

## 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<sub>12</sub>-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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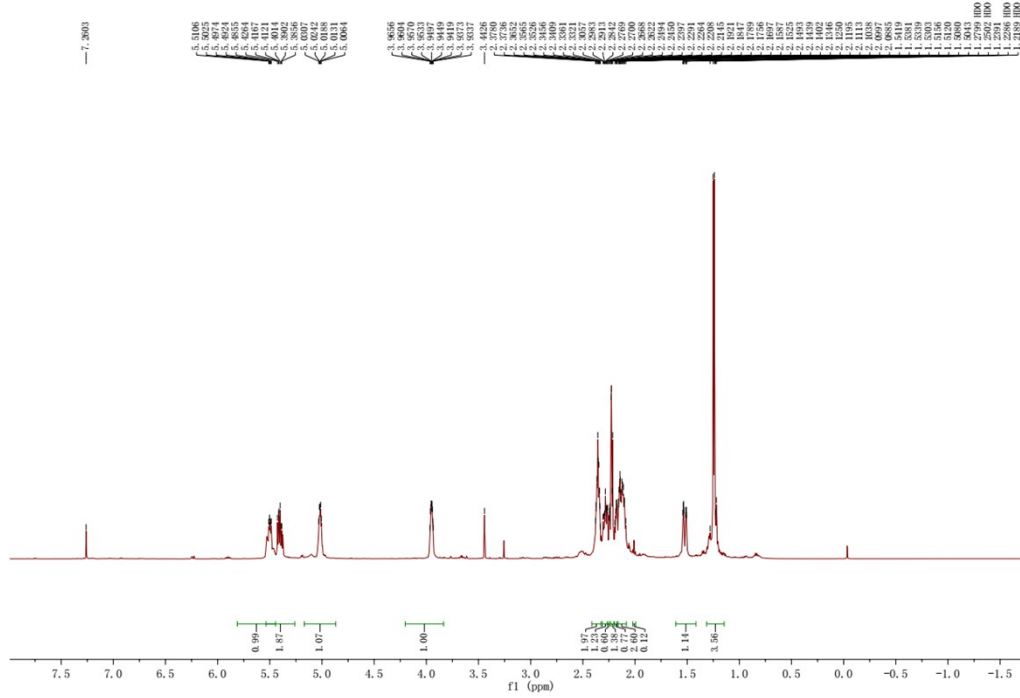


Figure S1.  $^1\text{H}$  NMR of compound **1** in  $\text{CDCl}_3$

pdata/1  
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Jan09-2018-huming  
C13DEPT90 CDCl3 (D:\dingzhongtao) huming 2

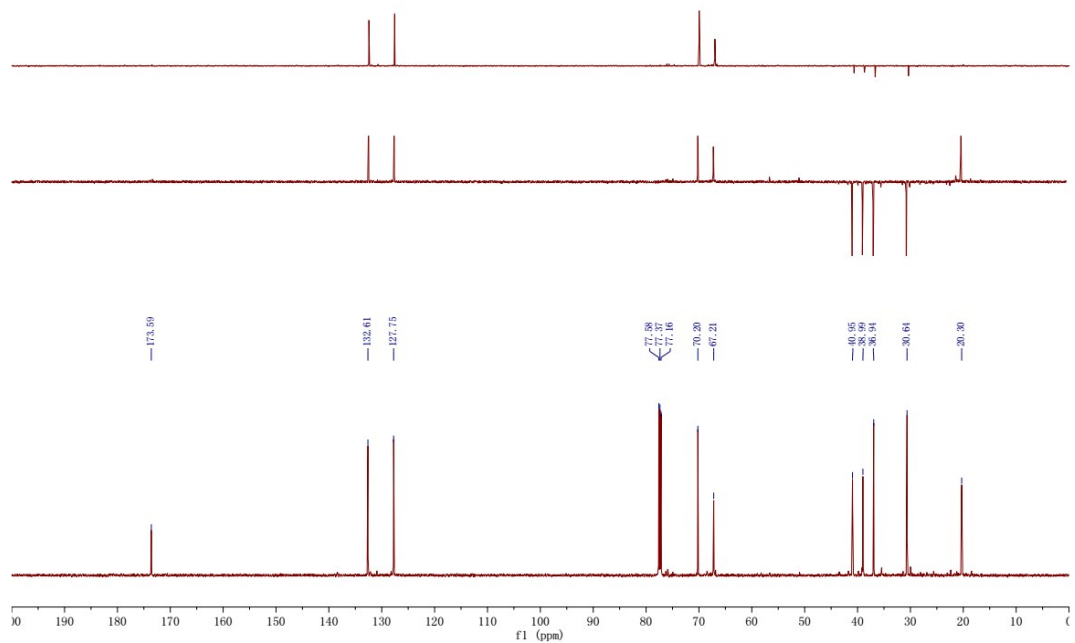


Figure S2.  $^{13}\text{C}$  NMR of compound **1** in  $\text{CDCl}_3$

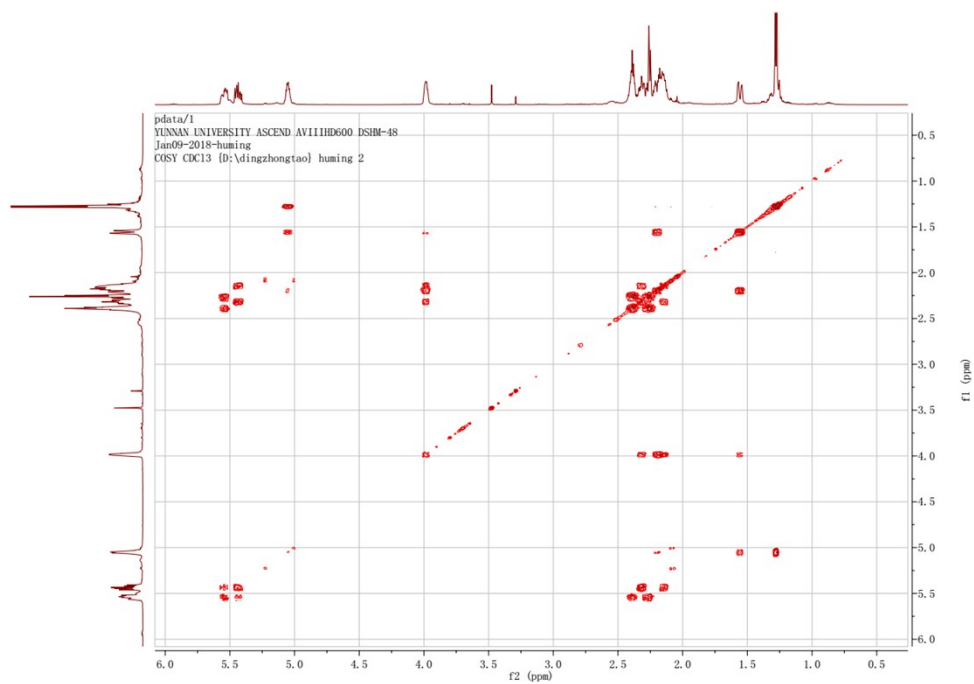


Figure S3.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **1** in  $\text{CDCl}_3$

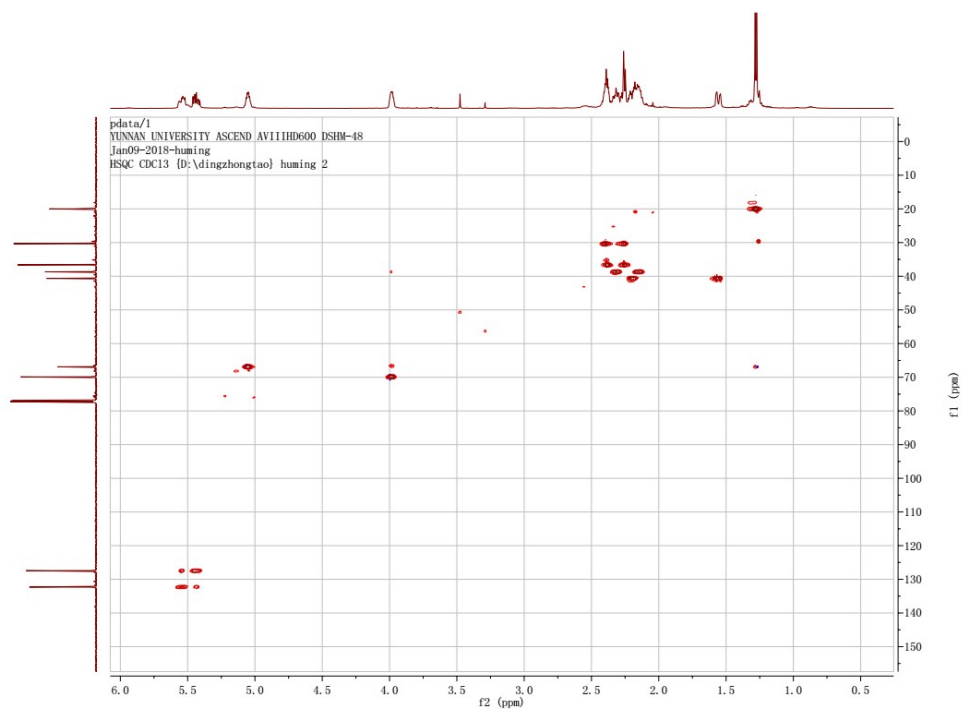


Figure S4. HSQC spectrum of compound **1** in  $\text{CDCl}_3$

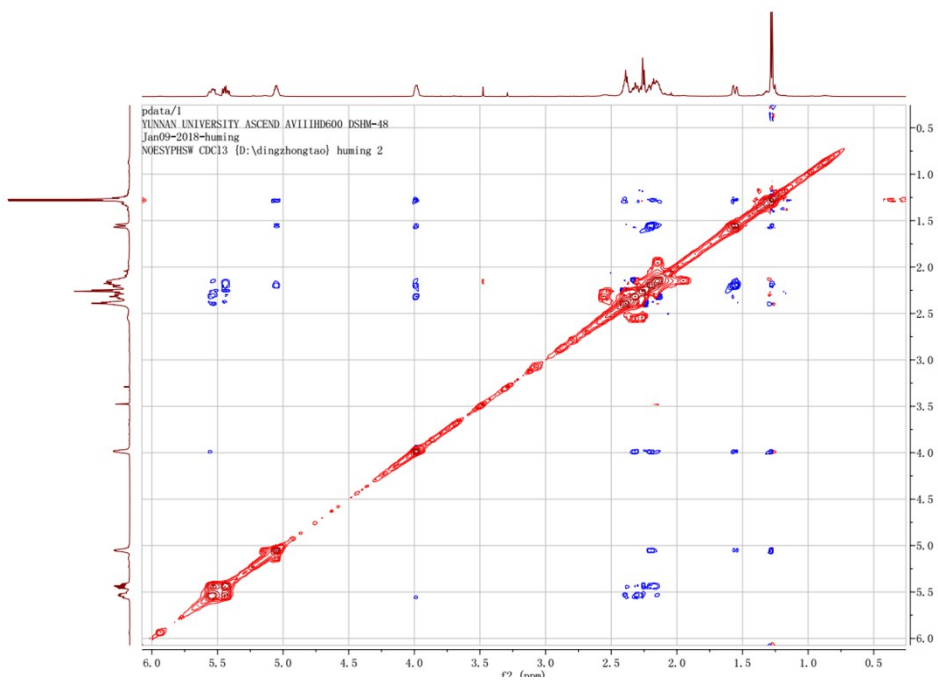


Figure S5. NOESY spectrum of compound **1** in CDCl<sub>3</sub>

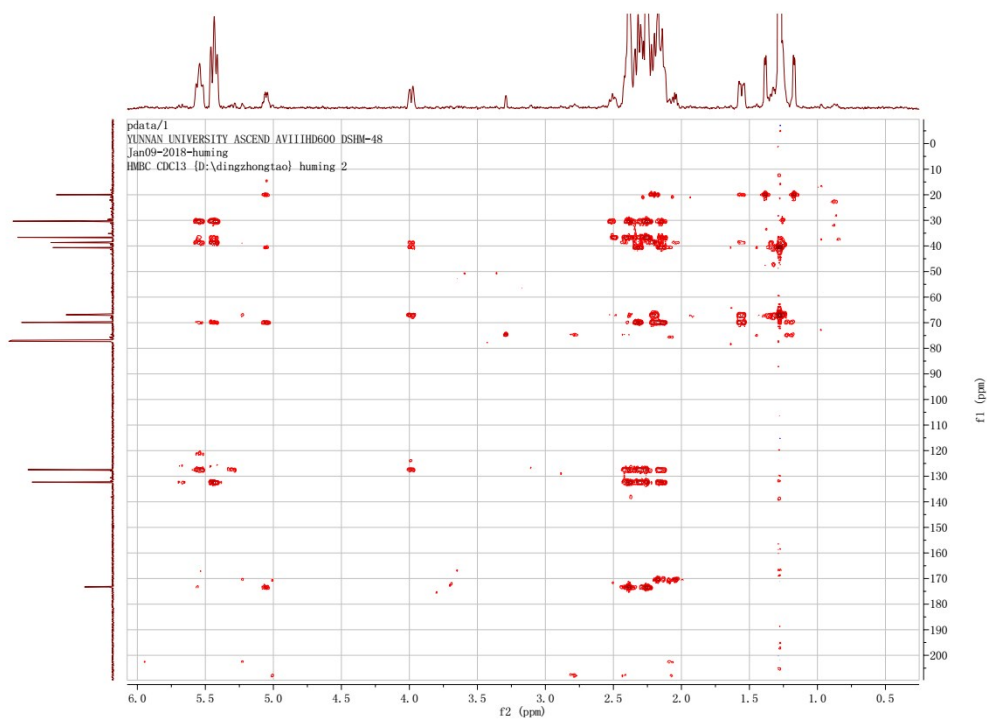


Figure S6. HMBC spectrum of compound **1** in CDCl<sub>3</sub>

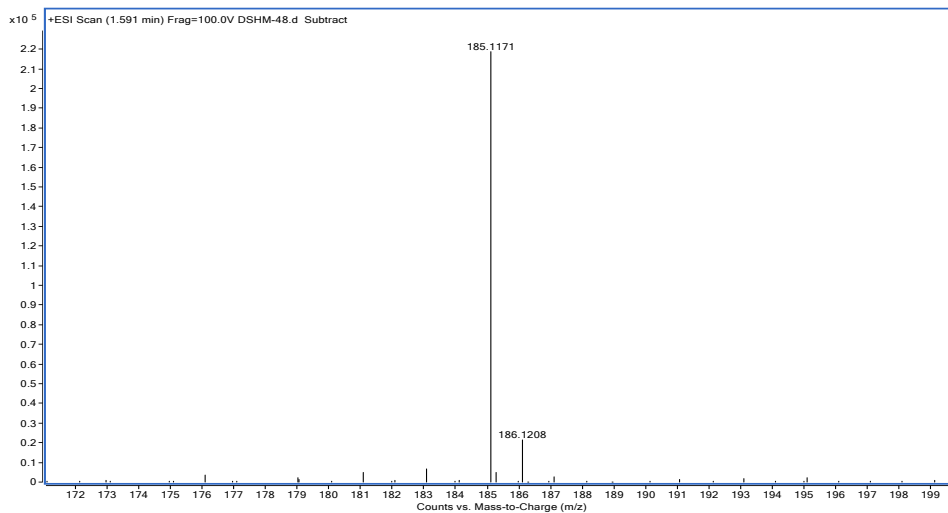


Figure S7. HRESIMS spectrum of compound **1**

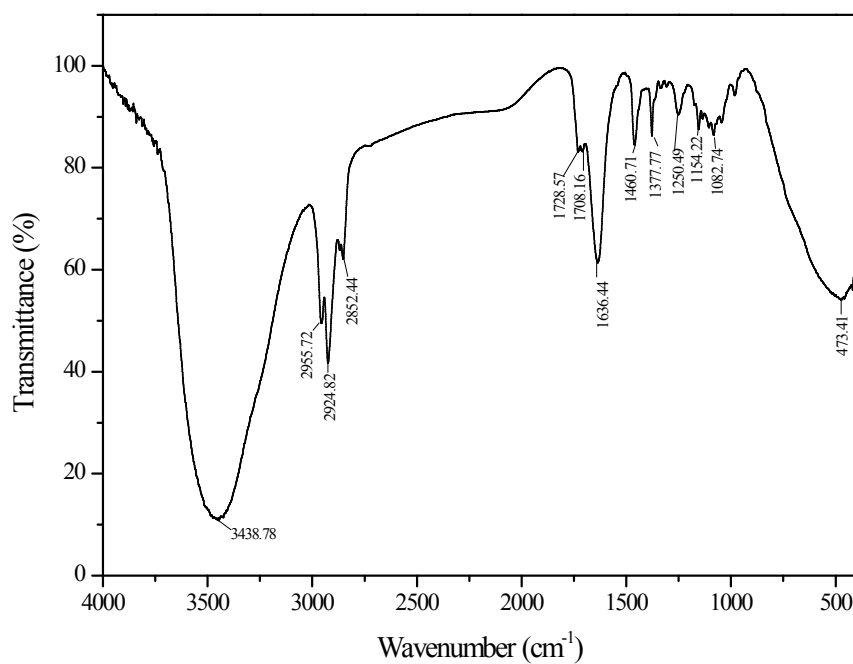


Figure S8. IR Spectrum of compound **1**

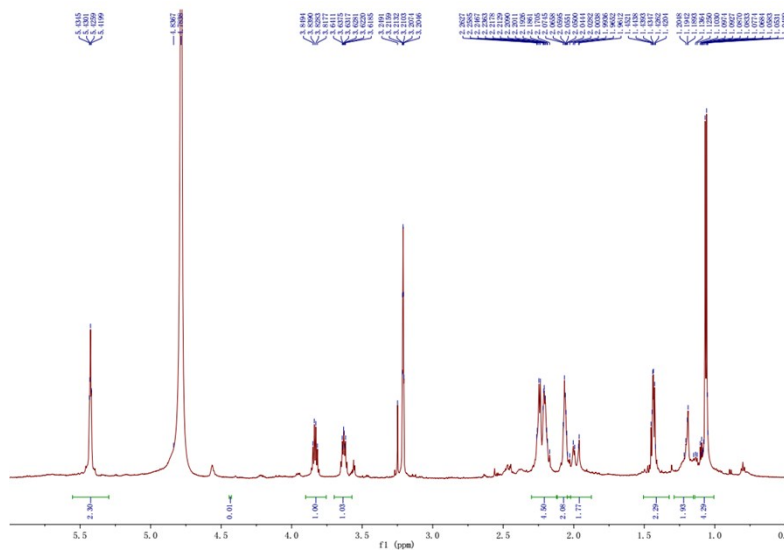


Figure S9.  $^1\text{H}$  NMR of compound **2** in MeOD

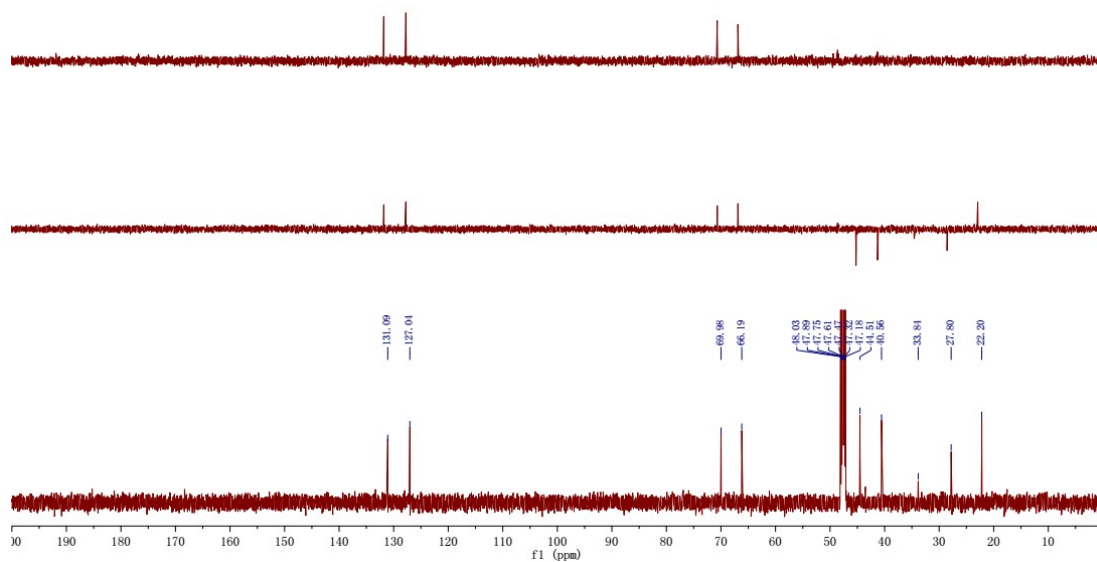


Figure S10.  $^{13}\text{C}$  NMR of compound **2** in MeOD



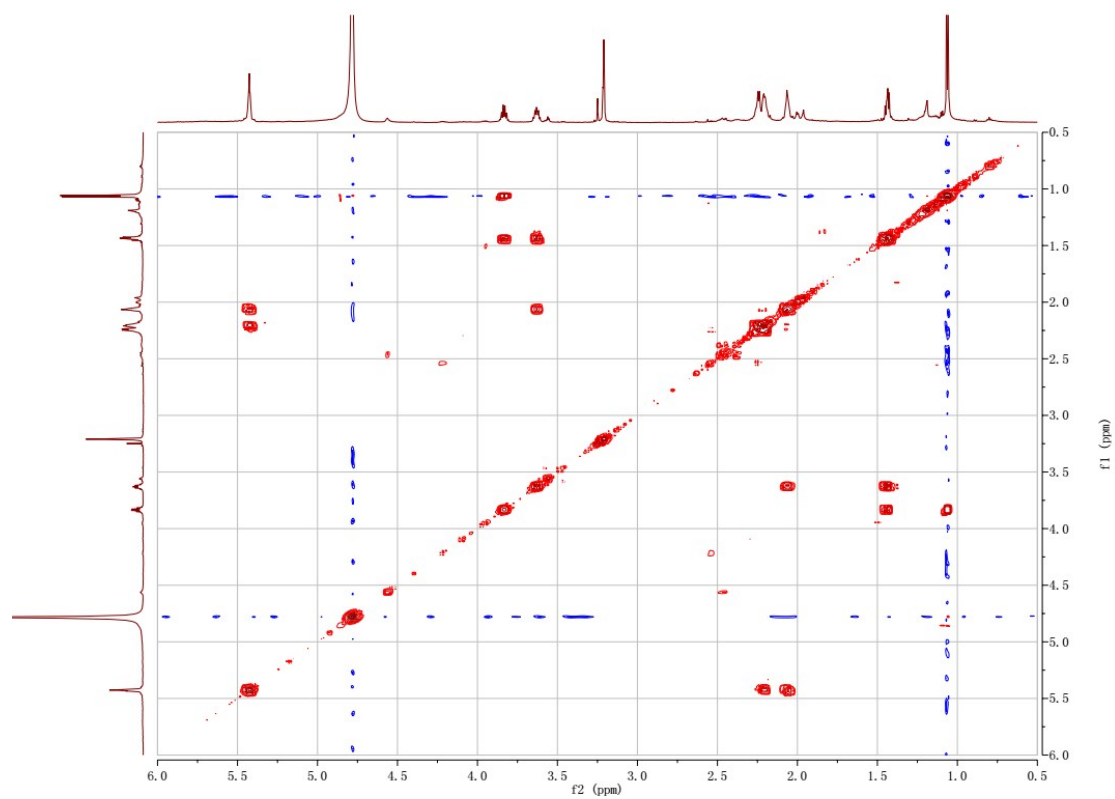


Figure S11.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **2** in MeOD

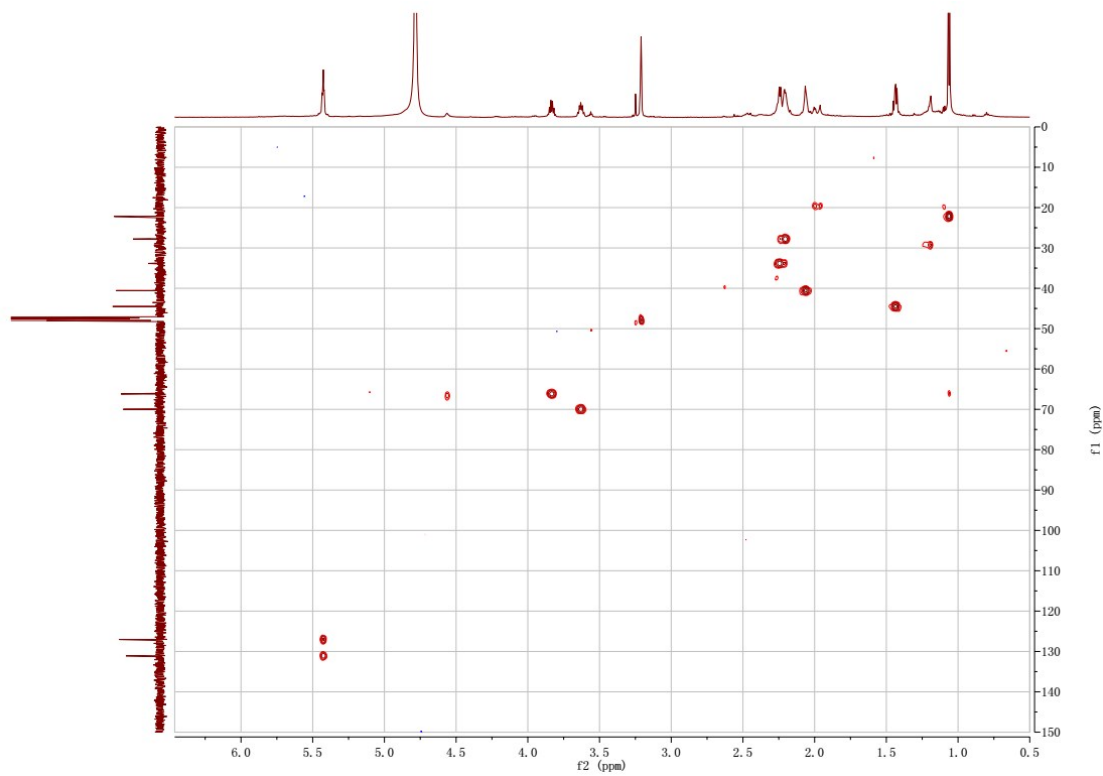


Figure S12. HSQC spectrum of compound **2** in MeOD

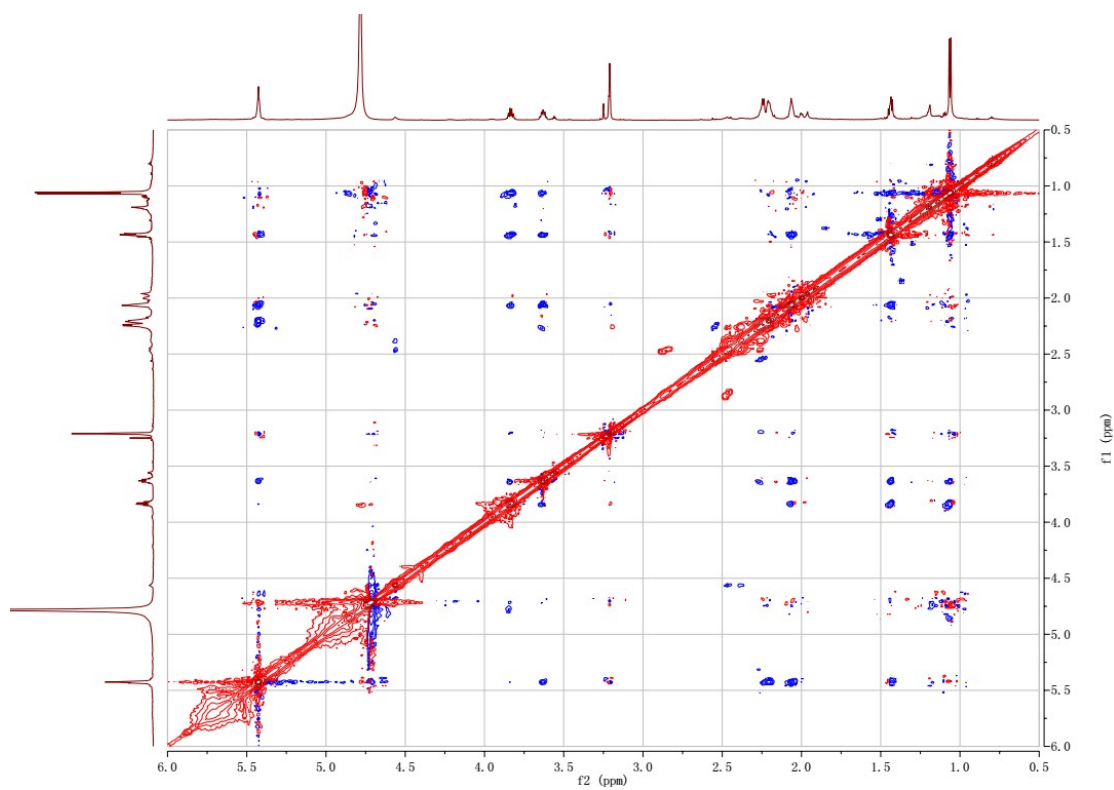


Figure S13. NOESY spectrum of compound **2** in MeOD

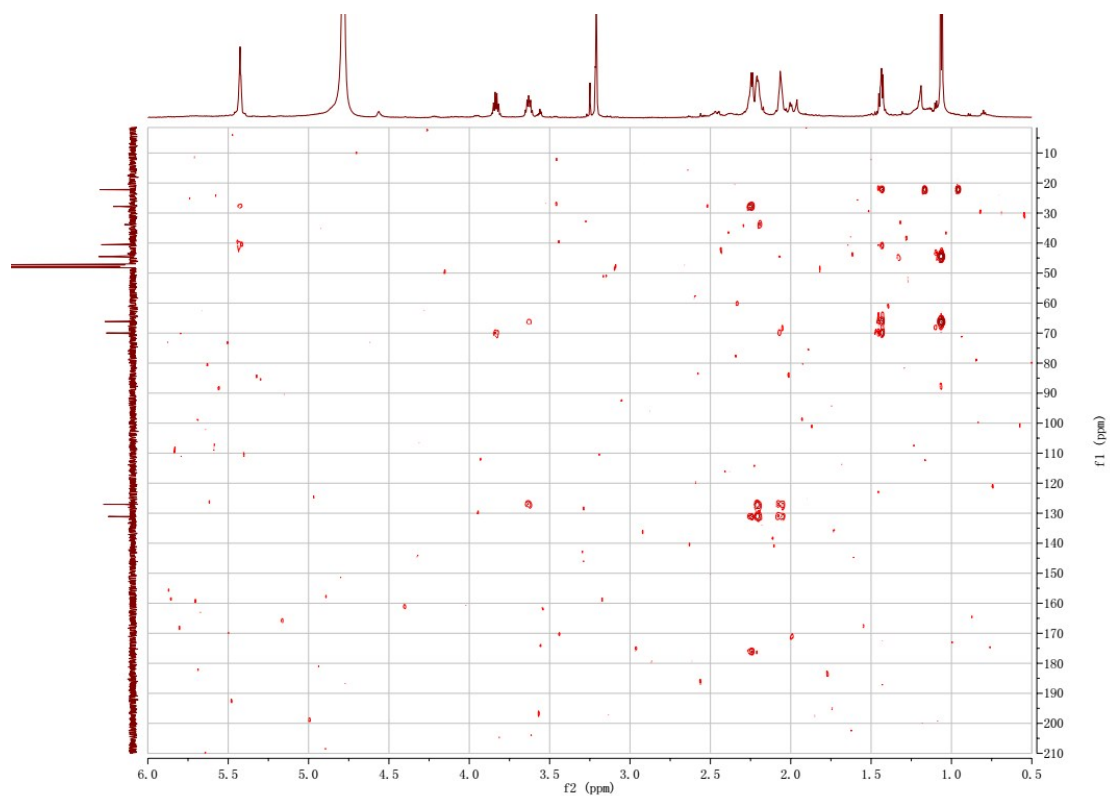


Figure S14. HMBC spectrum of compound **2** in MeOD

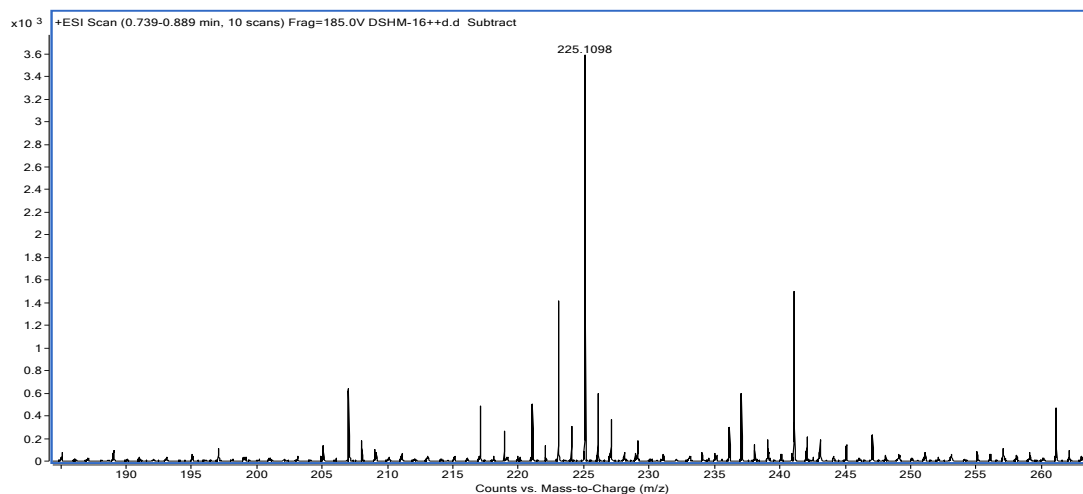


Figure S15. HRESIMS spectrum of compound **2**

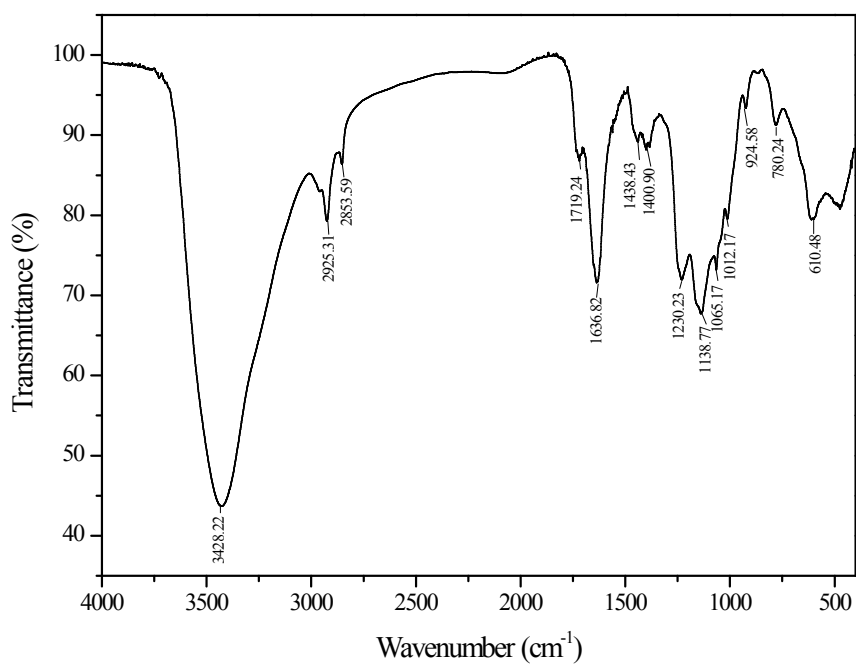


Figure S16. IR Spectrum of compound **2**



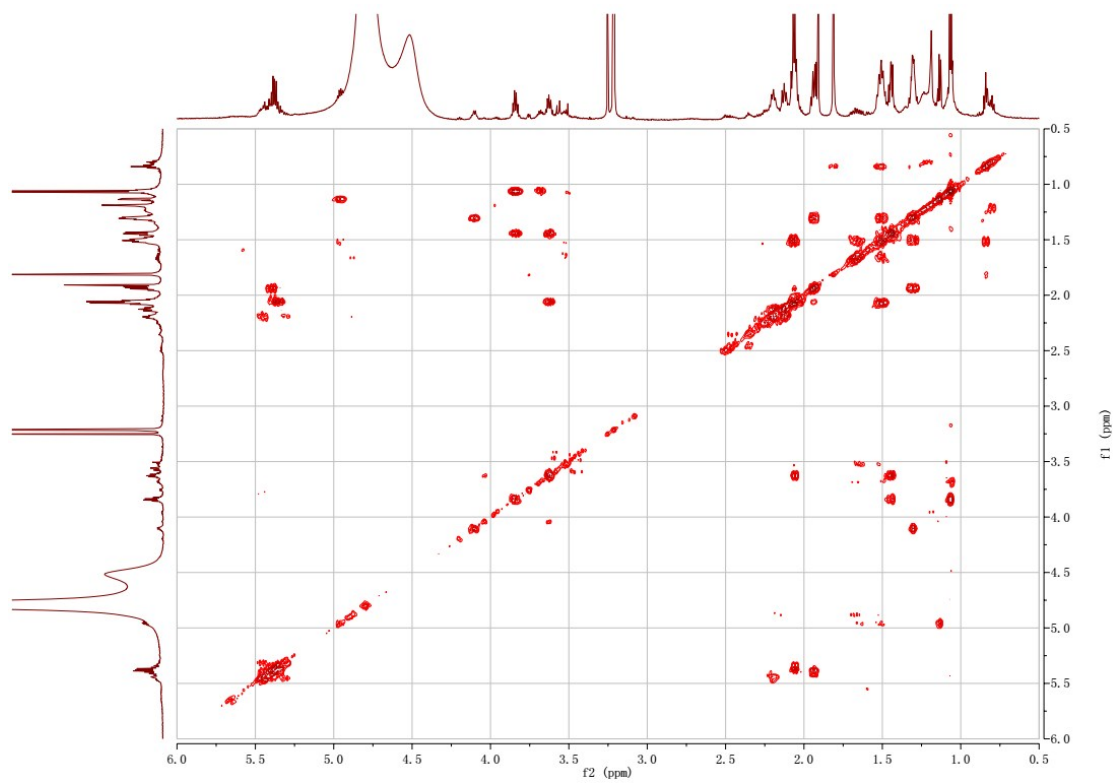


Figure S19.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **3** in MeOD

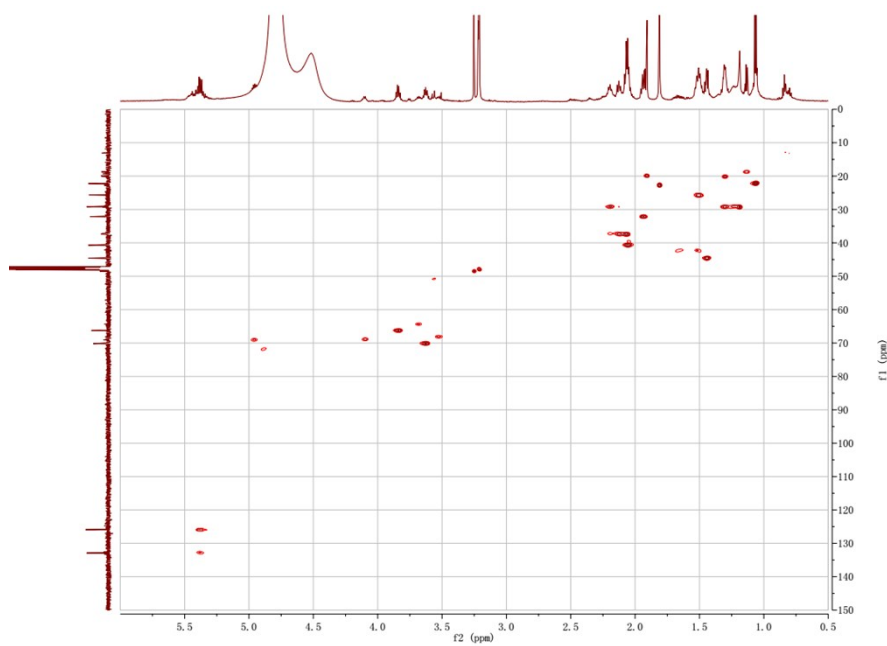


Figure S20. HSQC spectrum of compound **3** in MeOD

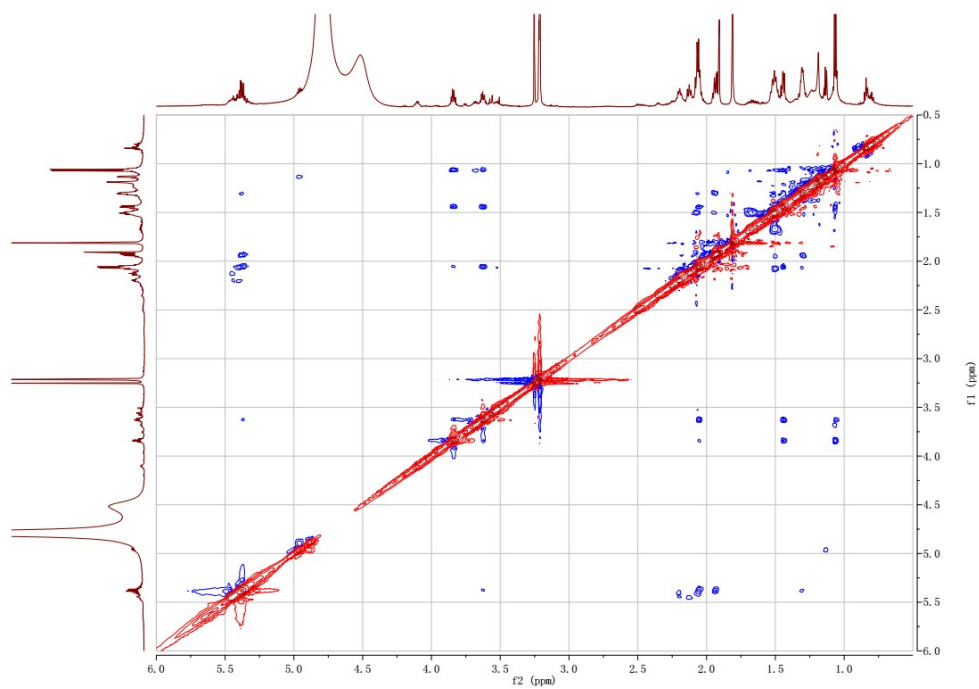


Figure S21. NOESY spectrum of compound **3** in MeOD

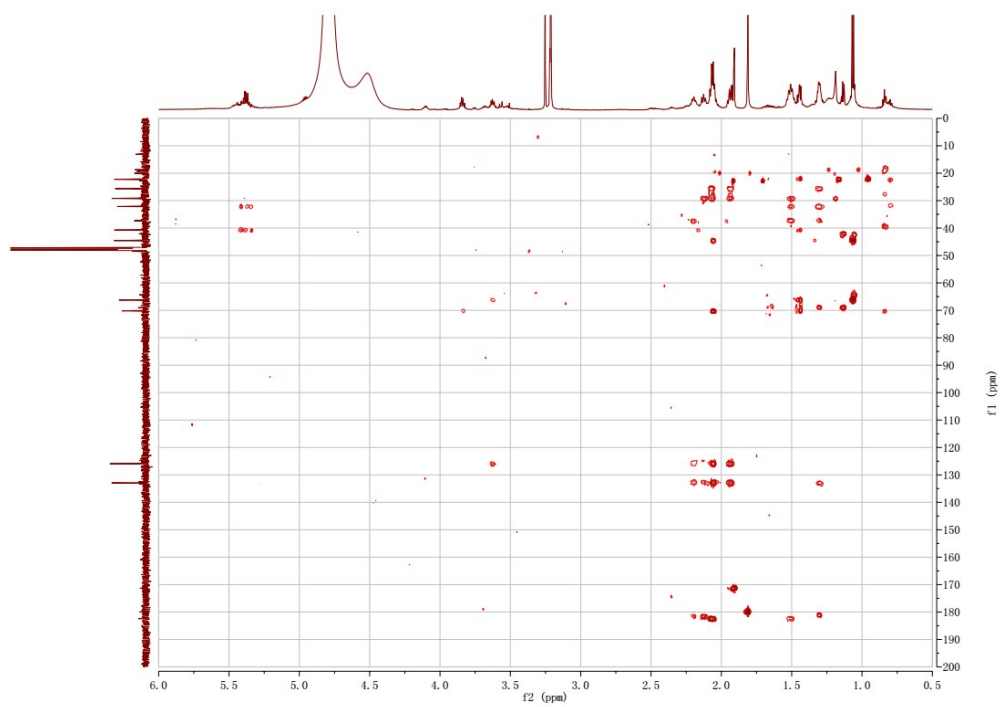


Figure S22. HMBC spectrum of compound **3** in MeOD

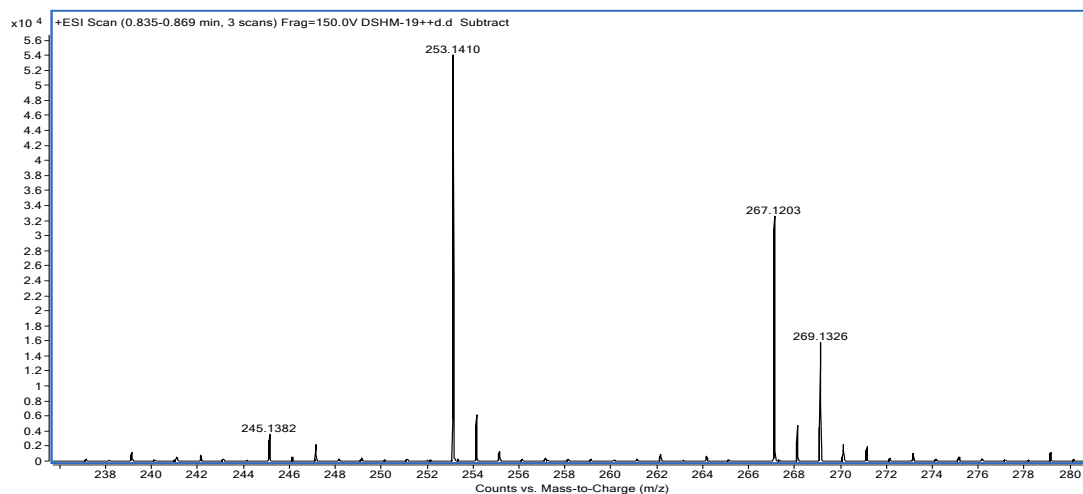


Figure S23. HRESIMS spectrum of compound 3

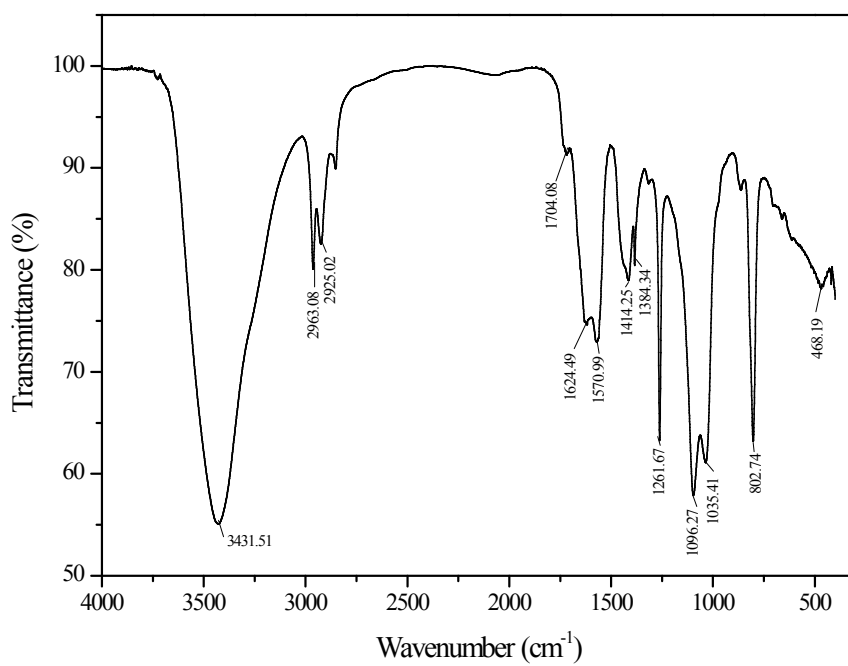


Figure S24. IR Spectrum of compound 3

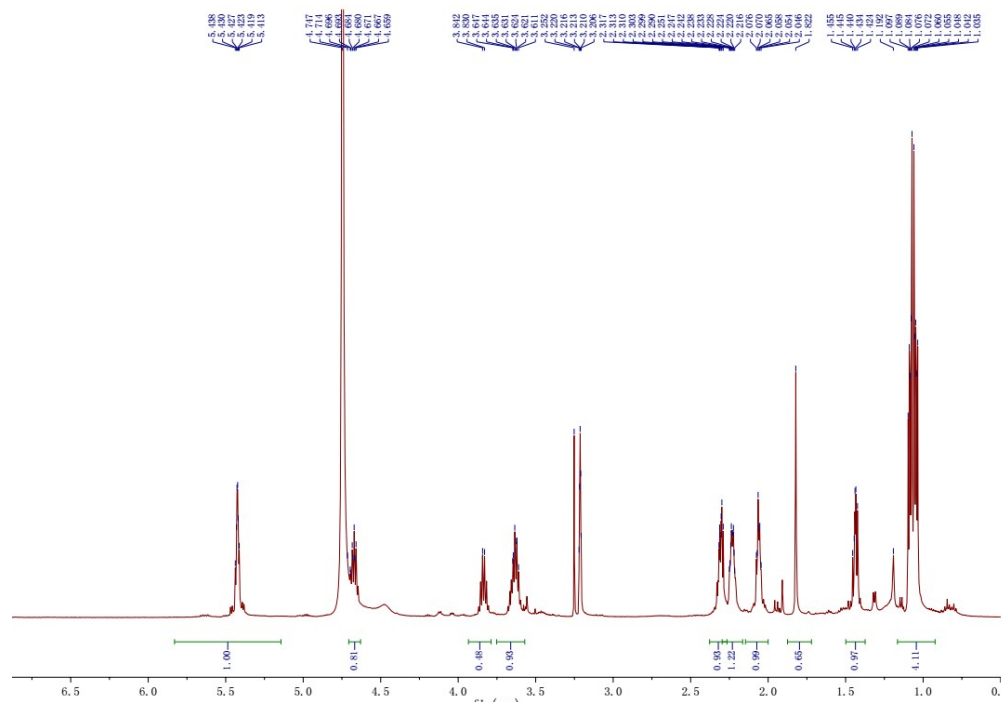


Figure S25.  $^1\text{H}$  NMR of compound **4** in MeOD

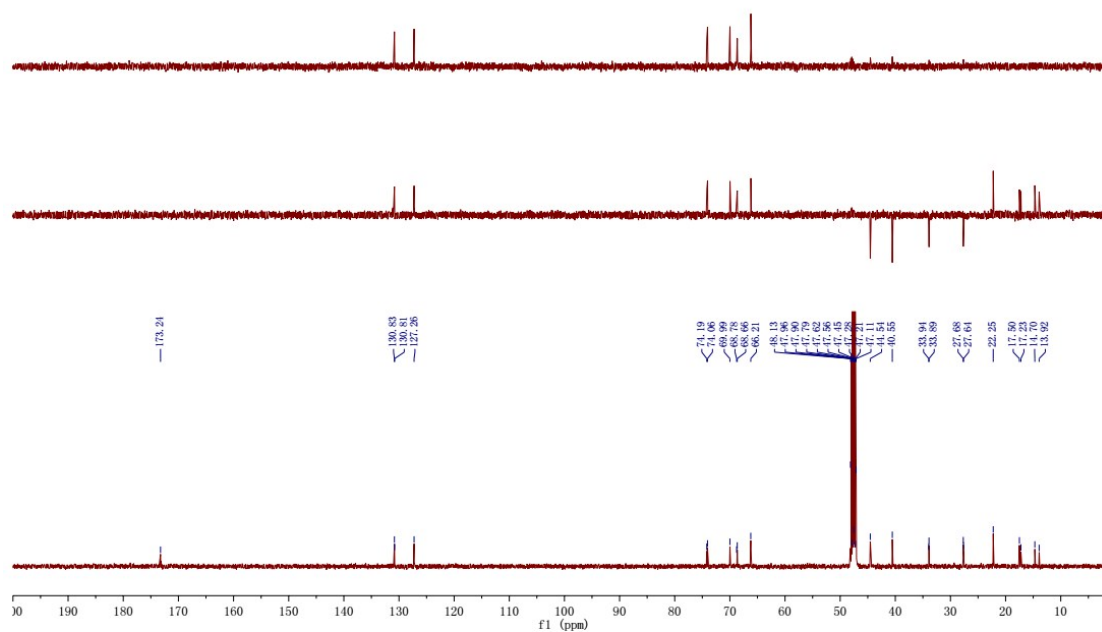


Figure S26.  $^{13}\text{C}$  NMR of compound **4** in MeOD



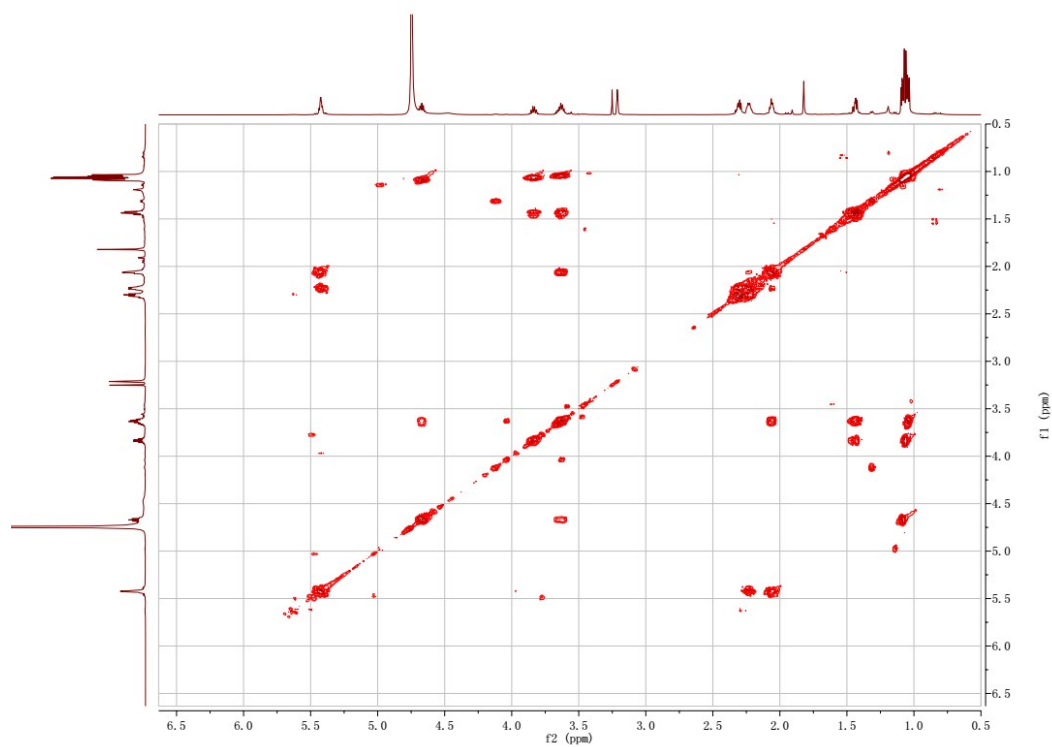


Figure S27.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **4** in MeOD

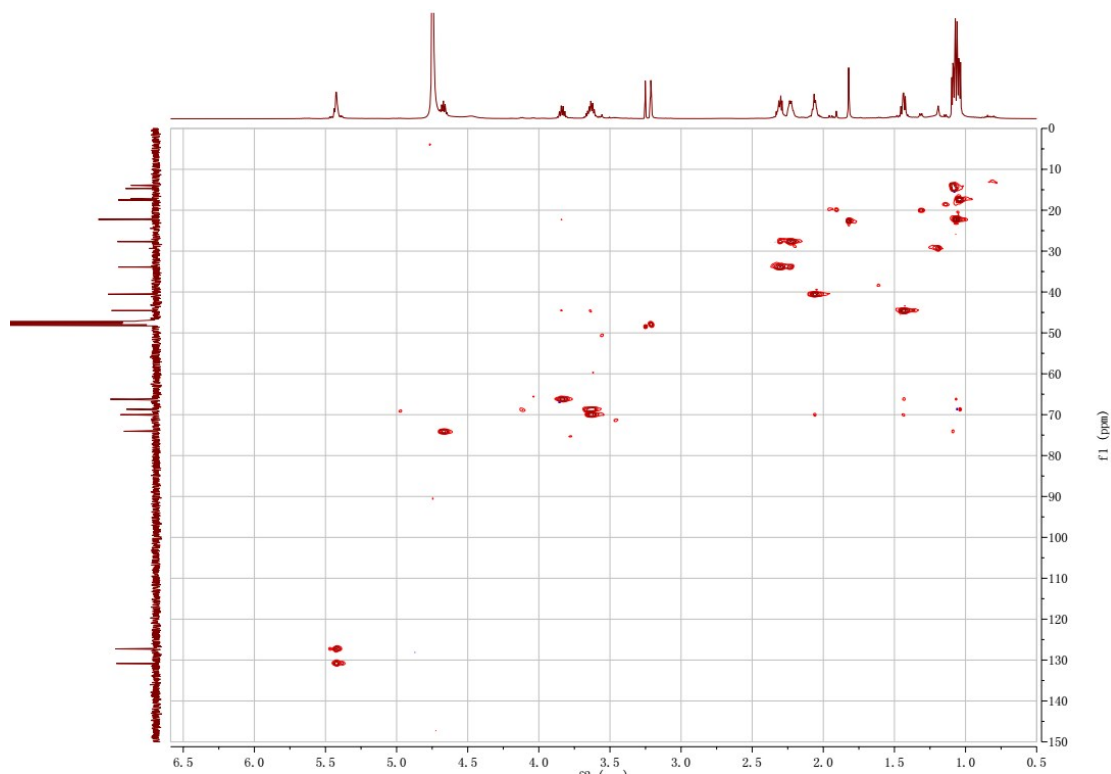


Figure S28. HSQC spectrum of compound **4** in MeOD

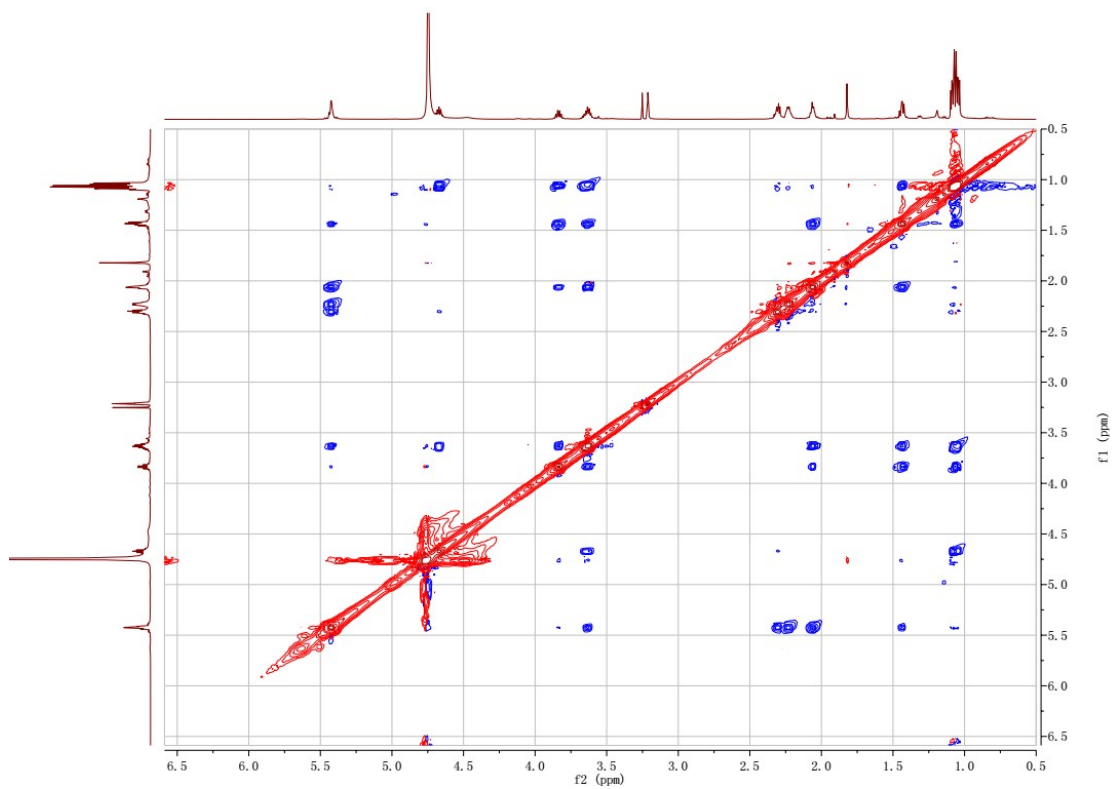


Figure S29. NOESY spectrum of compound **4** in MeOD

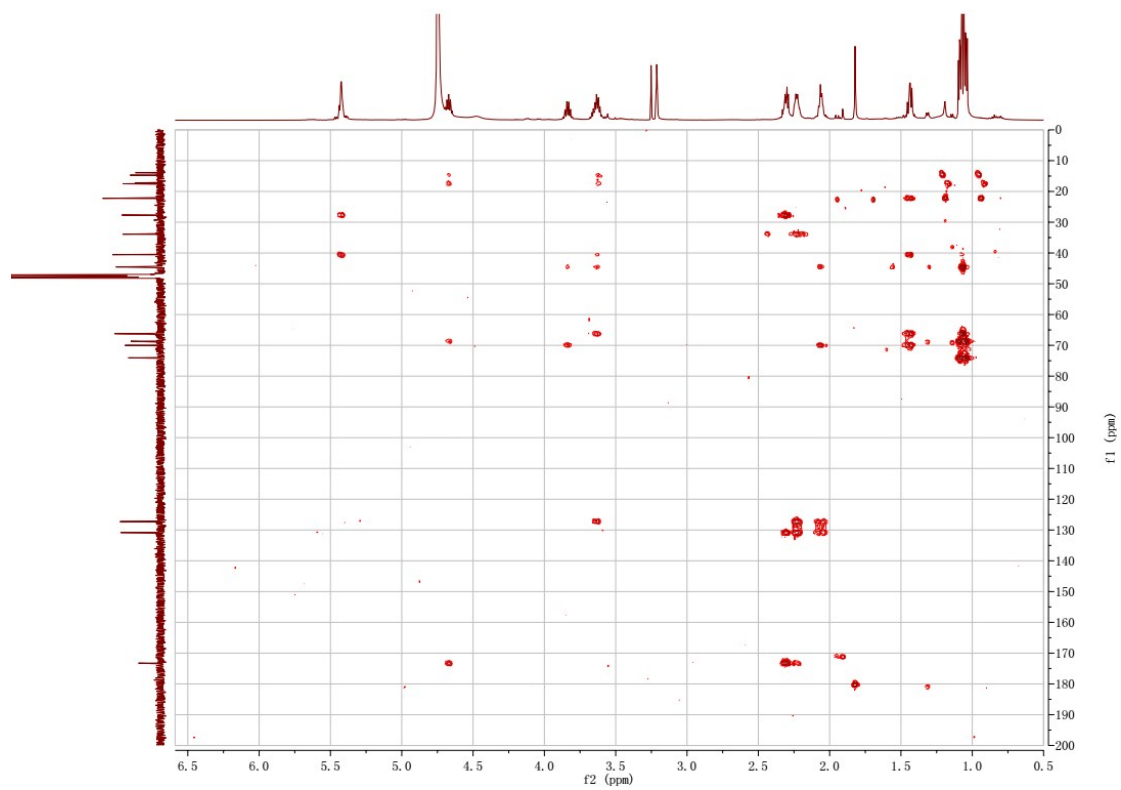


Figure S30. HMBC spectrum of compound **4** in MeOD

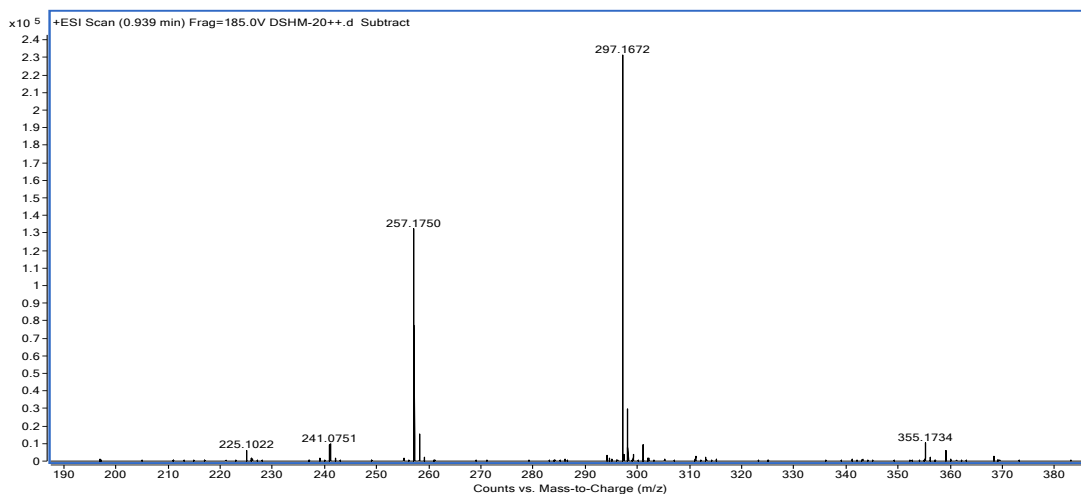


Figure S31. HRESIMS spectrum of compound 4

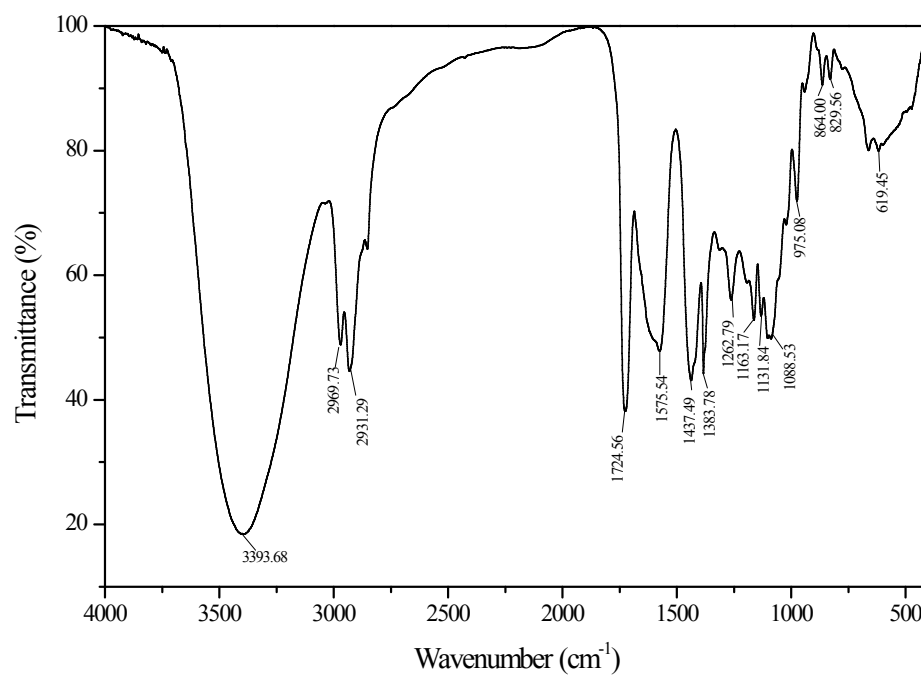


Figure S32. IR Spectrum of compound 4

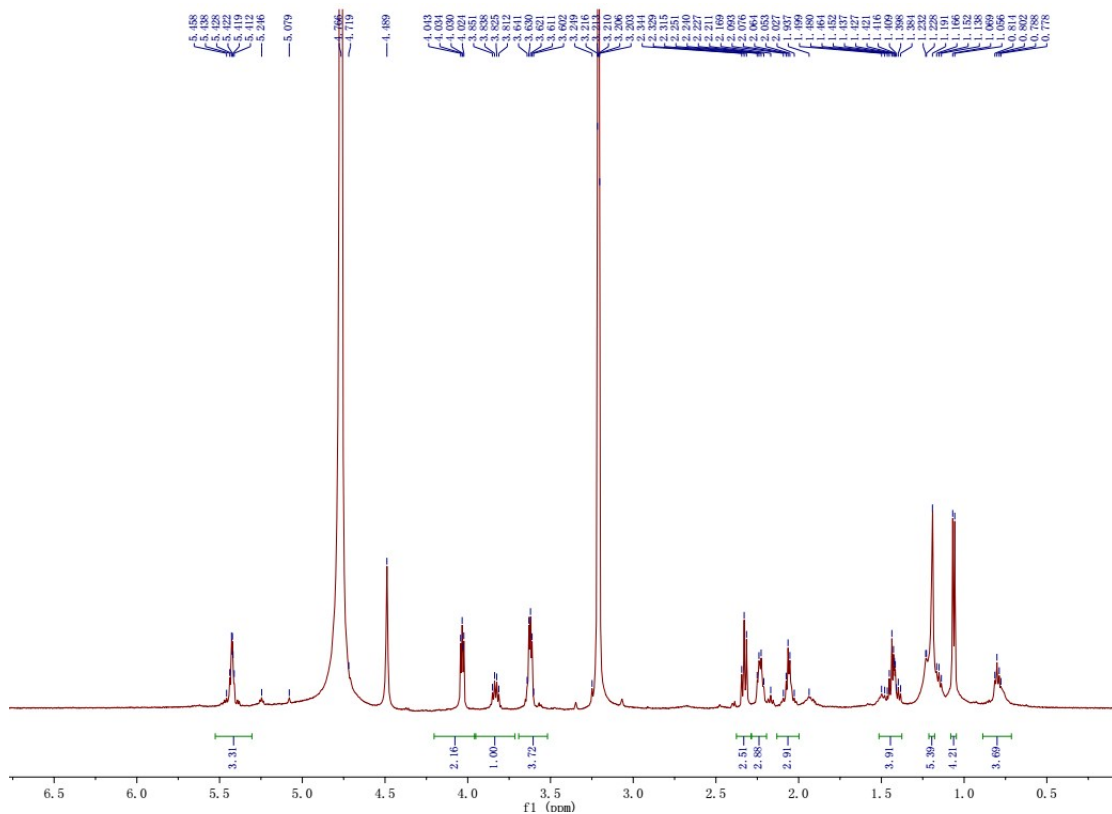


Figure S33.  $^1\text{H}$  NMR of compound **5** in MeOD

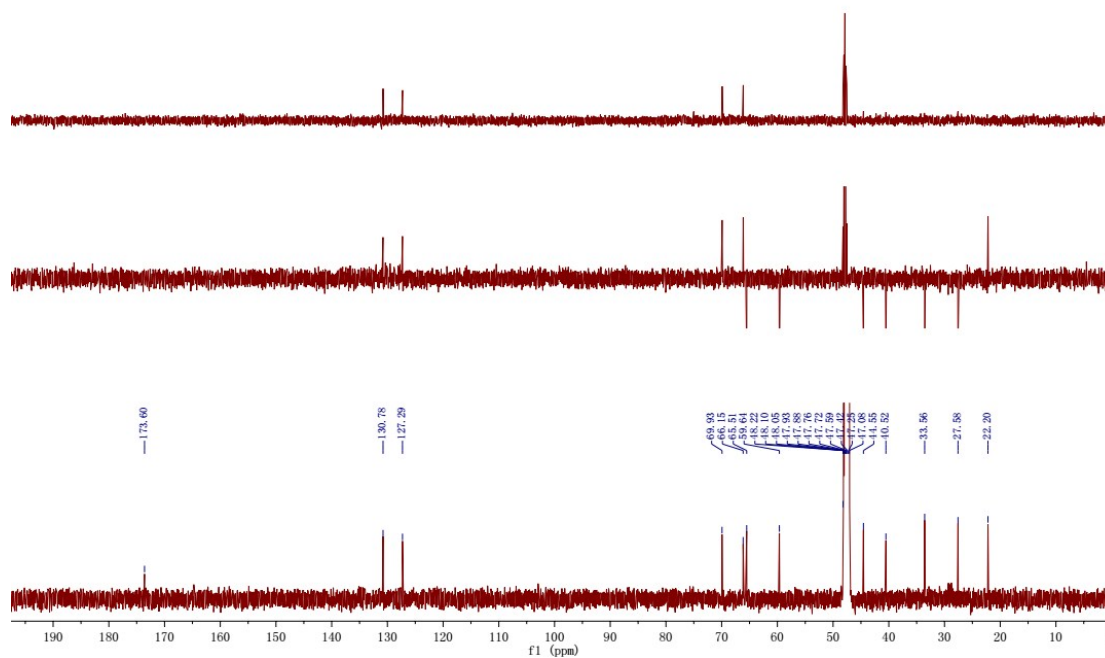


Figure S34.  $^{13}\text{C}$  NMR of compound **5** in MeOD

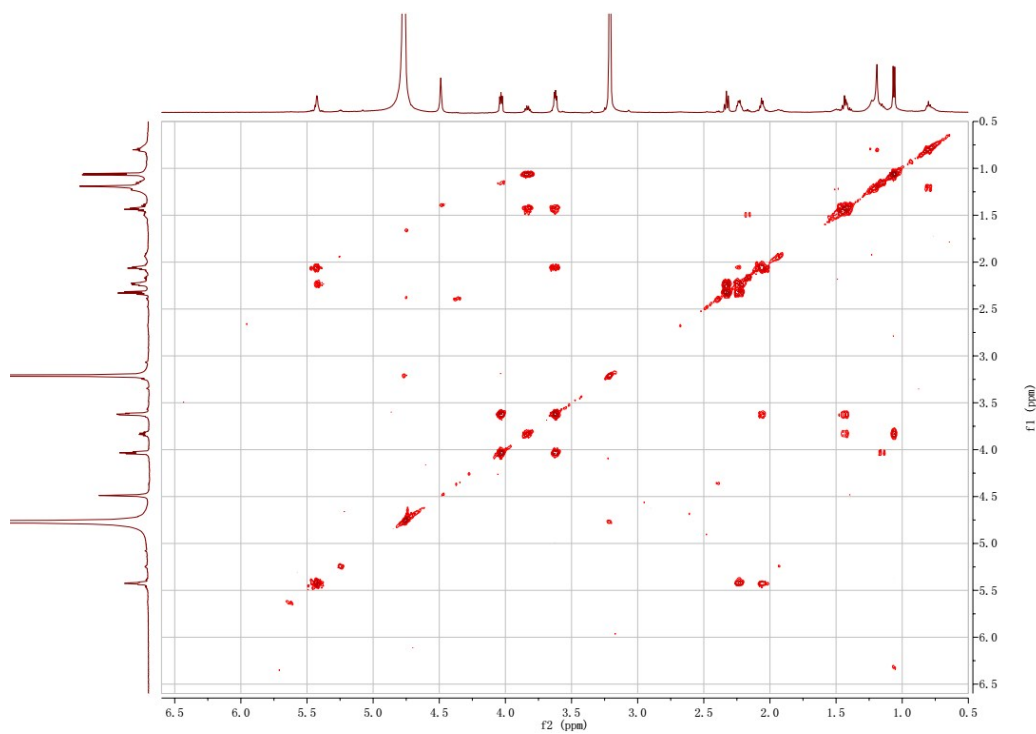


Figure S35.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **5** in MeOD

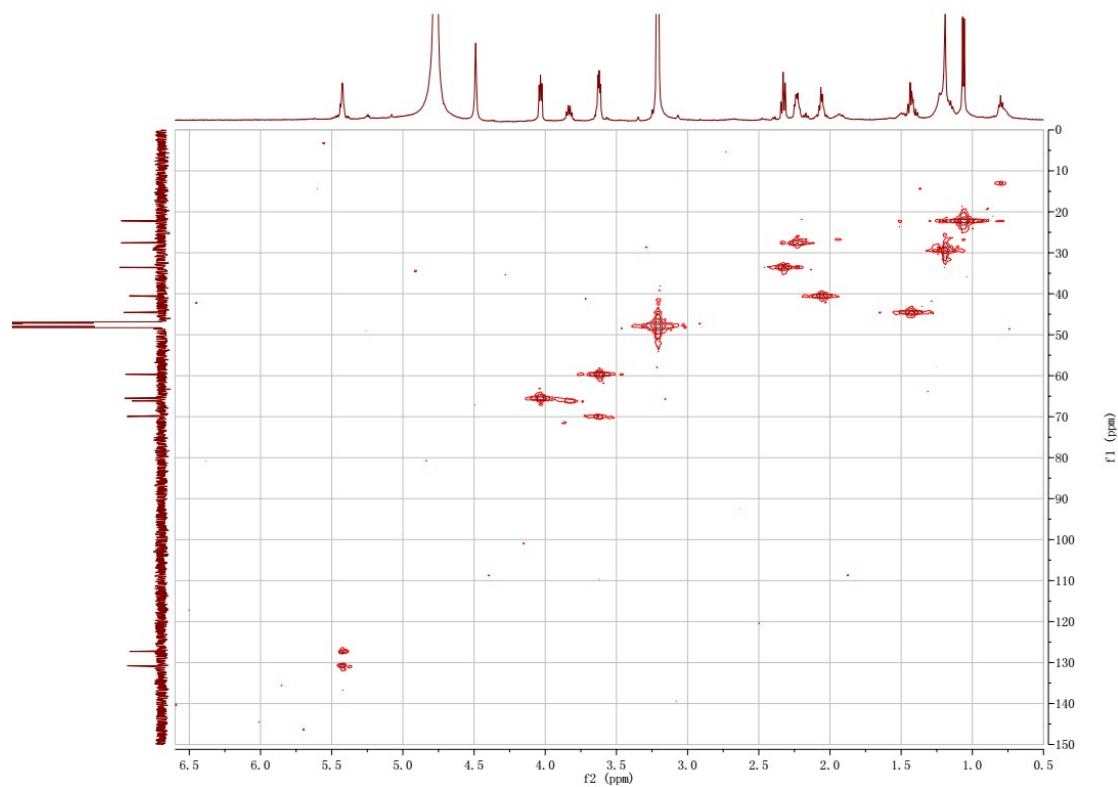


Figure S36. HSQC spectrum of compound **5** in MeOD

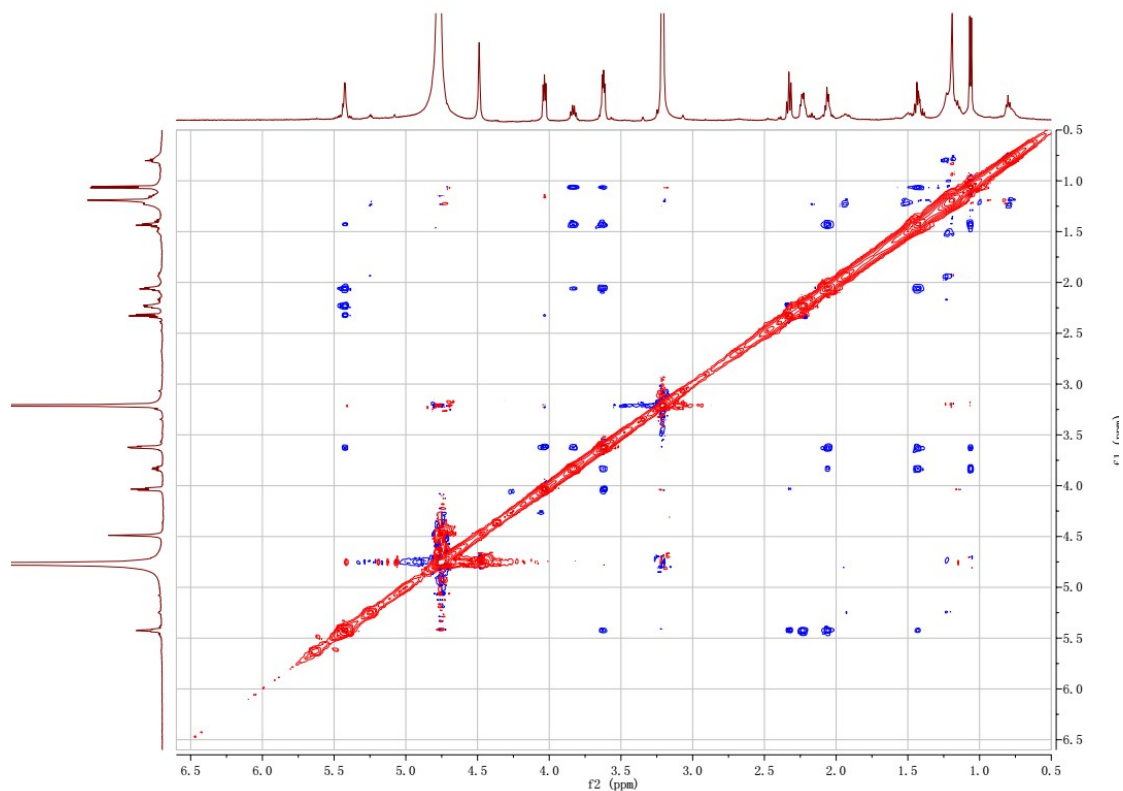


Figure S37. NOESY spectrum of compound **5** in MeOD

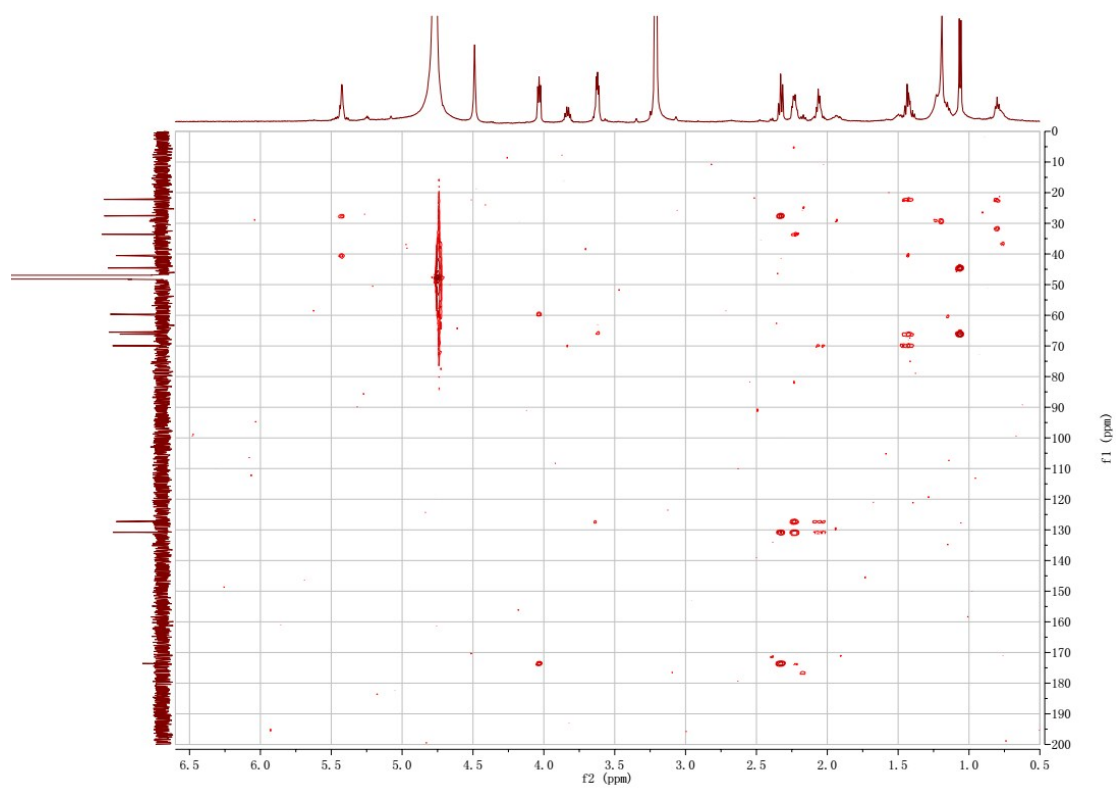


Figure S38. HMBC spectrum of compound **5** in MeOD

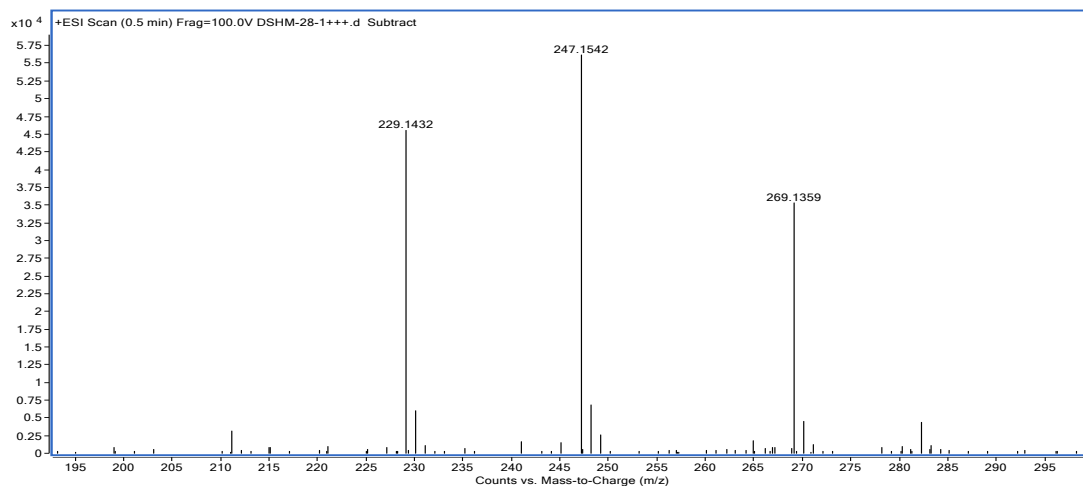


Figure S39. HRESIMS spectrum of compound **5** in MeOD

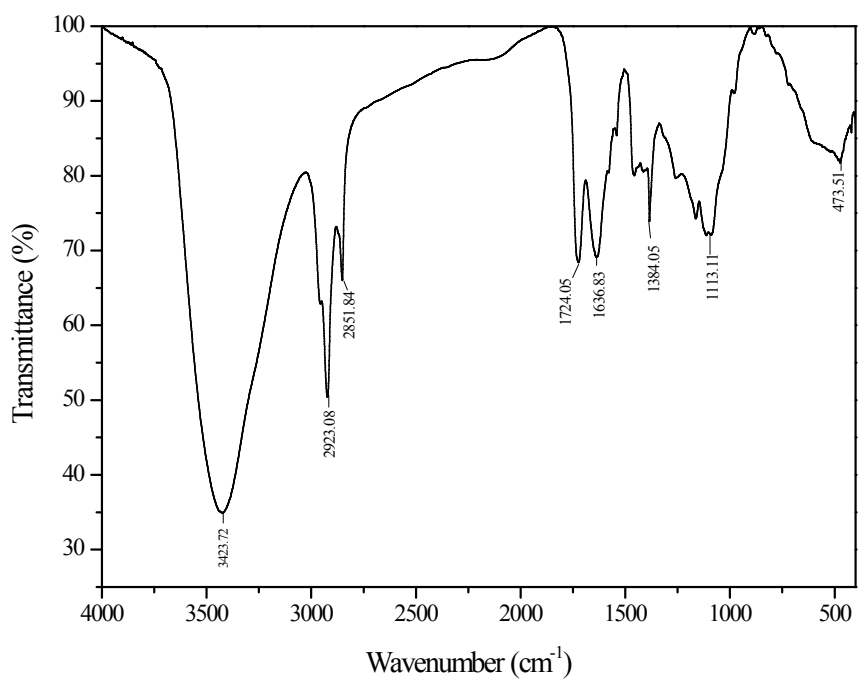


Figure S40. IR Spectrum of compound **5**





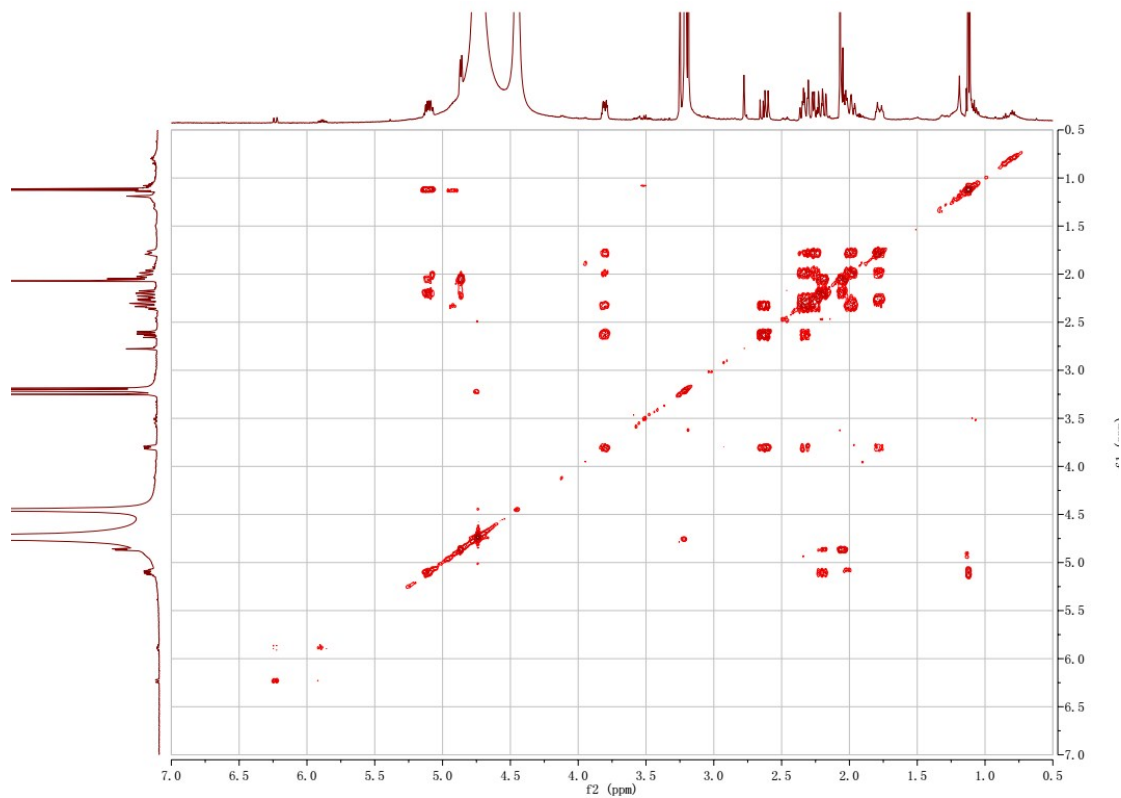


Figure S43.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **6** in MeOD

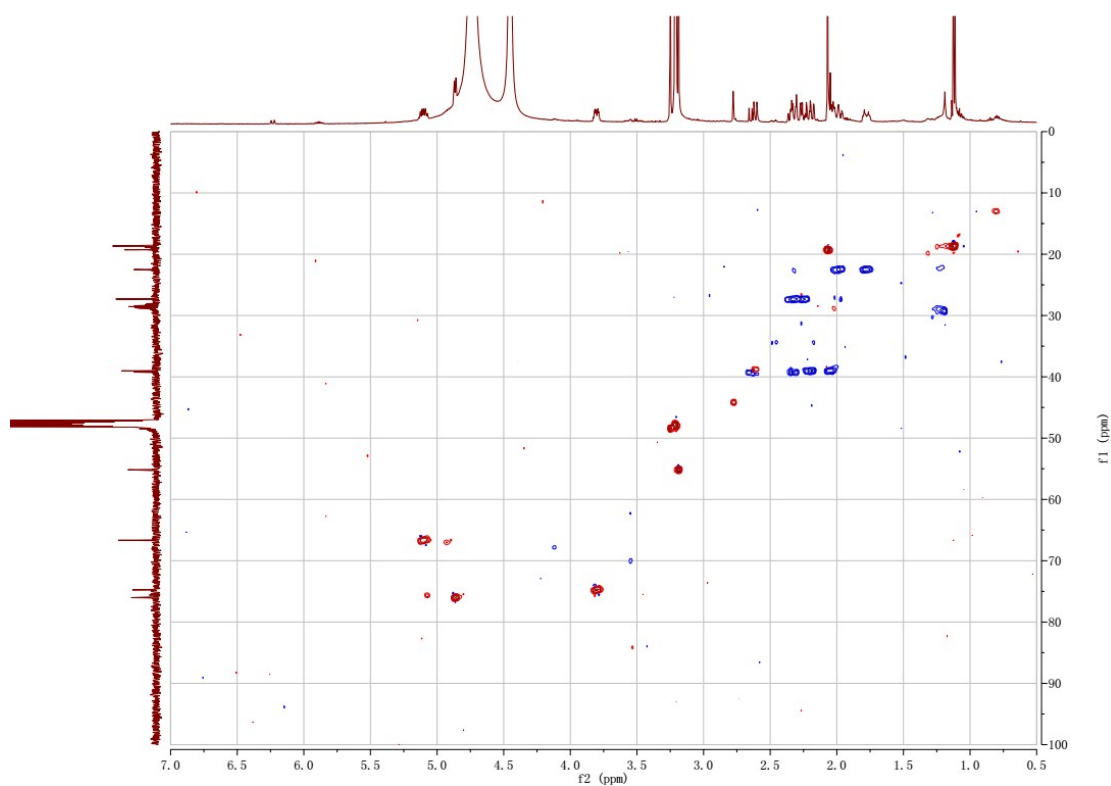


Figure 44. HSQC spectrum of compound **6** in MeOD

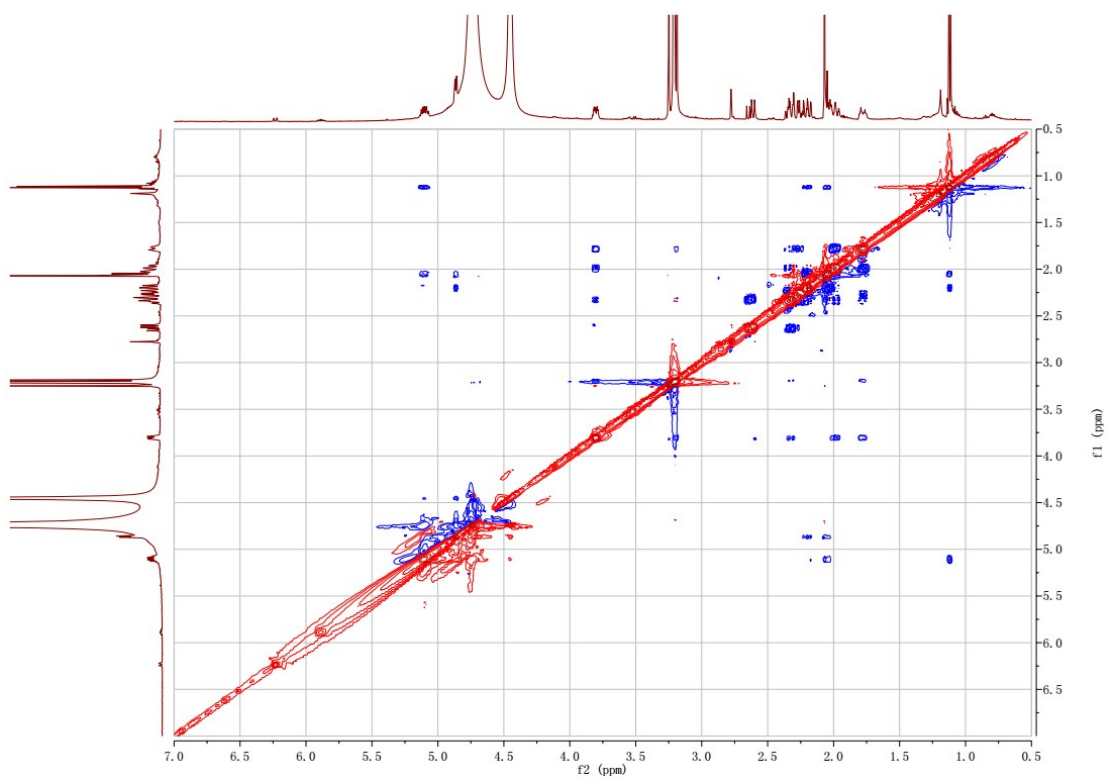


Figure S45. NOESY spectrum of compound **6** in MeOD

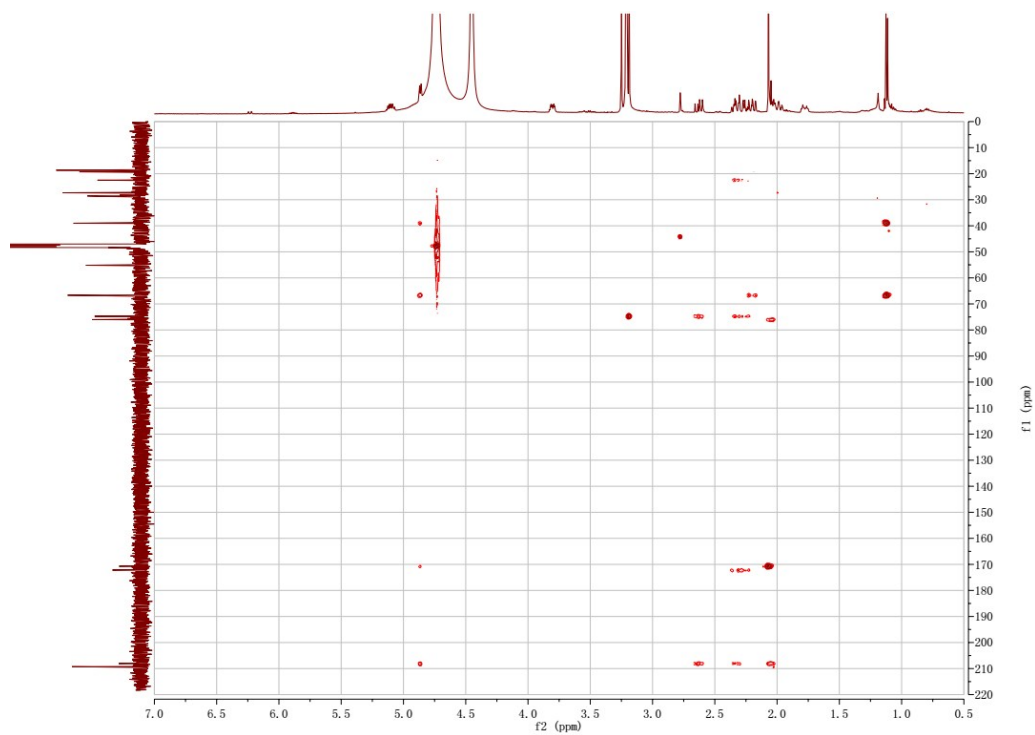


Figure 46. HMBC spectrum of compound **6** in MeOD

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T: FTMS + c ESI Full ms [150.00-800.00]

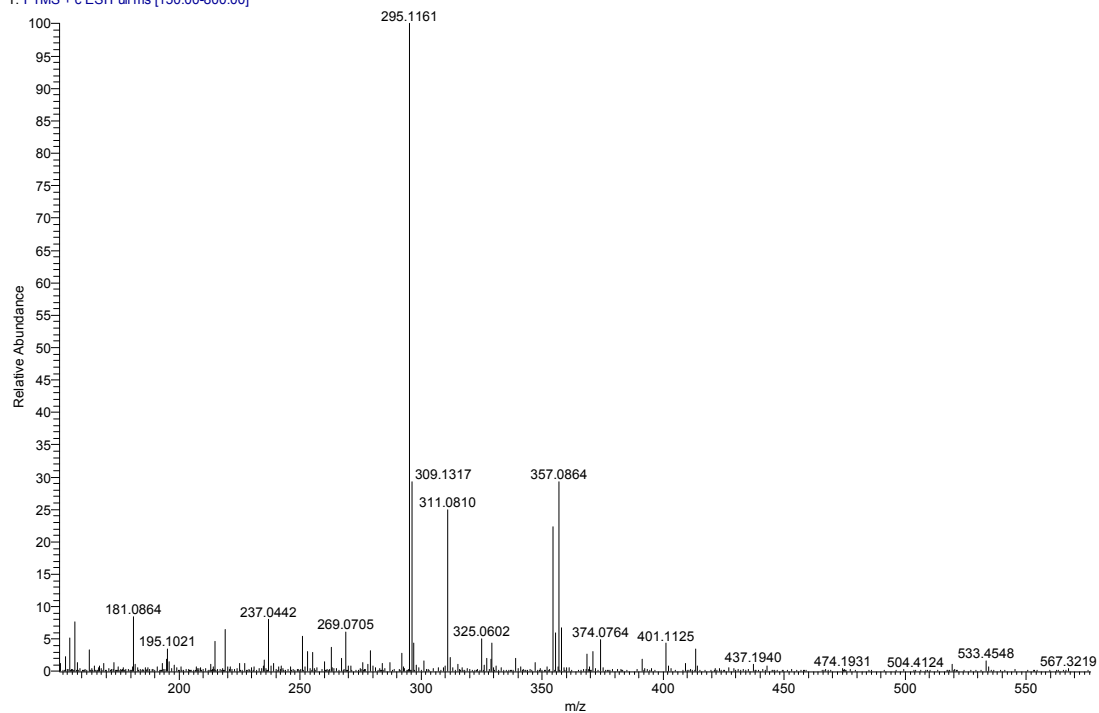


Figure S47. HRESIMS Spectrum of compound 6

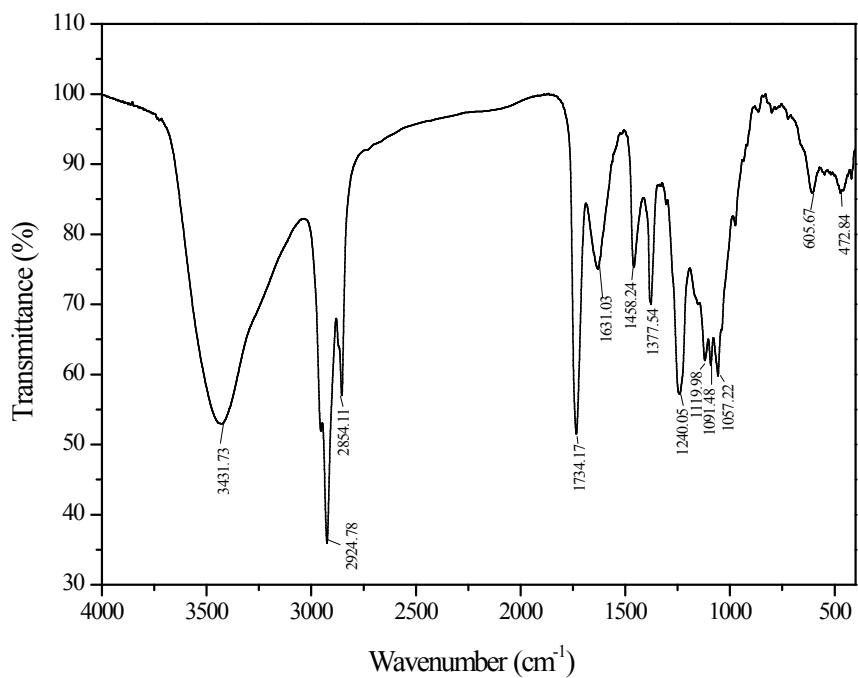


Figure S48. IR Spectrum of compound 6

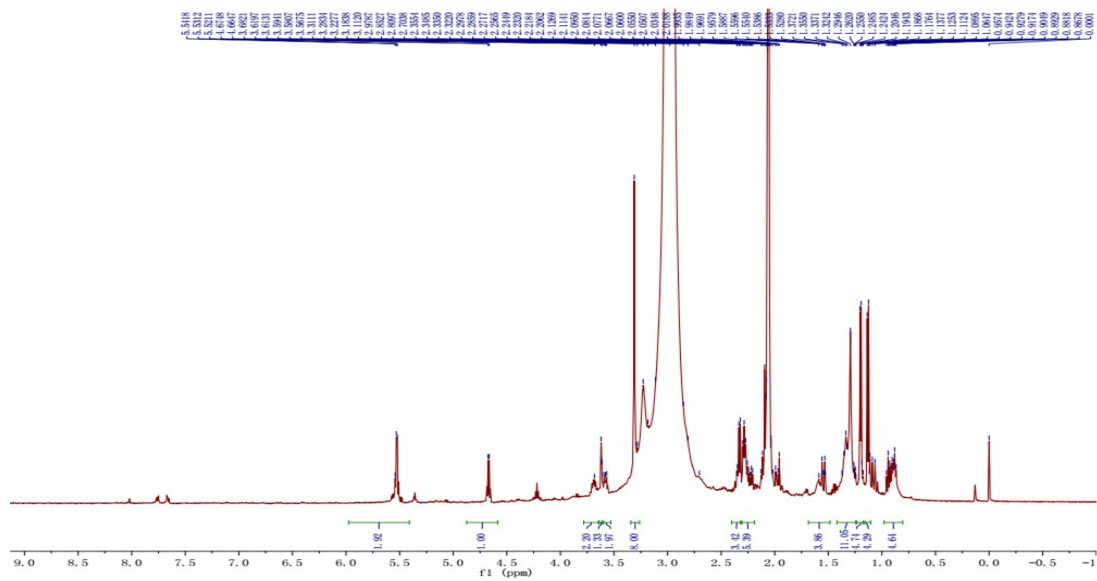


Figure S49.  $^1\text{H}$  NMR of compound **7** in acetone- $\text{d}_6$

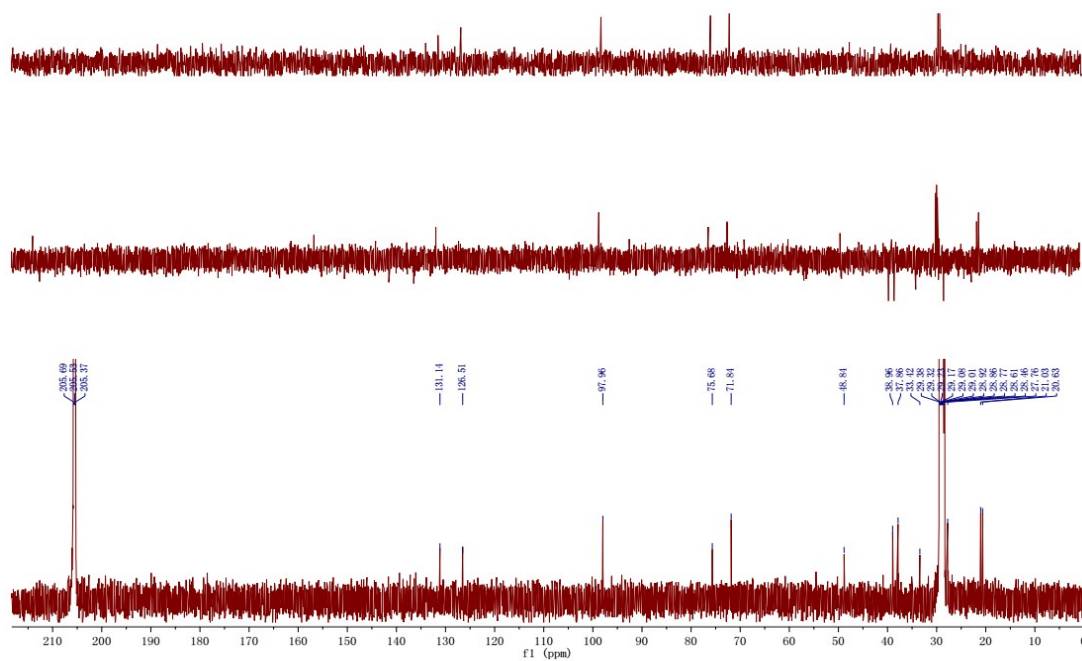


Figure S50.  $^{13}\text{C}$  NMR of compound **7** in acetone- $\text{d}_6$

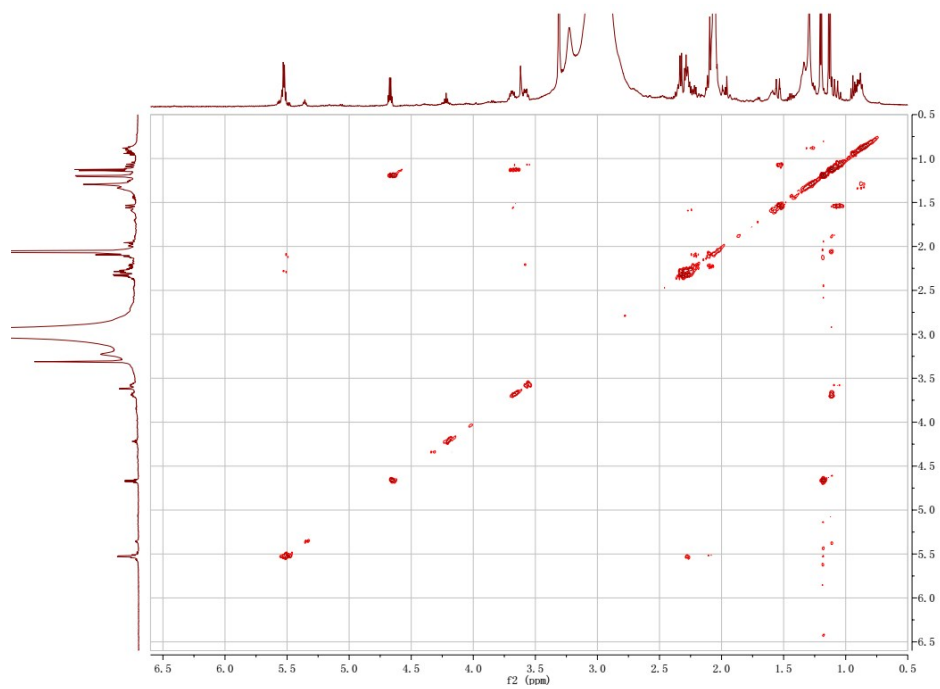


Figure S51.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **7** in acetone- $\text{d}_6$

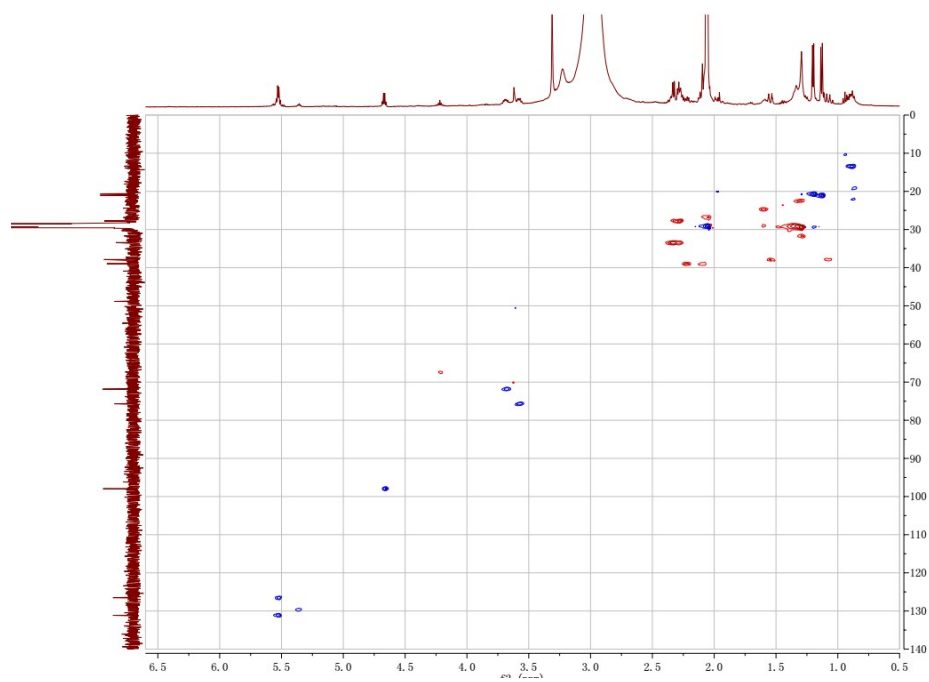


Figure S52. HSQC spectrum of compound **7** in acetone- $\text{d}_6$

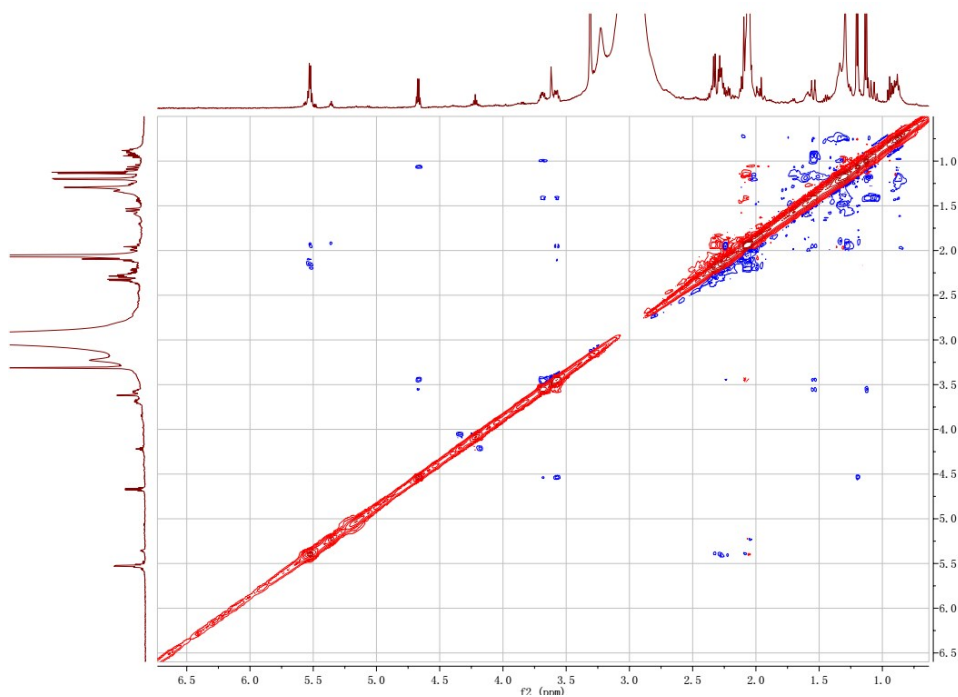


Figure S53. NOESY spectrum of compound **7** in acetone-d<sub>6</sub>

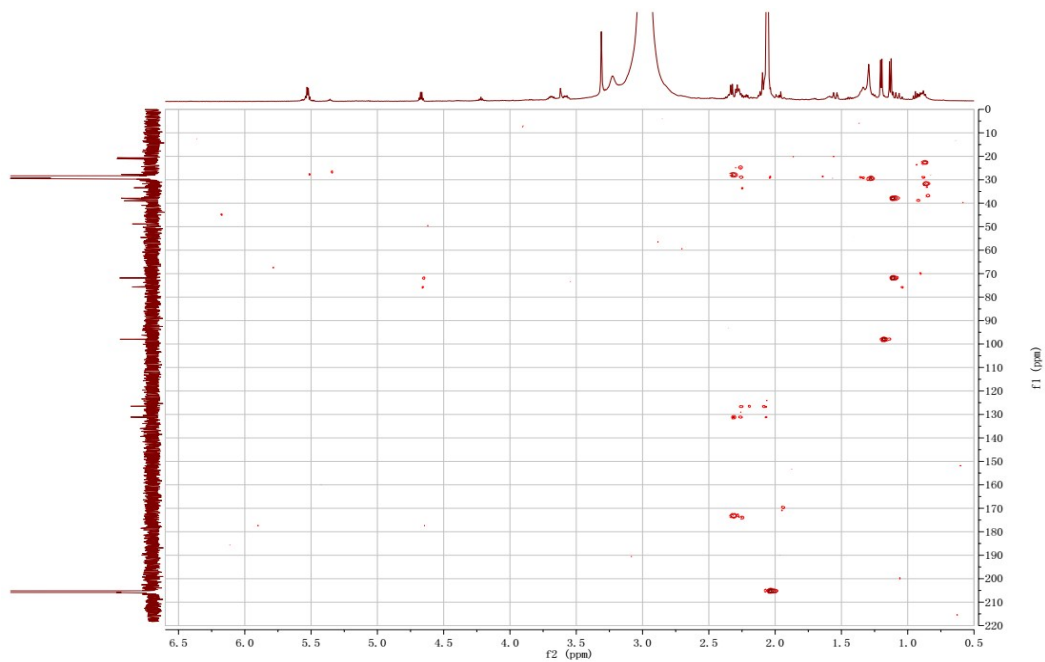


Figure S54. HMBC Spectrum of compound **7** in acetone-d<sub>6</sub>

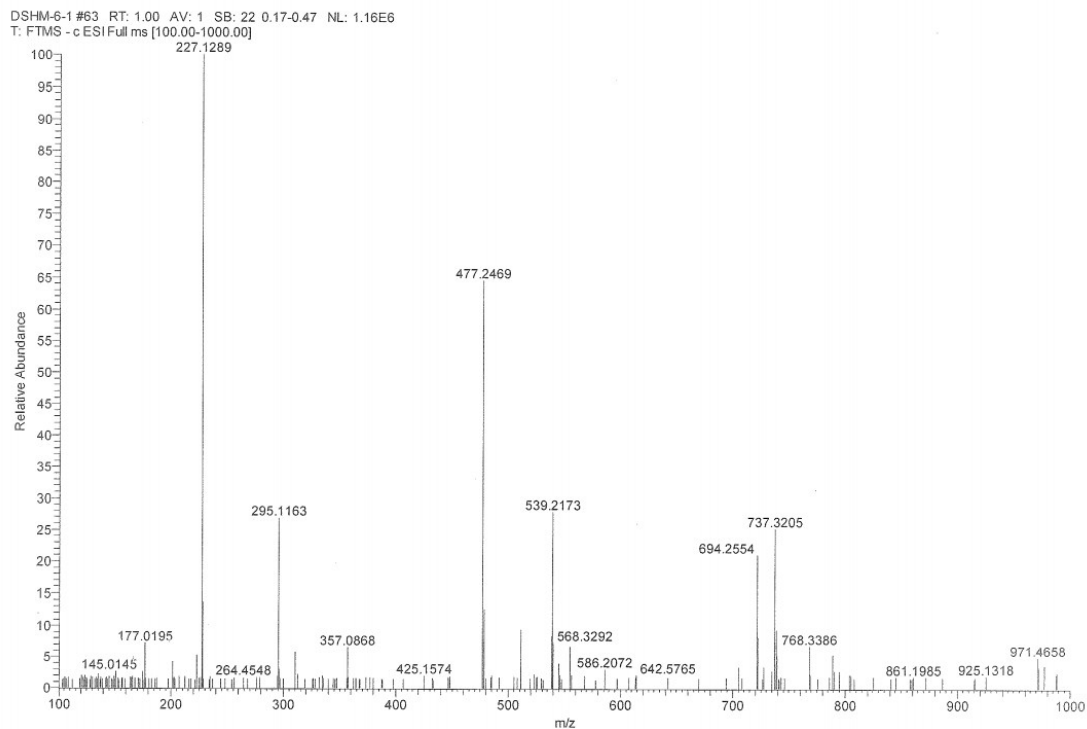


Figure S55. HRESIMS Spectrum of compound 7

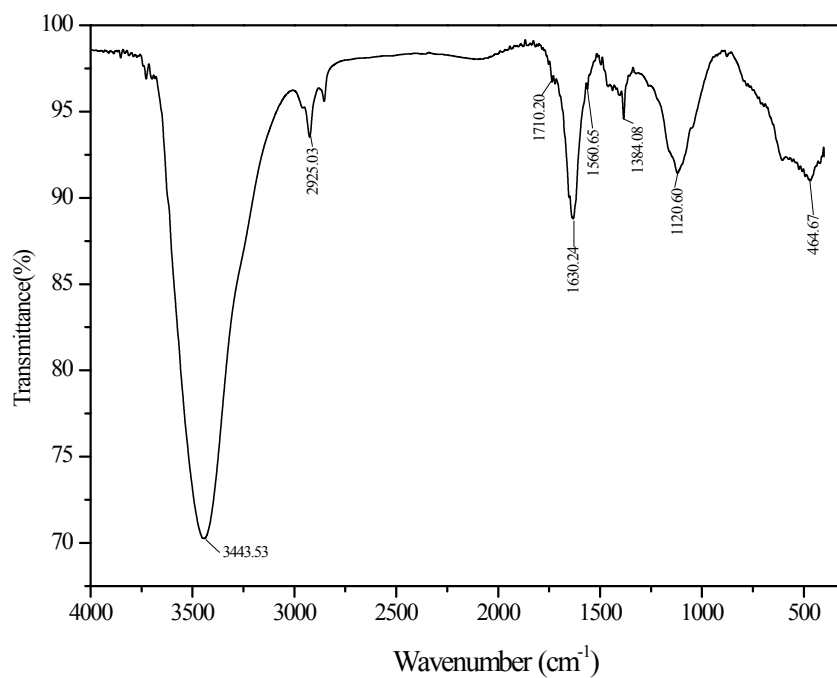


Figure S56. IR Spectrum of compound 7

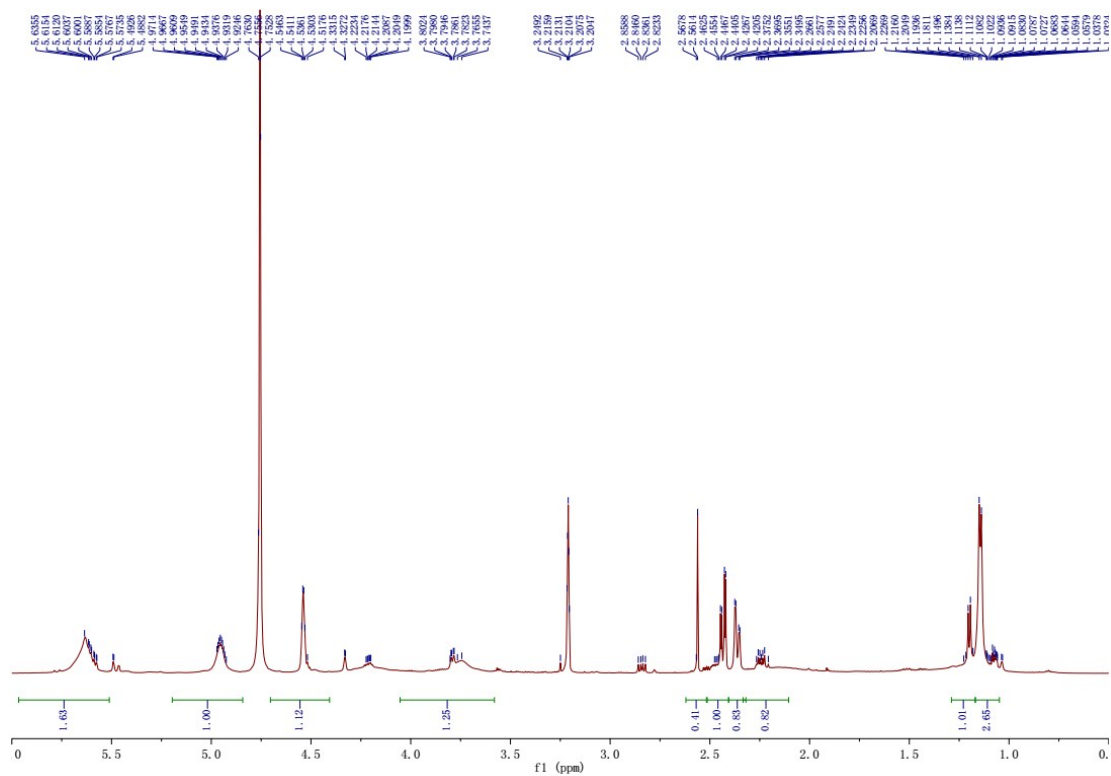


Figure S57.  $^1\text{H}$  NMR of compound **8** in MeOD

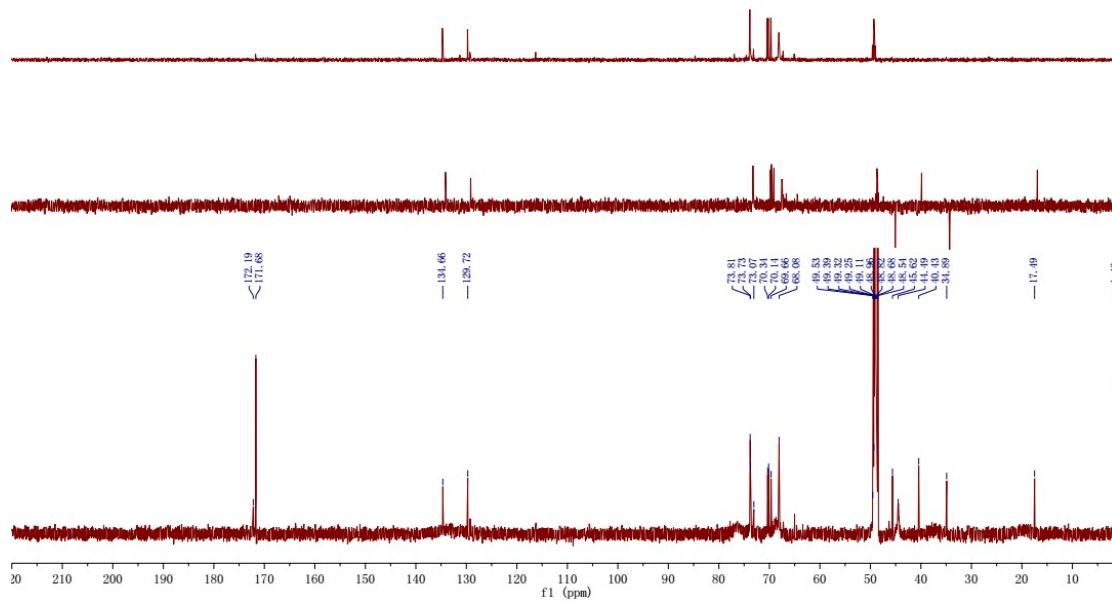


Figure S58.  $^{13}\text{C}$  NMR of compound **8** in MeOD



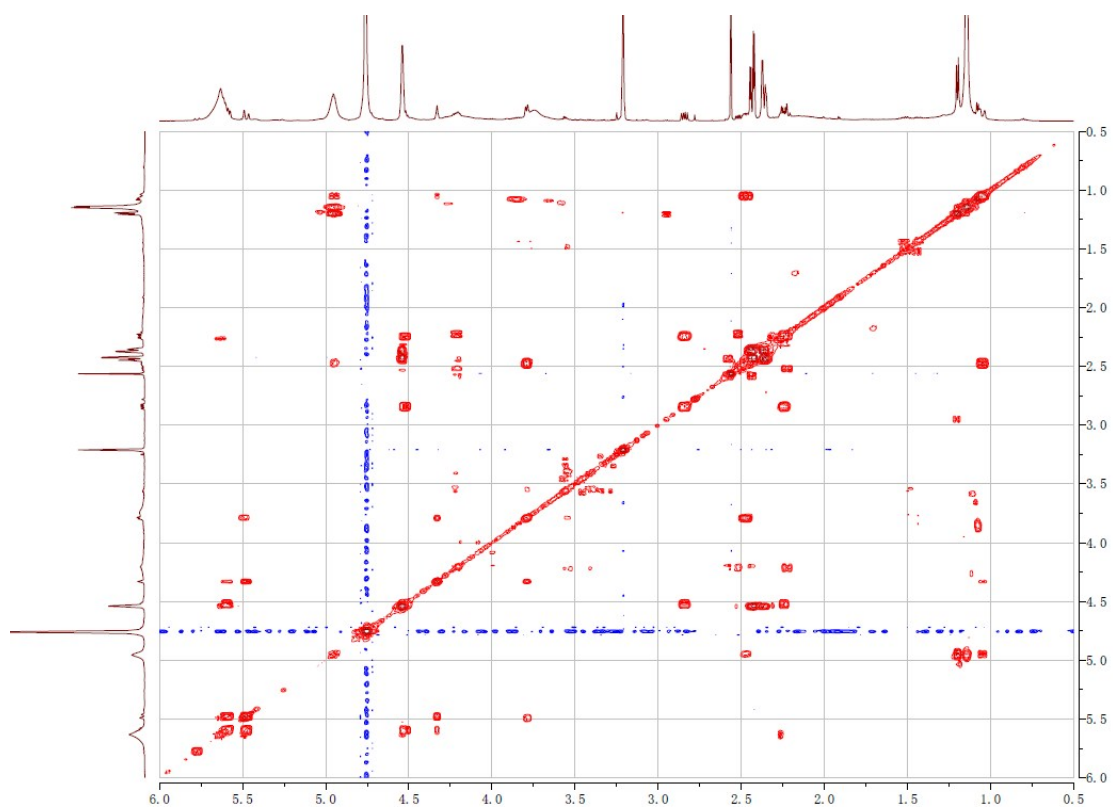


Figure S59.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **8** in MeOD

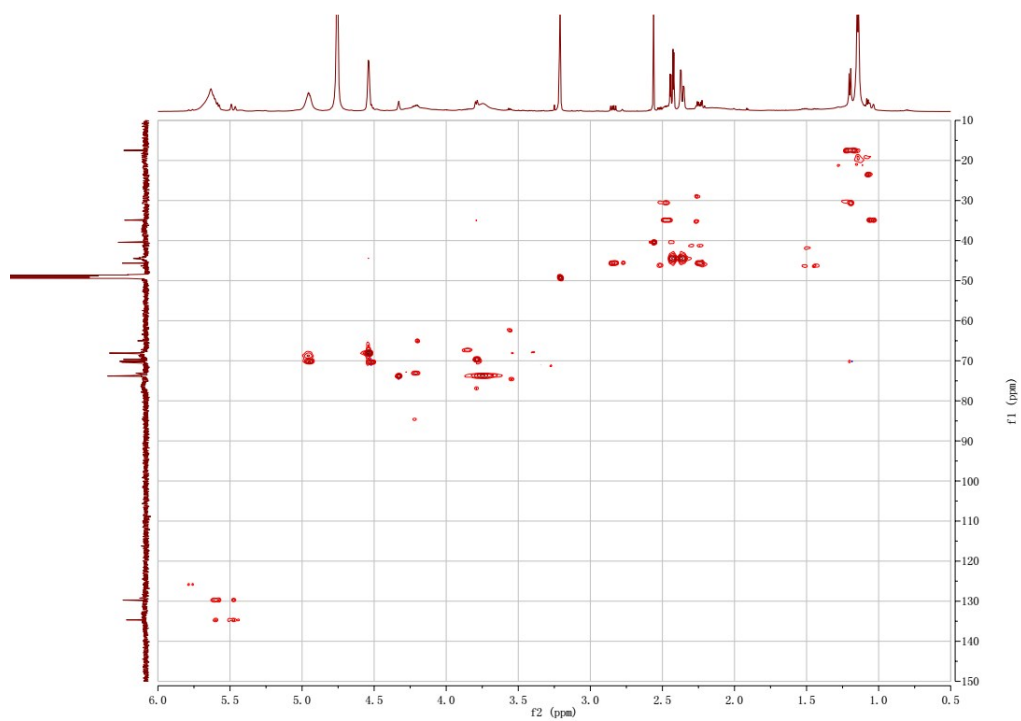


Figure S60. HSQC spectrum of compound **8** in MeOD

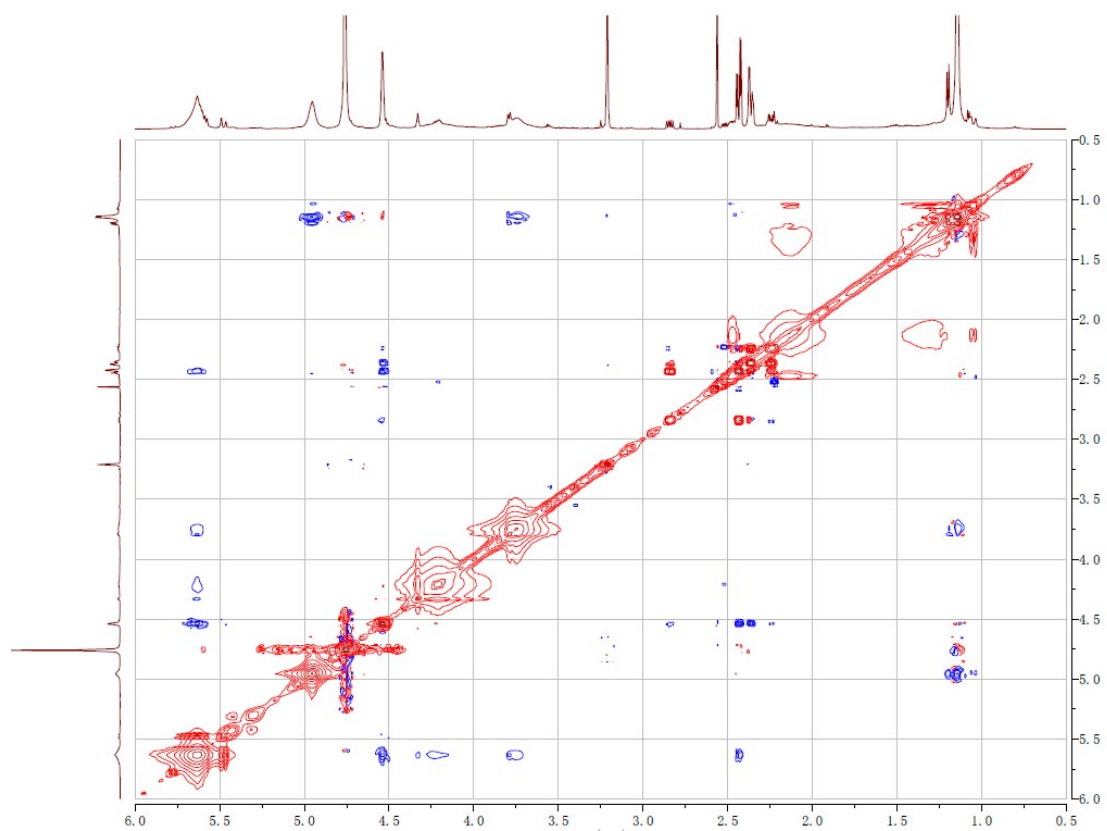


Figure S61. NOESY spectrum of compound **8** in MeOD

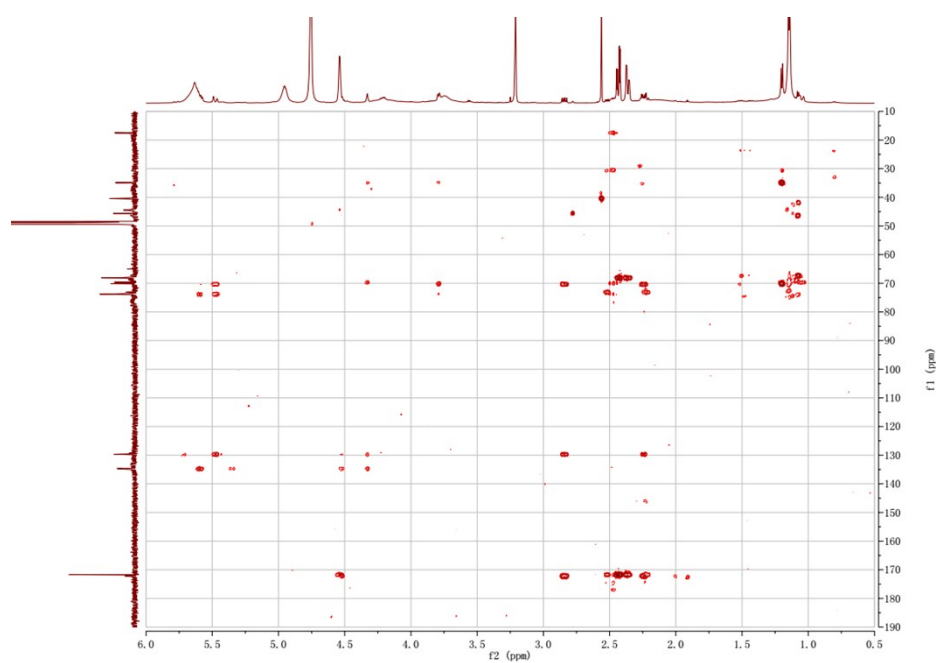


Figure S62. HMBC spectrum of compound **8** in MeOD

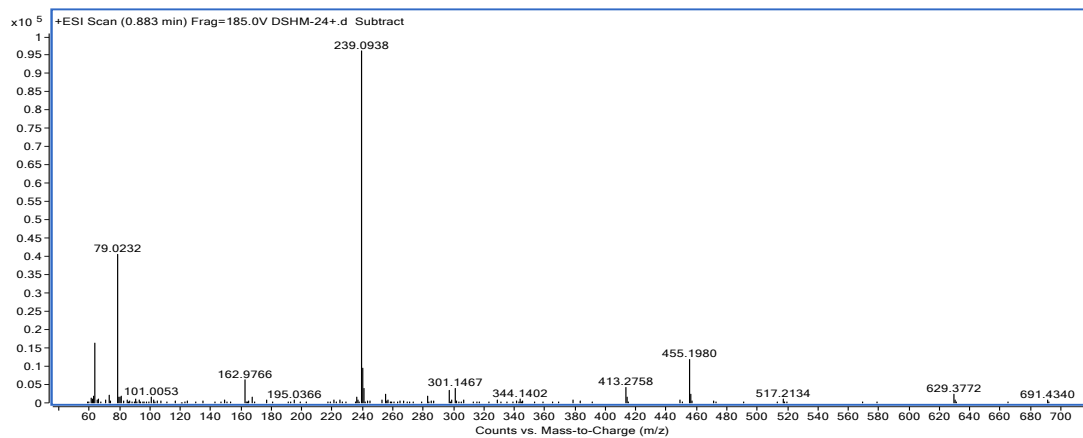


Figure S63. HRESIMS spectrum of compound **8**

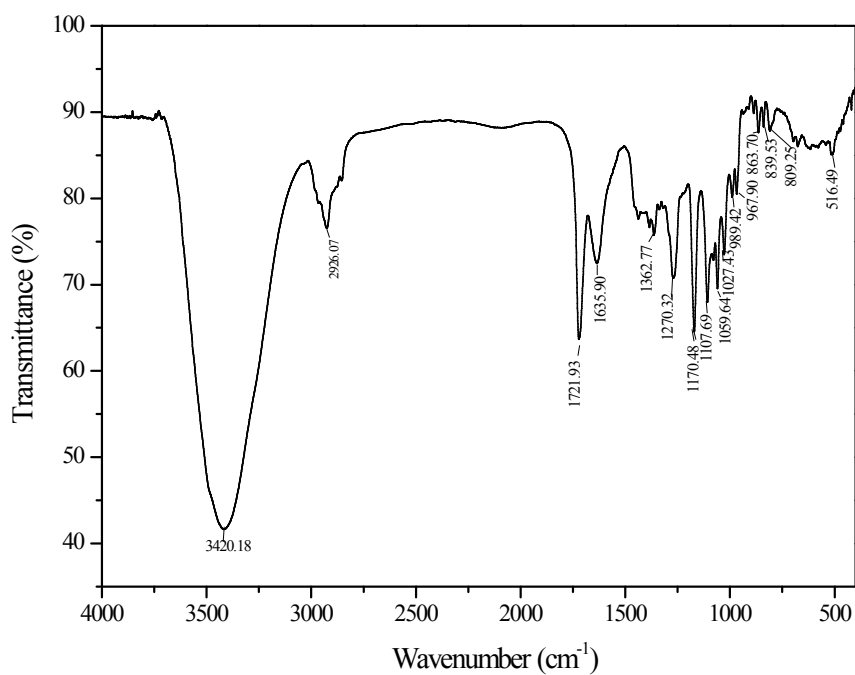


Figure S64. IR Spectrum of compound **8**

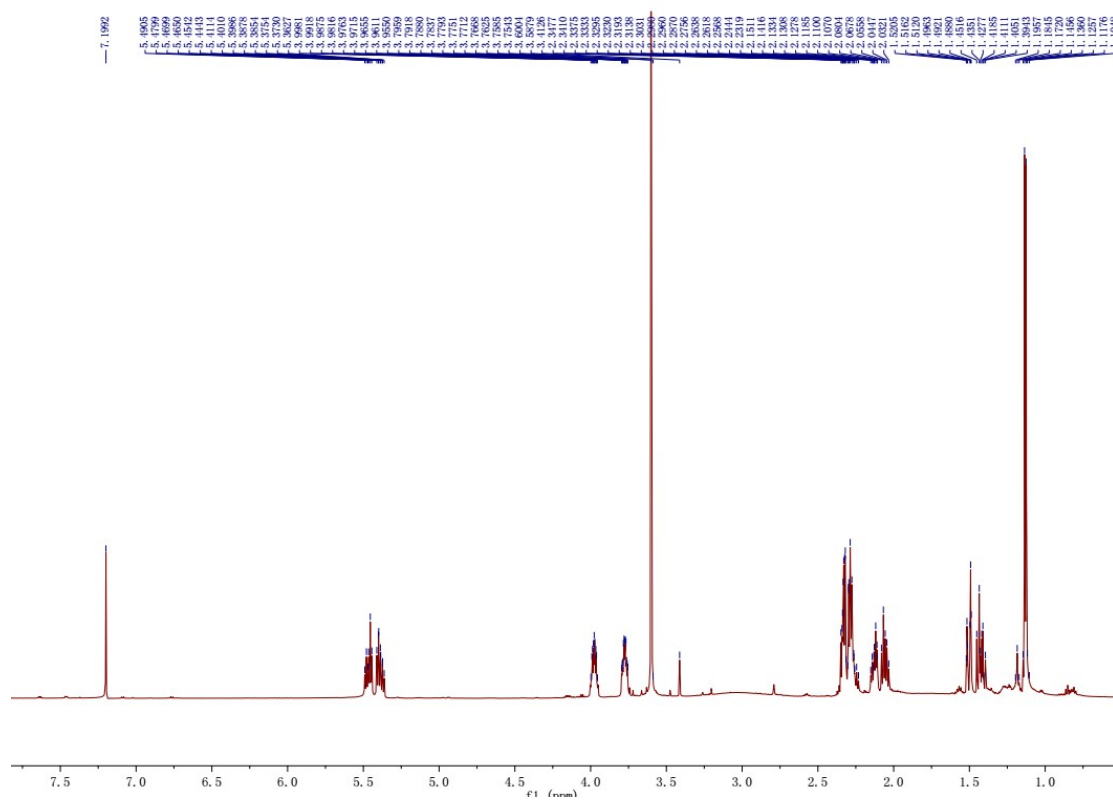


Figure S65. <sup>1</sup>H NMR of compound **9** in CDCl<sub>3</sub>

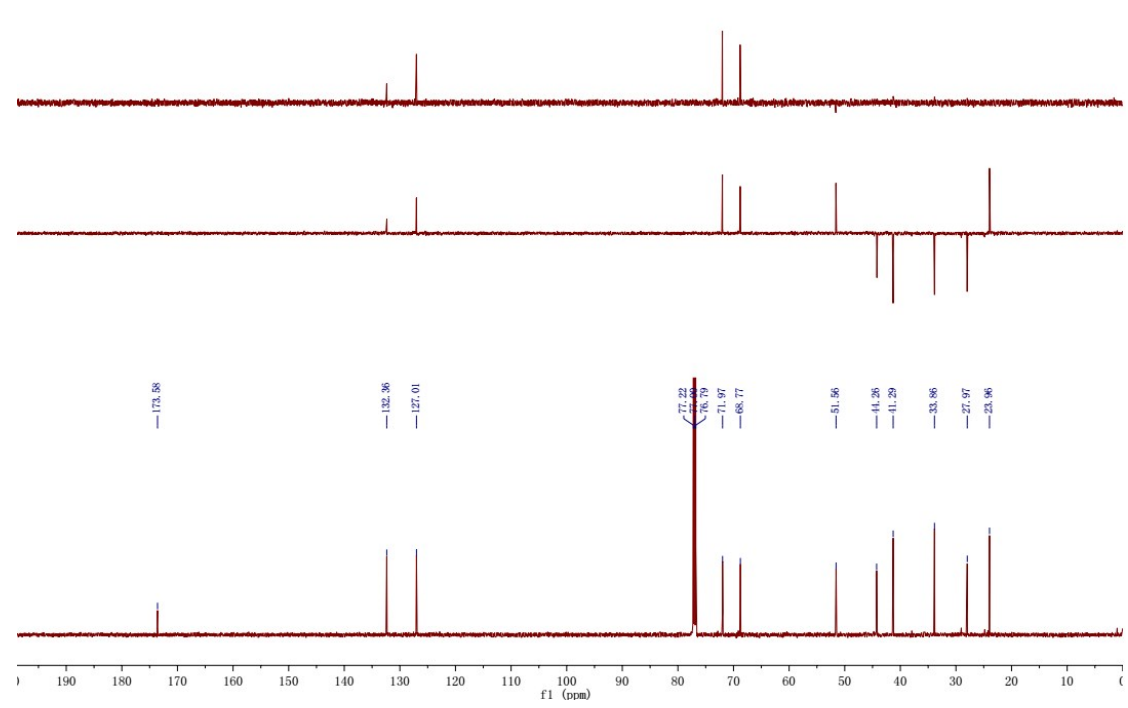


Figure S66. <sup>13</sup>C NMR of compound **9** in CDCl<sub>3</sub>

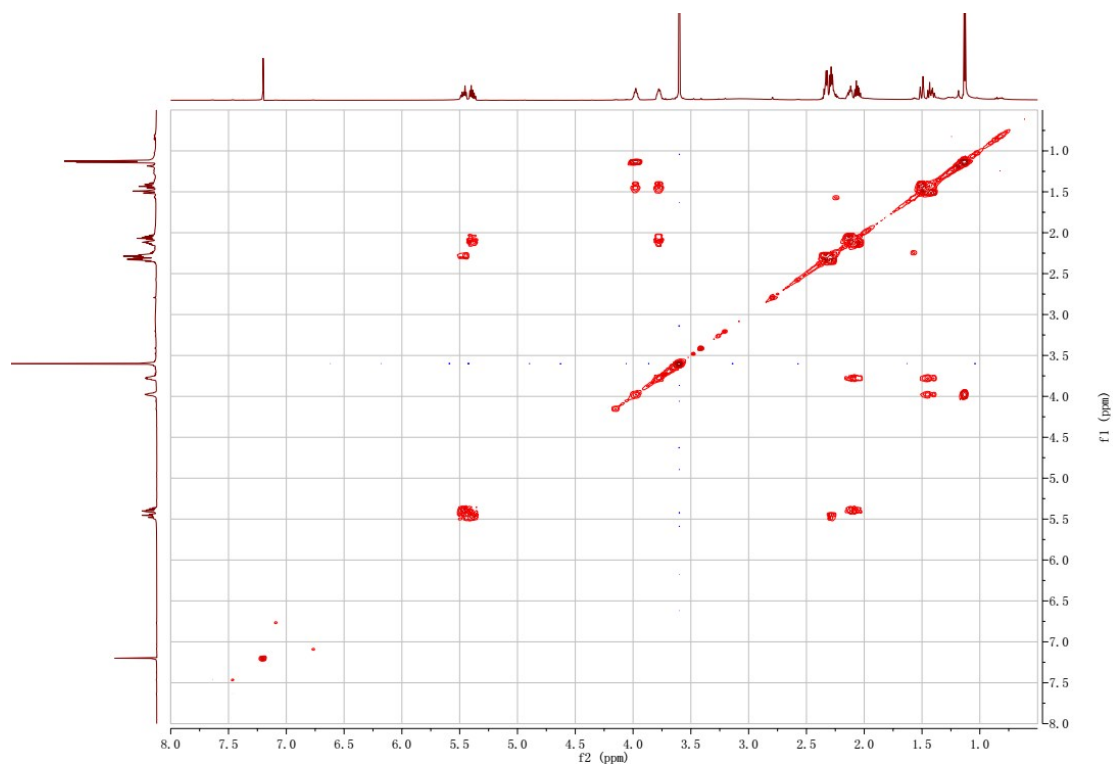


Figure S67.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **9** in  $\text{CDCl}_3$

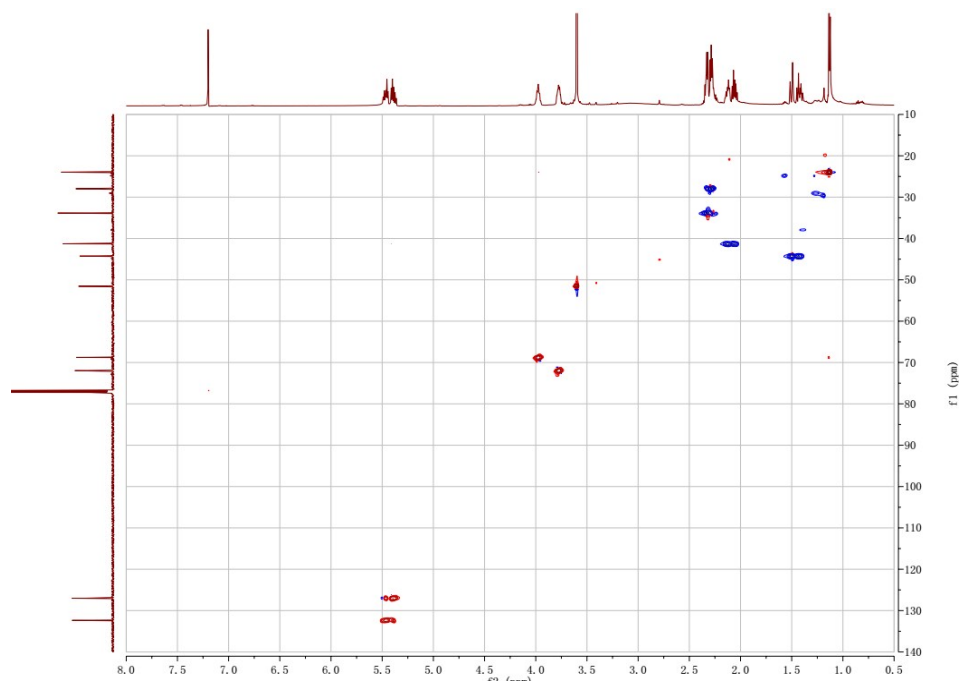


Figure S68. HSQC spectrum of compound **9** in  $\text{CDCl}_3$

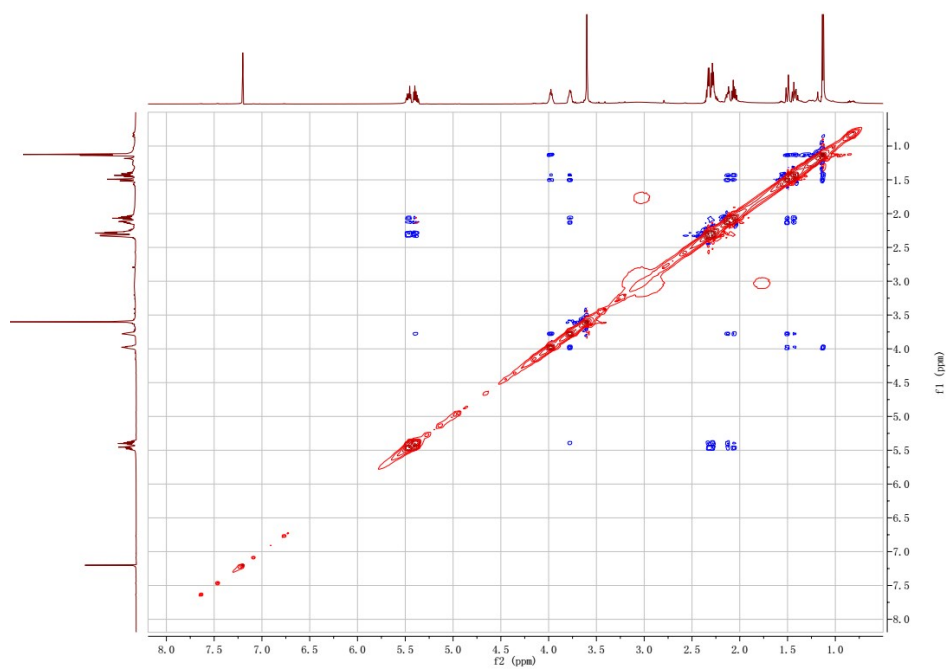


Figure S69. NOESY spectrum of compound **9** in CDCl<sub>3</sub>

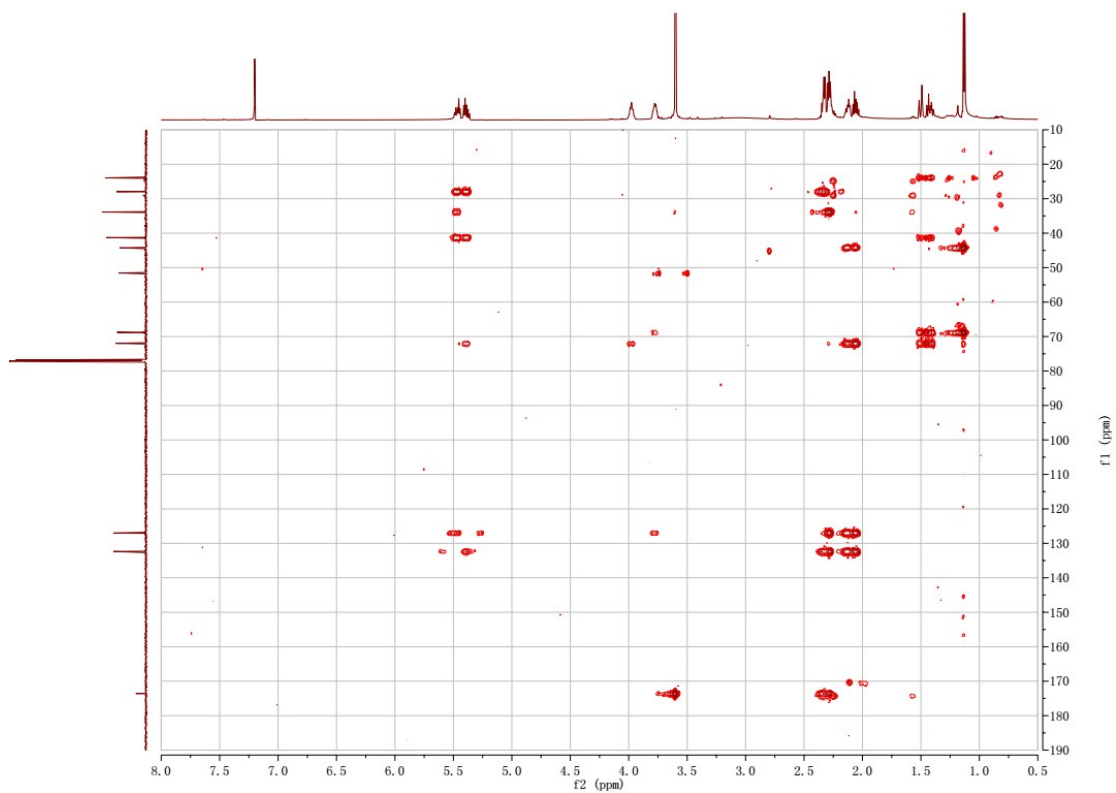


Figure S70. HMBC spectrum of compound **9** in CDCl<sub>3</sub>

DSHM-8 #44 RT: 0.96 AV: 1 SB: 10 0.04-0.24 NL: 9.74E4  
T: FTMS + c ESI Full ms [150.00-800.00]

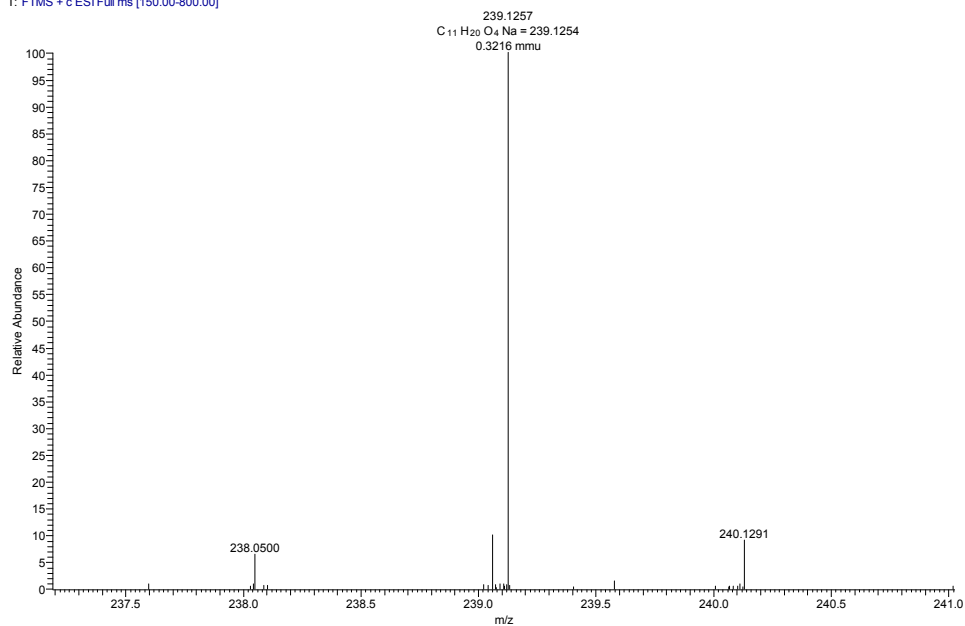


Figure S71. HRESIMS spectrum of compound **9**

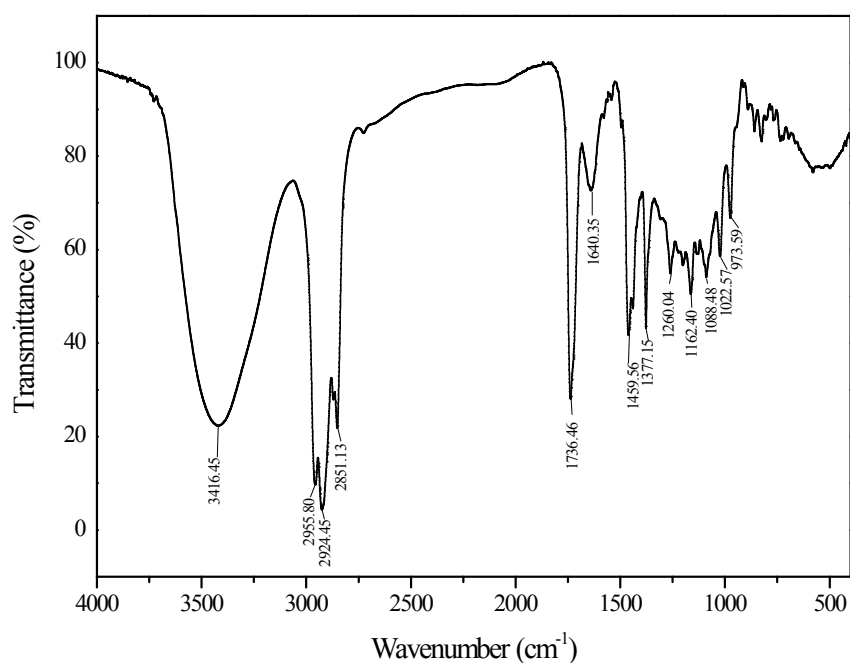


Figure S72. IR Spectrum of compound **9**

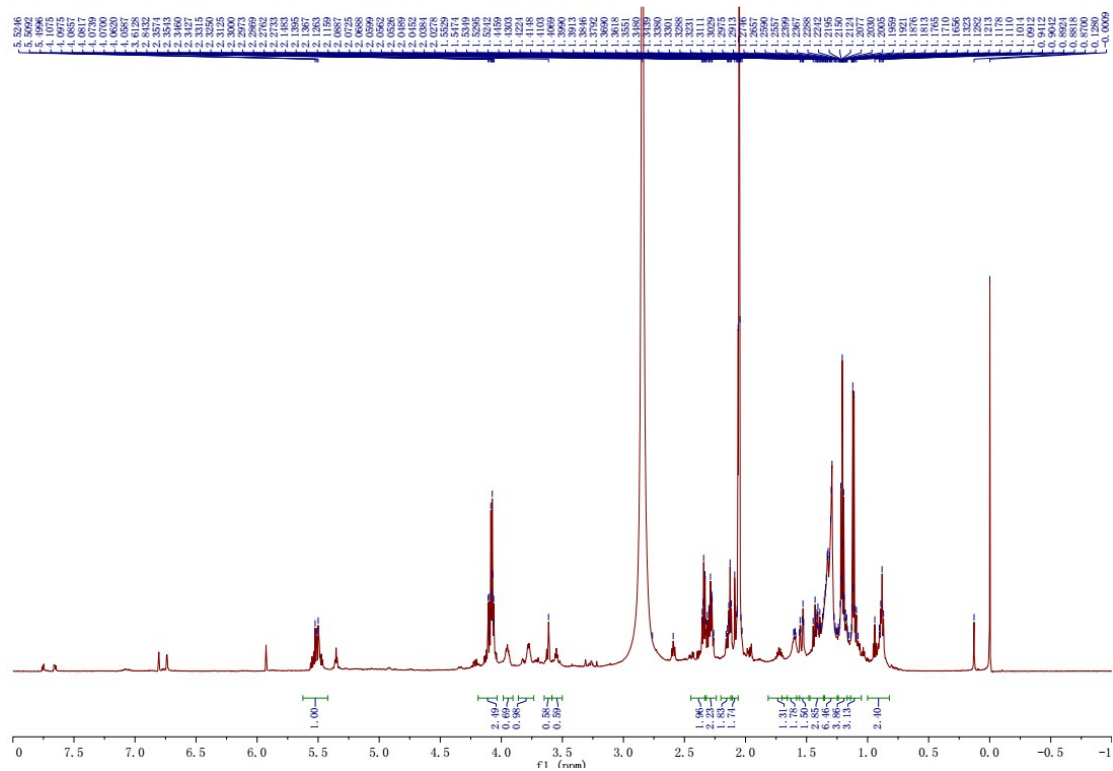


Figure S73.  $^1\text{H}$  NMR of compound **10** in acetone- $\text{d}_6$

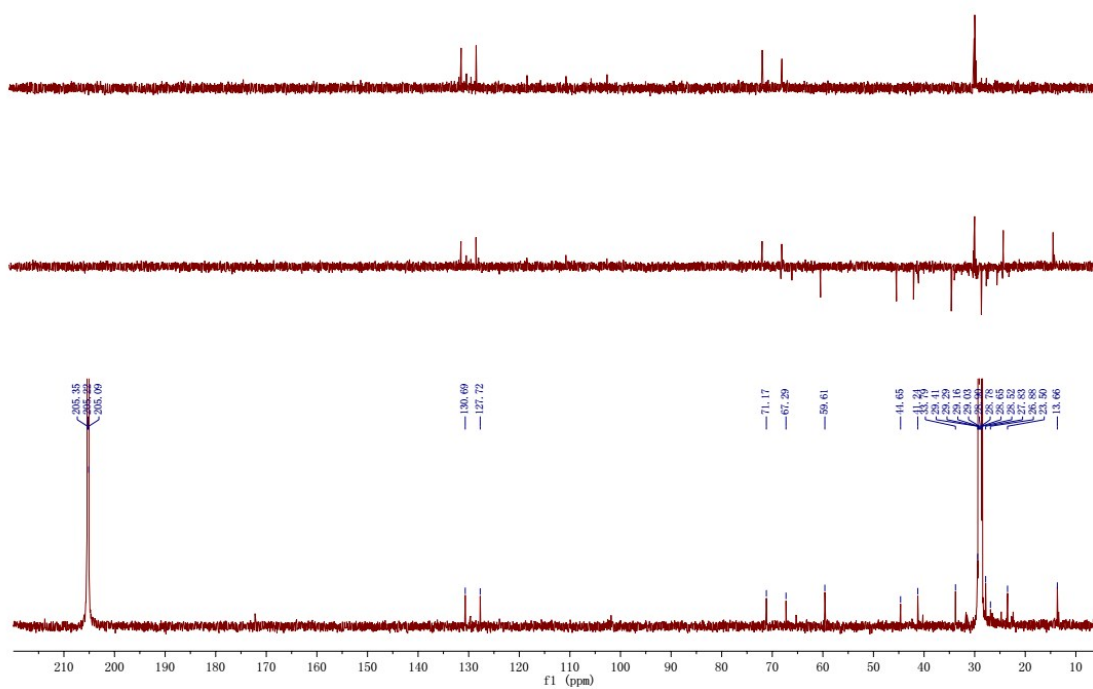


Figure S74.  $^{13}\text{C}$  NMR of compound **10** in acetone- $\text{d}_6$



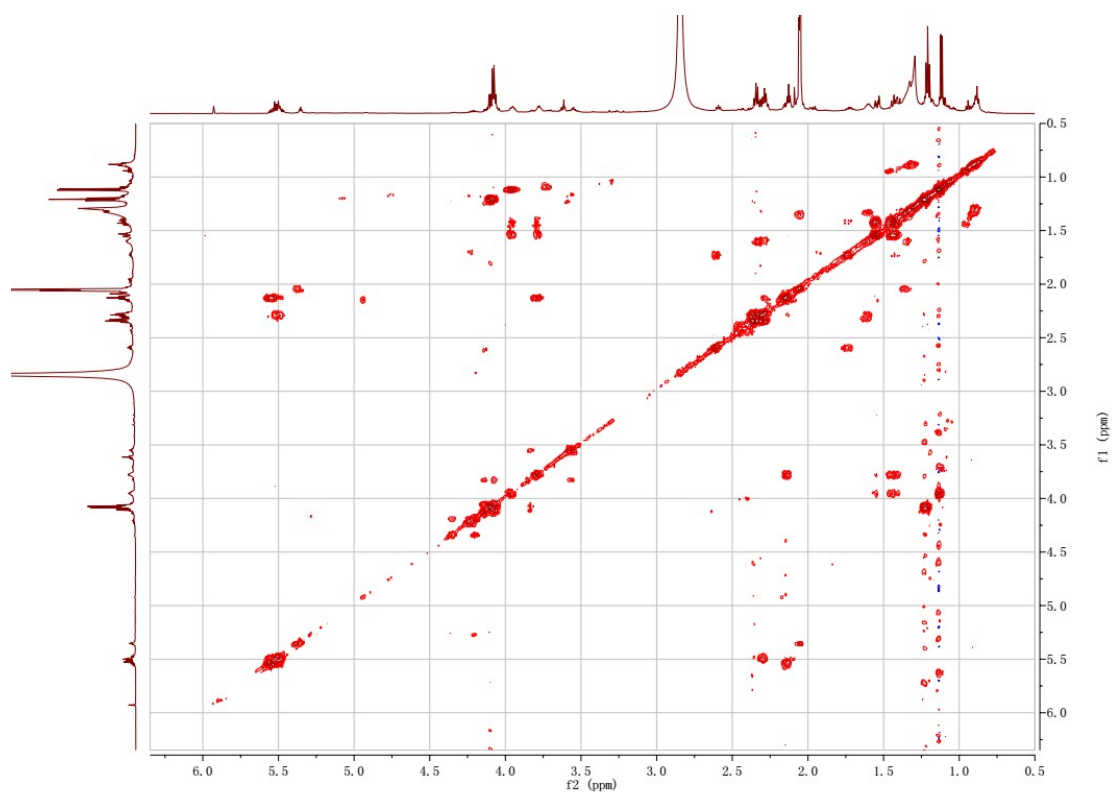


Figure S75.  $^1\text{H}$ - $^1\text{H}$  COSY Spectrum of compound **10** in acetone- $\text{d}_6$

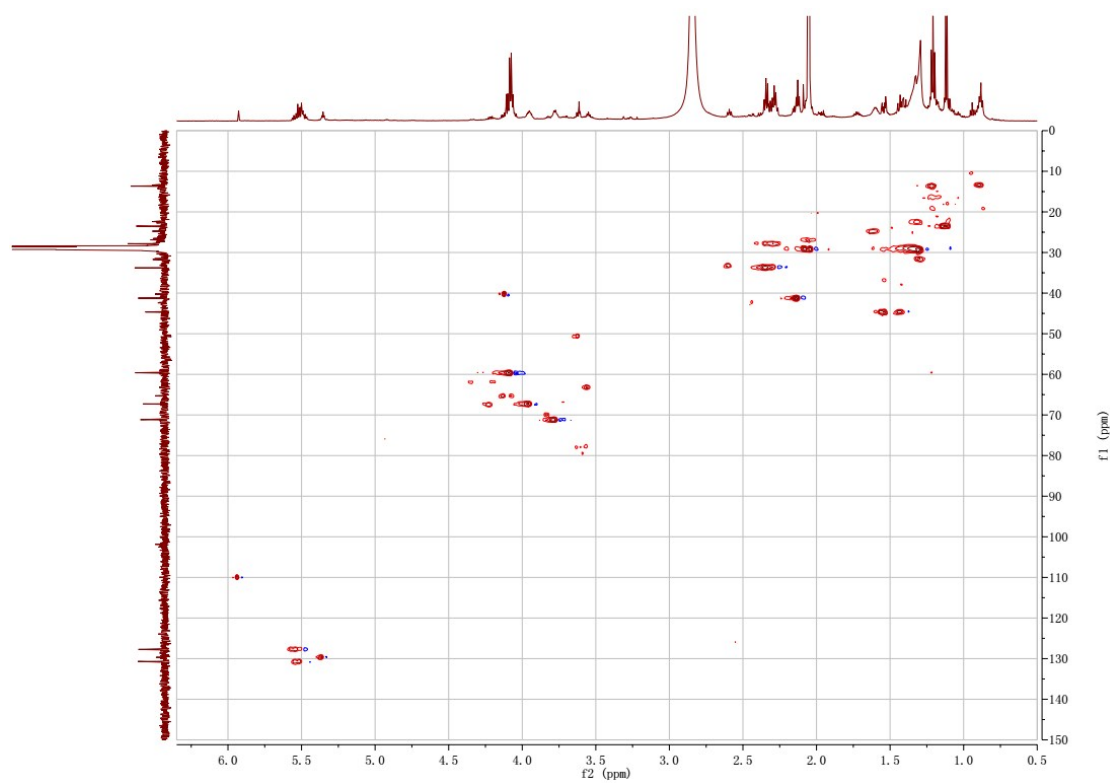


Figure S76. HSQC spectrum of compound **10** in acetone- $\text{d}_6$

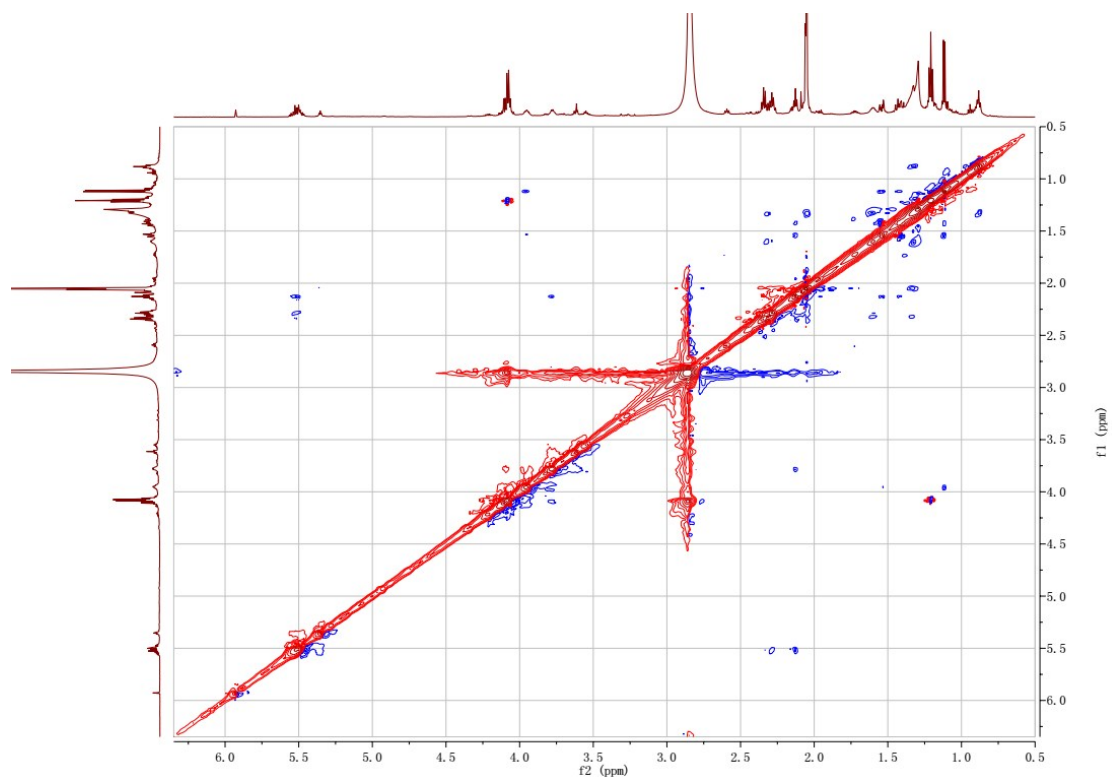


Figure S77. NOESY spectrum of compound **10** in acetone-d<sub>6</sub>

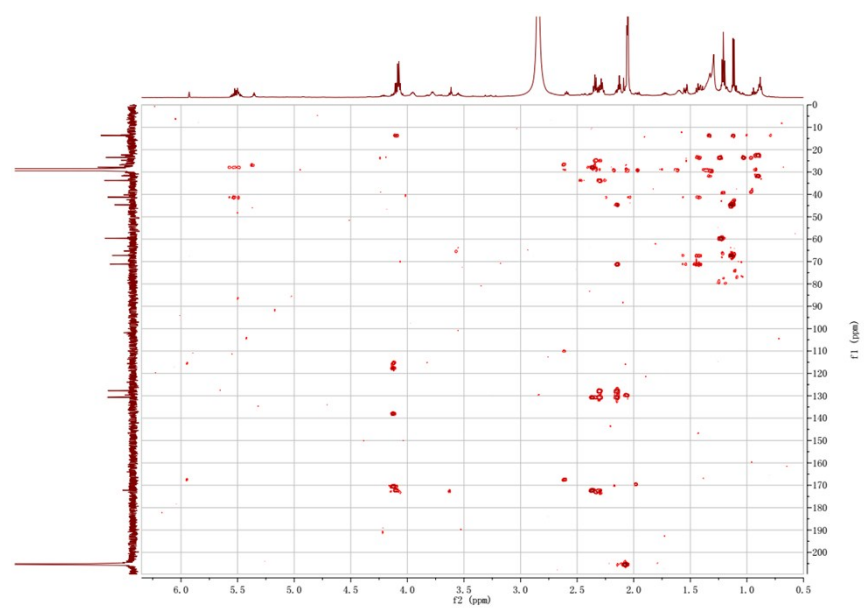


Figure S78. HMBC Spectrum of compound **10** in acetone-d<sub>6</sub>

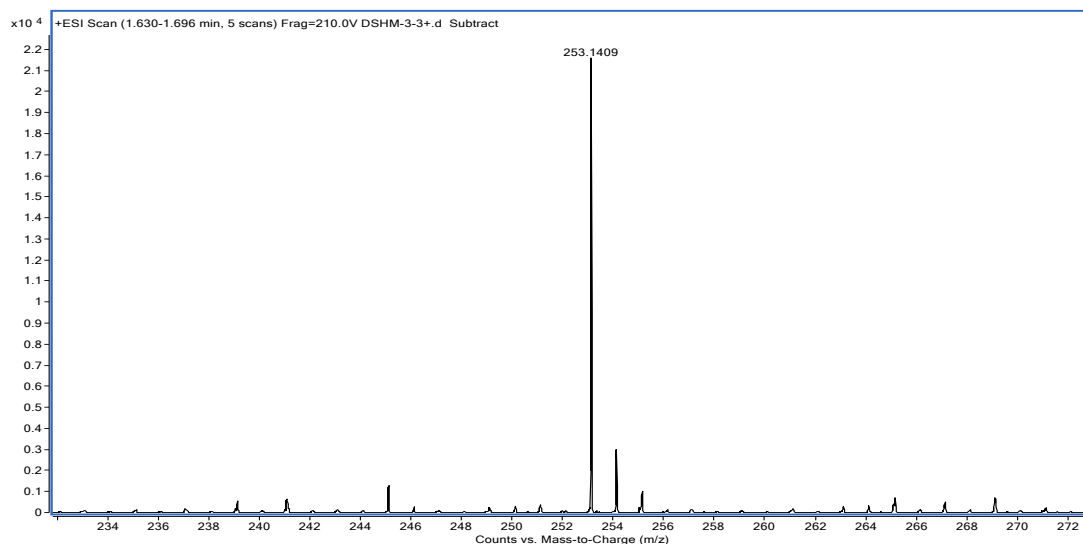


Figure S79. HRESIMS spectrum of compound **10**.

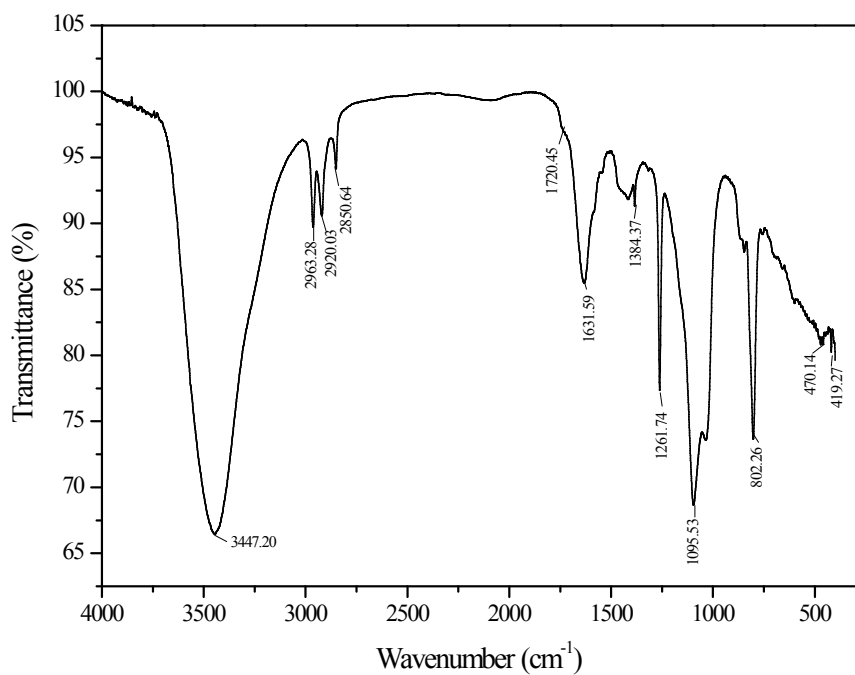


Figure S80. IR Spectrum of compound **10**



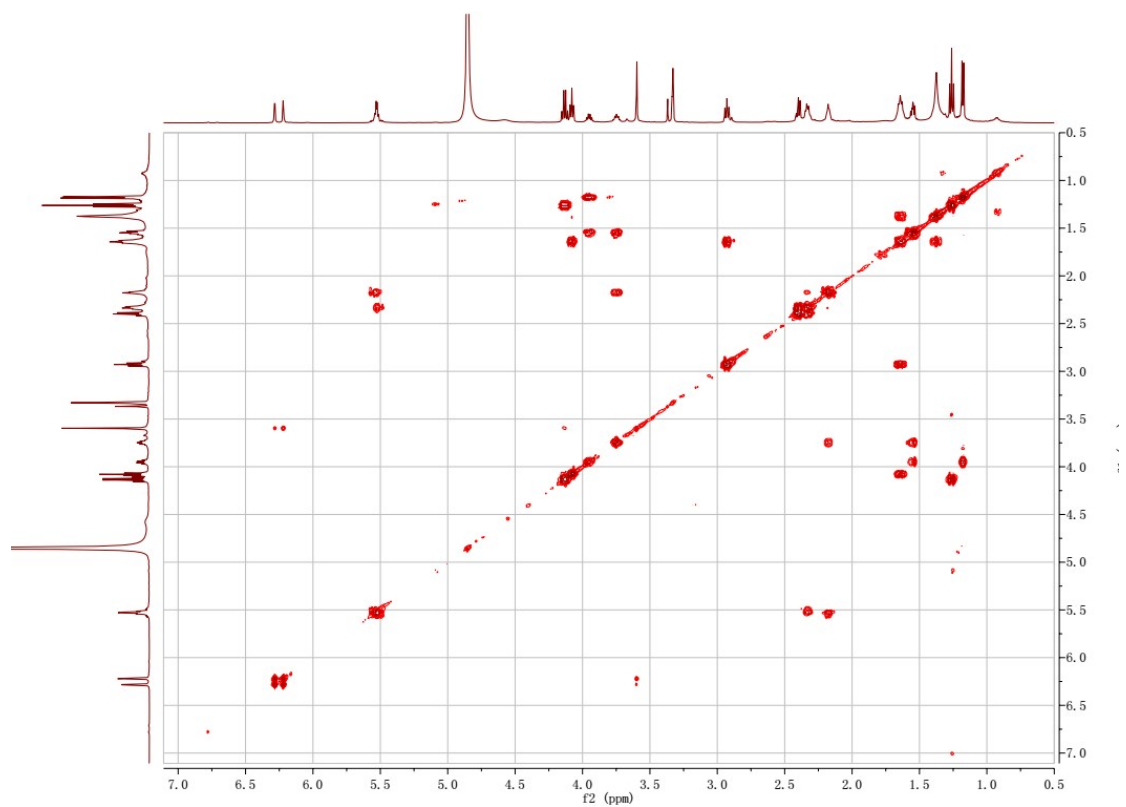


Figure S83.  $^1\text{H}$ - $^1\text{H}$  COSY spectrum of compound **11** in MeOD

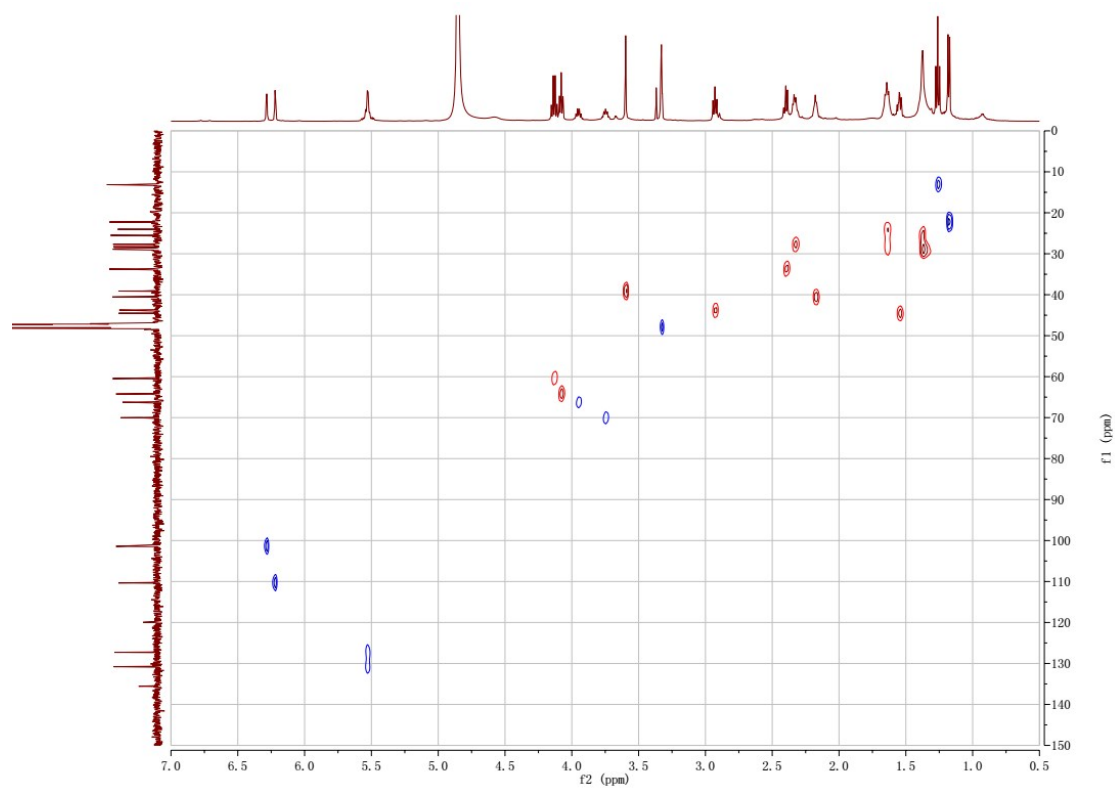


Figure S84. HSQC spectrum of compound **11** in MeOD

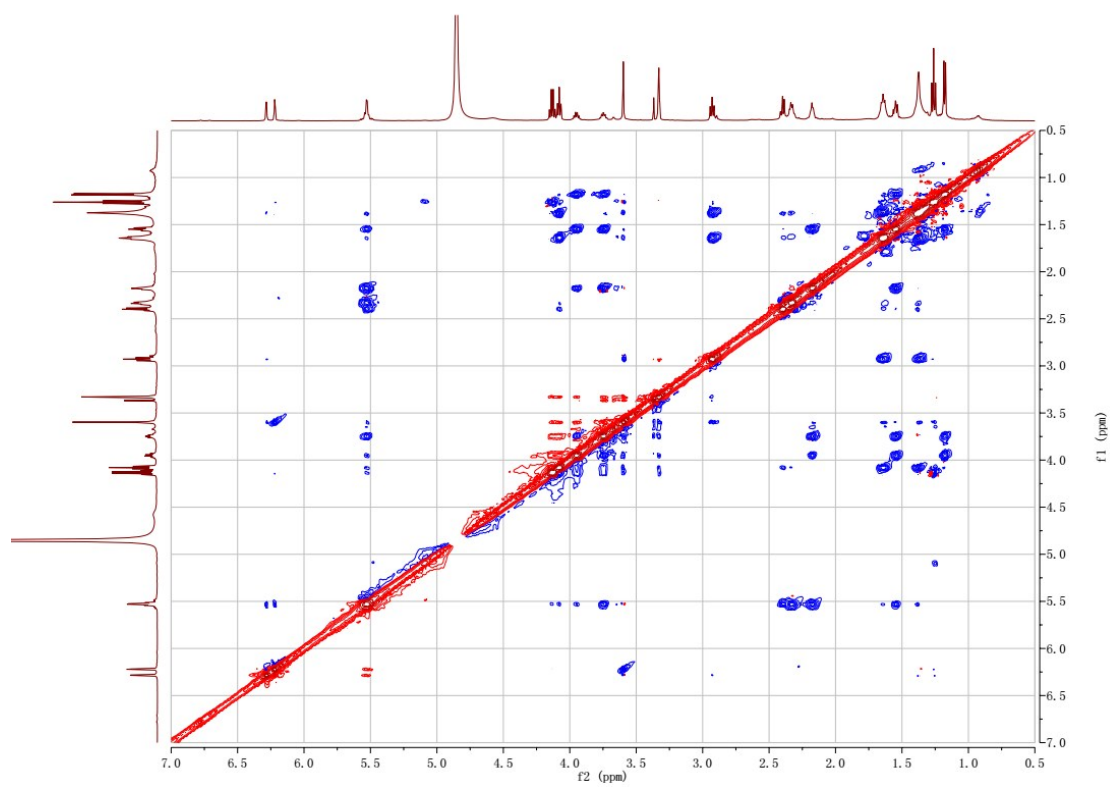


Figure S85. NOESY spectrum of compound **11** in MeOD

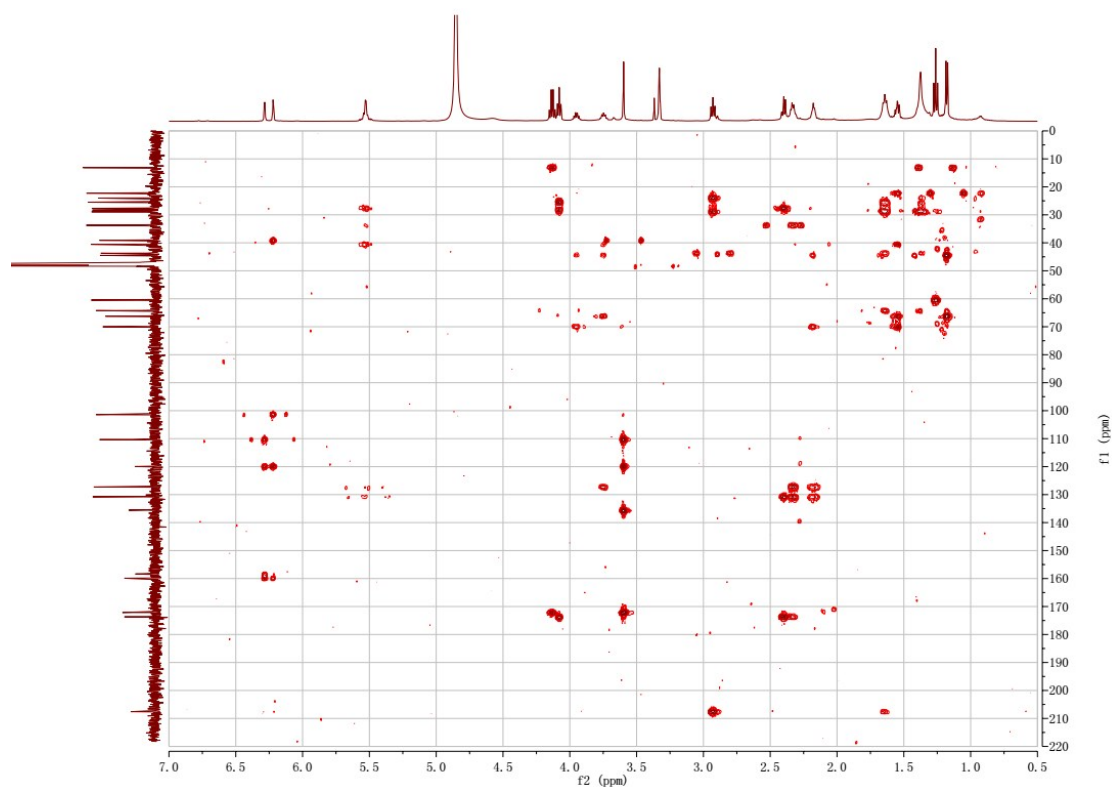


Figure S86. HMBC spectrum of compound **11** in MeOD

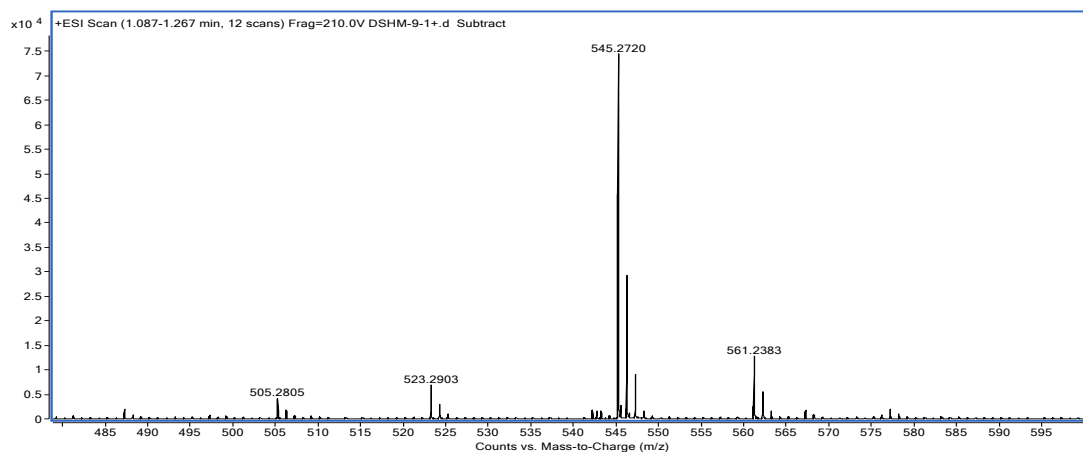


Figure S87. HRESIMS Spectrum of compound **11**

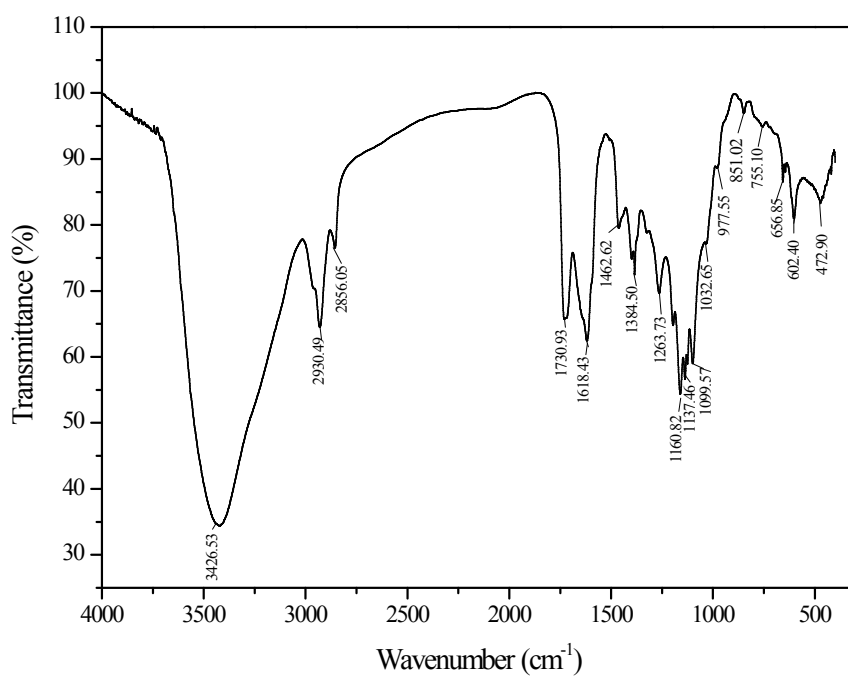


Figure S88. IR Spectrum of compound **11**

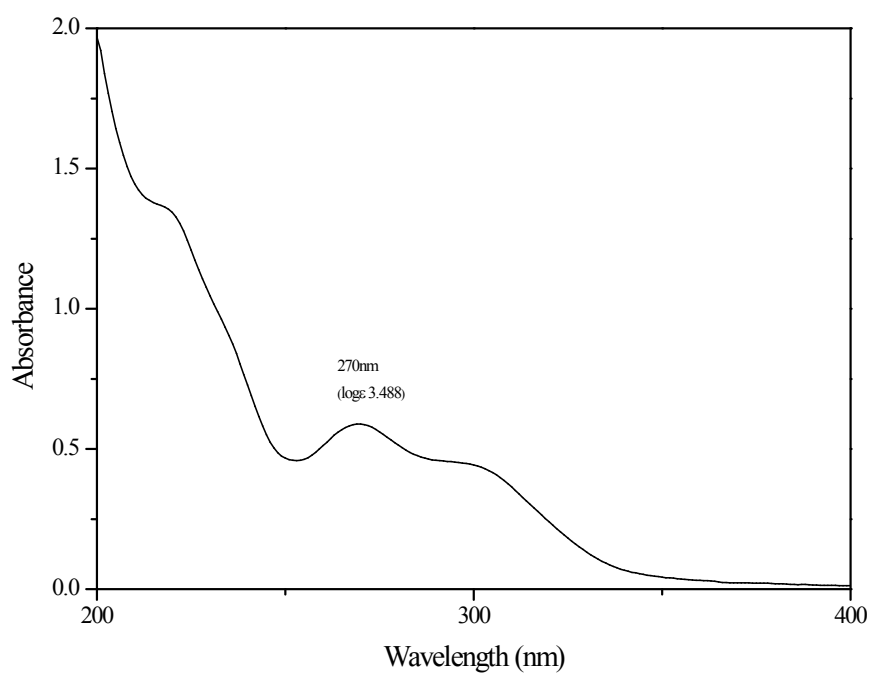


Figure S89. UV Spectrum of compound **11**

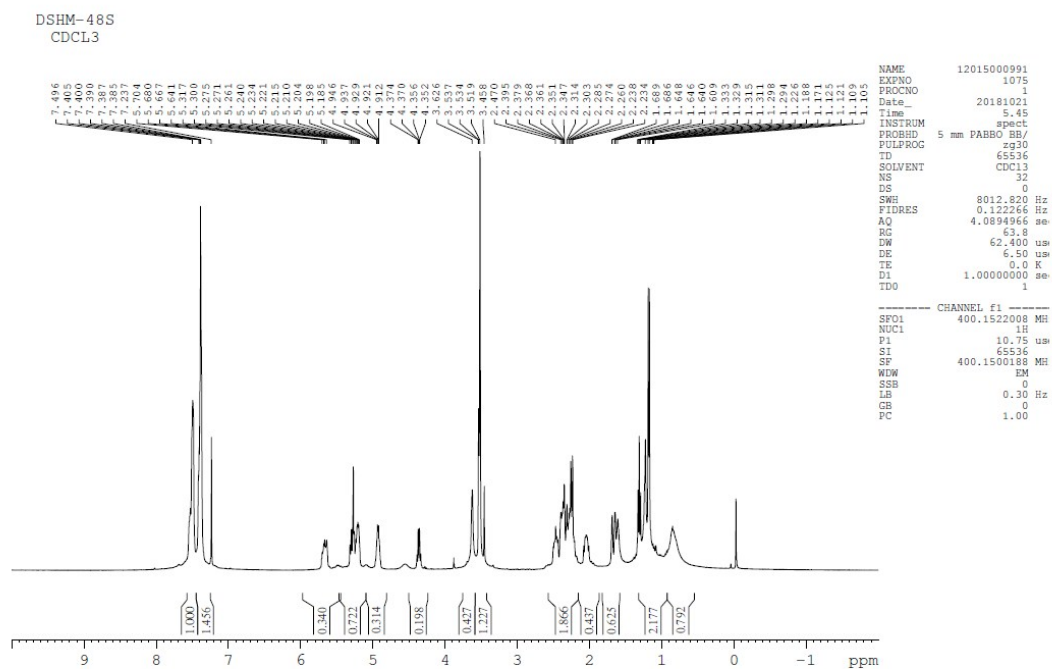


Figure S90 <sup>1</sup>H NMR spectrum of (S)-MTPA ester of **1** in CDCl<sub>3</sub>



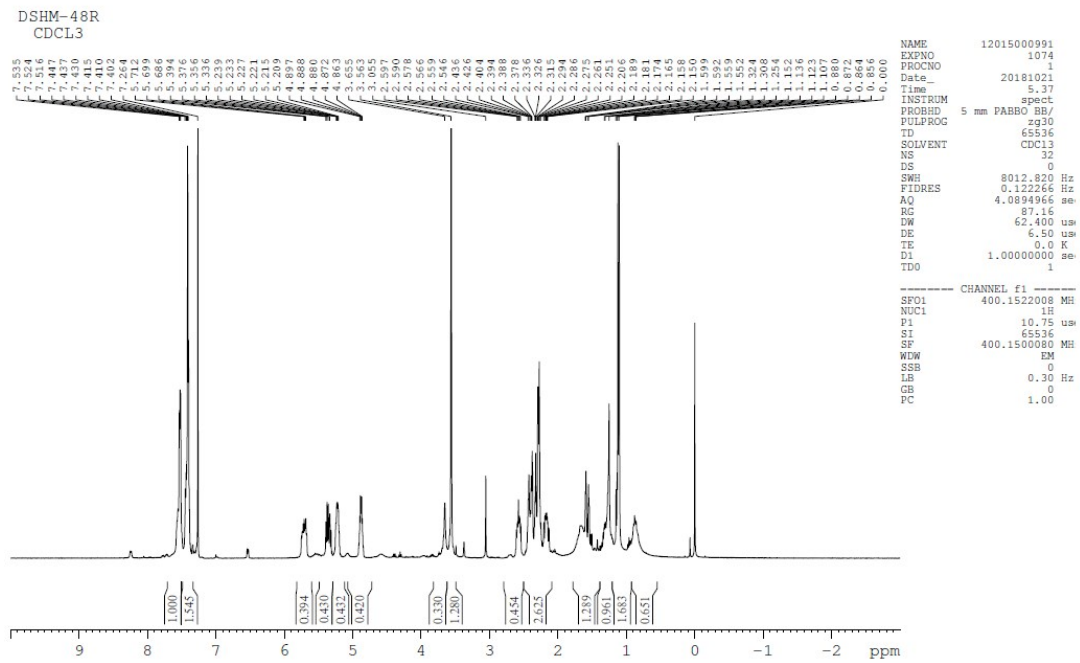


Figure S91 <sup>1</sup>H NMR spectrum of (R)-MTPA ester of **1** in CDCl<sub>3</sub>