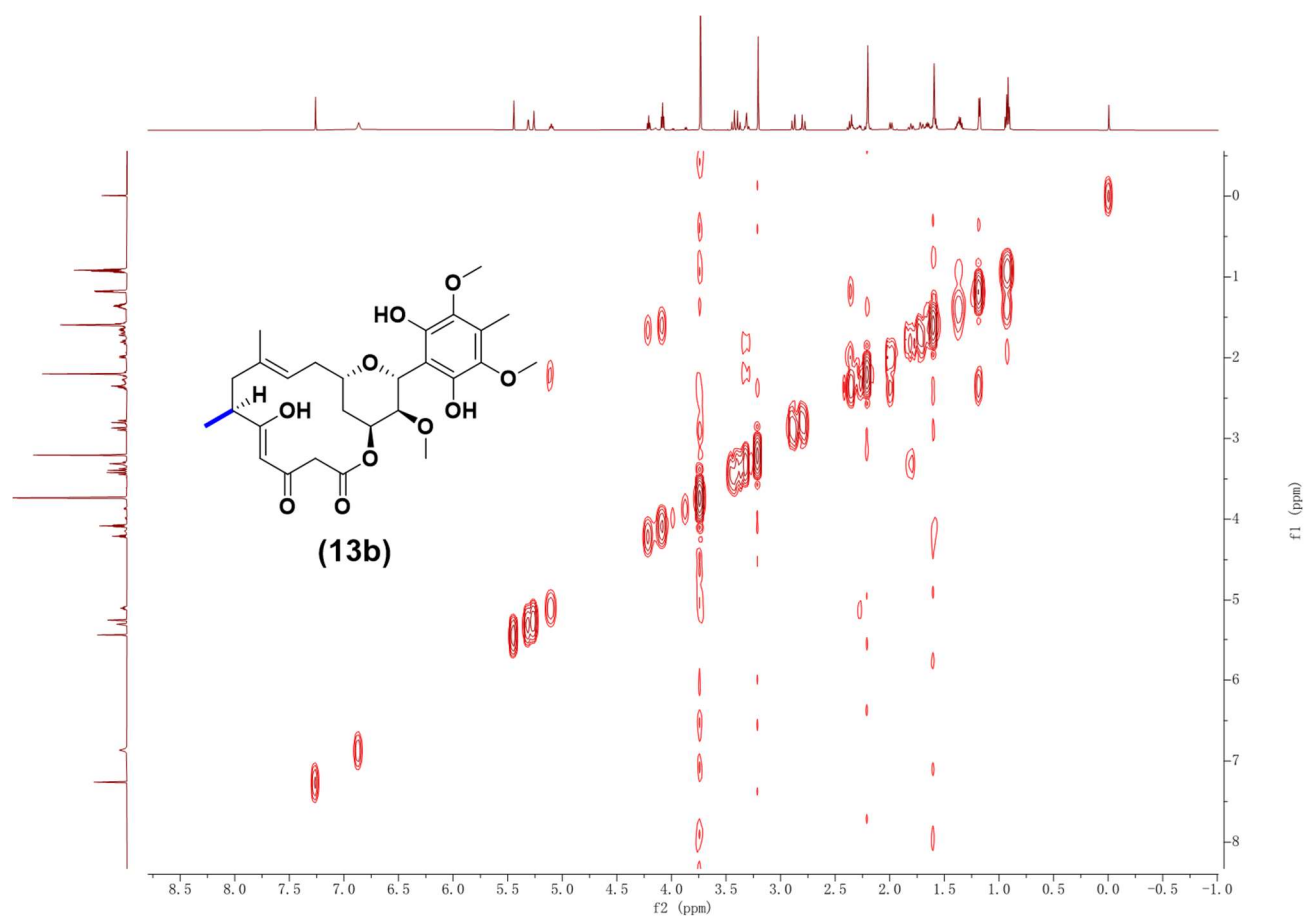


Fig. 59. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **13b**.

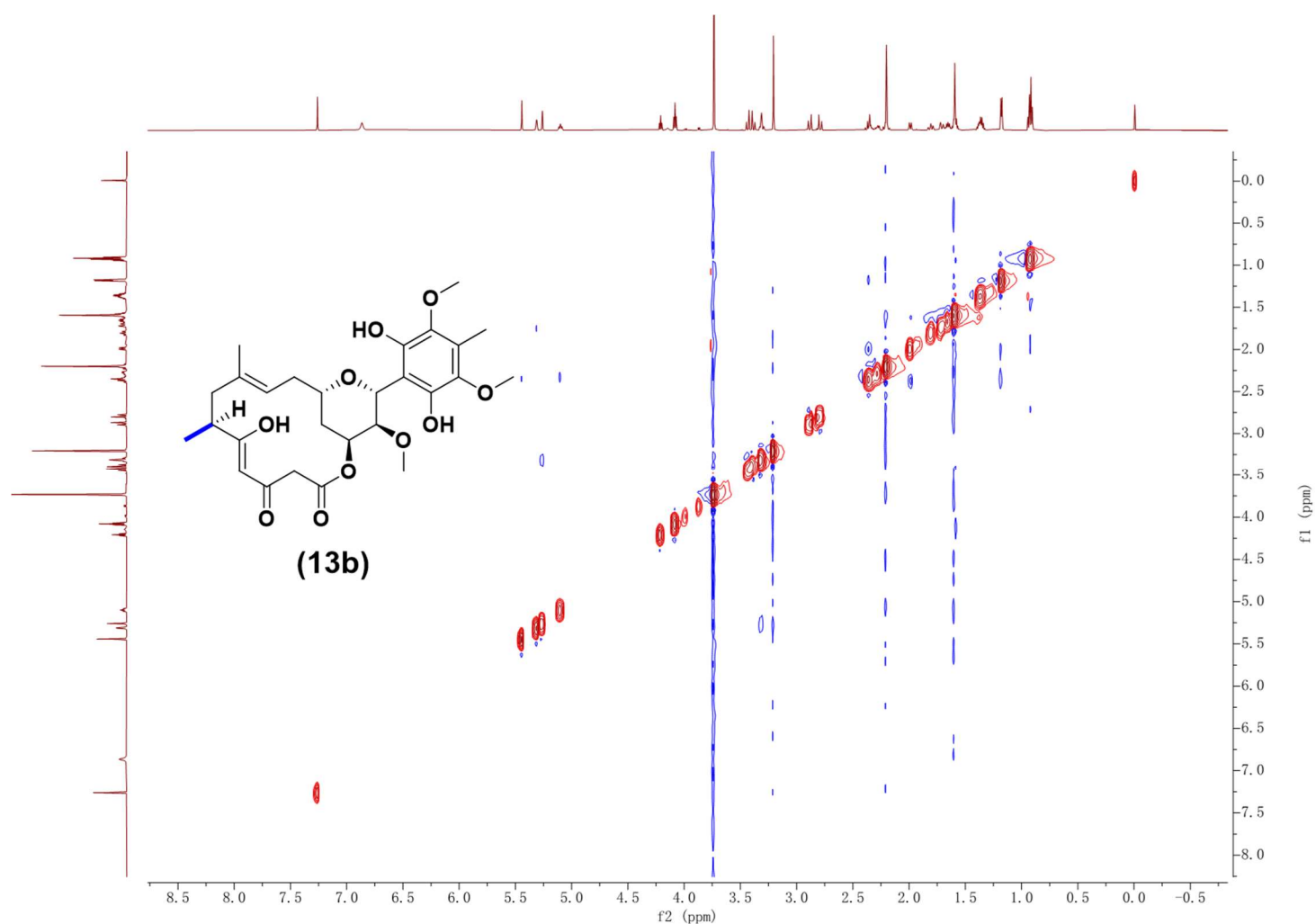


Fig. 60. NOESY NMR spectrum (600 MHz, CDCl₃) of compound **13b**.

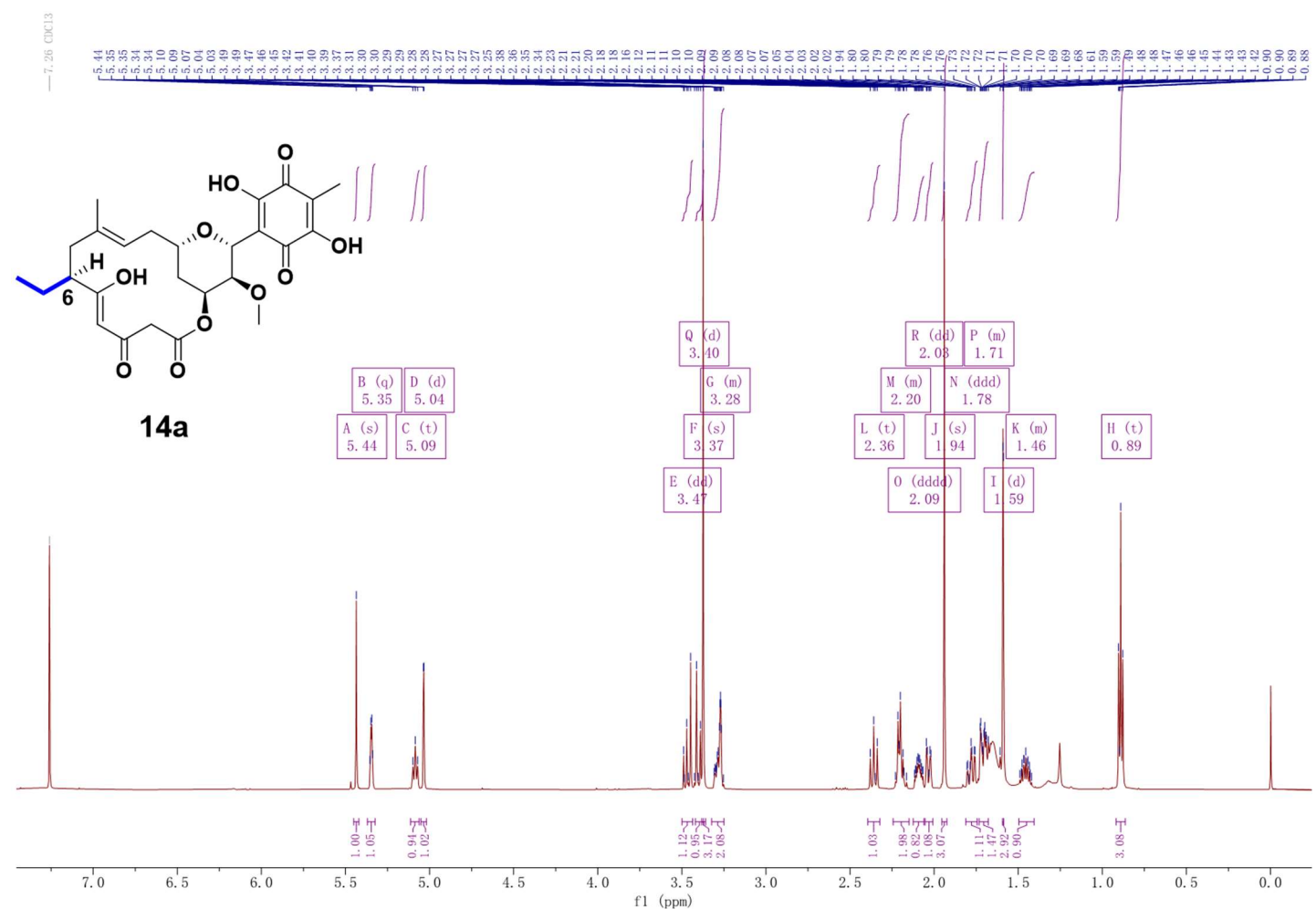


Fig. 61. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **14a**.

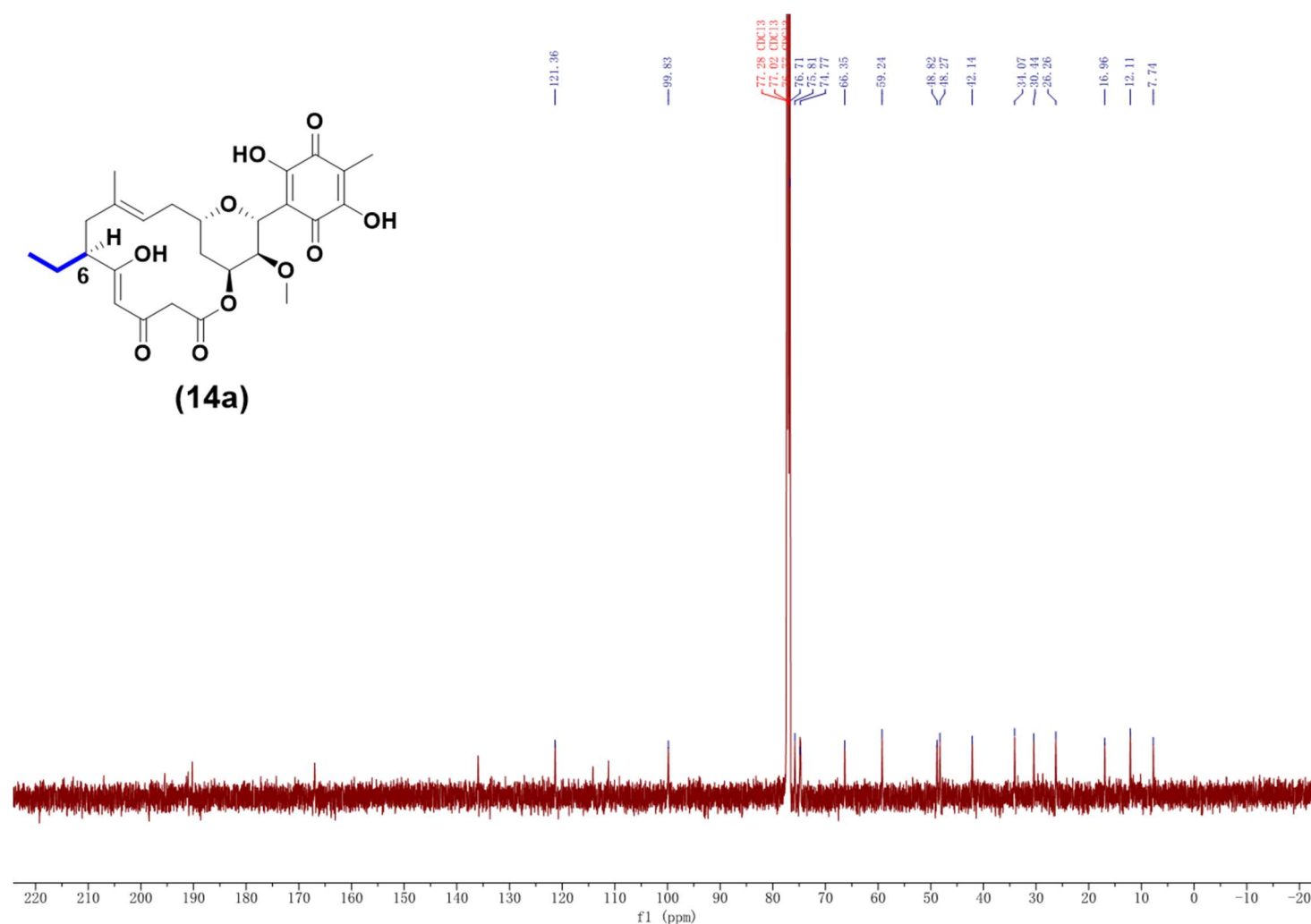


Fig. 62. ^{13}C NMR spectrum (125 MHz, CDCl_3) of compound **14a**.

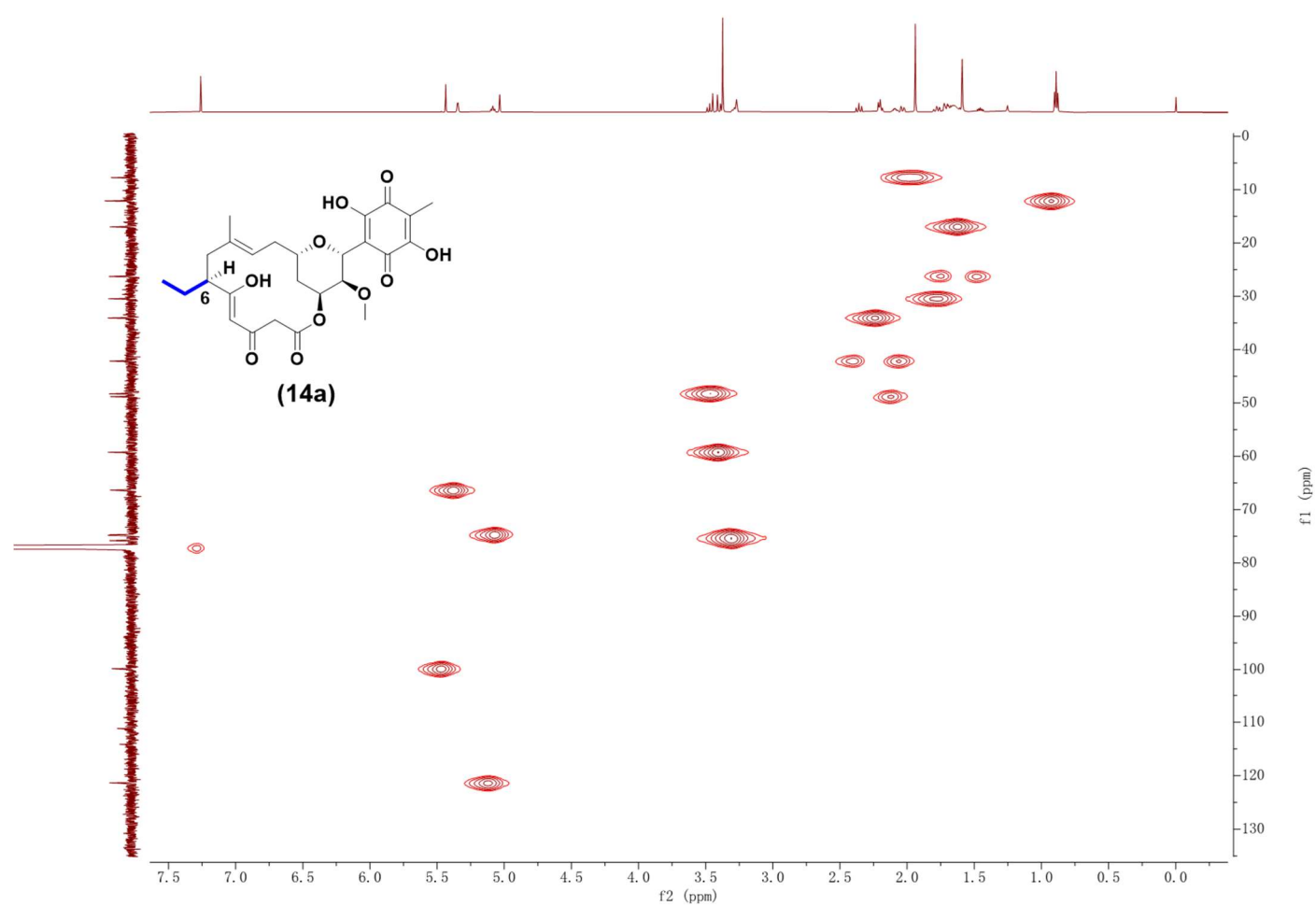


Fig. 63. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **14a**.

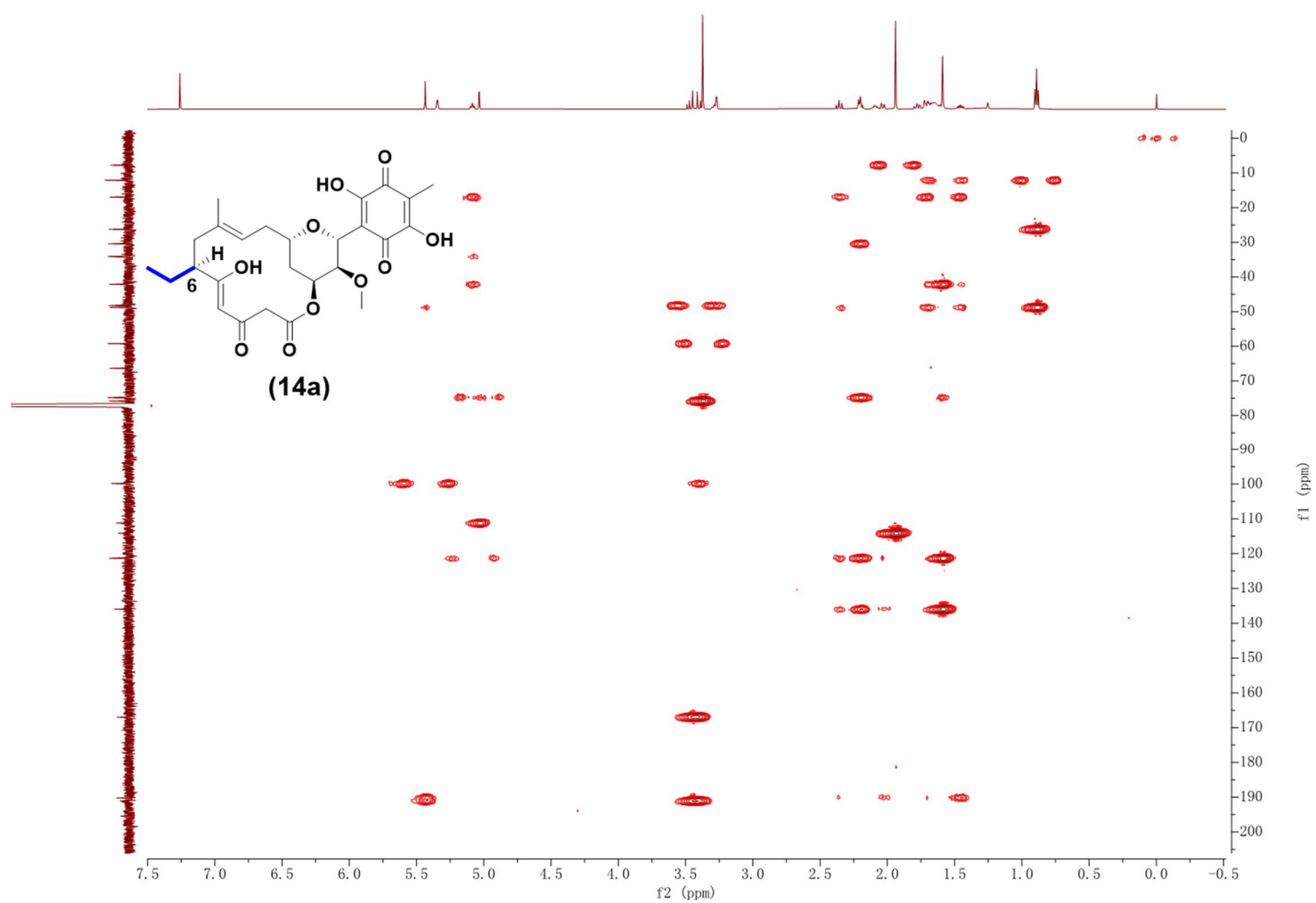


Fig. 64. ^1H HMBC NMR spectrum (600 MHz, CDCl_3) of compound **14a**.

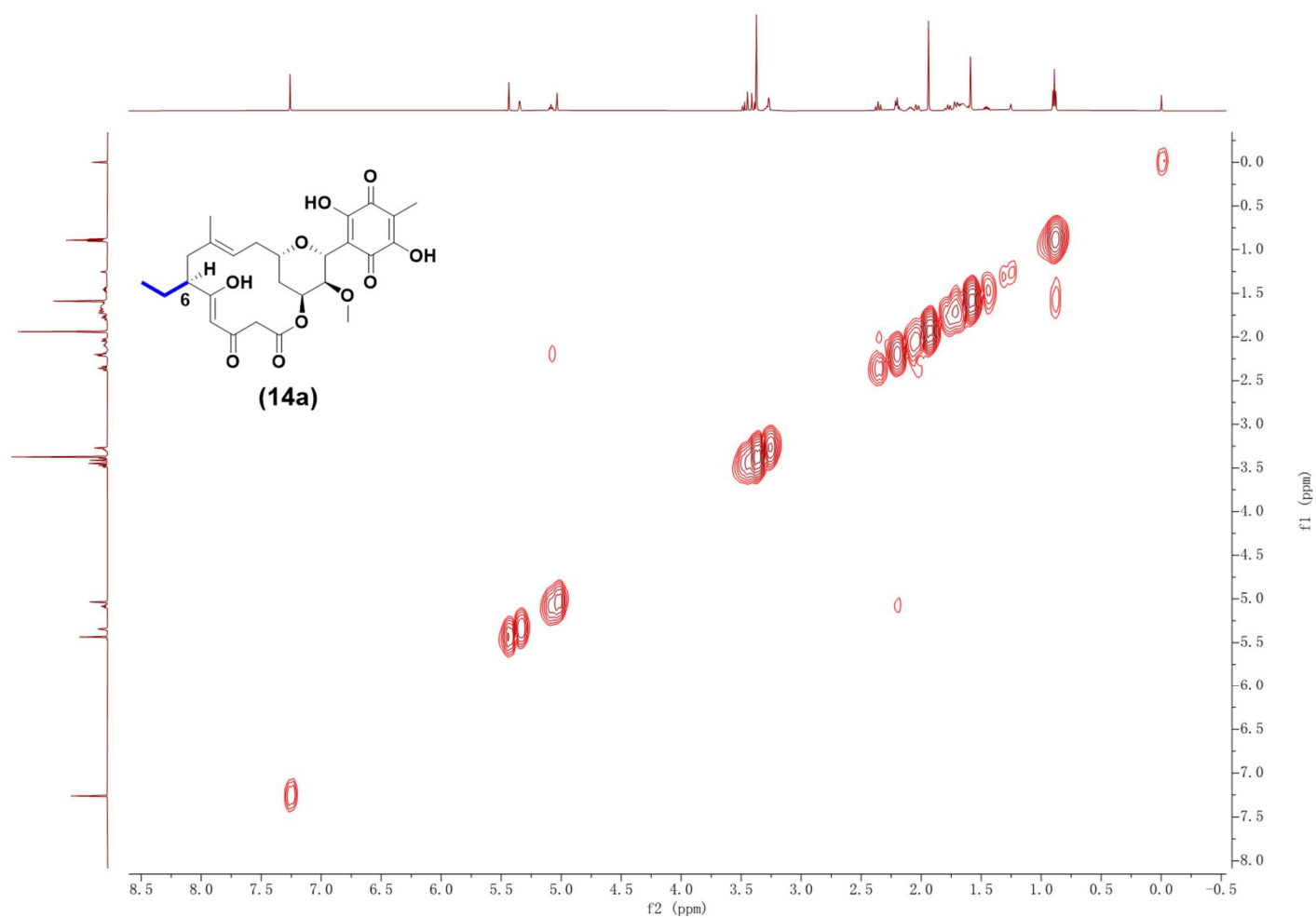


Fig. 65. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **14a**.

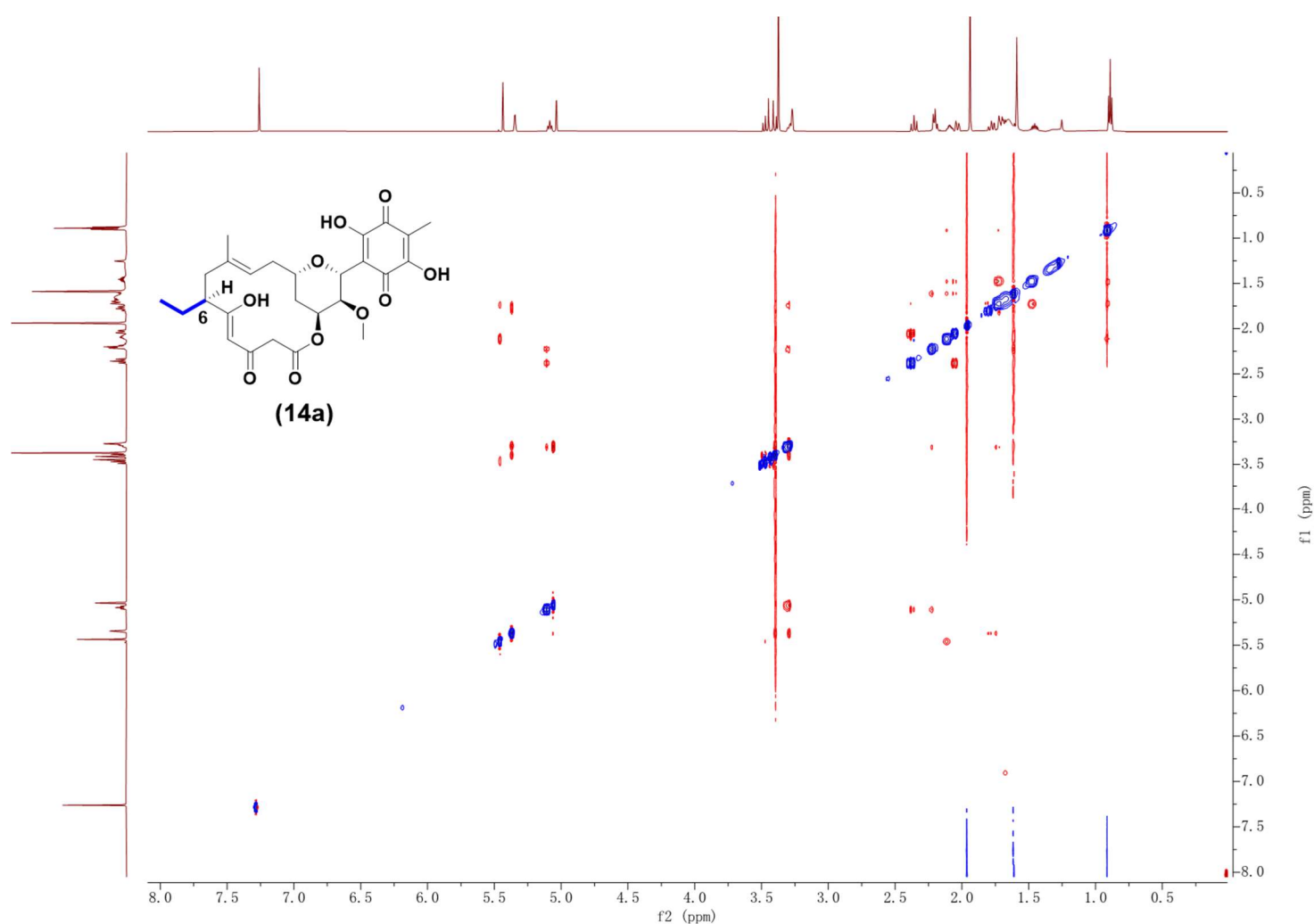


Fig. 66. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **14a**.

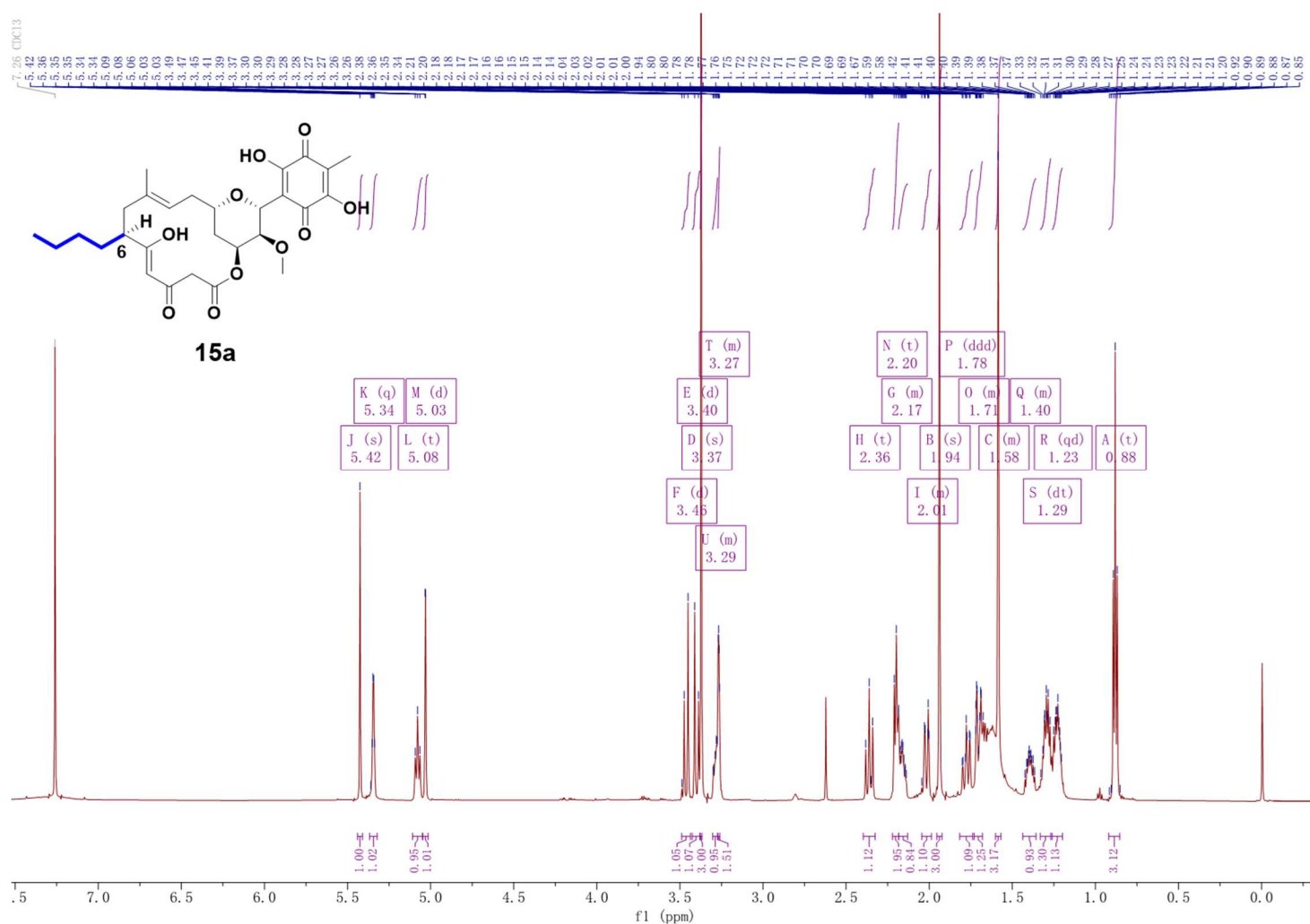


Fig. 67. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **15a**.

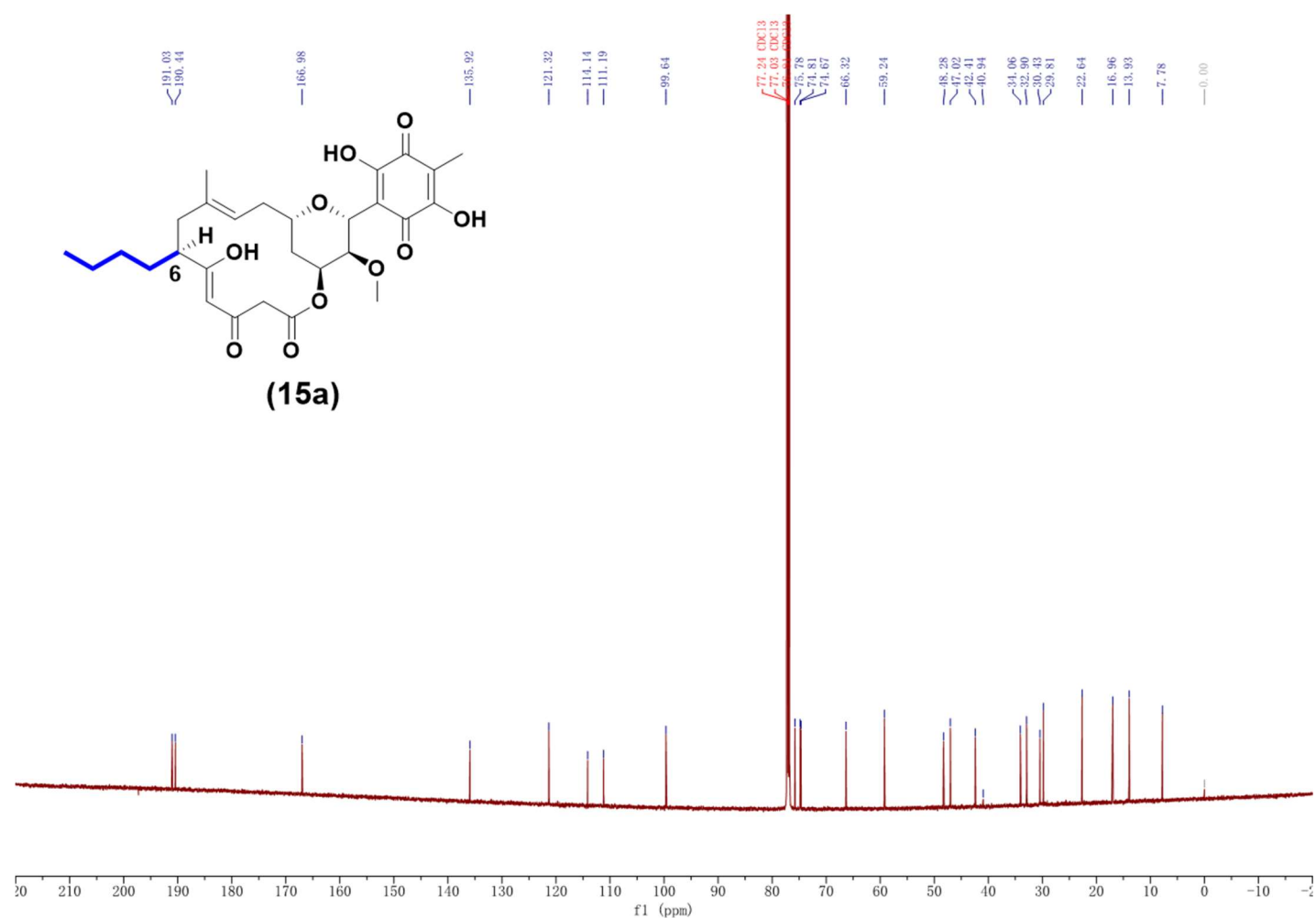


Fig. 68. ¹³C NMR spectrum (150 MHz, CDCl₃) of compound **15a**.

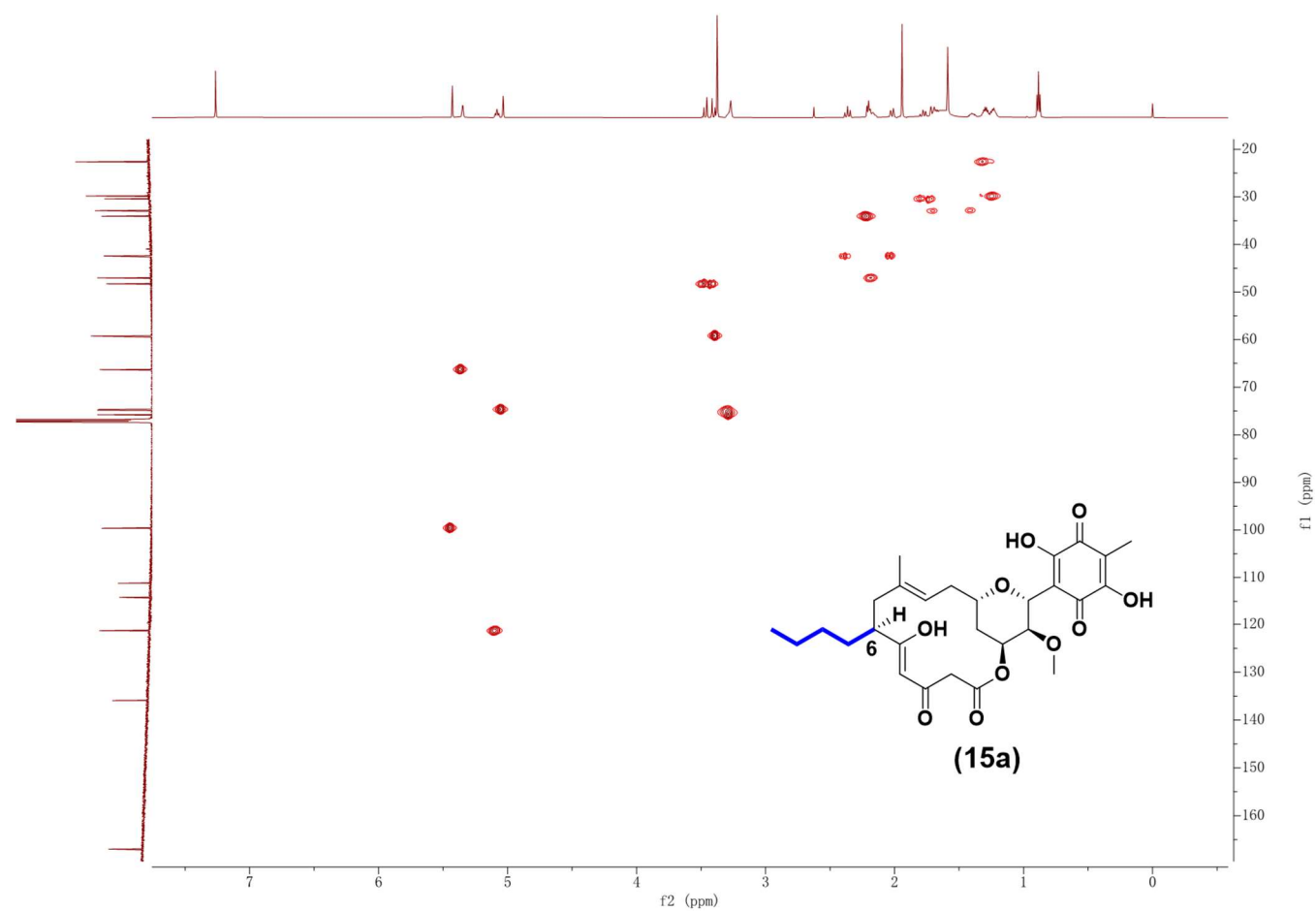


Fig. 69. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **15a**.

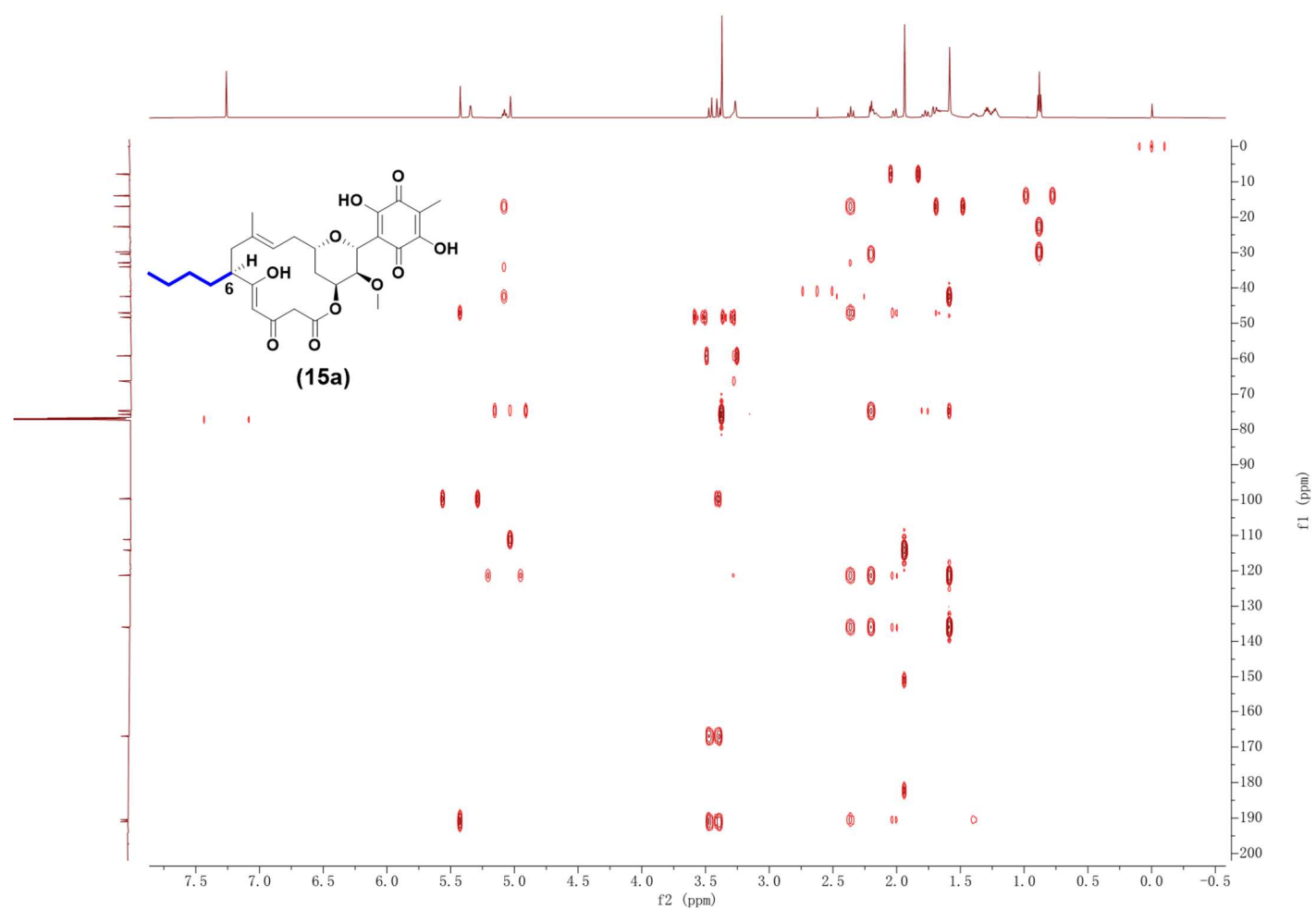


Fig. 70. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **15a**.

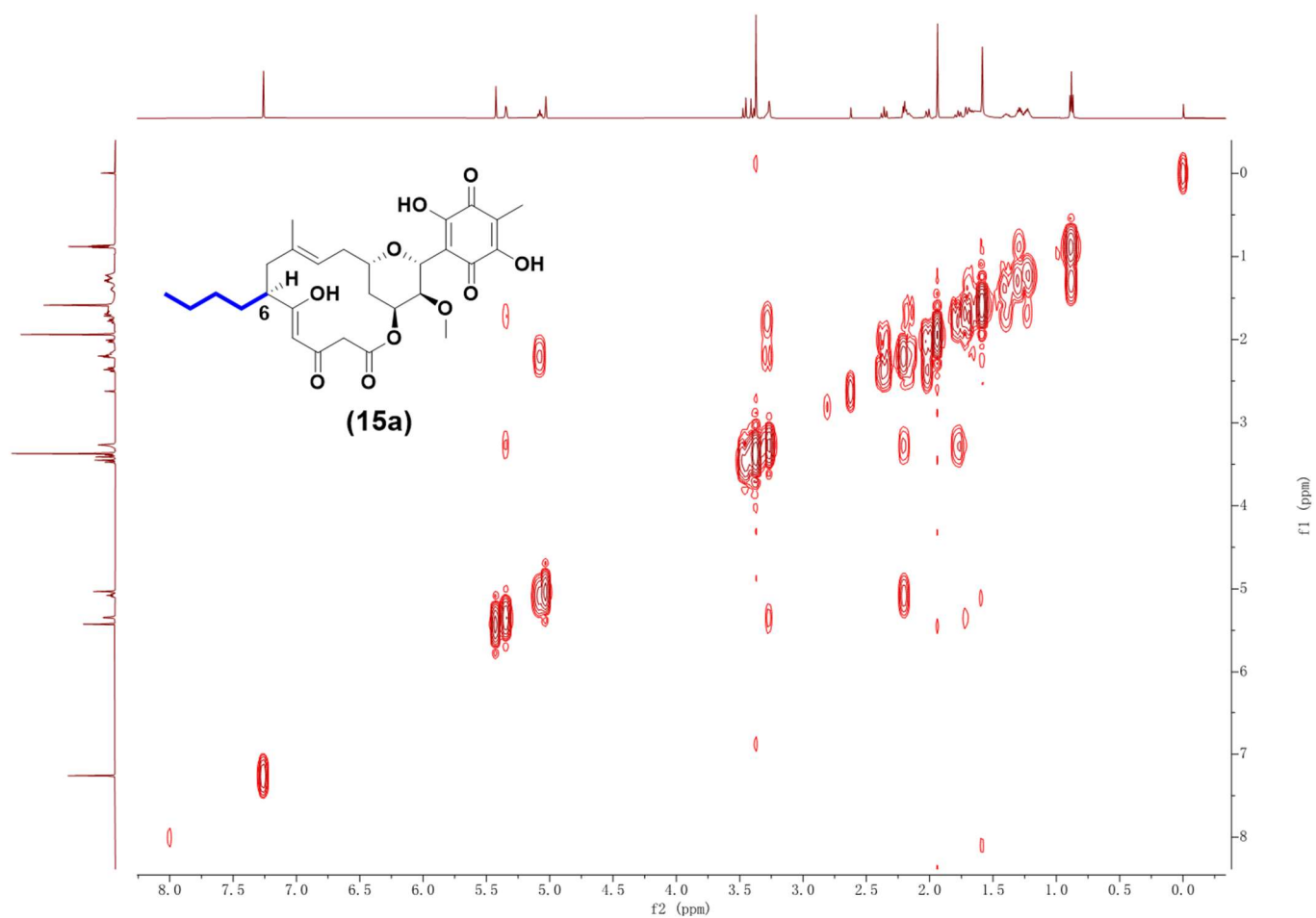


Fig. 71. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **15a**.

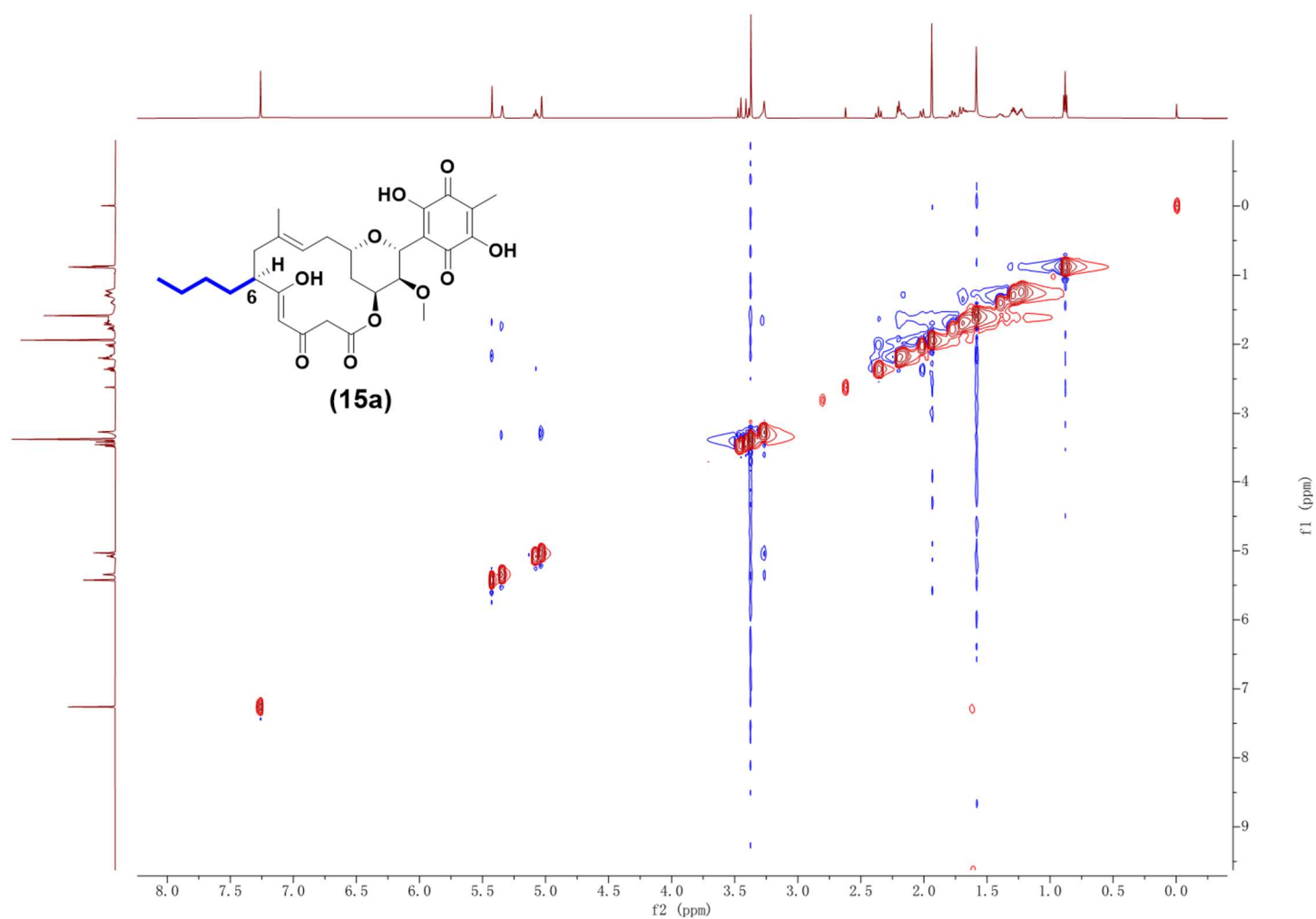


Fig. 72. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **15a**.

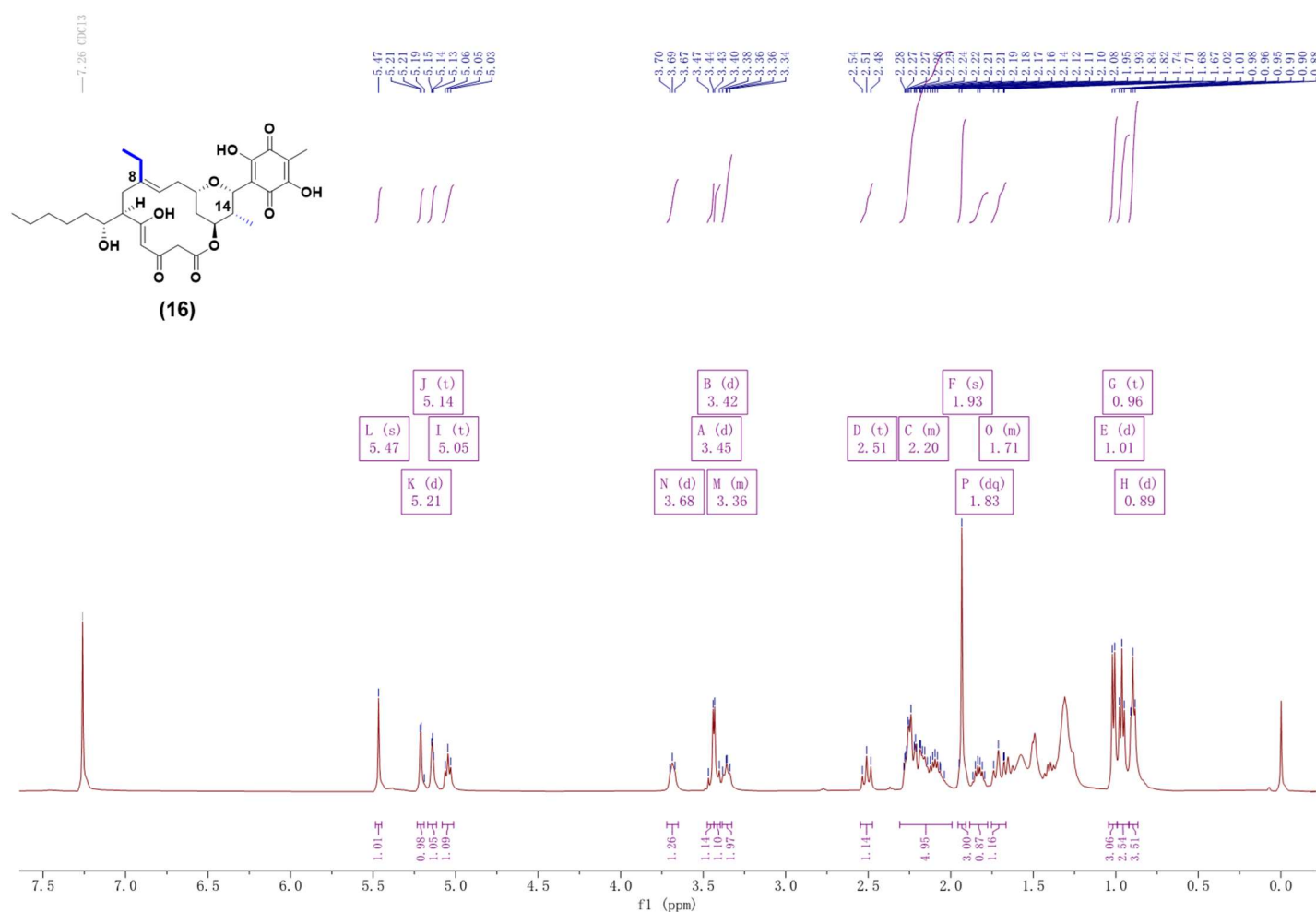


Fig. 73. ^1H NMR spectrum (500 MHz, CDCl_3) of compound **16**.

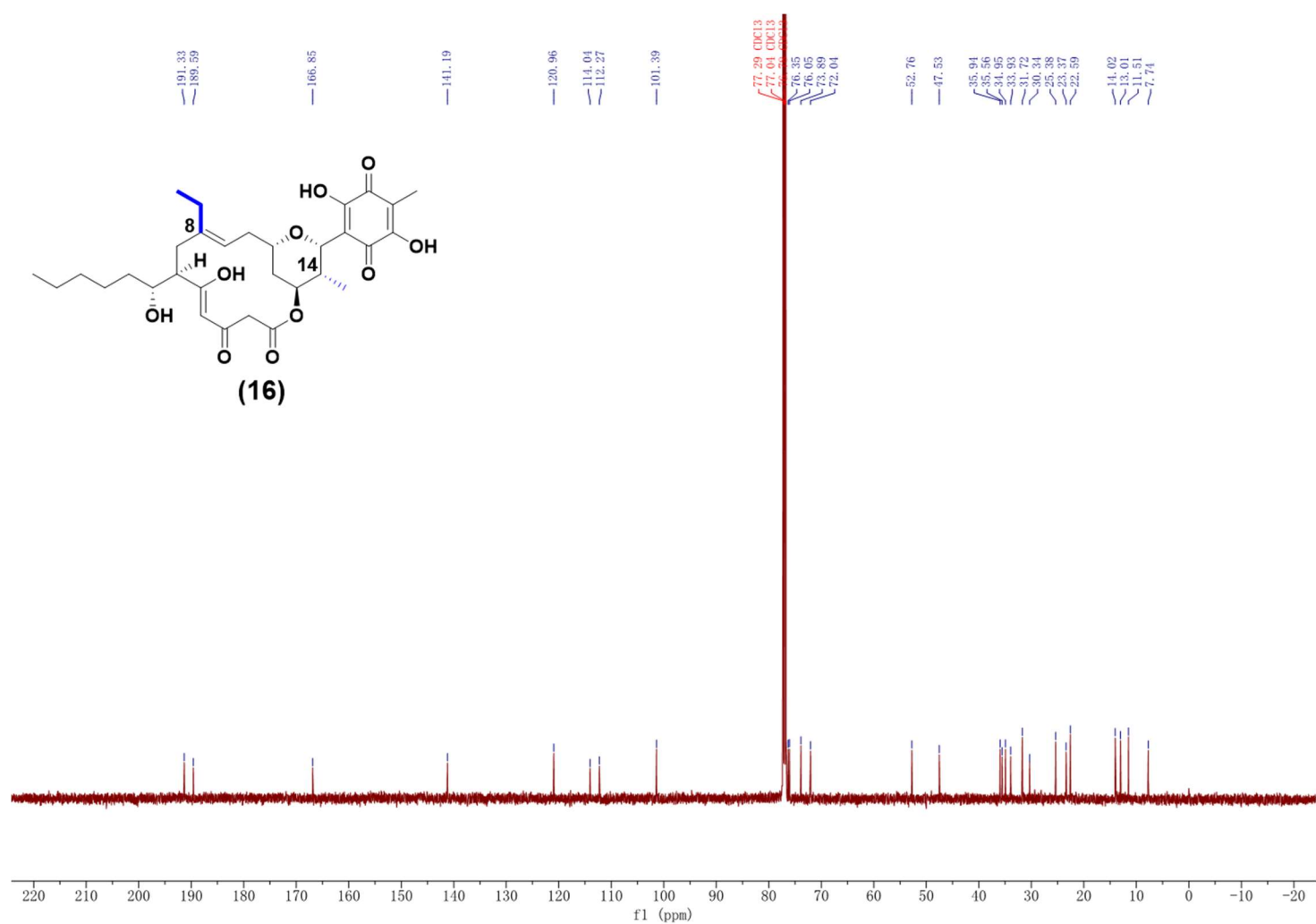


Fig. 74. ^{13}C NMR spectrum (125 MHz, CDCl_3) of compound **16**.

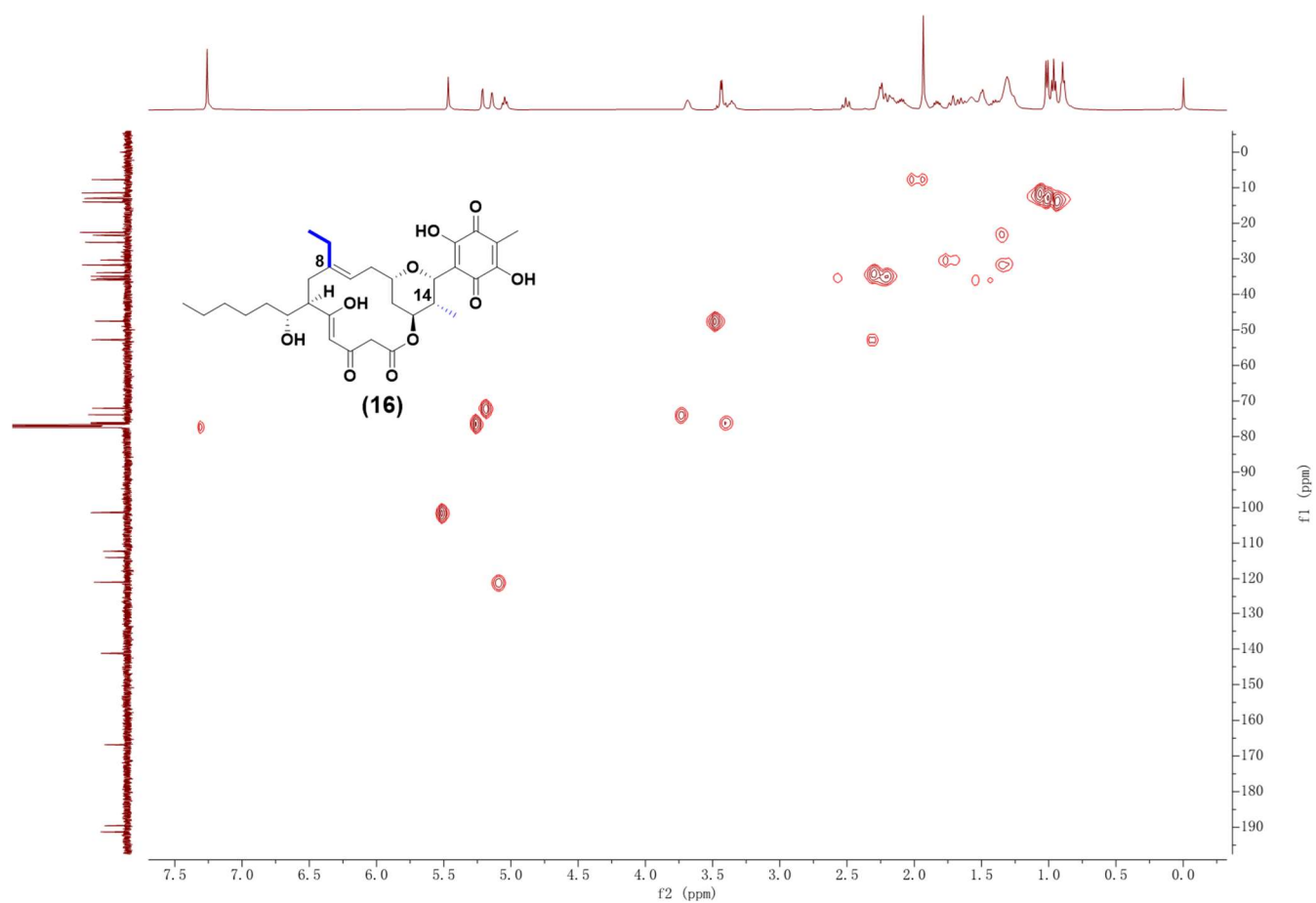


Fig. 75. HSQC NMR spectrum (500 MHz, CDCl_3) of compound **16**.

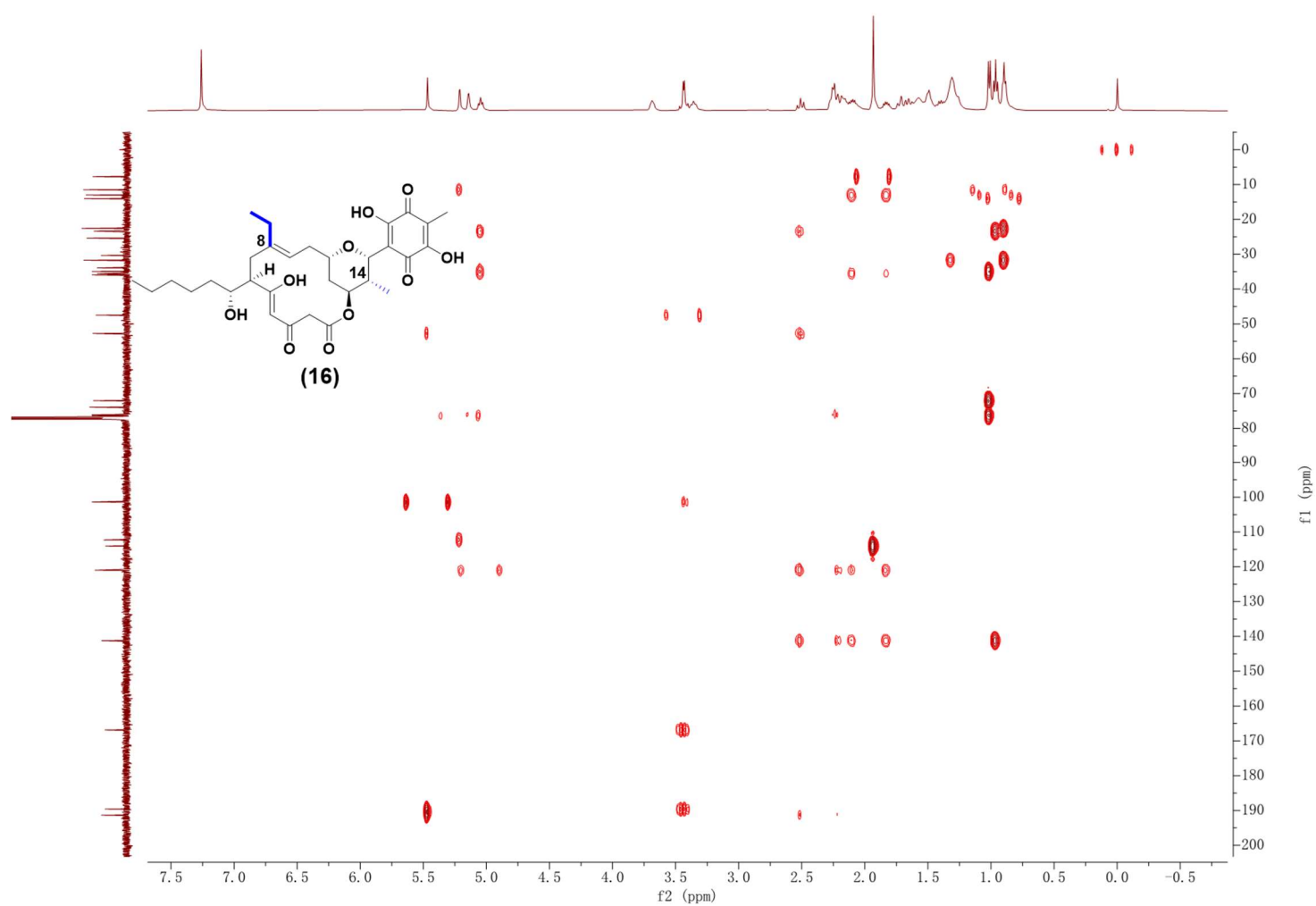


Fig. 76. HMBC NMR spectrum (500 MHz, CDCl_3) of compound **16**.

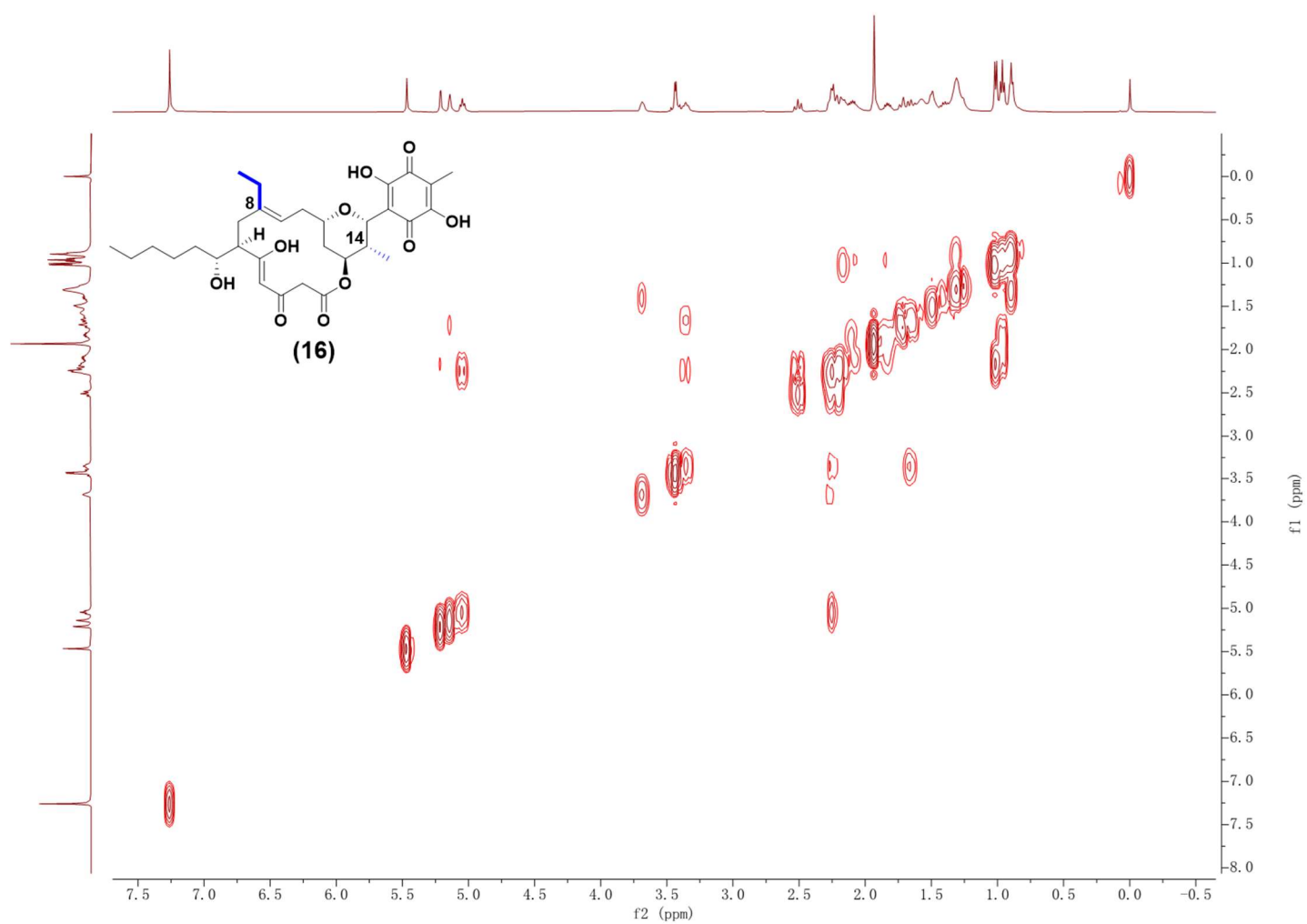


Fig. 77. ^1H - ^1H COSY NMR spectrum (500 MHz, CDCl_3) of compound **16**.

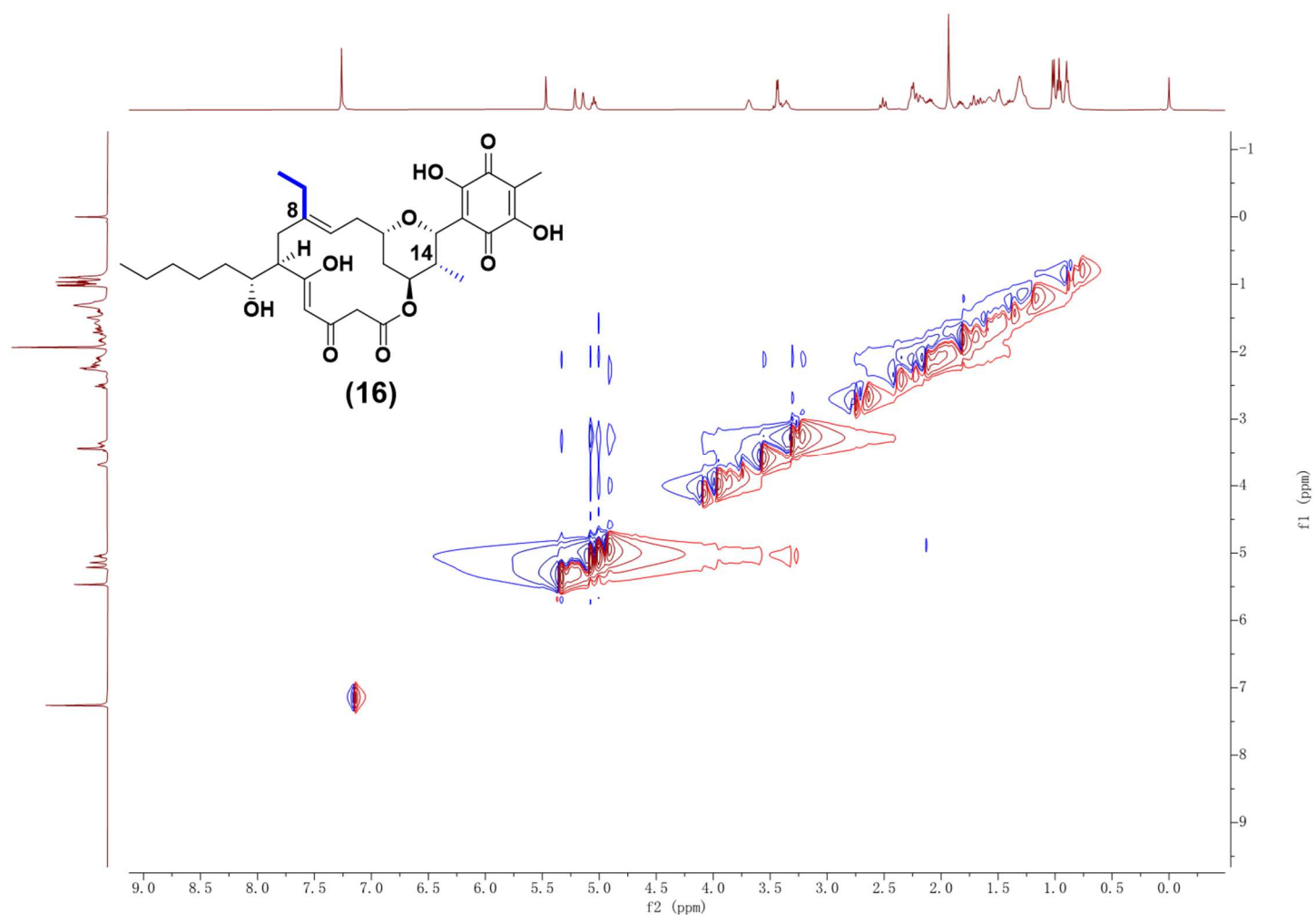


Fig. 78. NOESY NMR spectrum (500 MHz, CDCl_3) of compound **16**.

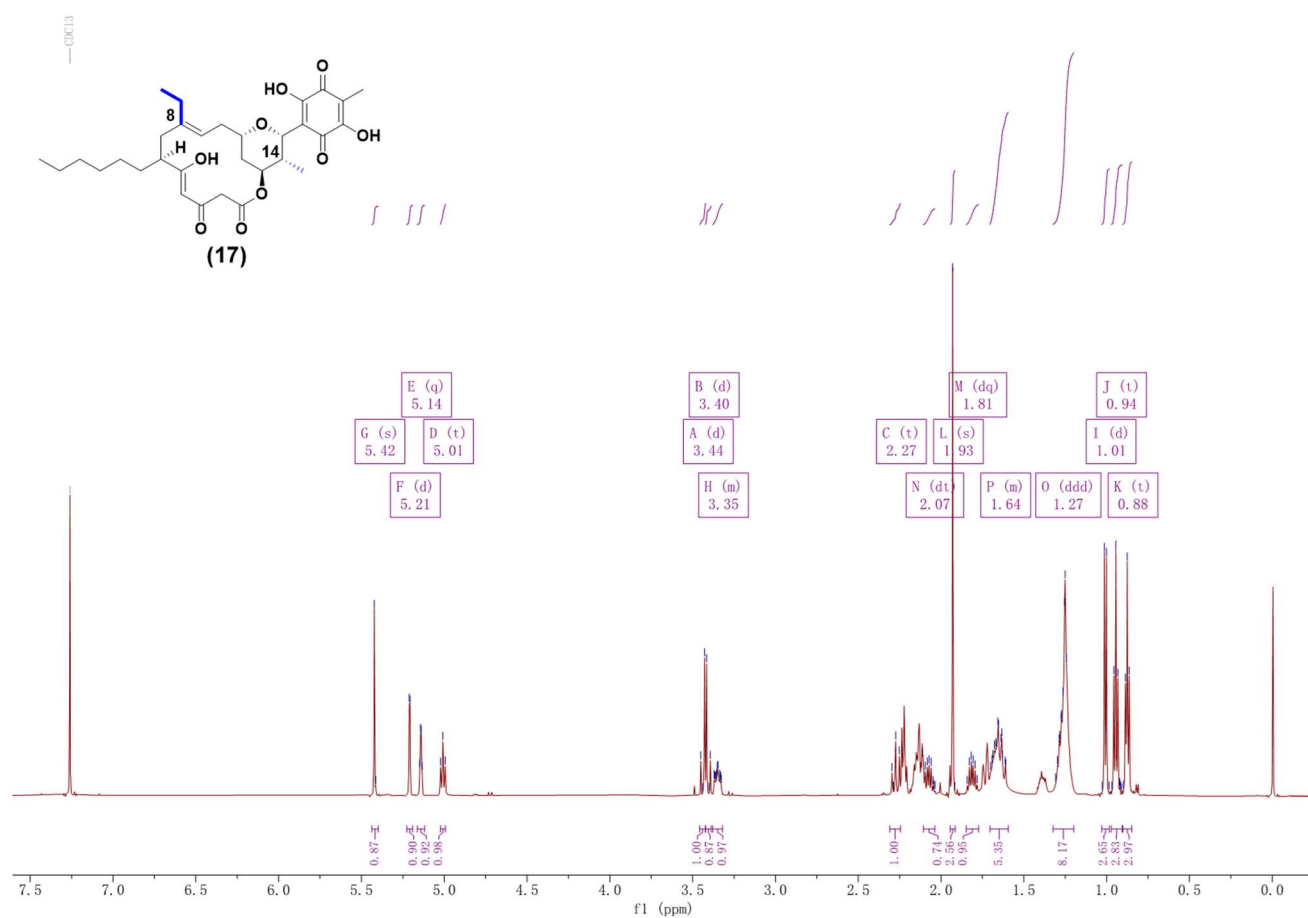


Fig. 79. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **17**.

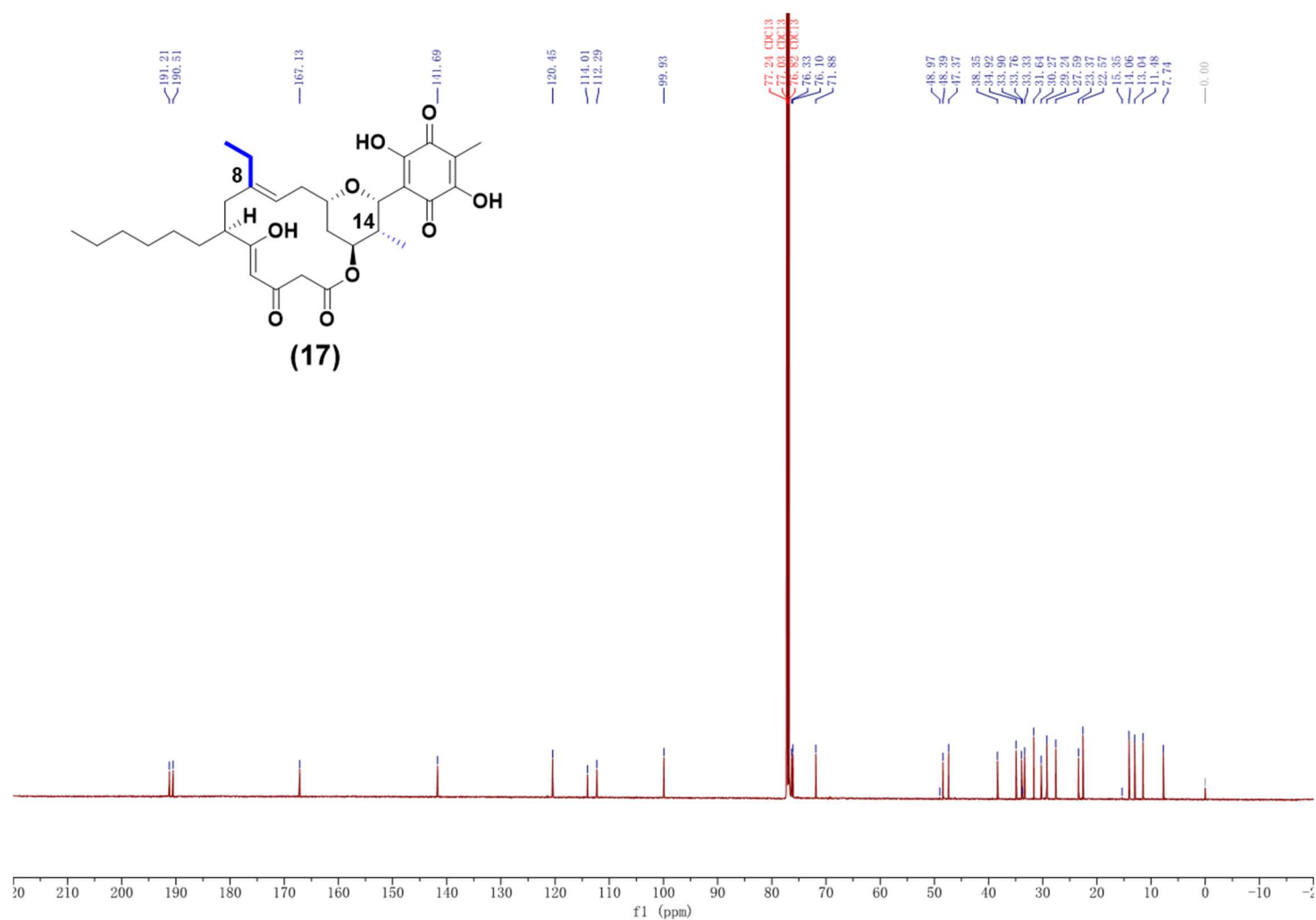


Fig. 80. ¹³C NMR spectrum (600 MHz, CDCl₃) of compound **17**.

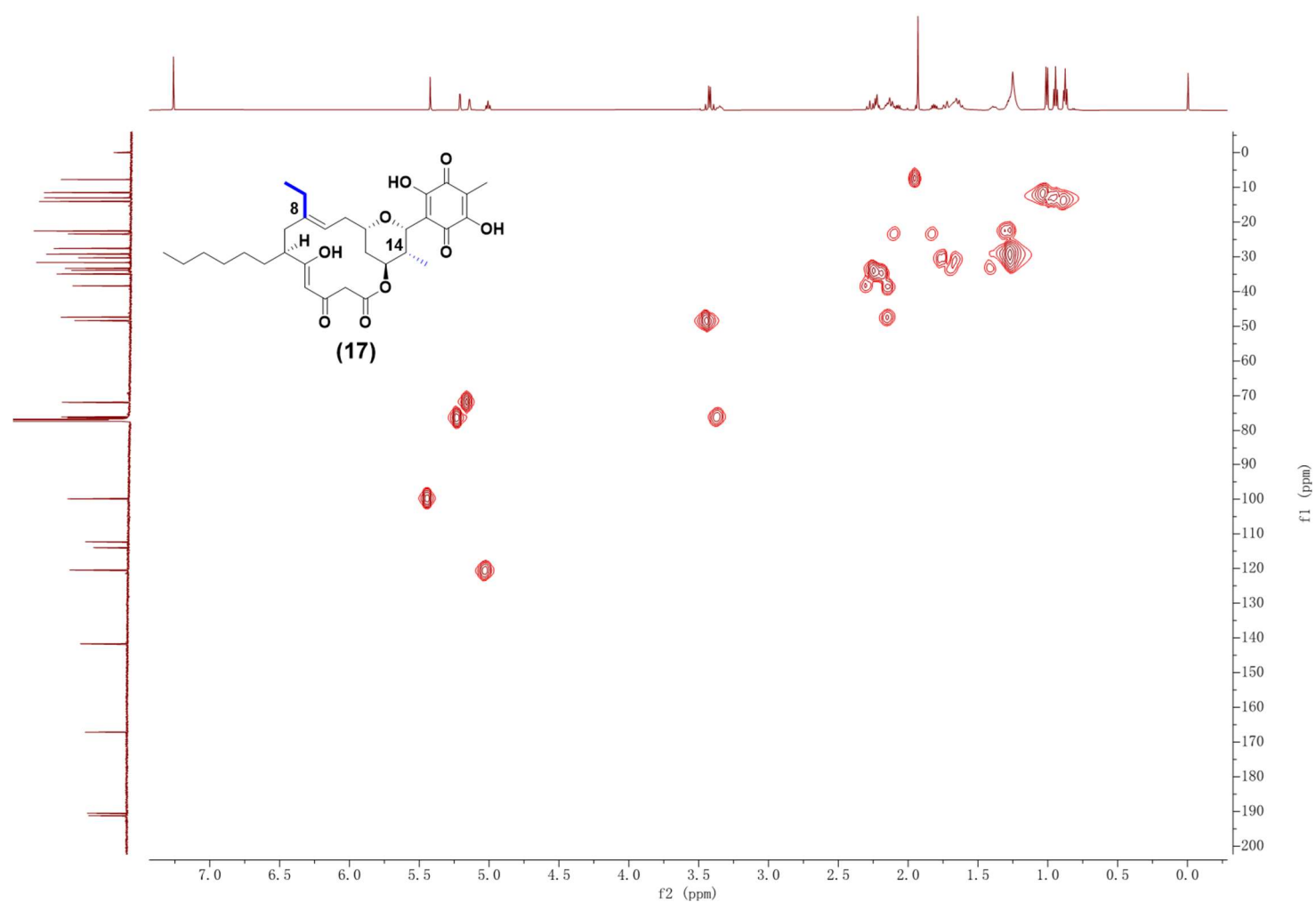


Fig. 81. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **17**.

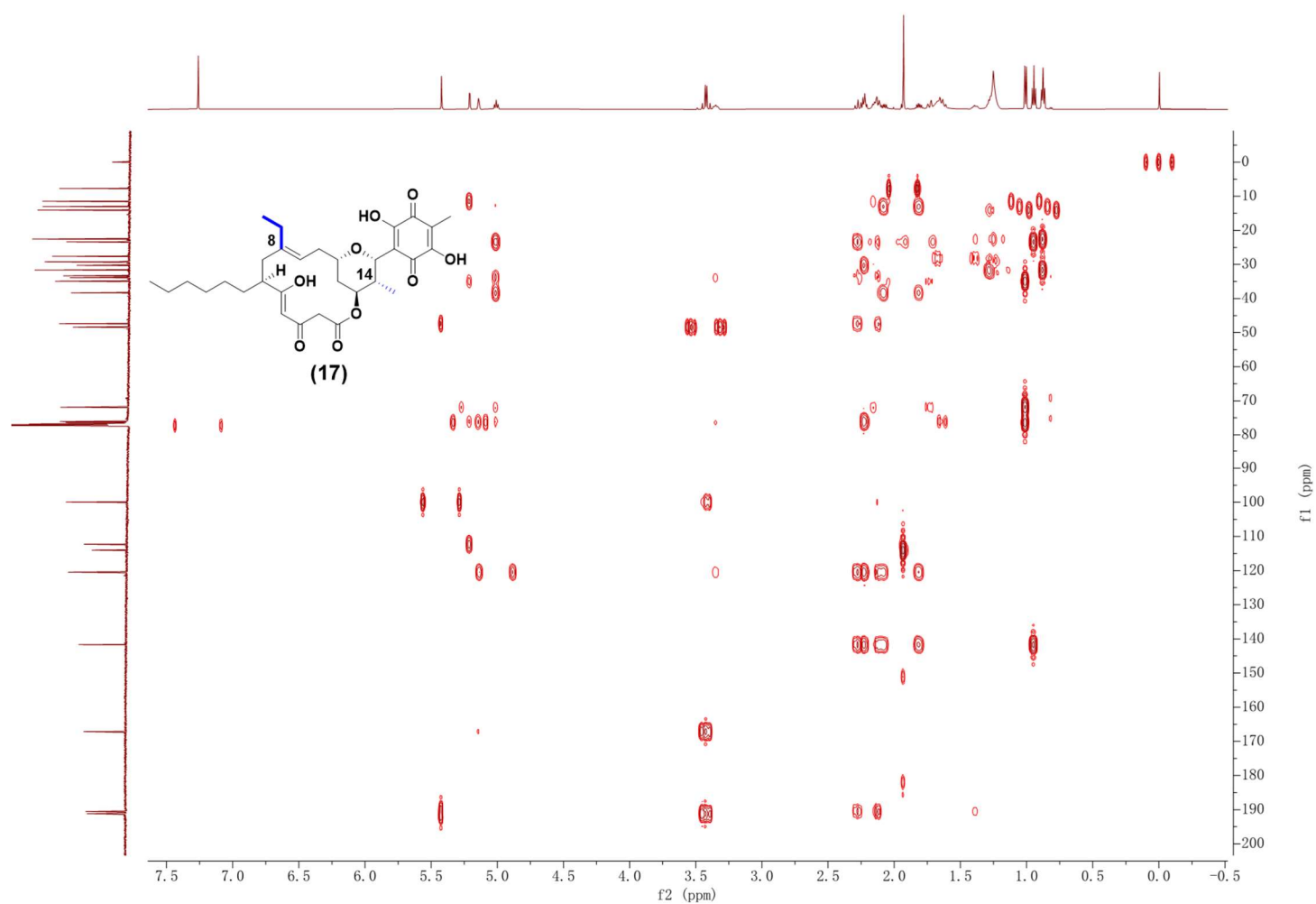


Fig. 82. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **17**.

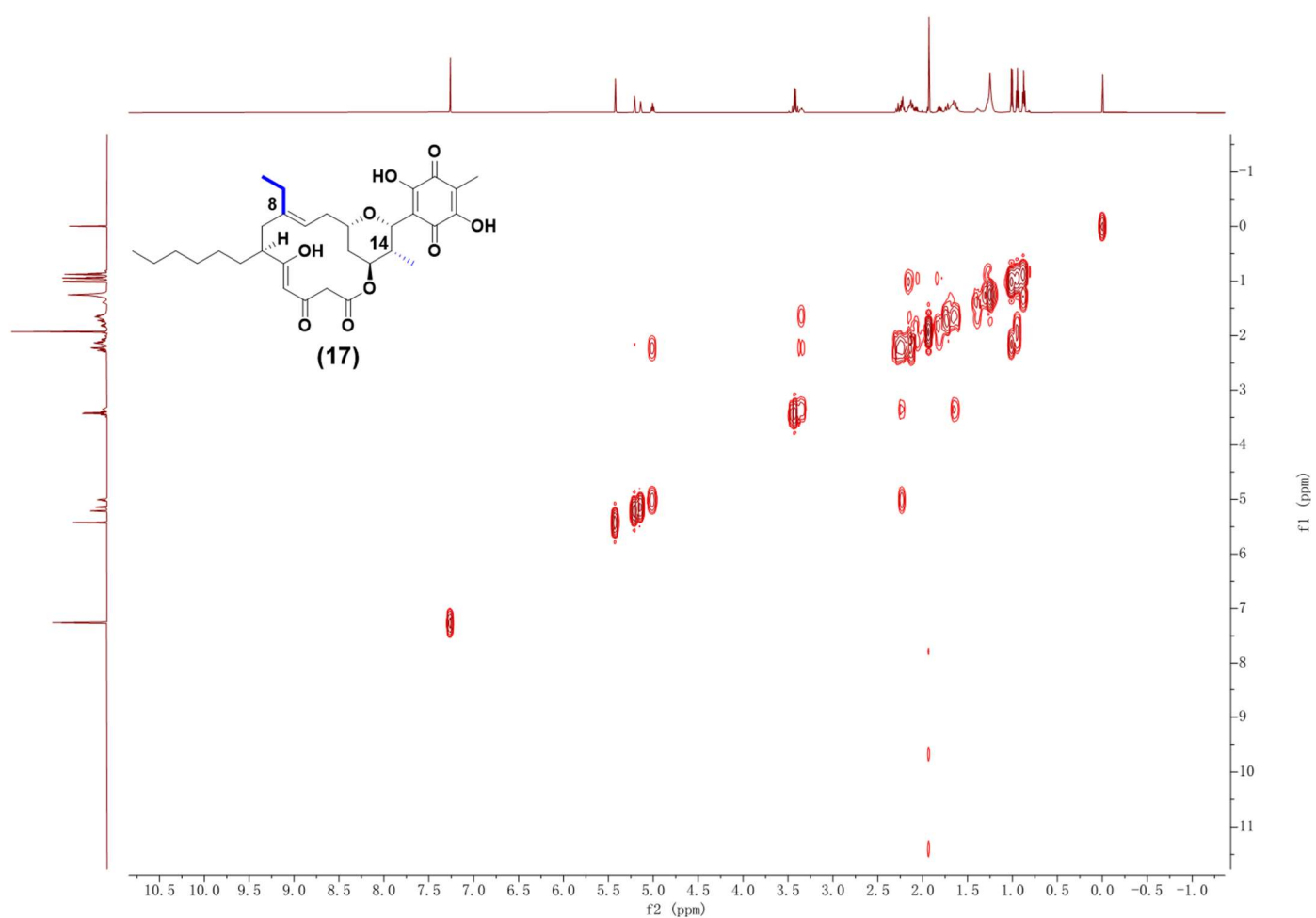


Fig. 83. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **17**.

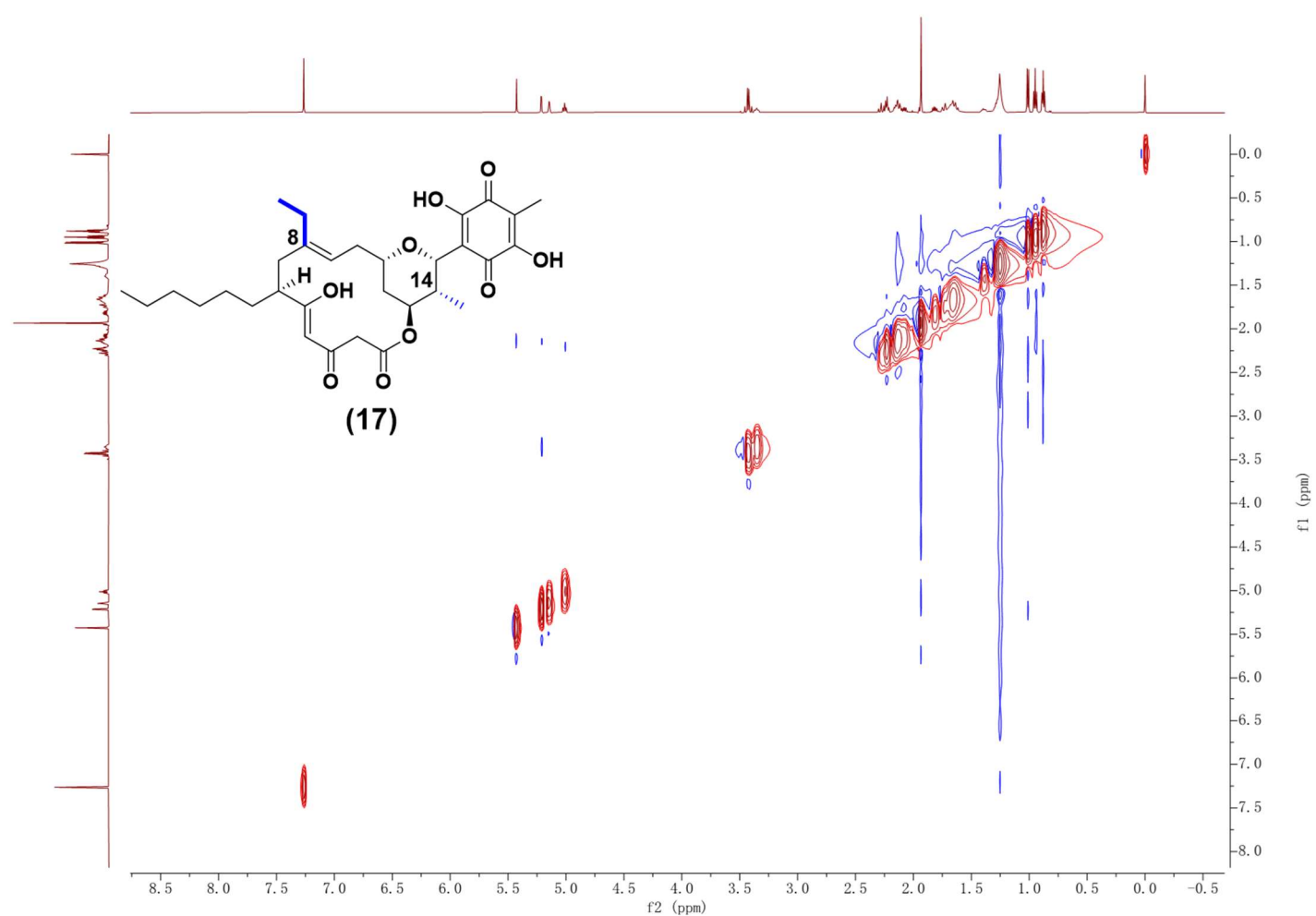


Fig. 84. NOESY NMR spectrum (600 MHz, CDCl₃) of compound **17**.

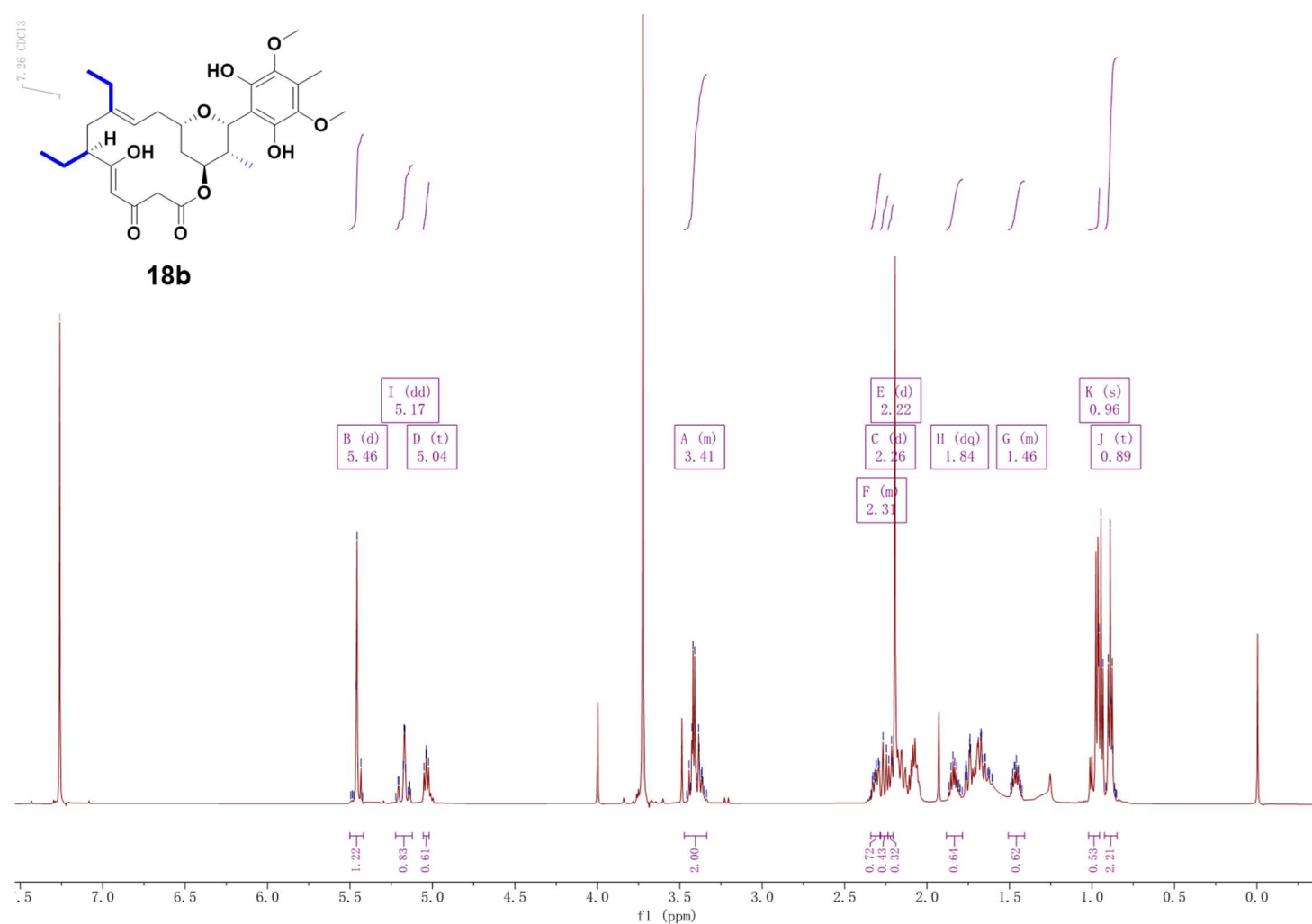


Fig. 85. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **18b**.

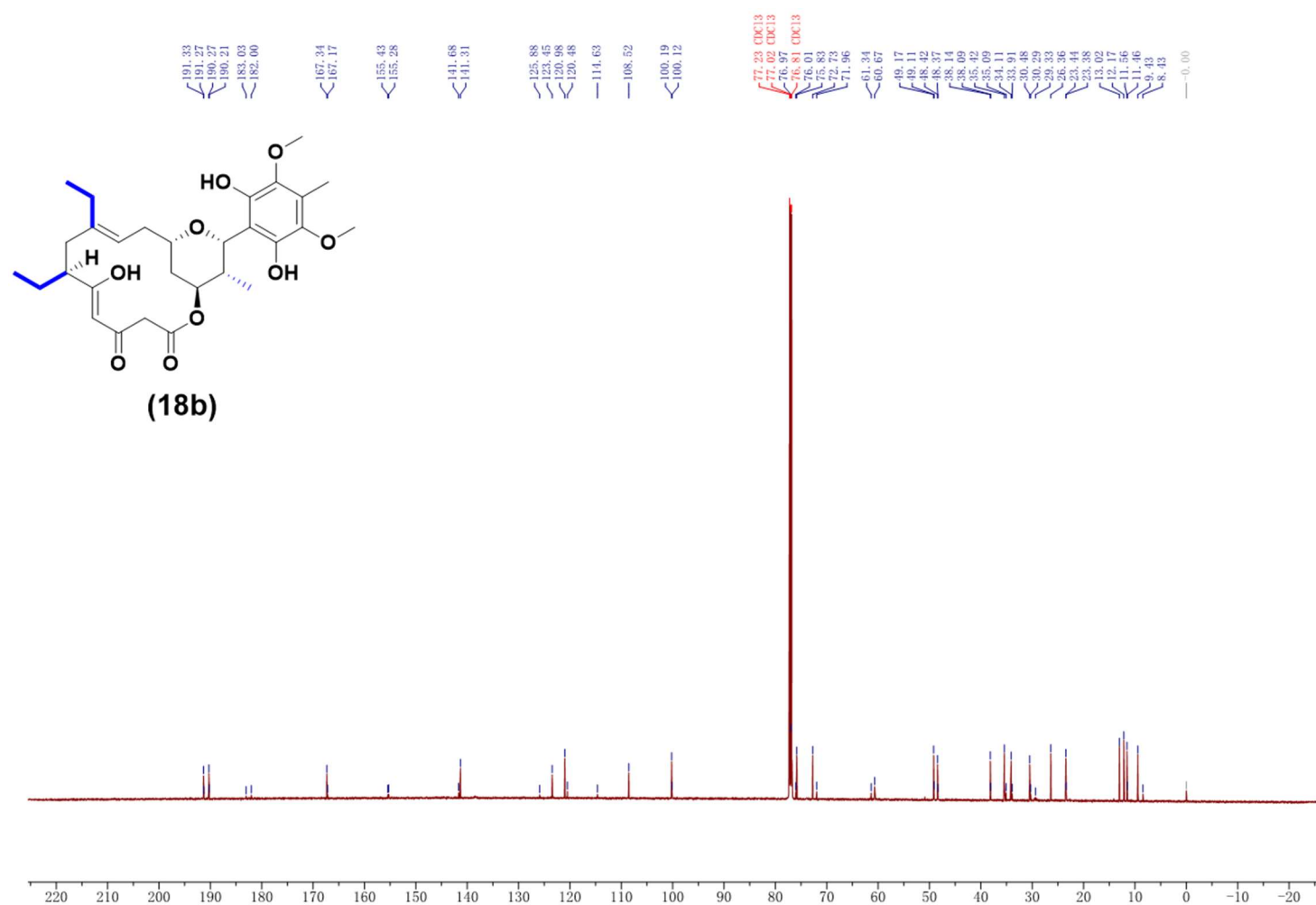


Fig. 86. ¹³C NMR spectrum (150 MHz, CDCl₃) of compound **18b**.

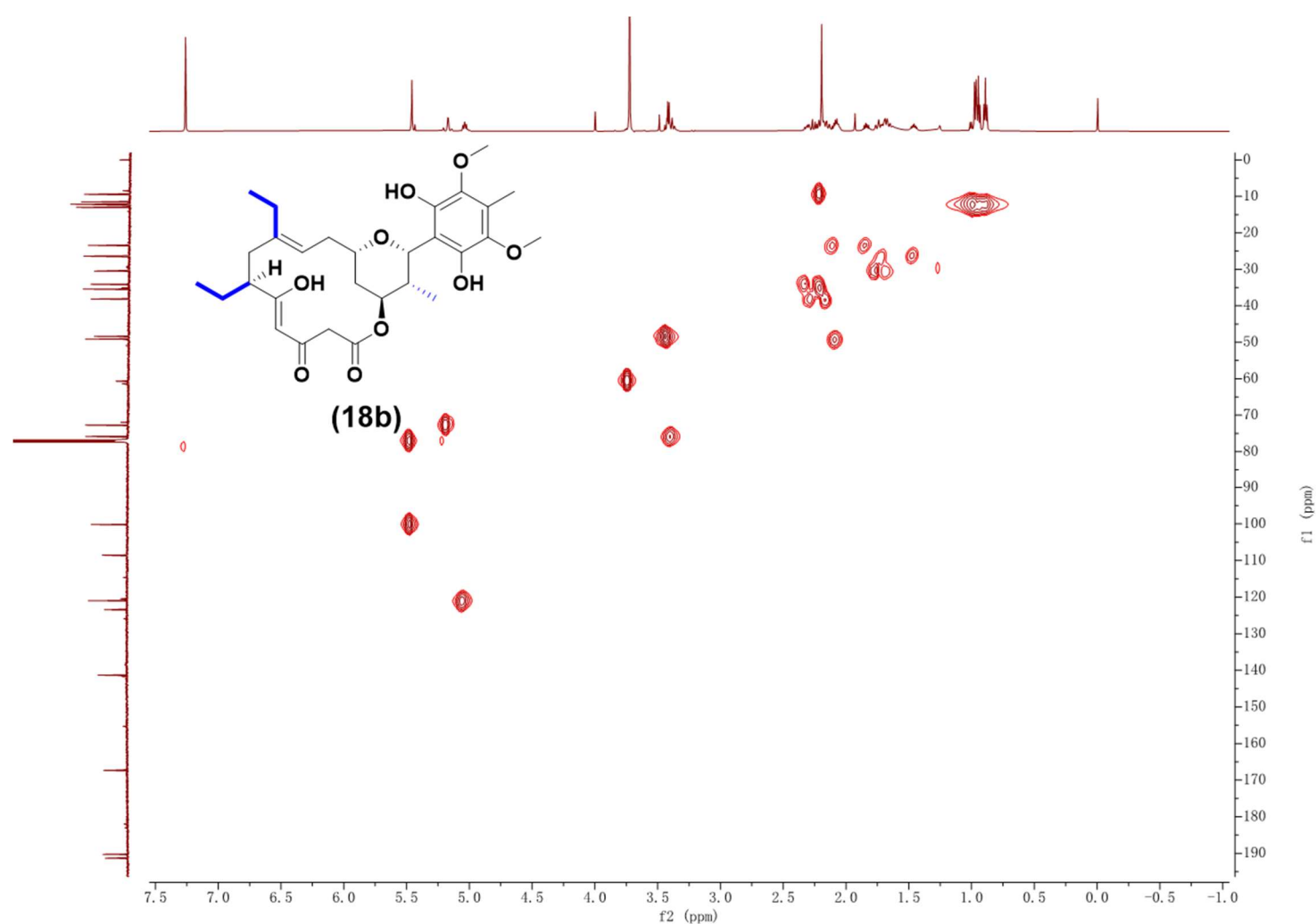


Fig. 87. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **18b**.

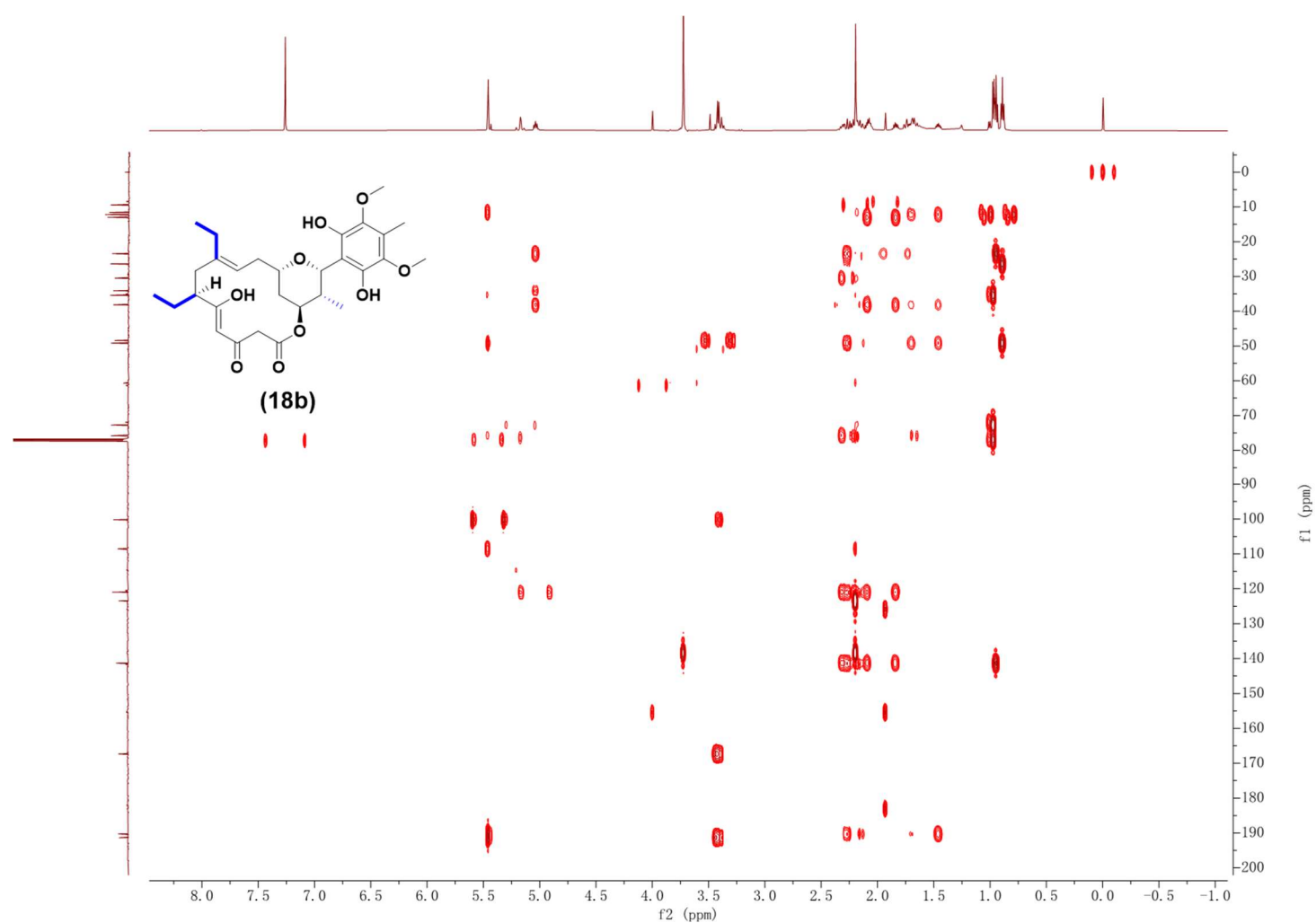


Fig. 88. HMBC NMR spectrum (600 MHz, CDCl₃) of compound **18b**.

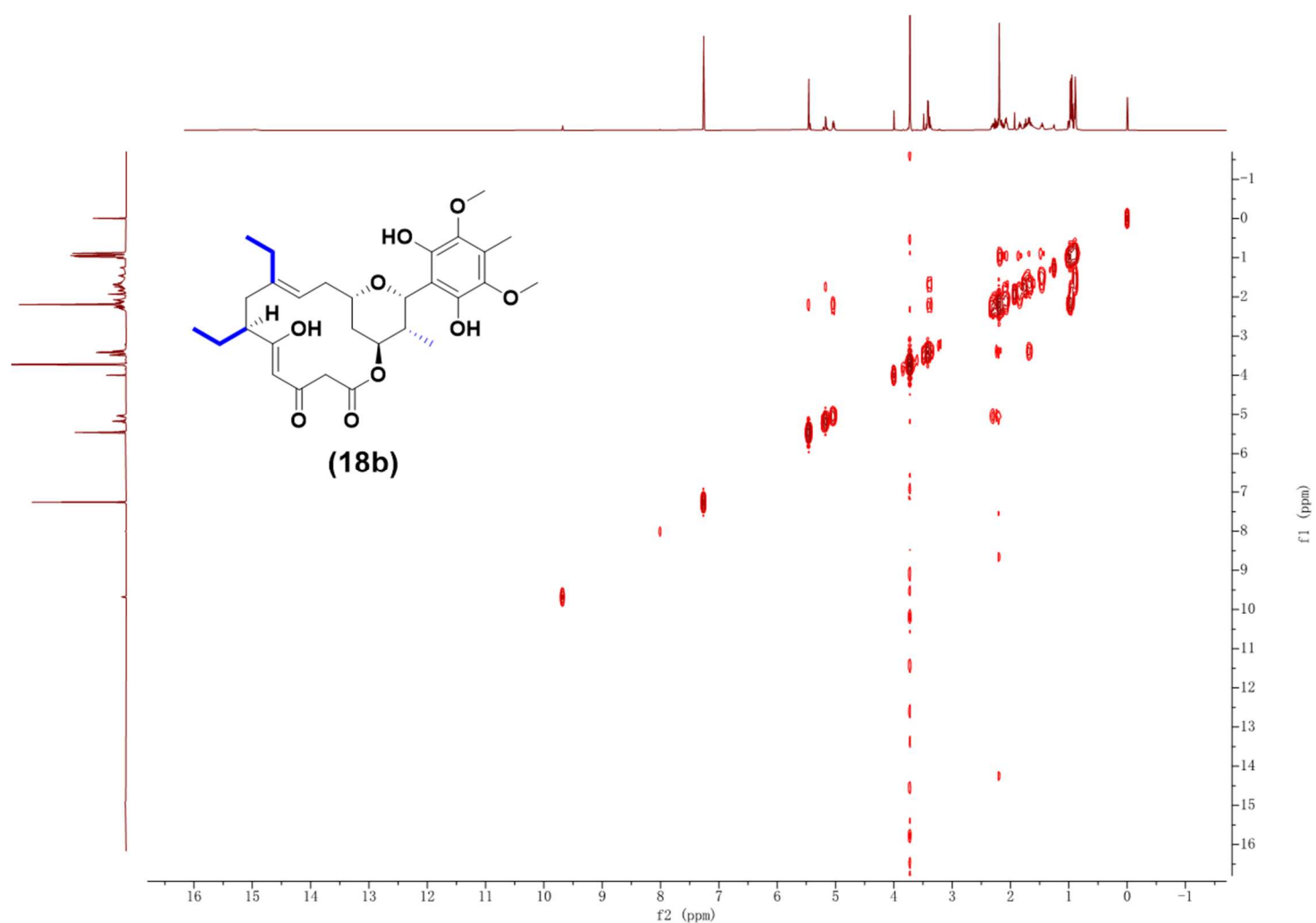


Fig. 89. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **18b**.

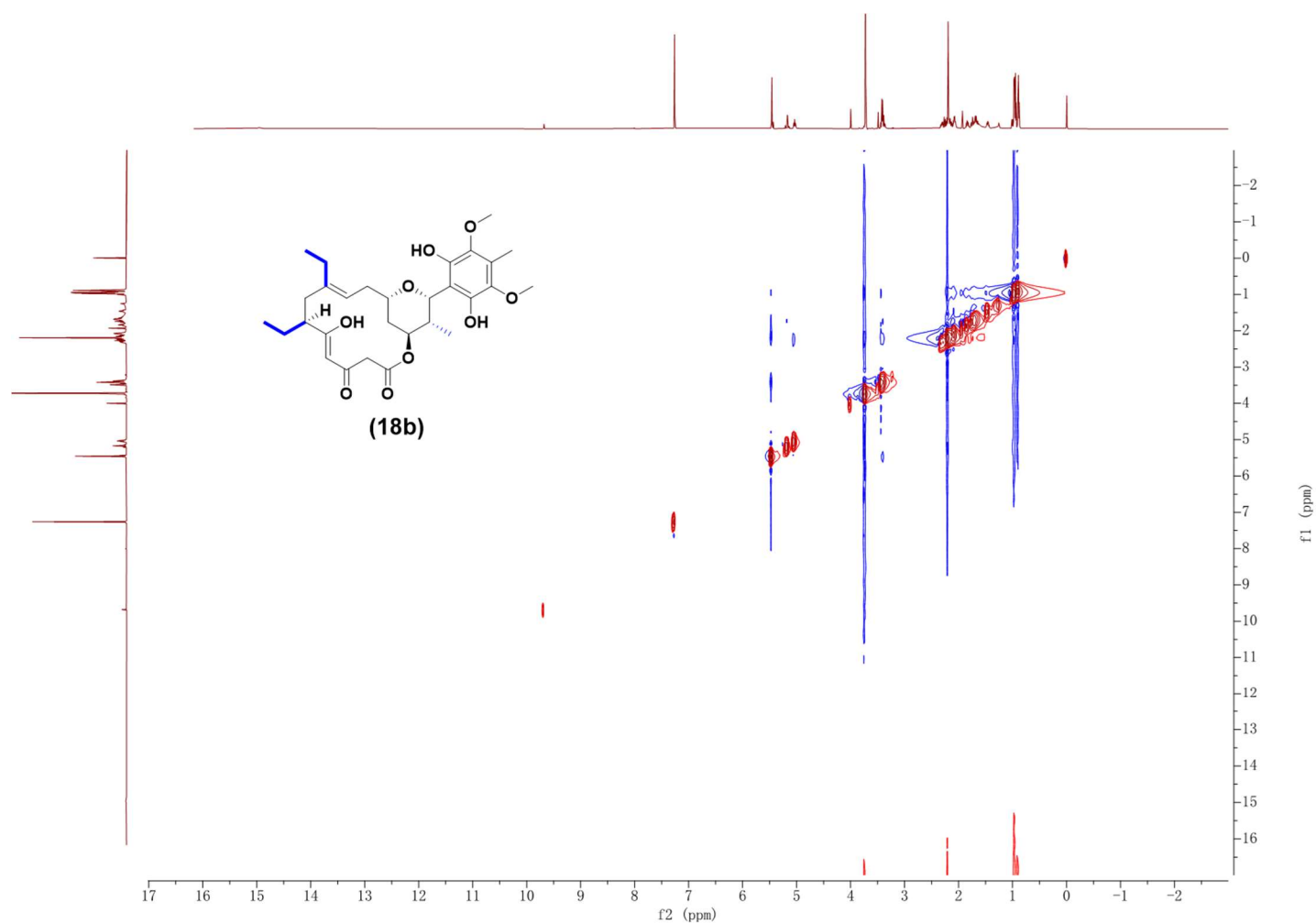


Fig. 90. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **18b**.

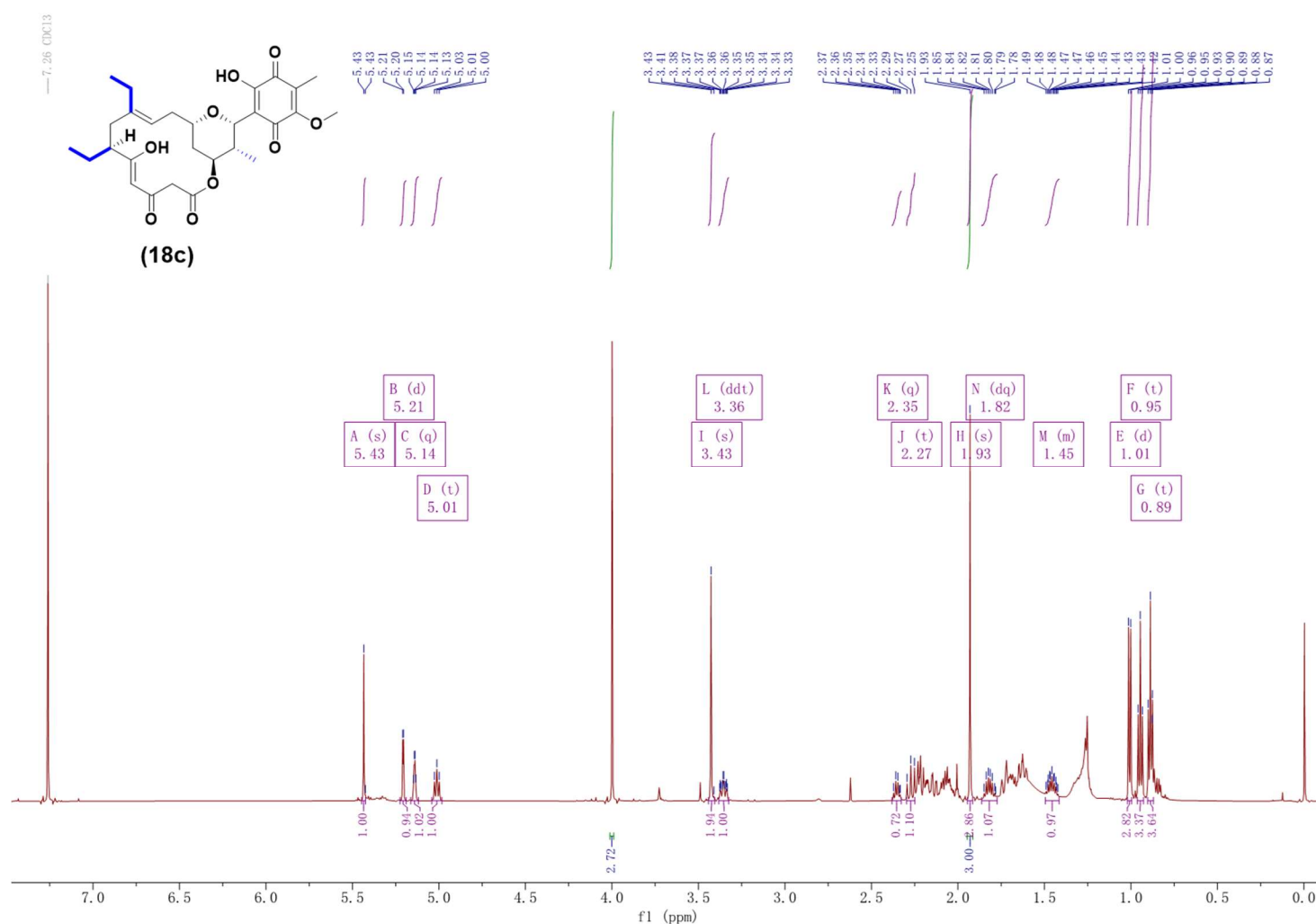


Fig. 91. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **18c**.

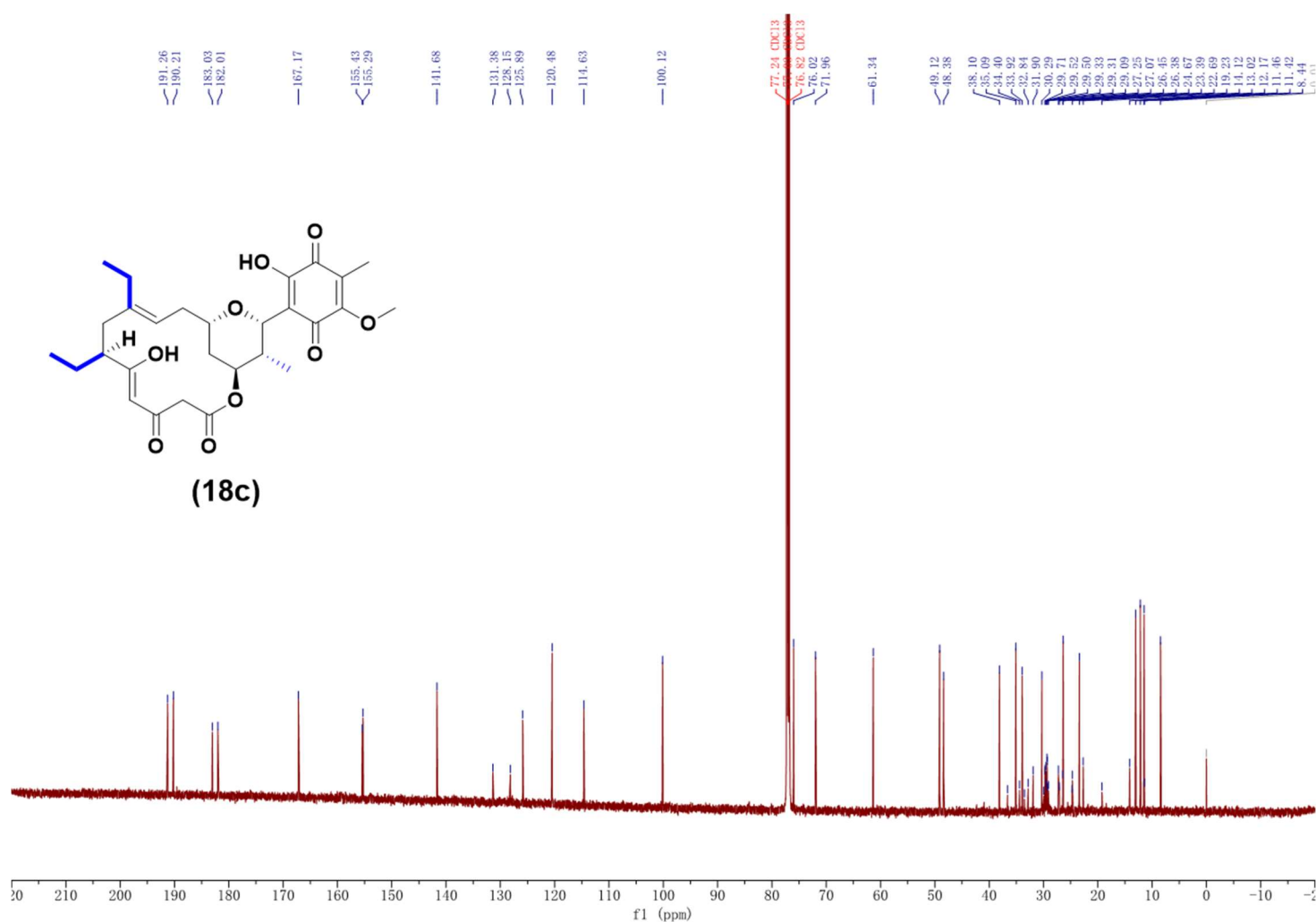


Fig. 92. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **18c**.

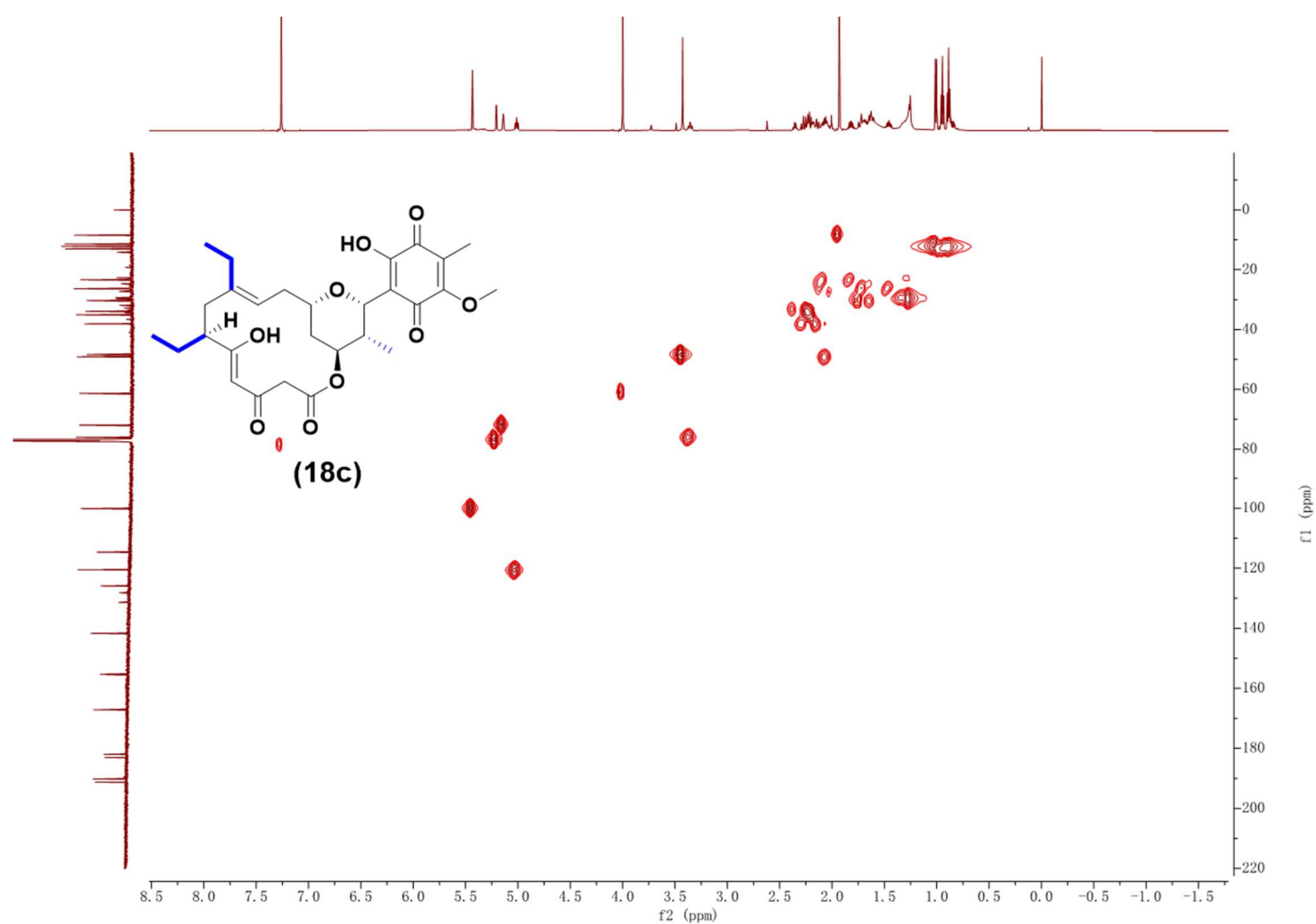


Fig. 93. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **18c**.

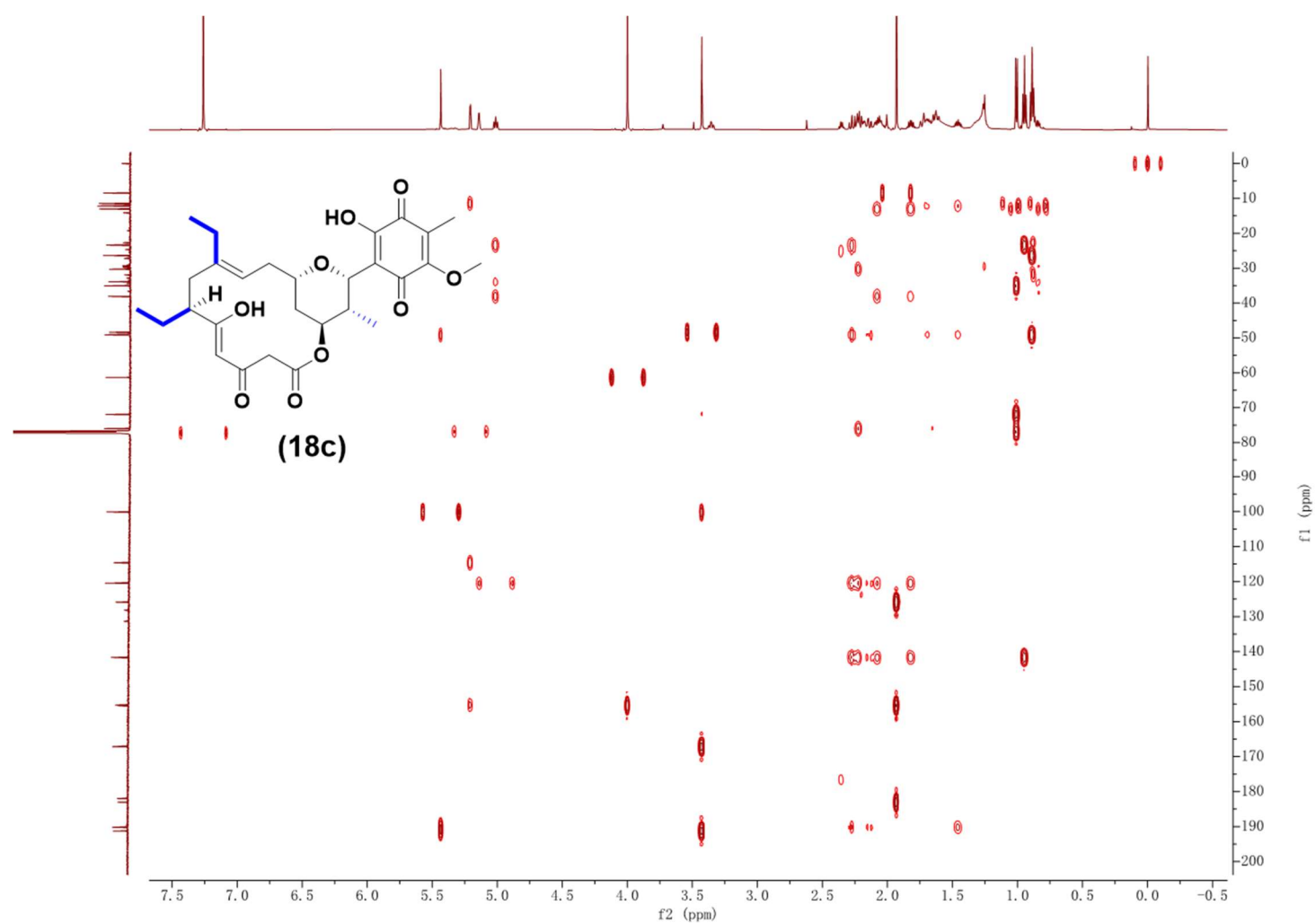


Fig. 94. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **18c**.

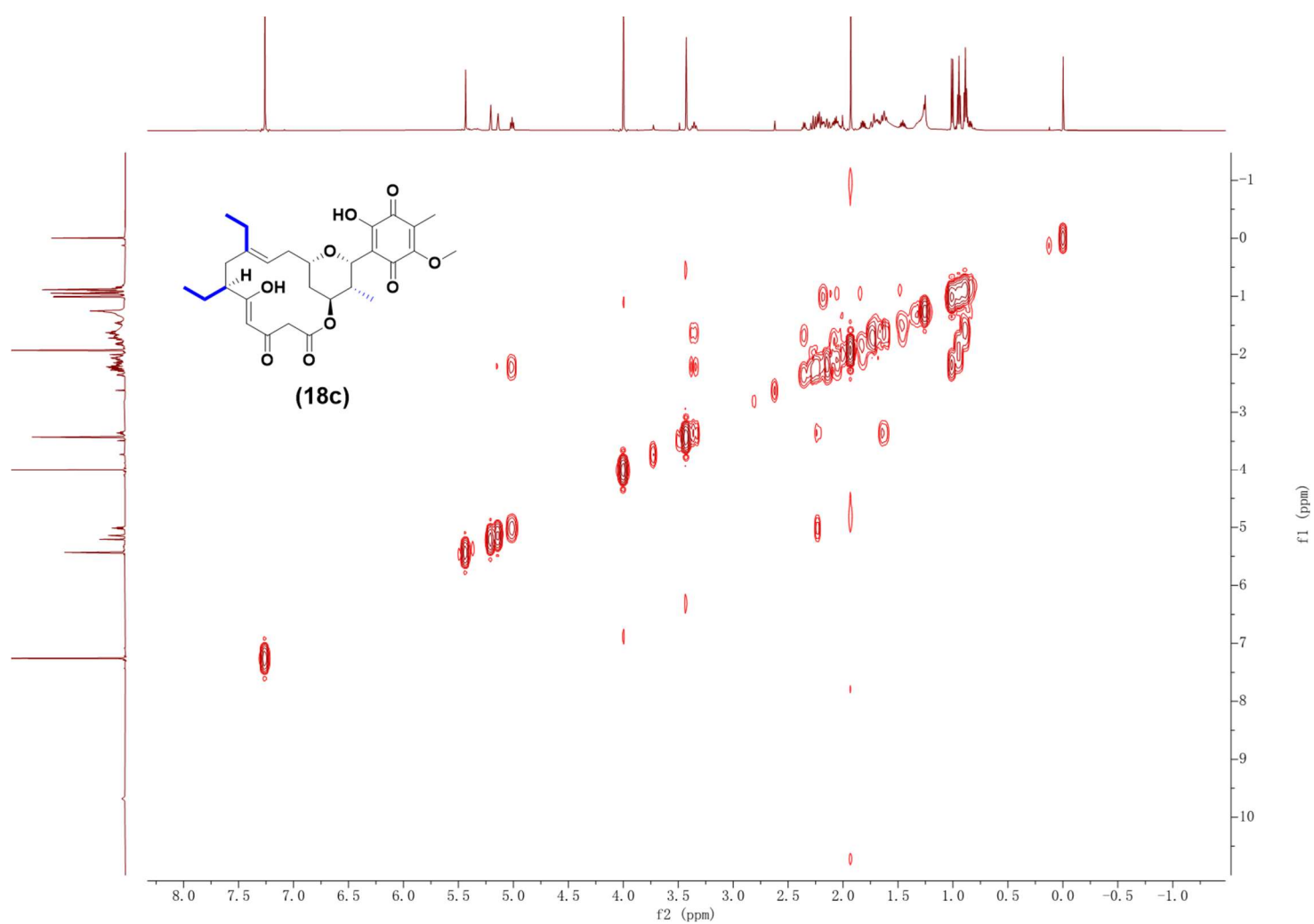


Fig. 95. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **18c**.

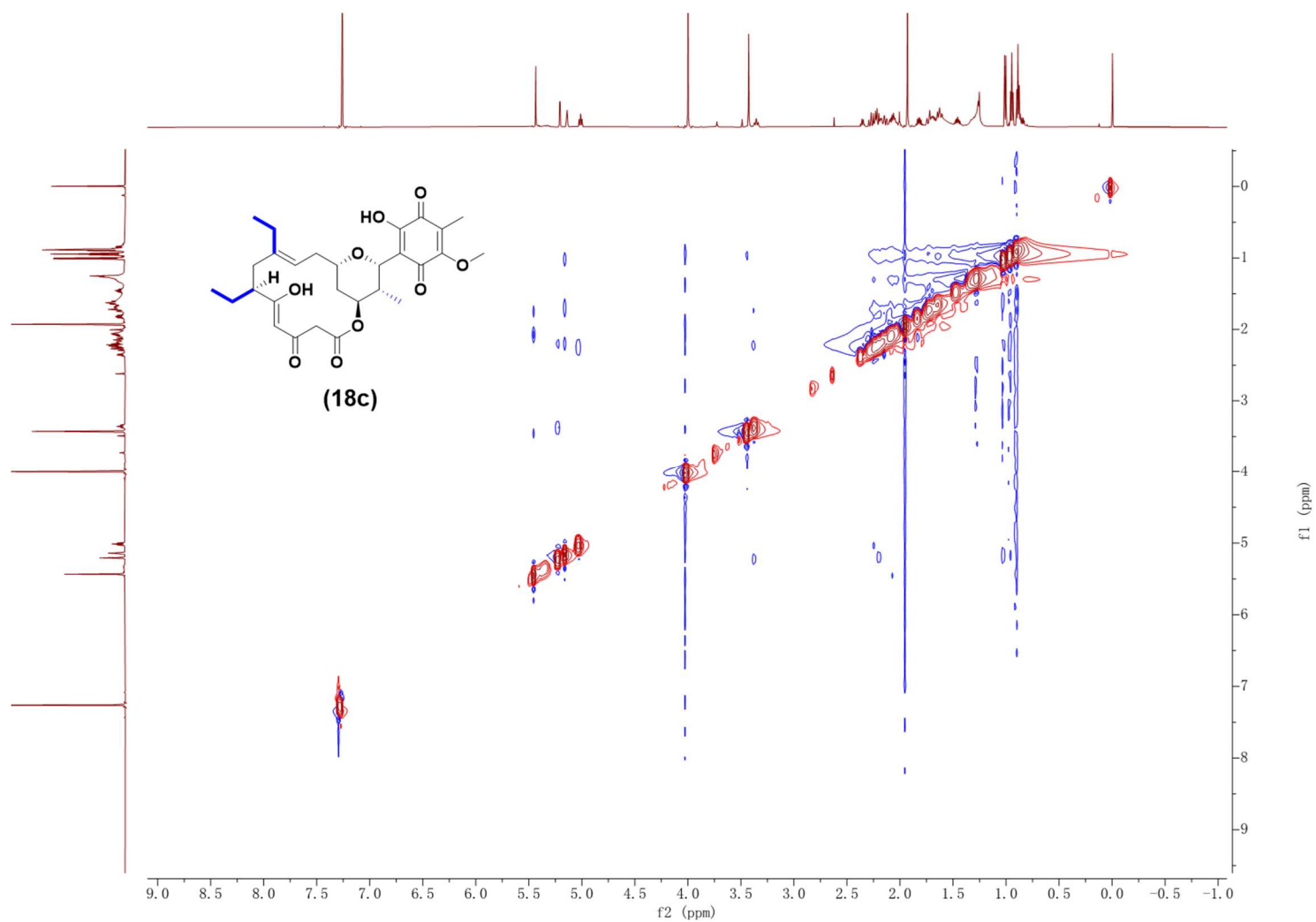


Fig. 96. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **18c**.

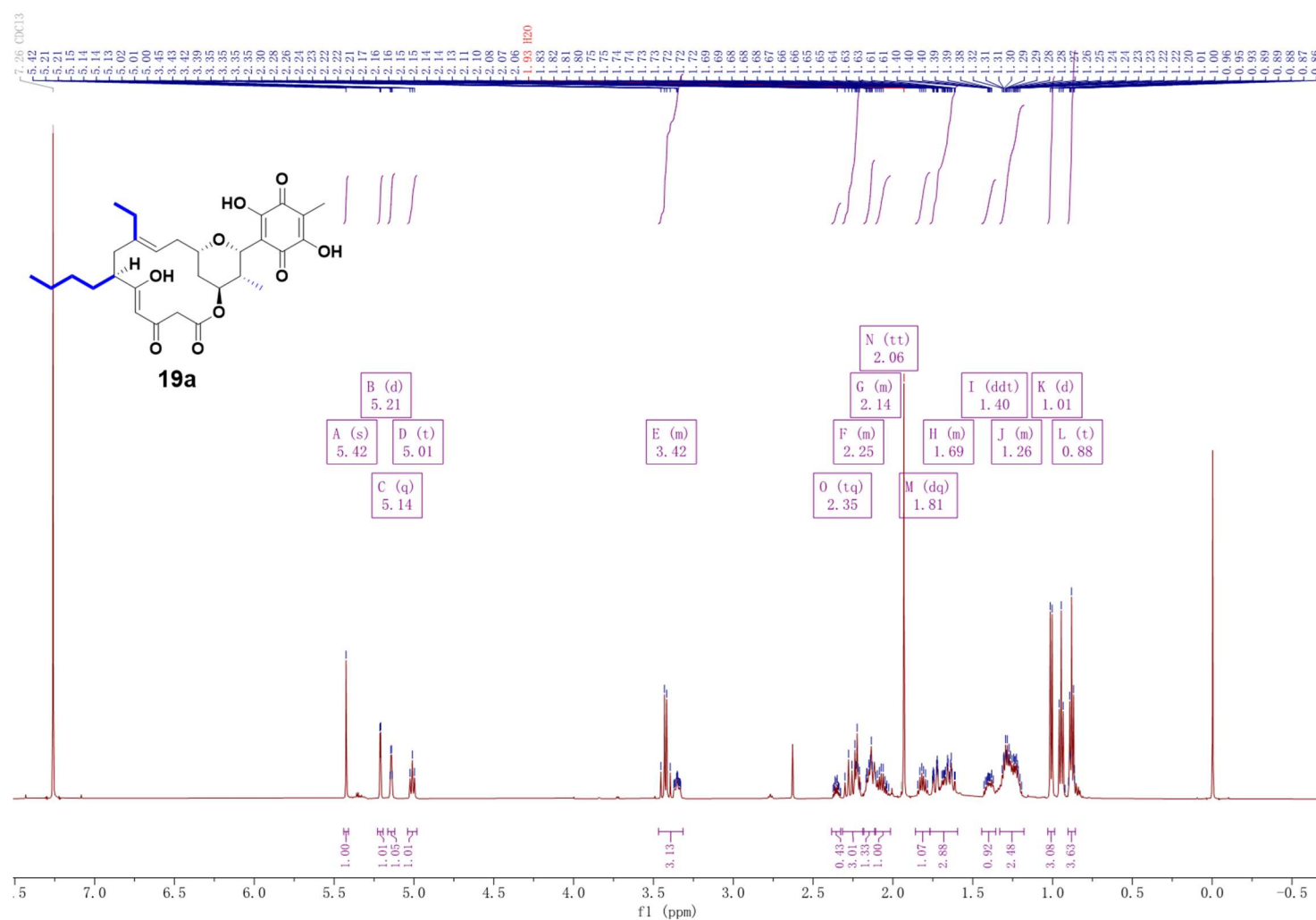


Fig. 97. ¹H NMR spectrum (600 MHz, CDCl₃) of compound **19a**.

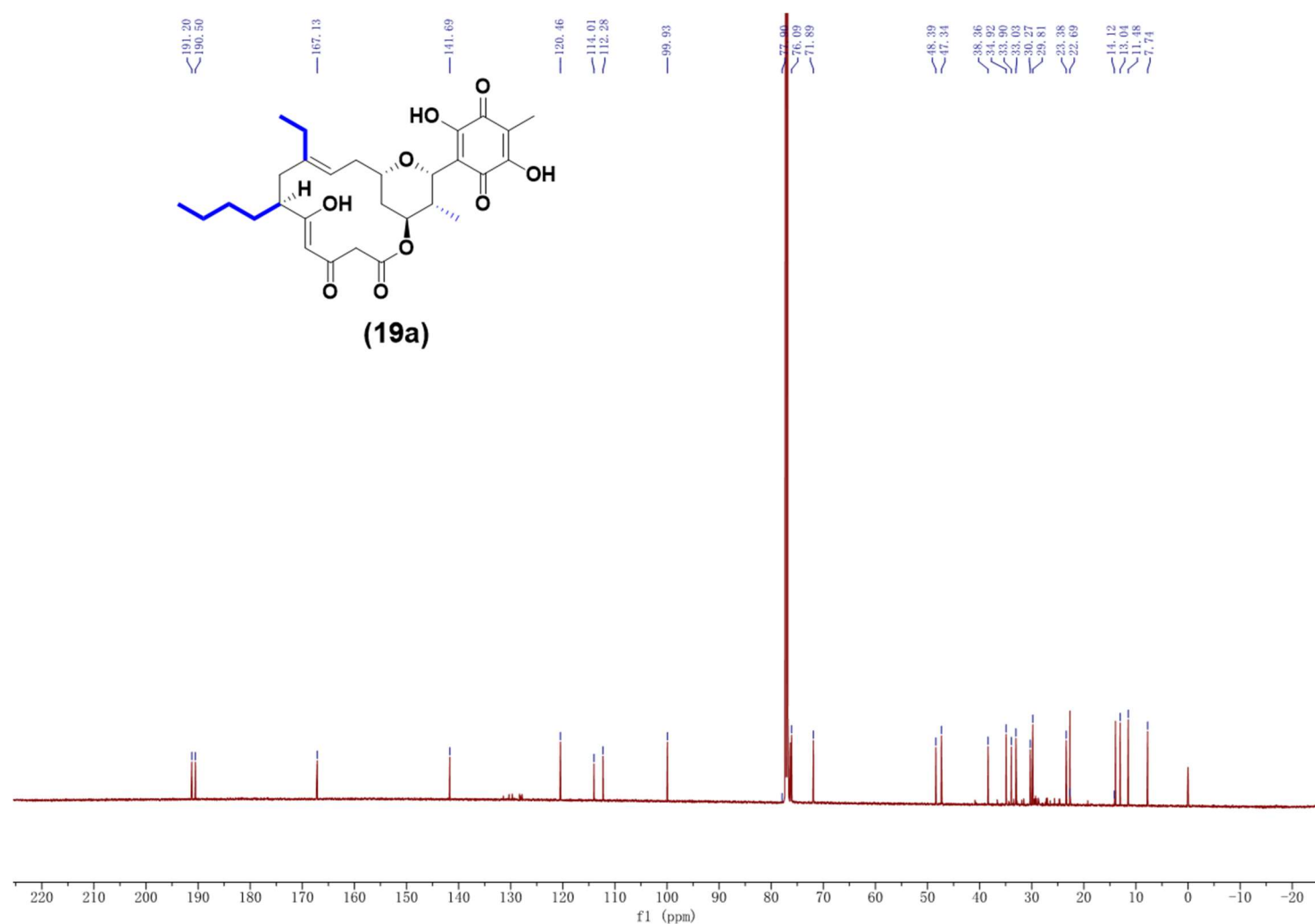


Fig. 98. ¹³C NMR spectrum (150 MHz, CDCl₃) of compound **19a**.

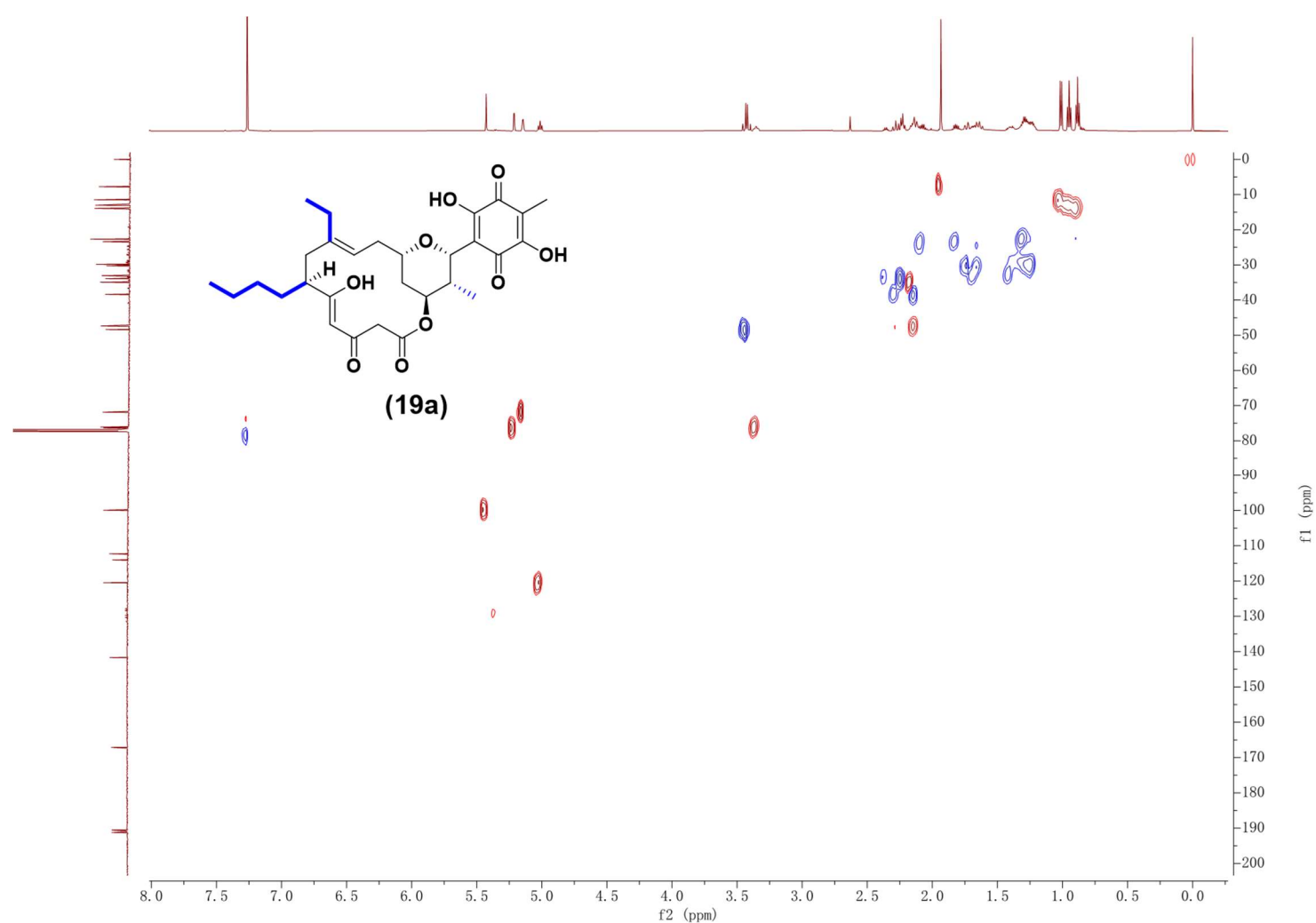


Fig. 99. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **19a**.

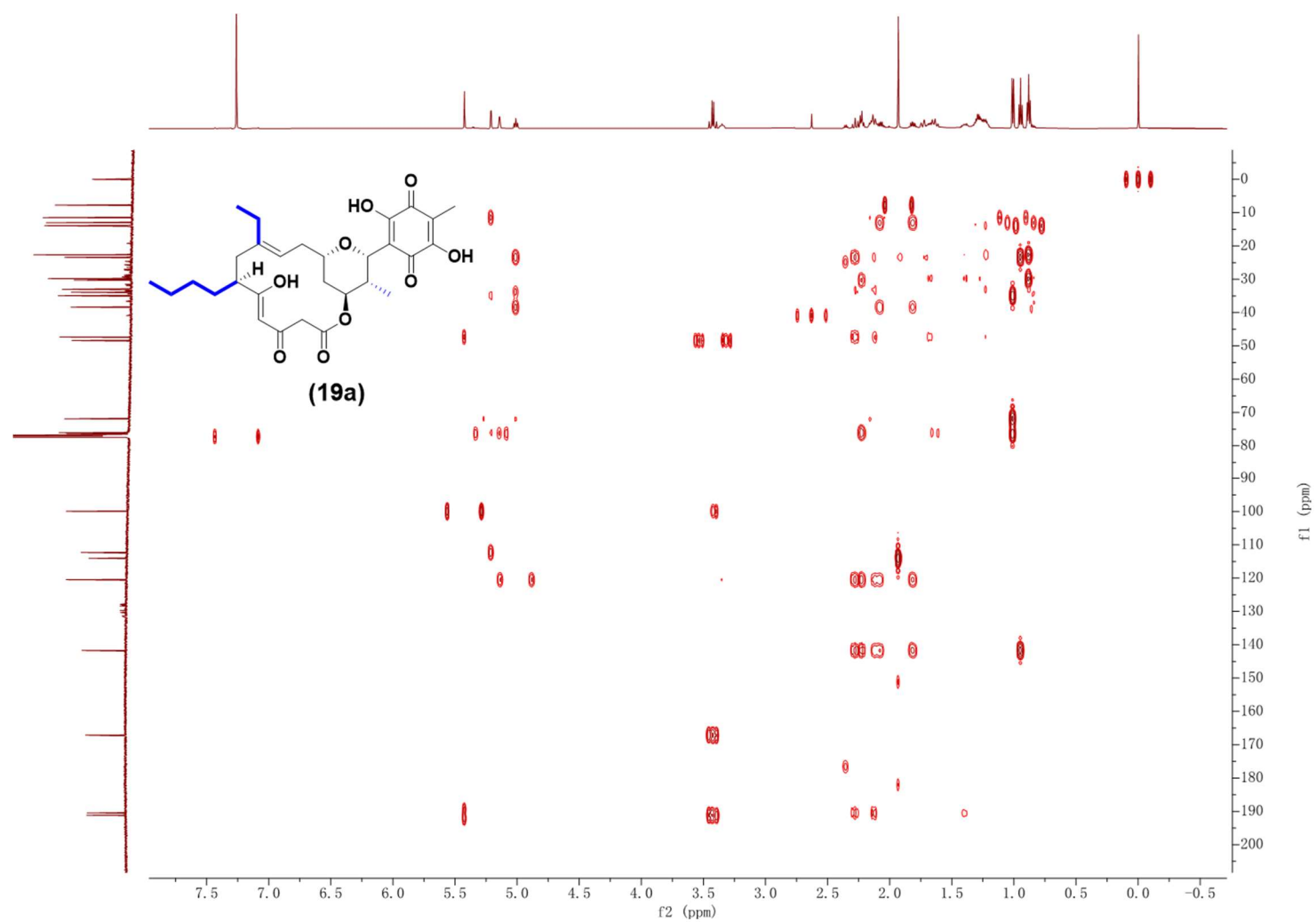


Fig. 100. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **19a**.

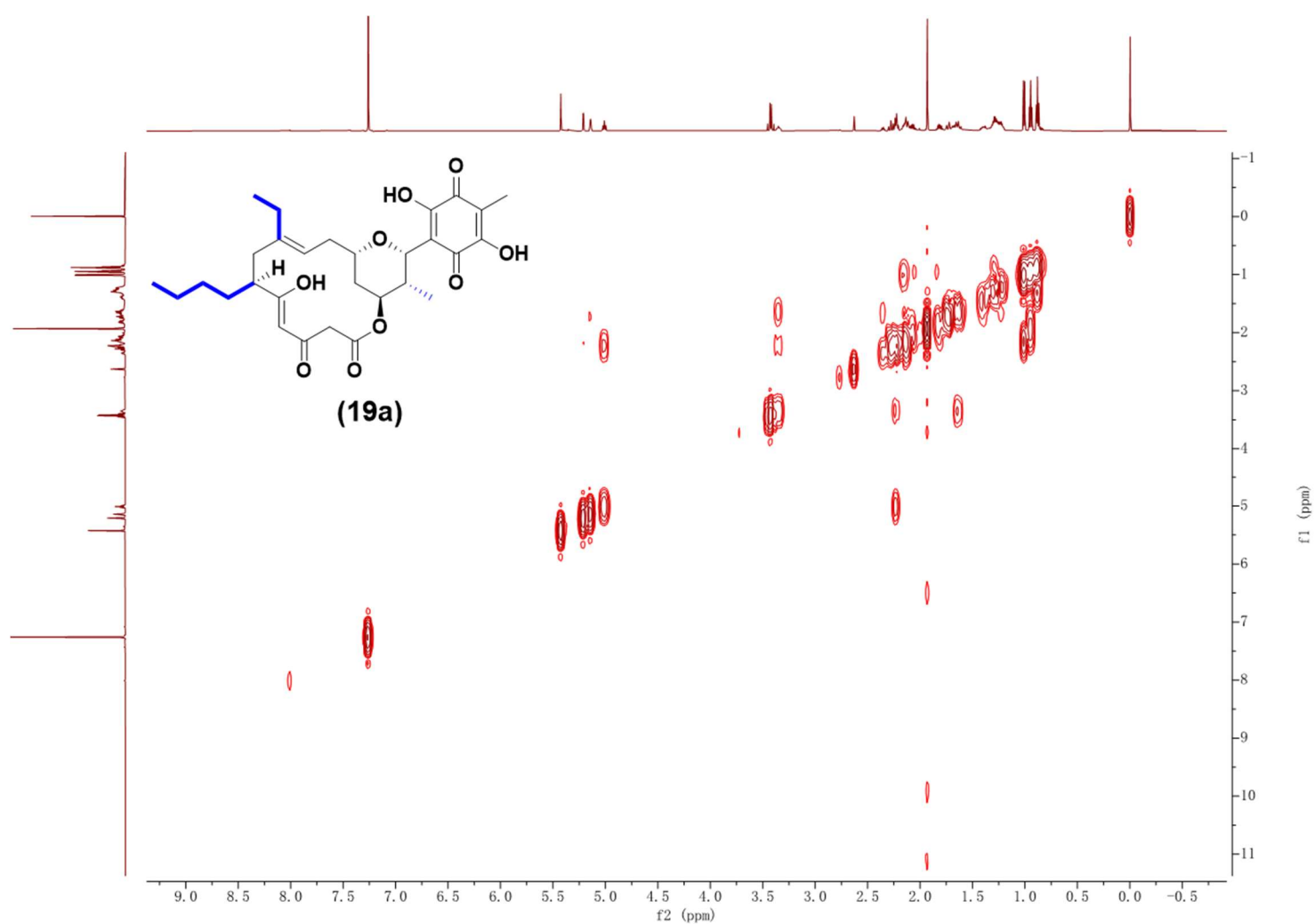


Fig. 101. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **19a**.

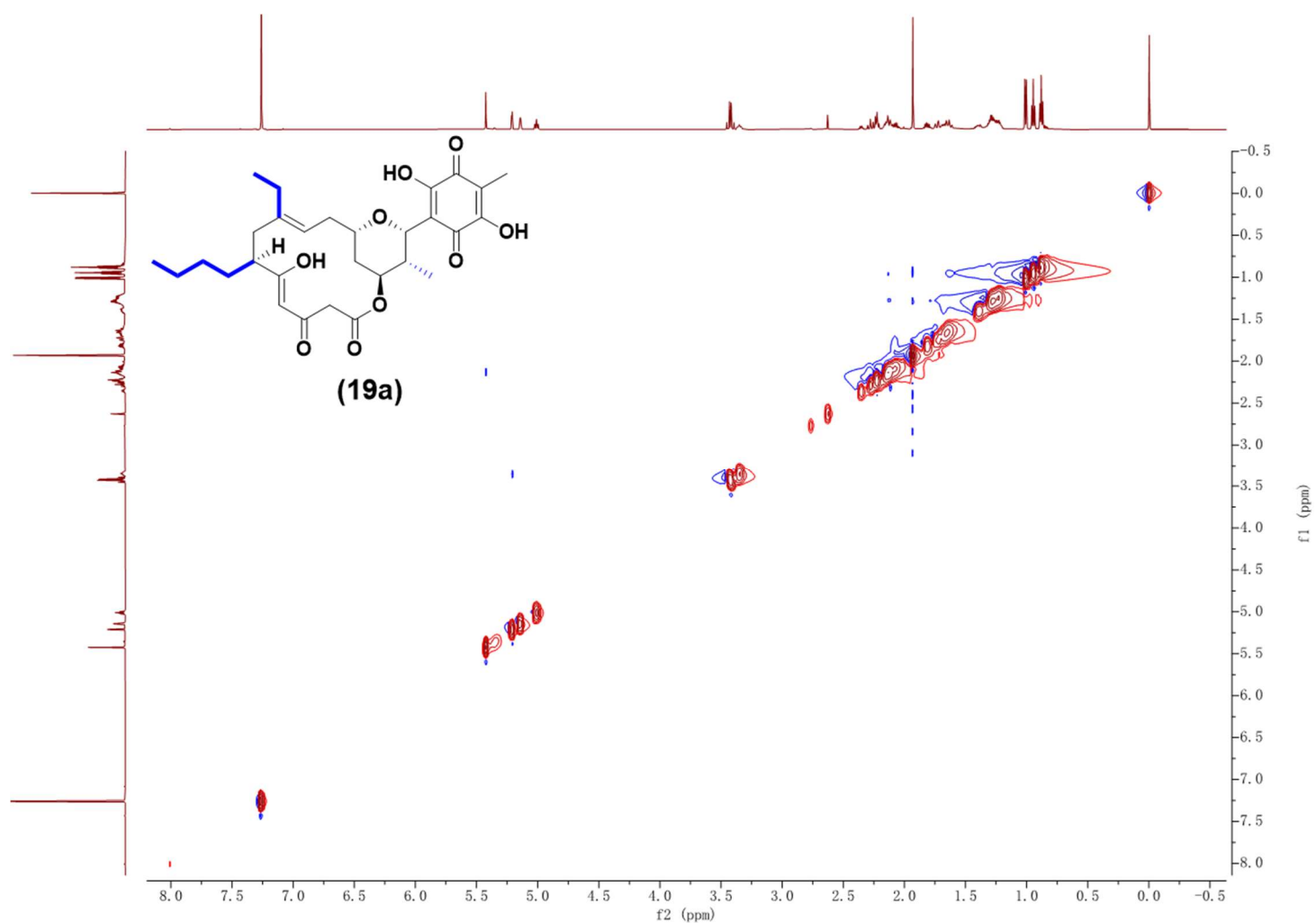


Fig. 102. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **19a**.

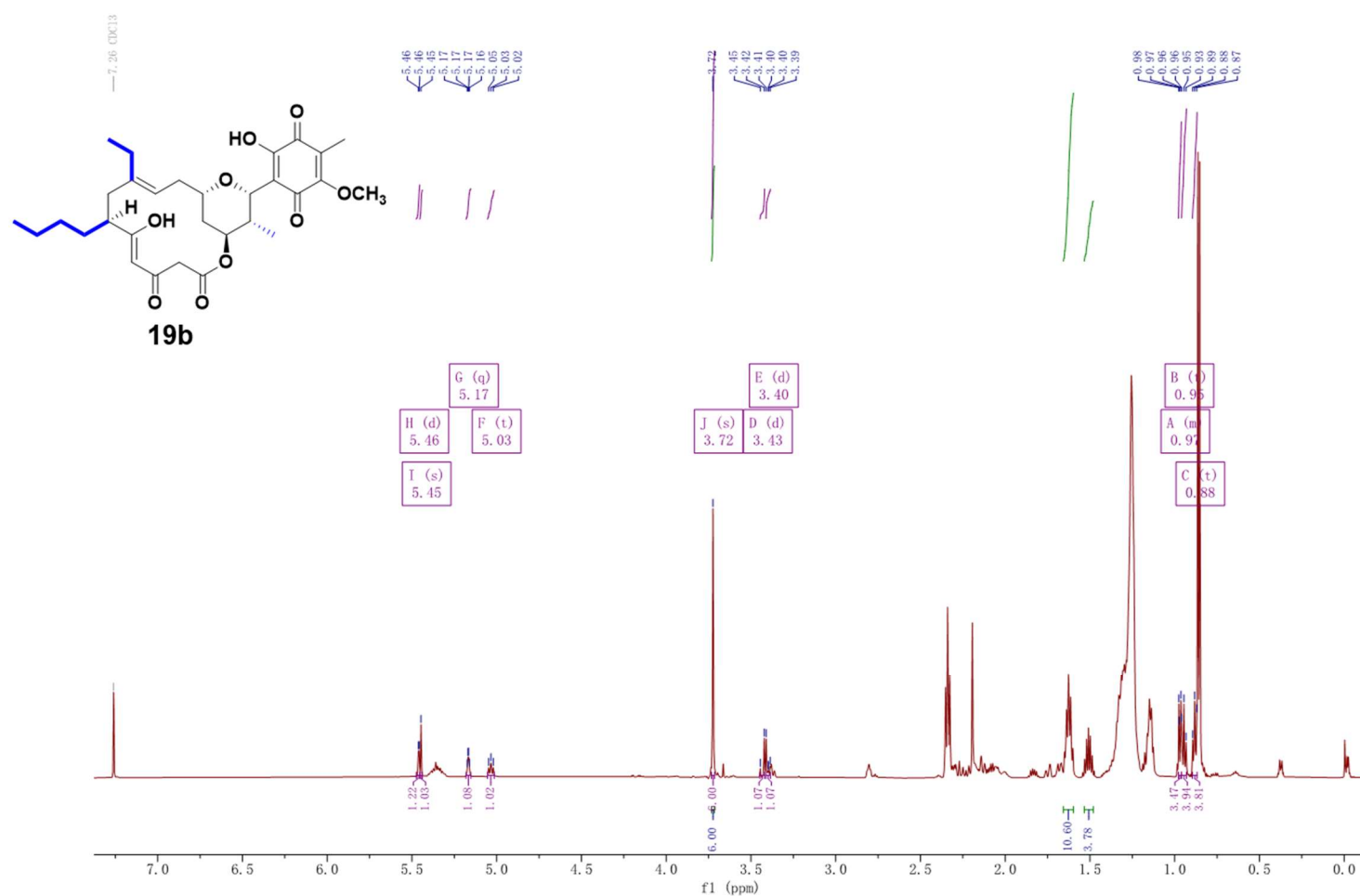


Fig. 103. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **19b**.

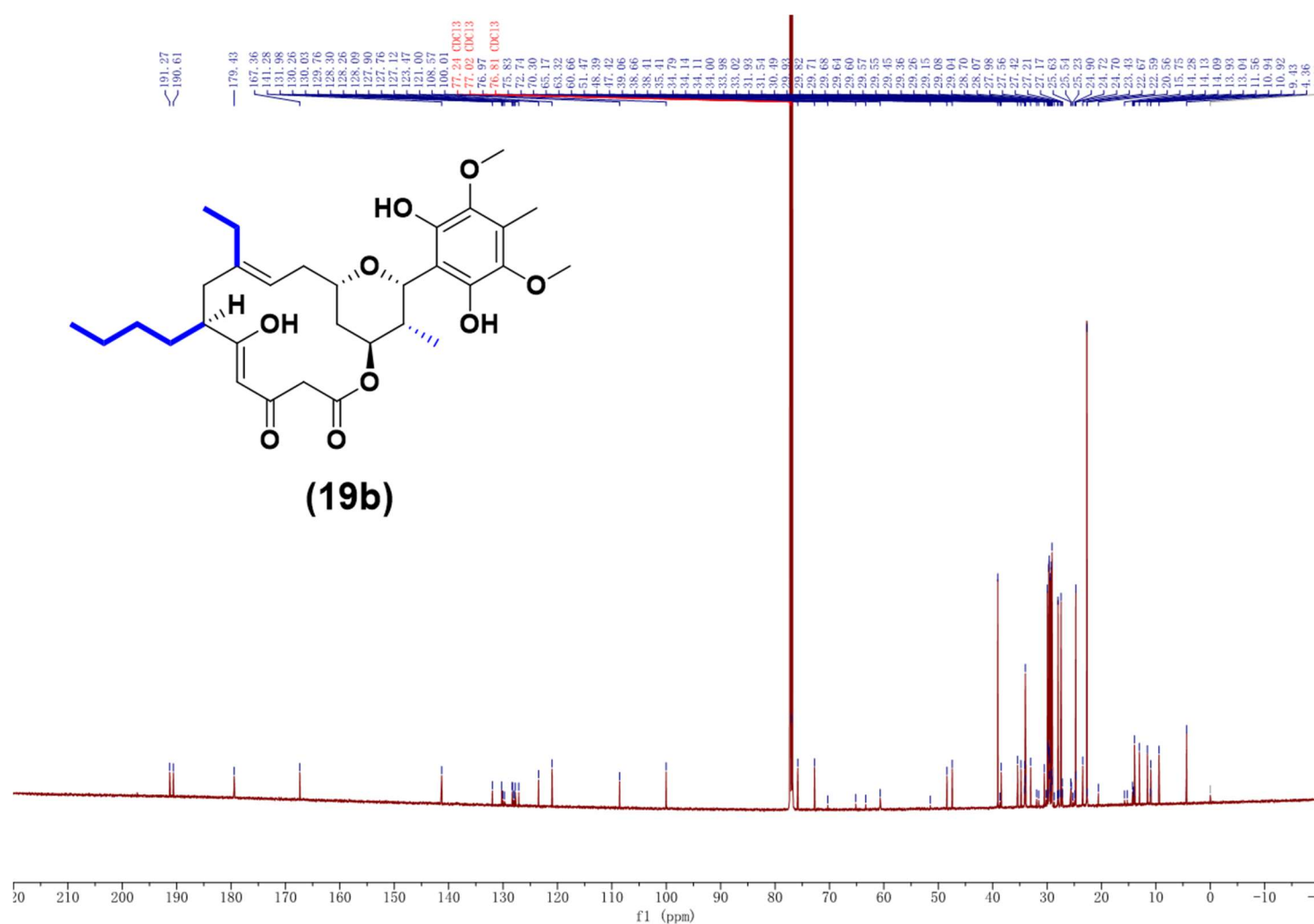


Fig. 104. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **19b**.

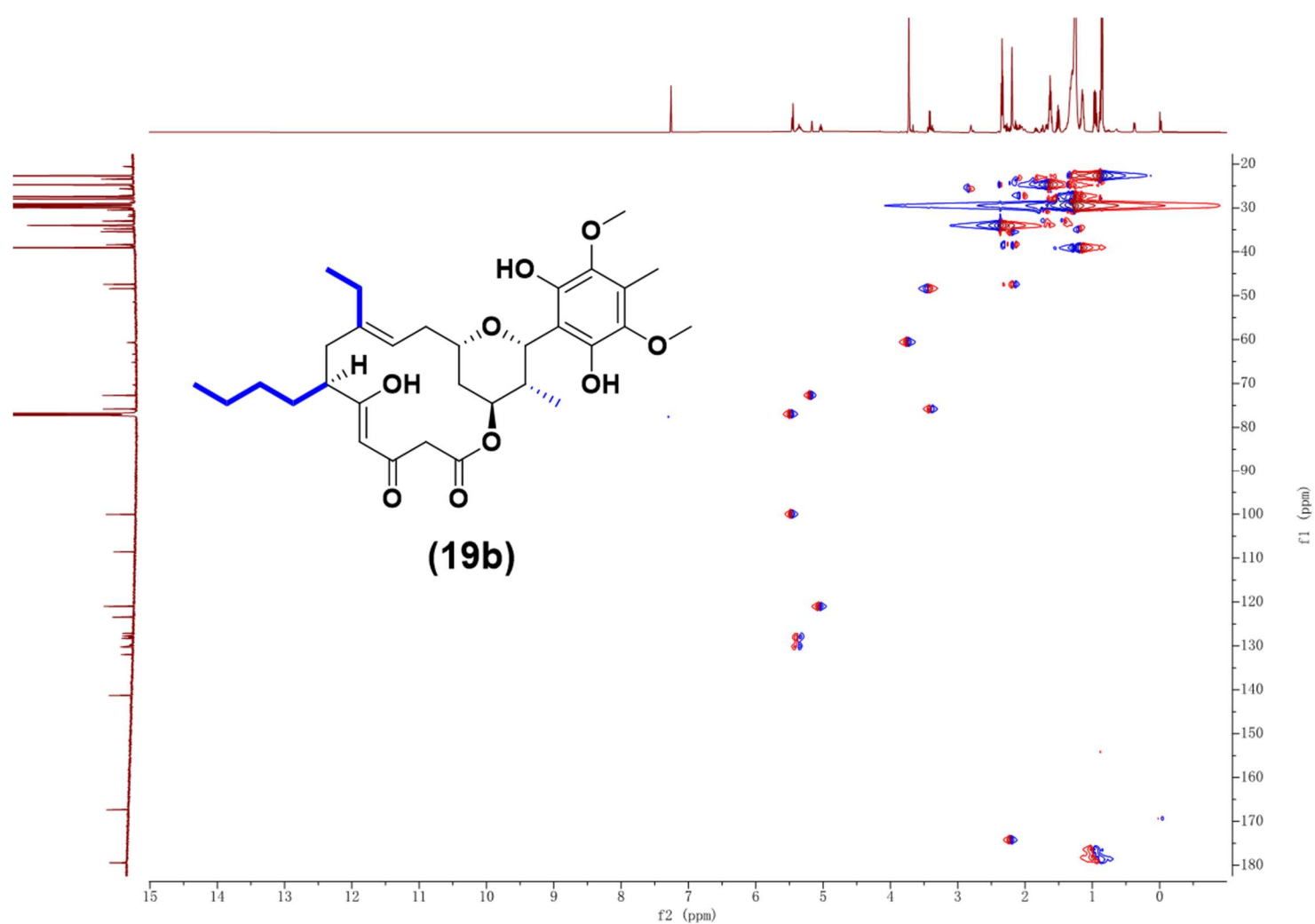


Fig. 105. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **19b**.

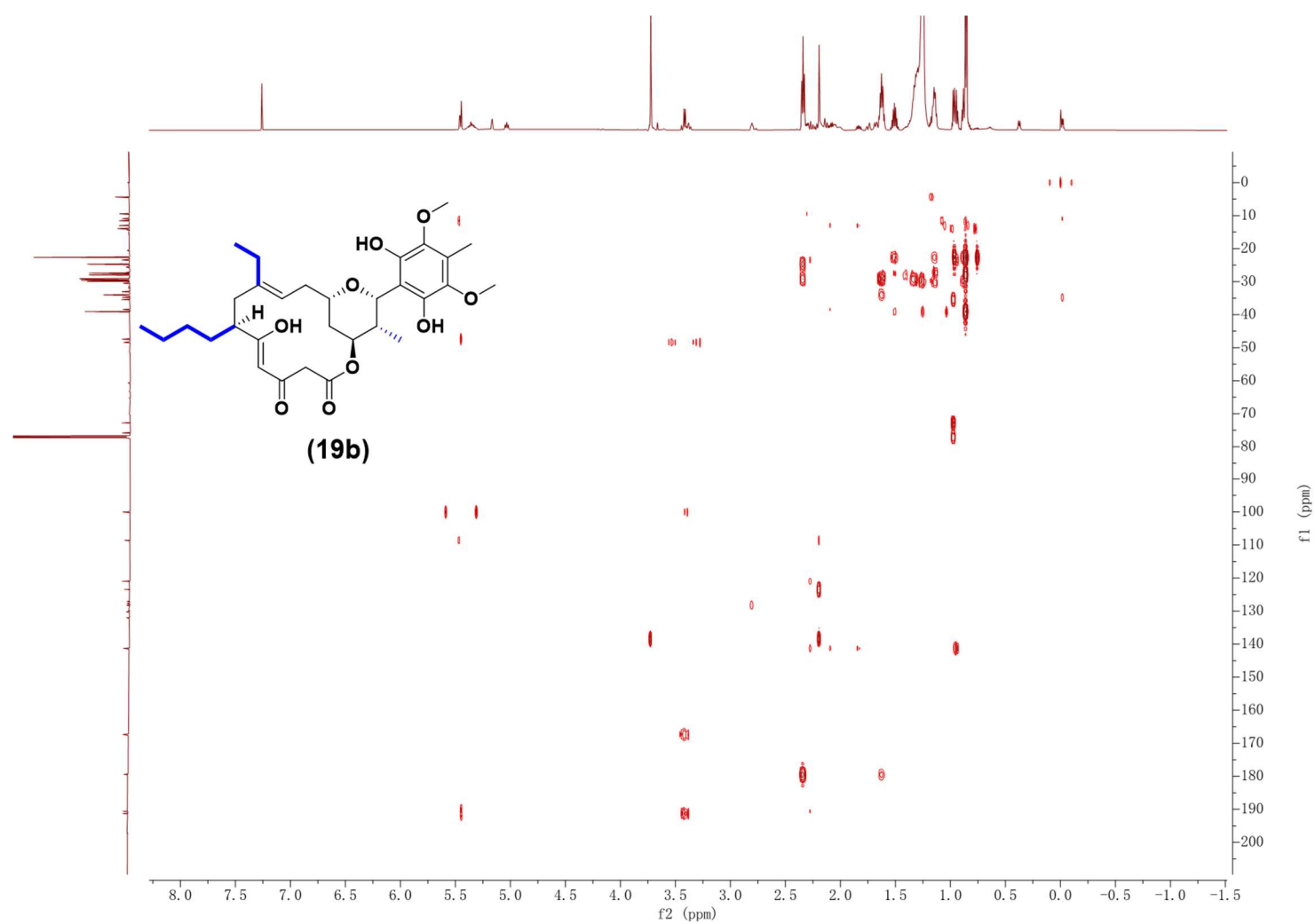


Fig. 106. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **19b**.

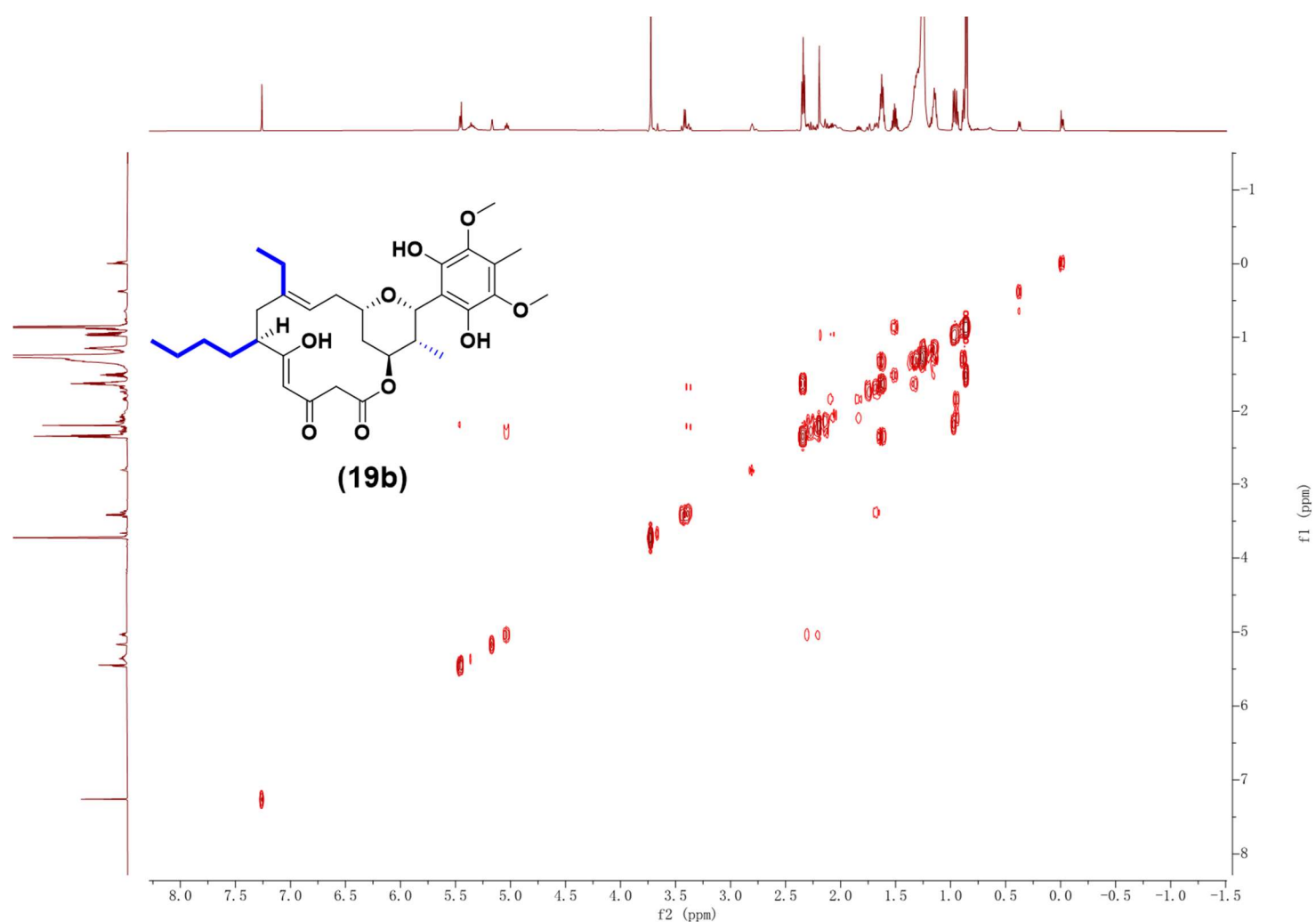


Fig. 107. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **19b**.

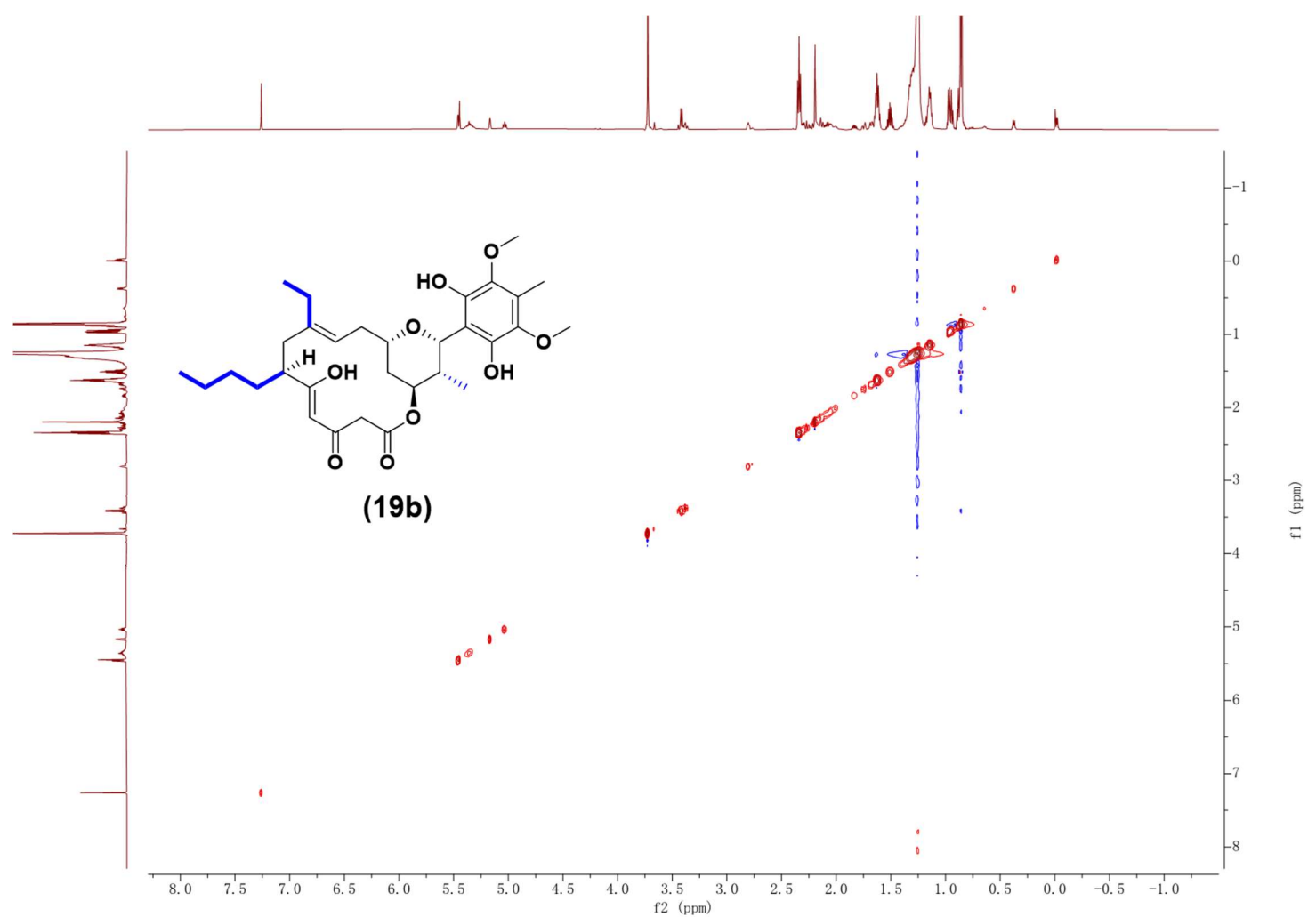


Fig. 108. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **19b**.

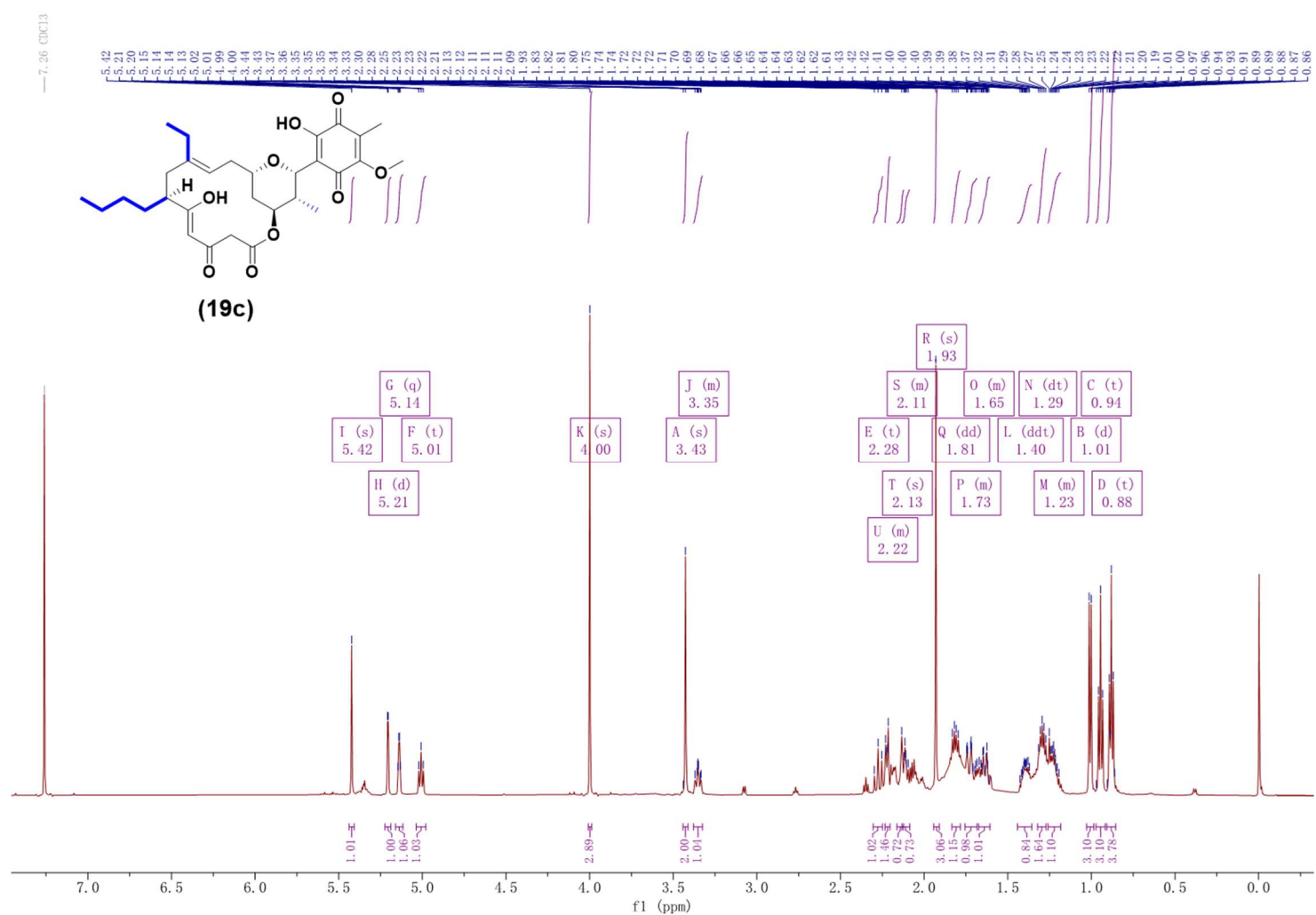


Fig. 109. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **19c**.

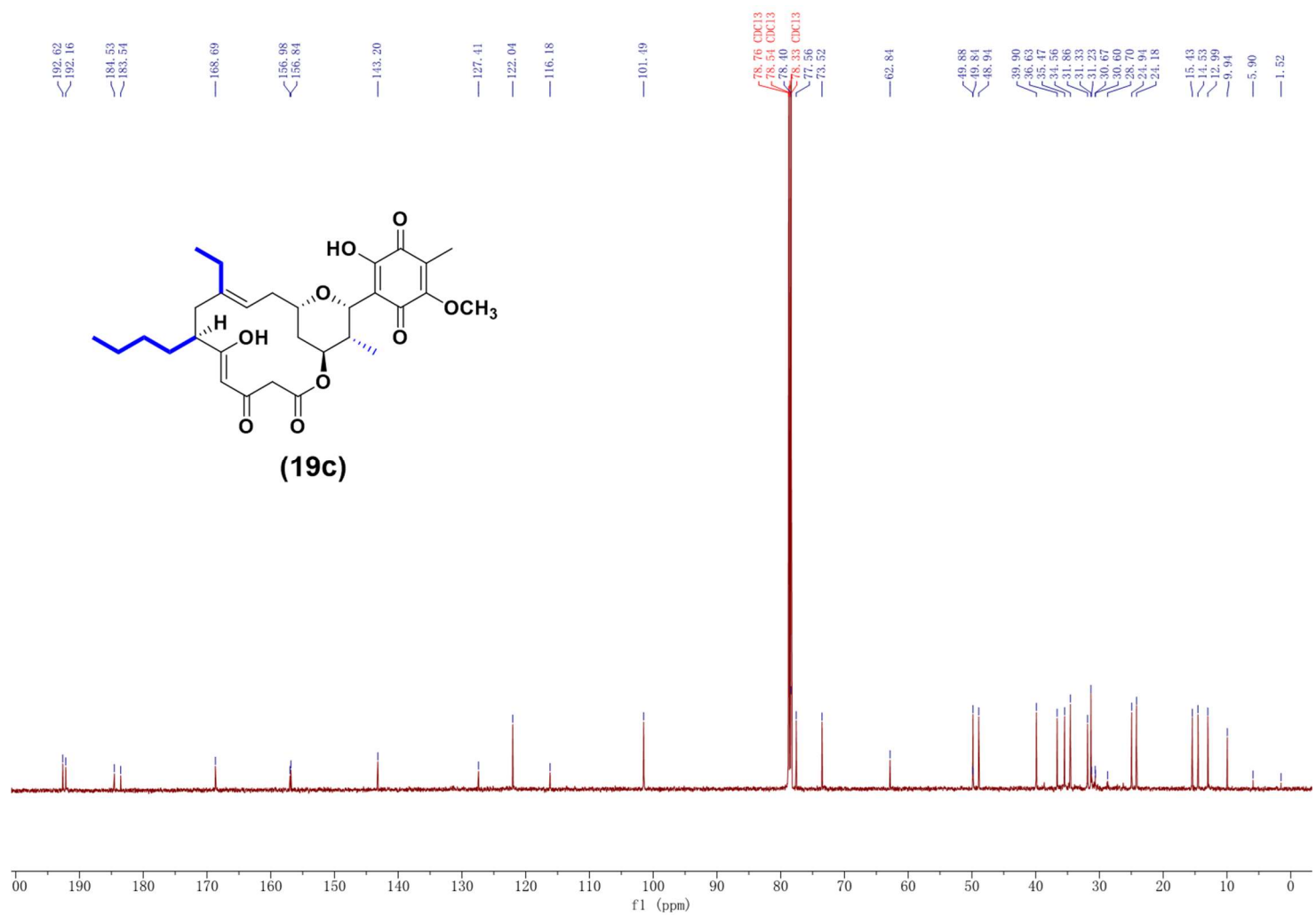


Fig. 110. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **19c**.

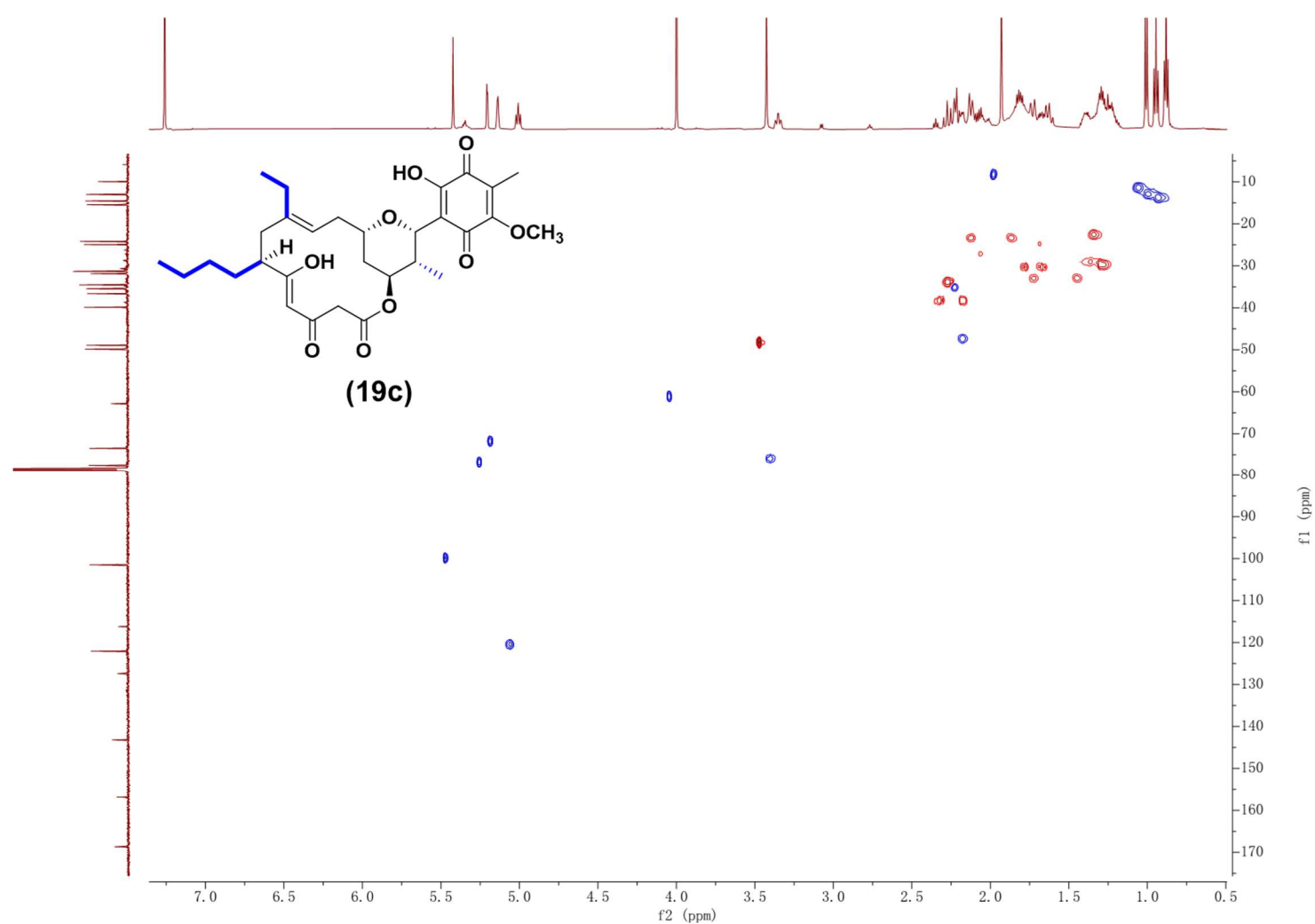


Fig. 111. HSQC NMR spectrum (600 MHz, CDCl_3) of compound **19c**.

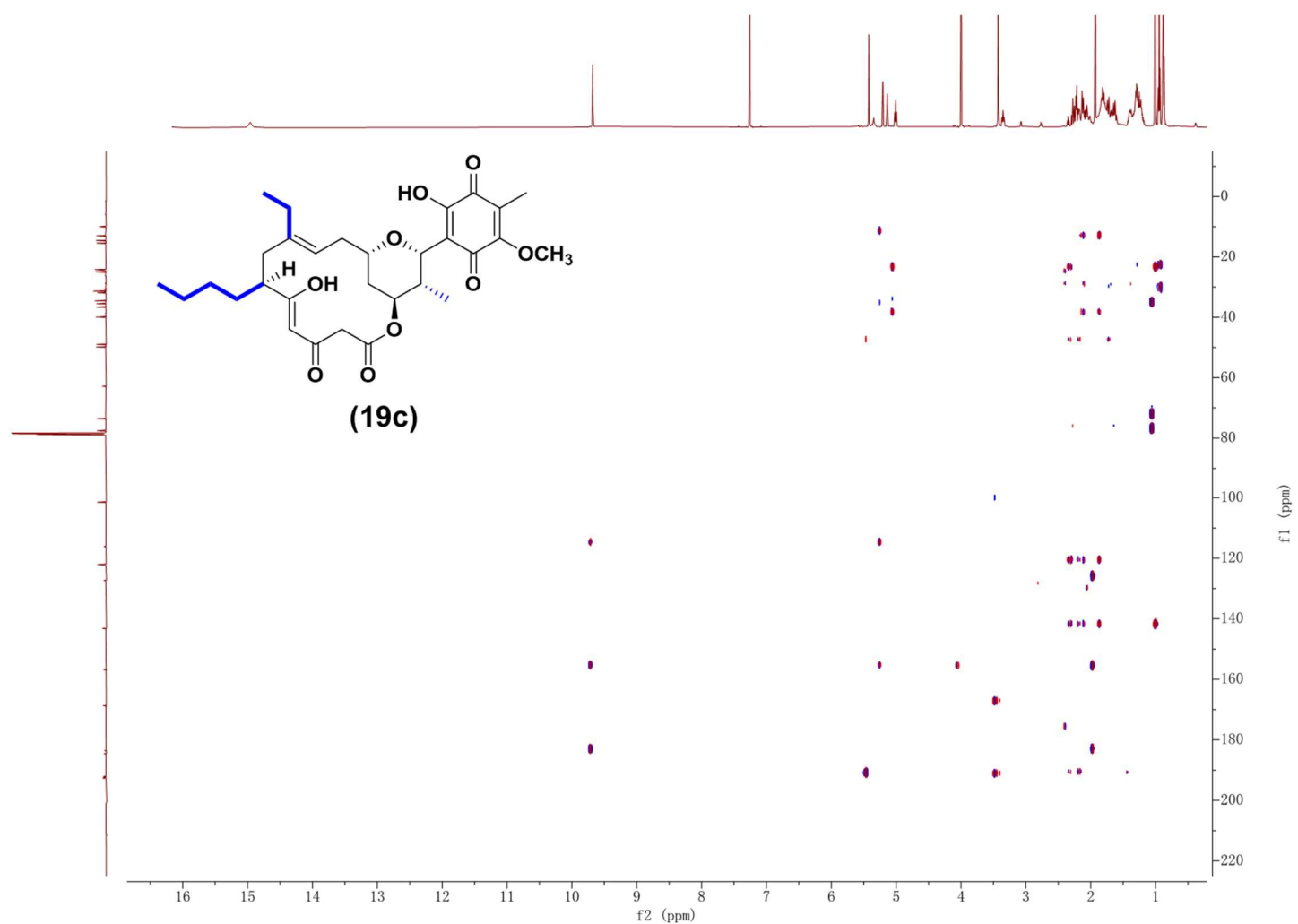


Fig. 112. HMBC NMR spectrum (600 MHz, CDCl_3) of compound **19c**.

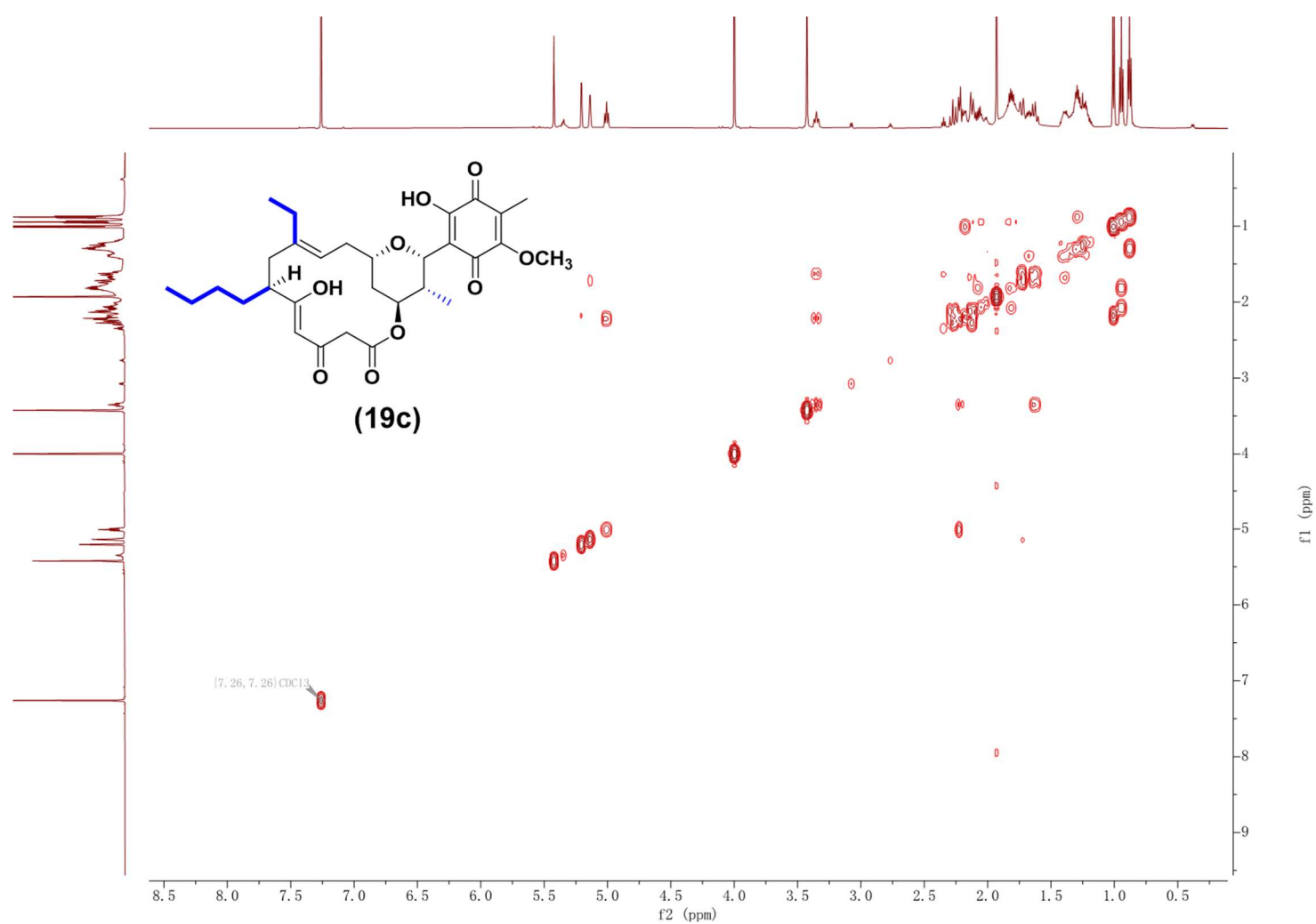


Fig. 113. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **19c**.

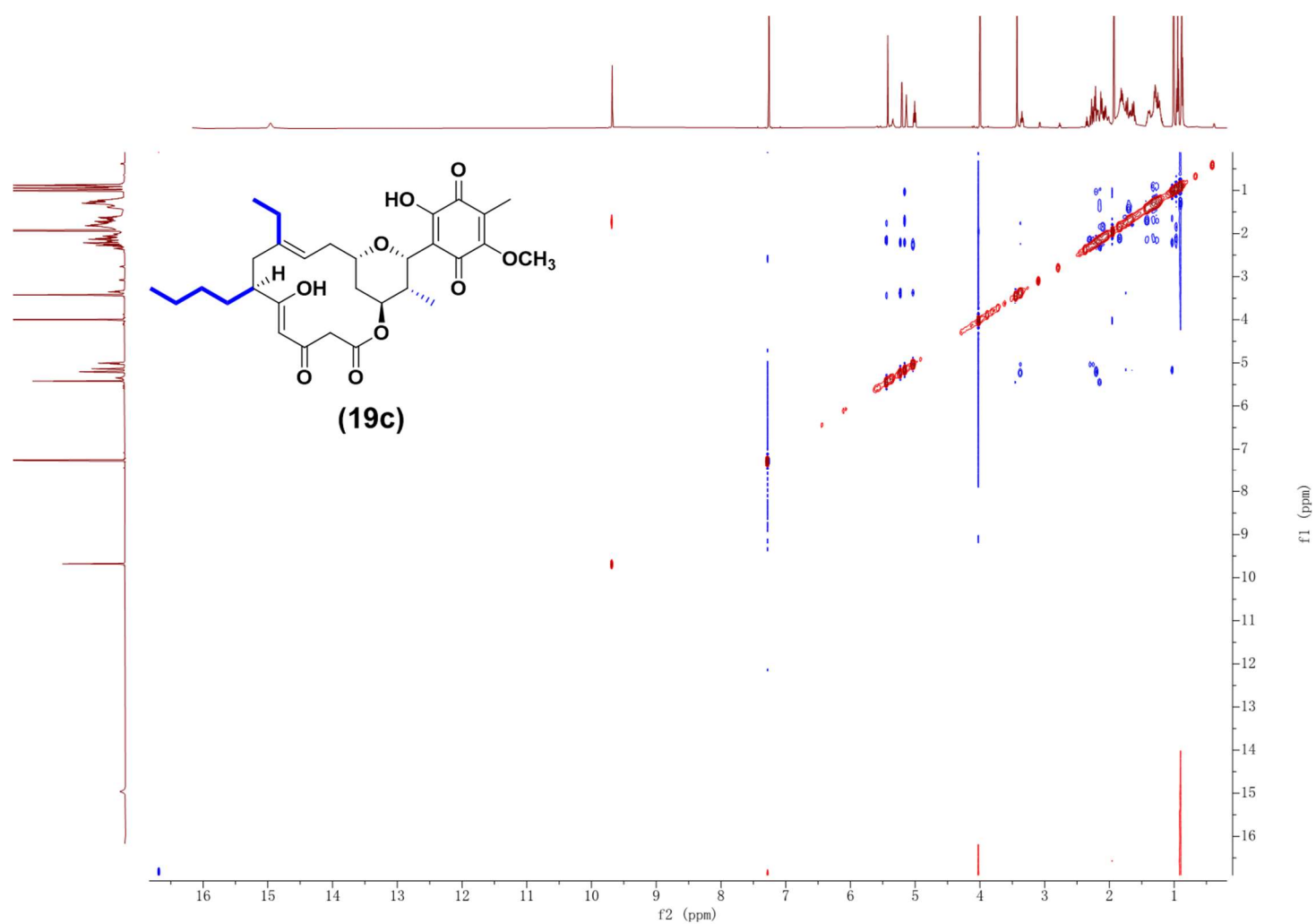


Fig. 114. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **19c**

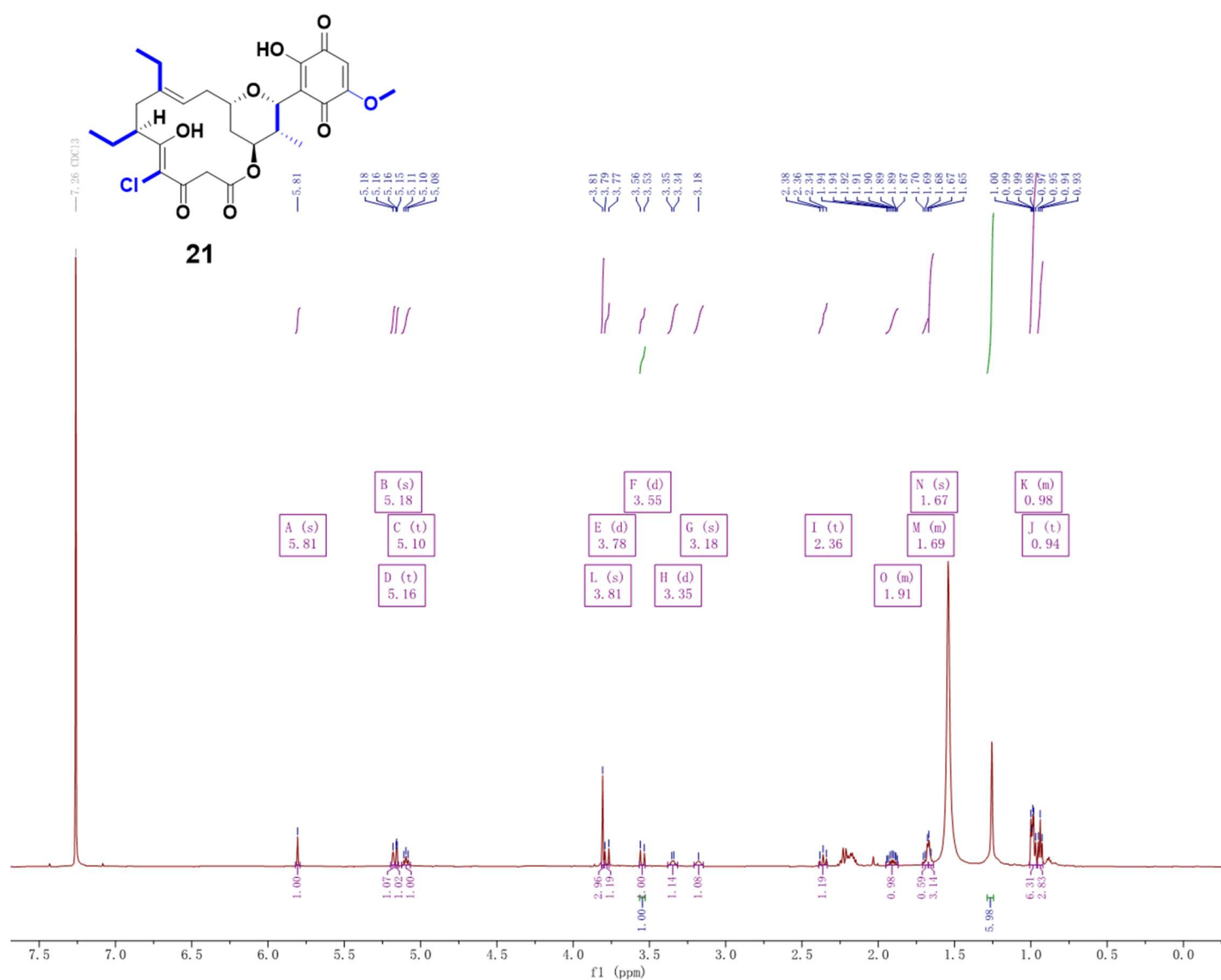


Fig. 115. ^1H NMR spectrum (600 MHz, CDCl_3) of compound **21**.

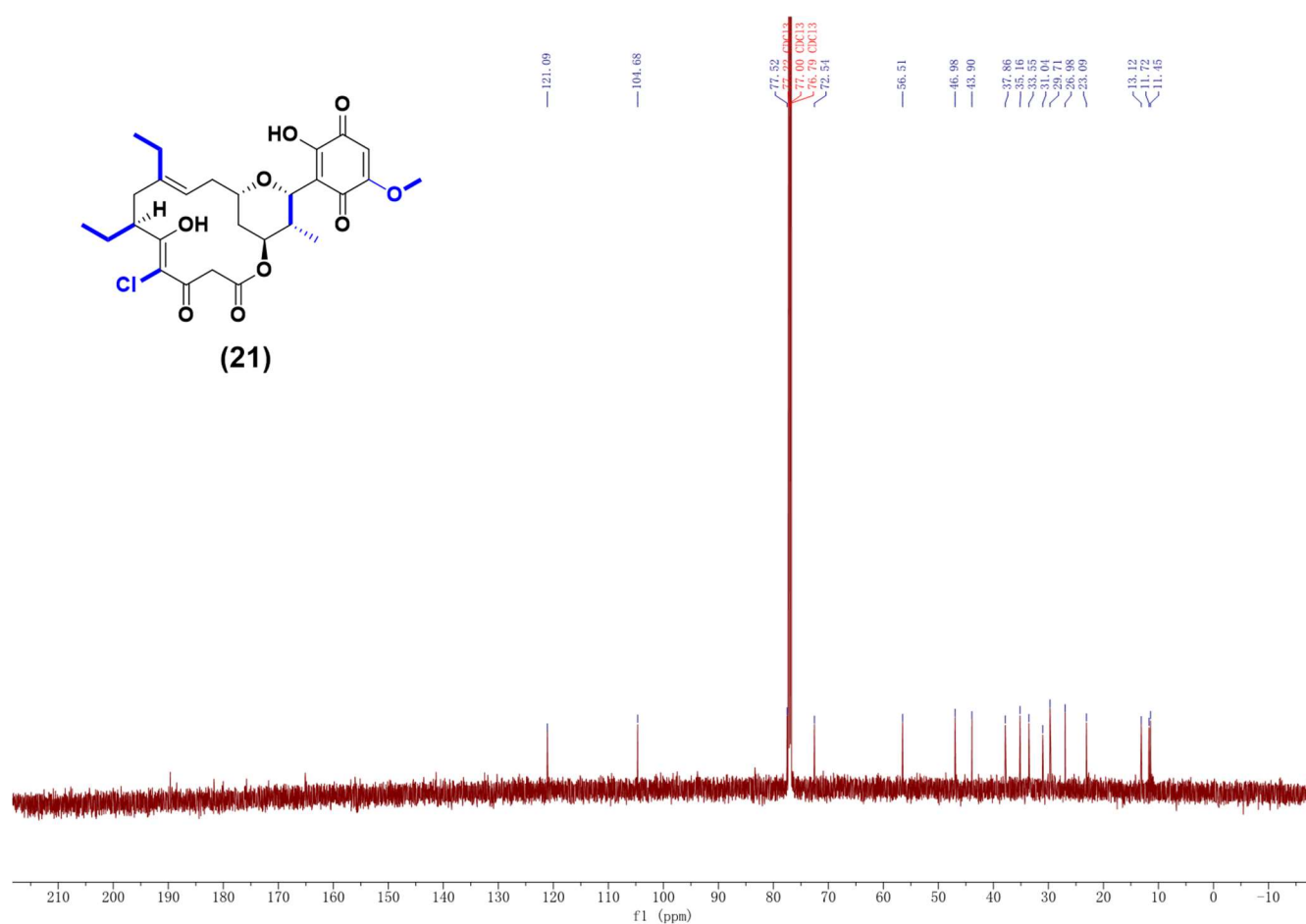


Fig. 116. ^{13}C NMR spectrum (150 MHz, CDCl_3) of compound **21**.

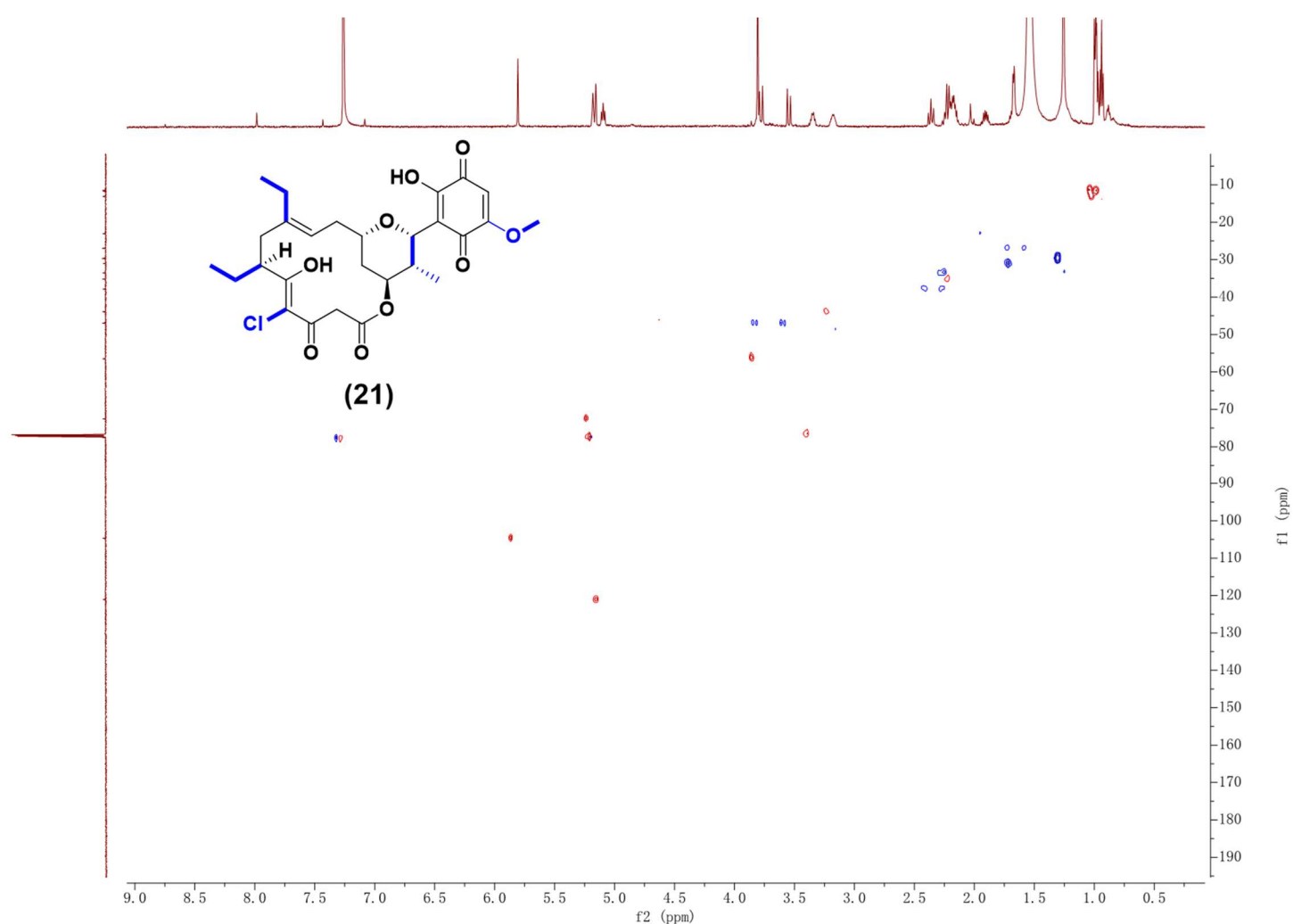


Fig. 117. HSQC NMR spectrum (600 MHz, CDCl₃) of compound **21**.

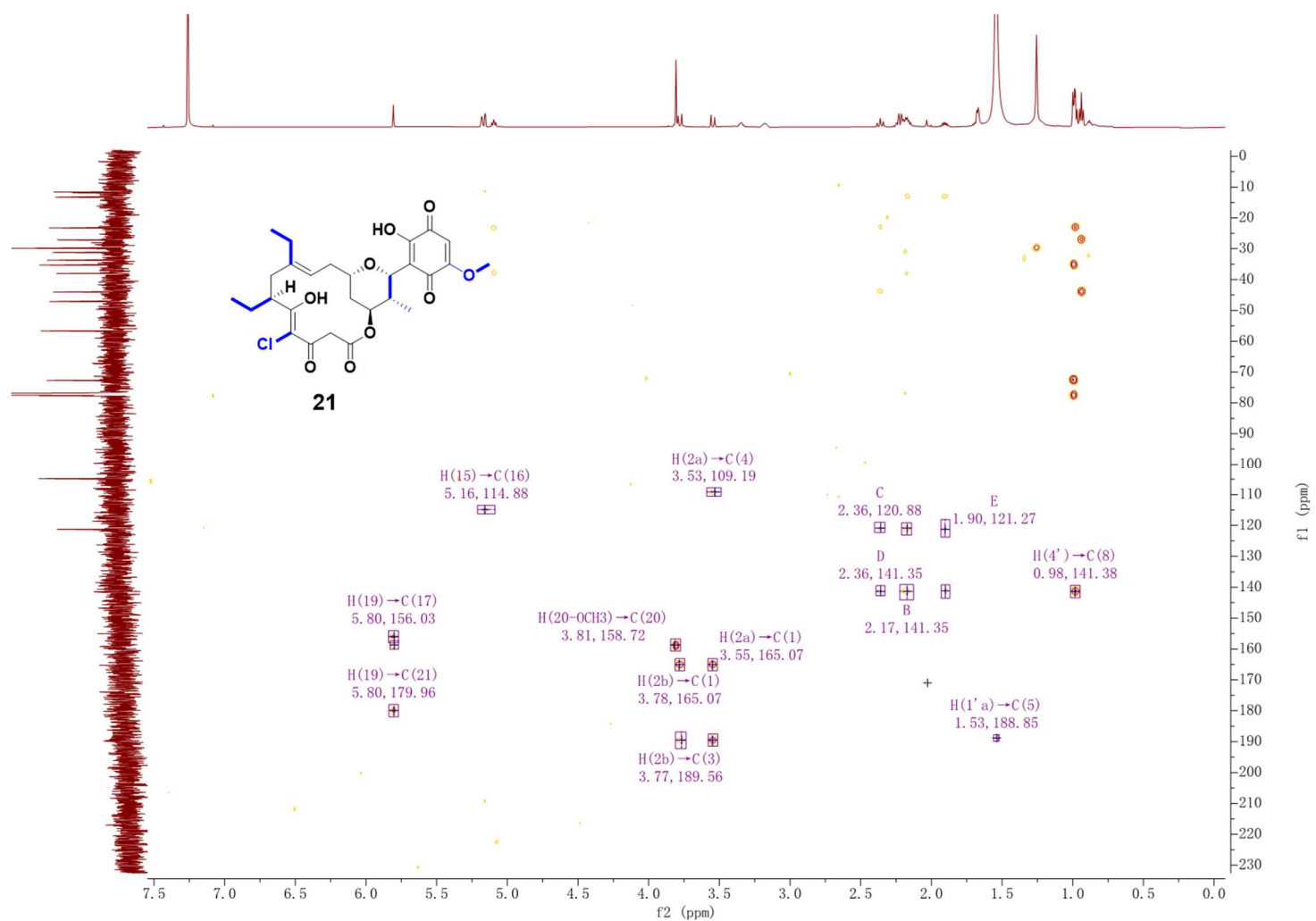


Fig. 118. HMBC NMR spectrum (600 MHz, CDCl₃) of compound **21**.

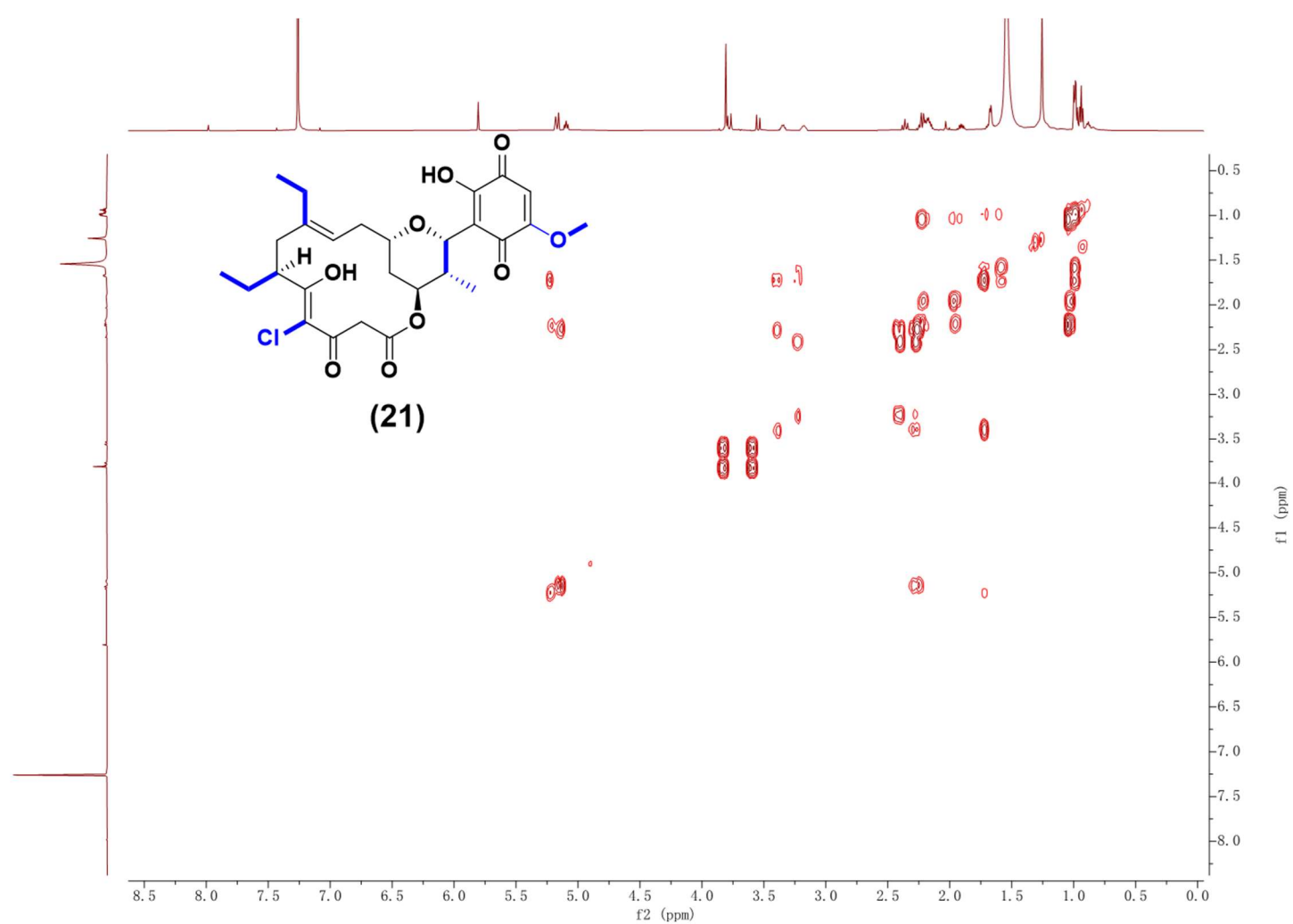


Fig. 119. ^1H - ^1H COSY NMR spectrum (600 MHz, CDCl_3) of compound **21**.

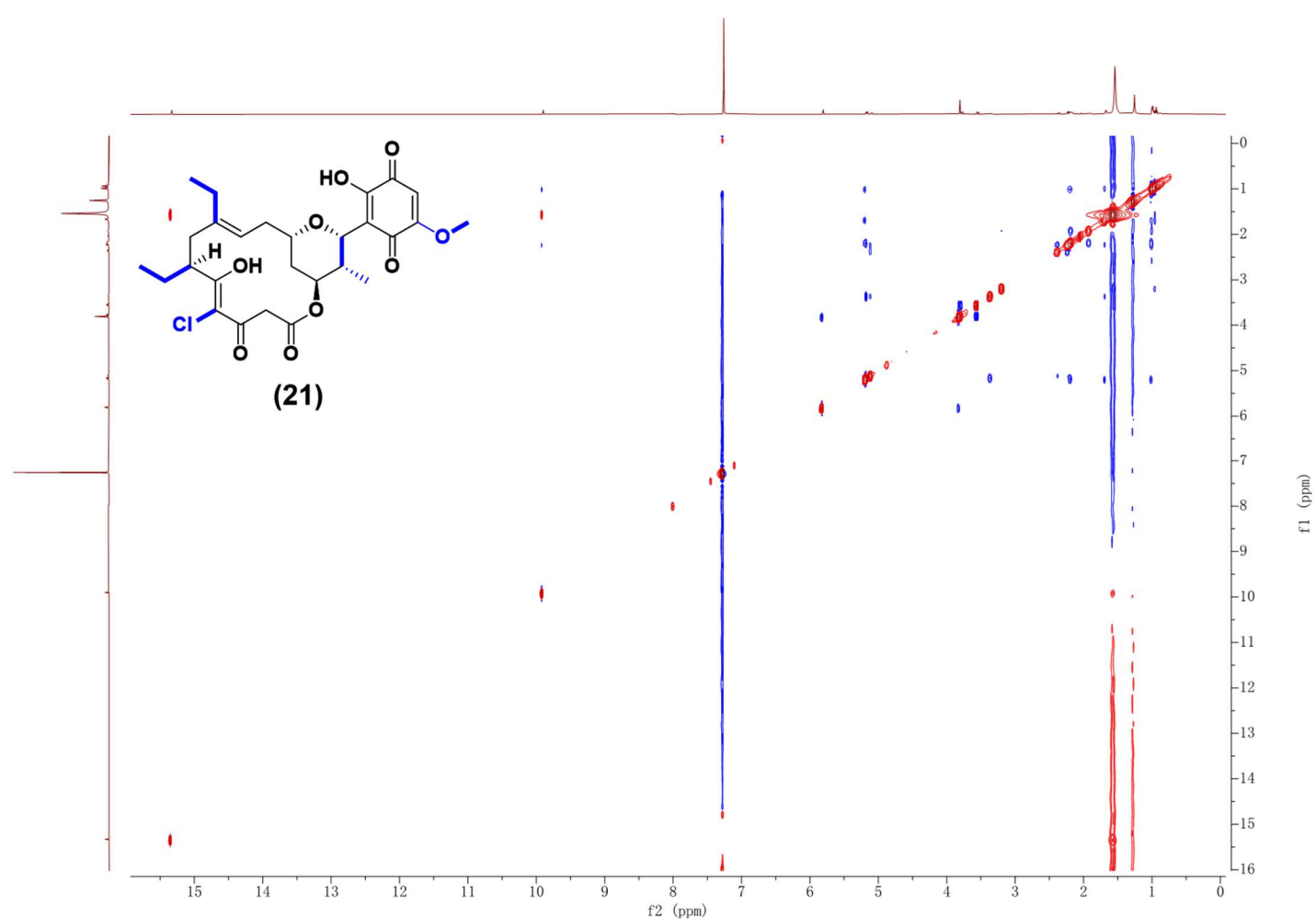


Fig. 120. NOESY NMR spectrum (600 MHz, CDCl_3) of compound **21**.