

Supporting Information for

Polyketide Derivatives from the Endophytic Fungus *Phaeosphaeria* sp. LF5 Isolated from *Huperzia serrata* and Their Acetylcholinesterase Inhibitory Activities

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Table S1. Acetylcholinesterase inhibitory activities of the crude extracts

Figure list: HR-ESI-MS, 1D and 2D NMR spectra data for compounds **1-11**

Figure S1. ^1H NMR spectrum of compound **1** in CD_3OD

Figure S2. ^{13}C NMR spectrum of compound **1** in CD_3OD

Figure S3. ^1H NMR spectrum of compound **2** in CD_3OD

Figure S4. ^{13}C NMR spectrum of compound **2** in CD_3OD

Figure S5. ^1H NMR spectrum of compound **3** in CD_3OD

Figure S6. ^{13}C NMR spectrum of compound **3** in CD_3OD

Figure S7. ^1H NMR spectrum of compound **4** in CD_3OD

Figure S8. ^{13}C NMR spectrum of compound **4** in CD_3OD

Figure S9. ^1H - ^1H COSY spectrum of compound **4** in CD_3OD

Figure S10. DEPT 90 spectrum of compound **4** in CD_3OD

Figure S11. DEPT 135 spectrum of compound **4** in CD_3OD

Figure S12. HSQC spectrum of compound **4** in CD_3OD

Figure S13. HMBC spectrum of compound **4** in CD_3OD

Figure S14. NOESY spectrum of compound **4** in CD_3OD

Figure S15. HRESIMS spectrum of compound **4**

Figure S16. ^1H NMR spectrum of compound **5** in CD_3OD

Figure S17. ^{13}C NMR spectrum of compound **5** in CD_3OD

Figure S18. ^1H NMR spectrum of compound **6** in CD_3OD

Figure S19. ^{13}C NMR spectrum of compound **6** in CD_3OD

Figure S20. ^1H NMR spectrum of compound **7** in CD_3OD

Figure S21. ^{13}C NMR spectrum of compound **7** in CD_3OD

Figure S22. ^1H - ^1H COSY spectrum of compound **7** in CD_3OD

Figure S23. HSQC spectrum of compound **7** in CD_3OD

Figure S24. HMBC spectrum of compound **7** in CD_3OD

Figure S25. NOESY spectrum of compound **7** in CD_3OD

Figure S26. HRESIMS spectrum of compound **7**

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Figure S30. ^{13}C NMR spectrum of compound **9** in $\text{DMSO}-d_6$

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Figure S33. ^1H - ^1H COSY spectrum of compound **9** in $\text{DMSO}-d_6$

Figure S34. HSQC spectrum of compound **9** in $\text{DMSO}-d_6$

Figure S35. HMBC spectrum of compound **9** in $\text{DMSO}-d_6$

Figure S36. NOESY spectrum of compound **9** in $\text{DMSO}-d_6$

Figure S37. HRESIMS spectrum of compound **9**

Figure S38. ^1H NMR spectrum of compound **10** in CD_3OD

Figure S39. ^{13}C NMR spectrum of compound **10** in CD_3OD

Figure S40. ^1H NMR spectrum of compound **11** in CD_3OD

Figure S41. ^{13}C NMR spectrum of compound **11** in CD_3OD

Table S1. Acetylcholinesterase inhibitory activities of the crude extracts.

Sample	Inhibition effects	Sample	Inhibition effects
	(%) ^a		(%) ^a
Petroleum ether extract	47.23 ± 0.40	Ethyl acetate extract	82.68 ± 1.60
Hup-A	93.20±0.30	Buthanol extract	15.82 ± 1.20

^a Expressed as the mean ± SD of three parallel measurements (p<0.05).

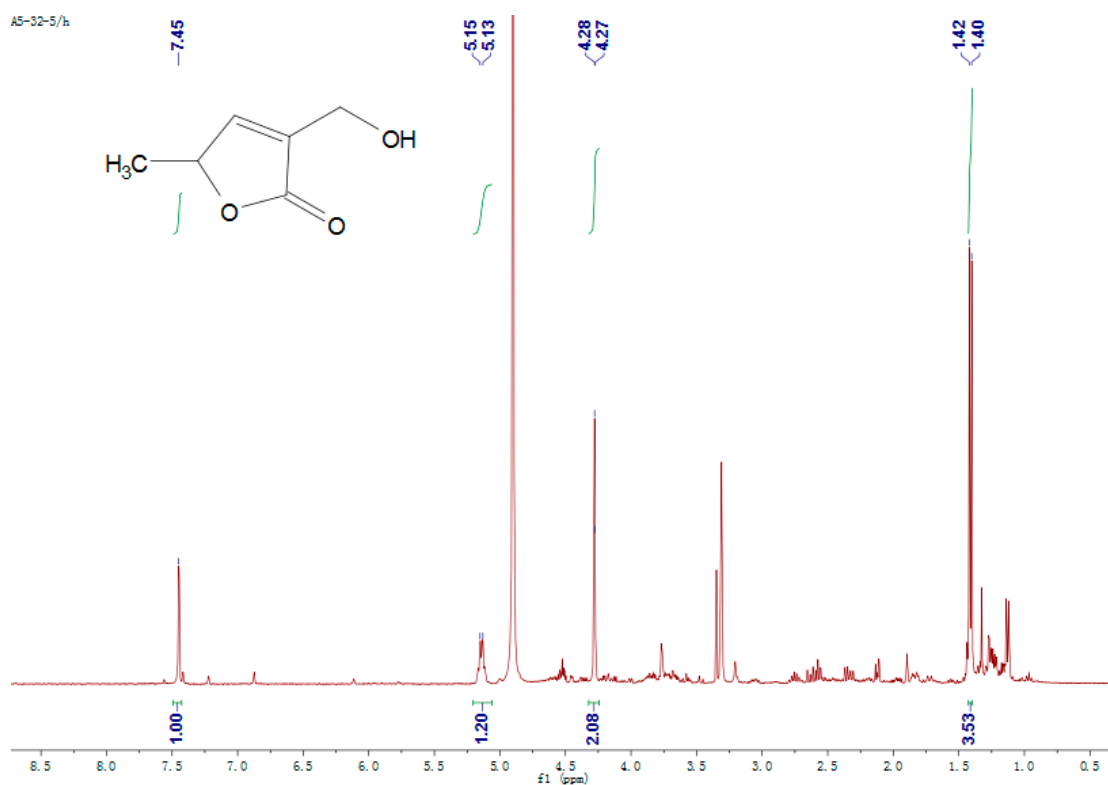


Figure S1. ¹H NMR spectrum of compound **1** in CD₃OD.

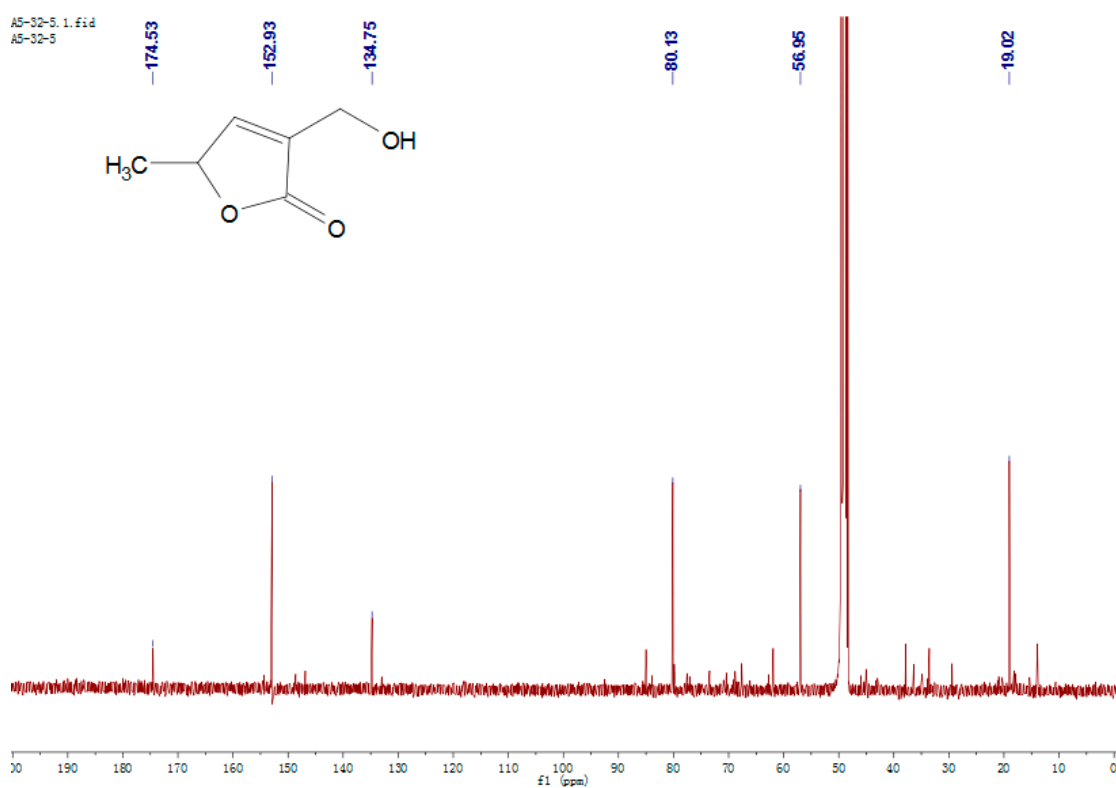


Figure S2. ¹³C NMR spectrum of compound **1** in CD₃OD.

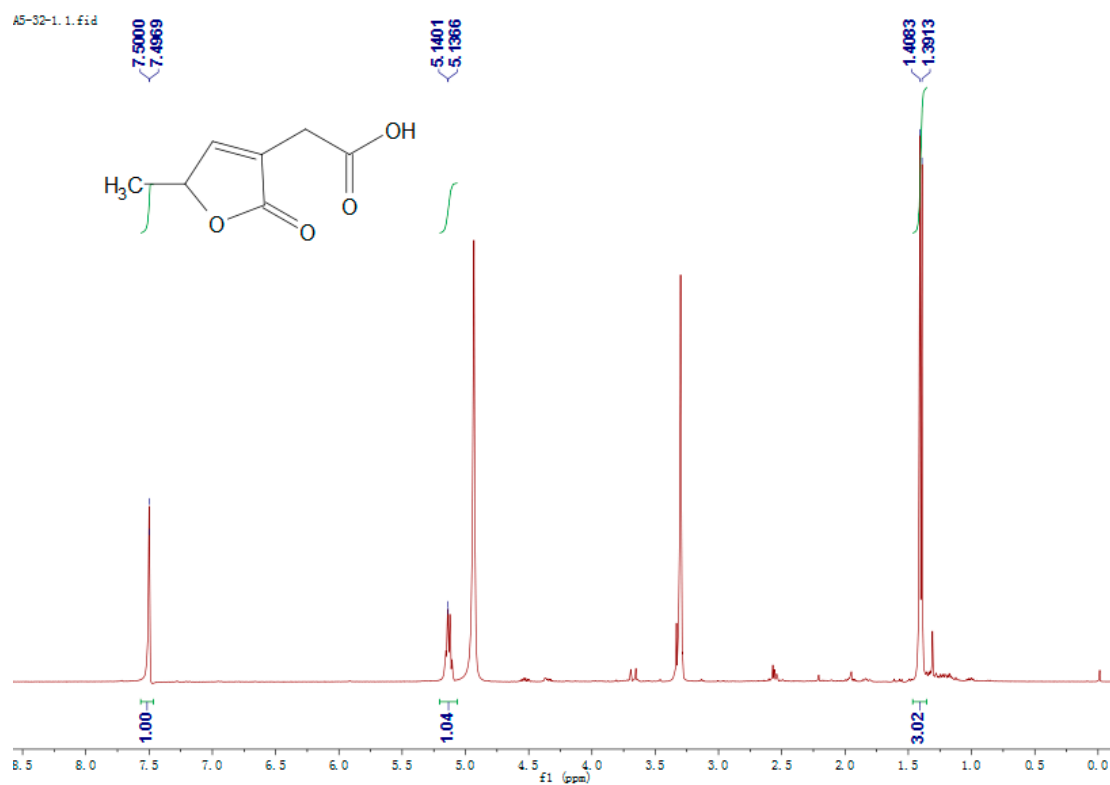


Figure S3. ¹H NMR spectrum of compound **2** in CD₃OD.

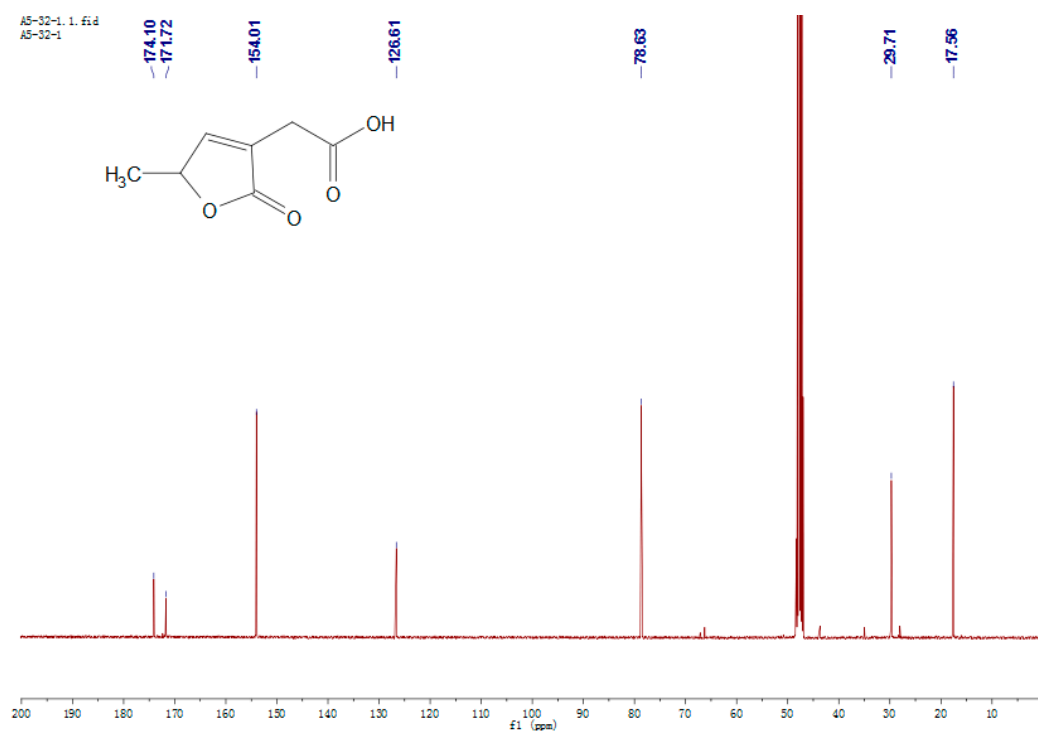


Figure S4. ¹³C NMR spectrum of compound **2** in CD₃OD.

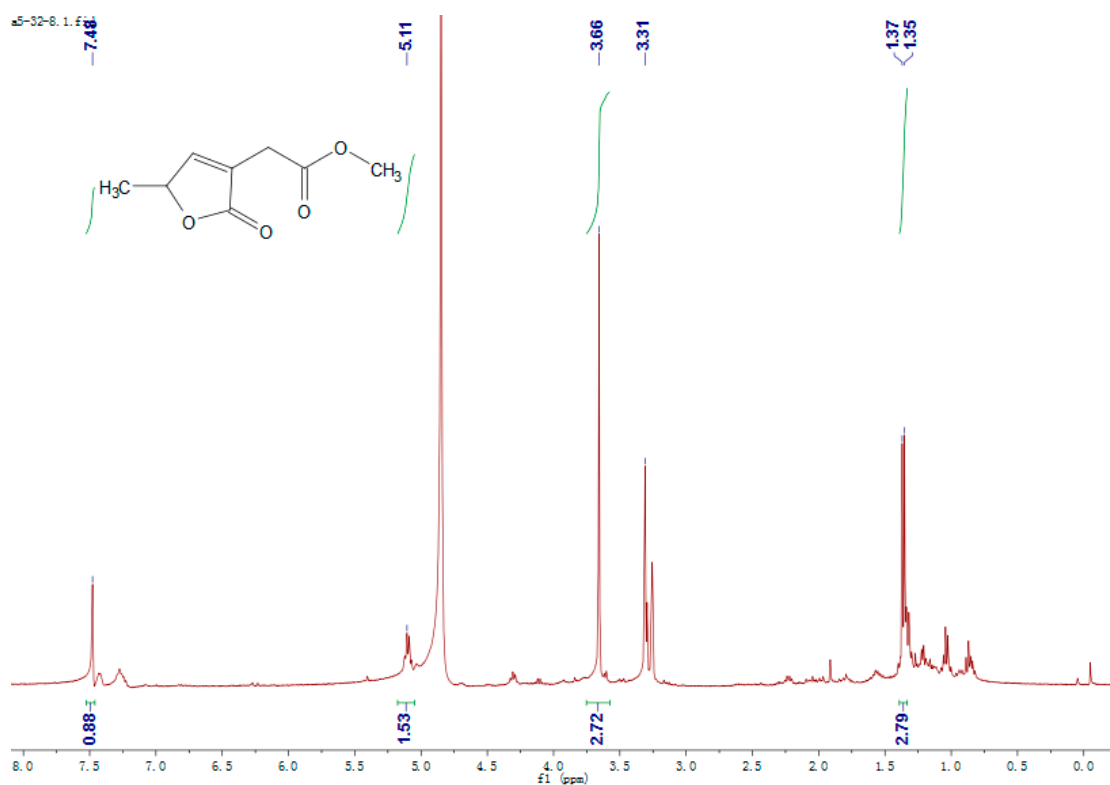


Figure S5. ¹H NMR spectrum of compound **3** in CD₃OD.

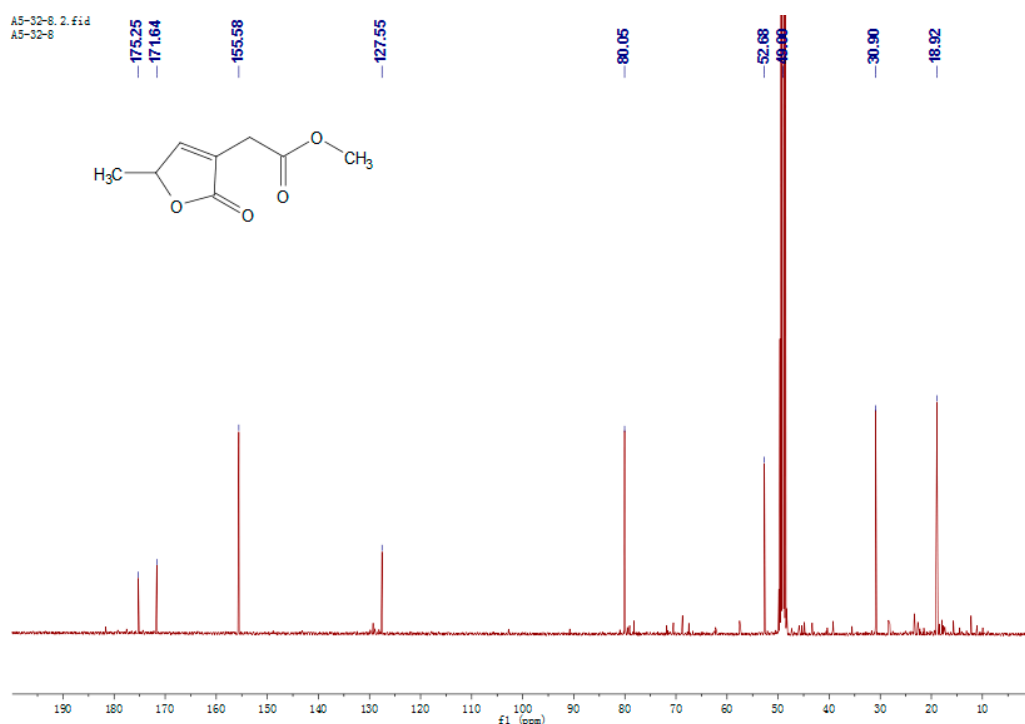


Figure S6. ¹³C NMR spectrum of compound **3** in CD₃OD.

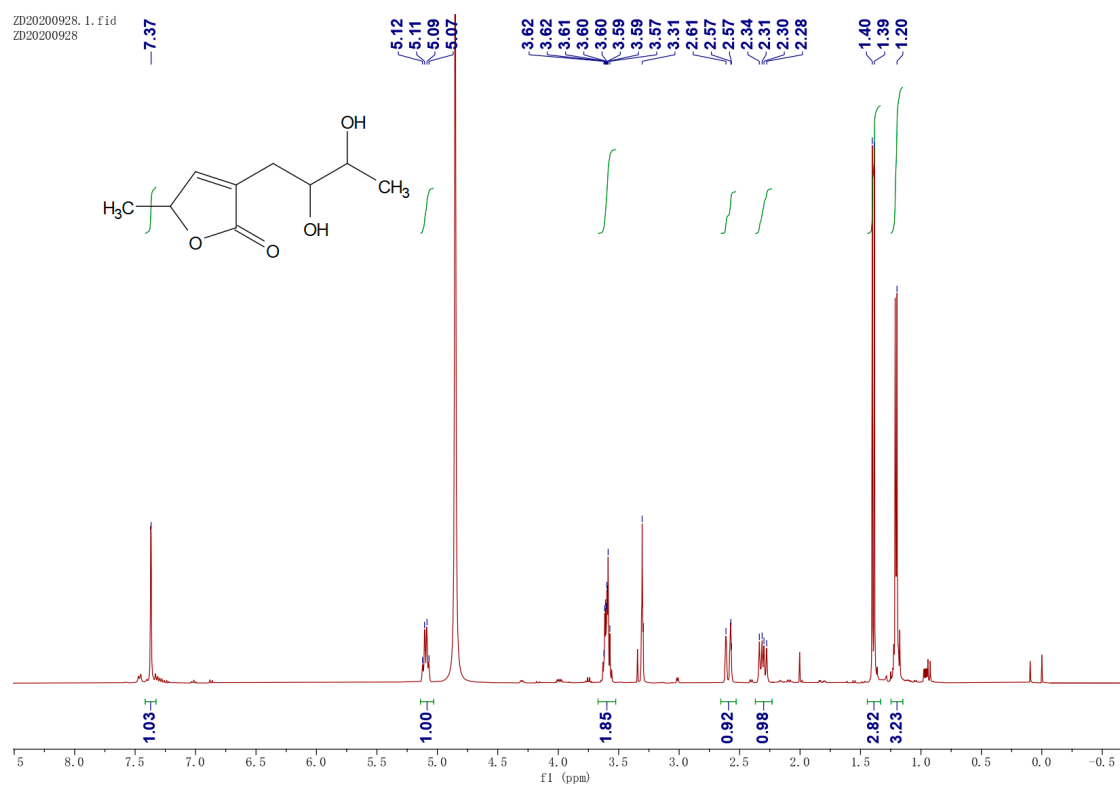


Figure S7. ^1H NMR spectrum of compound 4 in CD_3OD .

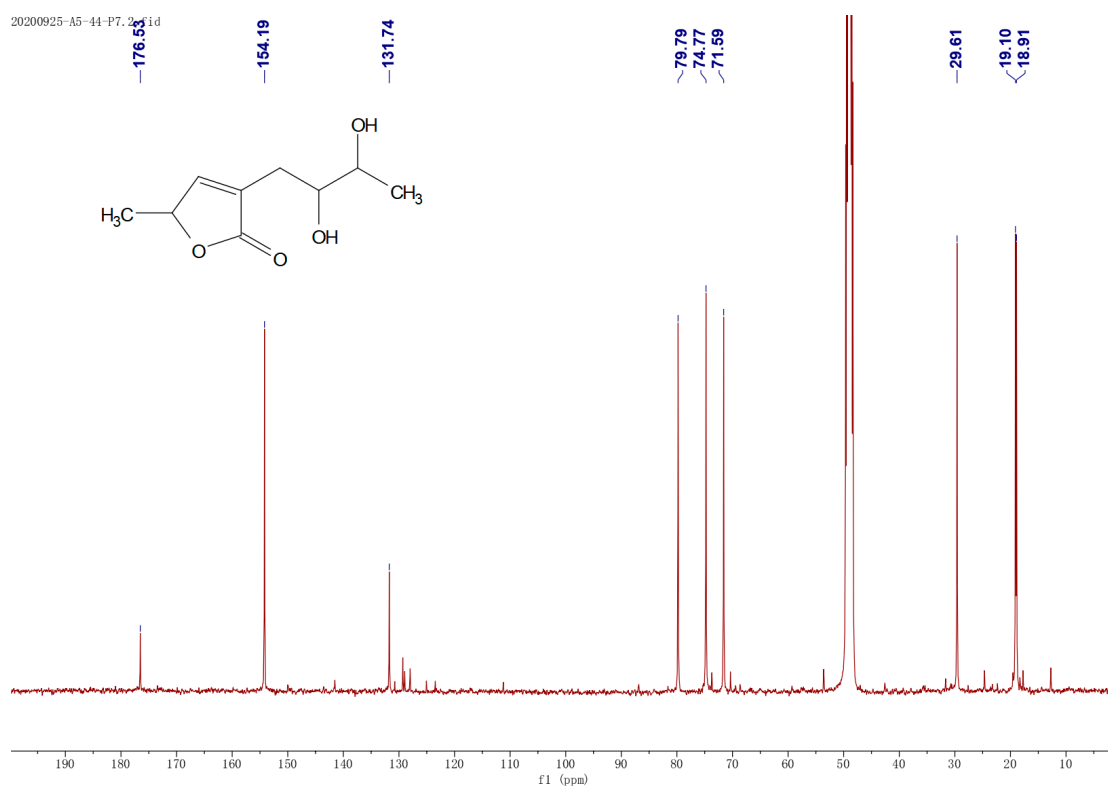


Figure S8. ¹³C NMR spectrum of compound 4 in CD₃OD.

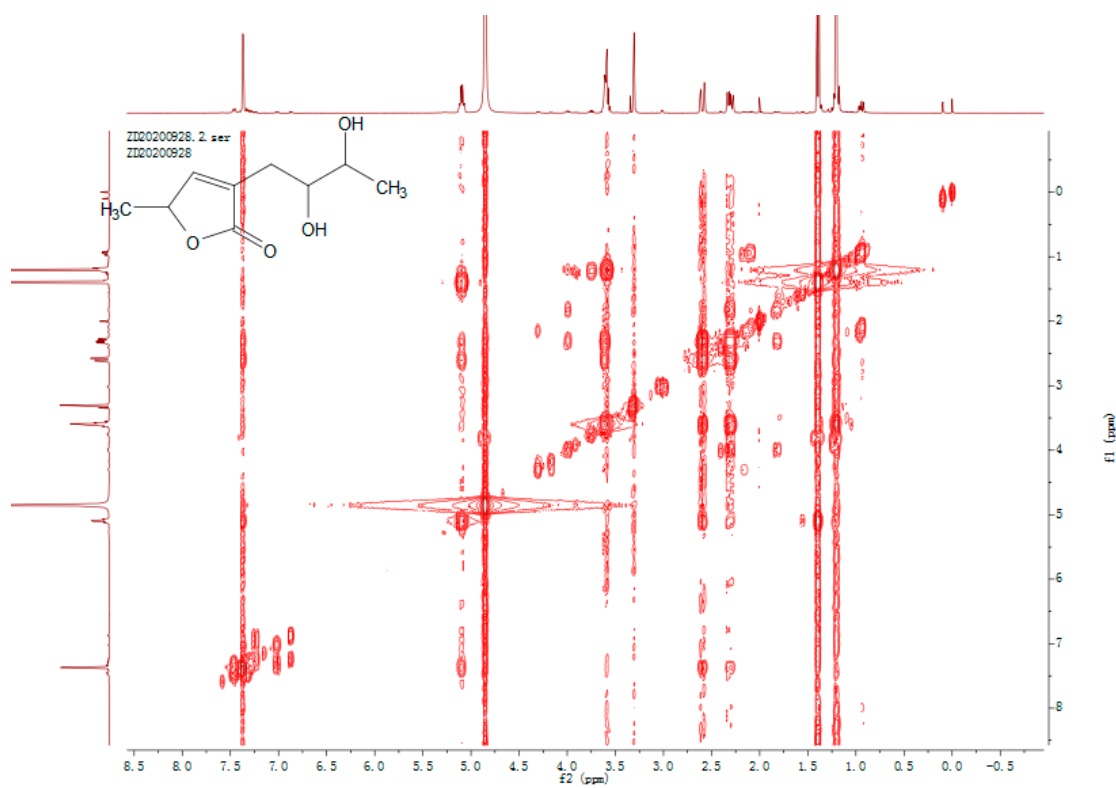


Figure S9. ¹H-¹H COSY spectrum of compound 4 in CD₃OD.

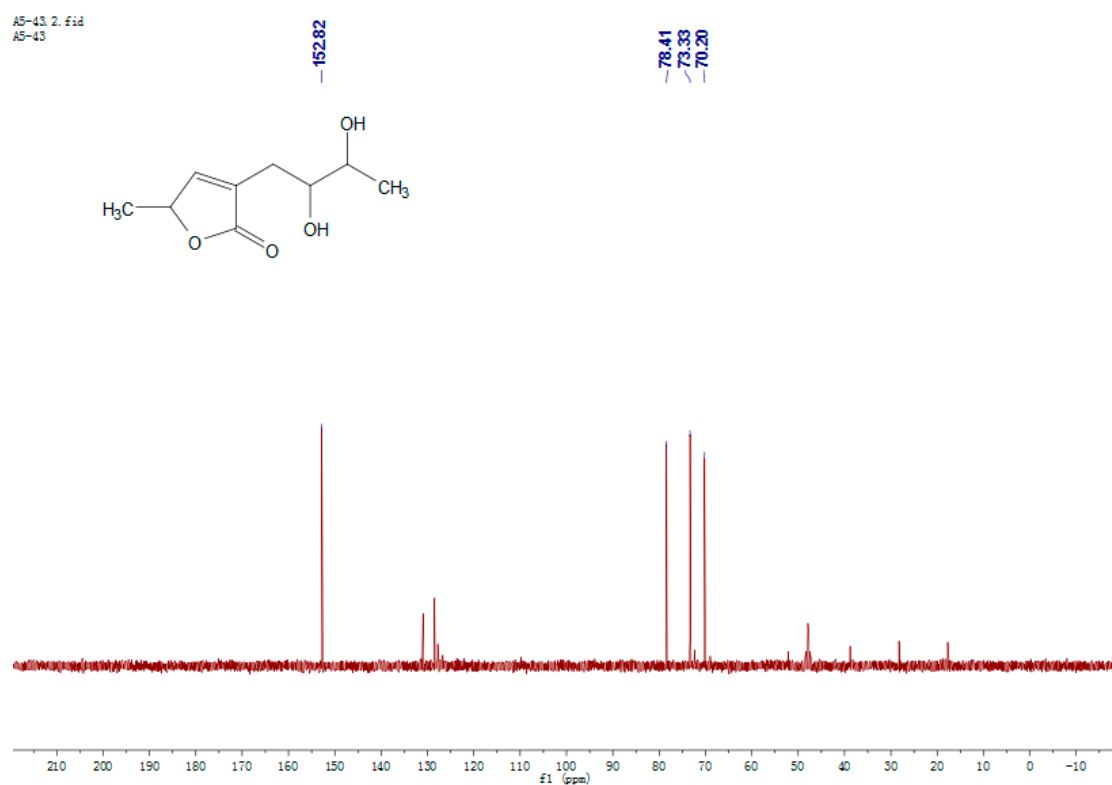


Figure S10. DEPT 90 spectrum of compound **4** in CD₃OD.

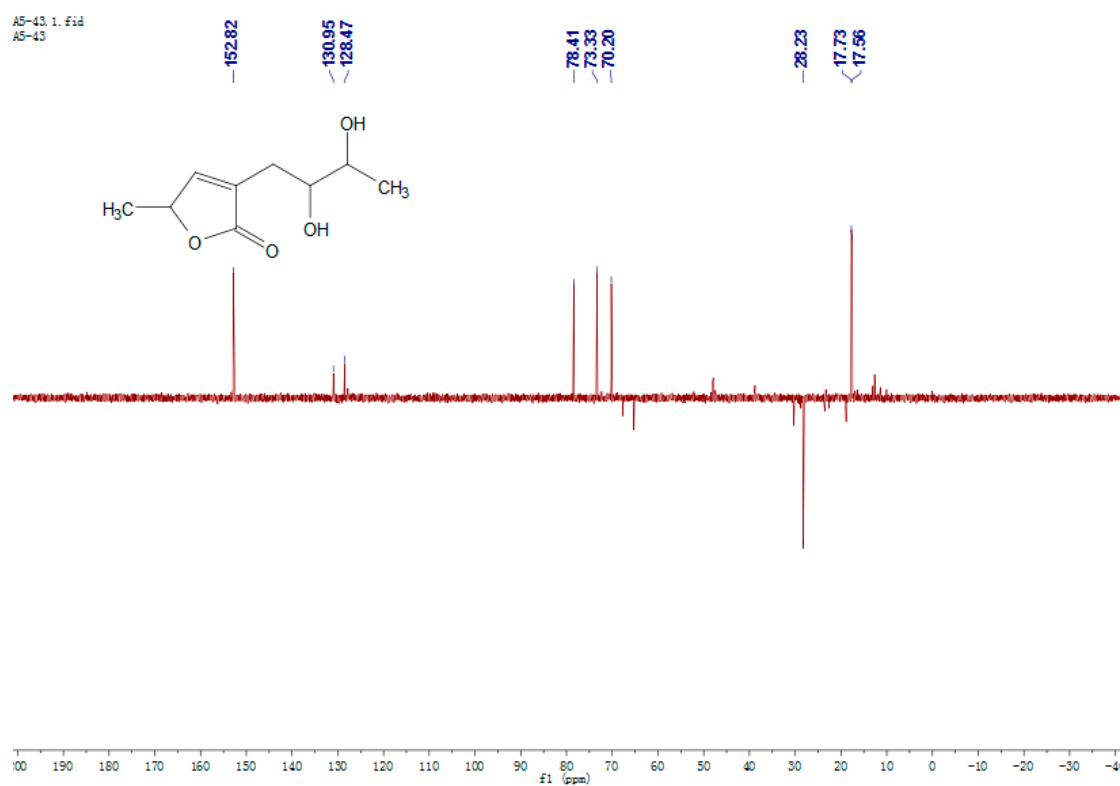


Figure S11. DEPT 135 spectrum of compound **4** in CD₃OD.

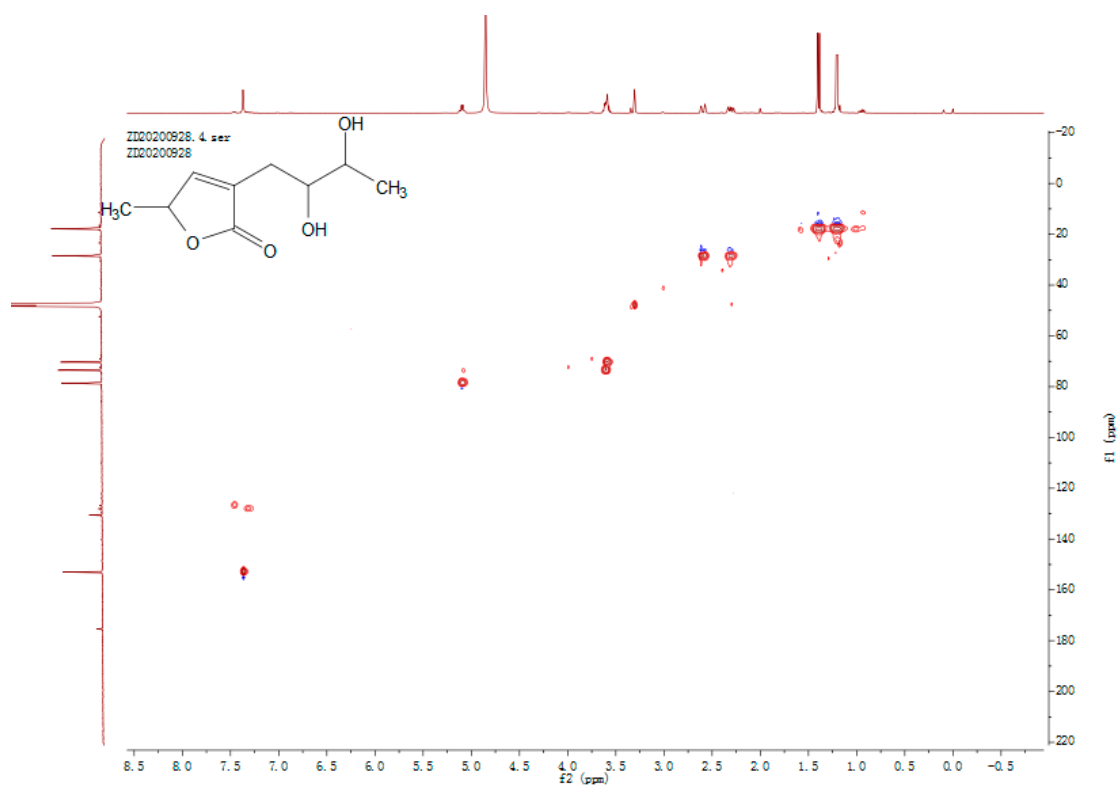


Figure S12. HSQC spectrum of compound **4** in CD₃OD.

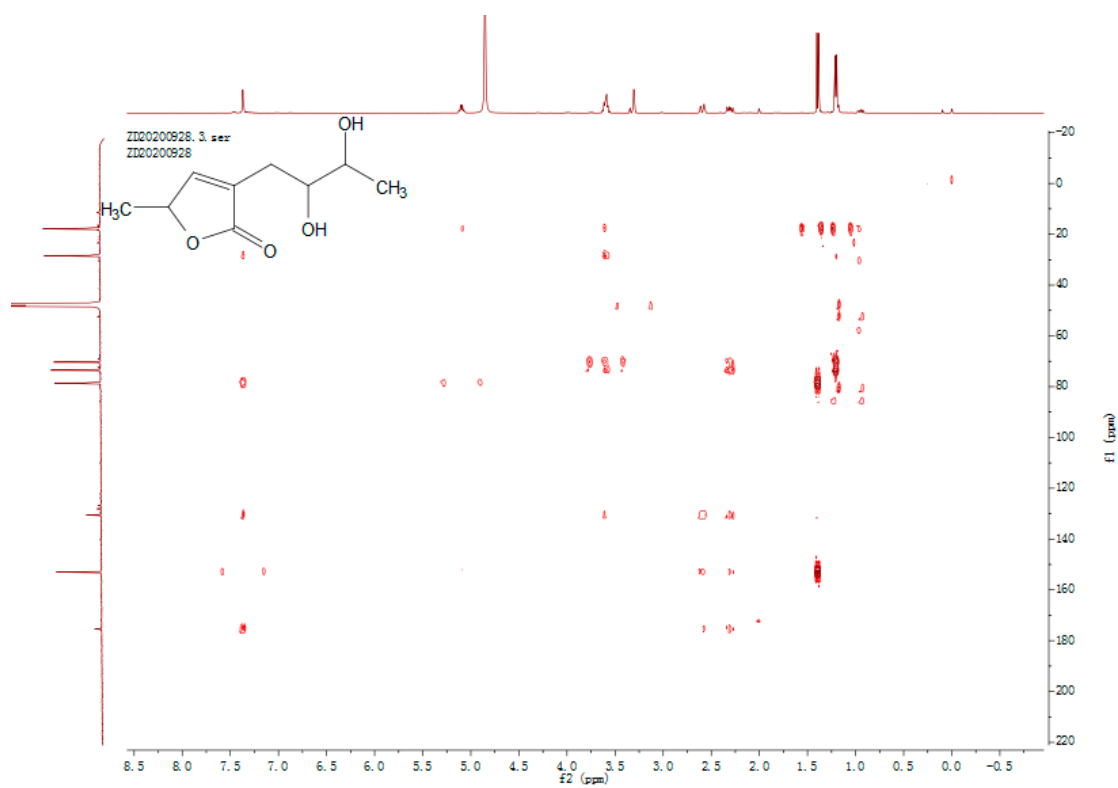


Figure S13. HMBC spectrum of compound **4** in CD₃OD.

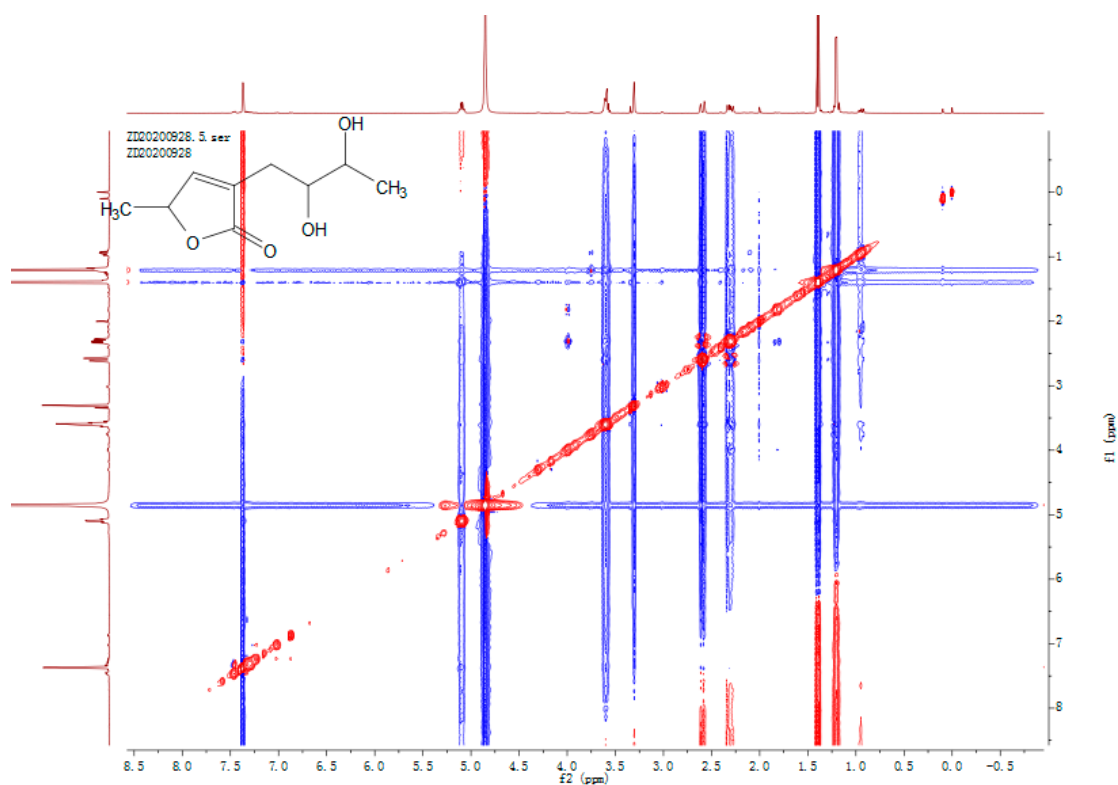


Figure S14. NOESY spectrum of compound **4** in CD₃OD.

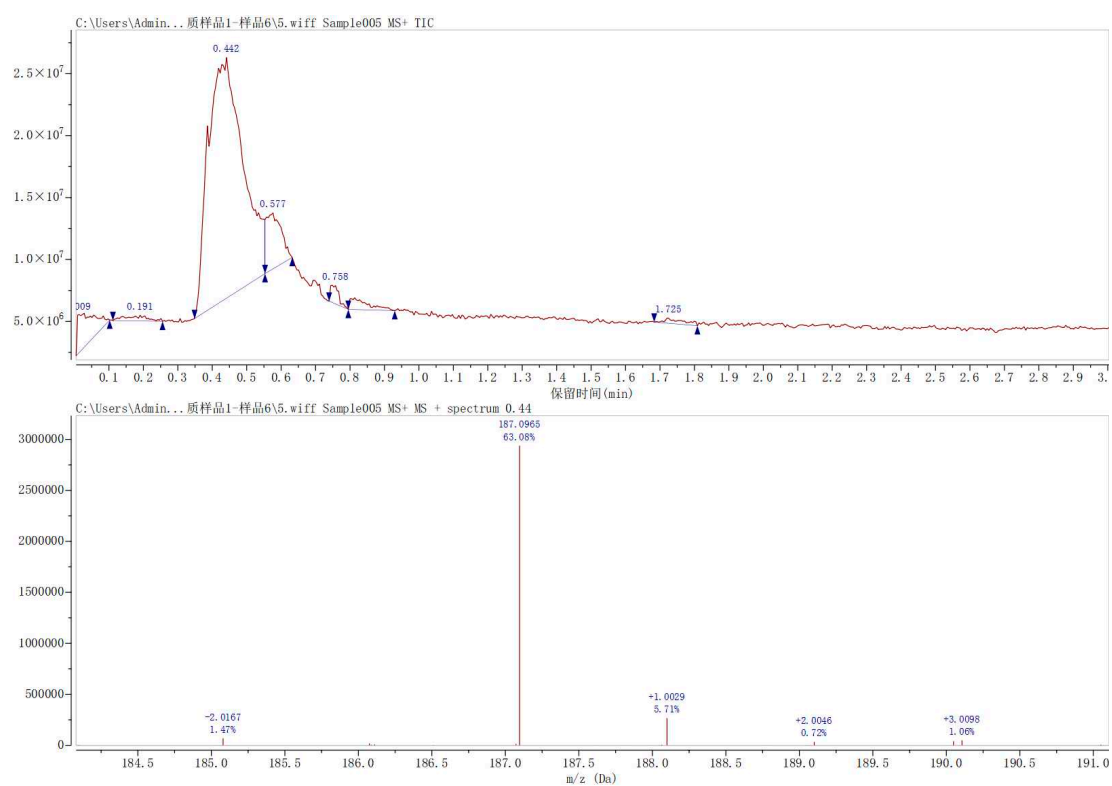


Figure S15. HRESIMS spectrum of compound **4**.

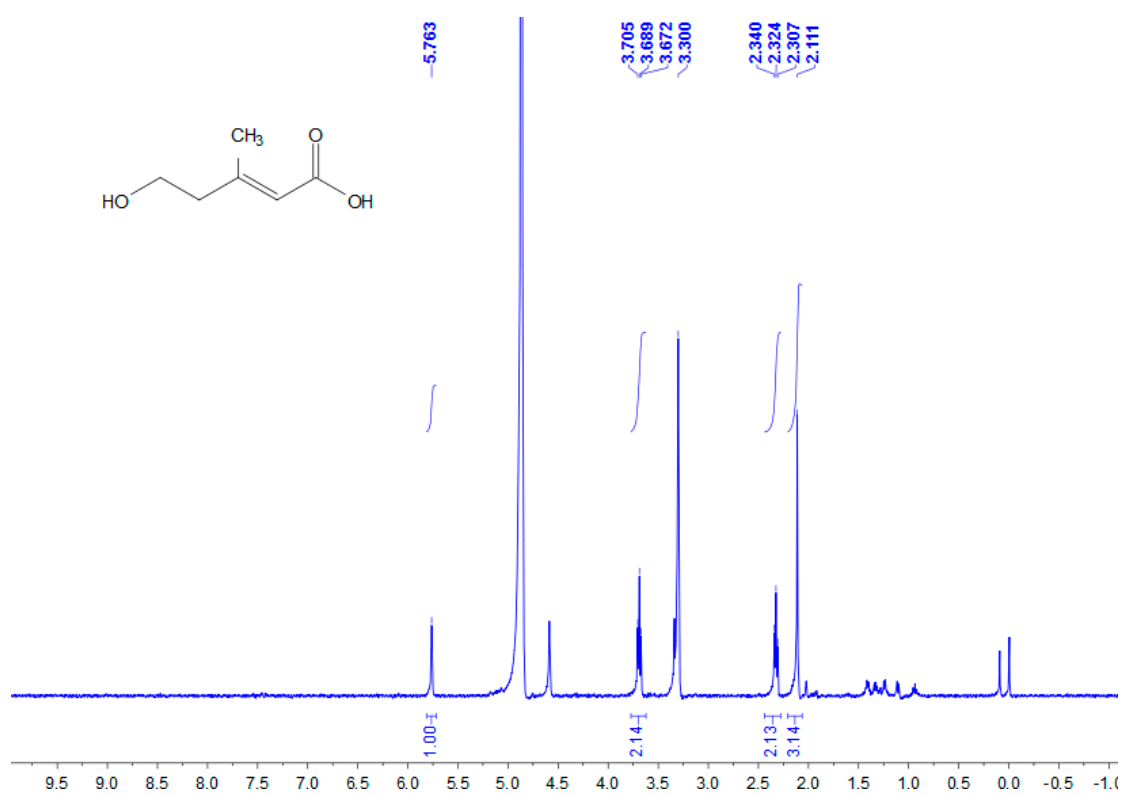


Figure S16. ¹H NMR spectrum of compound **5** in CD₃OD.

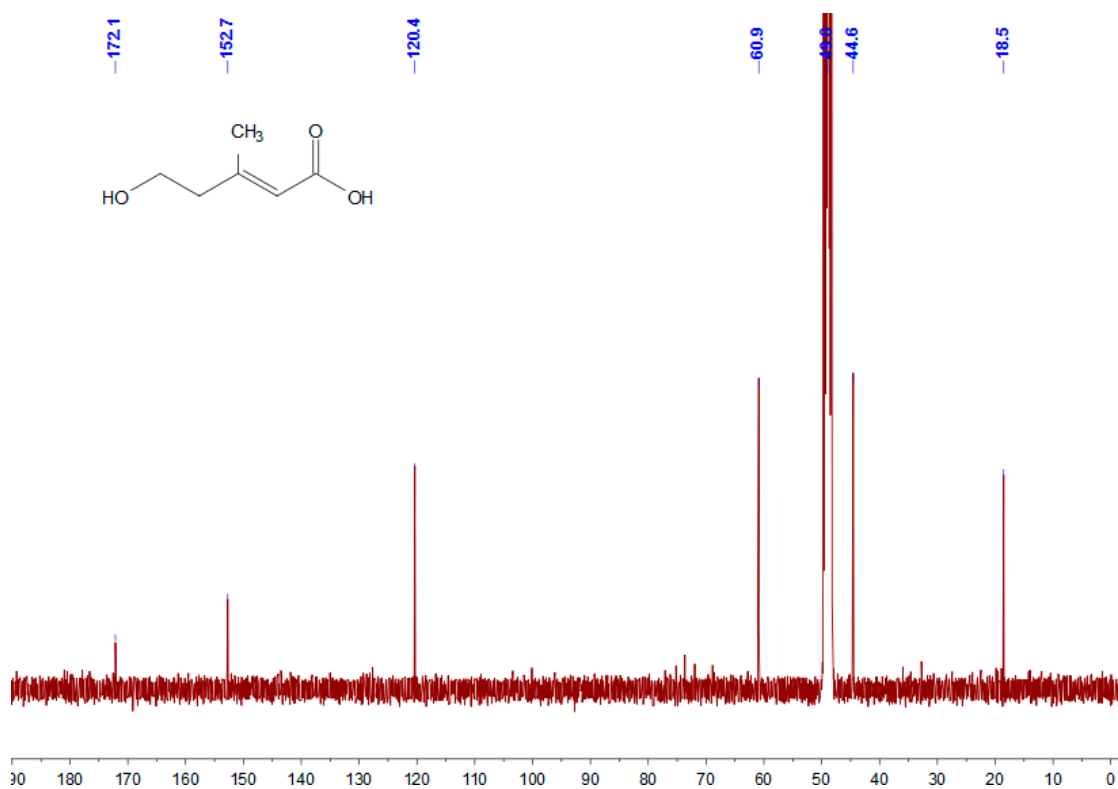


Figure S17. ¹³C NMR spectrum of compound **5** in CD₃OD.

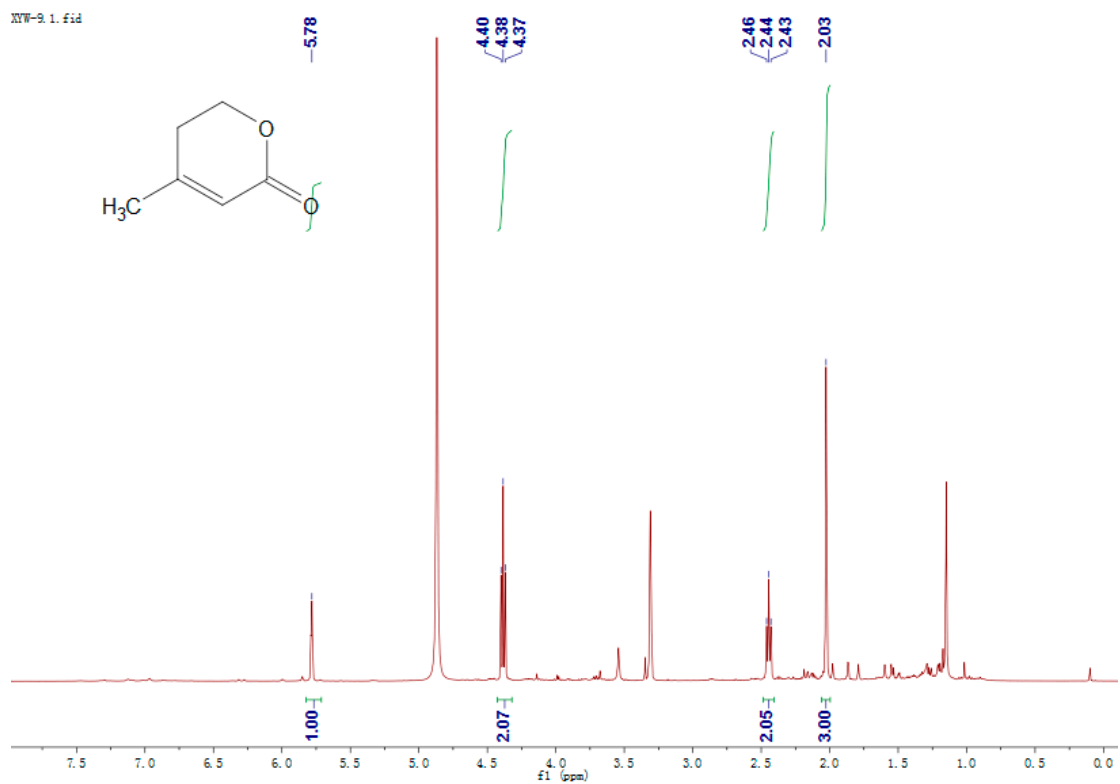


Figure S18. ¹H NMR spectrum of compound **6** in CD₃OD.

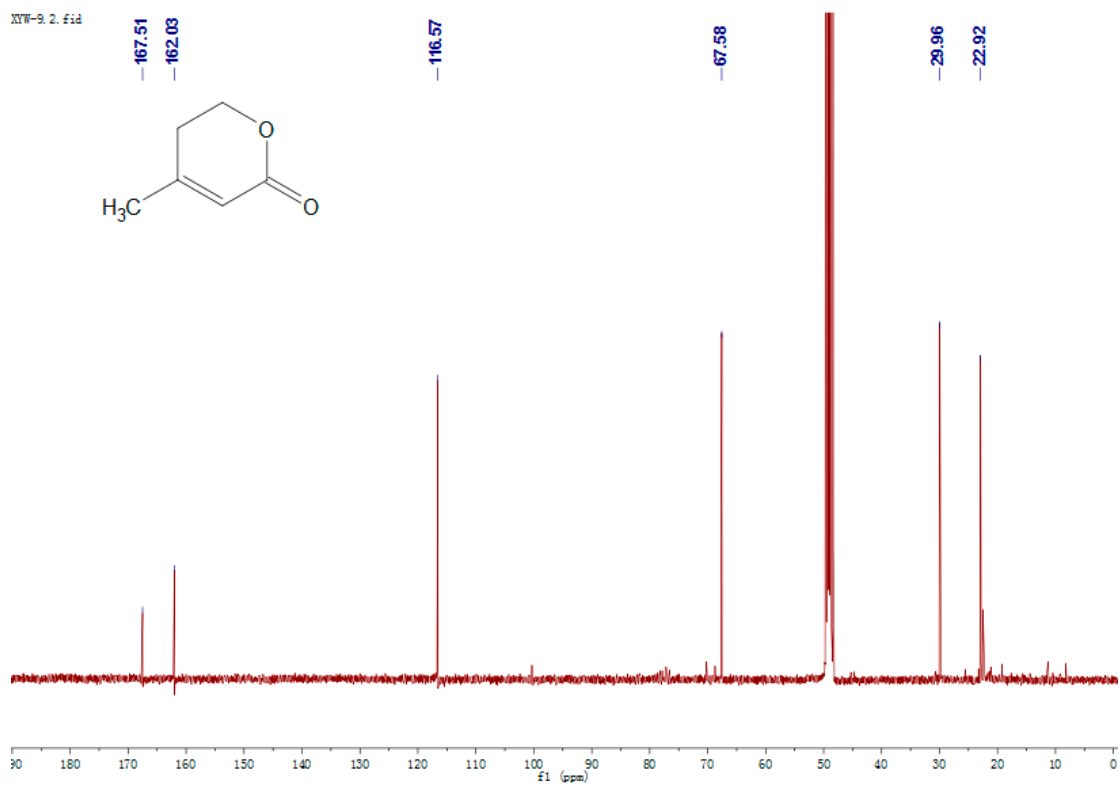


Figure S19. ¹³C NMR spectrum of compound **6** in CD₃OD.

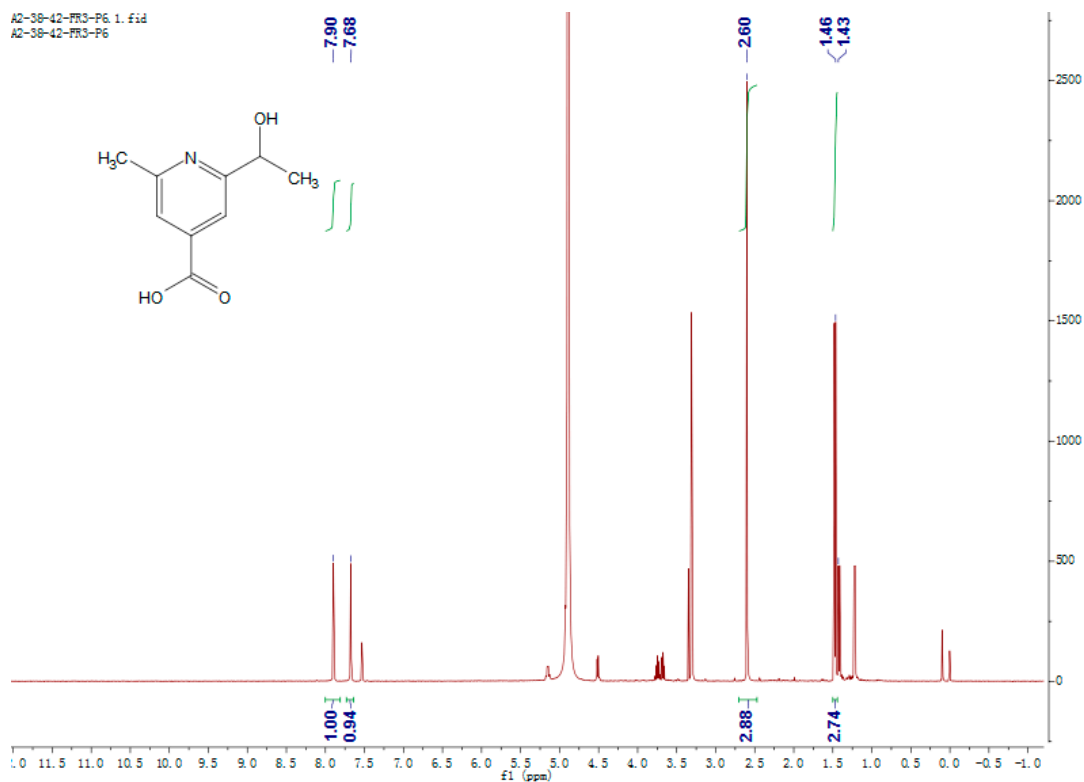


Figure S20. ¹H NMR spectrum of compound **7** in CD₃OD.

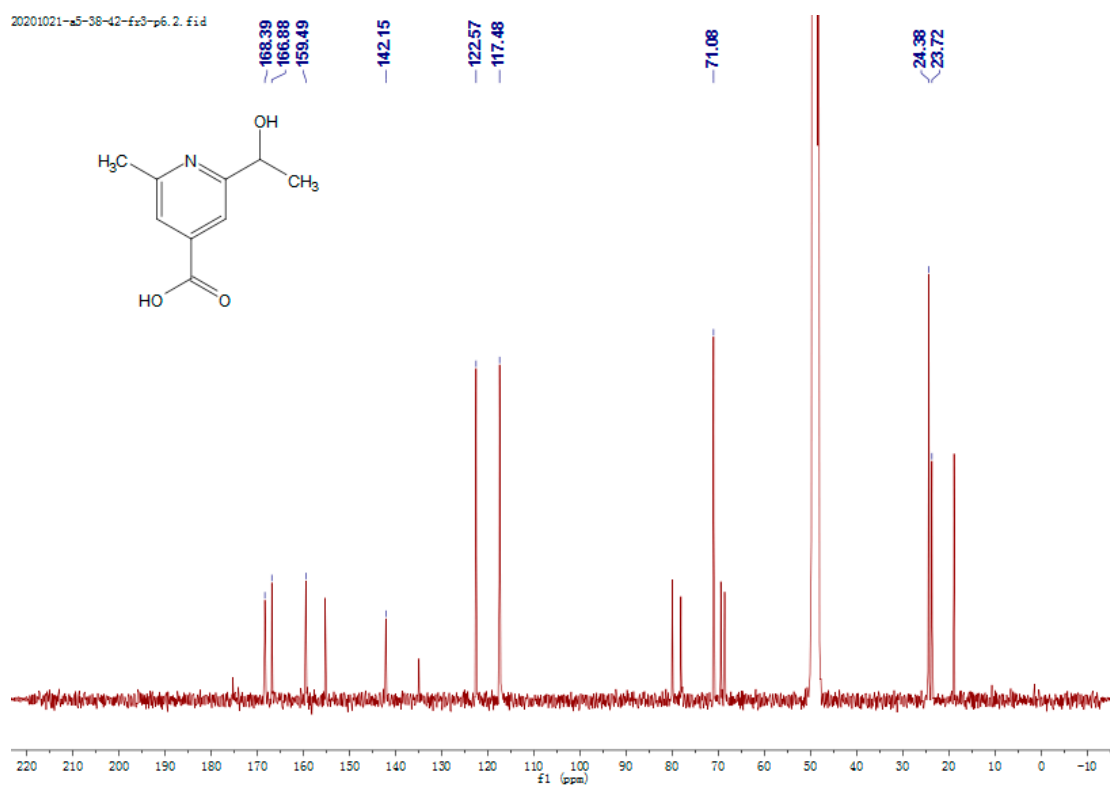


Figure S21. ¹³C NMR spectrum of compound **7** in CD₃OD.

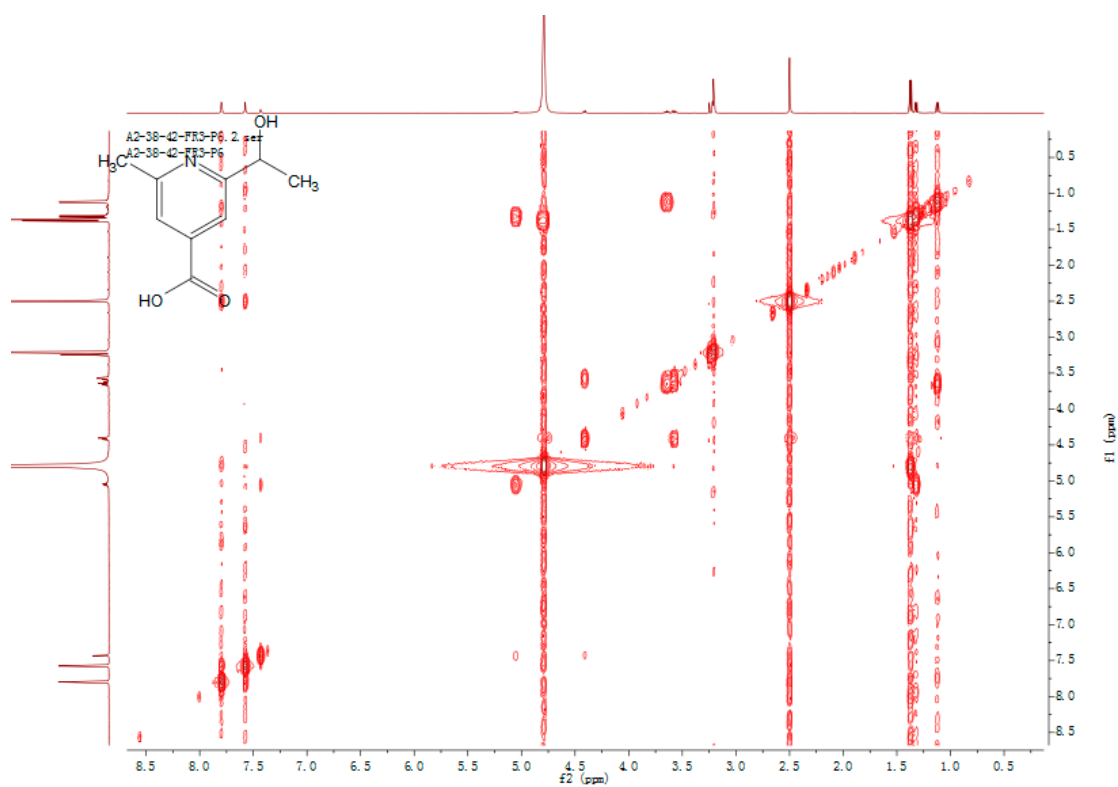


Figure S22. ^1H - ^1H COSY spectrum of compound **7** in CD_3OD .

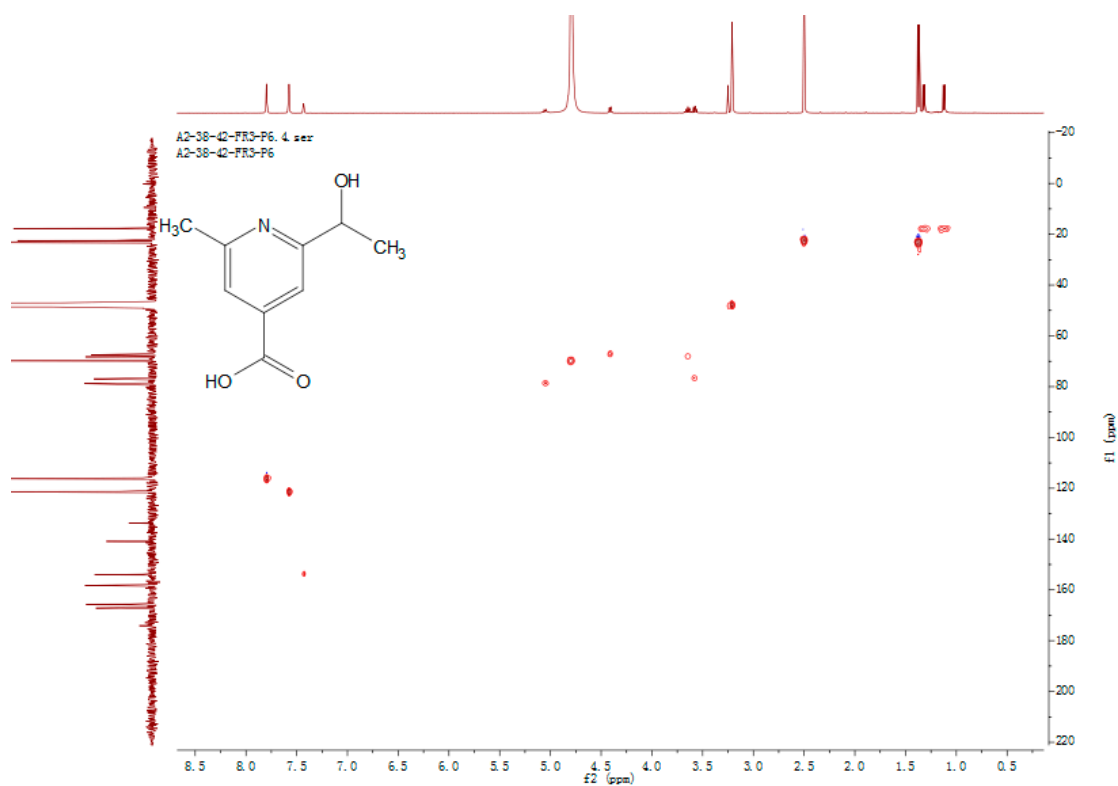


Figure S23. HSQC spectrum of compound **7** in CD_3OD .

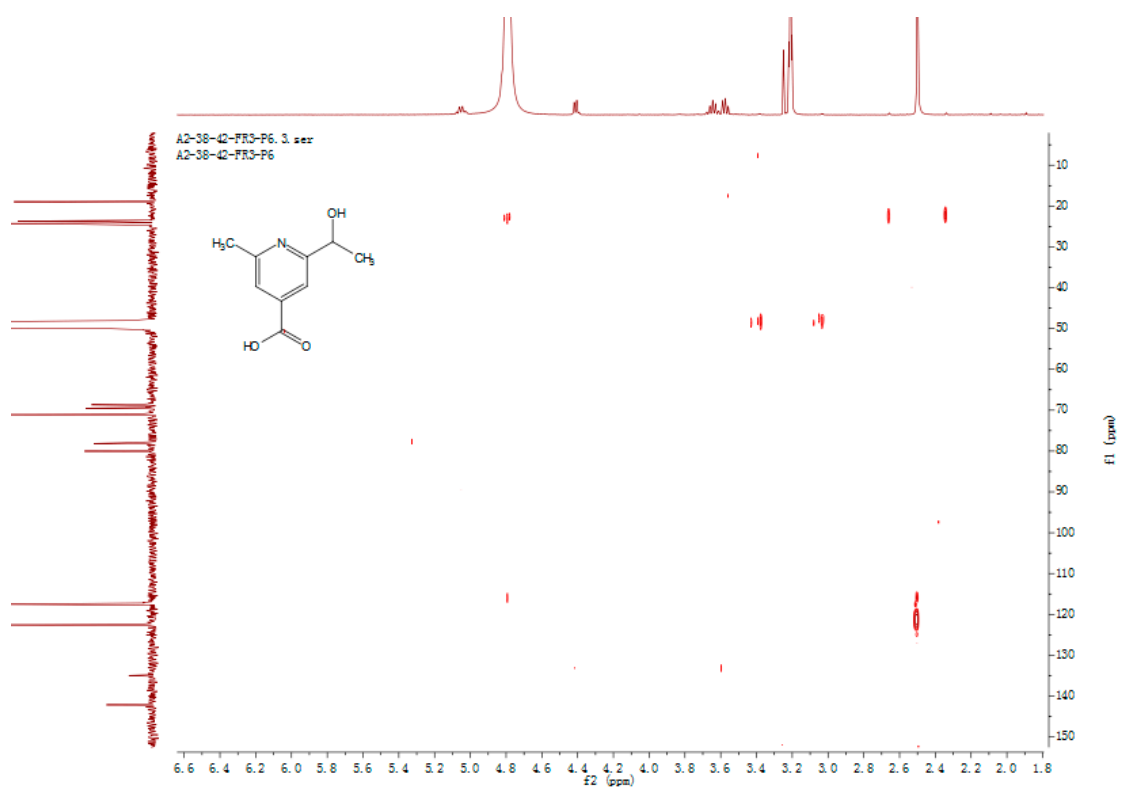


Figure S24. HMBC spectrum of compound **7** in CD₃OD.

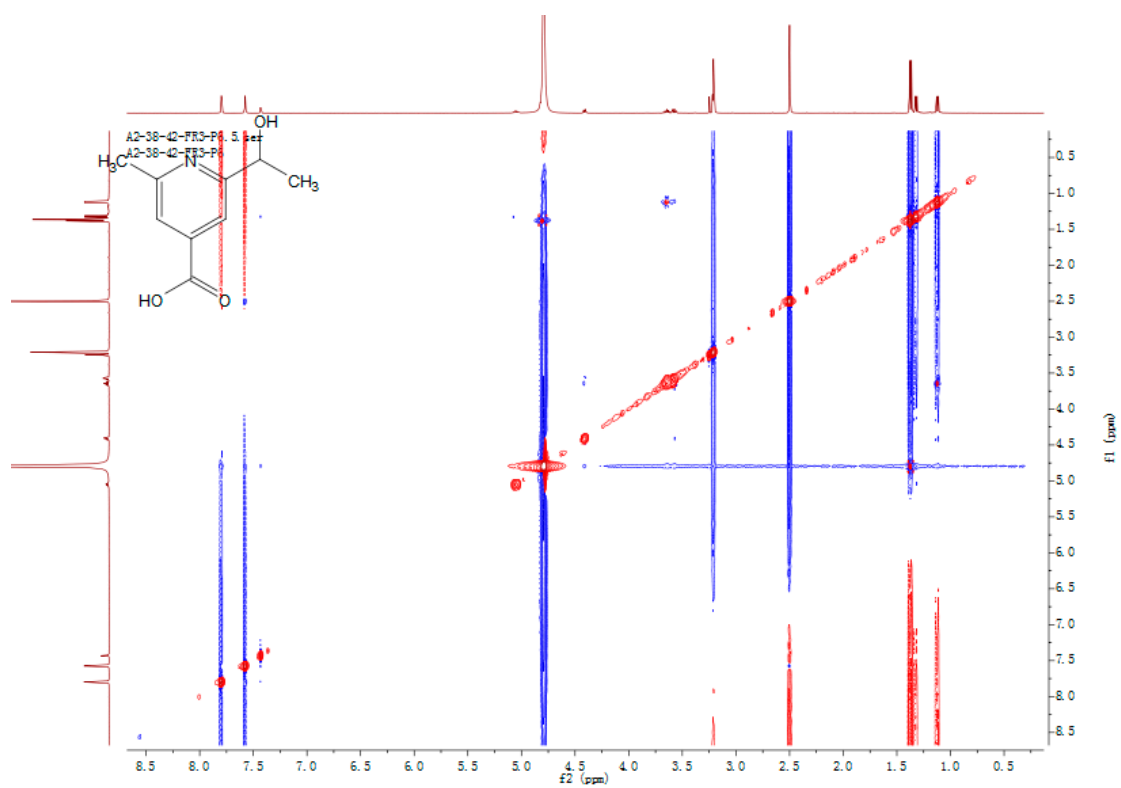


Figure S25. NOESY spectrum of compound **7** in CD₃OD.

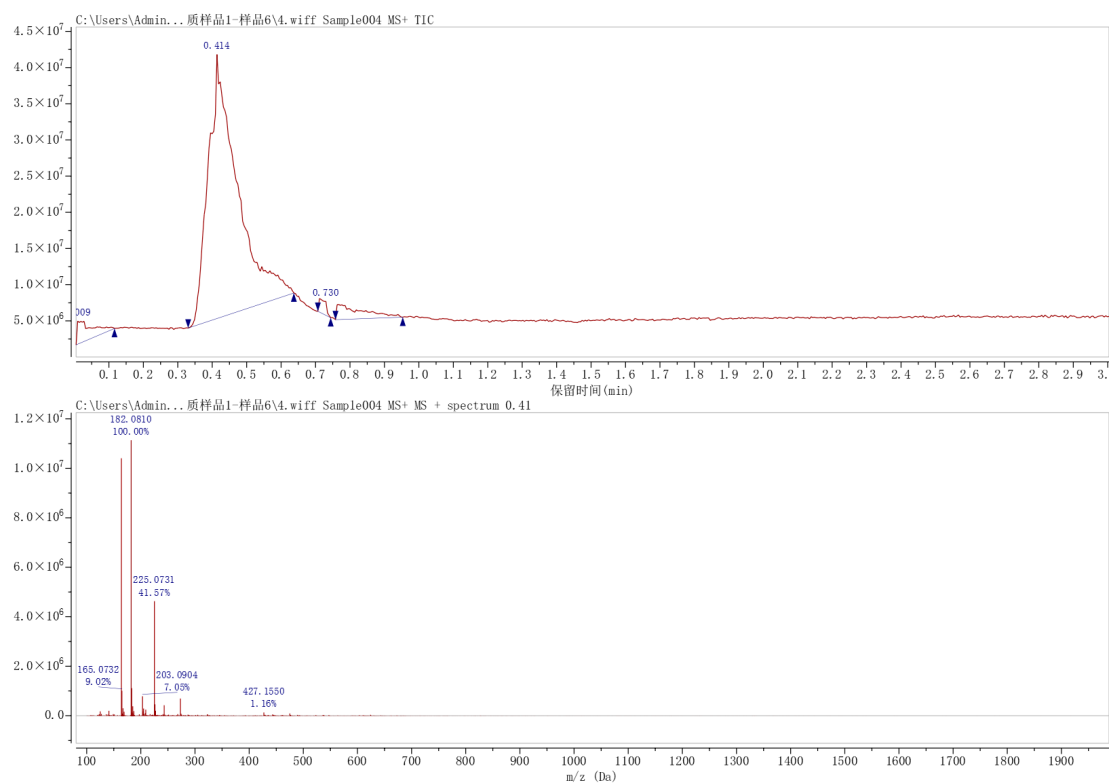


Figure S26. HRESIMS spectrum of compound 7.

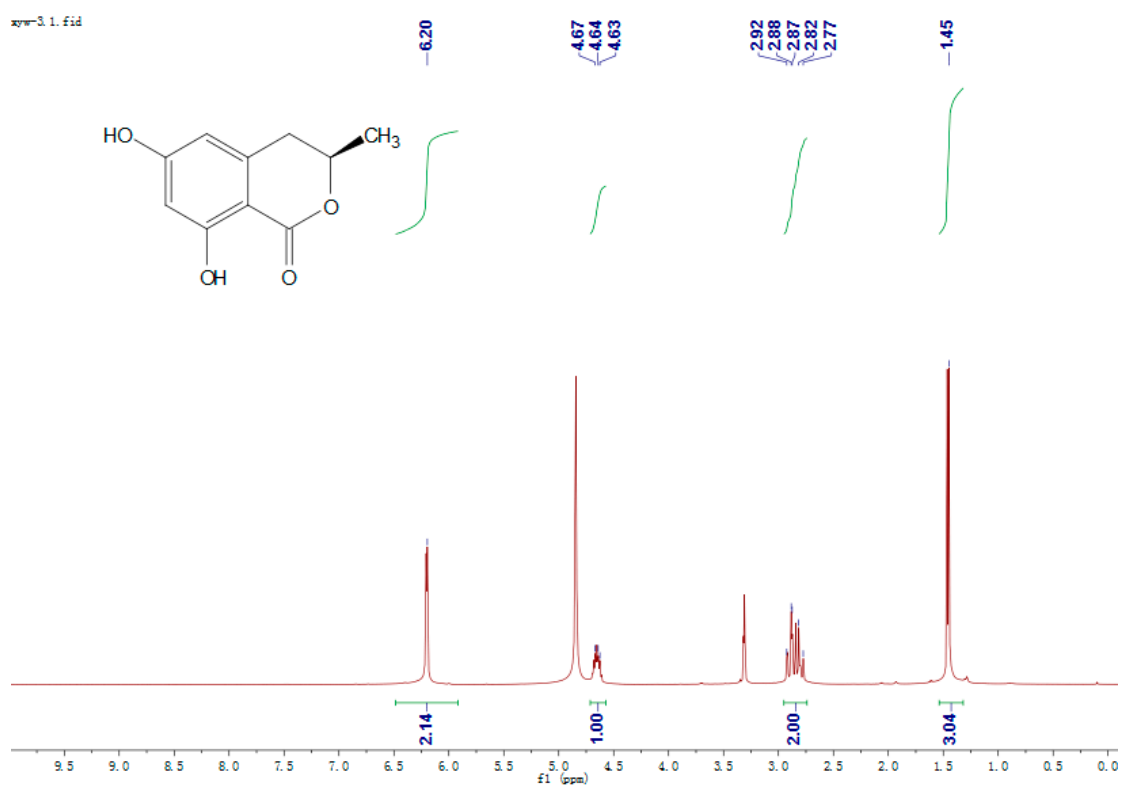


Figure S27. ^1H NMR spectrum of compound 8 in CD_3OD .

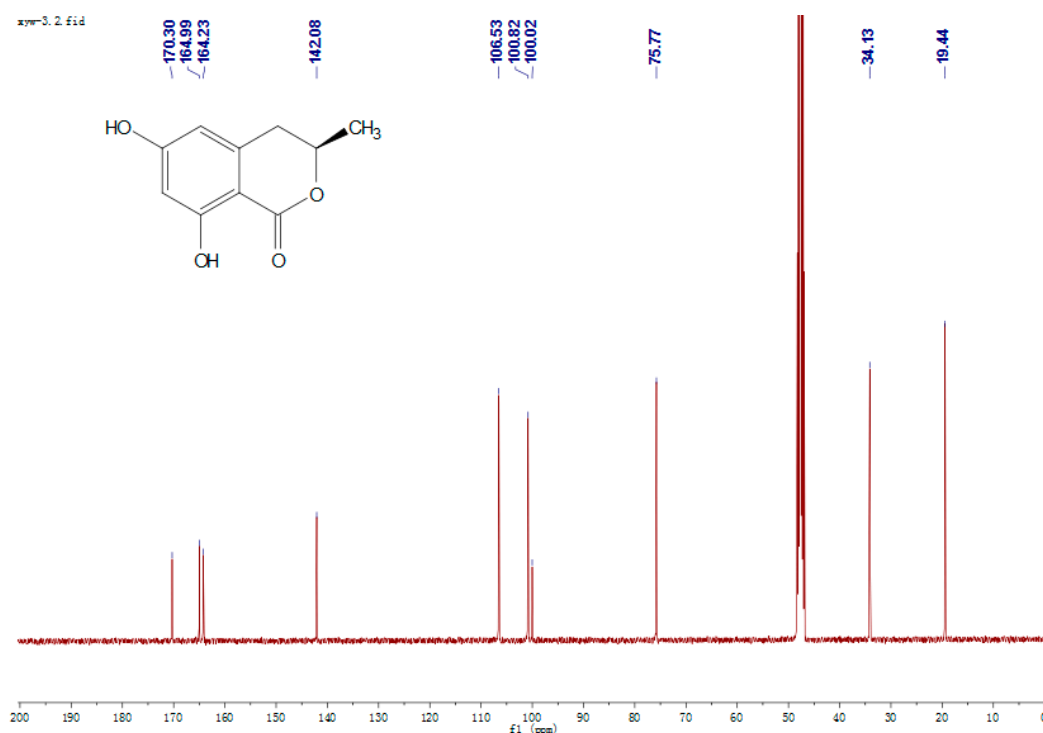


Figure S28. ¹³C NMR spectrum of compound **8** in CD₃OD.

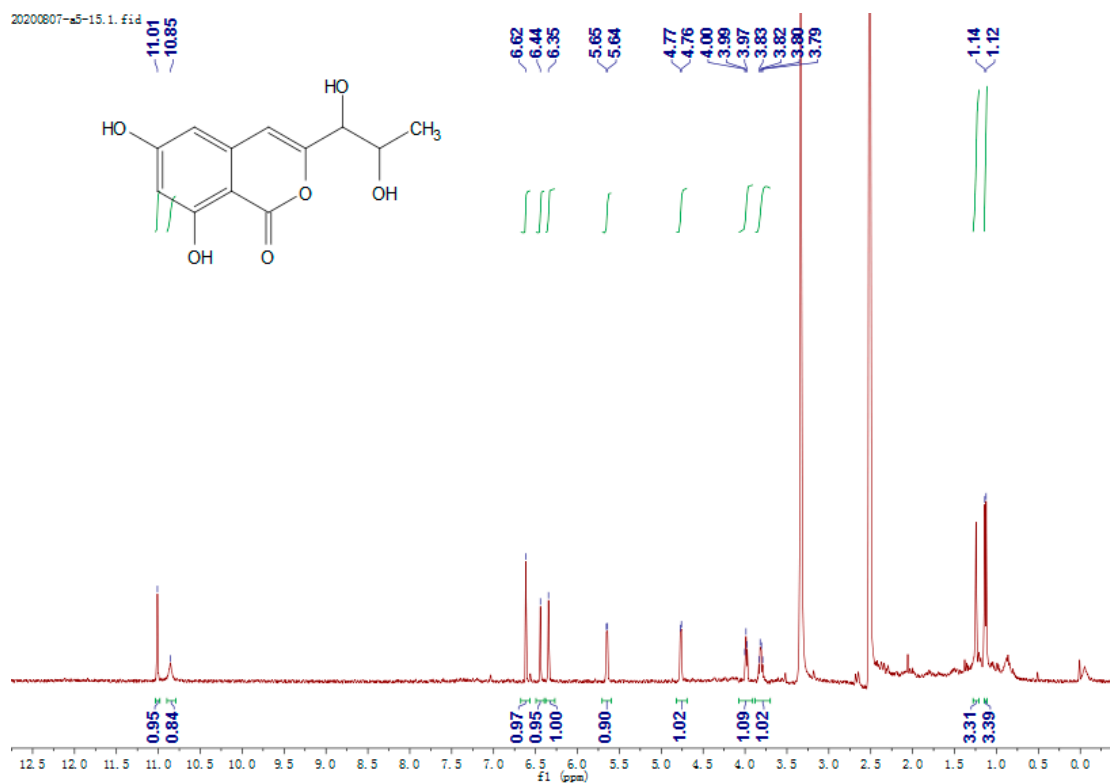


Figure S29. ¹H NMR spectrum of compound **9** in DMSO-*d*₆.

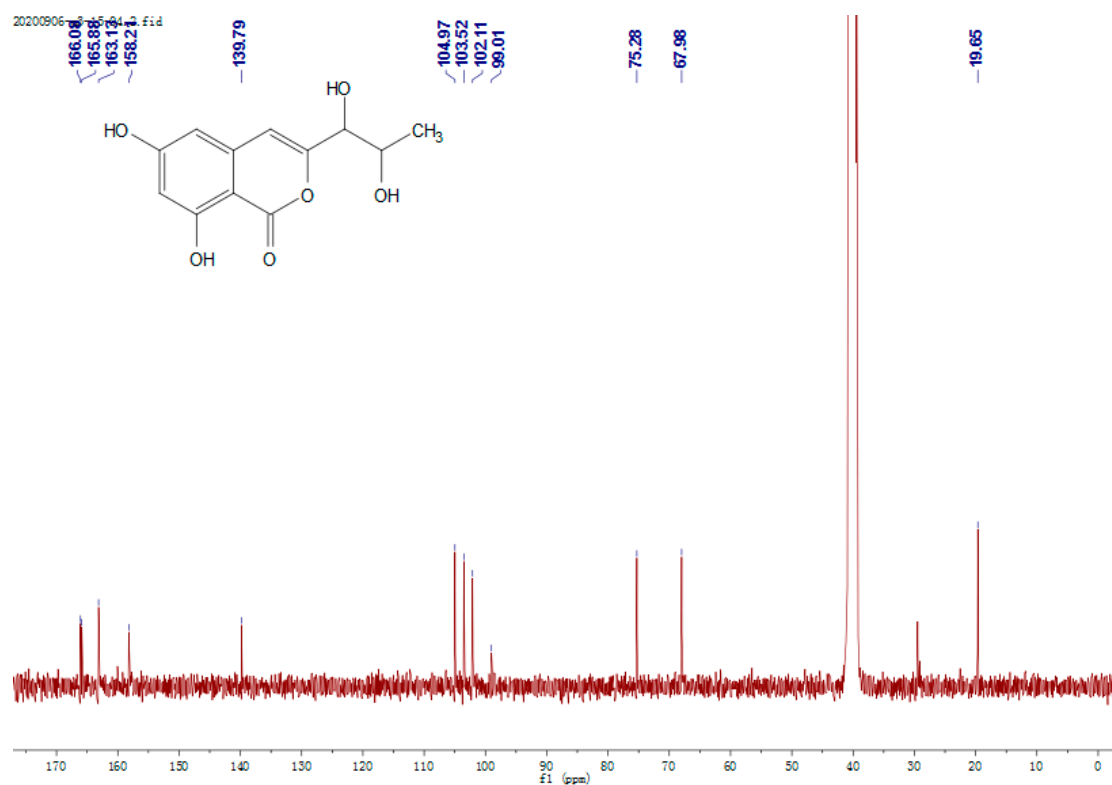


Figure S30. ^{13}C NMR spectrum of compound **9** in $\text{DMSO}-d_6$.

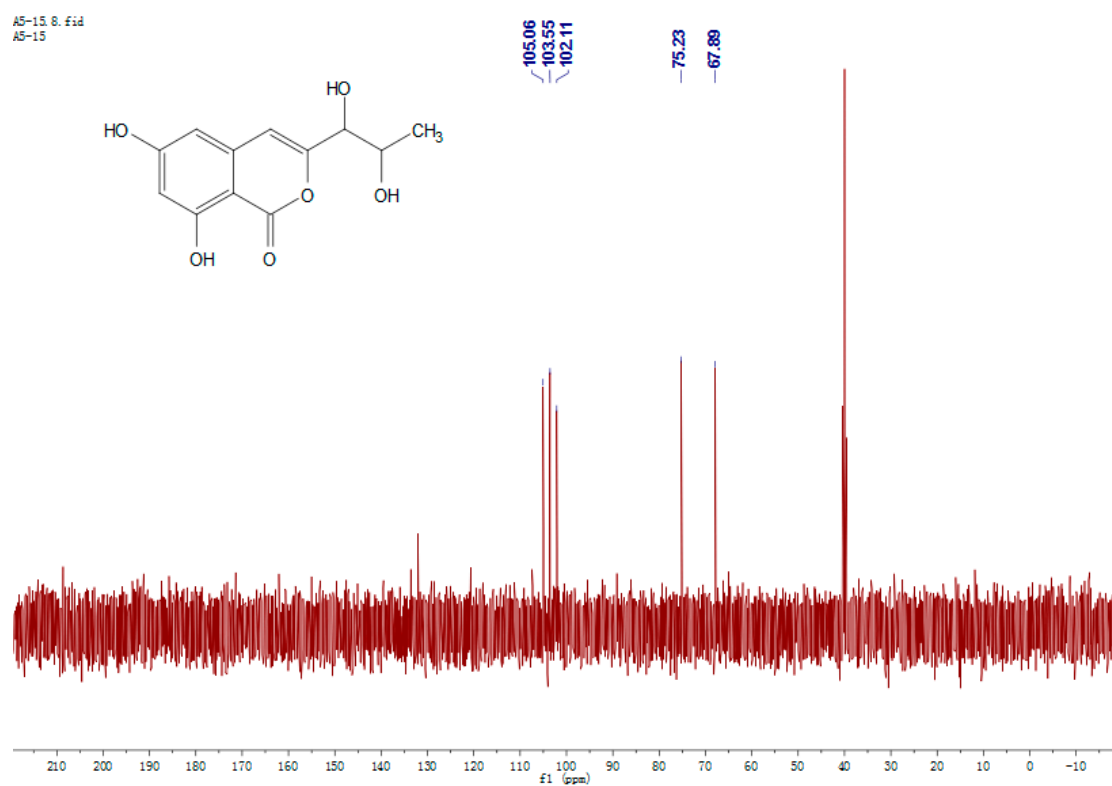
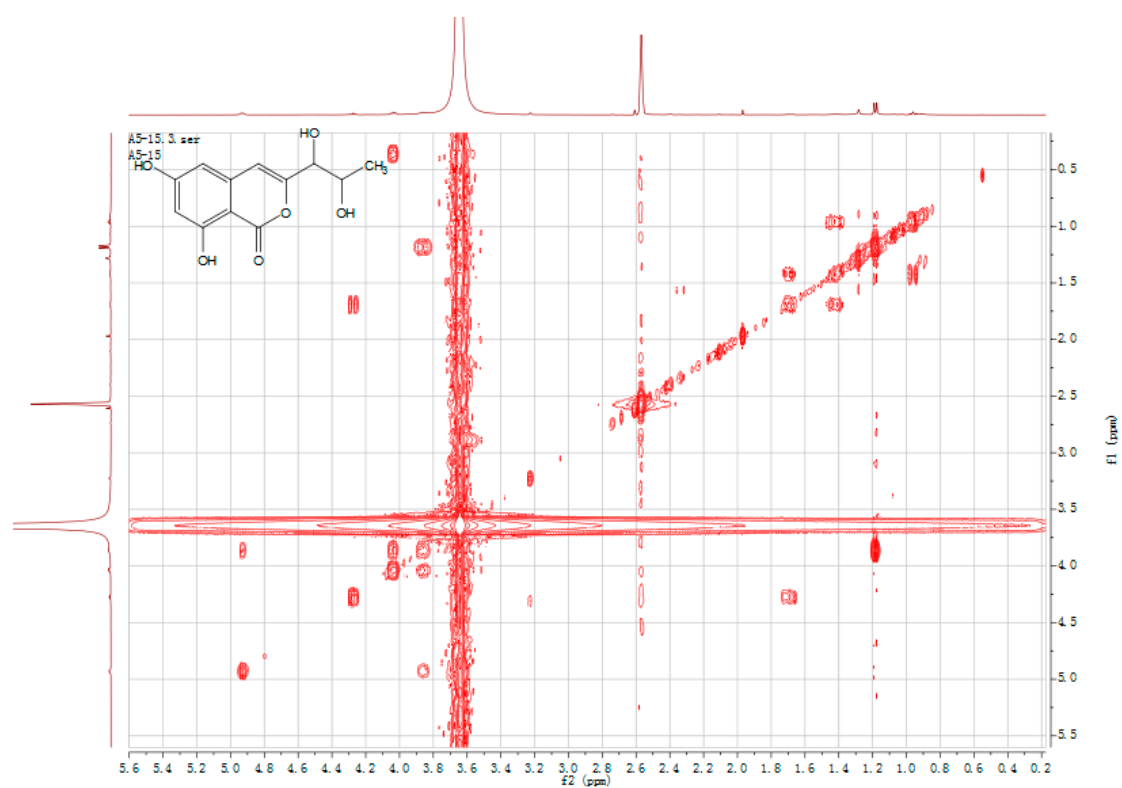
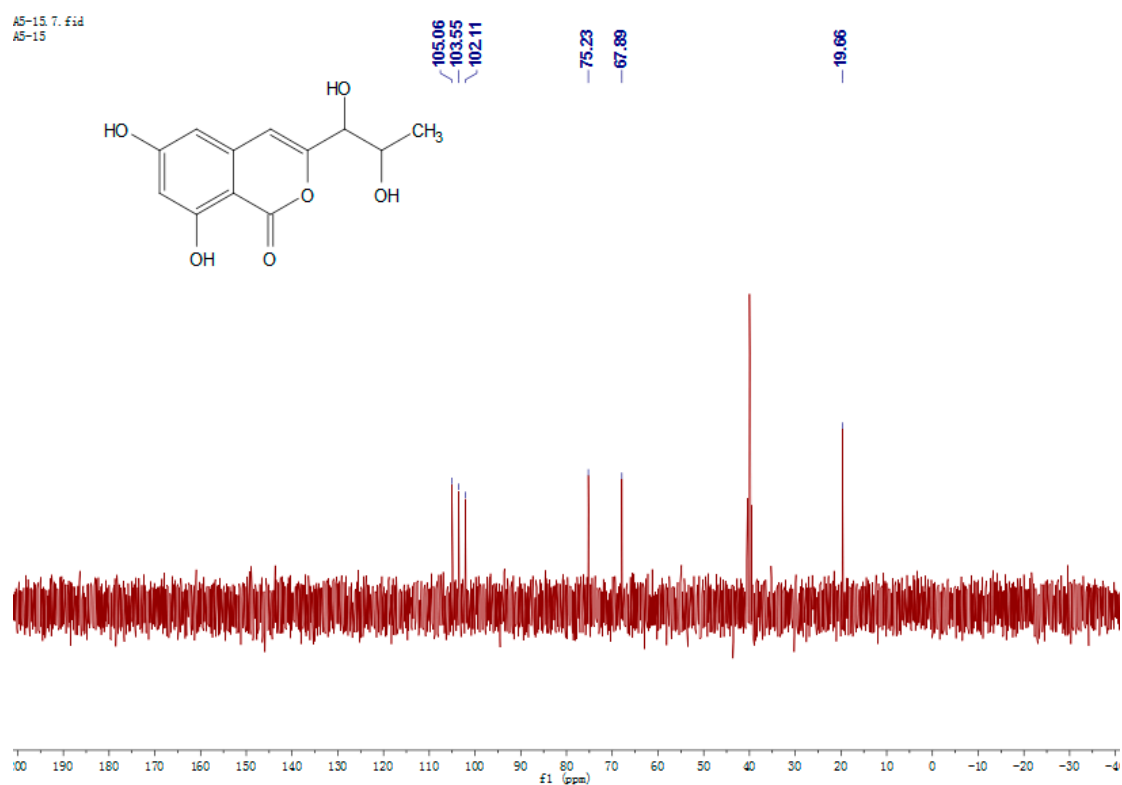


Figure S31. DEPT 90 spectrum of compound **9** in $\text{DMSO}-d_6$.



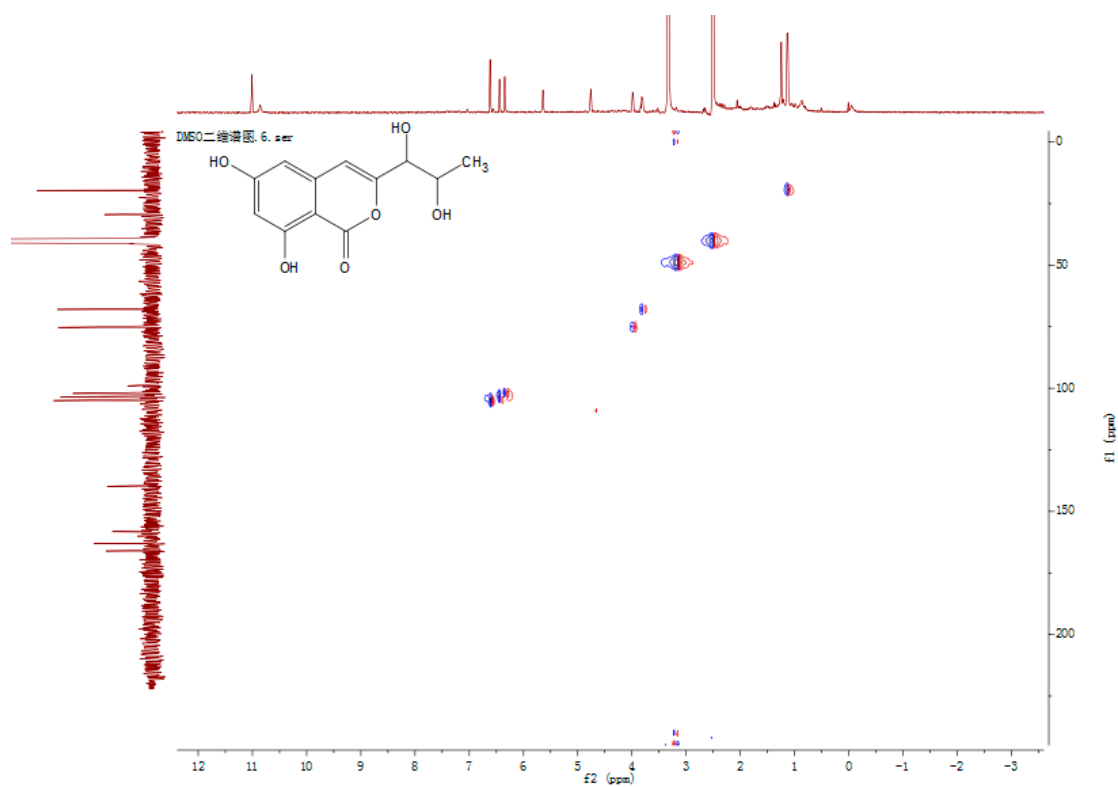


Figure S34. HSQC spectrum of compound **9** in DMSO- d_6 .

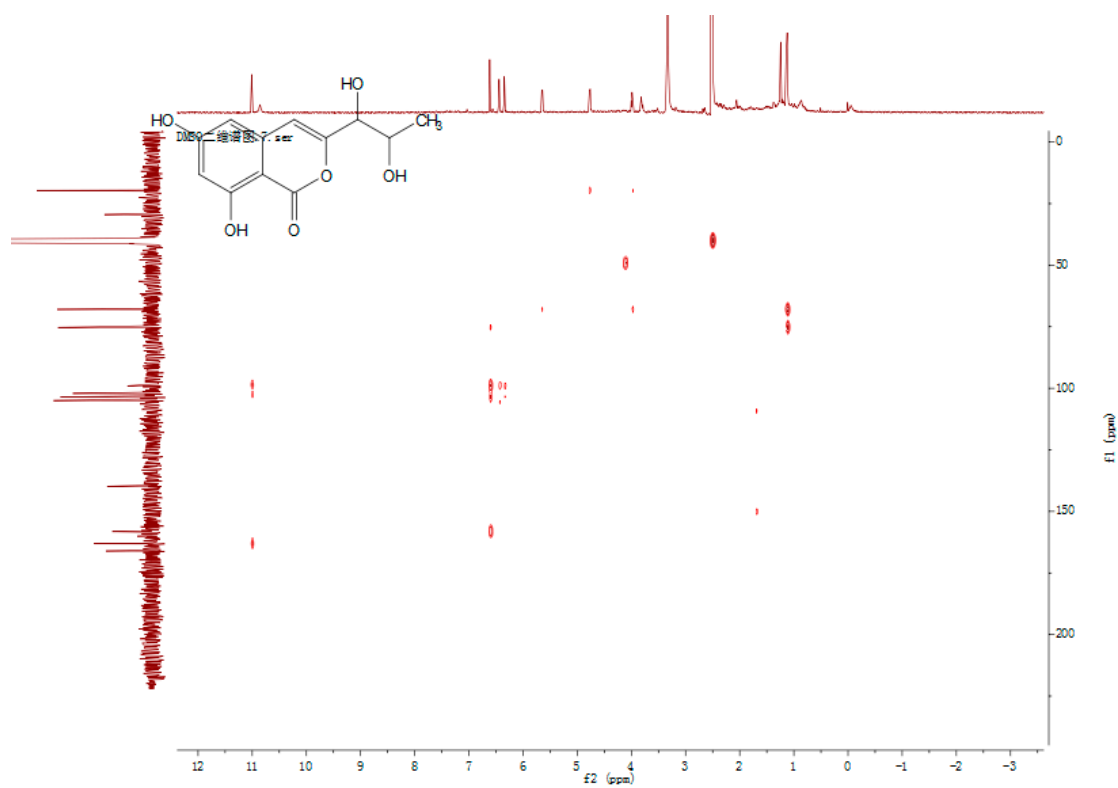


Figure S35. HMBC spectrum of compound **9** in DMSO- d_6 .

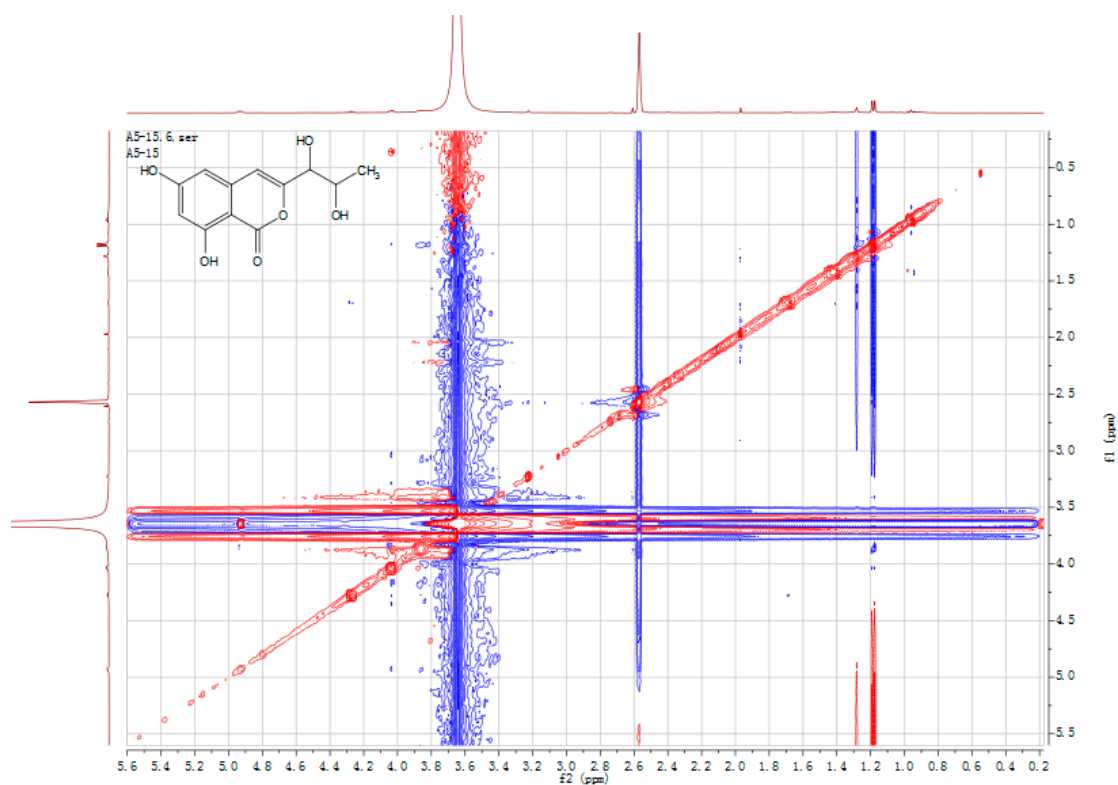


Figure S36. NOESY spectrum of compound **9** in DMSO-*d*₆.

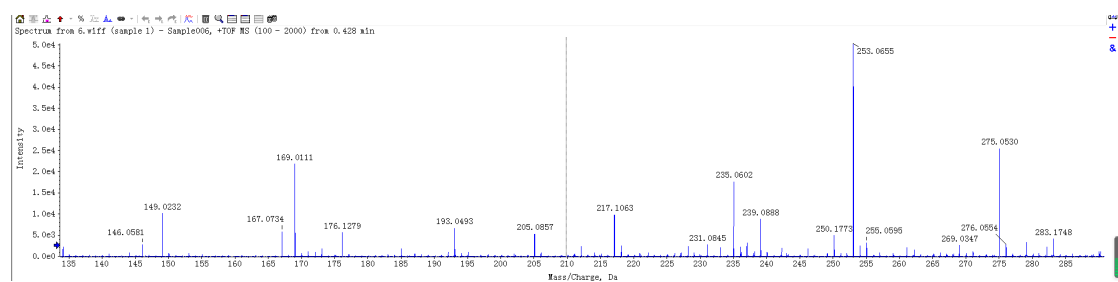


Figure S37. HRESIMS spectrum of compound **9**.

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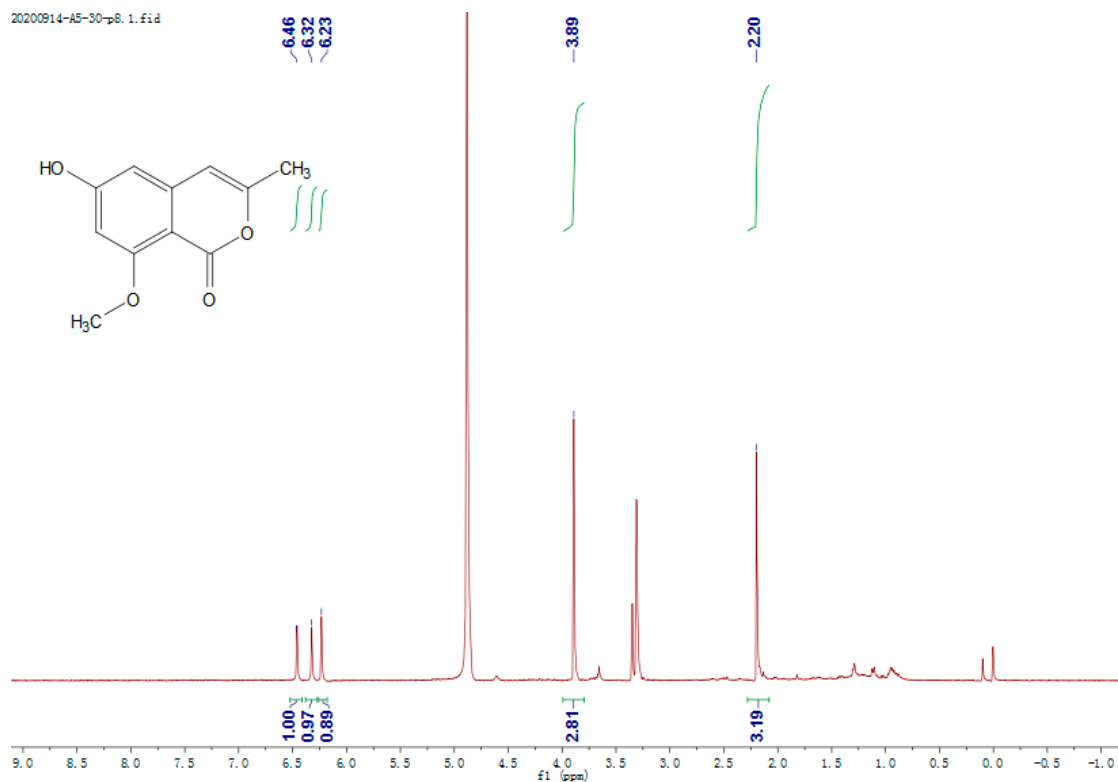


Figure S38. ¹H NMR spectrum of compound **10** in CD₃OD.

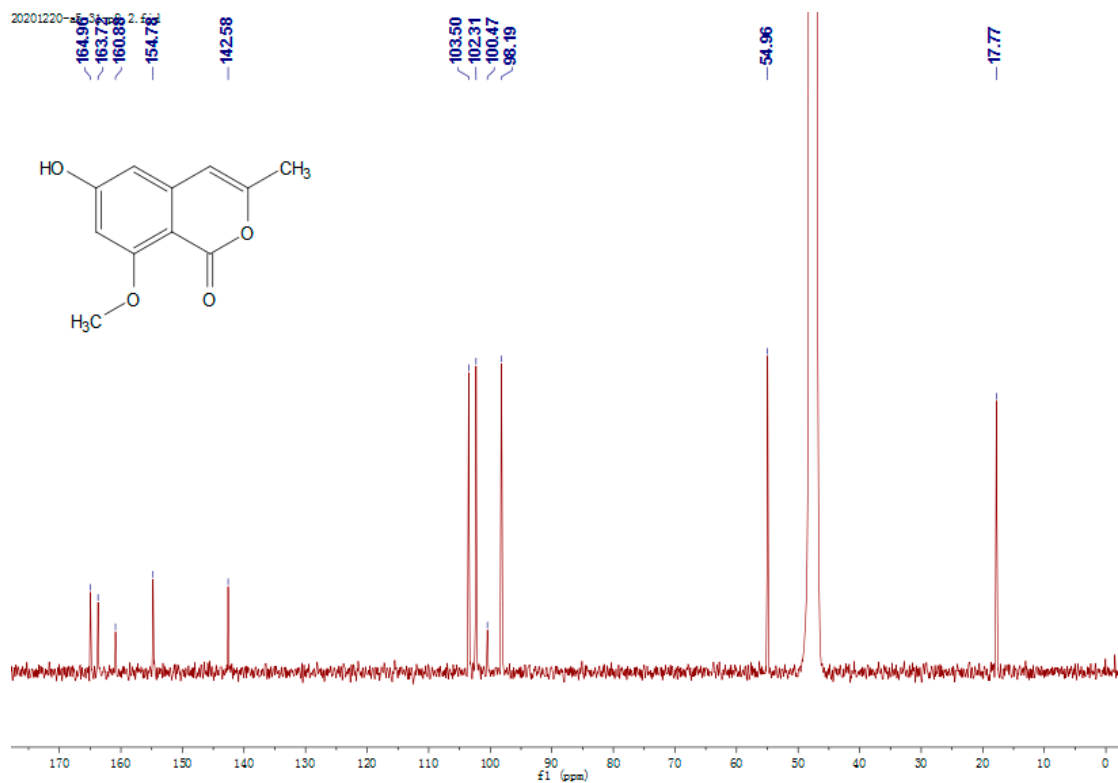


Figure S39. ¹³C NMR spectrum of compound **10** in CD₃OD.

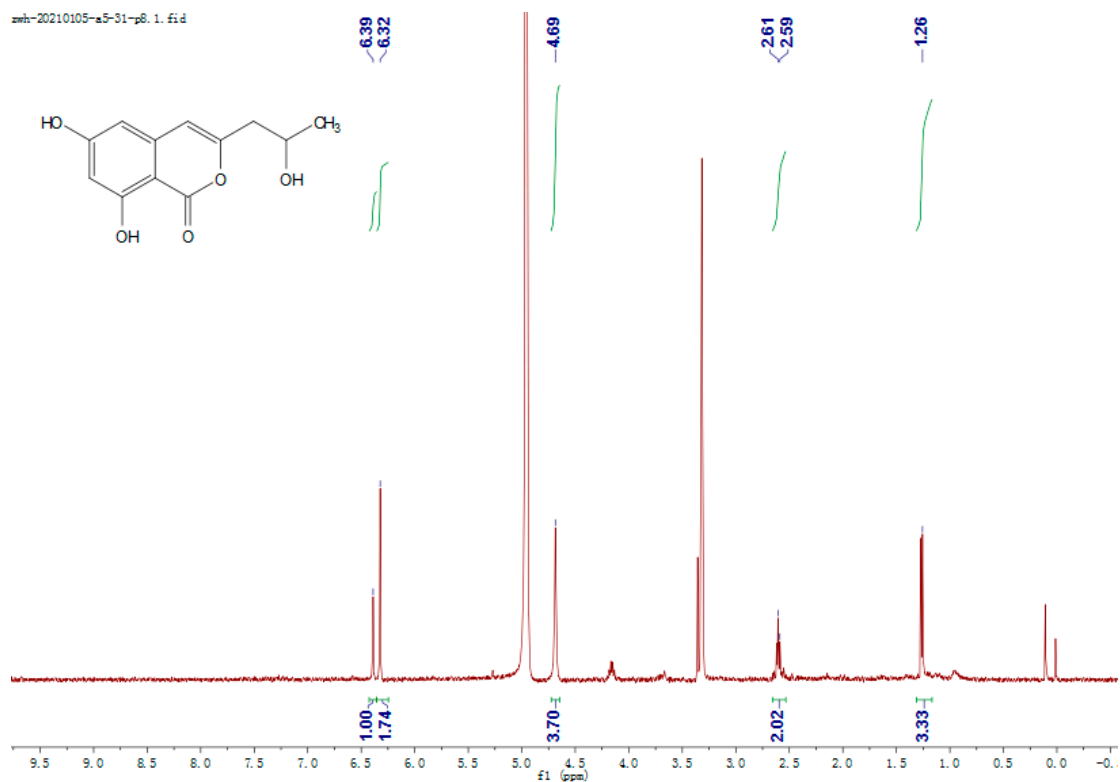


Figure S40. ¹H NMR spectrum of compound **11** in CD₃OD.

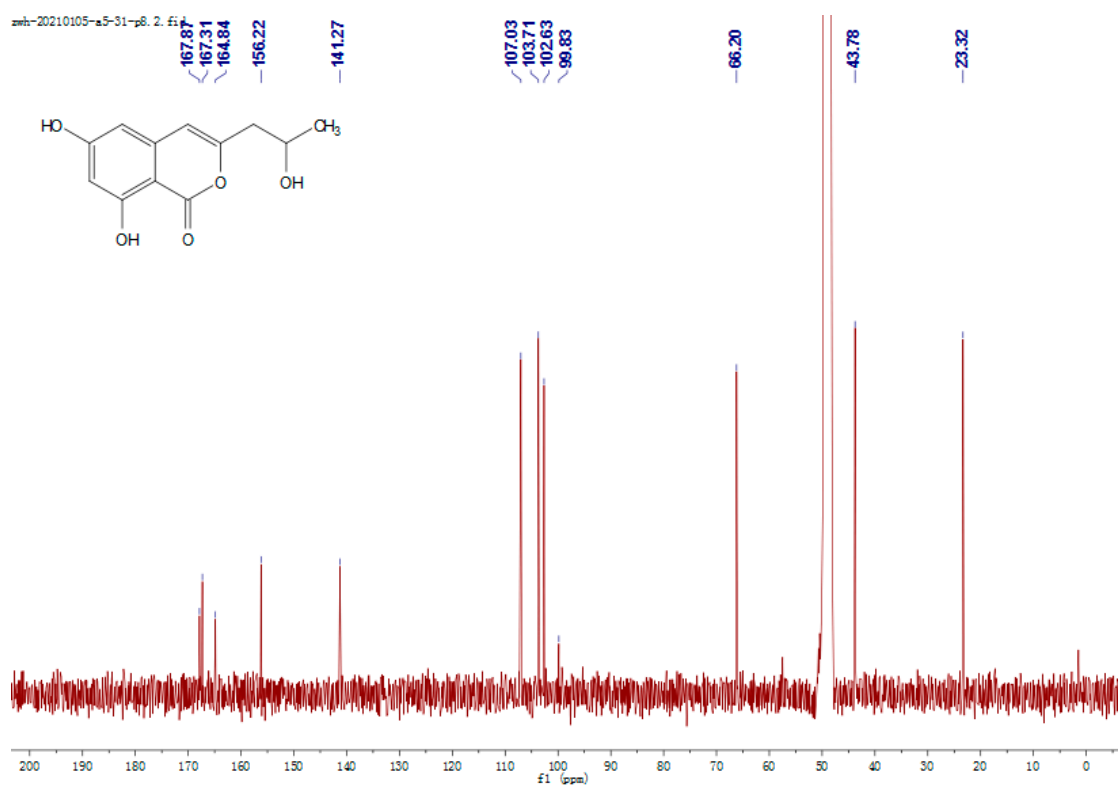


Figure S41. ¹³C NMR spectrum of compound **11** in CD₃OD.