Supplementary Information

Potential antihyperlipidemic polyketones from endophytic *Diaporthe* sp. JC-J7 in *Dendrobium nobile*

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Abstract Eleven new polyketones named diaporthsins A-K (**1-11**) were isolated from the fermentation of *Diaporthe* sp. JC-J7. The chemical structures of compounds (**1-11**) were elucidated by spectroscopic method, including HRESIMS, 2DNMR, NMR spectra and chemical method. Compound **11** features unusual acyclic polyketone-phenolic polyketone hybrid structure that integrate the characteristics of different fungal metabolites (cytosporone and multiplolide). Compound **3** was the only C_{12}-polyketone in this research. These new polyketones showed inhibitory activity on content of triglycerides (TG) in steatosis hepatocyte L-02 cells. Among them, compound **5**, and (4E)-6,7,9- trihydroxydec-4-enoic acid display inhibitory activity on content of triglycerides (TG) in steatotic L-02 cells with inhibition ratios of 26%, and 21% at concentration of 5 μg/mL, along with inhibition ratios of 8-O-acetylmultiplolide A, and phomopsisporone A at concentration of 5 μg/mL were calculated to be about 24 %, and 16 % respectively, which was equivalent to the antihyperlipidemic activity of lovastatin. The preliminary structure–activity relationship stated that the acetyl at C-8 can increase the antihyperlipidemic activity of multiplolide A, and the glycol ester and hydroxyl at C-6 can also raise the corresponding activity of diaporthsin B.

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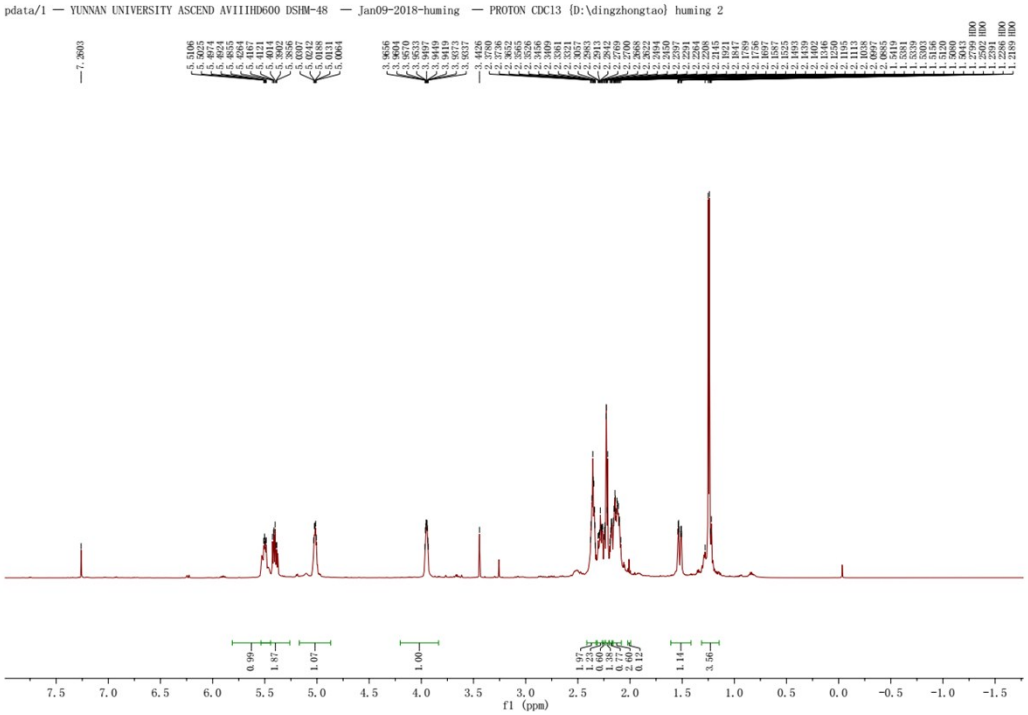


Figure S1. ^{1}H NMR of compound **1** in $CDCl_3$

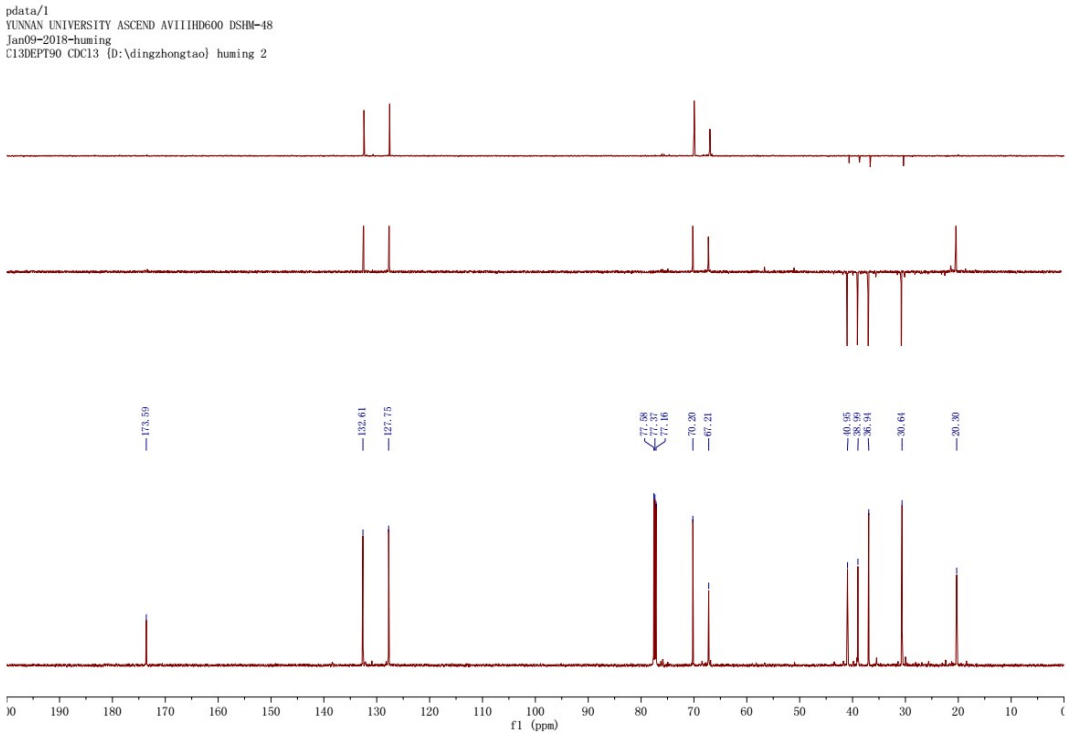


Figure S2. ^{13}C NMR of compound **1** in $CDCl_3$

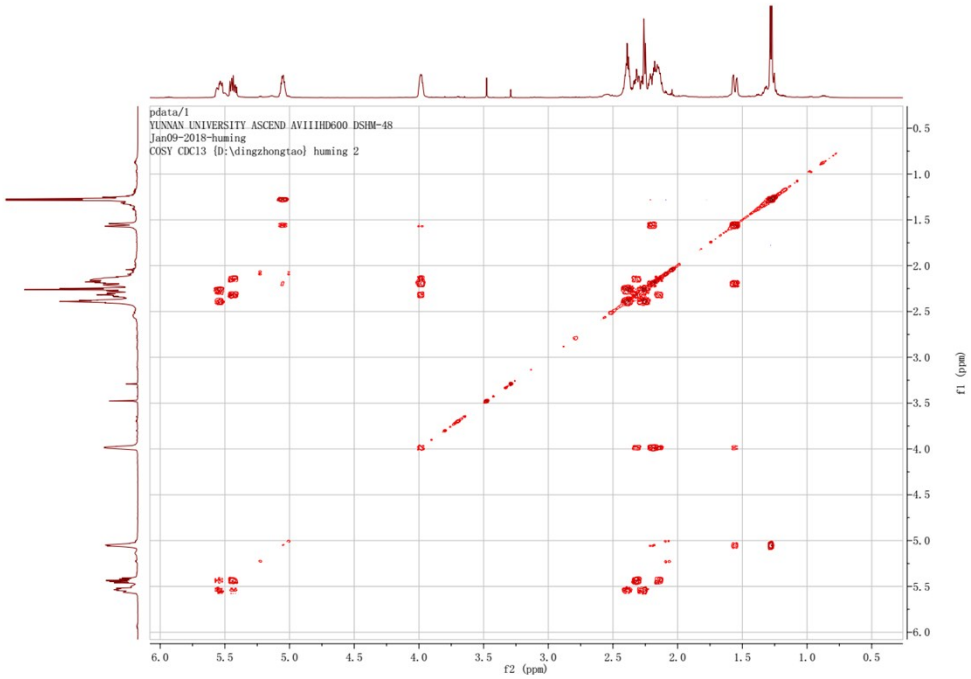


Figure S3. ^{1}H-^{1}H COSY spectrum of compound **1** in $CDCl_3$

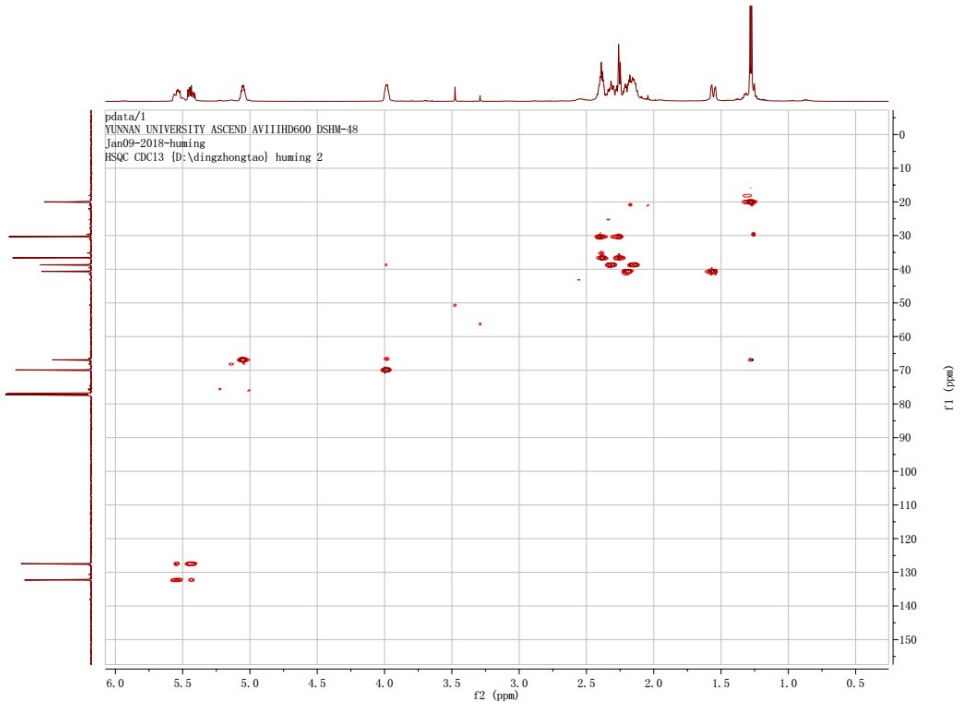


Figure S4. HSQC spectrum of compound **1**in $CDCl_3$

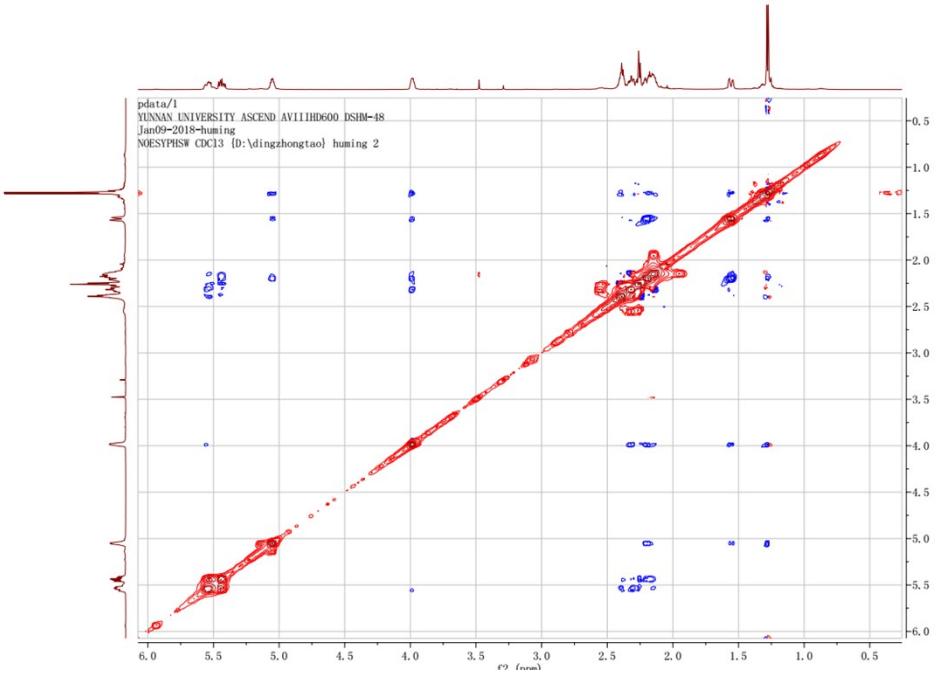


Figure S5. NOESY spectrum of compound **1** in $CDCl_3$

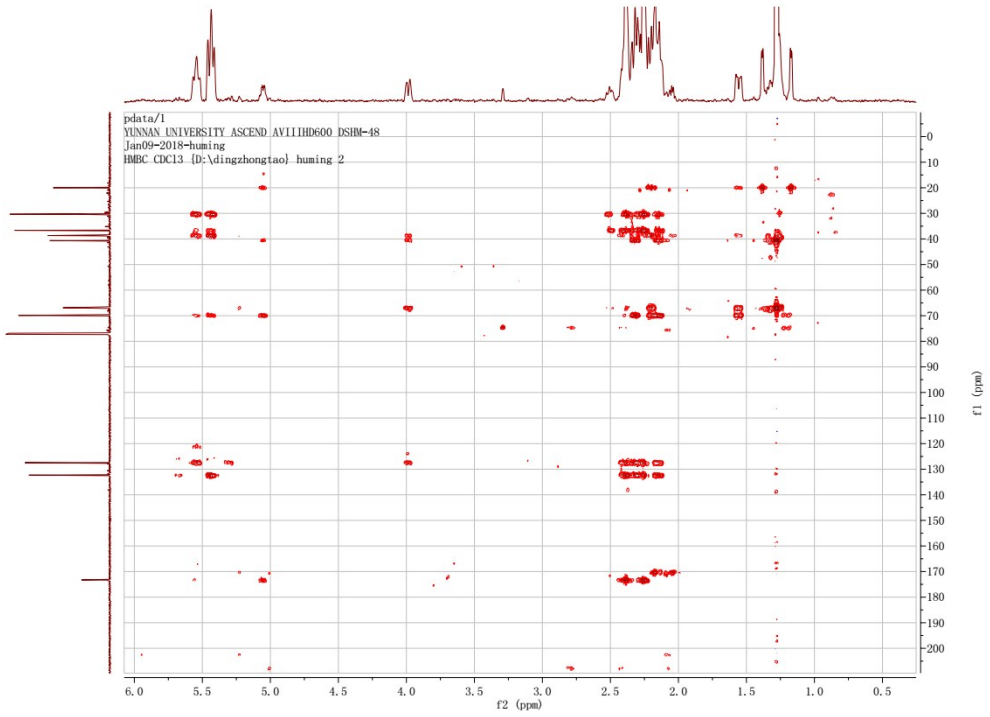


Figure S6. HMBC spectrum of compound **1** in $CDCl_3$

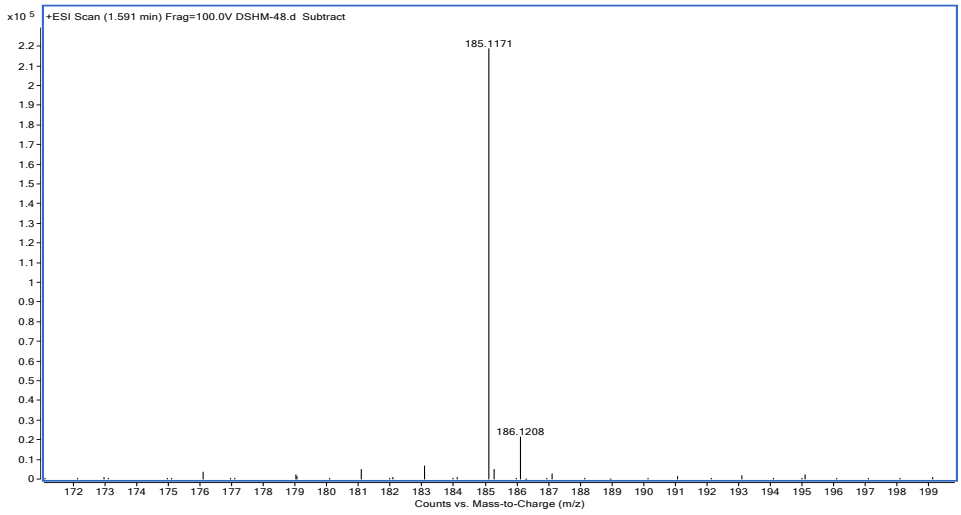


Figure S7. HRESIMS spectrum of compound **1**

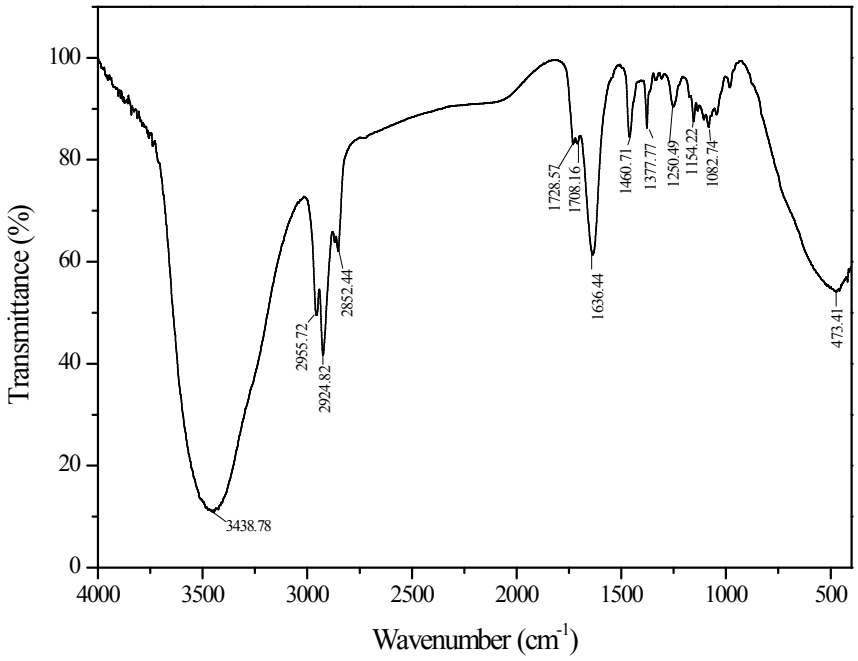


Figure S8. IR Spectrum of compound **1**

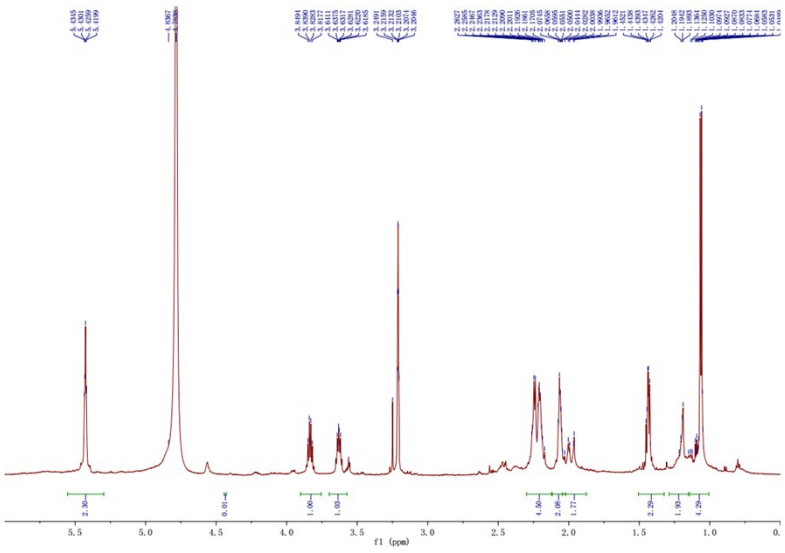
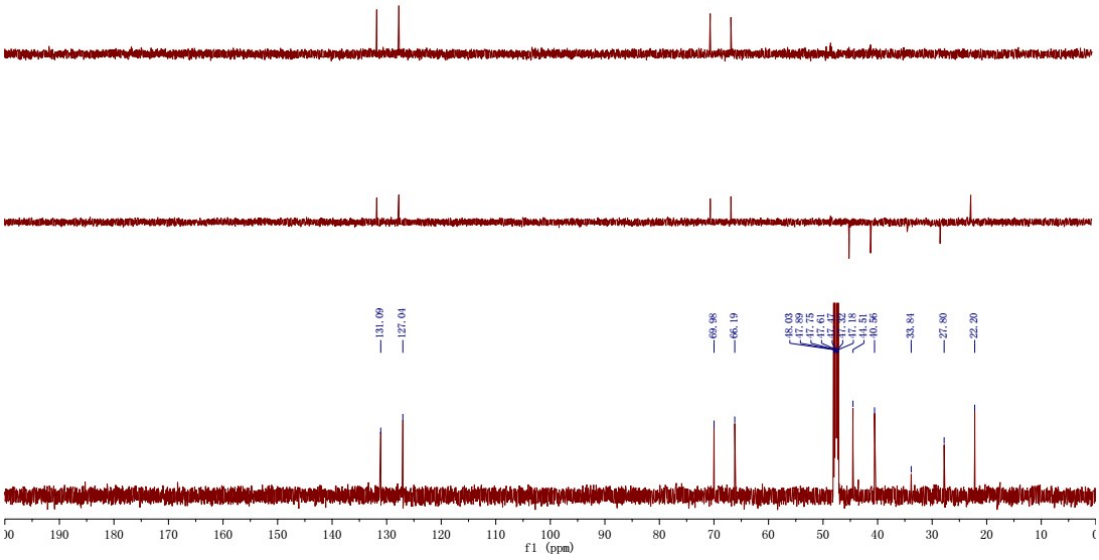


Figure S9. ^{1}H NMR of compound **2** in MeOD



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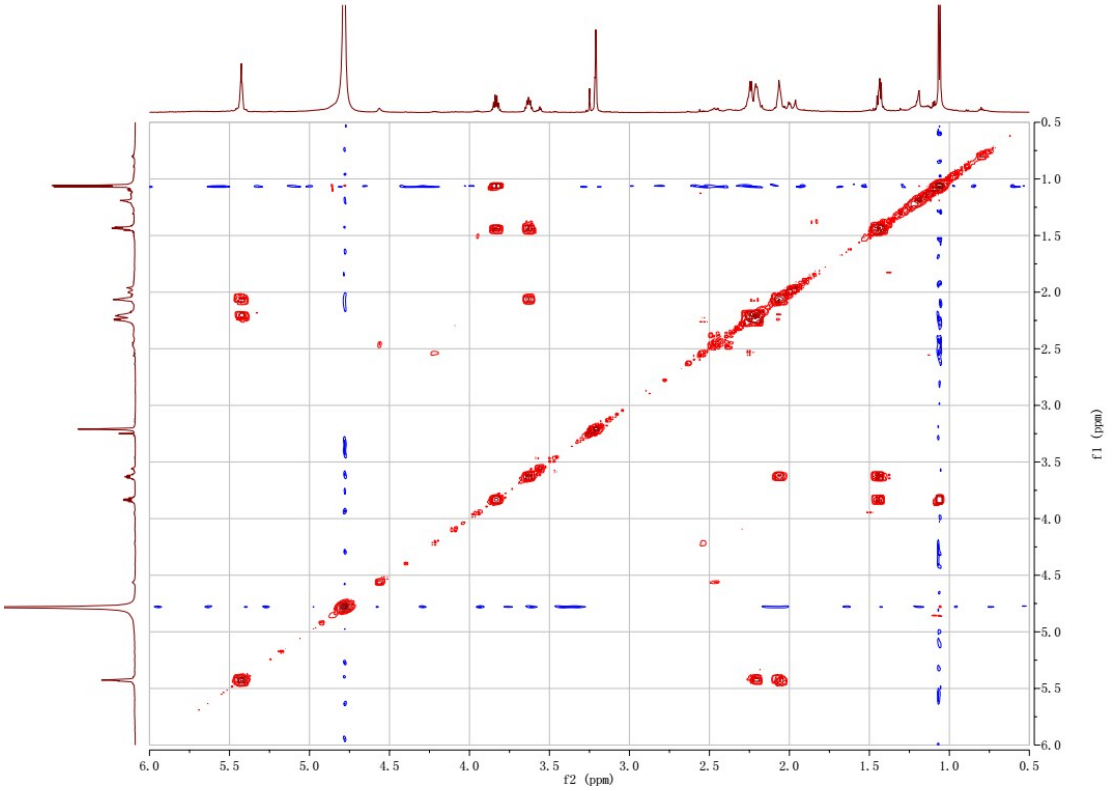


Figure S11. ^{1}H-^{1}H COSY spectrum of compound **2** in MeOD

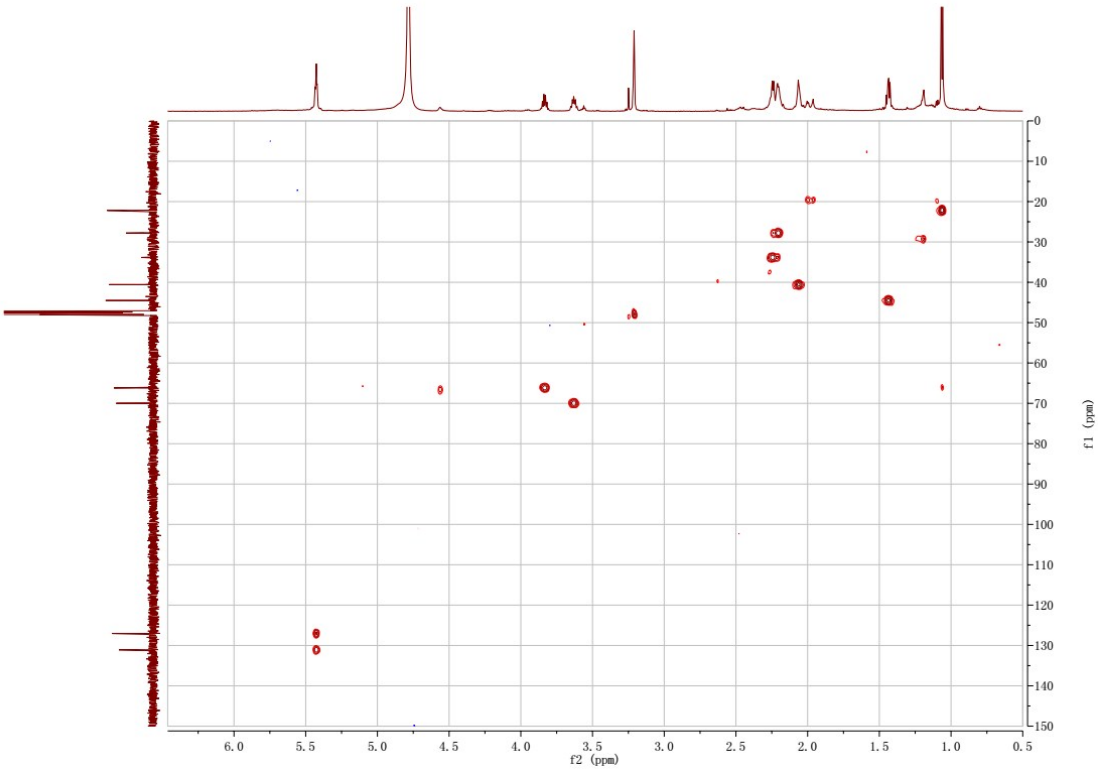


Figure S12. HSQC spectrum of compound **2** in MeOD

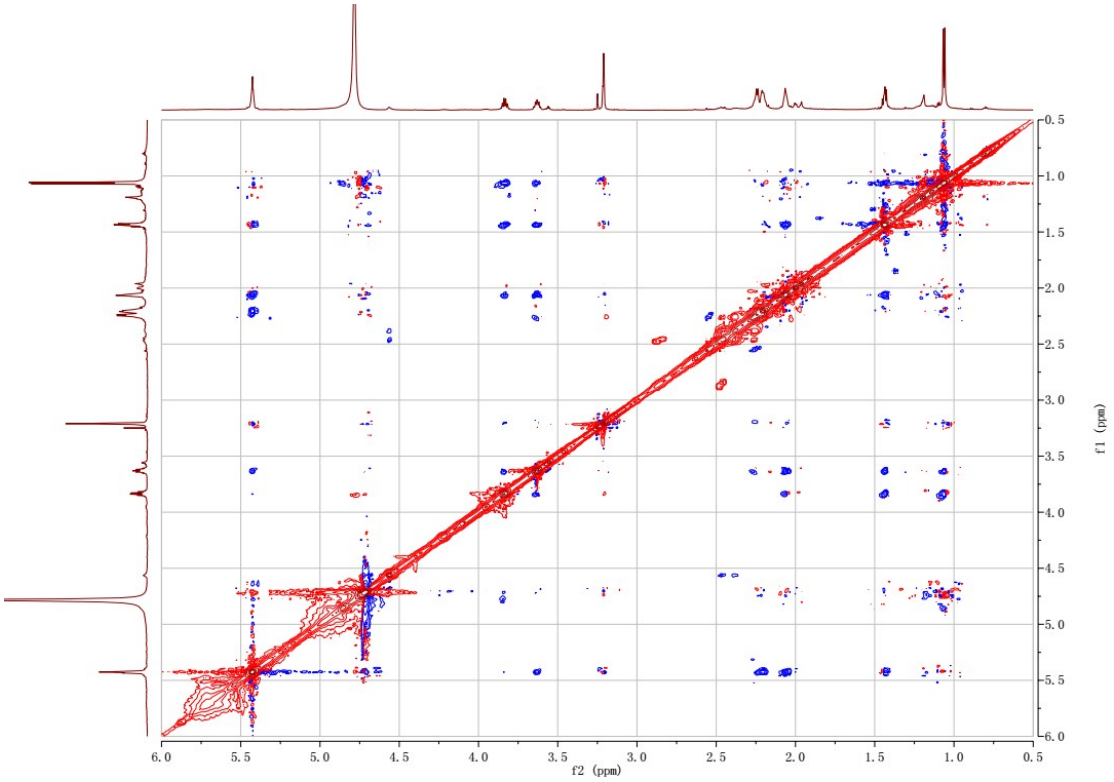


Figure S13. NOESY spectrum of compound **2** in MeOD

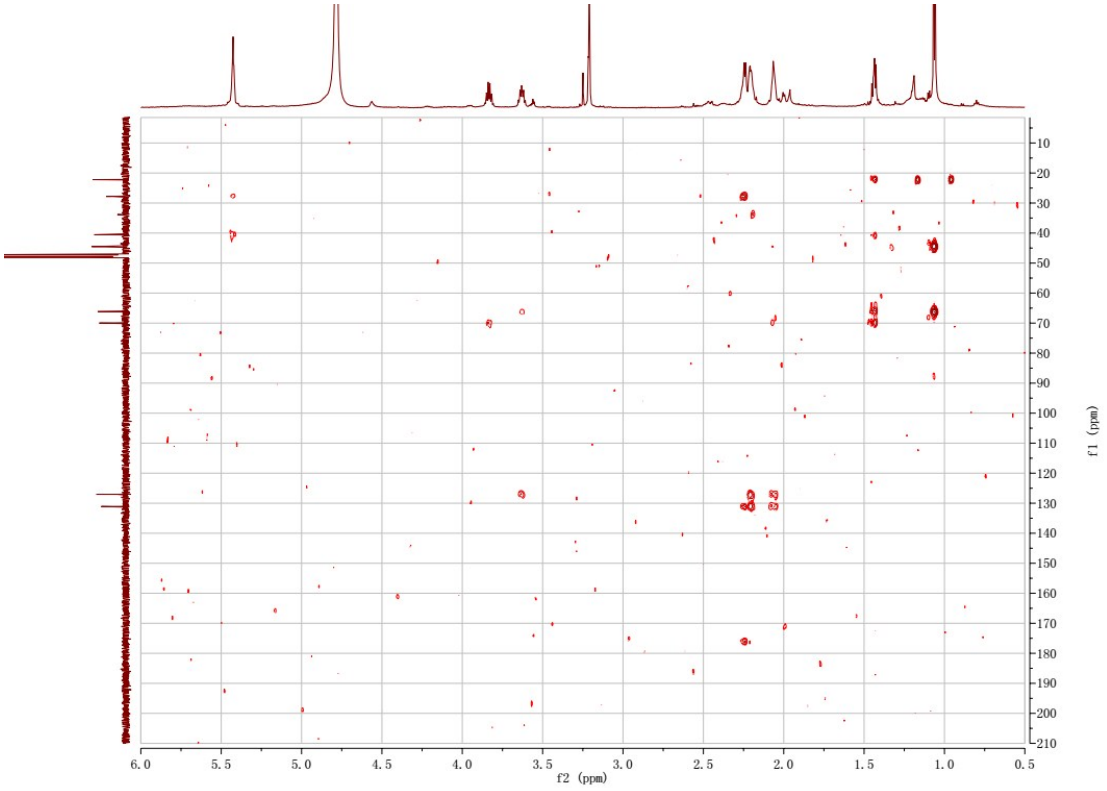
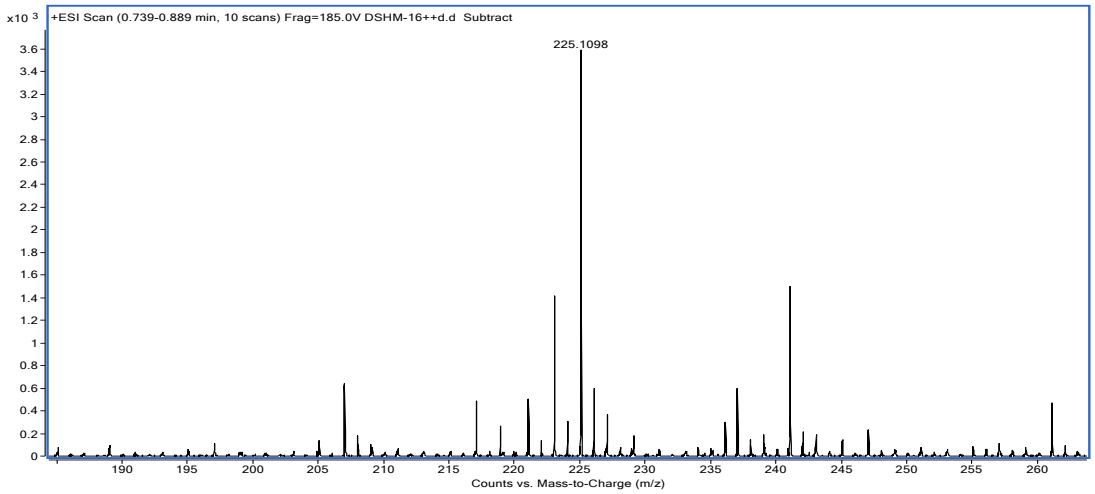


Figure S14. HMBC spectrum of compound **2** in MeOD



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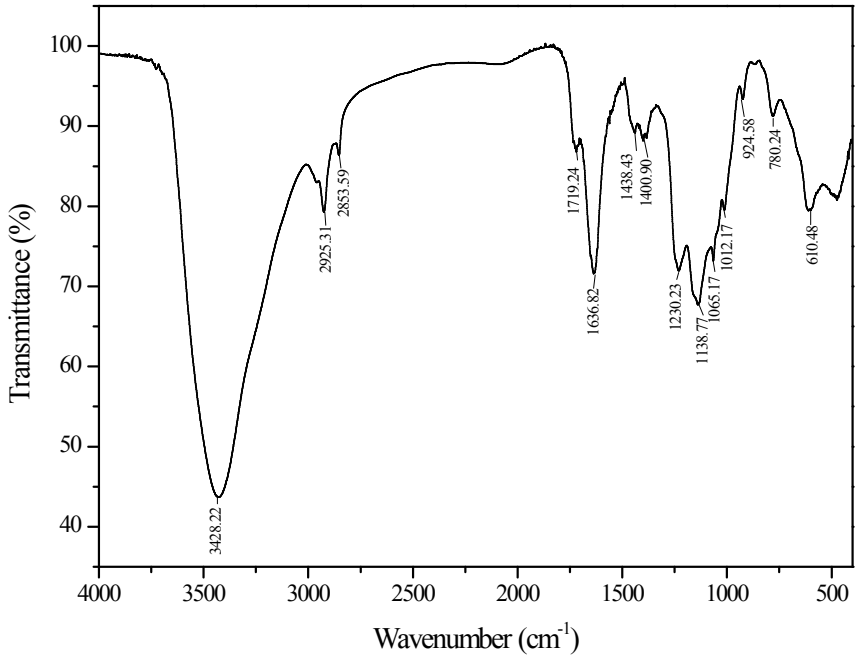


Figure S16. IR Spectrum of compound **2**

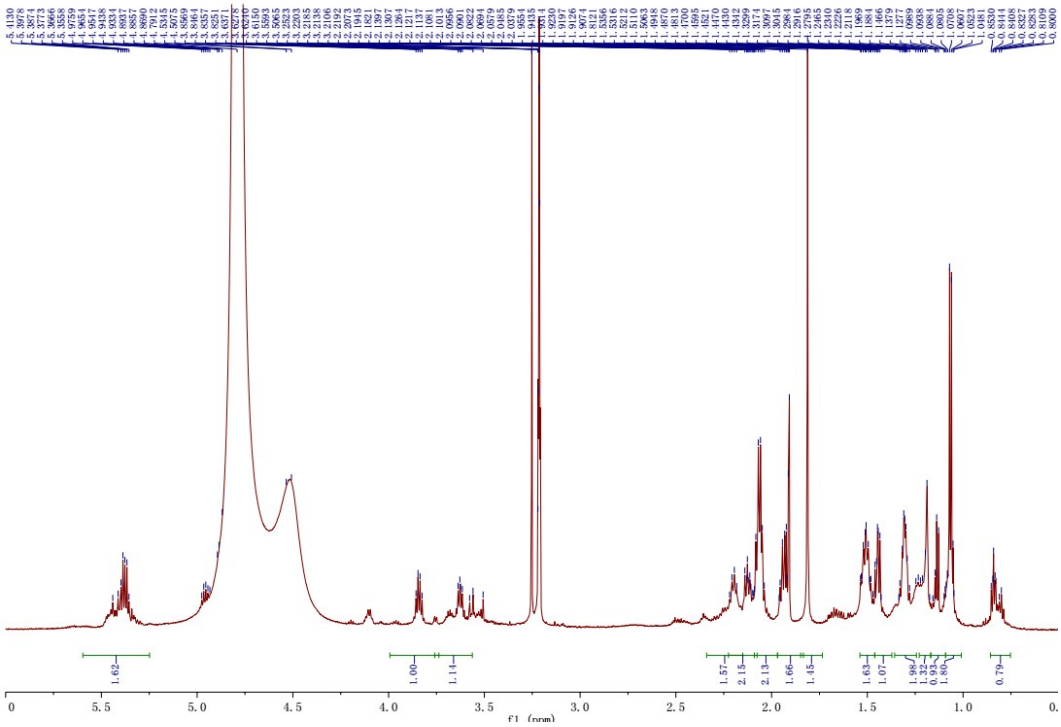


Figure S17. ^{1}H NMR of compound **3** in MeOD

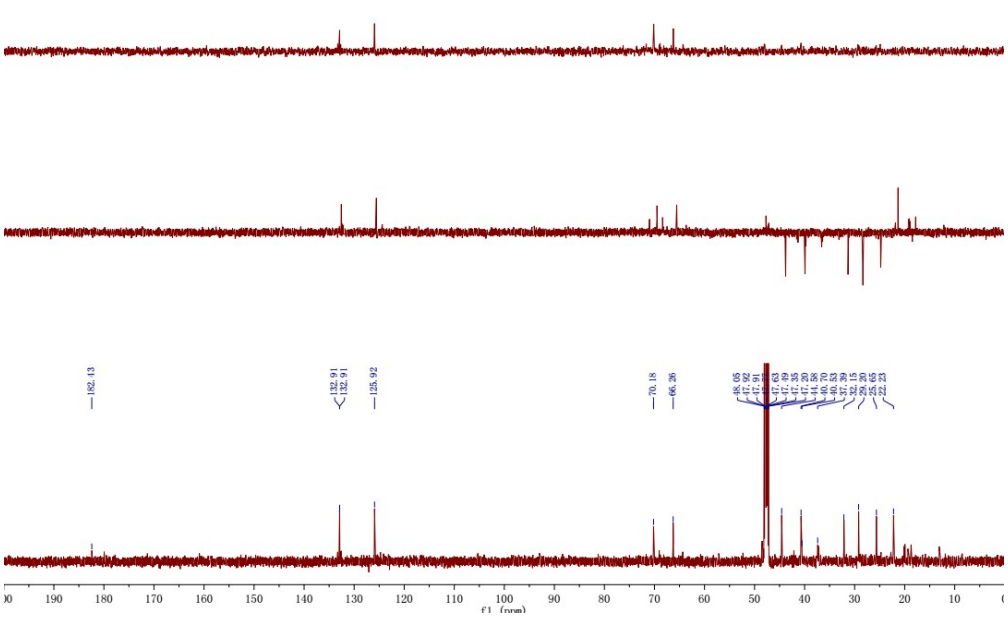


Figure S18. ^{13}C NMR of compound **3** in MeOD

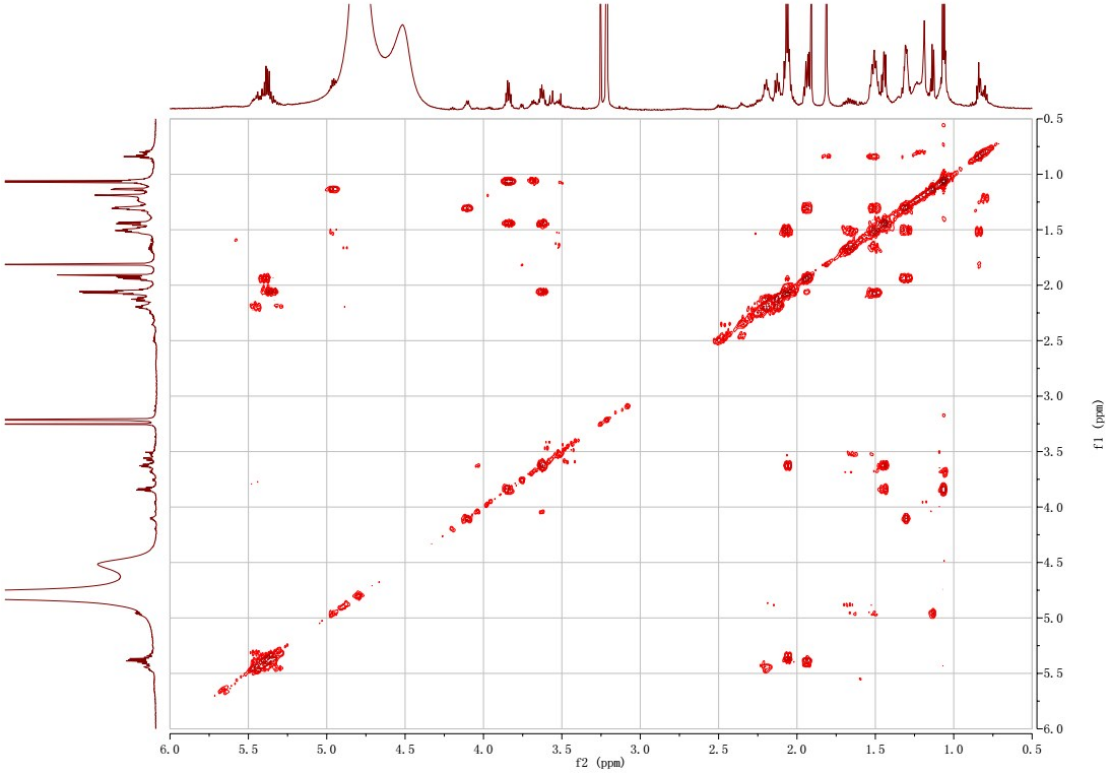


Figure S19. ^{1}H-^{1}H COSY spectrum of compound **3** in MeOD

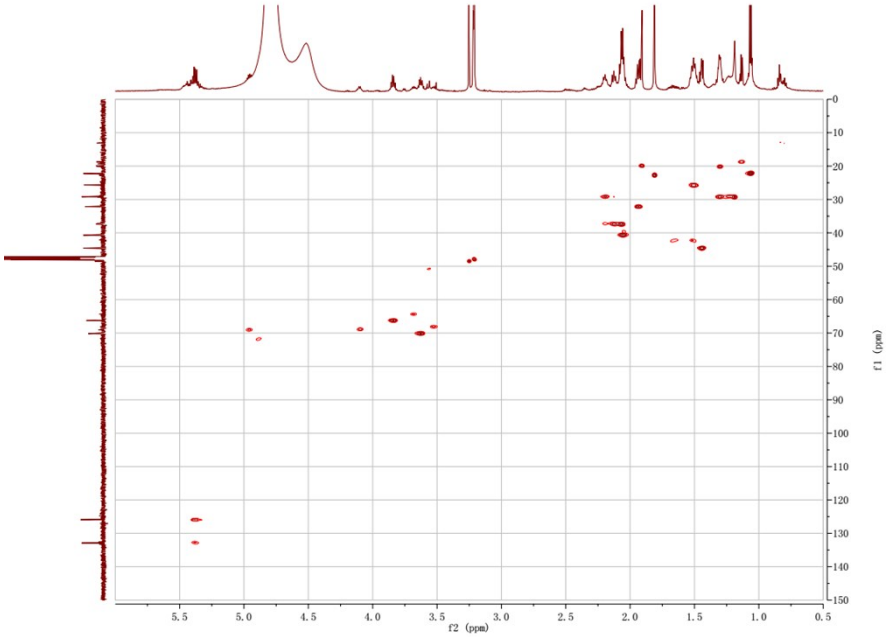


Figure S20. HSQC spectrum of compound **3** in MeOD

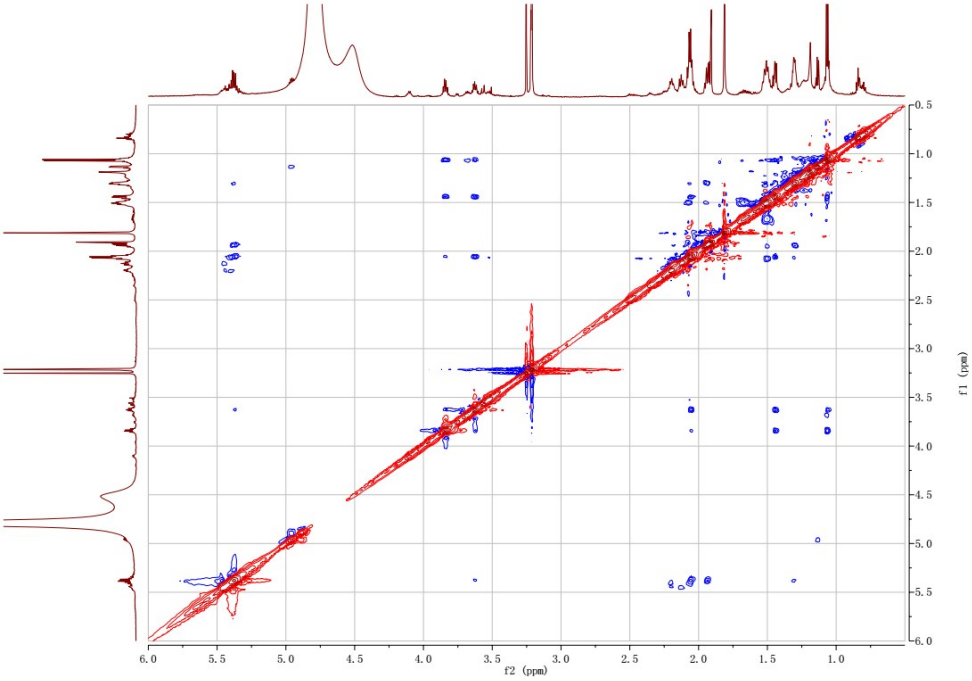


Figure S21. NOESY spectrum of compound **3** in MeOD

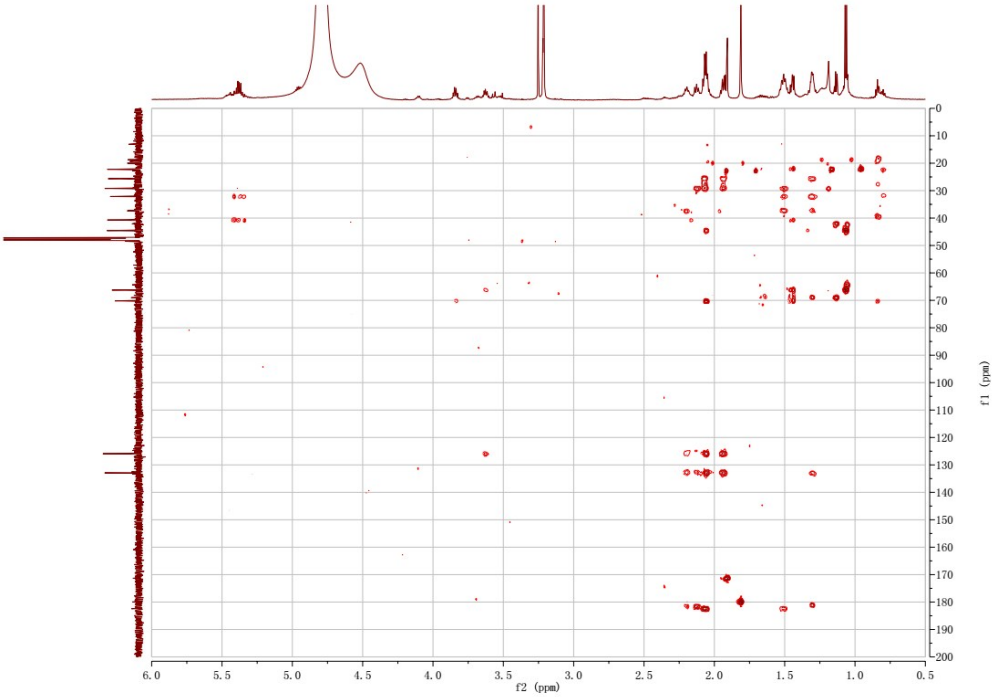
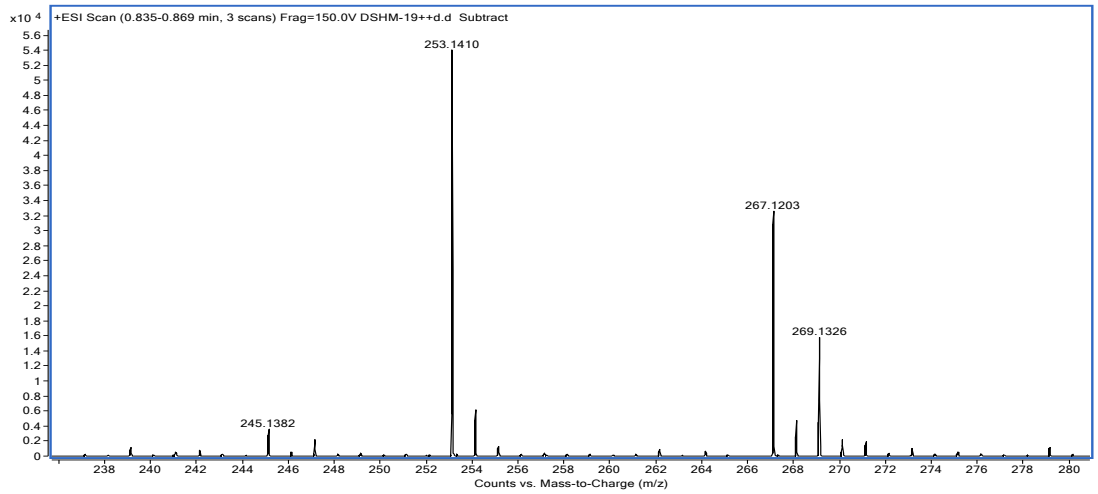


Figure S22. HMBC spectrum of compound **3** in MeOD



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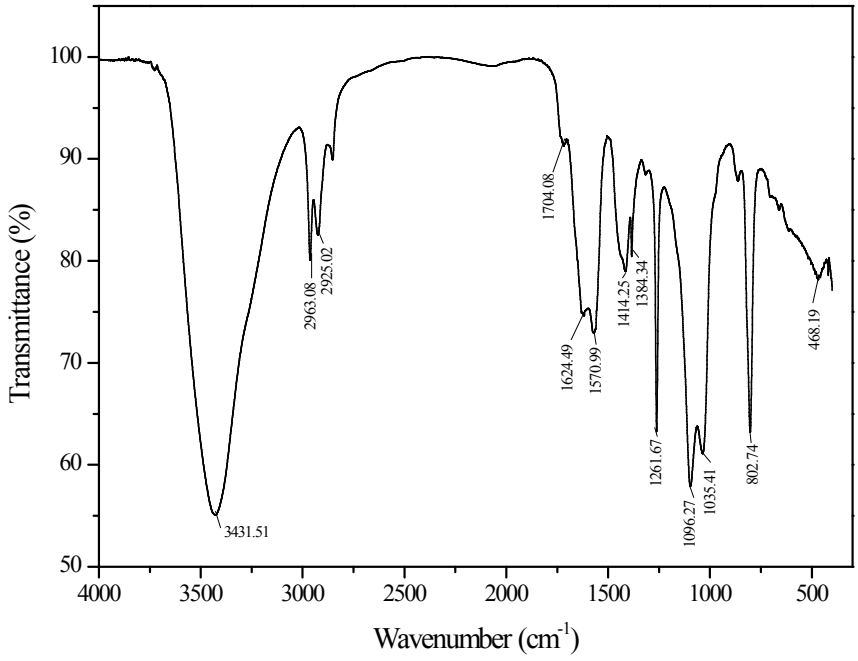


Figure S24. IR Spectrum of compound **3**

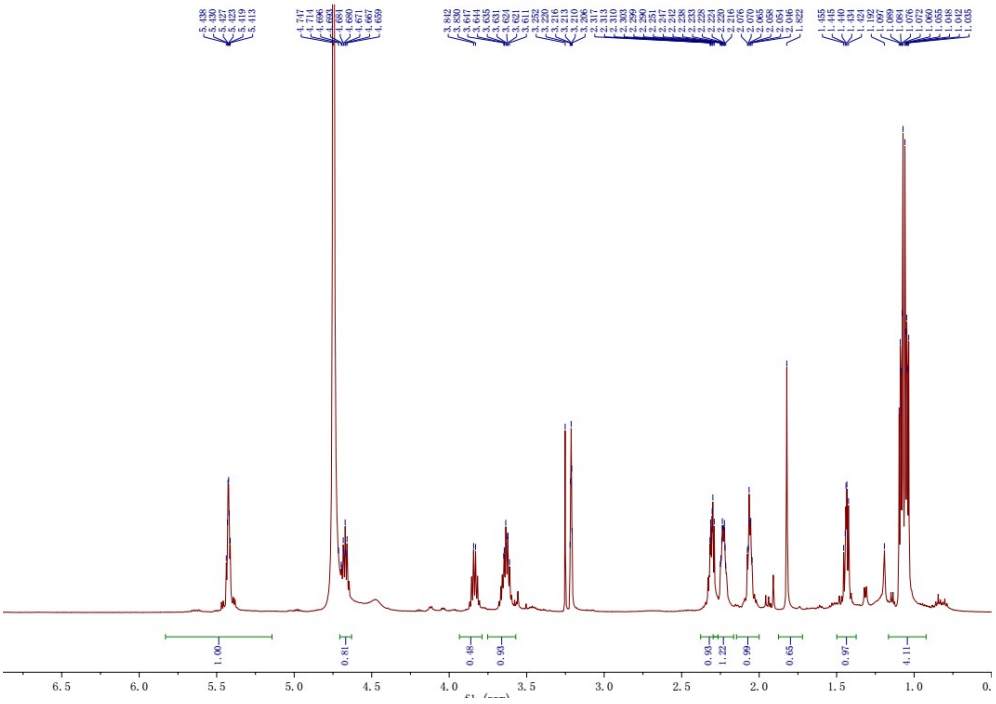
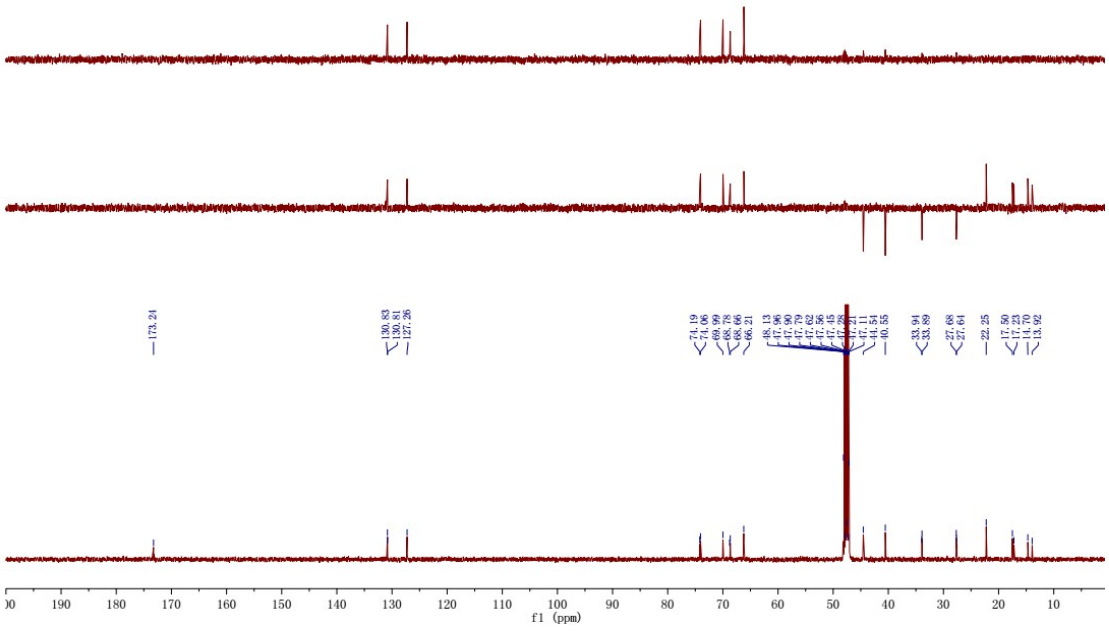


Figure S25. ^{1}H NMR of compound **4** in MeOD



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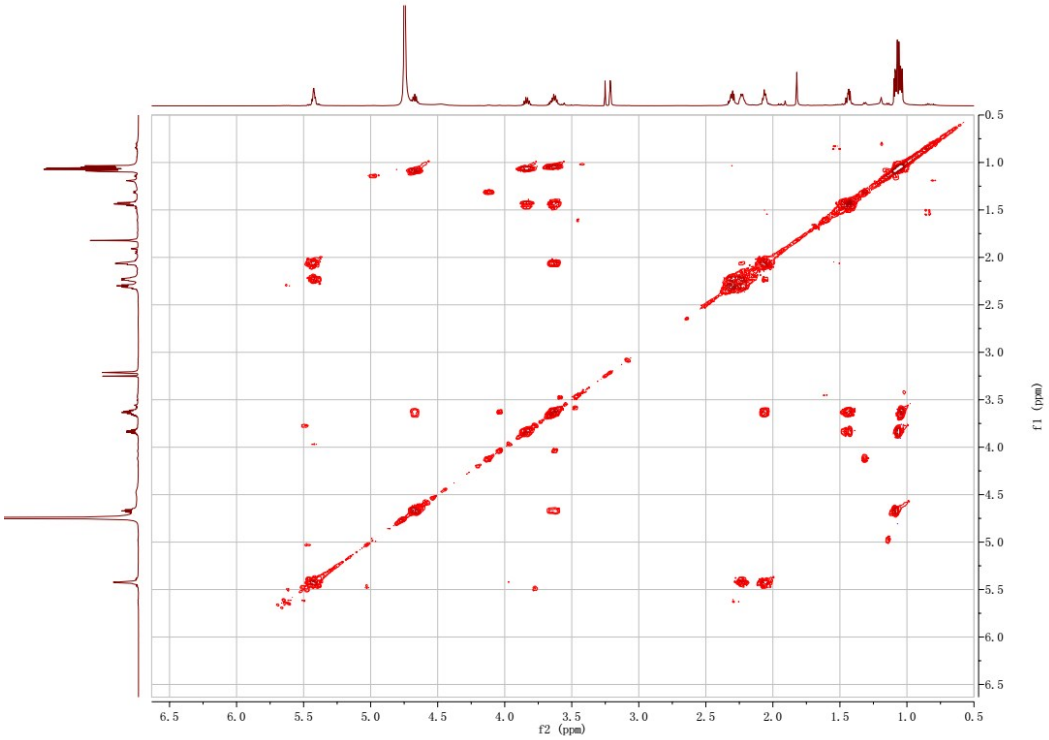


Figure S27. ^{1}H-^{1}H COSY spectrum of compound **4** in MeOD

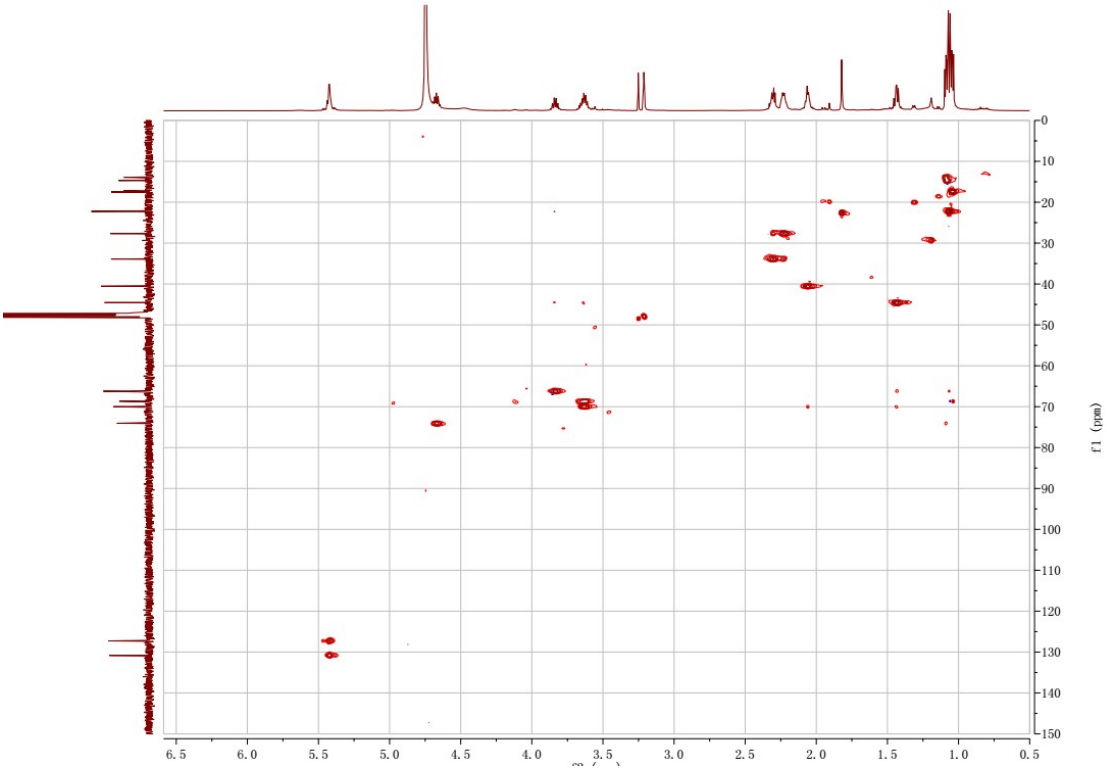


Figure S28. HSQC spectrum of compound **4** in MeOD

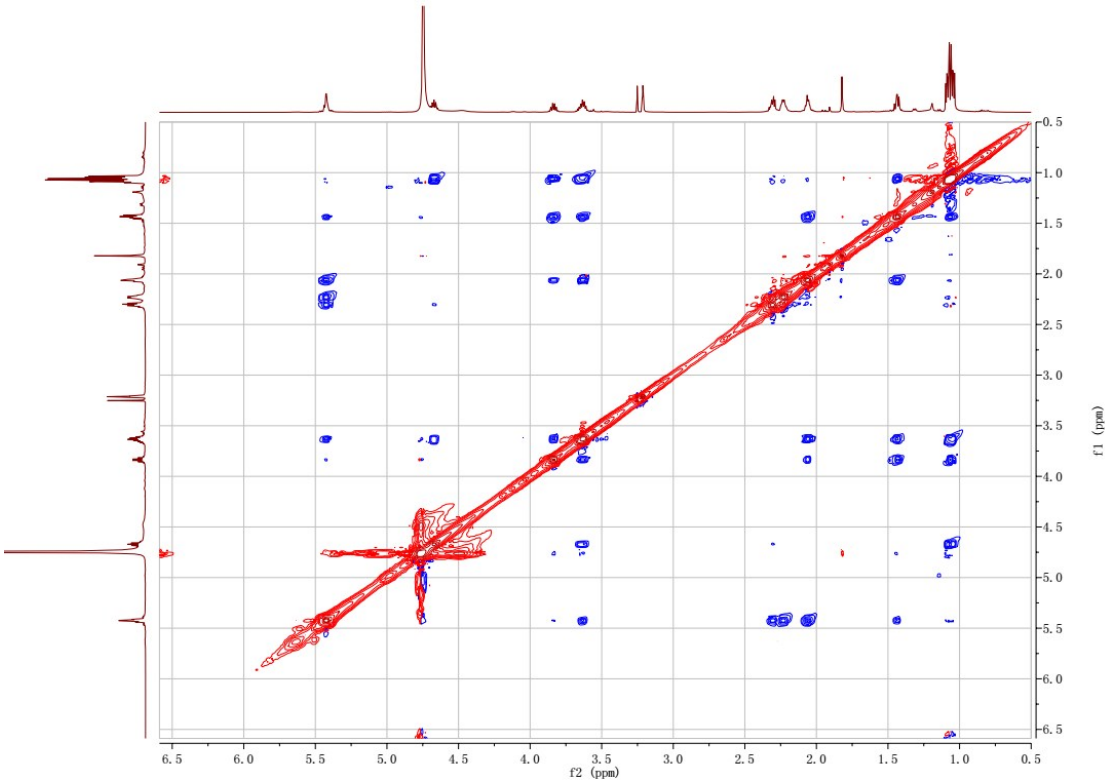


Figure S29. NOESY spectrum of compound **4** in MeOD

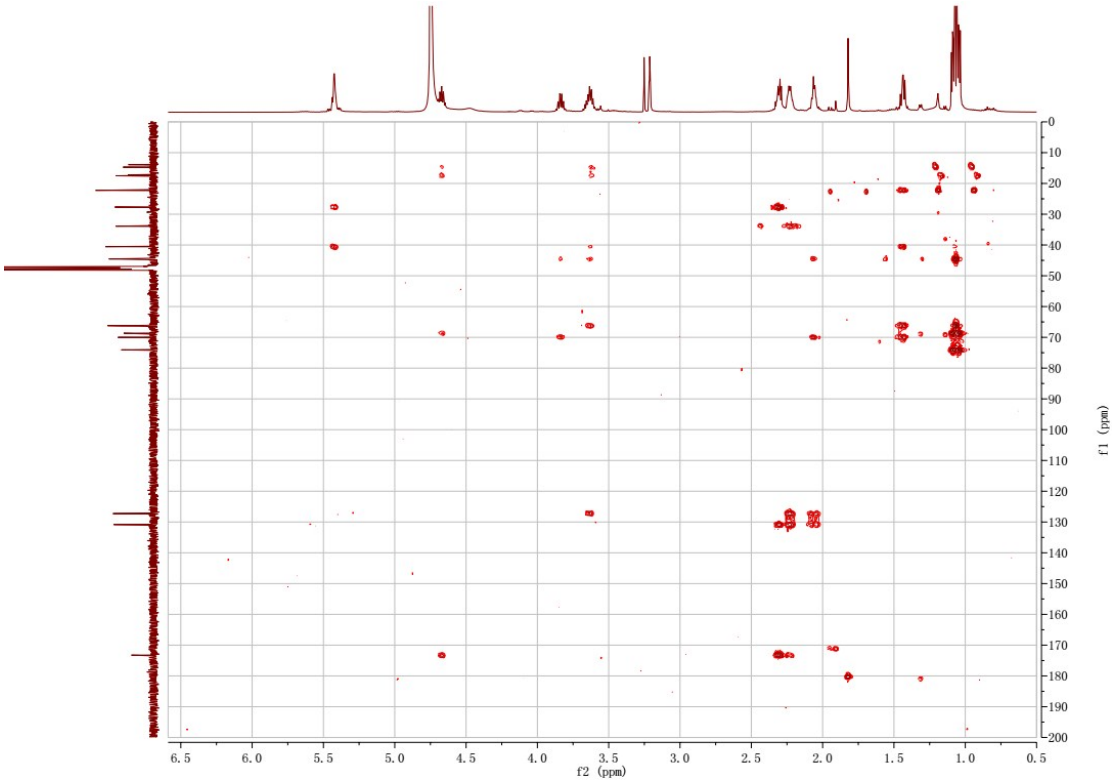


Figure S30. HMBC spectrum of compound **4** in MeOD

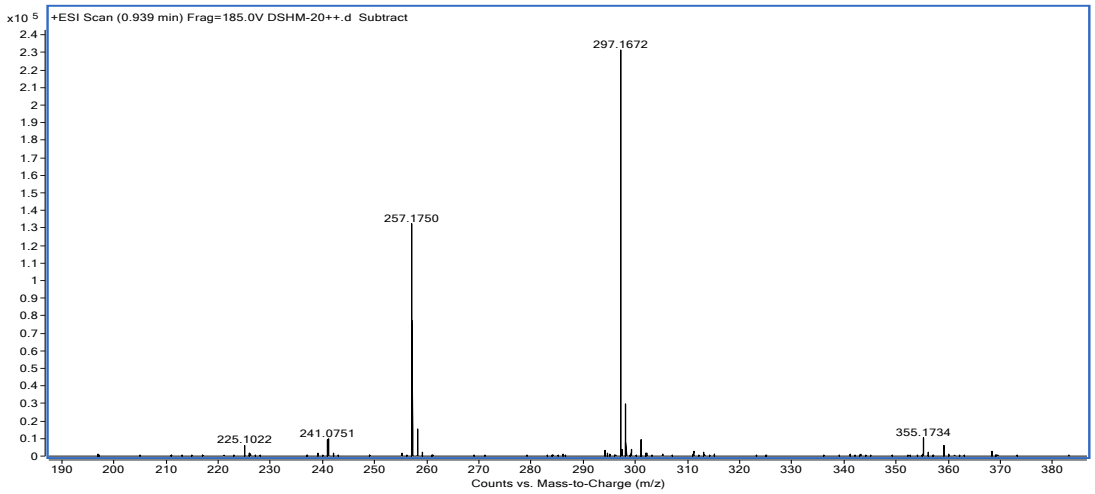


Figure S31. HRESIMS spectrum of compound **4**

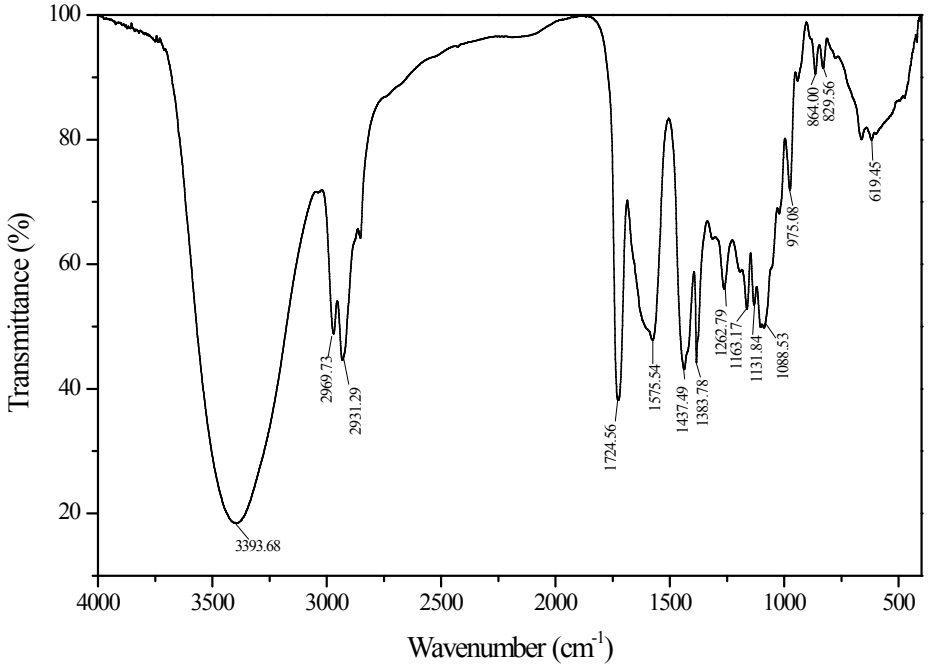


Figure S32. IR Spectrum of compound **4**

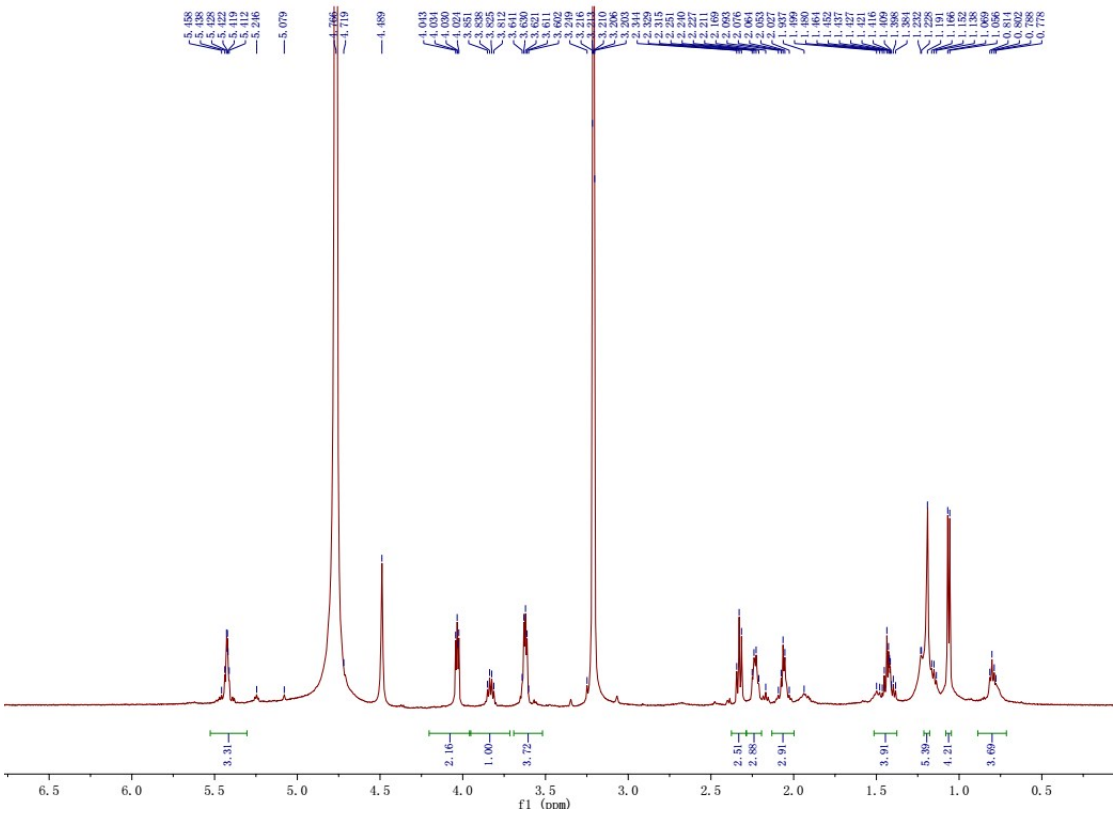


Figure S33. ^{1}H NMR of compound **5** in MeOD

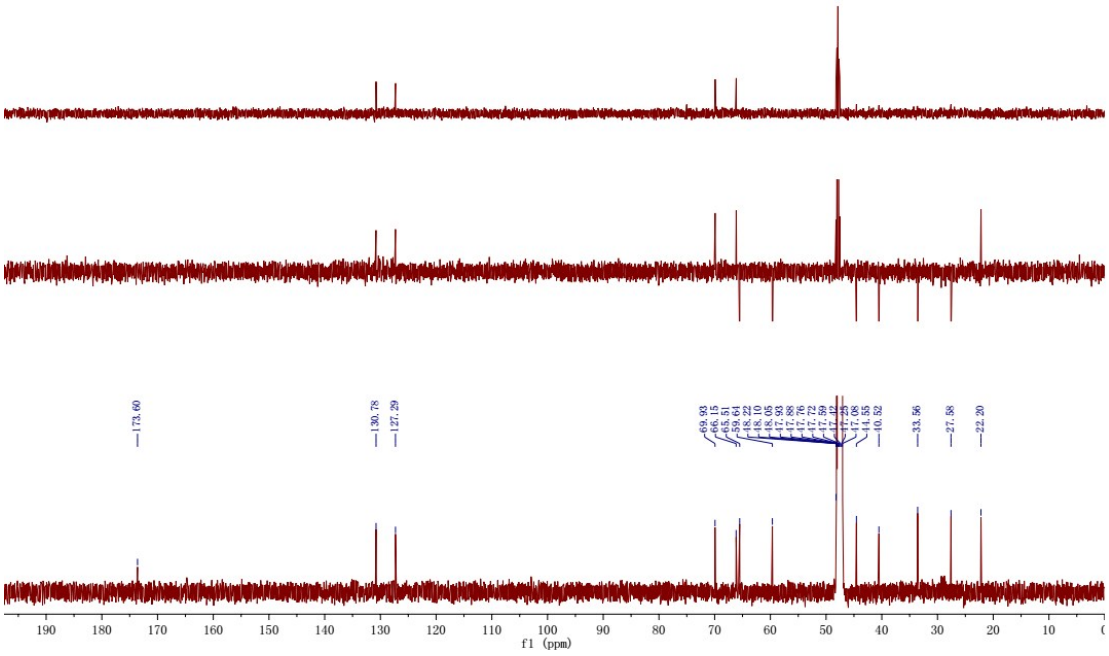


Figure S34. ^{13}C NMR of compound **5** in MeOD

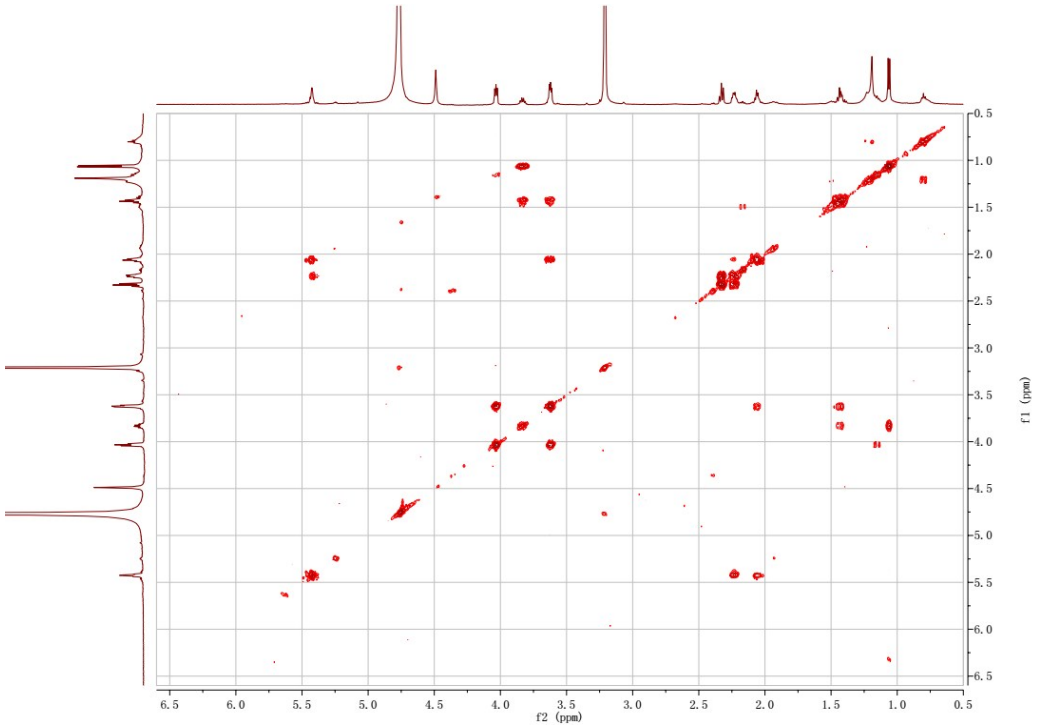


Figure S35. ^{1}H-^{1}H COSY spectrum of compound **5** in MeOD

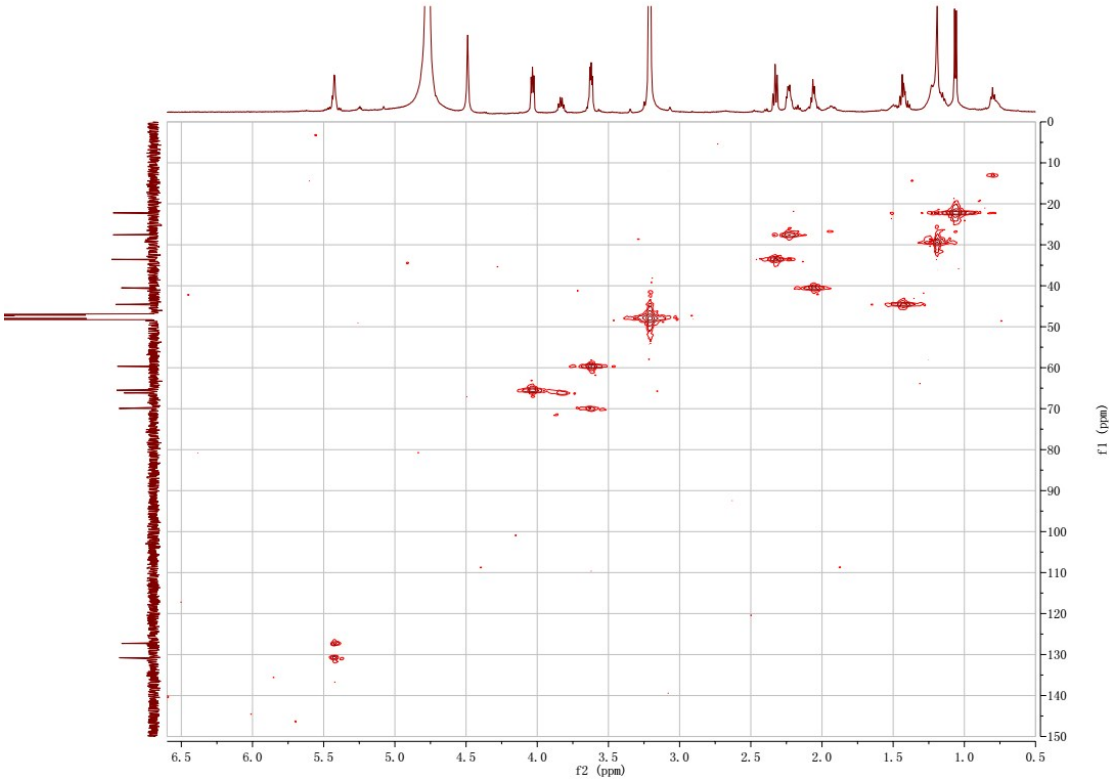


Figure S36. HSQC spectrum of compound **5** in MeOD

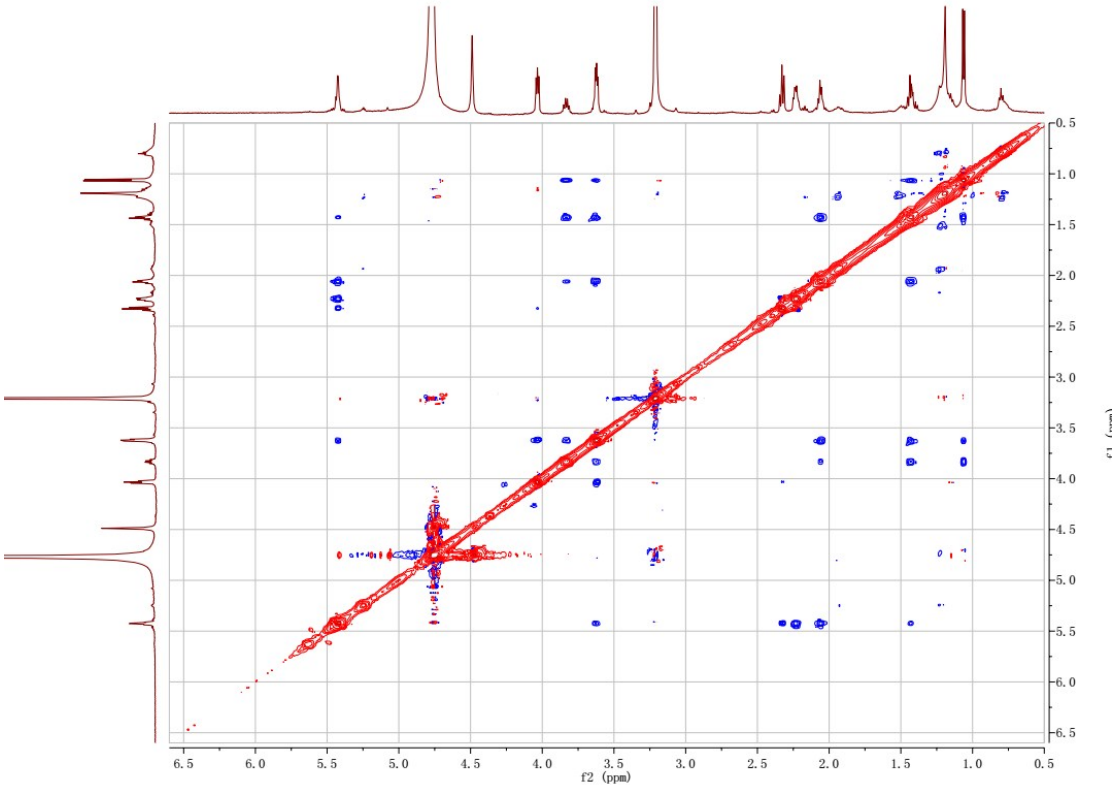


Figure S37. NOESY spectrum of compound **5** in MeOD

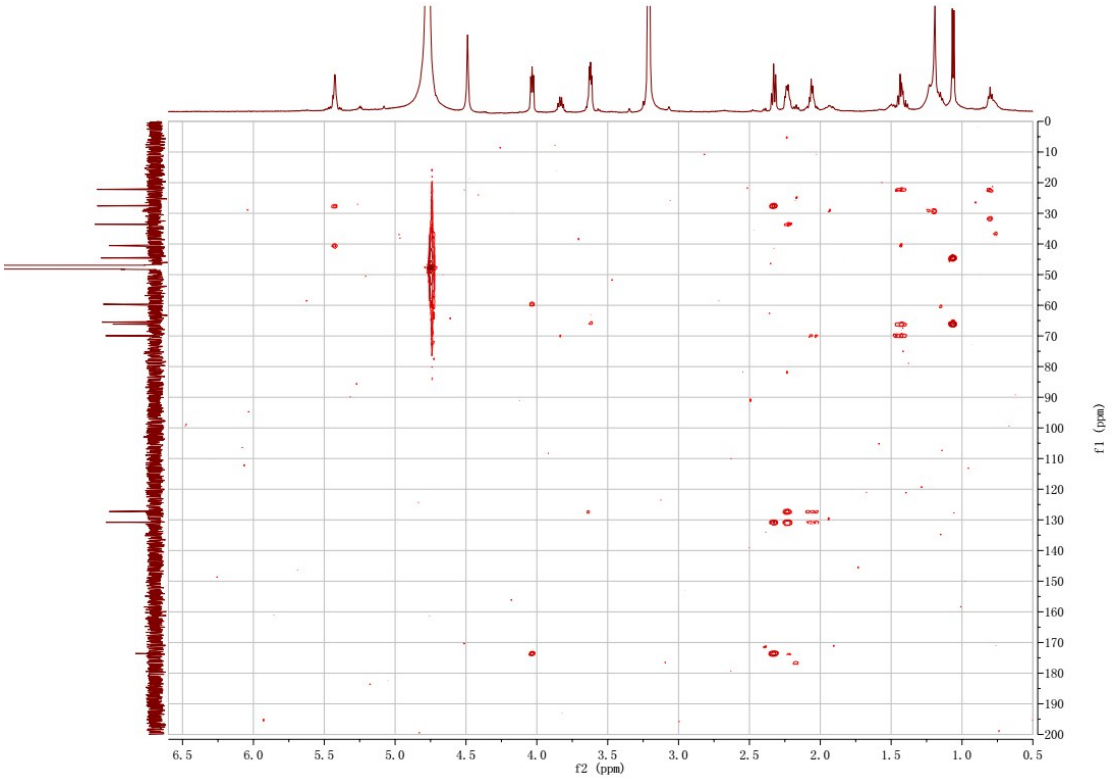


Figure S38. HMBC spectrum of compound **5** in MeOD

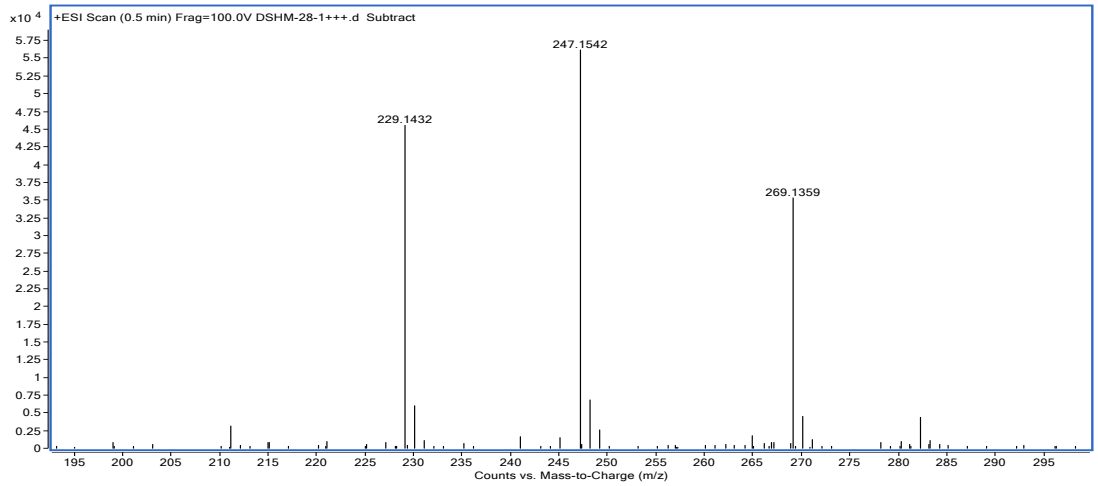


Figure S39. HRESIMS spectrum of compound **5** in MeOD

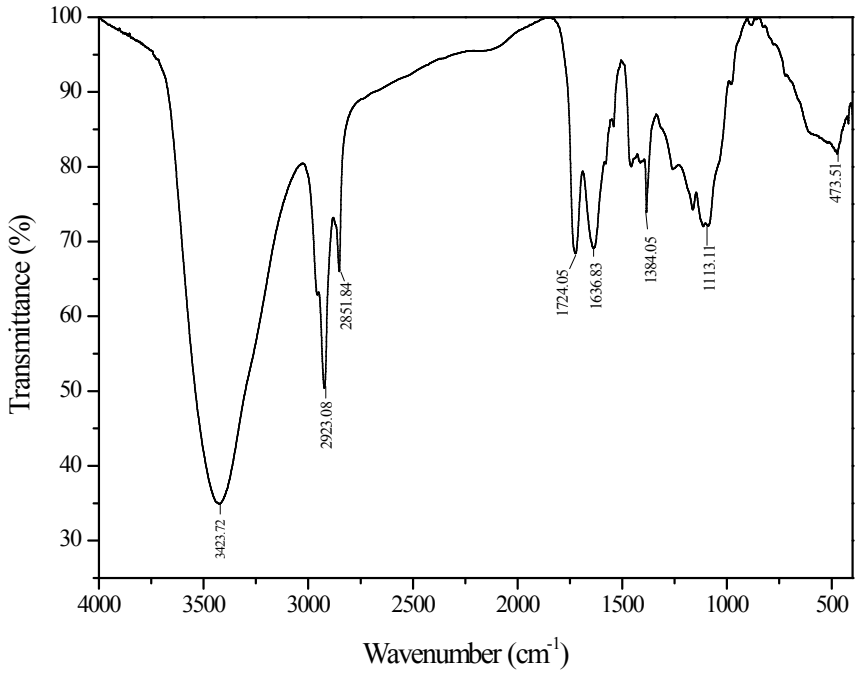


Figure S40. IR Spectrum of compound **5**

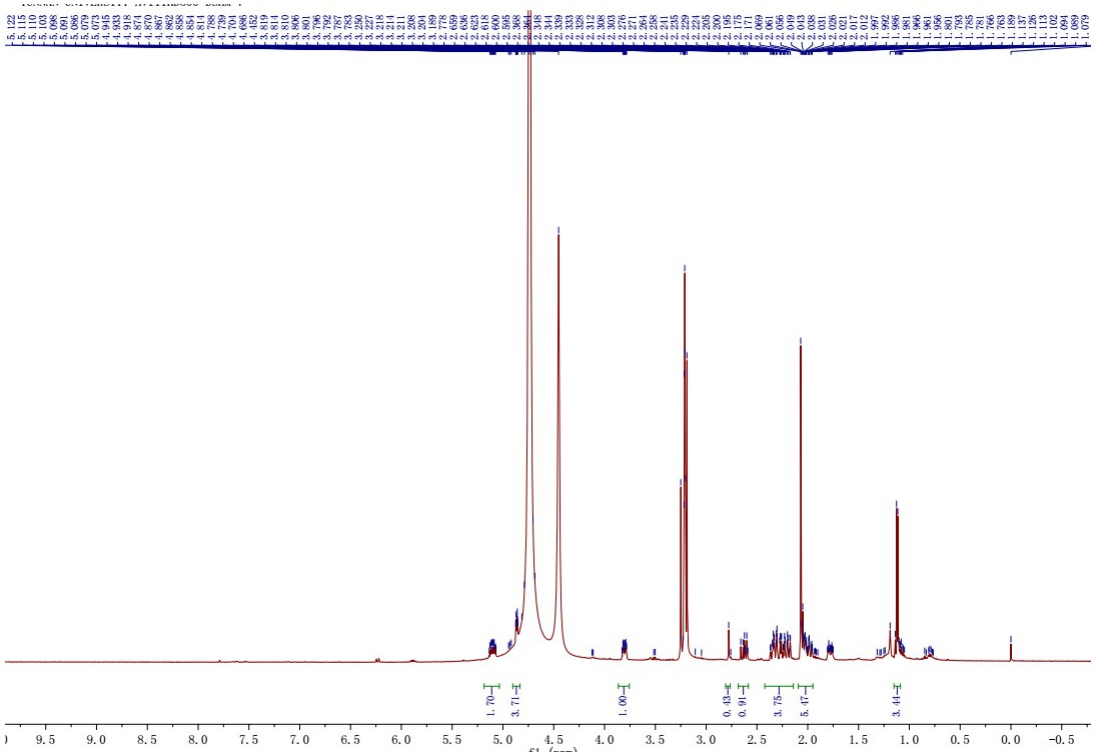


Figure S41. ^{1}H NMR of compound **6** in MeOD

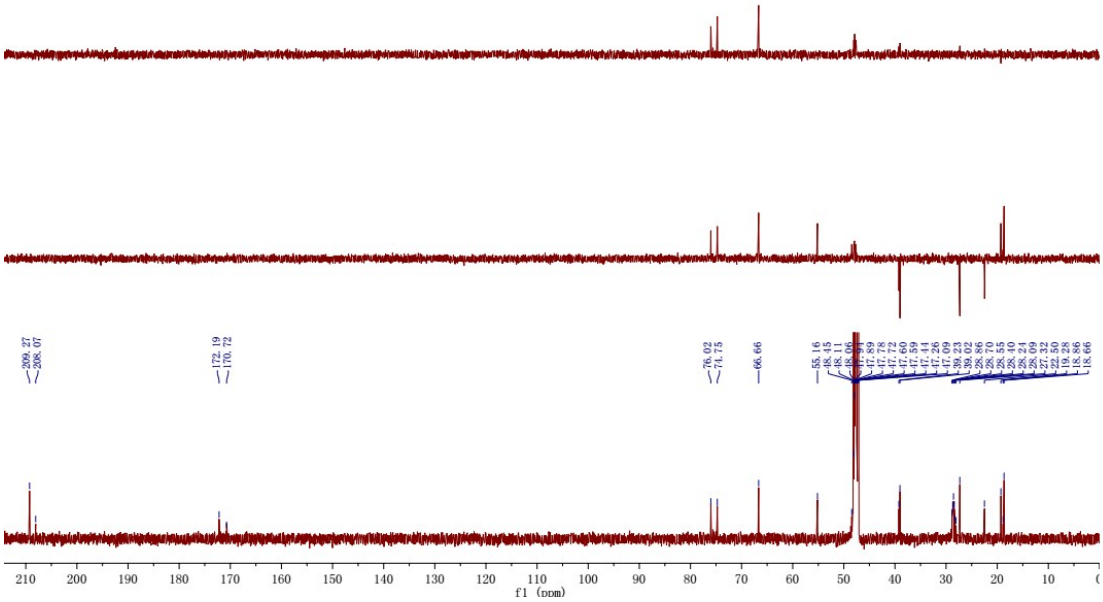


Figure S42. ^{13}C NMR of compound **6** in MeOD

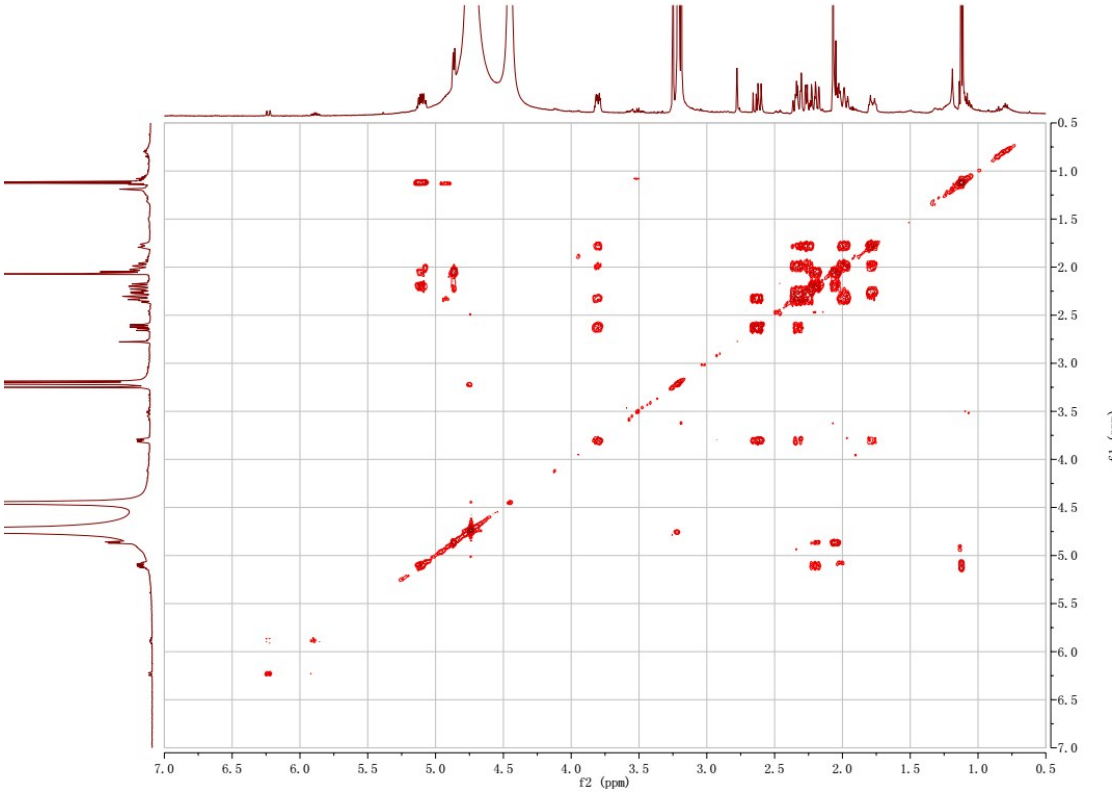


Figure S43. ^{1}H-^{1}H COSY spectrum of compound **6** in MeOD

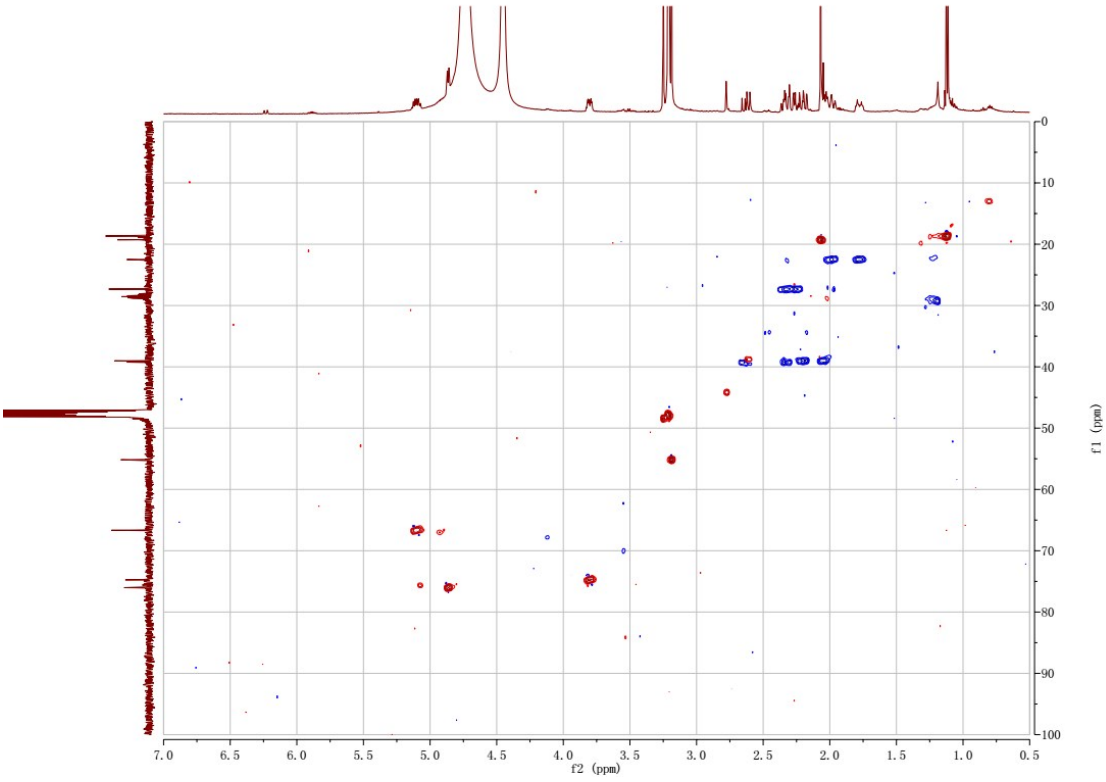
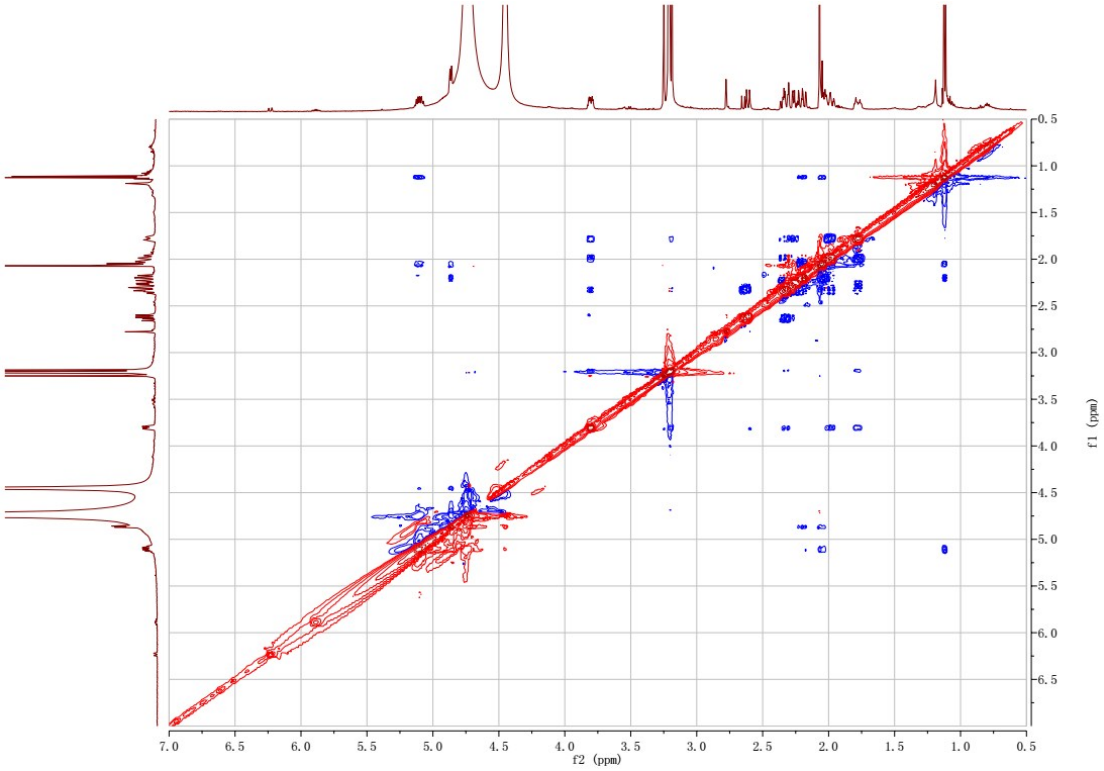


Figure 44. HSQC spectrum of compound **6** in MeOD



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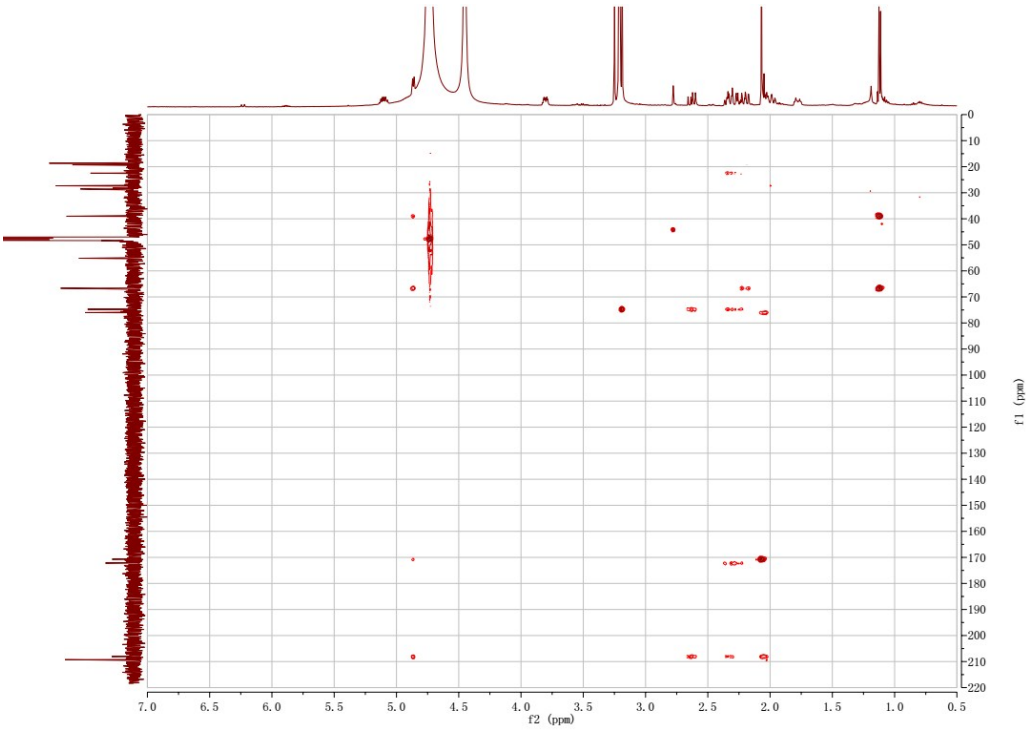

Figure 46. HMBC spectrum of compound **6** in MeOD

Figure S47. HRESIMS Spectrum of compound **6**

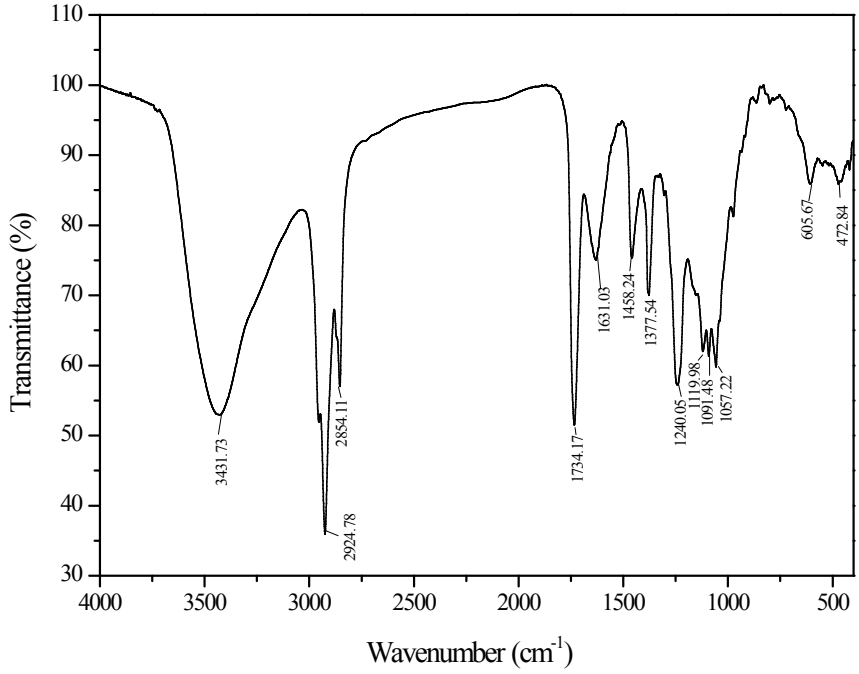

Figure S48. IR Spectrum of compound **6**

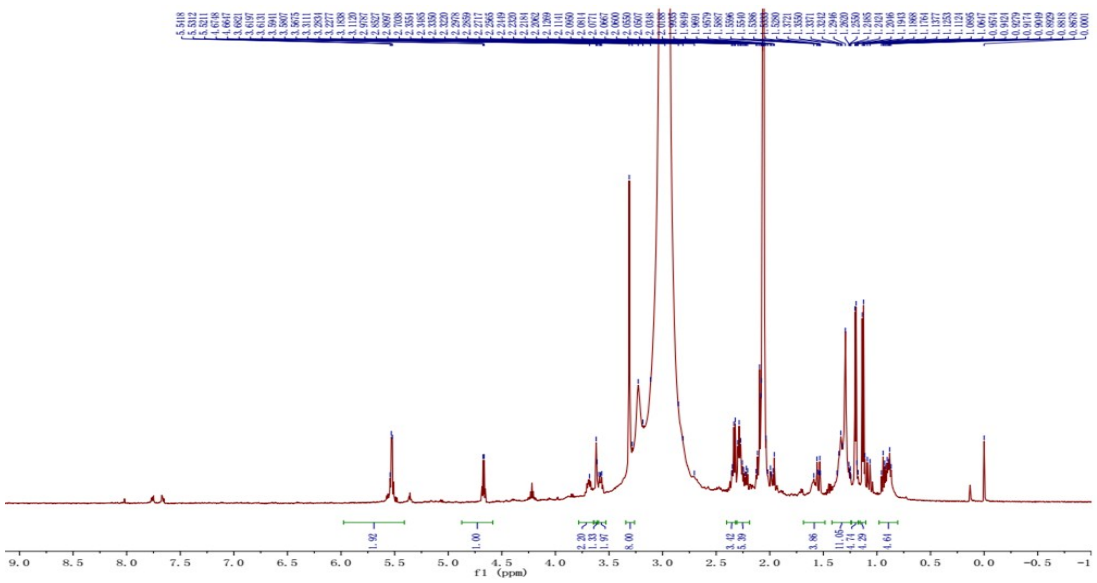

Figure S49. ^{1}H NMR of compound **7** in acetone-d_6

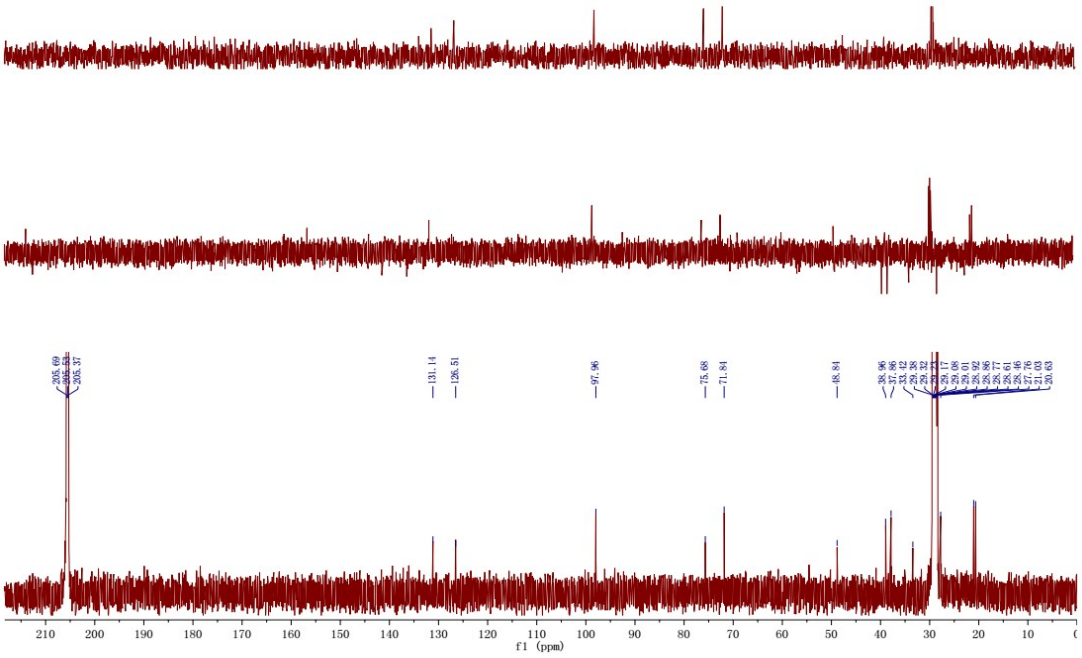

Figure S50. ^{13}C NMR of compound **7** in acetone-d_6

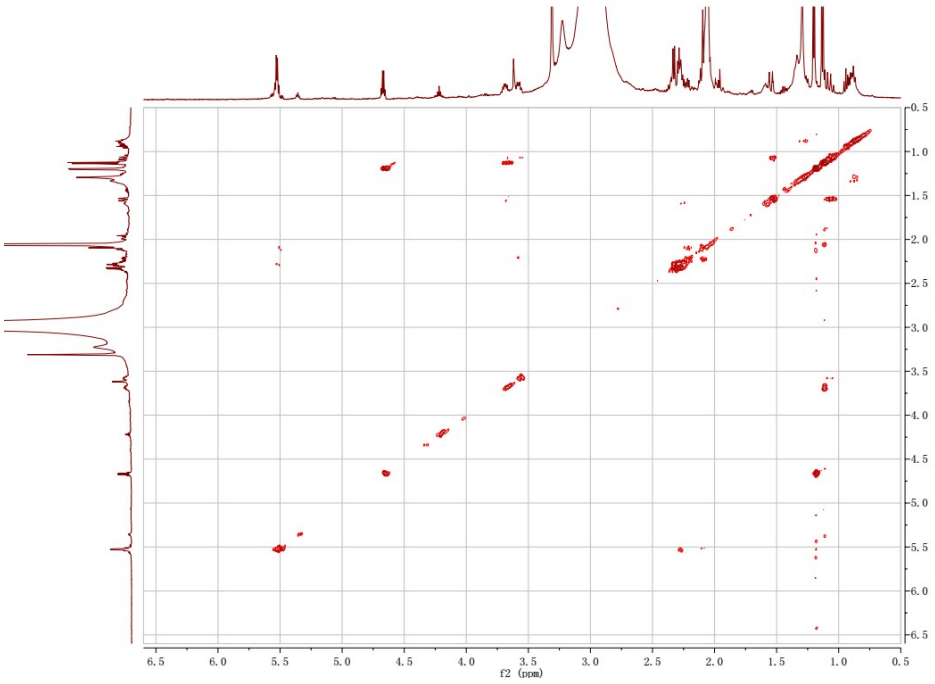

Figure S51. ^{1}H-^{1}H COSY spectrum of compound **7** in acetone-d_6

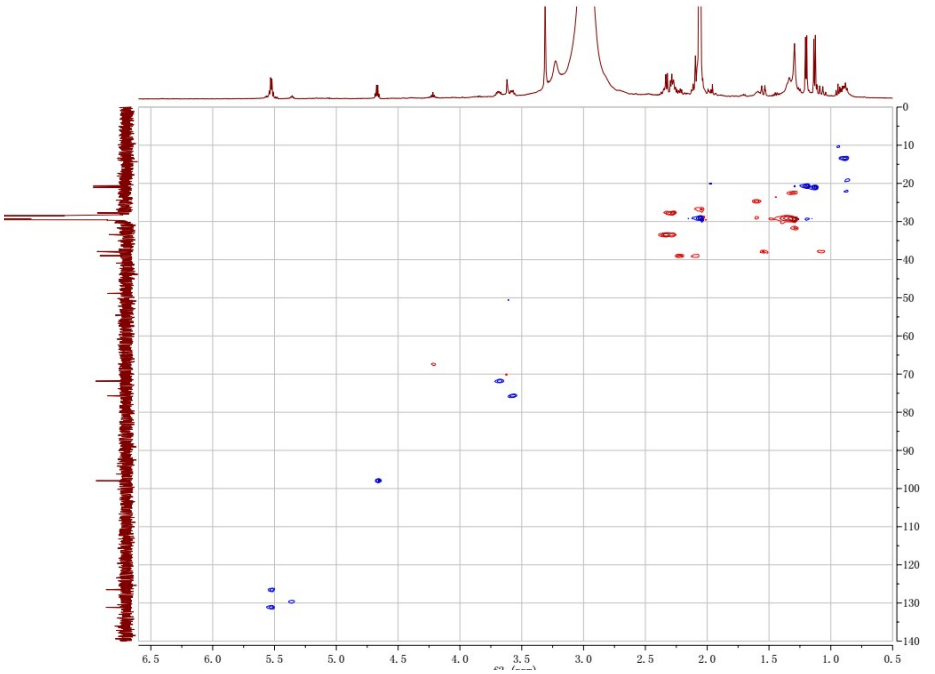

Figure S52. HSQC spectrum of compound **7** in acetone-d_6

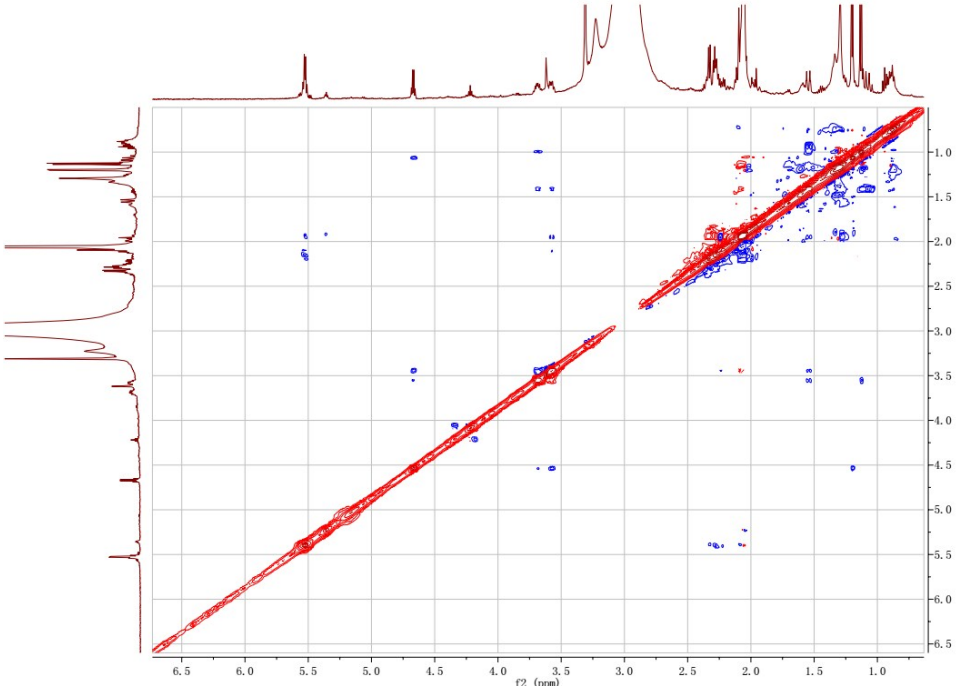

Figure S53. NOESY spectrum of compound **7** in acetone-d_6

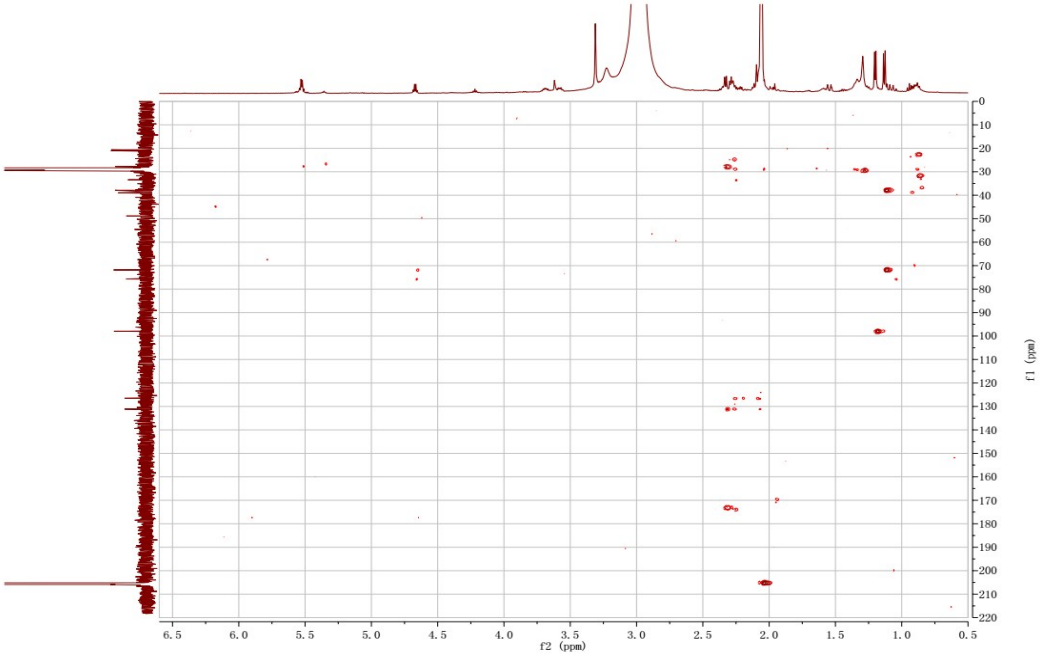

Figure S54. HMBC Spectrum of compound **7** in acetone-d_6

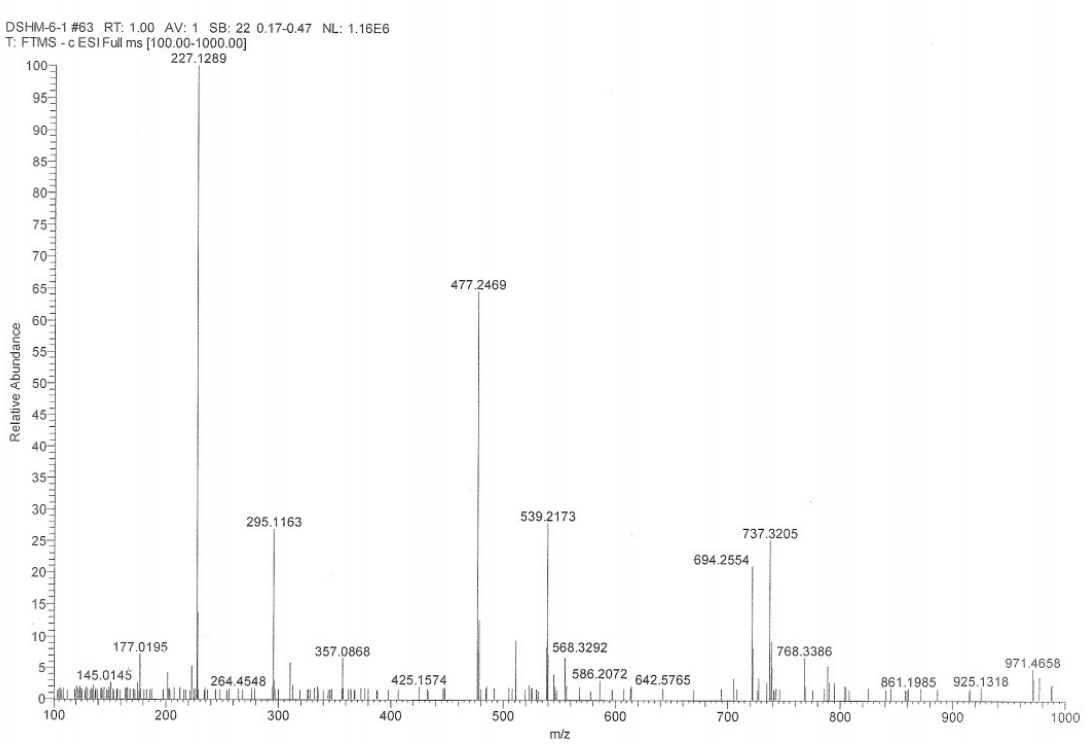

Figure S55. HRESIMS Spectrum of compound **7**

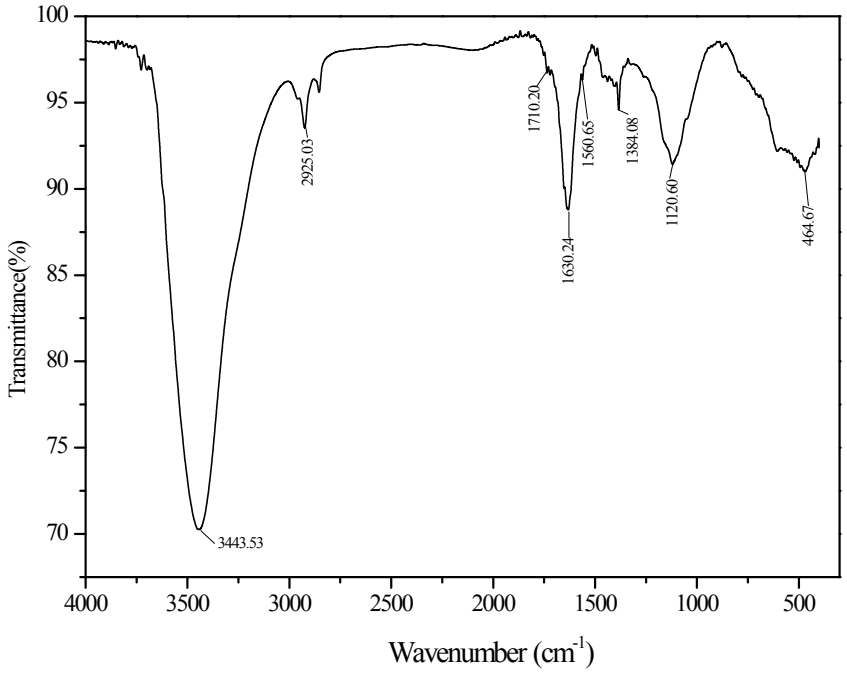

Figure S56. IR Spectrum of compound **7**

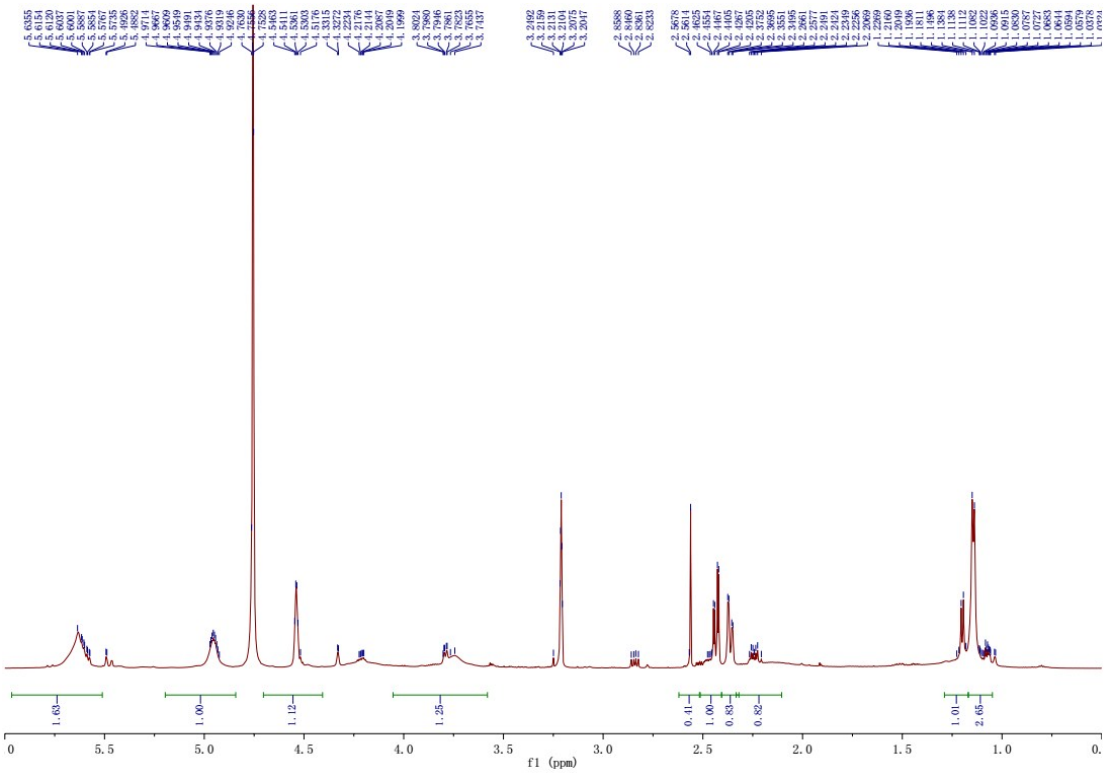

Figure S57. ^{1}H NMR of compound **8** in MeOD

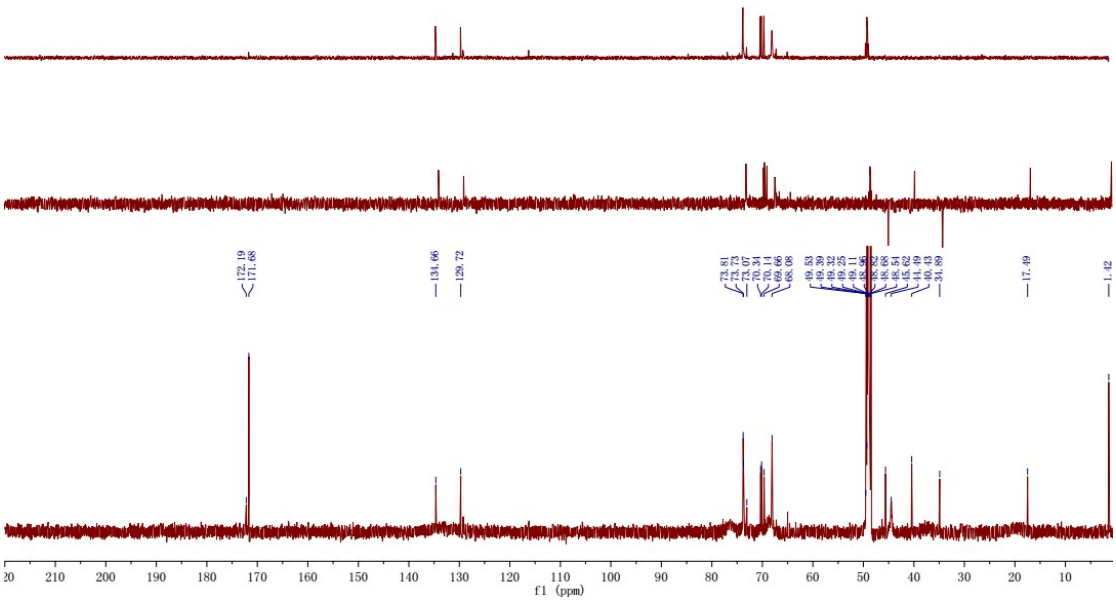

Figure S58. ^{13}C NMR of compound **8** in MeOD

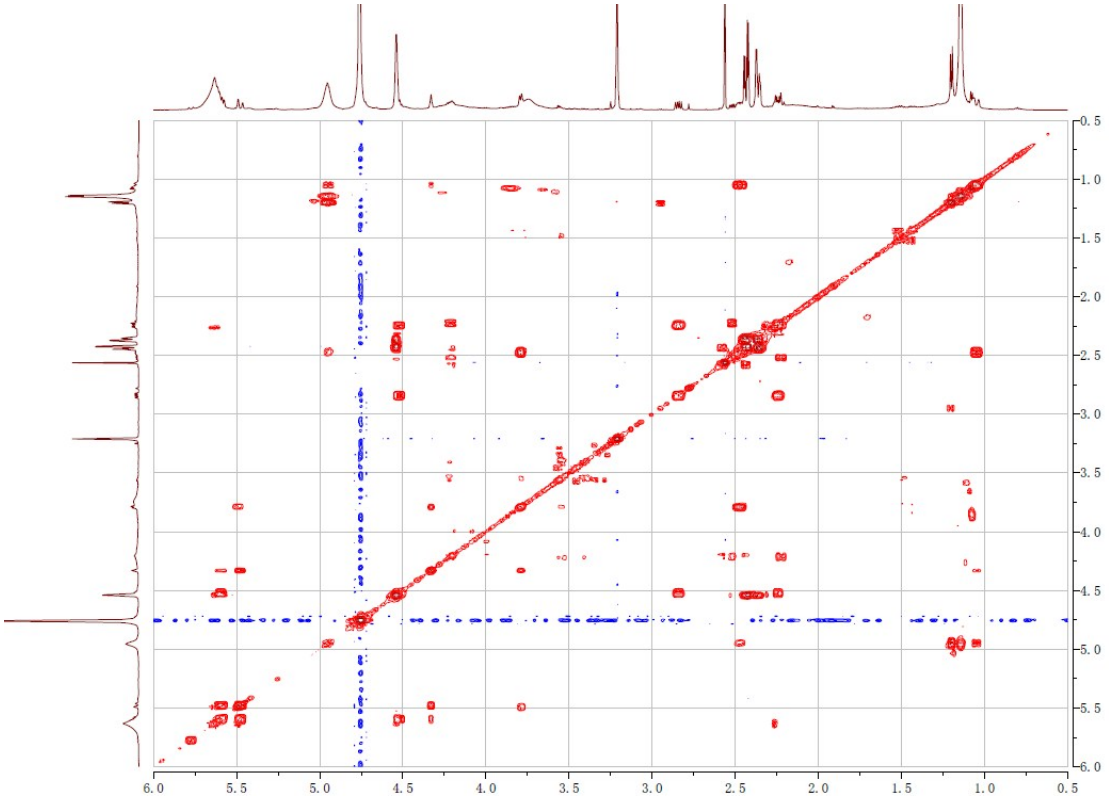

Figure S59. ^{1}H-^{1}H COSY spectrum of compound **8** in MeOD

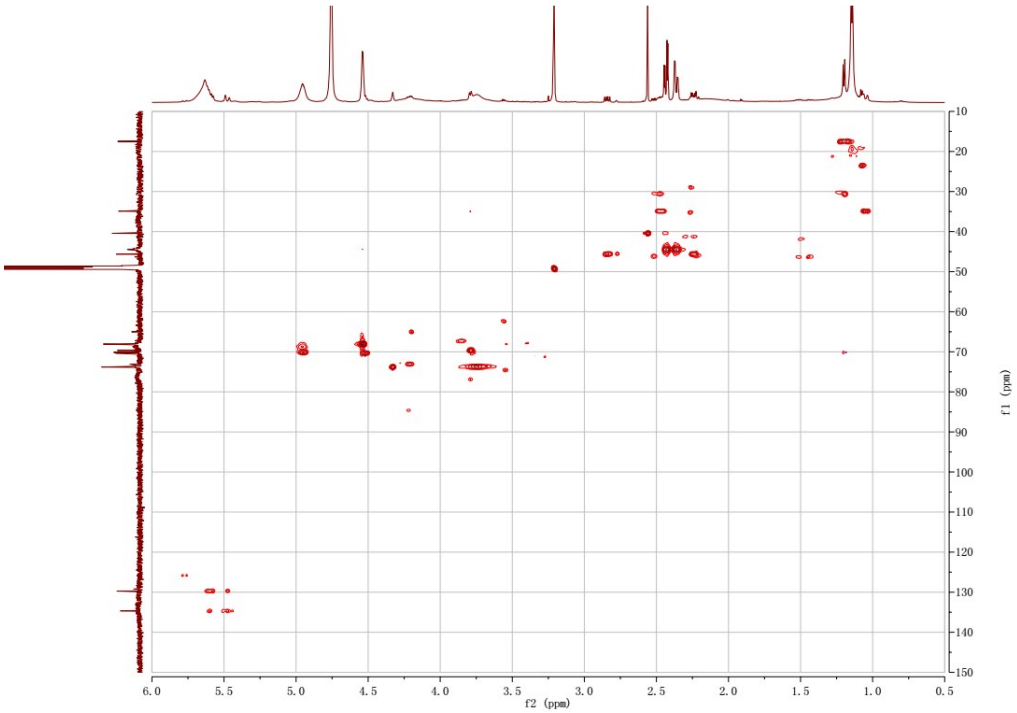

Figure S60. HSQC spectrum of compound **8** in MeOD

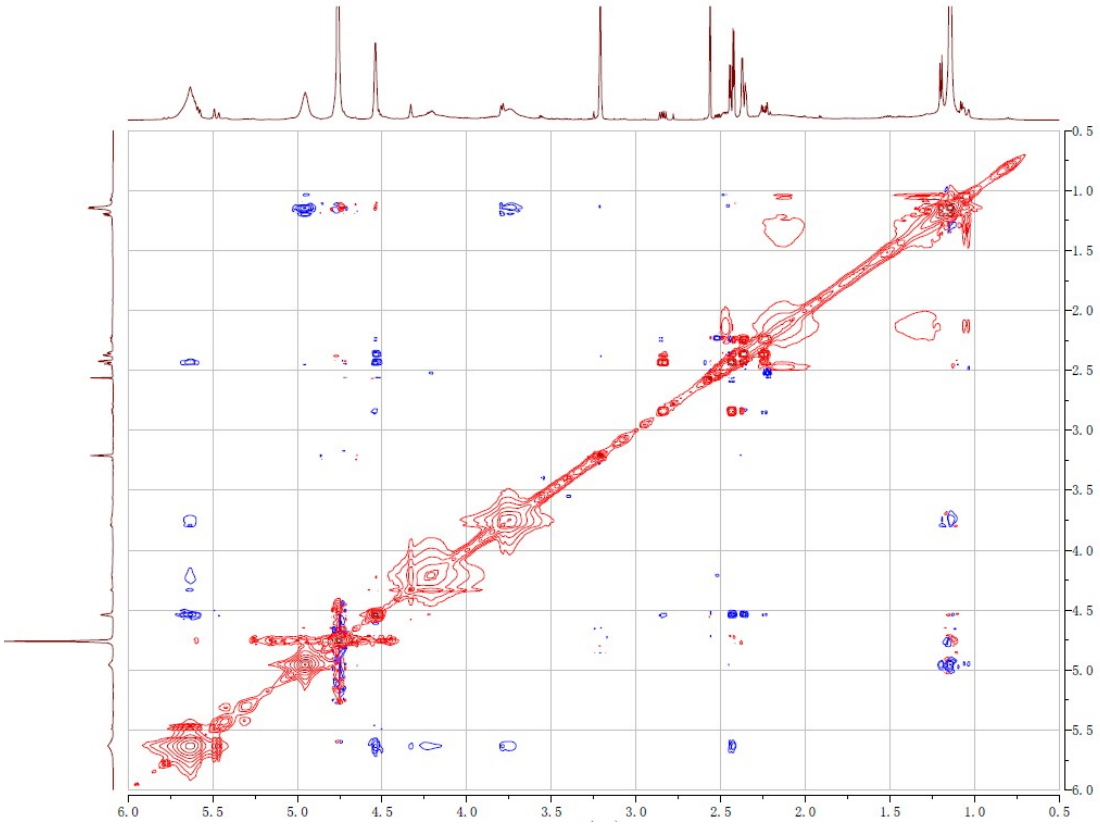

Figure S61. NOESY spectrum of compound **8** in MeOD

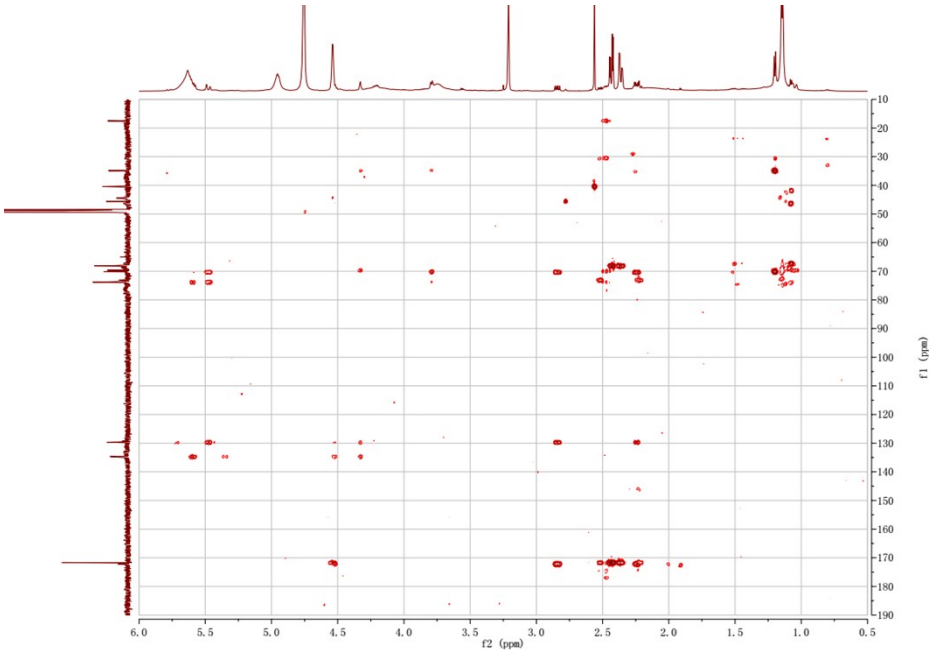

Figure S62. HMBC spectrum of compound **8** in MeOD

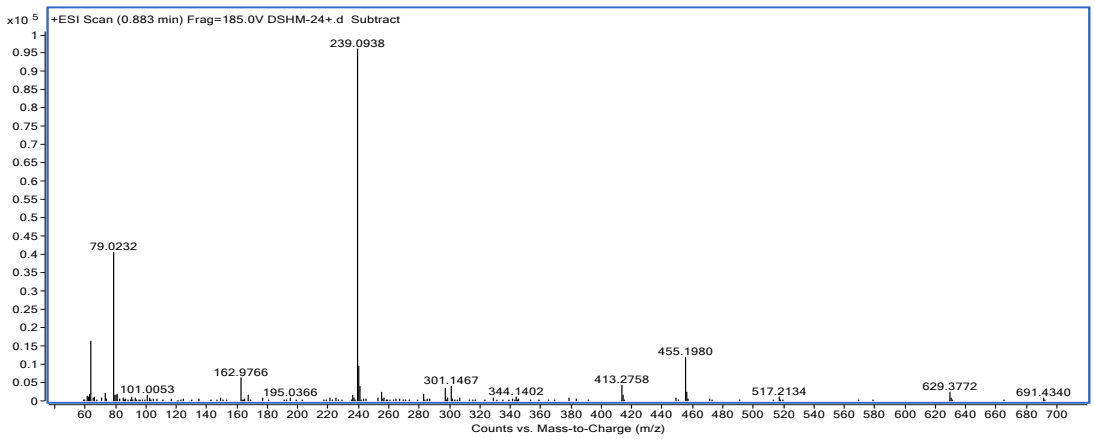

Figure S63. HRESIMS spectrum of compound **8**

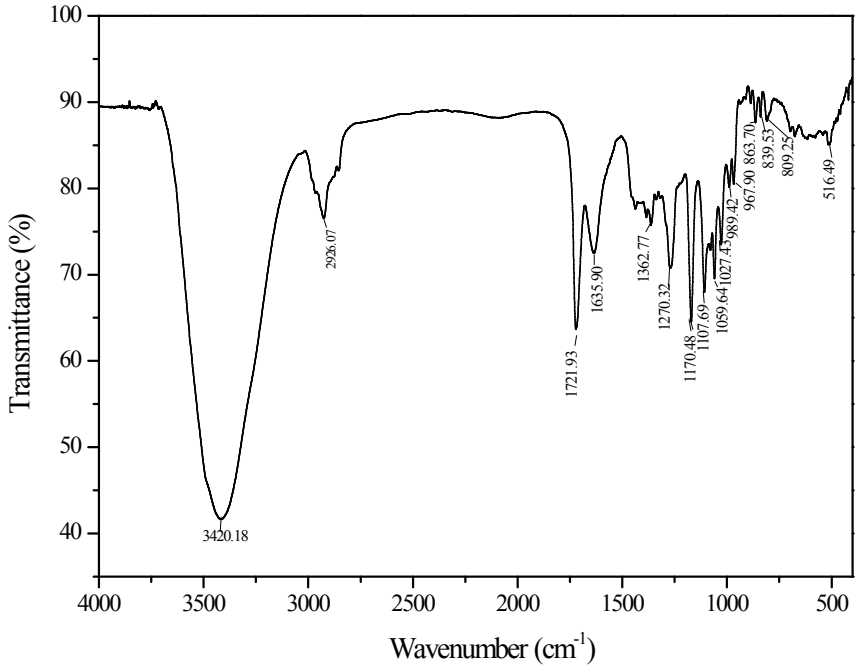

Figure S64. IR Spectrum of compound **8**

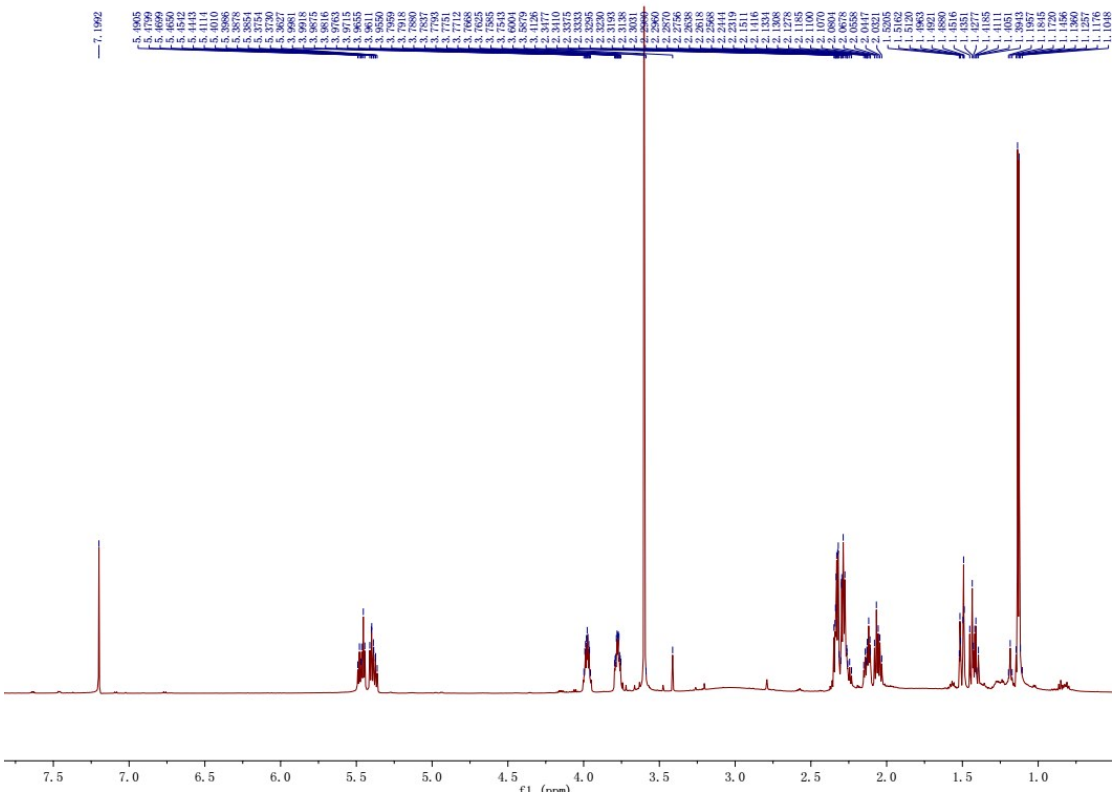

Figure S65. ^{1}H NMR of compound **9** in $CDCl_3$

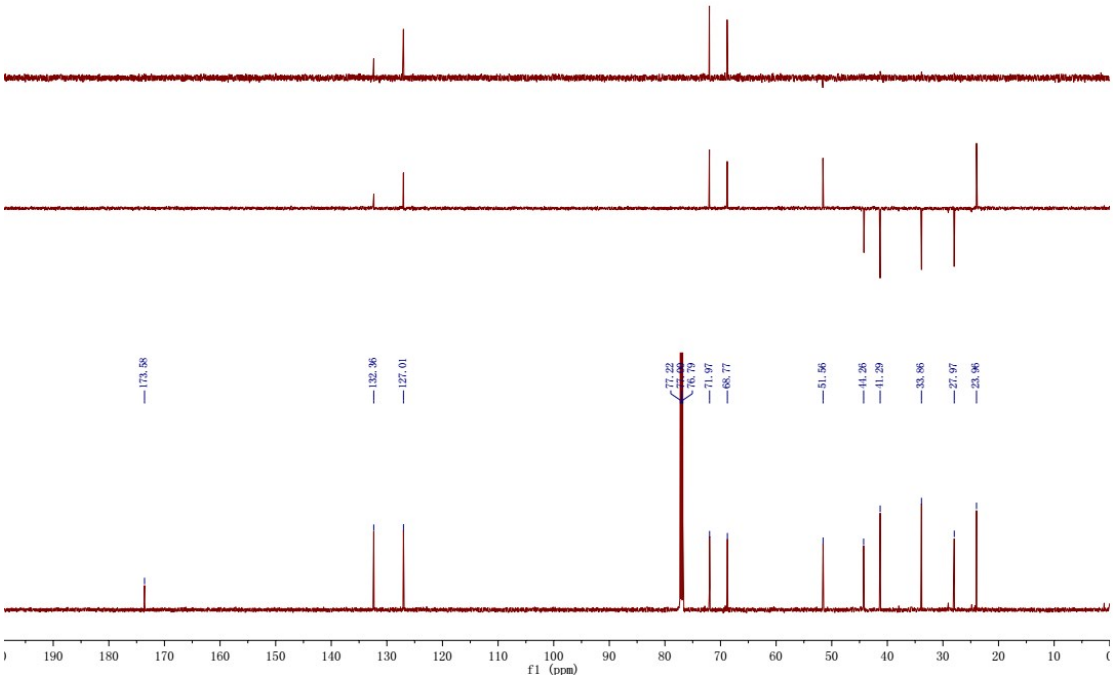

Figure S66. ^{13}C NMR of compound **9** in $CDCl_3$

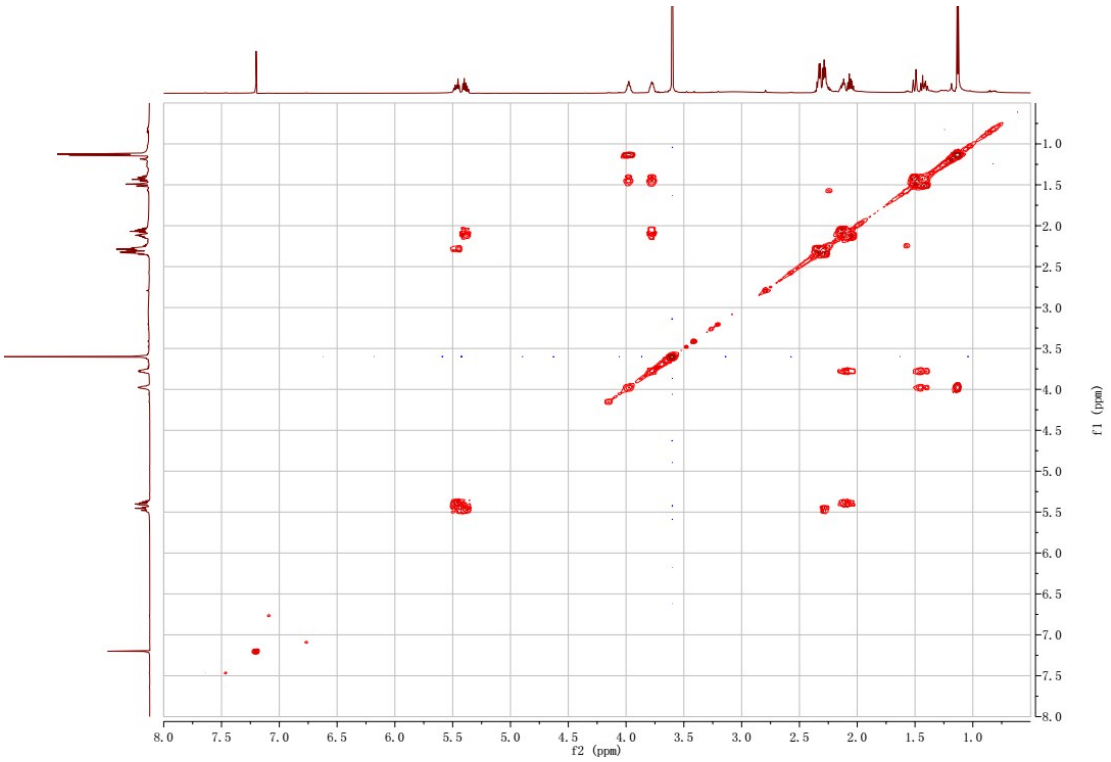

Figure S67. ^{1}H-^{1}H COSY spectrum of compound **9** in $CDCl_3$

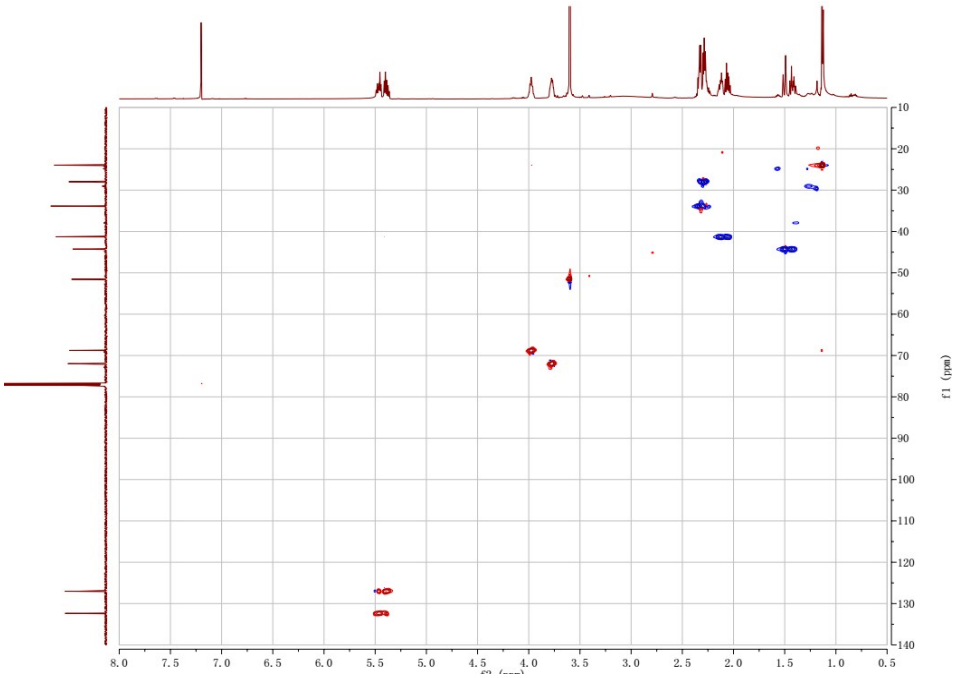

Figure S68. HSQC spectrum of compound **9** in $CDCl_3$

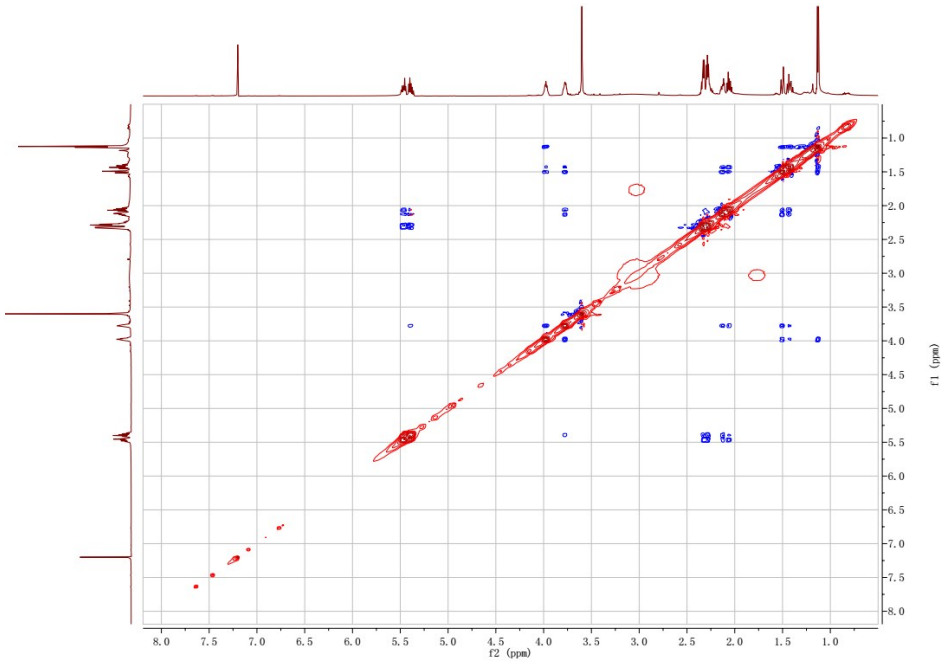

Figure S69. NOESY spectrum of compound **9** in $CDCl_3$

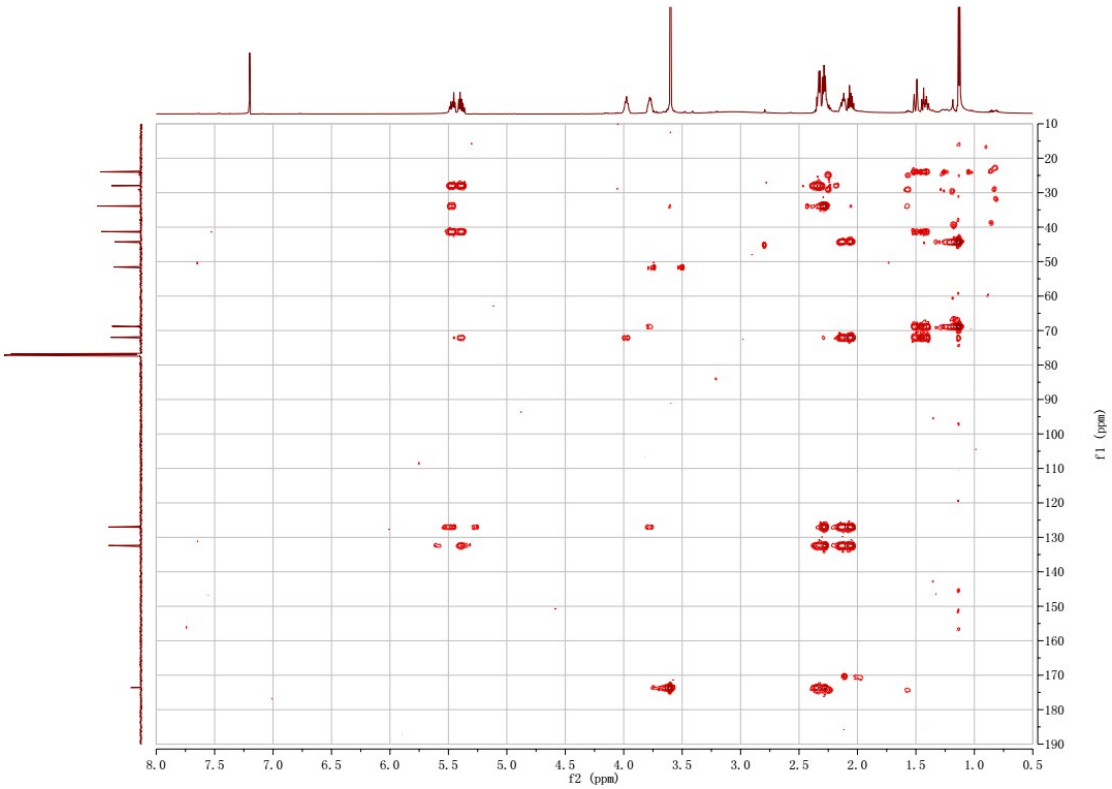

Figure S70. HMBC spectrum of compound **9** in $CDCl_3$

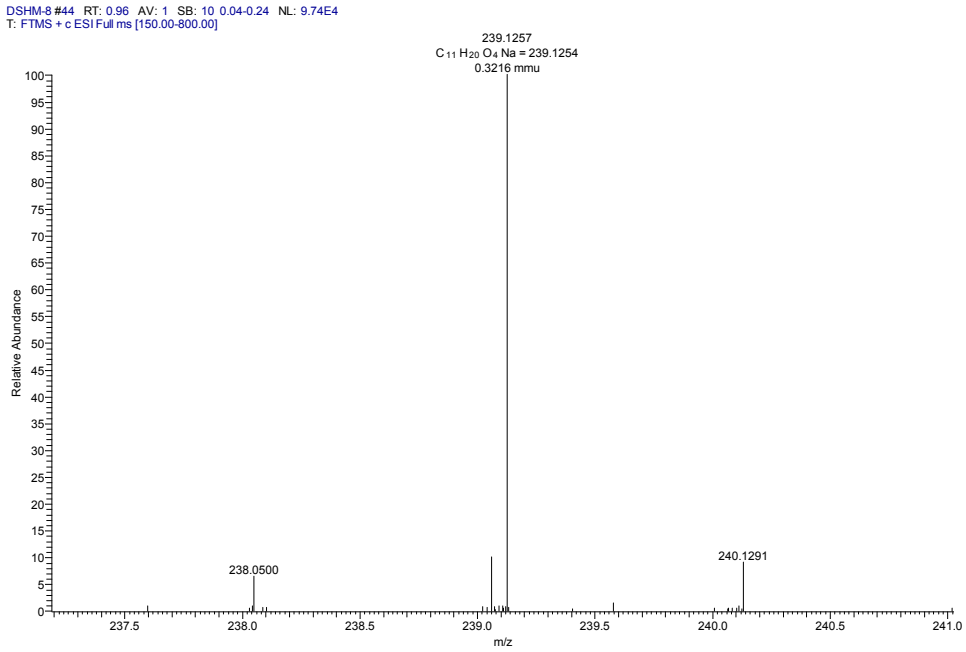

Figure S71. HRESIMS spectrum of compound **9**

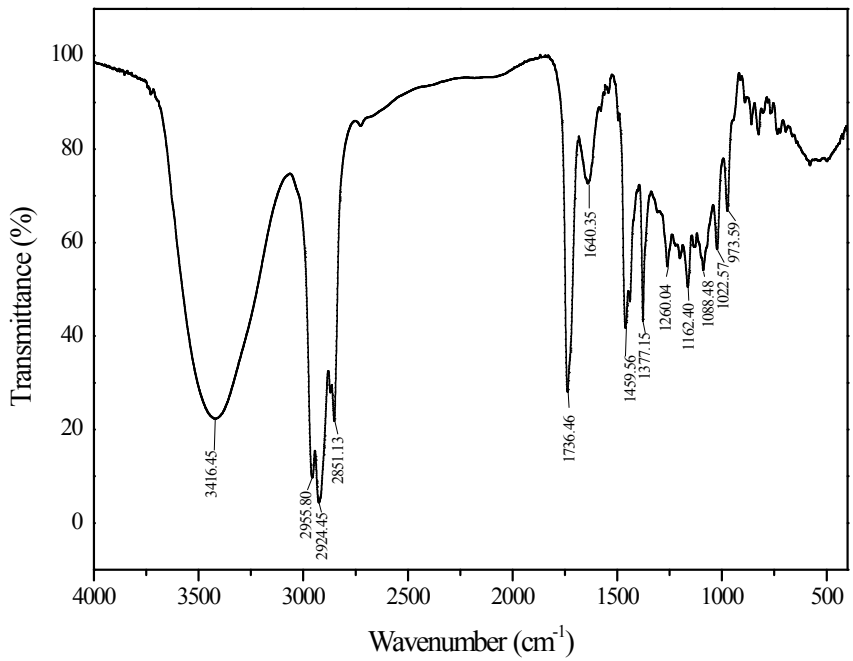

Figure S72. IR Spectrum of compound **9**

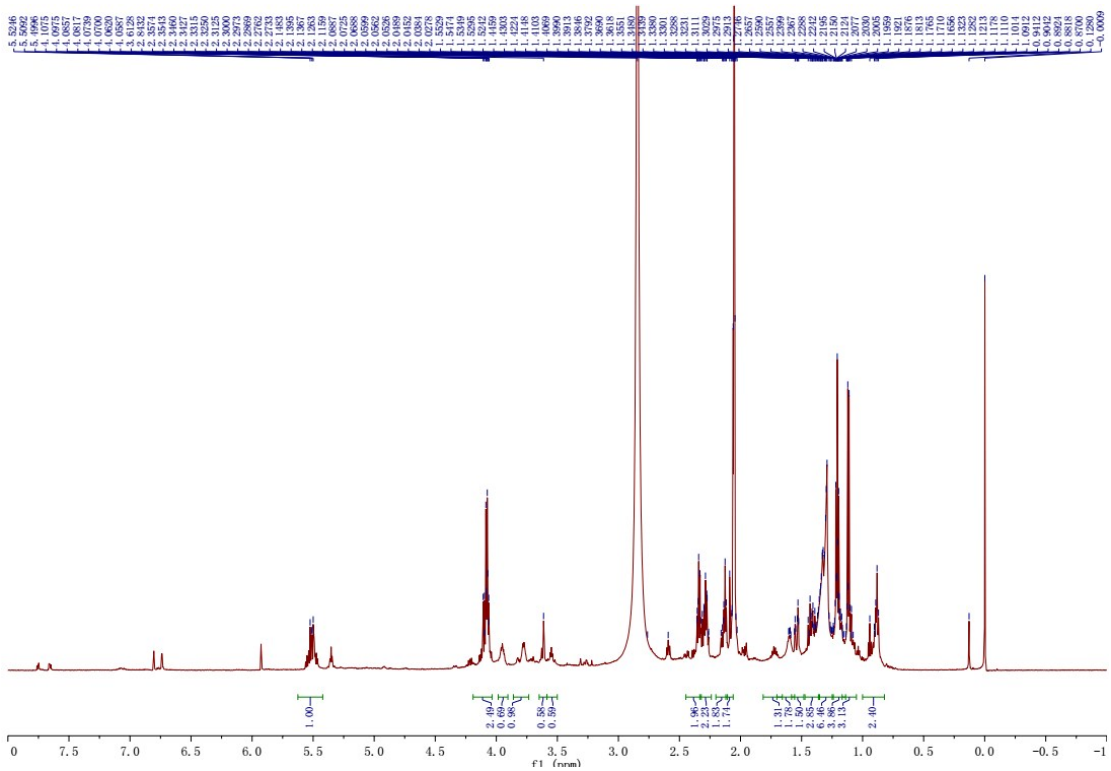

Figure S73. ^{1}H NMR of compound **10** in acetone-d_6

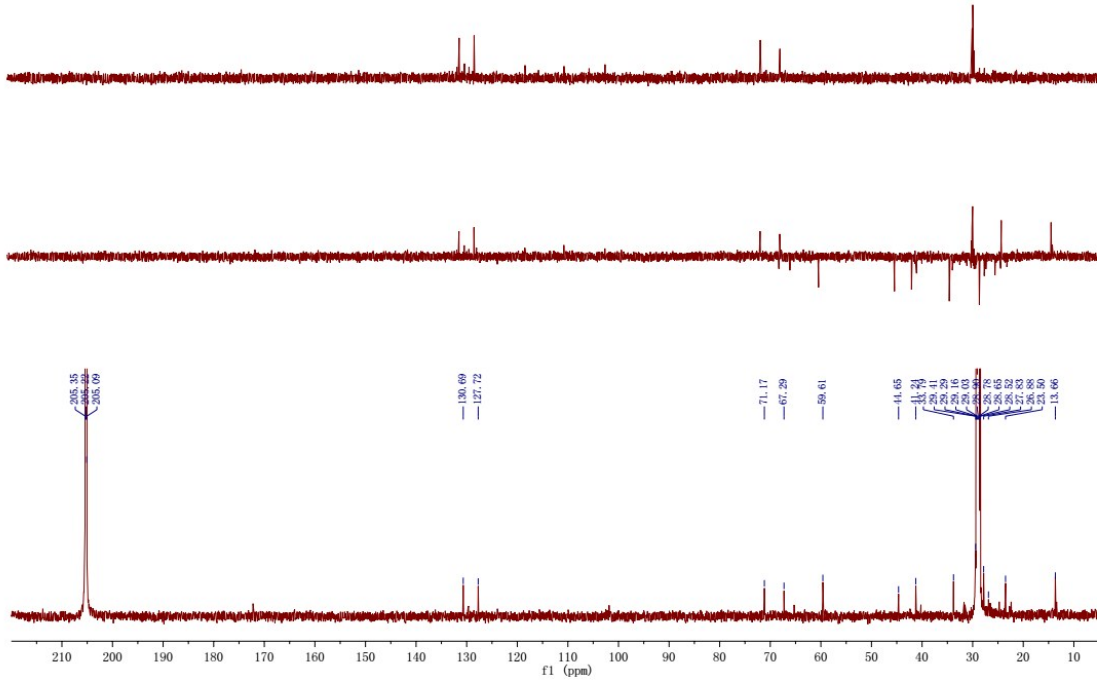

Figure S74. ^{13}C NMR of compound **10** in acetone-d_6

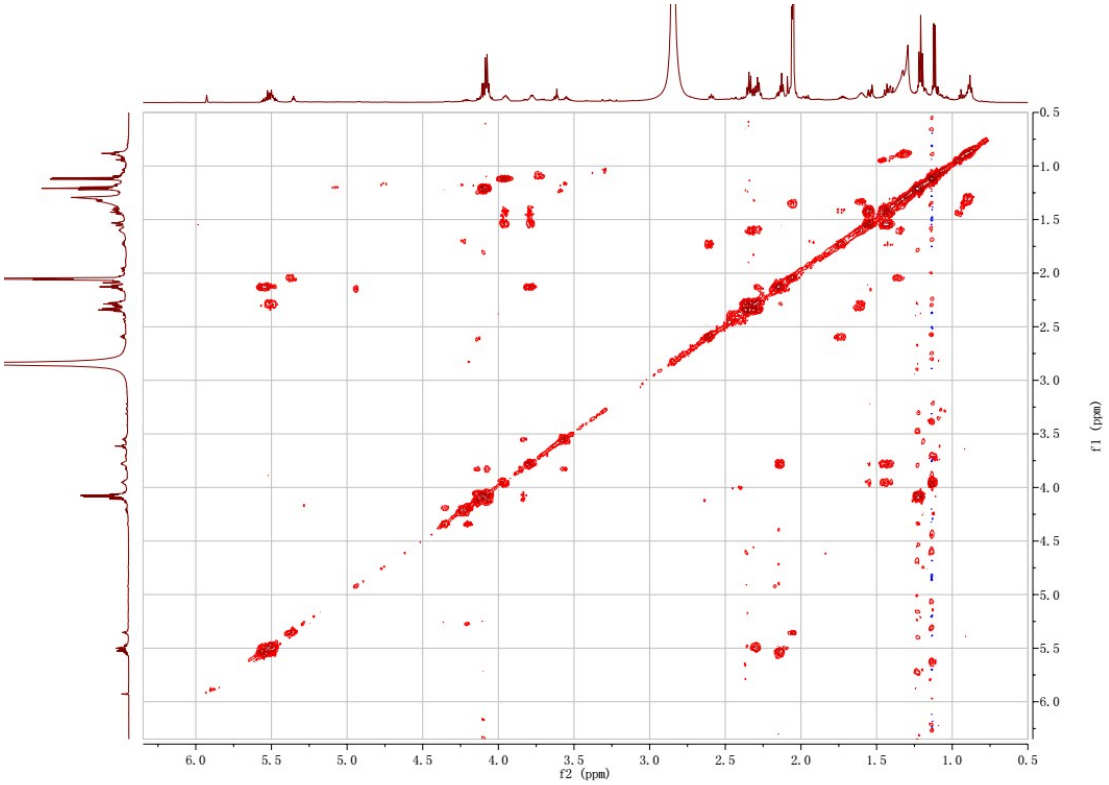

Figure S75. ^{1}H-^{1}H COSY Spectrum of compound **10** in acetone-d_6

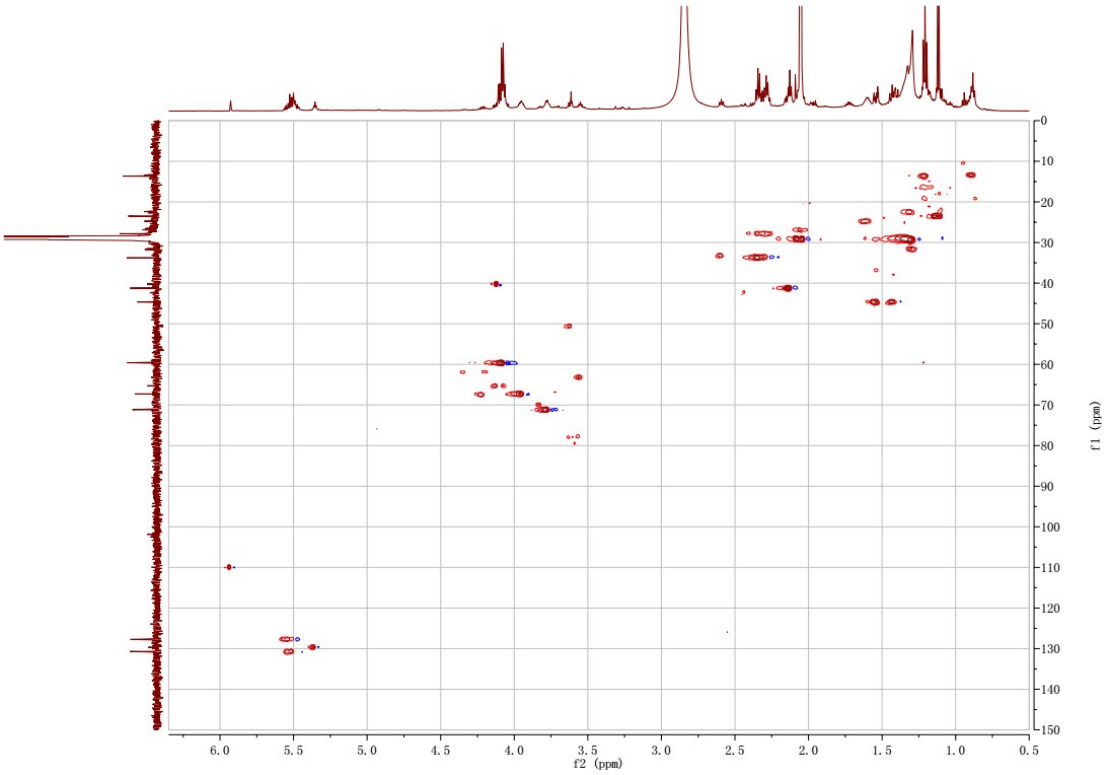

Figure S76. HSQC spectrum of compound **10** in acetone-d_6

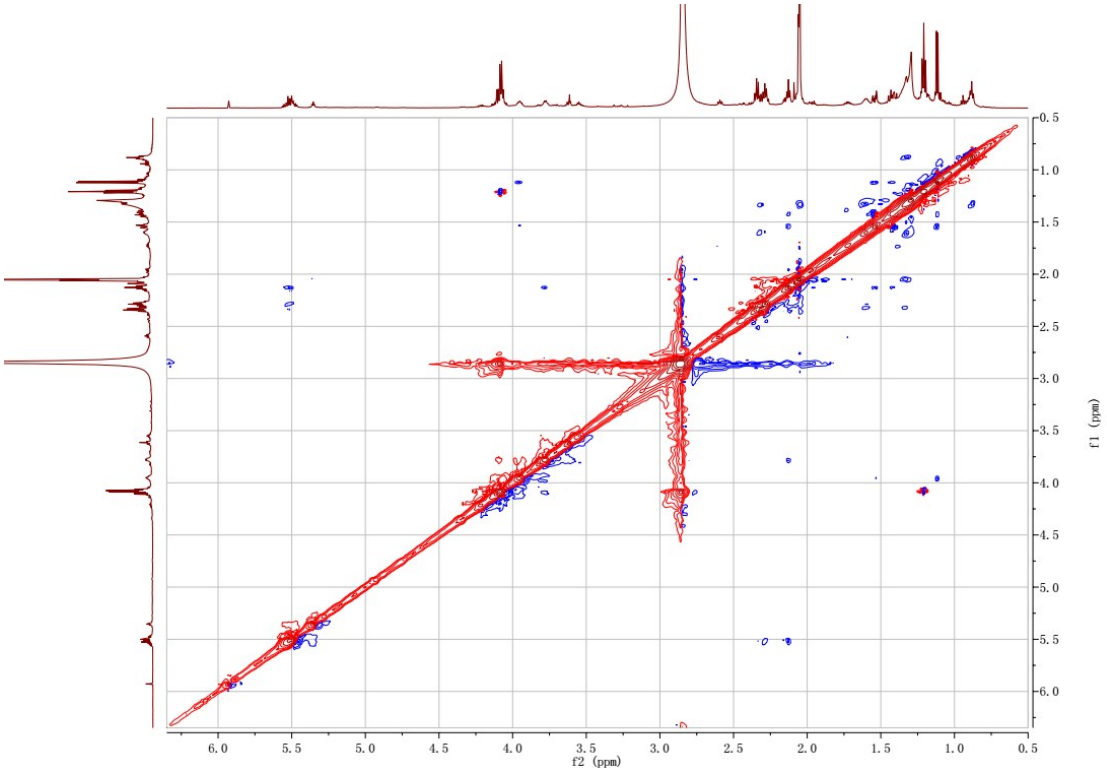

Figure S77. NOESY spectrum of compound **10** in acetone-d_6

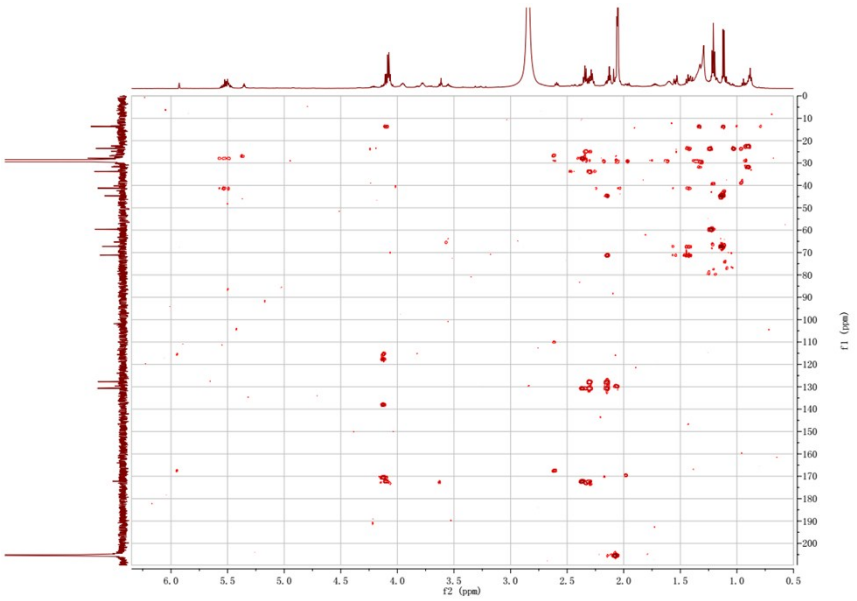

Figure S78. HMBC Spectrum of compound **10** in acetone-d_6

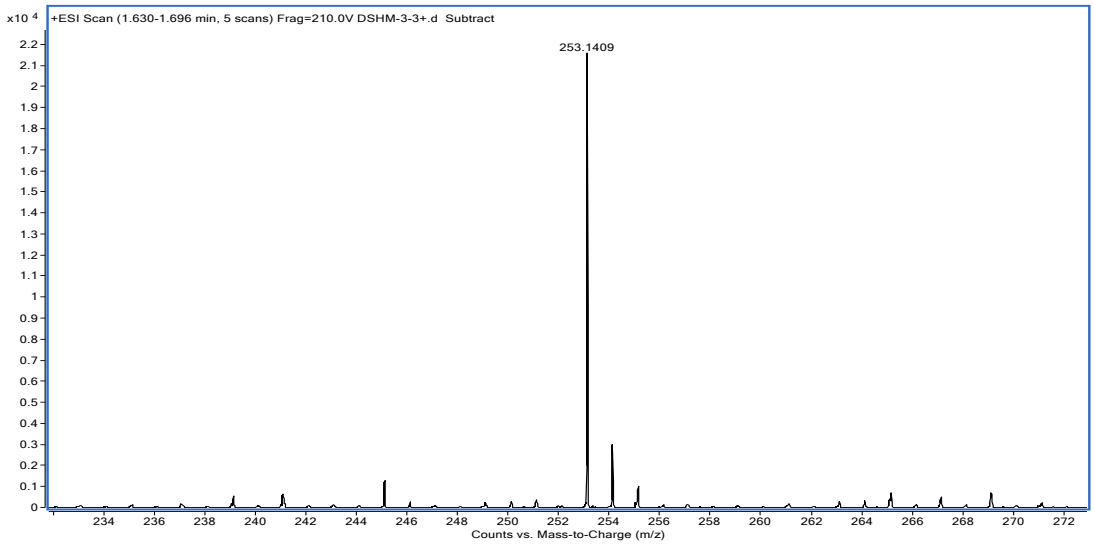

Figure S79. HRESIMS spectrum of compound **10**.

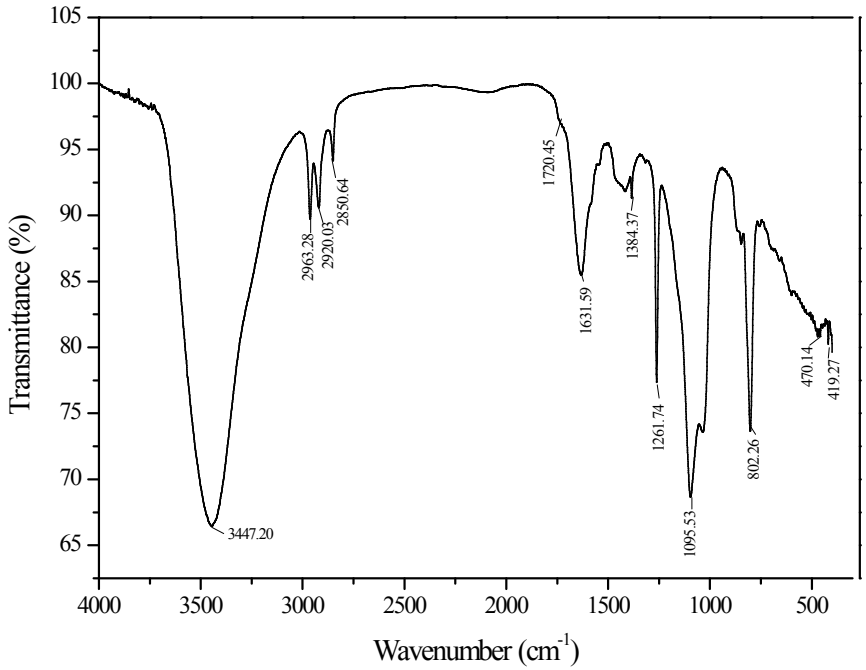

Figure S80. IR Spectrum of compound **10**

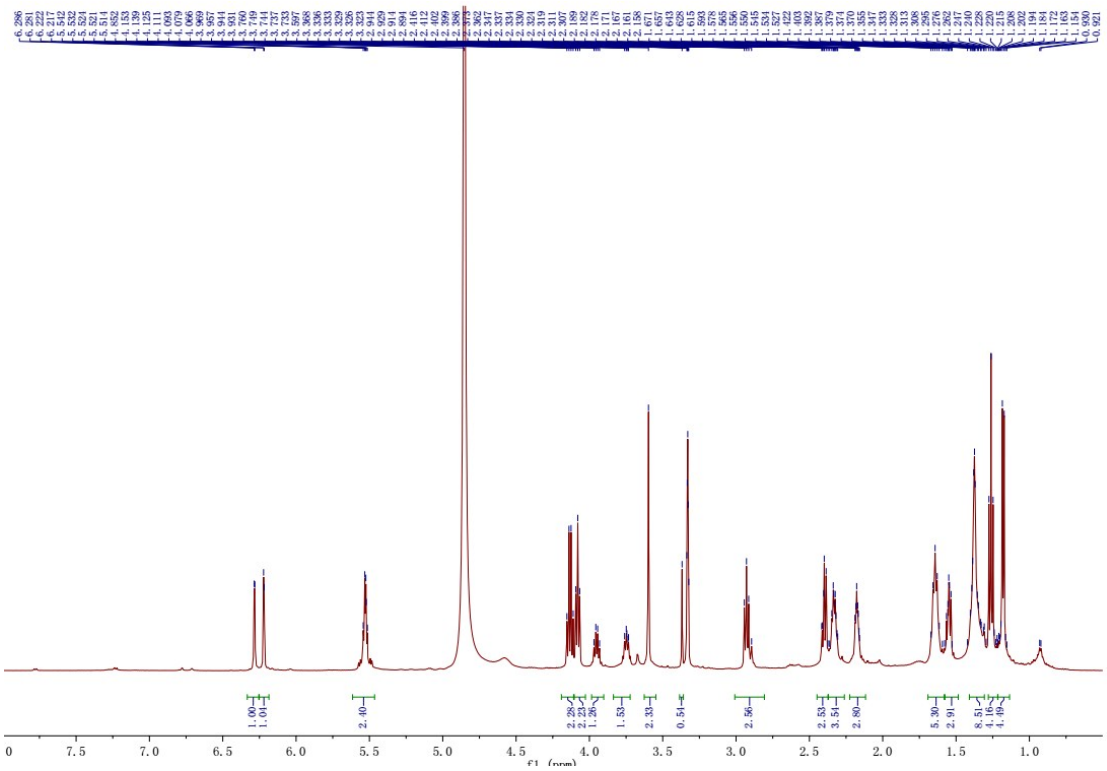

Figure S81. ^{1}H NMR of compound **11** in MeOD

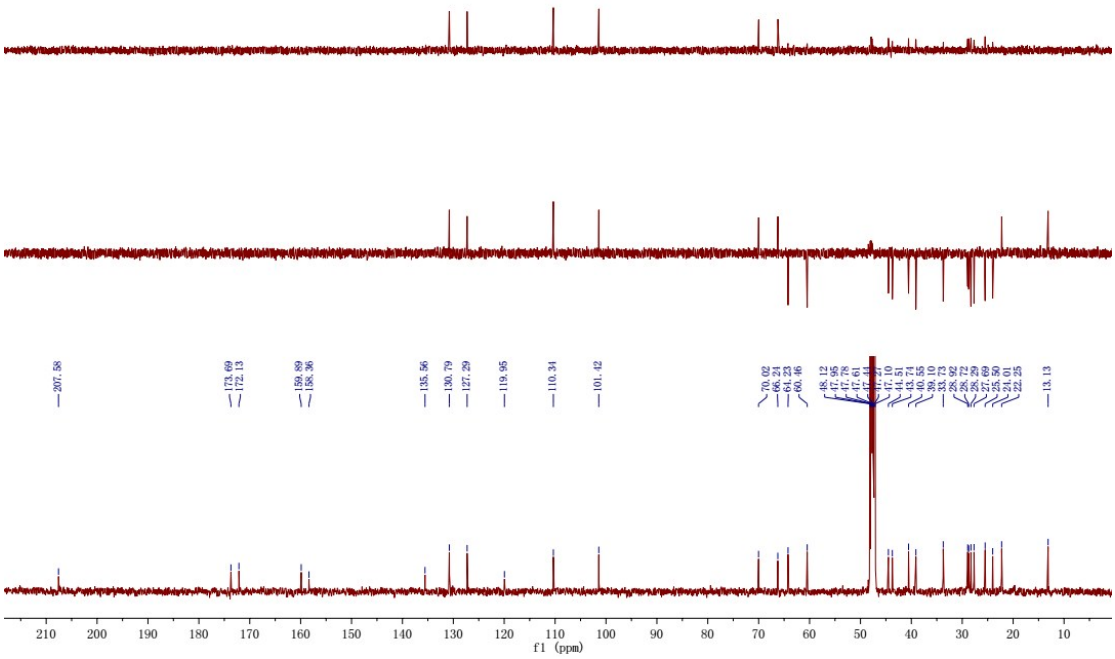

Figure S82. ^{13}C NMR of compound **11** in MeOD

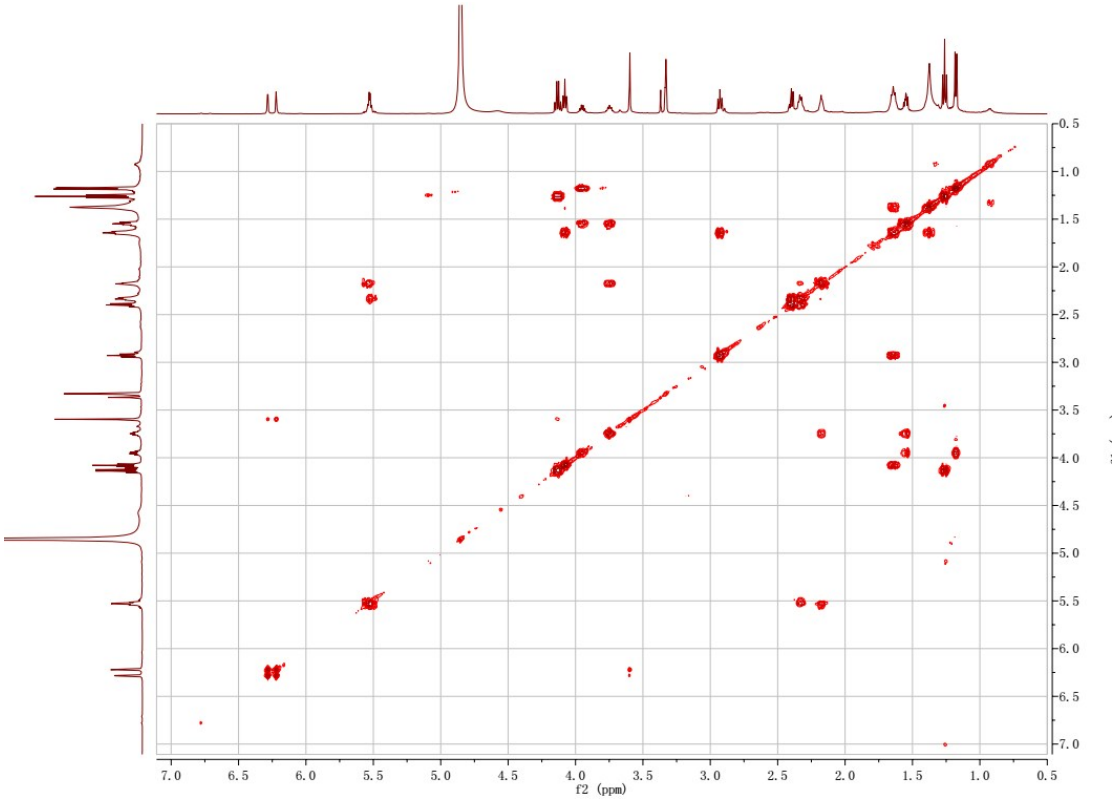

Figure S83. ^{1}H-^{1}H COSY spectrum of compound **11** in MeOD

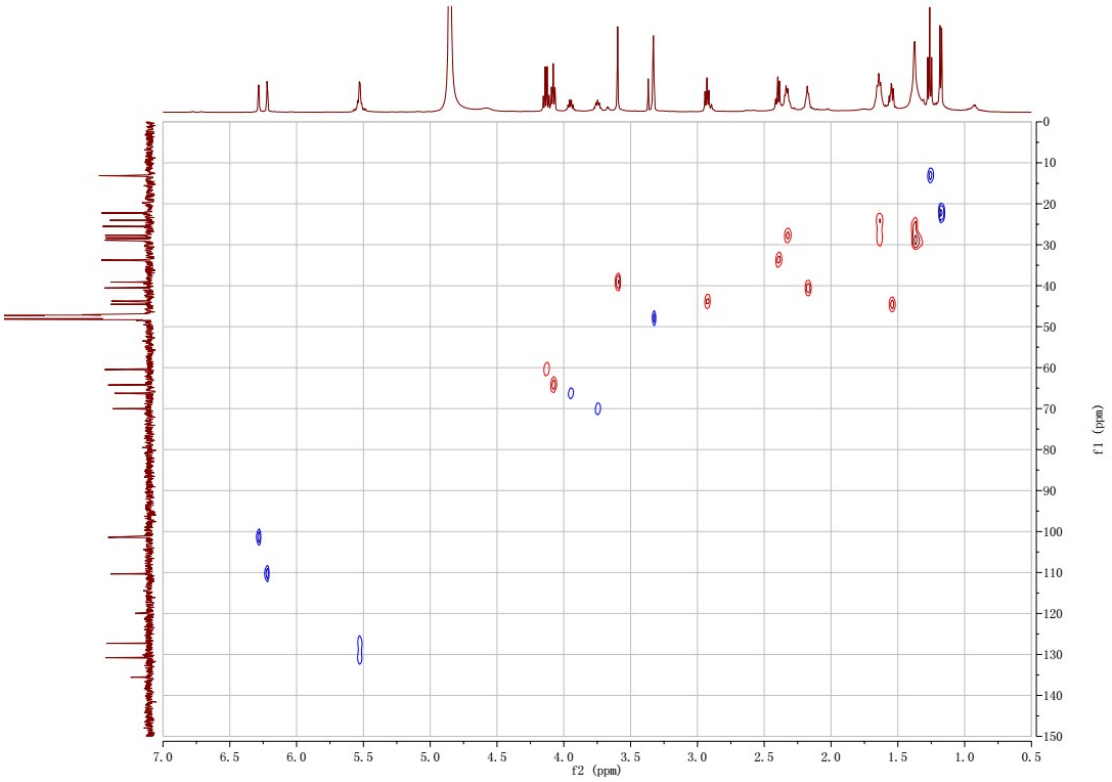

Figure S84. HSQC spectrum of compound **11** in MeOD

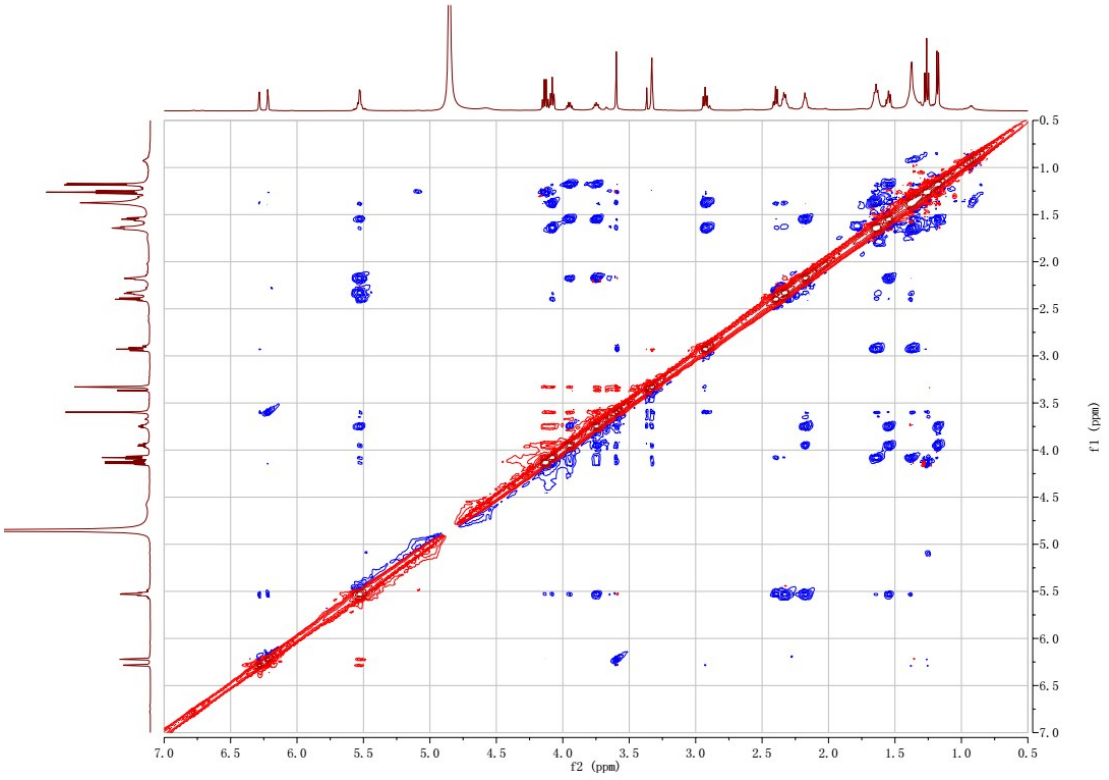

Figure S85. NOESY spectrum of compound **11** in MeOD

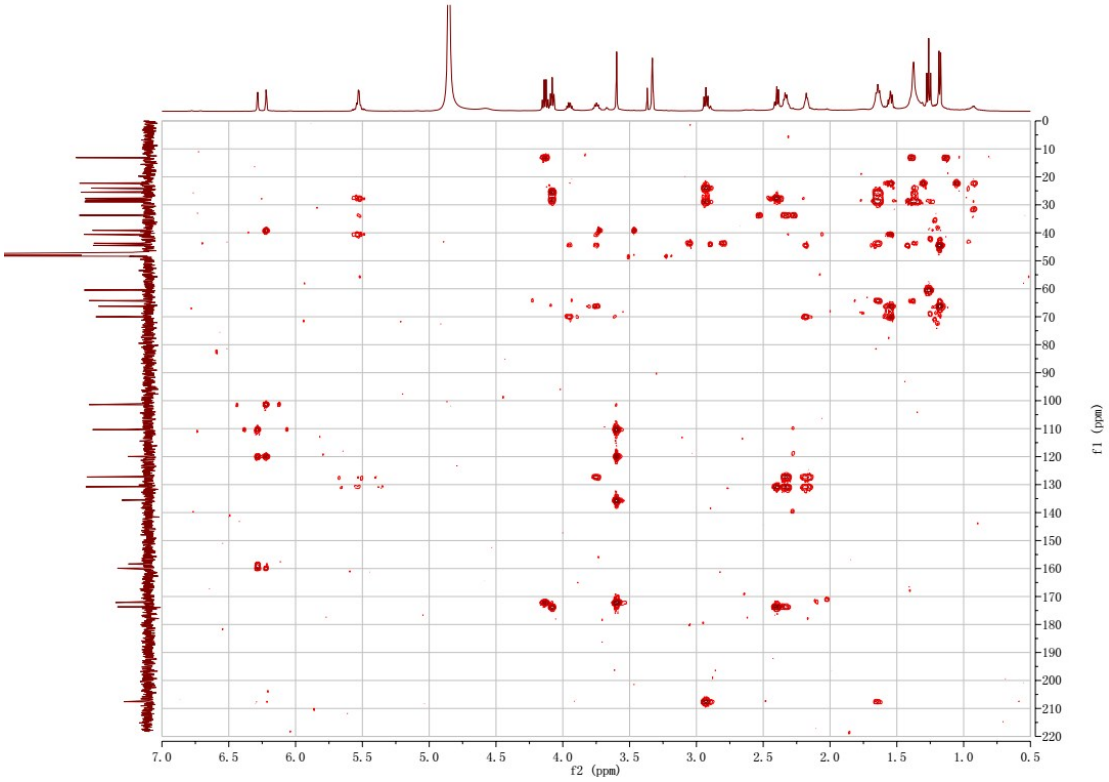

Figure S86. HMBC spectrum of compound **11** in MeOD

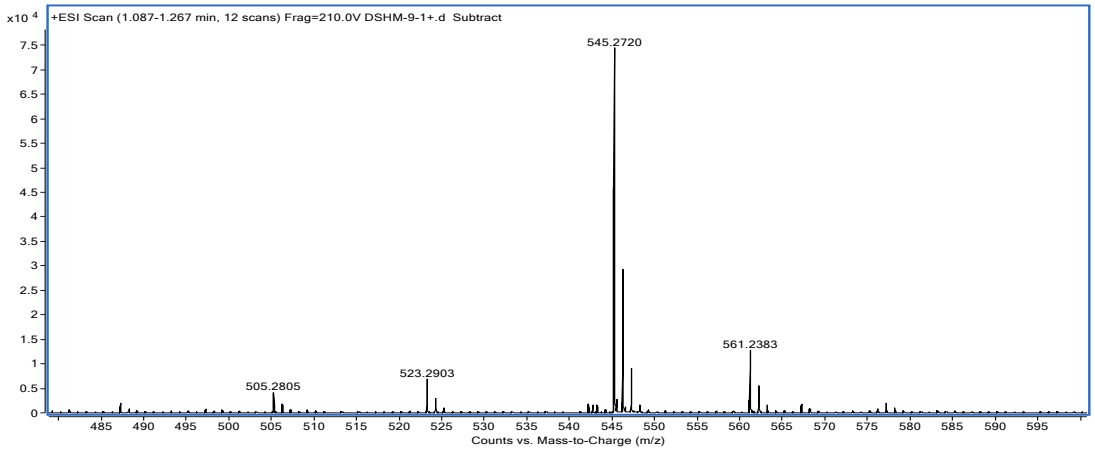

Figure S87. HRESIMS Spectrum of compound **11**

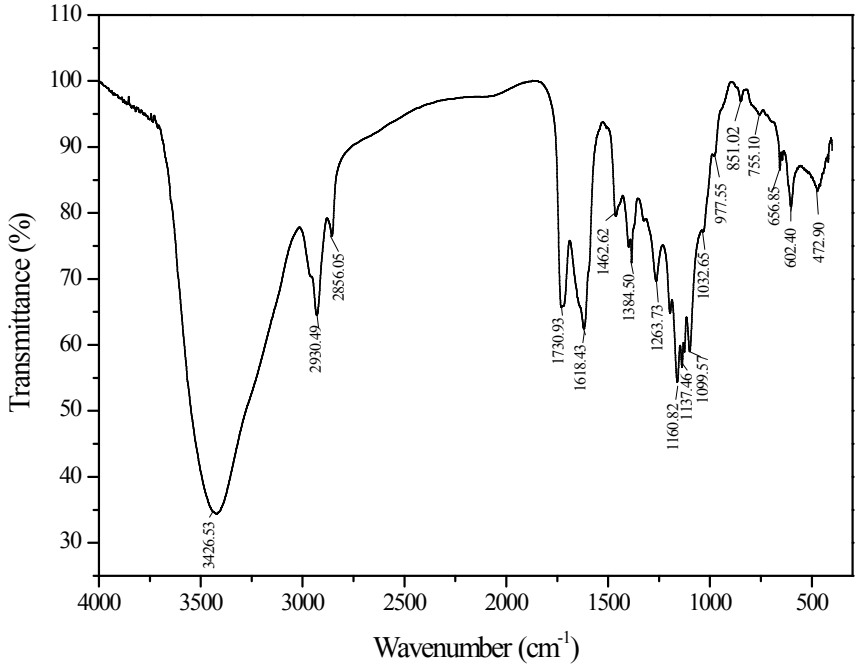

Figure S88. IR Spectrum of compound **11**

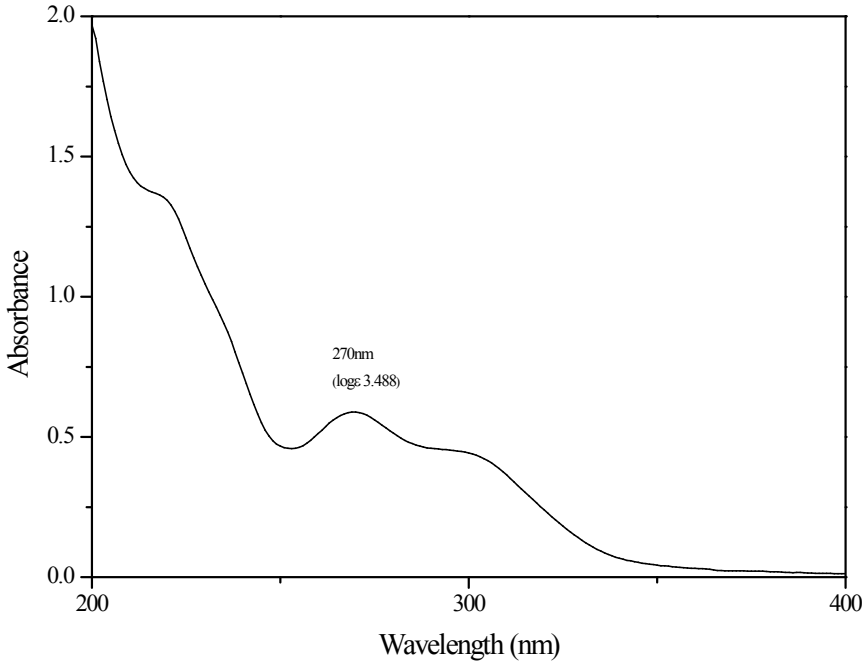

Figure S89. UV Spectrum of compound **11**

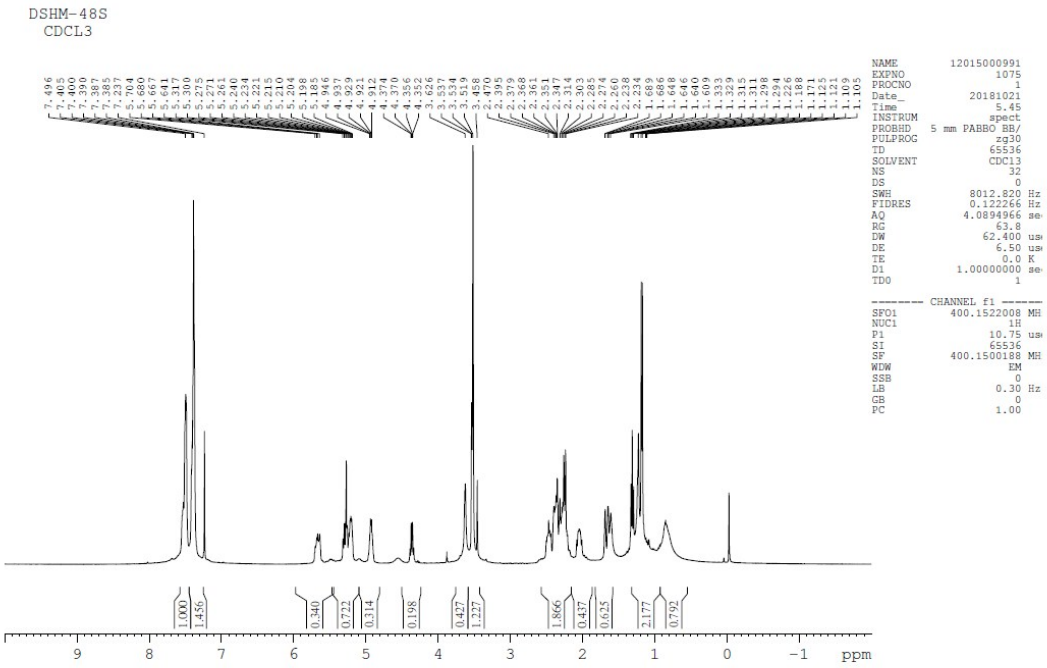

Figure S90 ^{1}H NMR spectrum of (S)-MTPA ester of **1** in $CDCl_3$

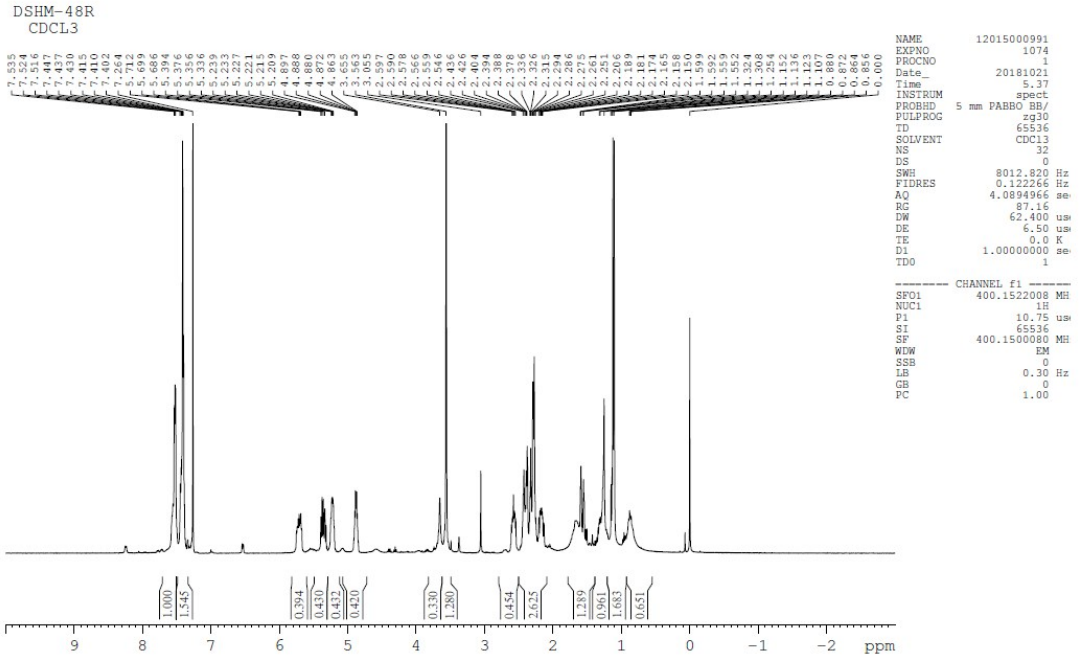

Figure S91 ^{1}H NMR spectrum of (R)-MTPA ester of **1** in $CDCl_3$