Neocornuside A–D, Four Novel Iridoid Glycosides from Fruits of *Cornus officinalis* and Their Antidiabetic Activity

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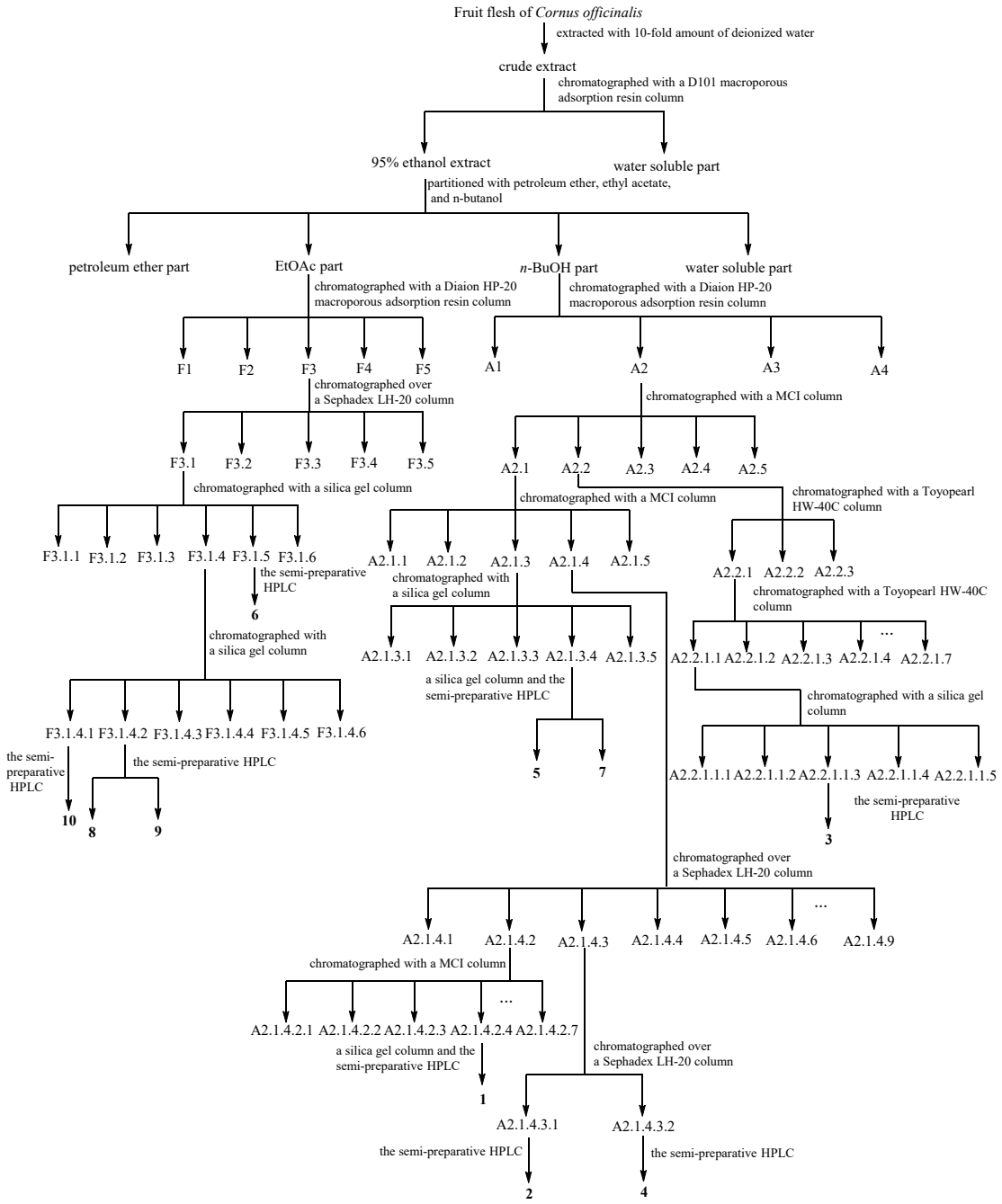


Scheme S1. Extraction and isolation flow chart of compounds **1**–**10** from fruits of *Cornus officinalis*

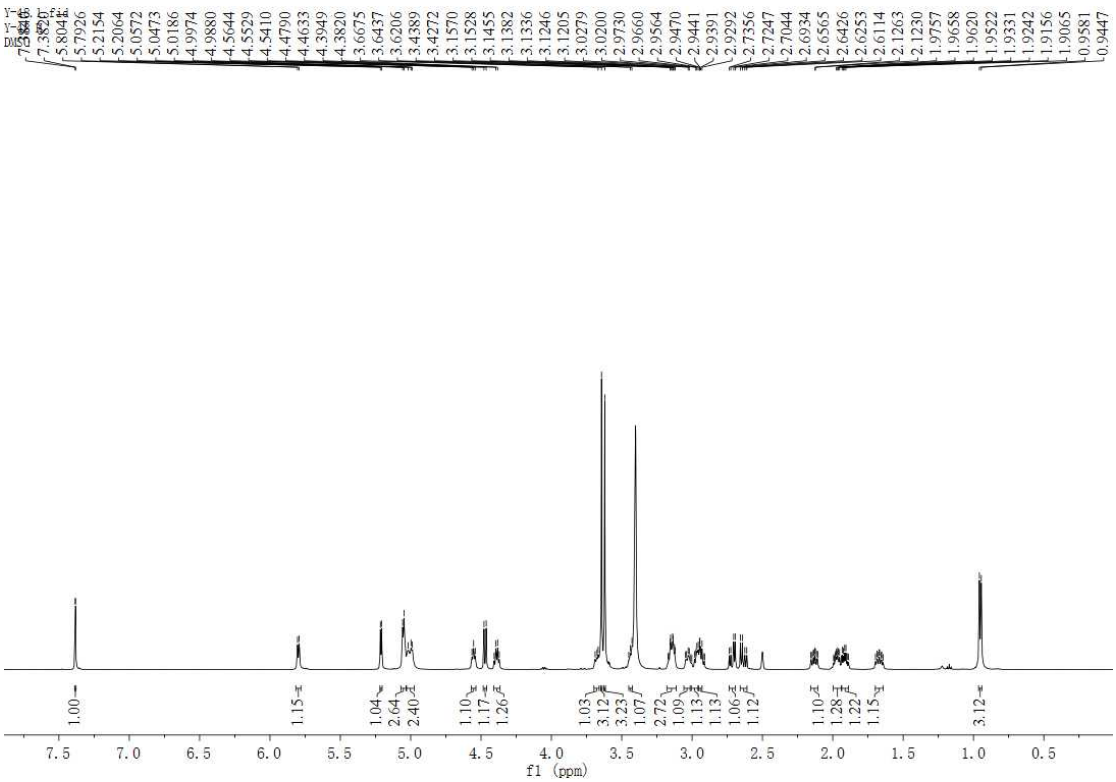


Figure S1. ^{1}H NMR spectrum of compound **1** (500 MHz, DMSO-d_6)

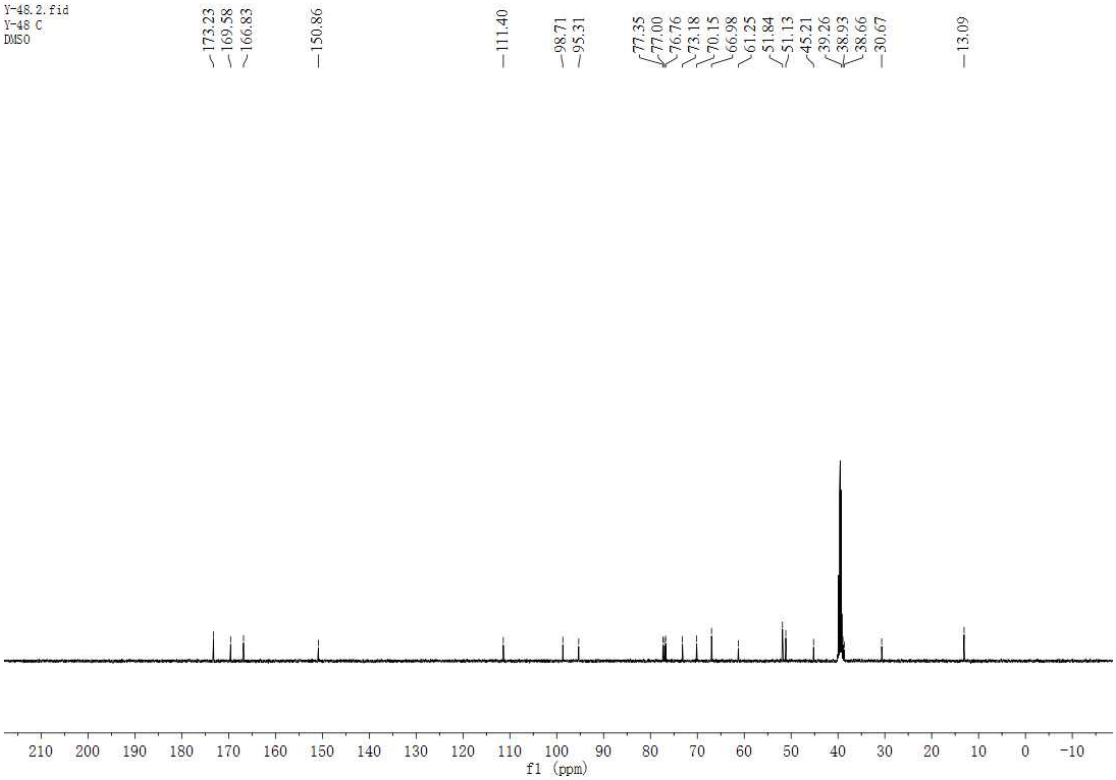


Figure S2. ^{13}C NMR spectrum of compound **1** (125 MHz, DMSO-d_6)

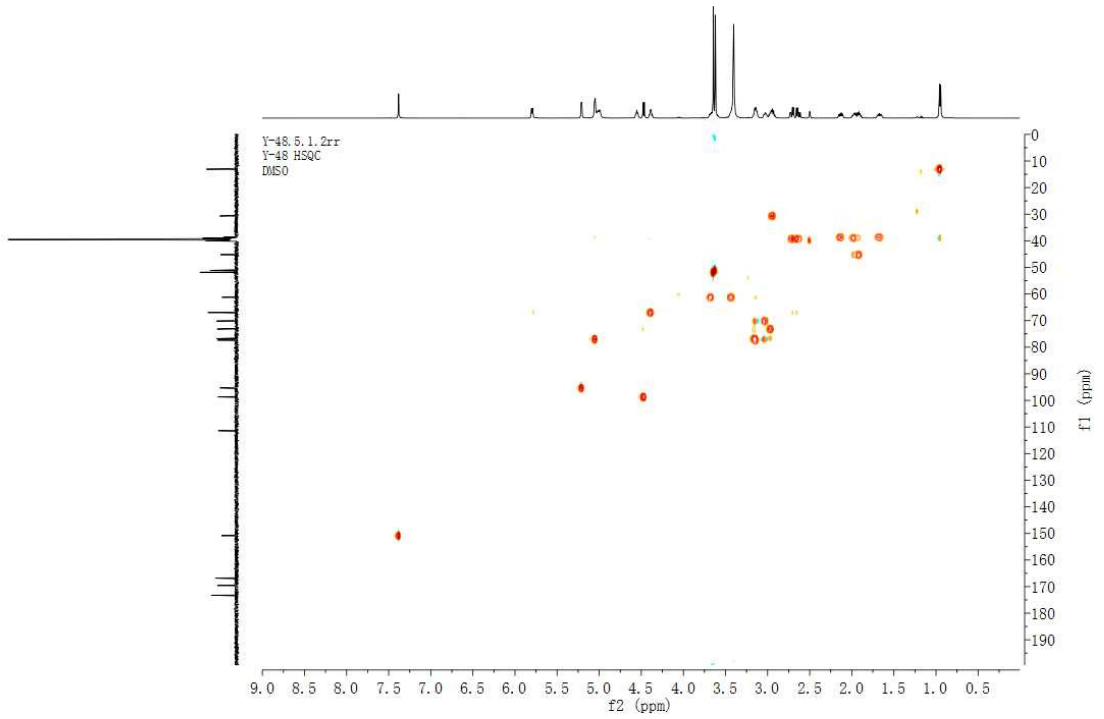


Figure S3. HSQC spectrum of compound **1**

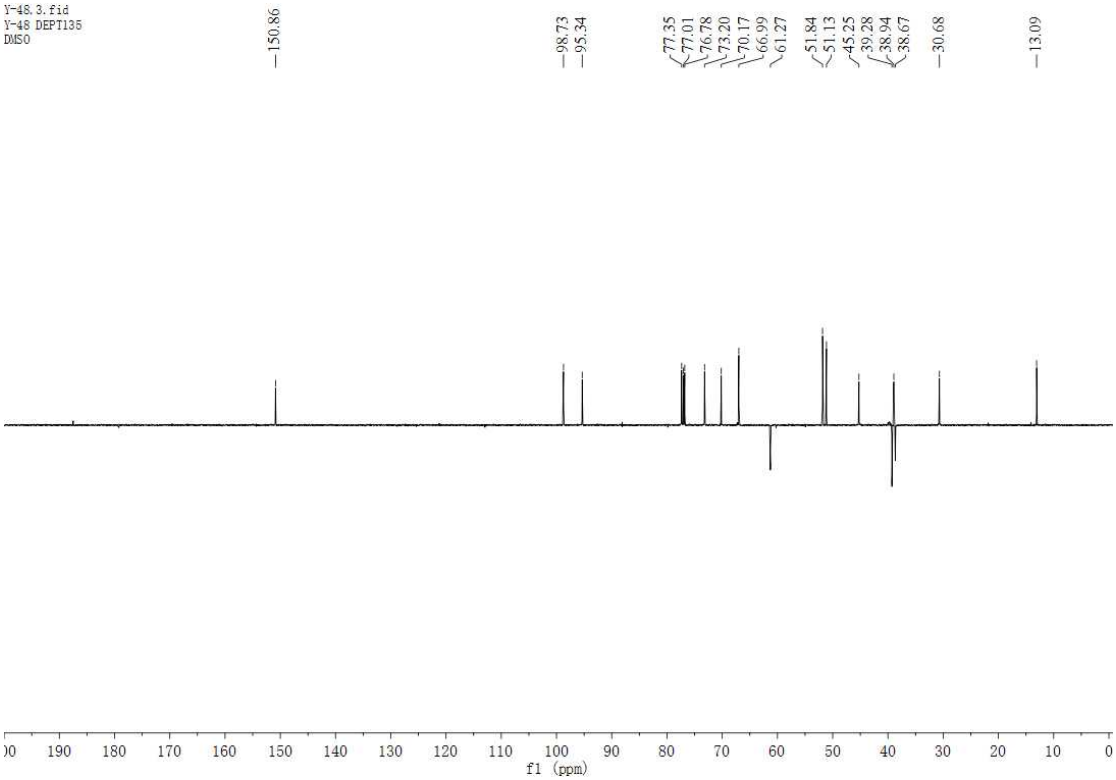


Figure S4. DEPT135 spectrum of compound **1**

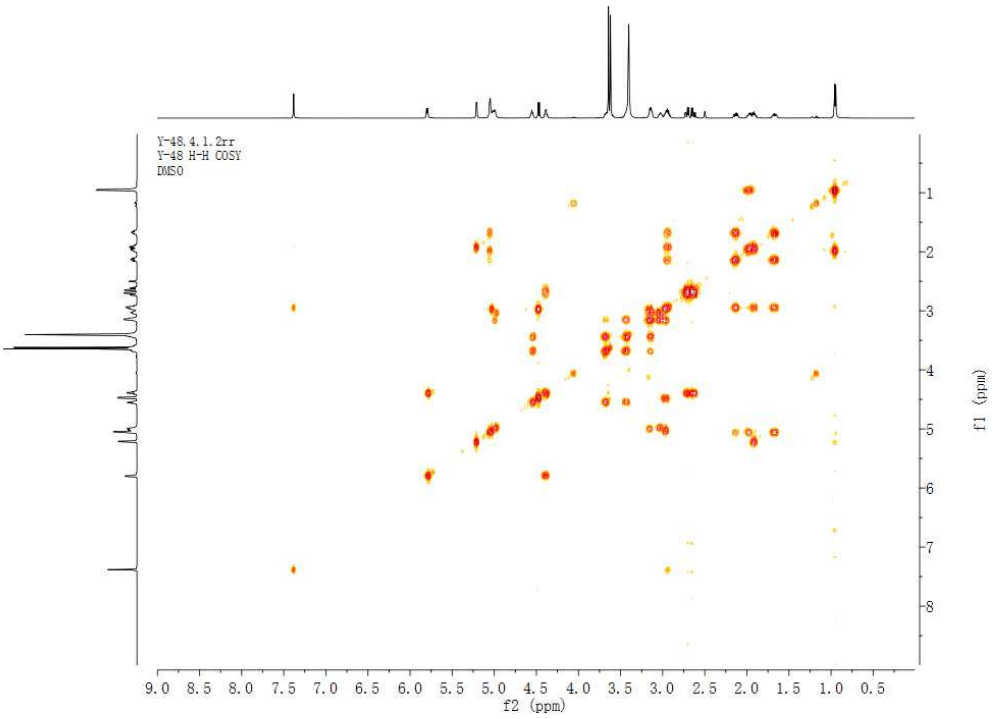


Figure S5. ^{1}H-^{1}H COSY spectrum of compound **1**

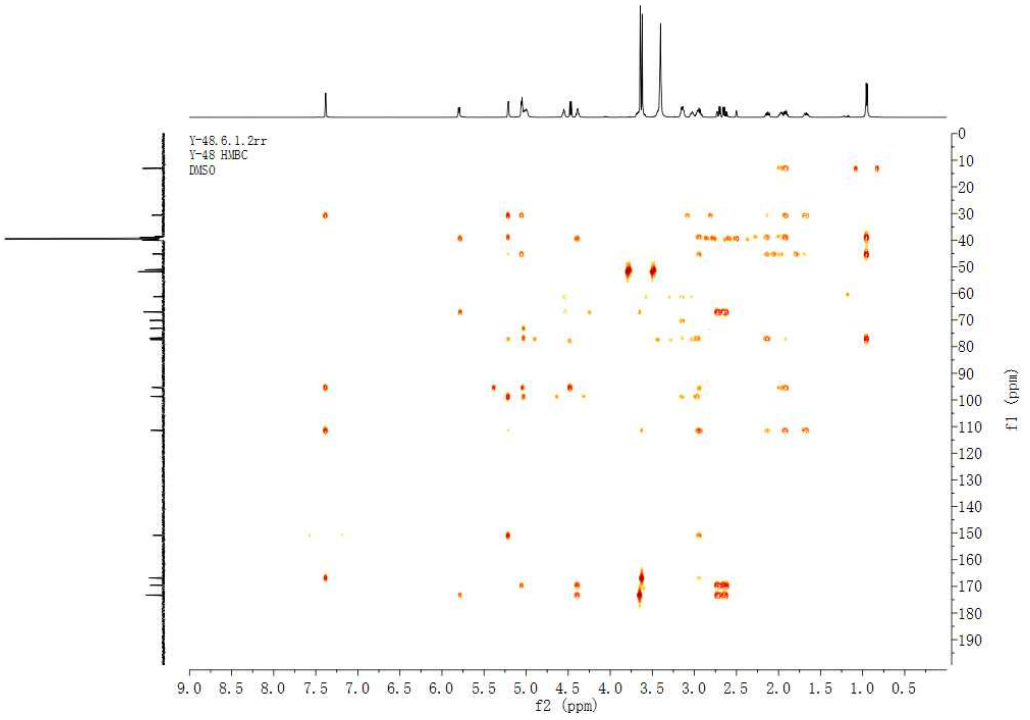


Figure S6. HMBC spectrum of compound **1**

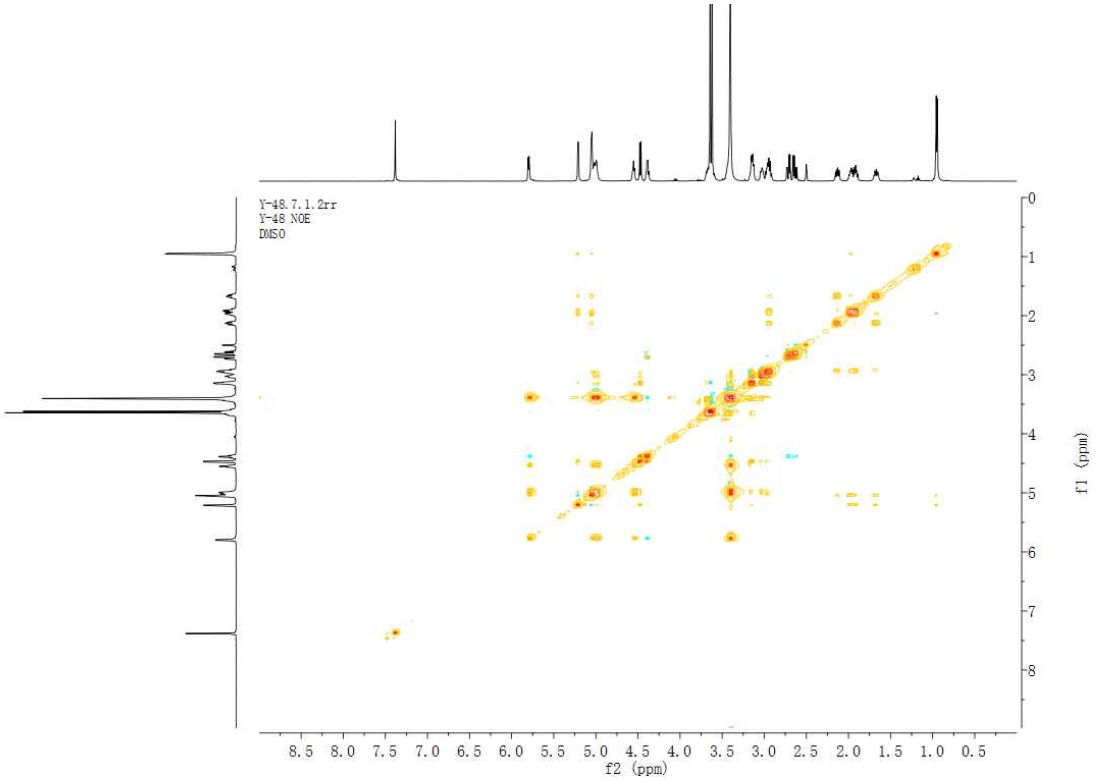
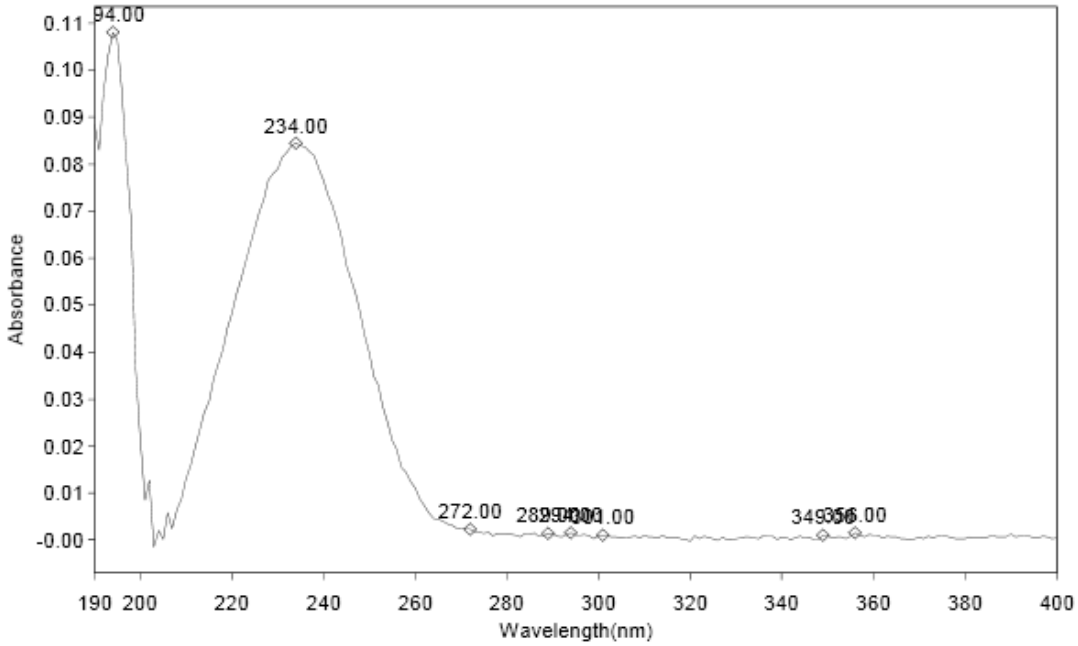


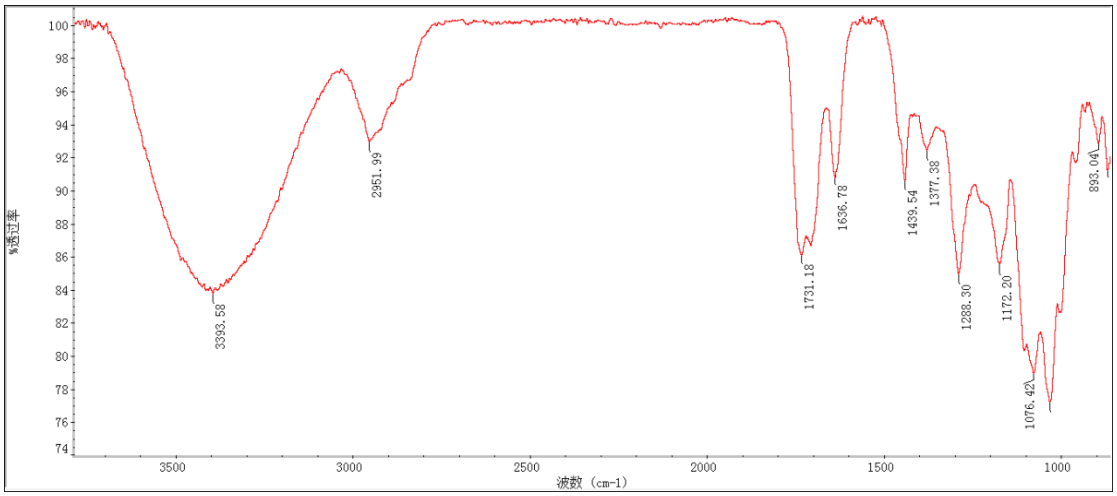
Figure S7. NOESY spectrum of compound **1**



Results Table - Y-48-1.sre,Y-48-1,Cycle01

nm	A	Peak Pick Method	
194.00	.108	Find 8 Peaks Above -3.0000 A	
234.00	.084	Start Wavelength	190.00 nm
272.00	.002	Stop Wavelength	400.00 nm
289.00	.001	Sort By Wavelength	
294.00	.002	Sensitivity	Manual
301.00	.001	Rising Points	2
349.00	.001	Falling Points	2
356.00	.002	Min. Change	0.0000

Figure S8. UV spectrum of compound **1**



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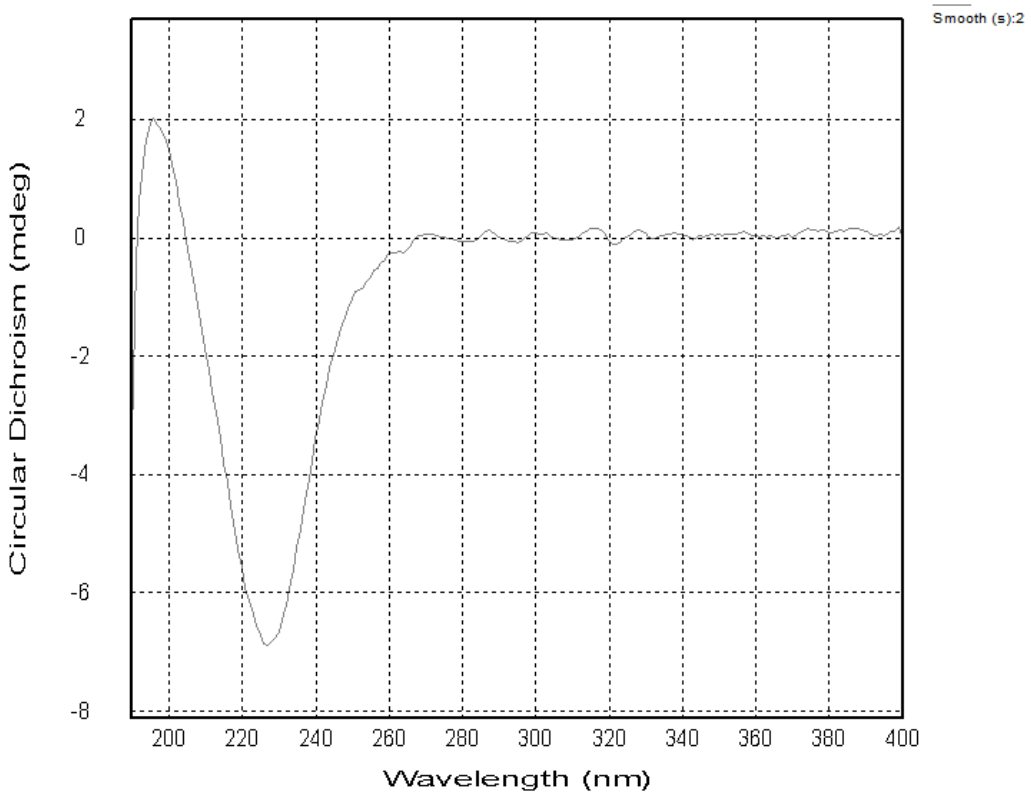


Figure S10. CD spectrum of compound **1**

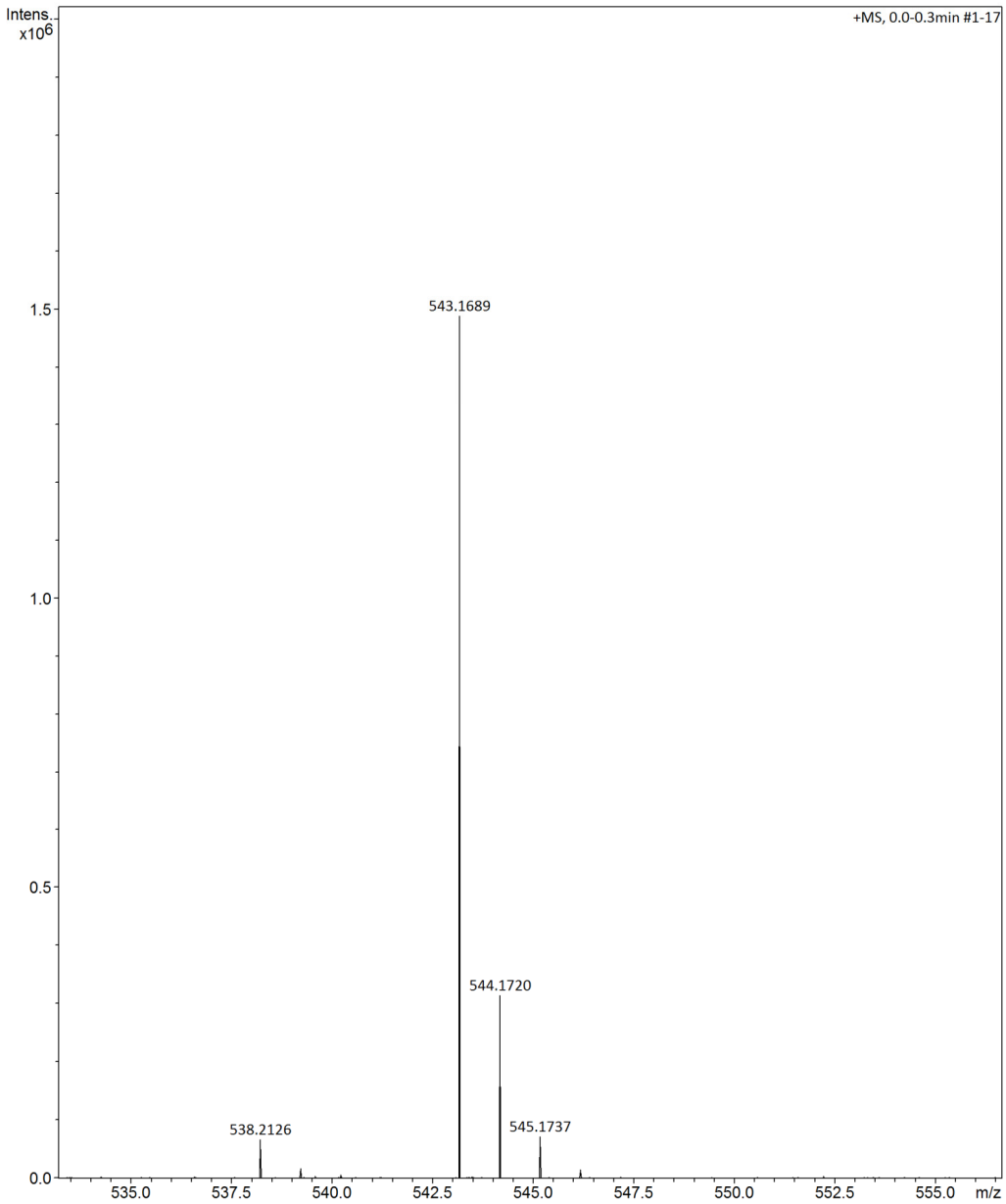


Figure S11. HRESIMS spectrum of compound **1**

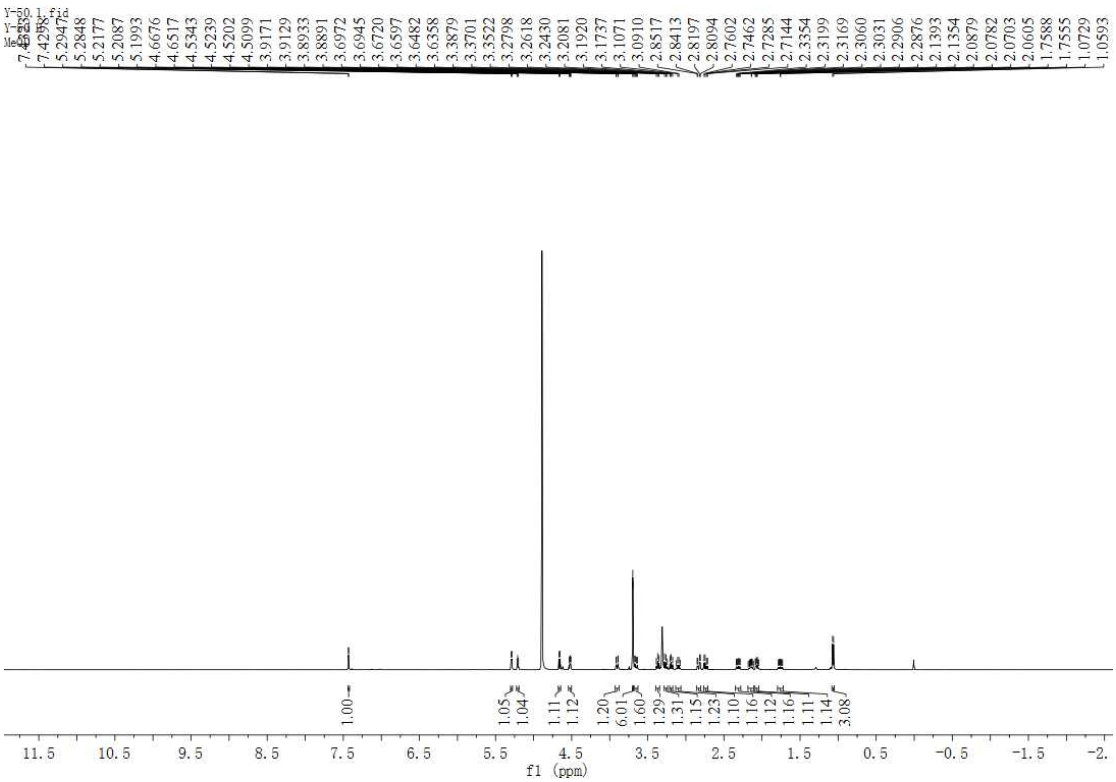


Figure S12. ^{1}H NMR spectrum of compound**2** (500 MHz, MeOD)

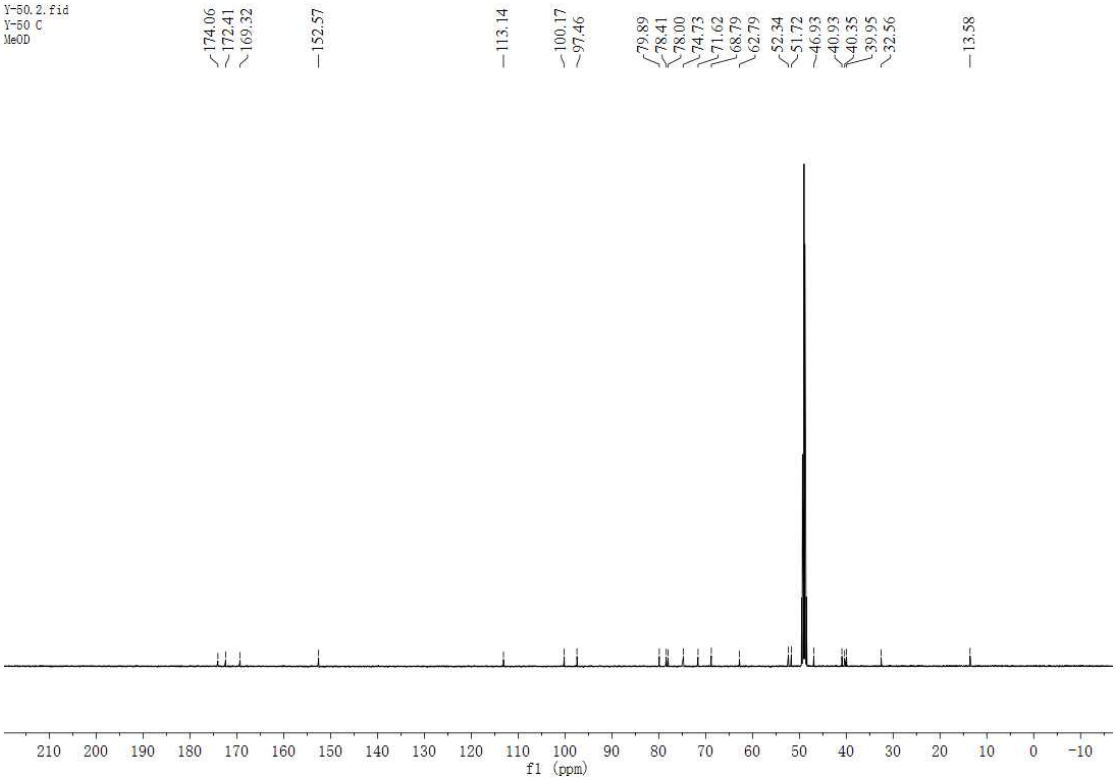


Figure S13. ^{13}C NMR spectrum of compound **2** (125 MHz, MeOD)

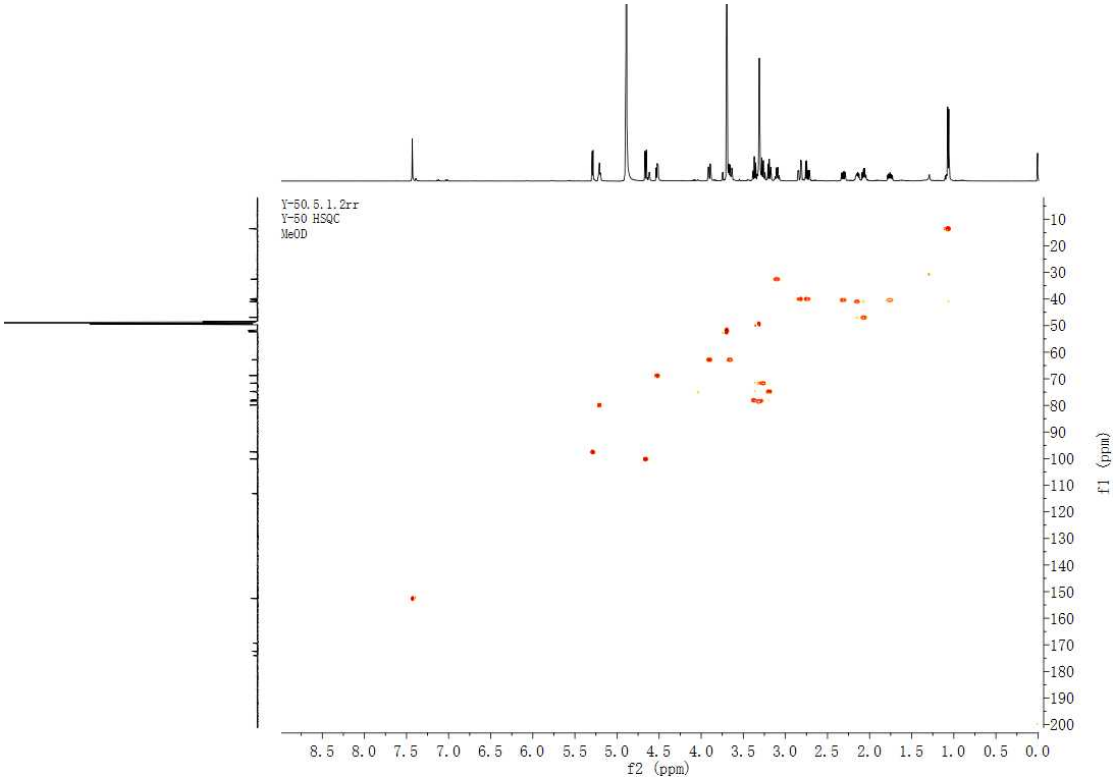


Figure S14. HSQC spectrum of compound **2**

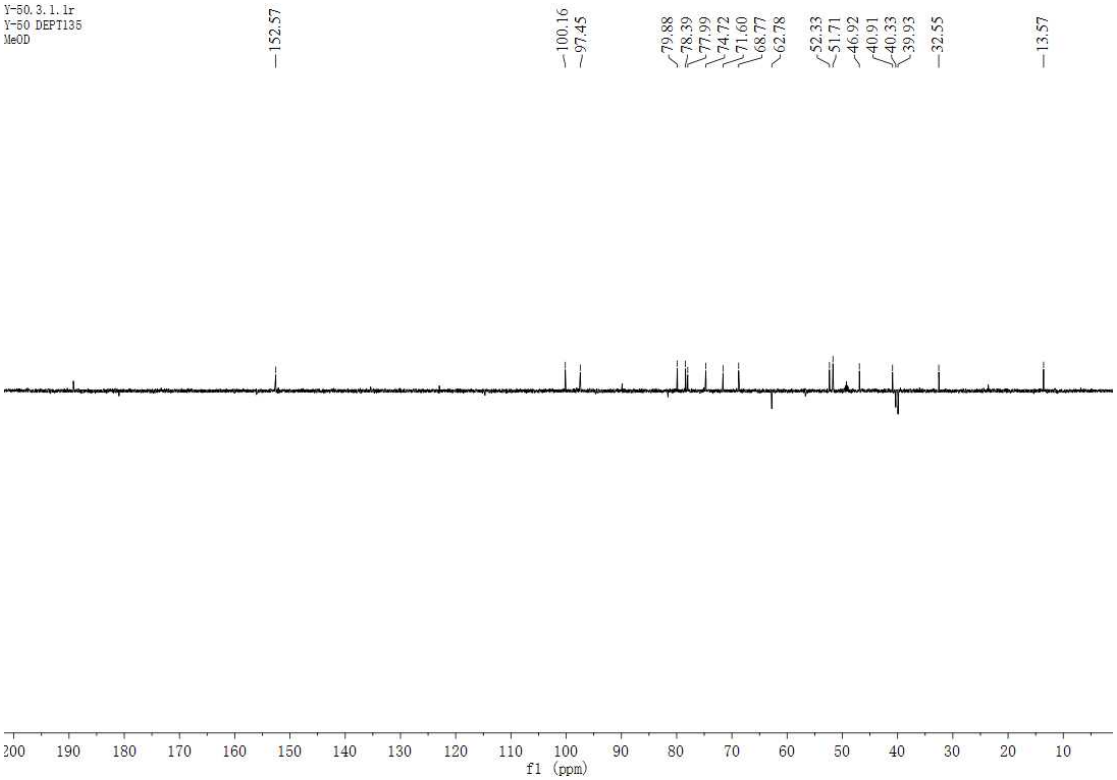


Figure S15. DEPT135 spectrum of compound **2**

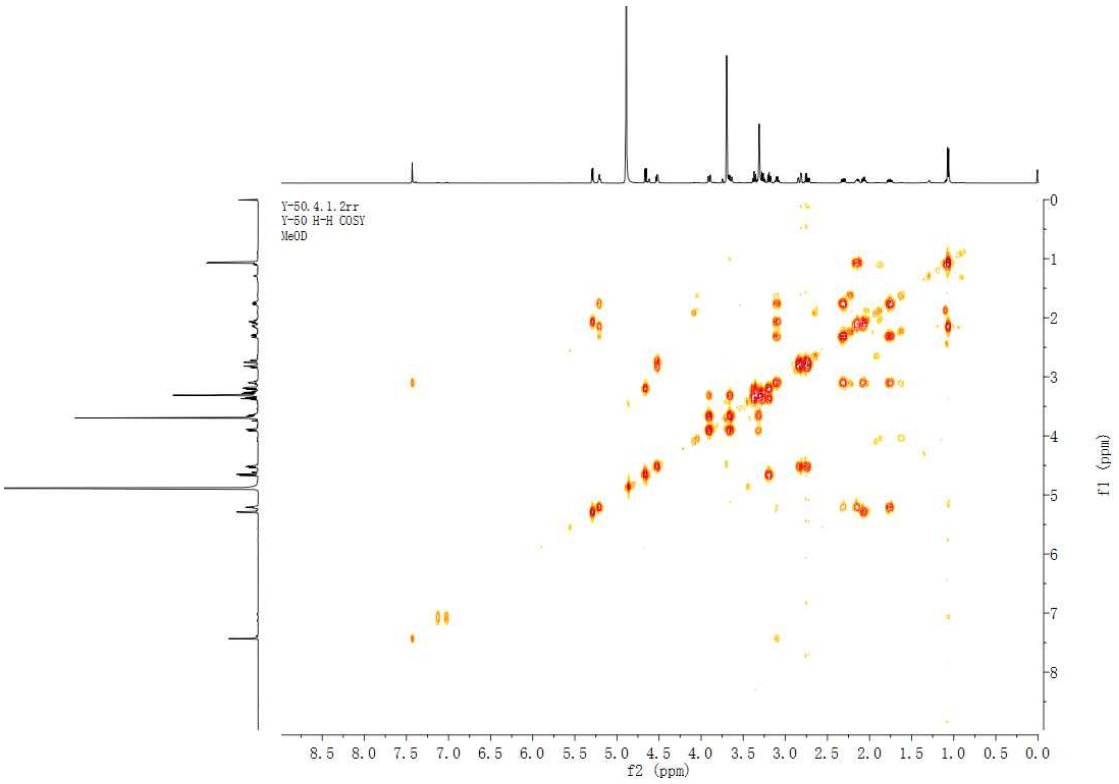


Figure S16. ^{1}H-^{1}H COSY spectrum of compound **2**

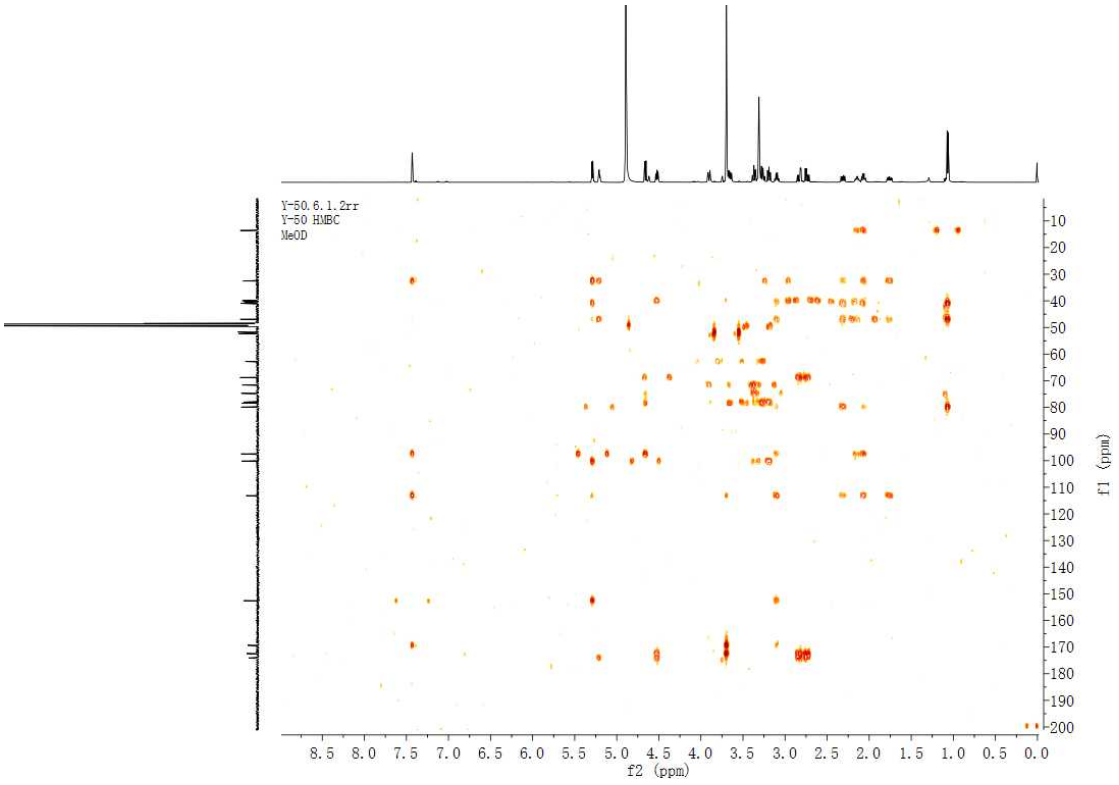


Figure S17. HMBC spectrum of compound **2**

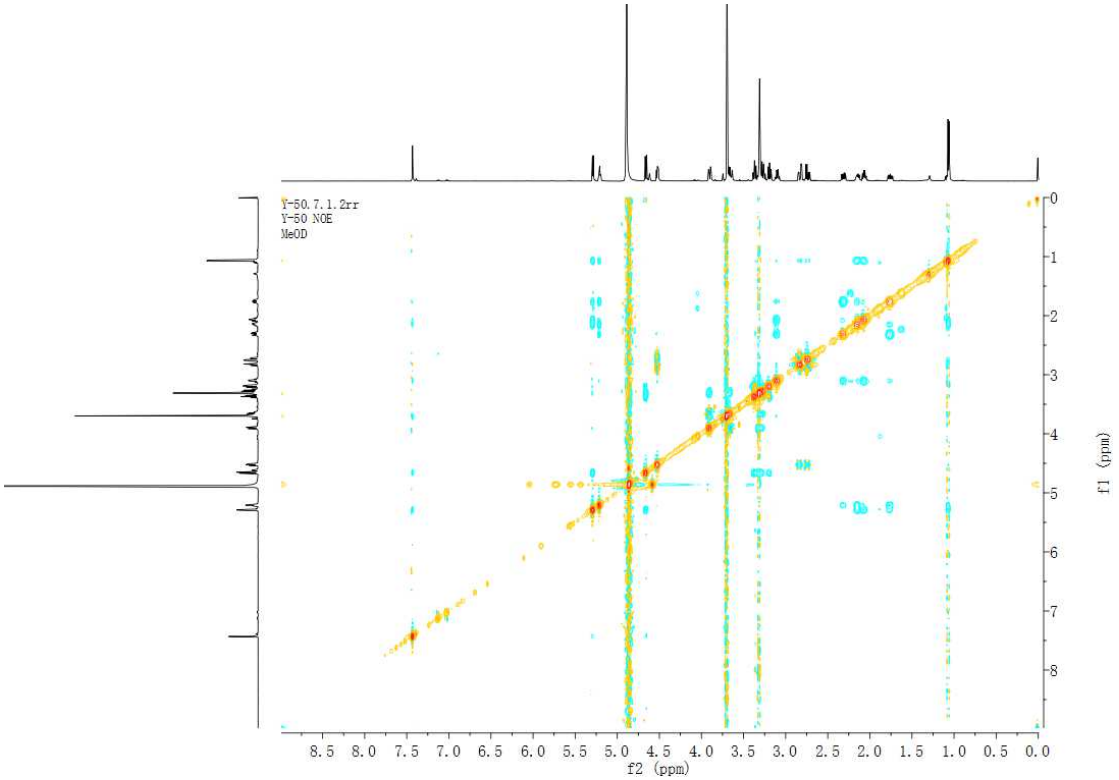
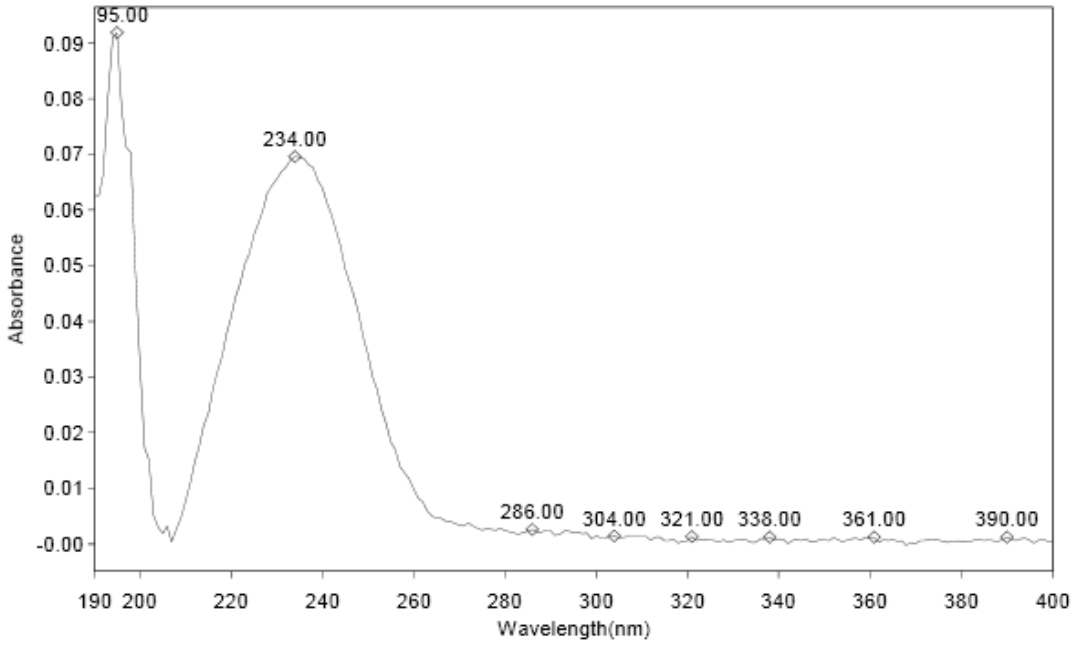


Figure S18. NOESY spectrum of compound **2**



Results Table - Y-50-1.sre,Y-50-1,Cycle01

nm	A	Peak Pick Method	
195.00	.092	Find 8 Peaks Above -3.0000 A	
234.00	.070	Start Wavelength	190.00 nm
286.00	.003	Stop Wavelength	400.00 nm
304.00	.001	Sort By Wavelength	
321.00	.001	Sensitivity	Manual
338.00	.001	Rising Points	2
361.00	.001	Falling Points	2
390.00	.001	Min. Change	0.0000

Figure S19. UV spectrum of compound **2**

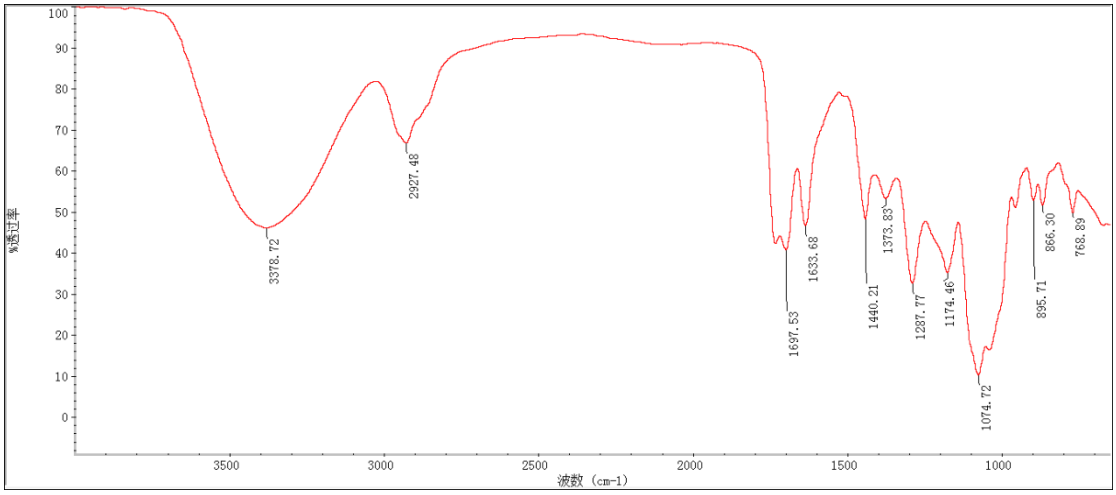


Figure S20. IR spectrum of compound **2**

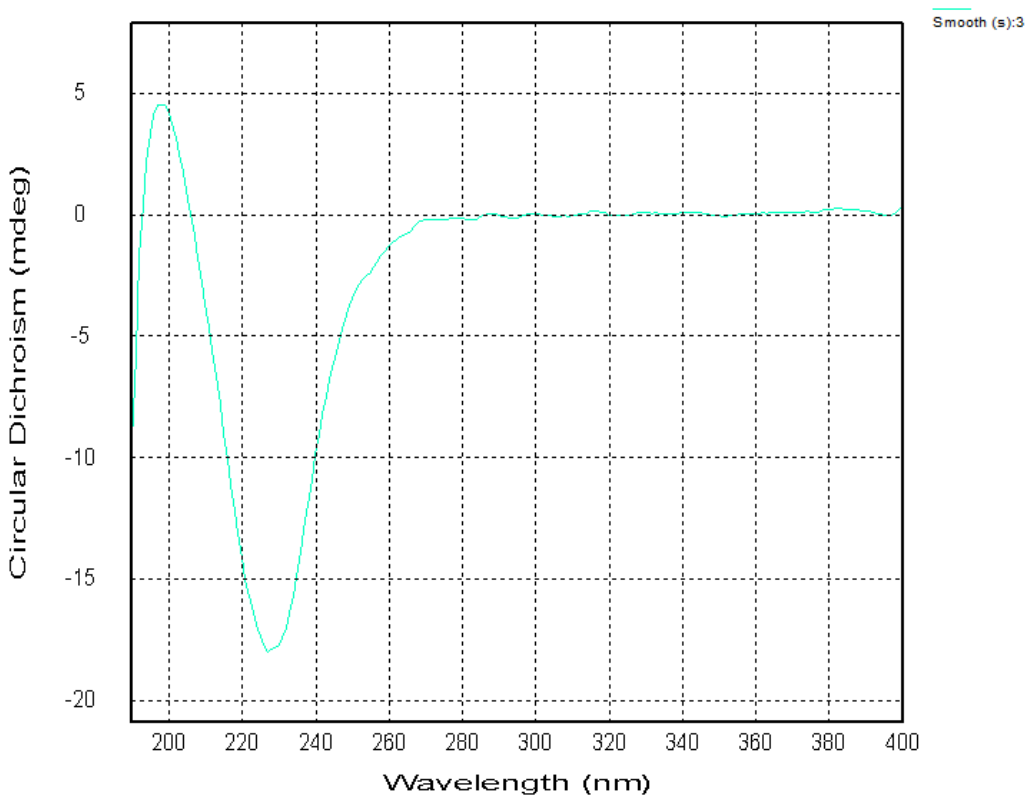


Figure S21. CD spectrum of compound **2**

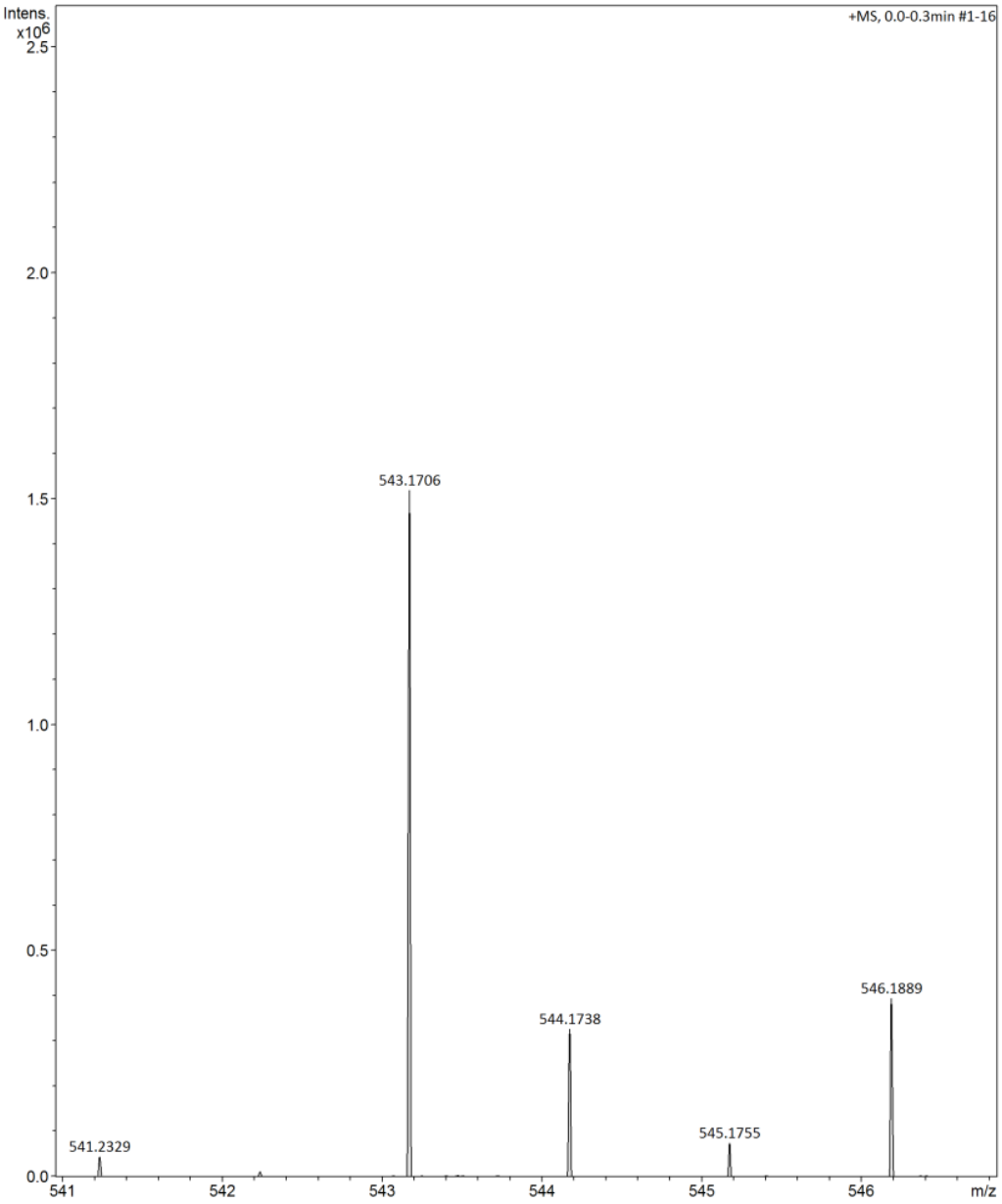


Figure S22. HRESIMS spectrum of compound **2**

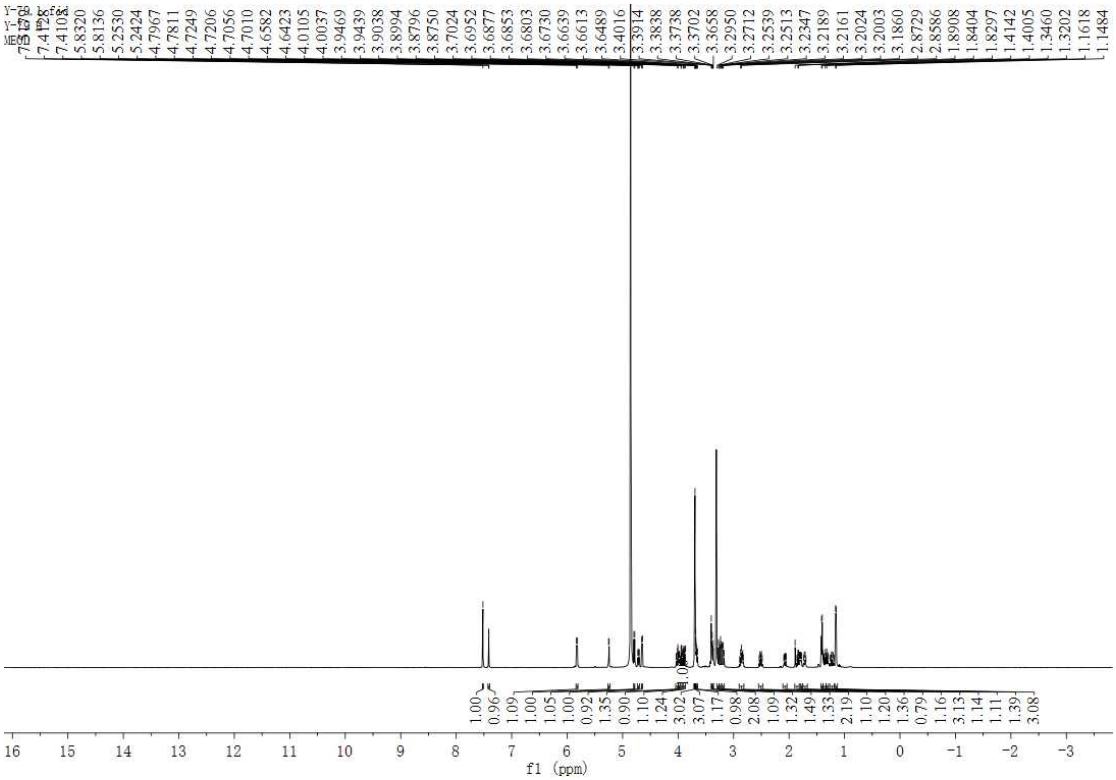


Figure S23. ^{1}H NMR spectrum of compound **3** (500 MHz, MeOD)

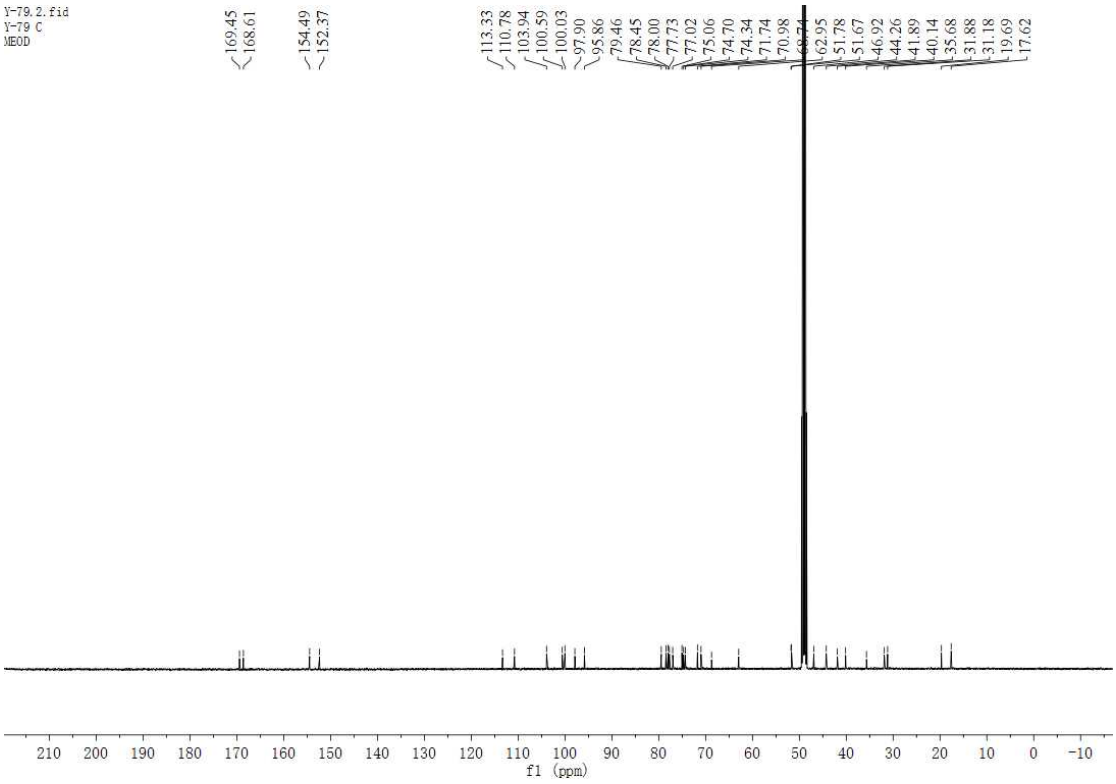


Figure S24. ^{13}C NMR spectrum of compound **3** (125 MHz, MeOD)

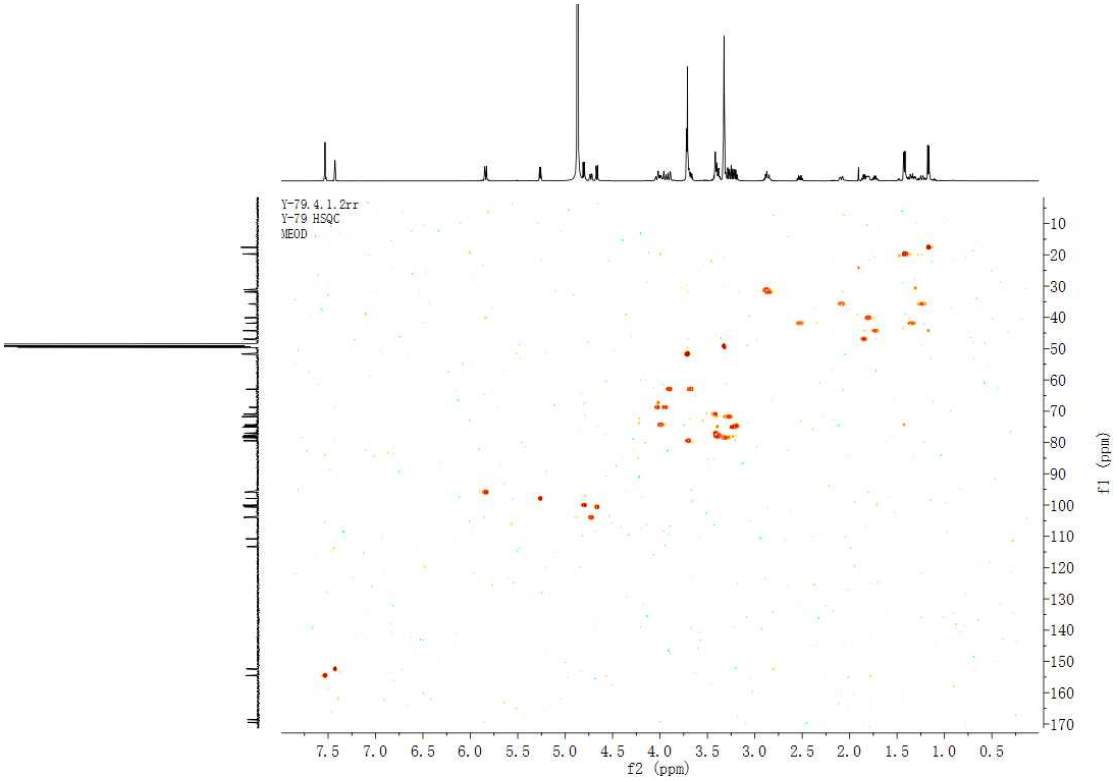


Figure S25. HSQC spectrum of compound **3**

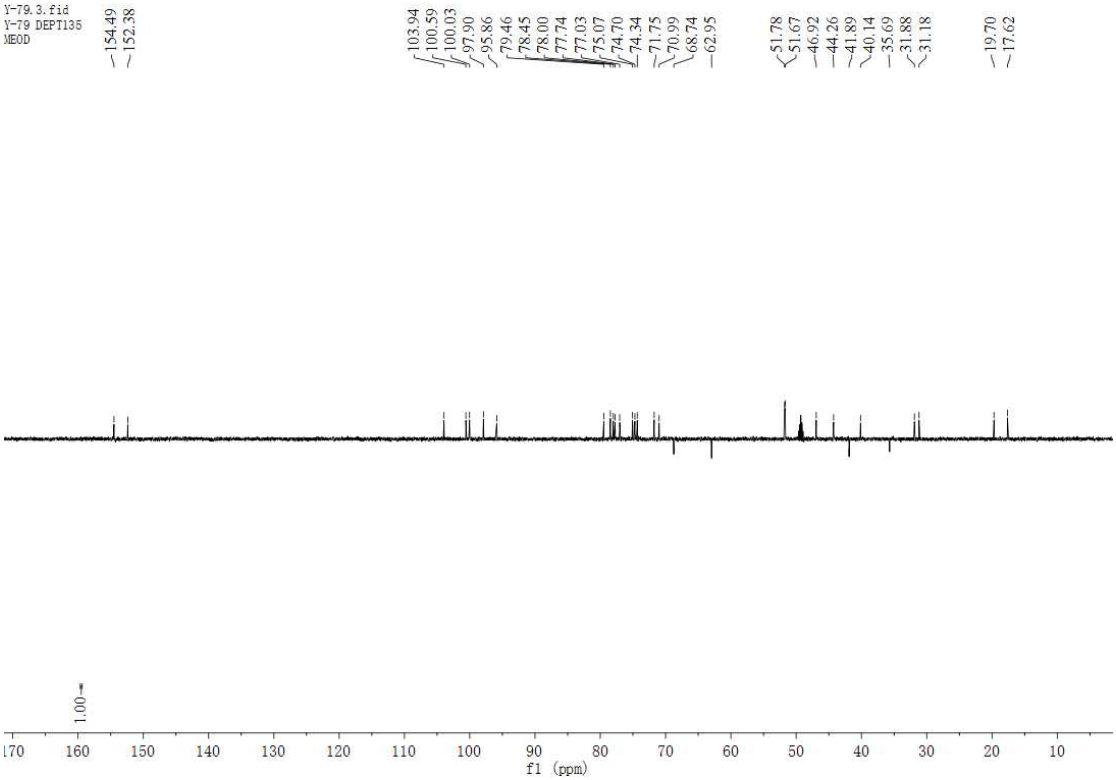


Figure S26. DEPT135 spectrum of compound **3**

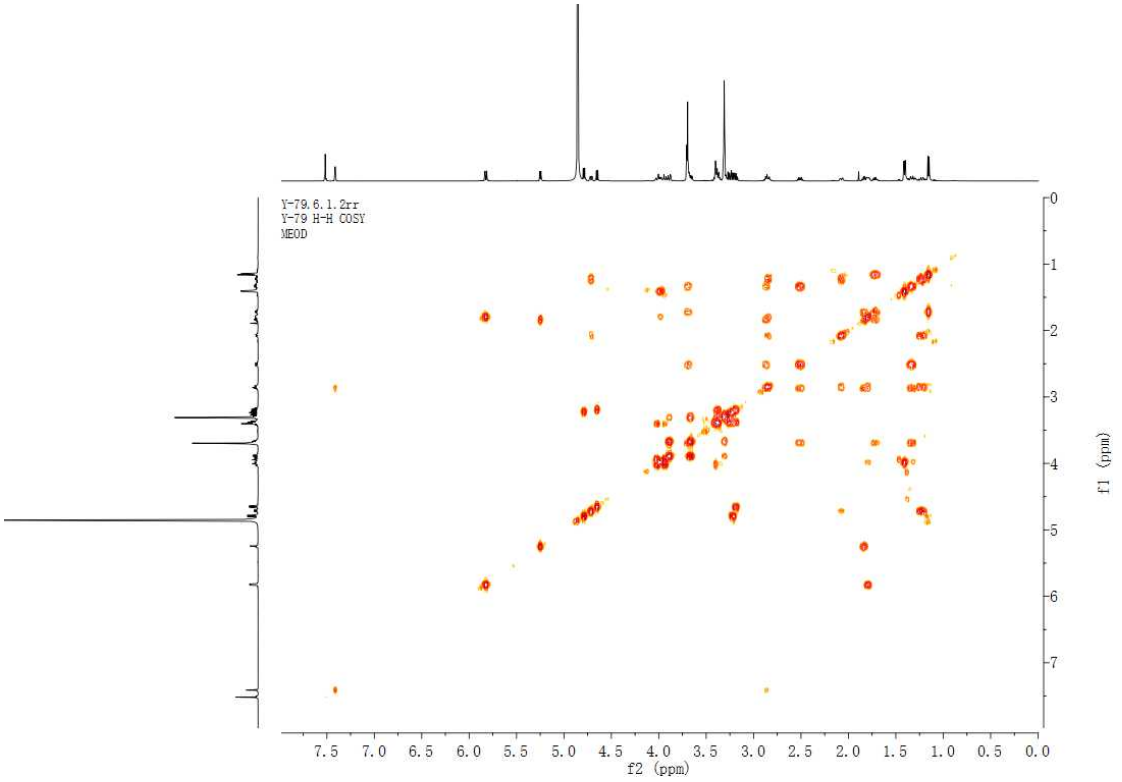


Figure S27. ^{1}H-^{1}H COSY spectrum of compound **3**

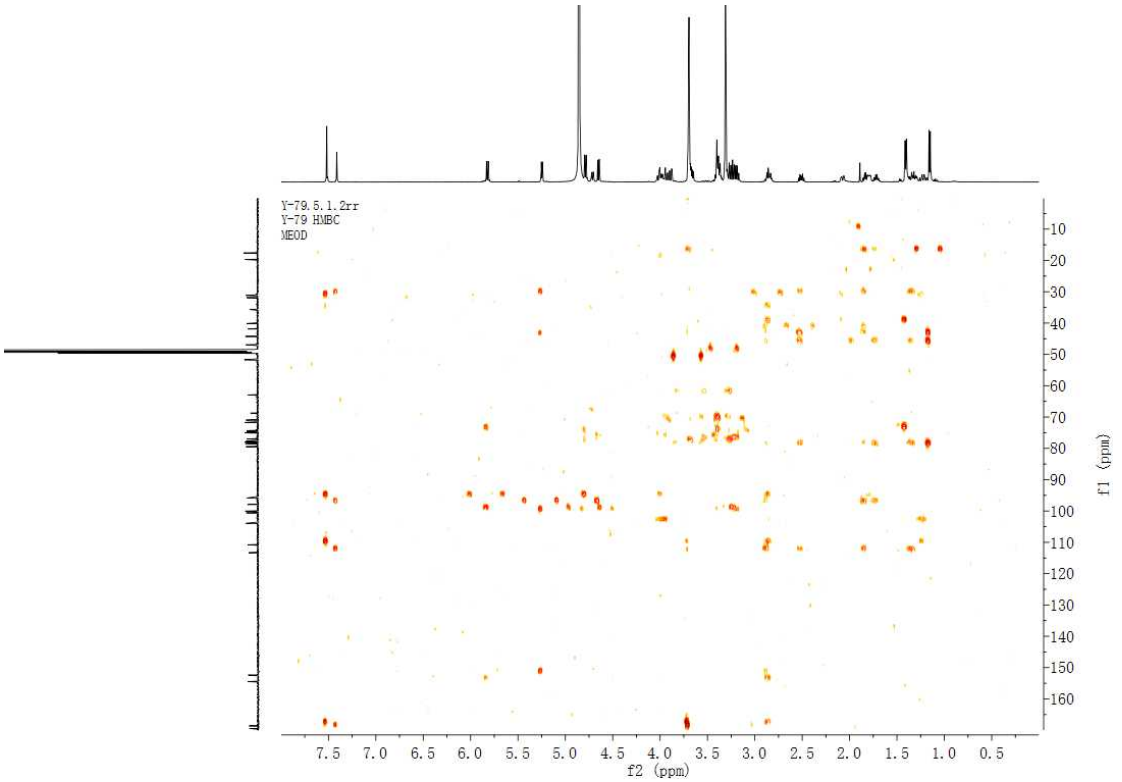


Figure S28. HMBC spectrum of compound **3**

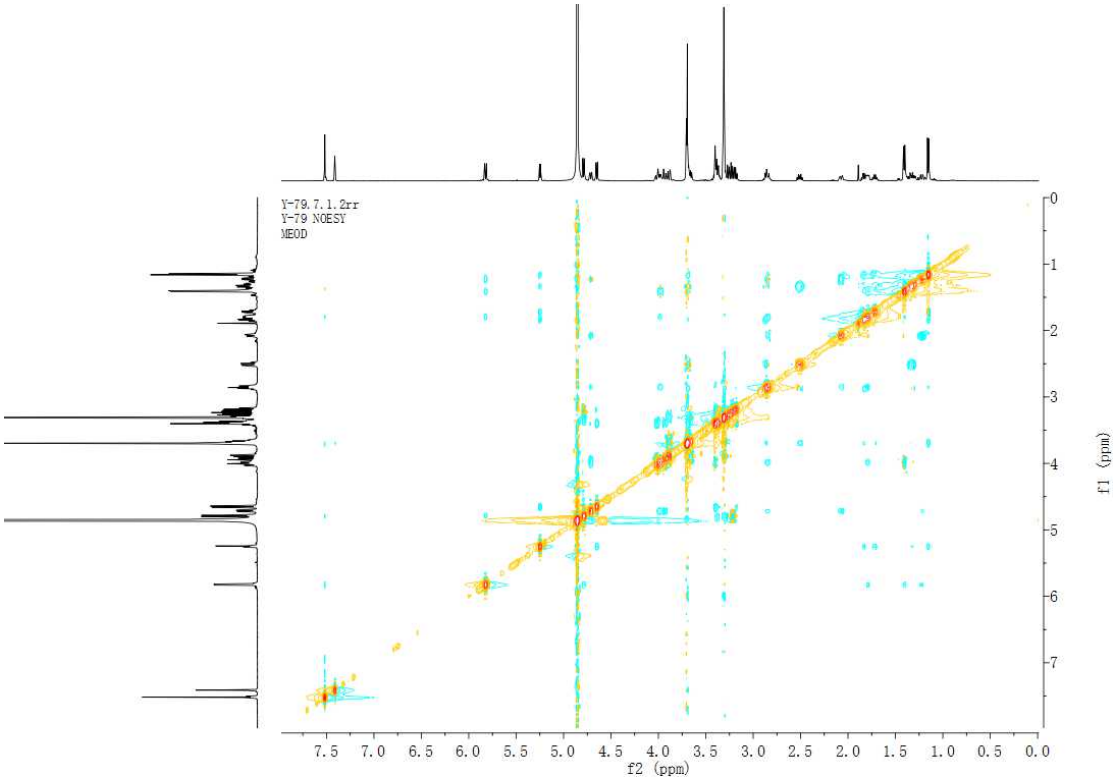
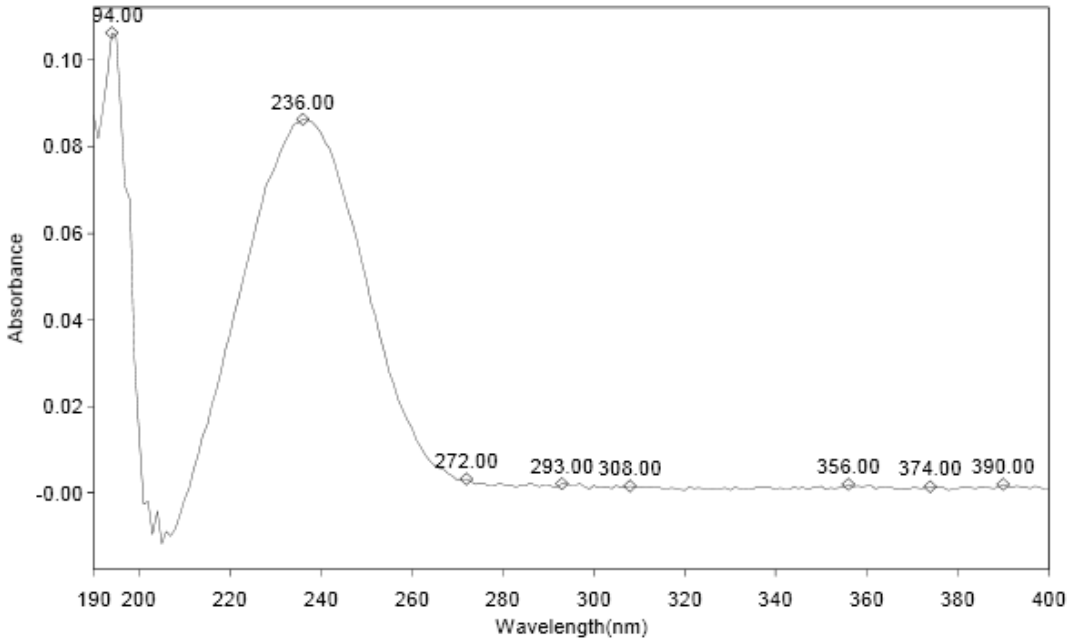


Figure S29. NOESY spectrum of compound **3**



Results Table - Y-79-1.sre,Y-79-1,Cycle01

nm	A	Peak Pick Method	
194.00	.106	Find 8 Peaks Above -3.0000 A	
236.00	.086	Start Wavelength	190.00 nm
272.00	.003	Stop Wavelength	400.00 nm
293.00	.002	Sort By Wavelength	
308.00	.002	Sensitivity	Manual
356.00	.002	Rising Points	2
374.00	.002	Falling Points	2
390.00	.002	Min. Change	0.0000

Figure S30. UV spectrum of compound **3**

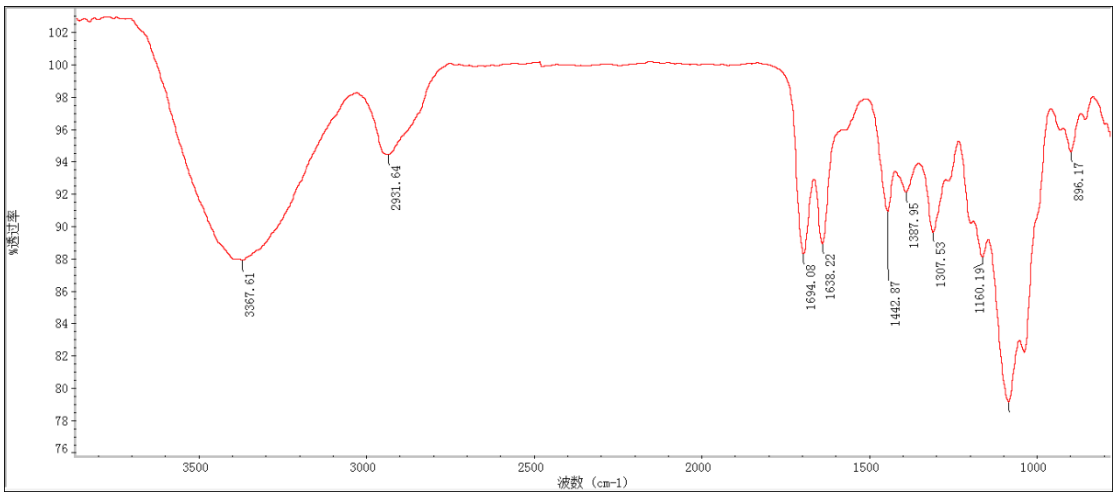


Figure S31. IR spectrum of compound **3**

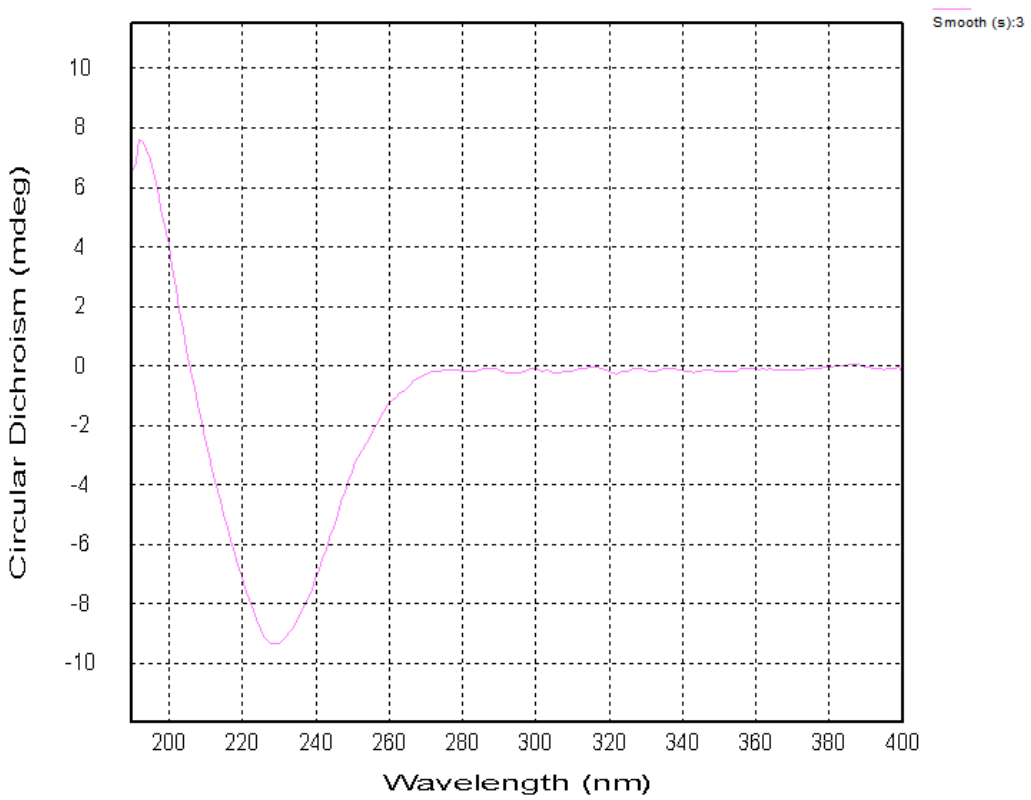


Figure S32. CD spectrum of compound **3**

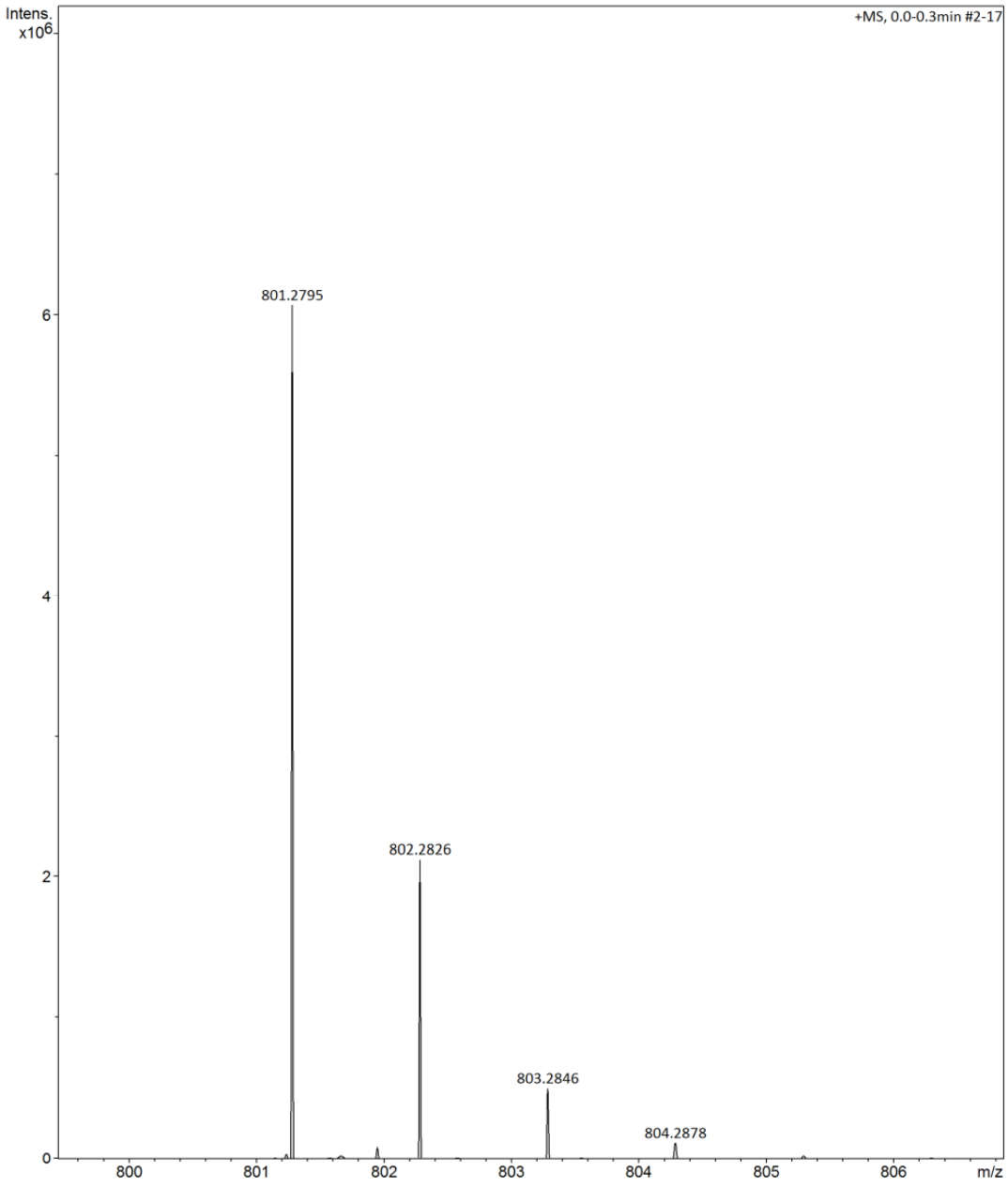


Figure S33. HRESIMS spectrum of compound **3**

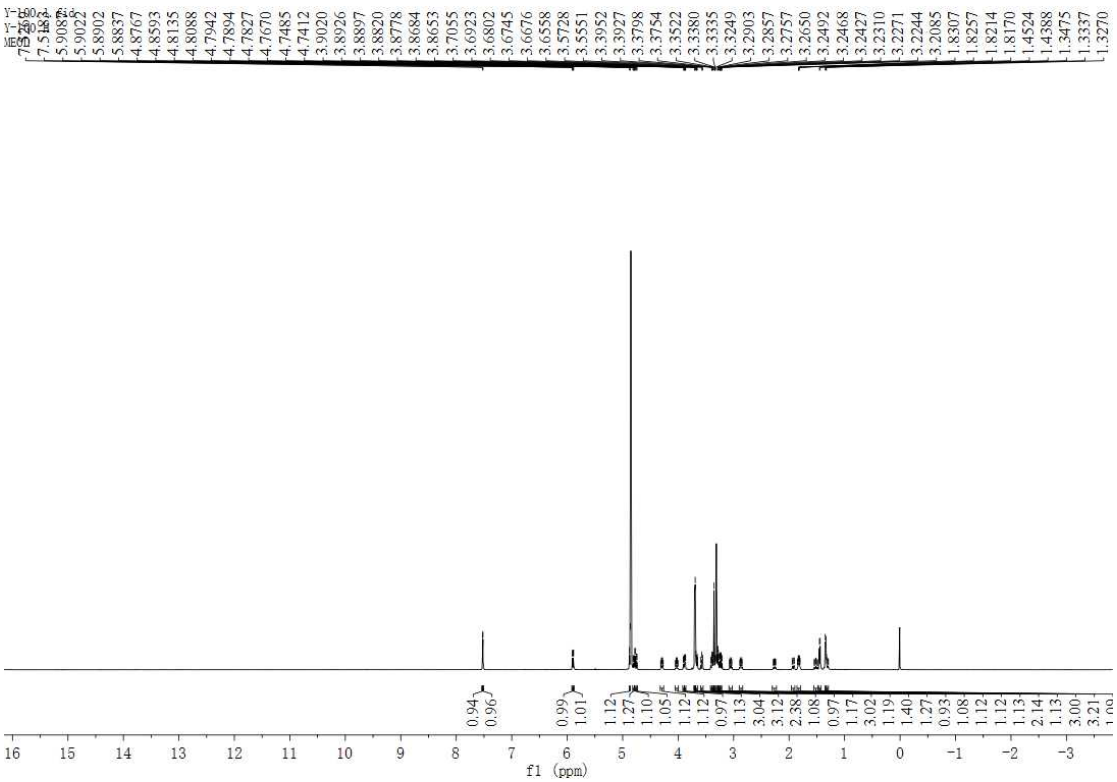


Figure S34. ^{1}H NMR spectrum of compound **4** (500 MHz, MeOD)

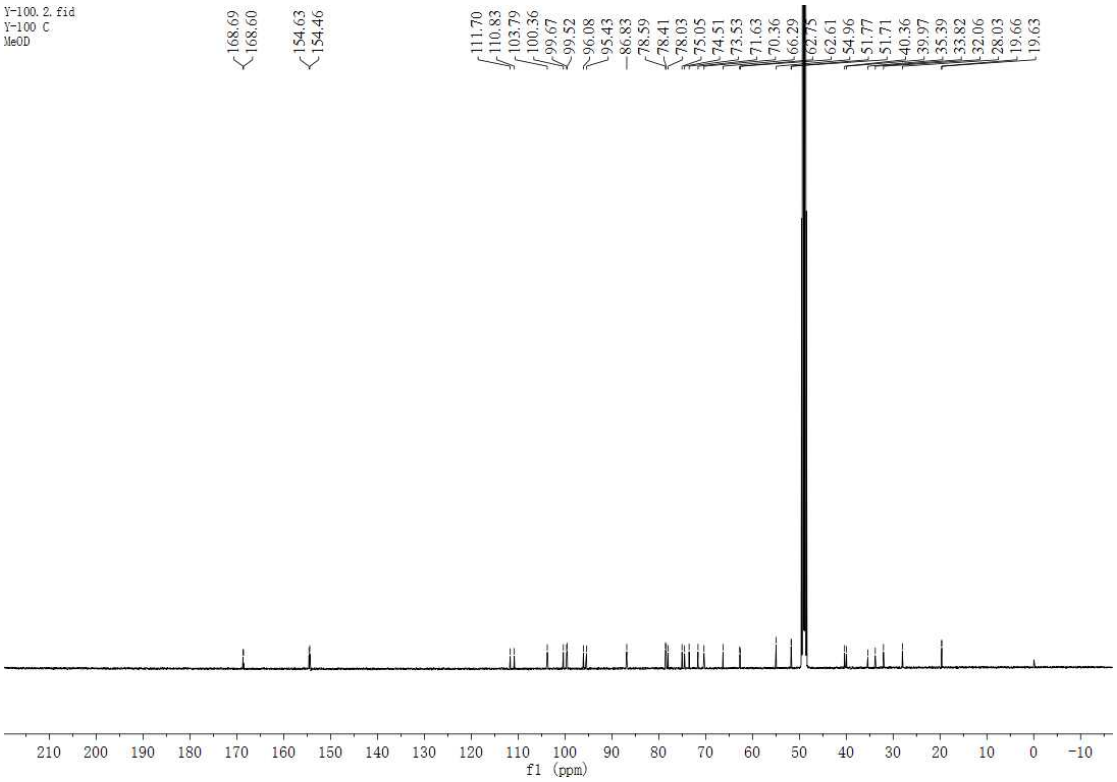


Figure S35. ^{13}C NMR spectrum of compound **4** (125 MHz, MeOD)

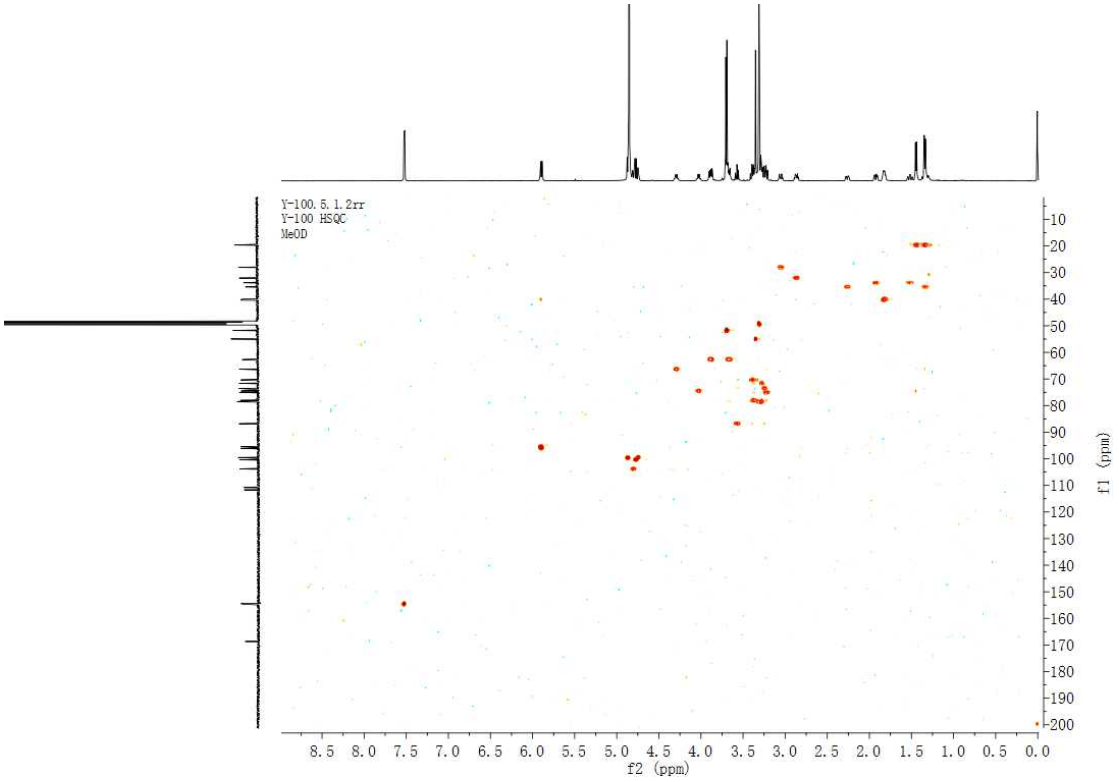


Figure S36. HSQC spectrum of compound **4**

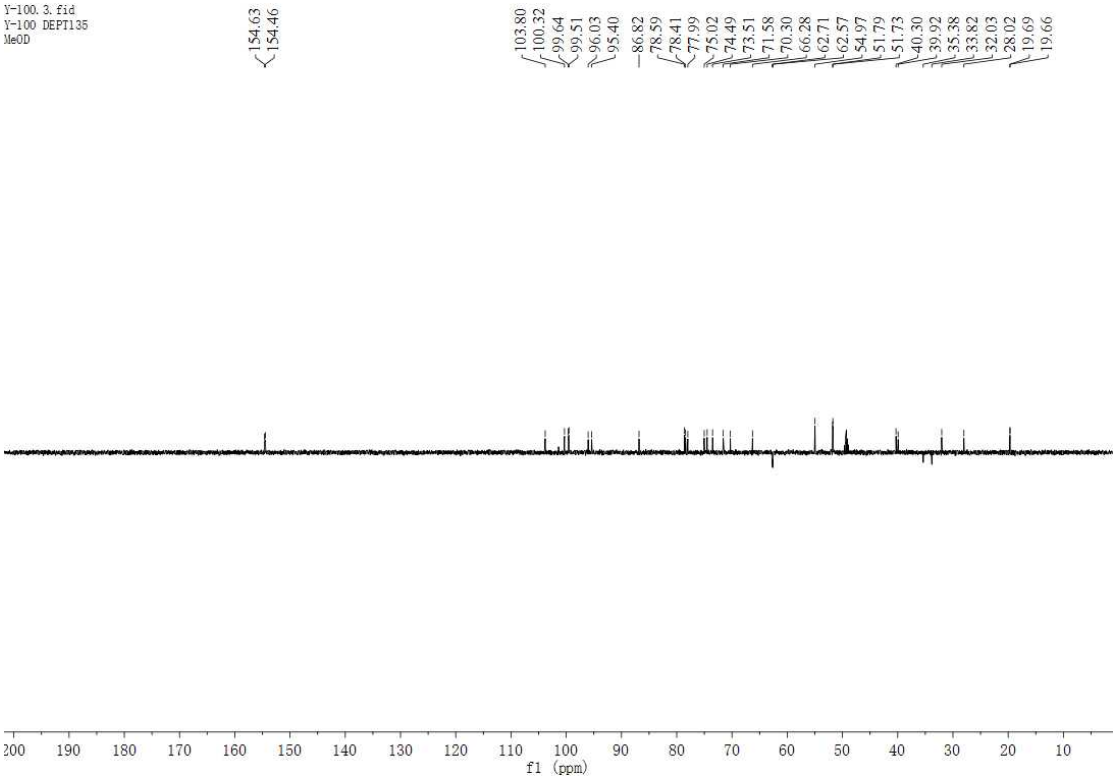


Figure S37. DEPT135 spectrum of compound **4**

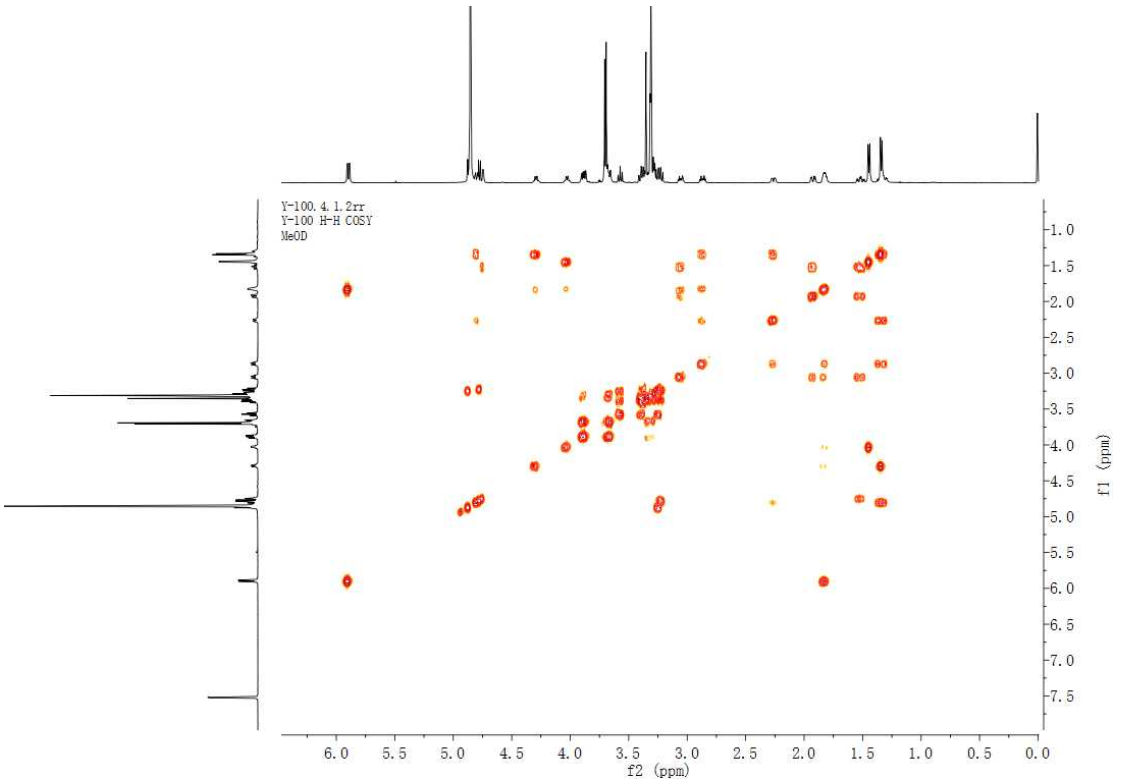


Figure S38. ^{1}H-^{1}H COSY spectrum of compound **4**

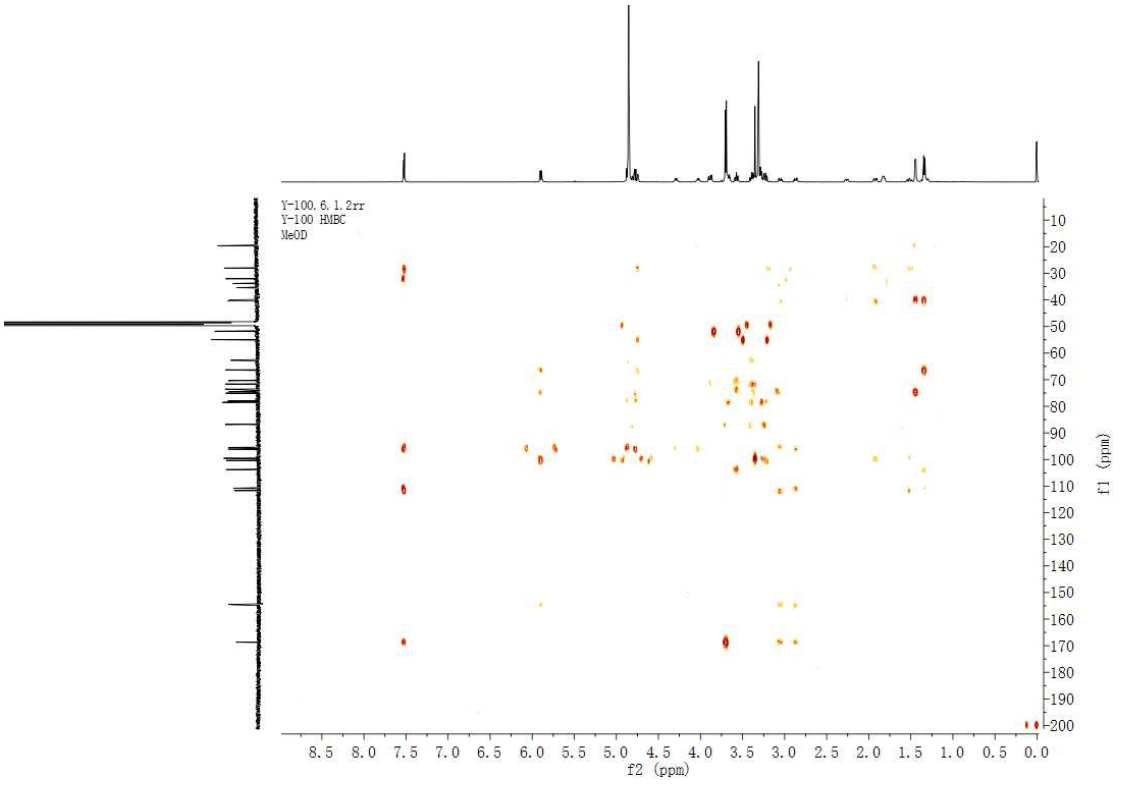


Figure S39. HMBC spectrum of compound **4**

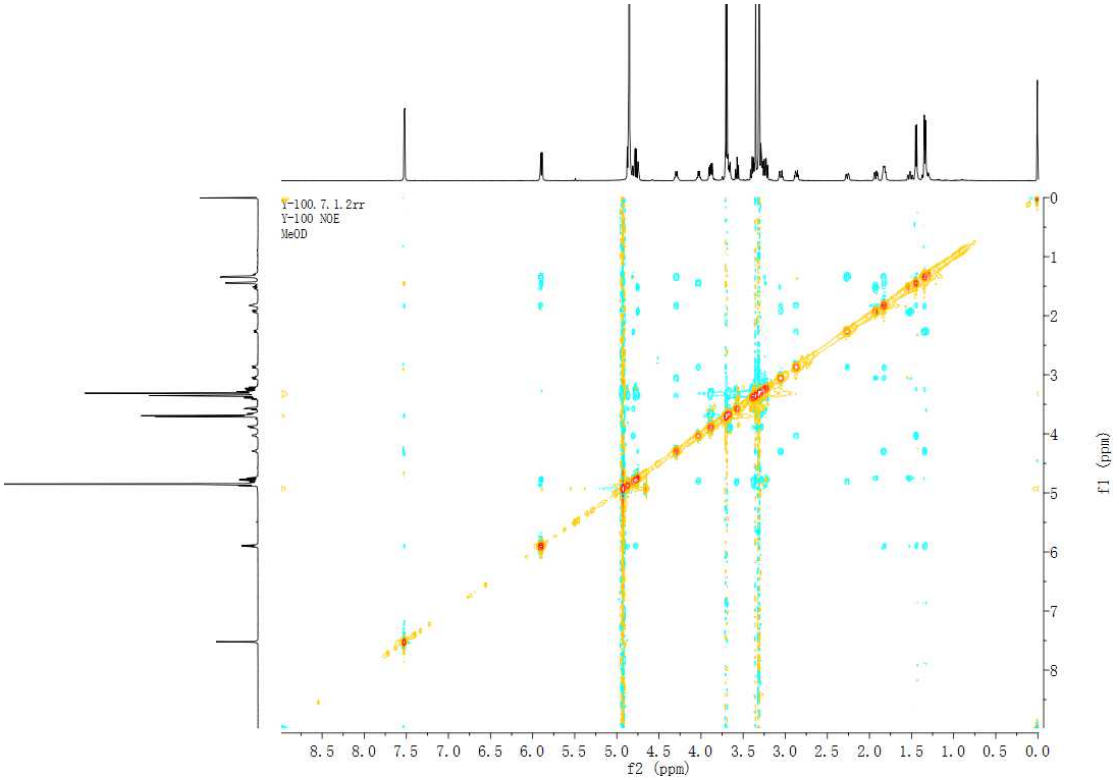
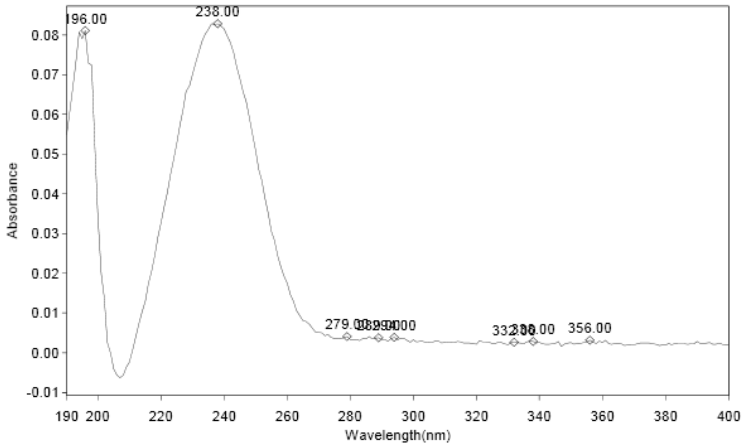


Figure S40. NOESY spectrum of compound **4**



Results Table - Y-100-1.sre,Y-100-1,Cycle01

nm	A	Peak Pick Method	
196.00	.081	Find 8 Peaks Above -3.0000 A	
238.00	.083	Start Wavelength	190.00 nm
279.00	.004	Stop Wavelength	400.00 nm
289.00	.004	Sort By Wavelength	
294.00	.004	Sensitivity	Manual
332.00	.003	Rising Points	2
338.00	.003	Falling Points	2
356.00	.003	Min. Change	0.0000

Figure S41. UV spectrum of compound **4**

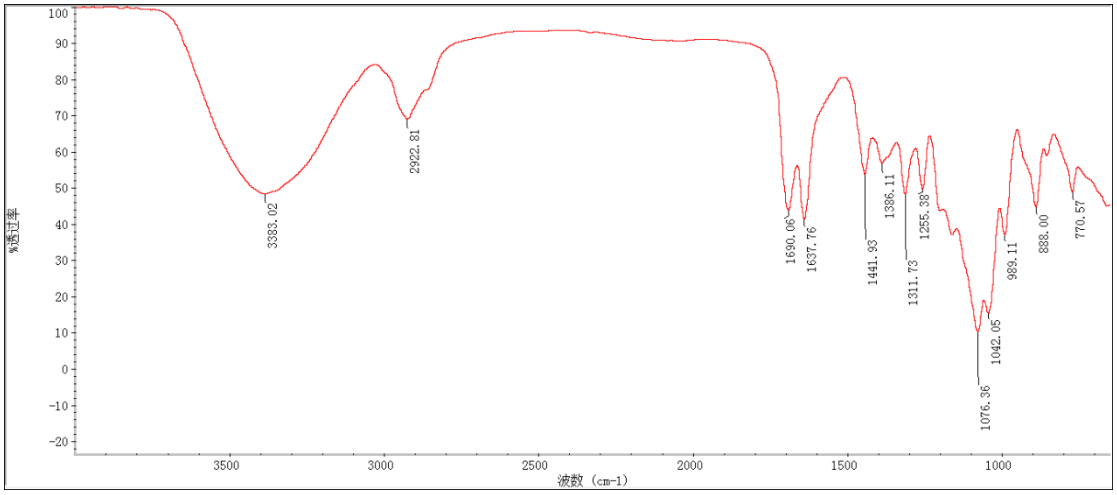


Figure S42. IR spectrum of compound **4**

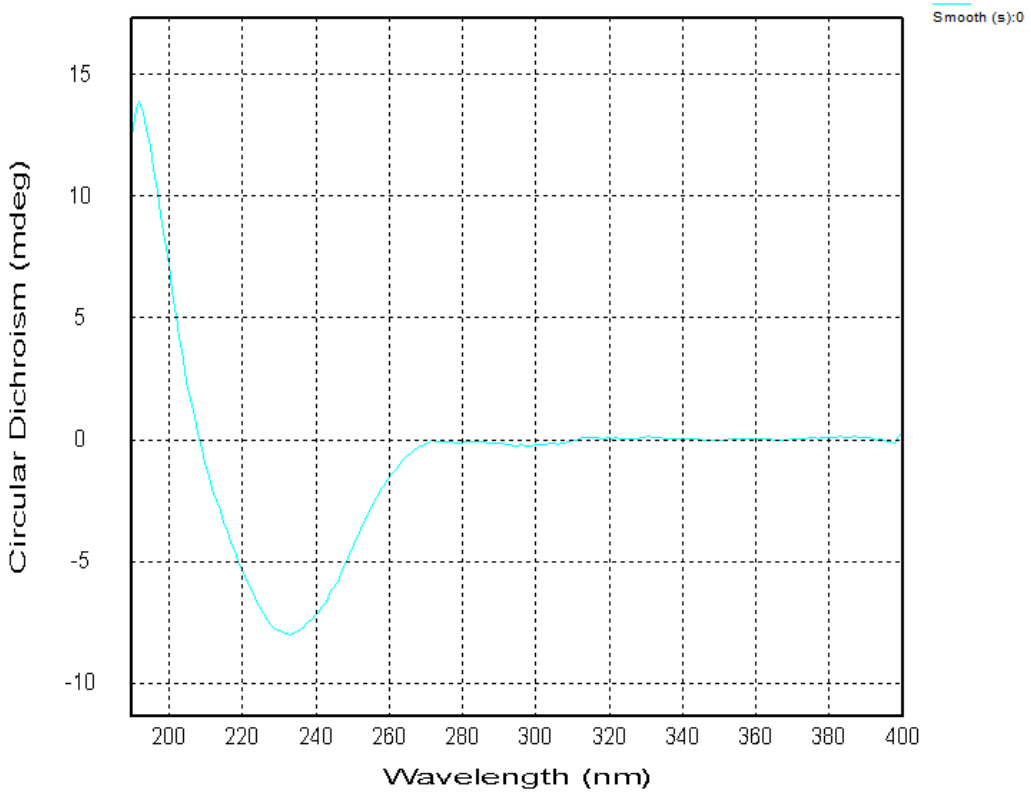


Figure S43. CD spectrum of compound **4**

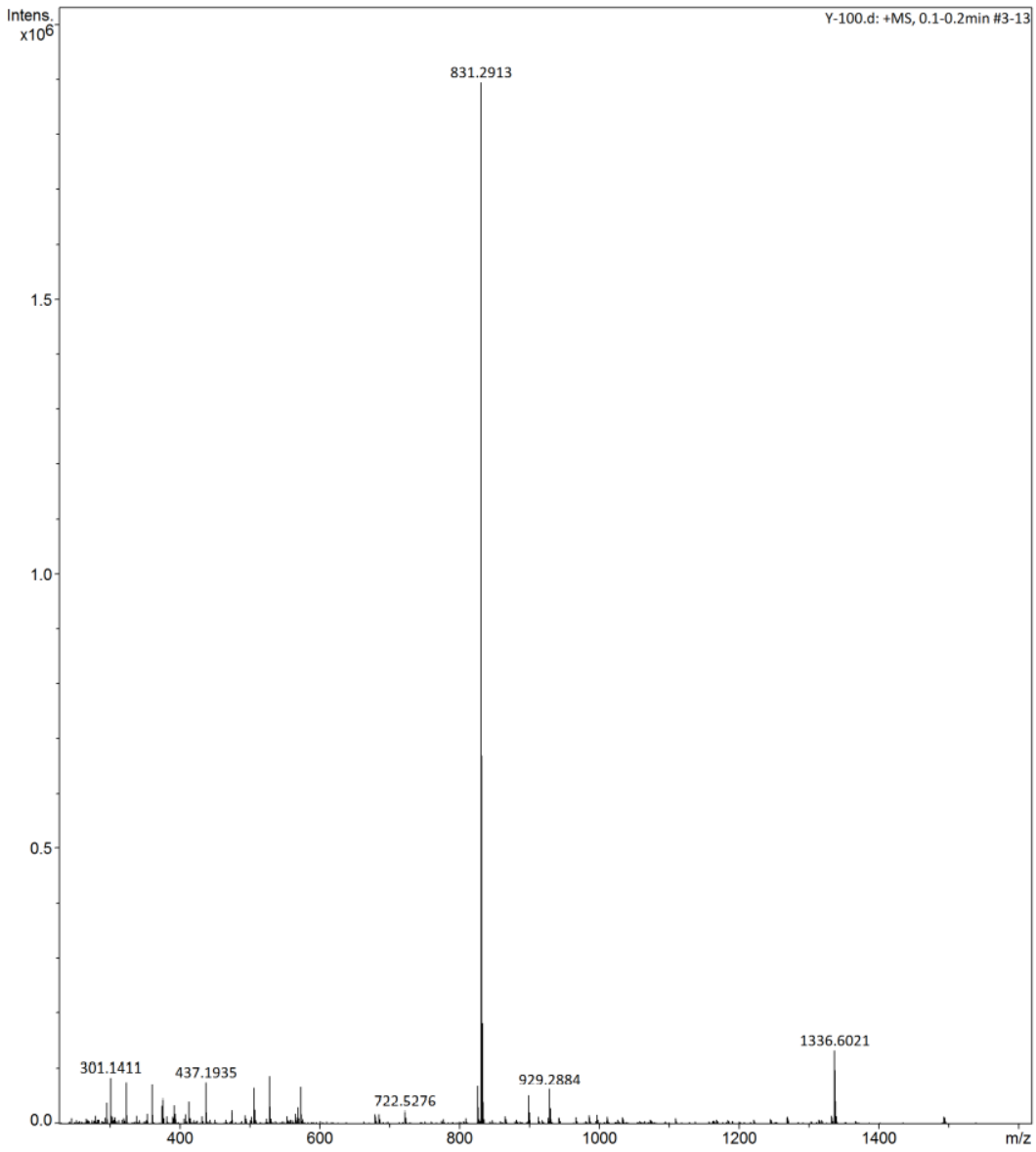


Figure S44. HRESIMS spectrum of compound **4**

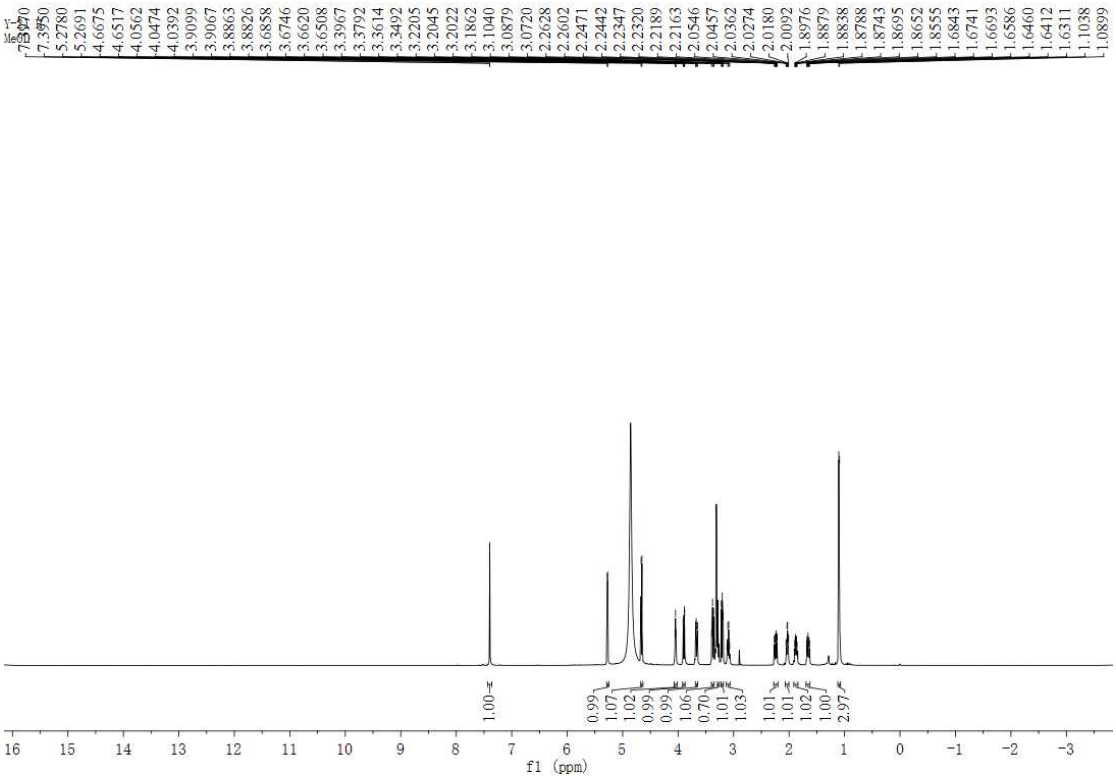


Figure S45. ^{1}H NMR spectrum of compound **5** (500 MHz, MeOD)

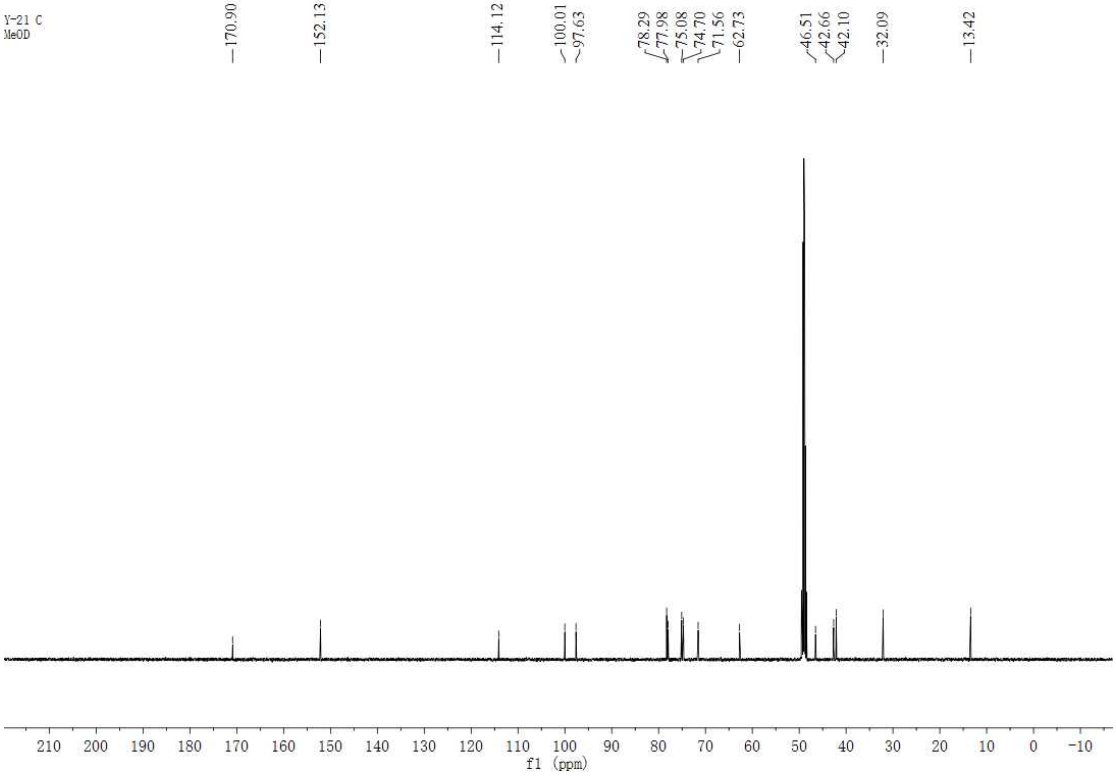


Figure S46. ^{13}C NMR spectrum of compound **5** (125 MHz, MeOD)

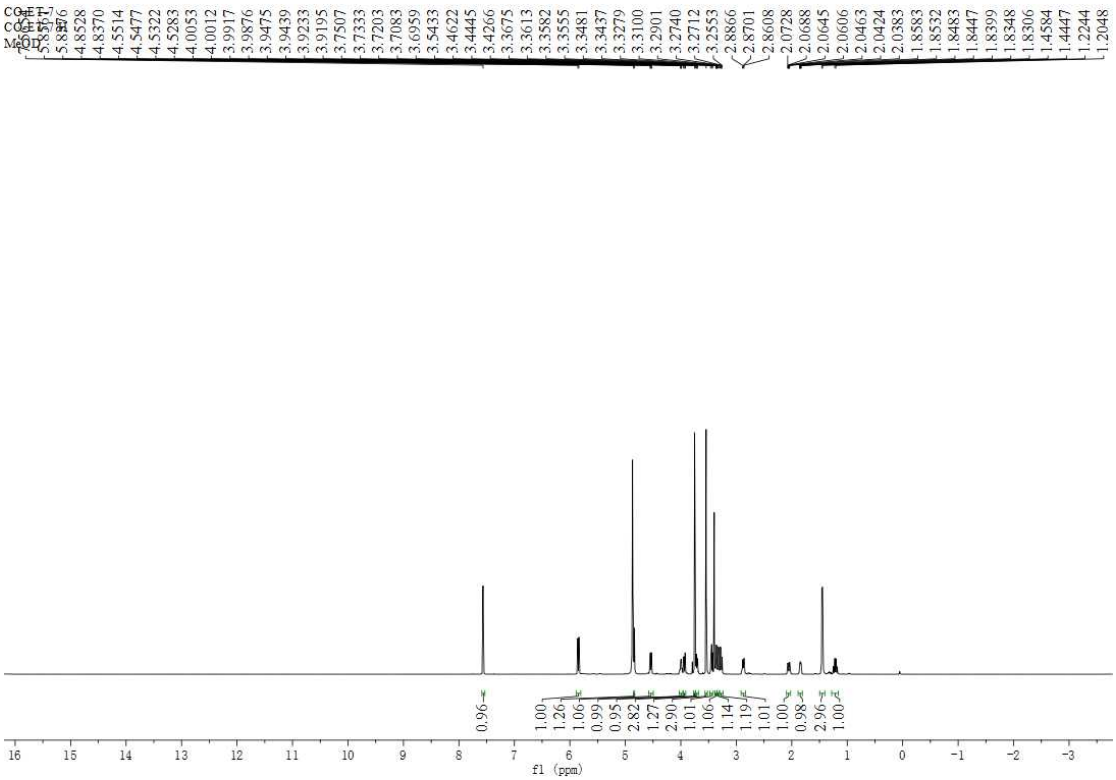


Figure S47. ^{1}H NMR spectrum of compound **6** (500 MHz, MeOD)

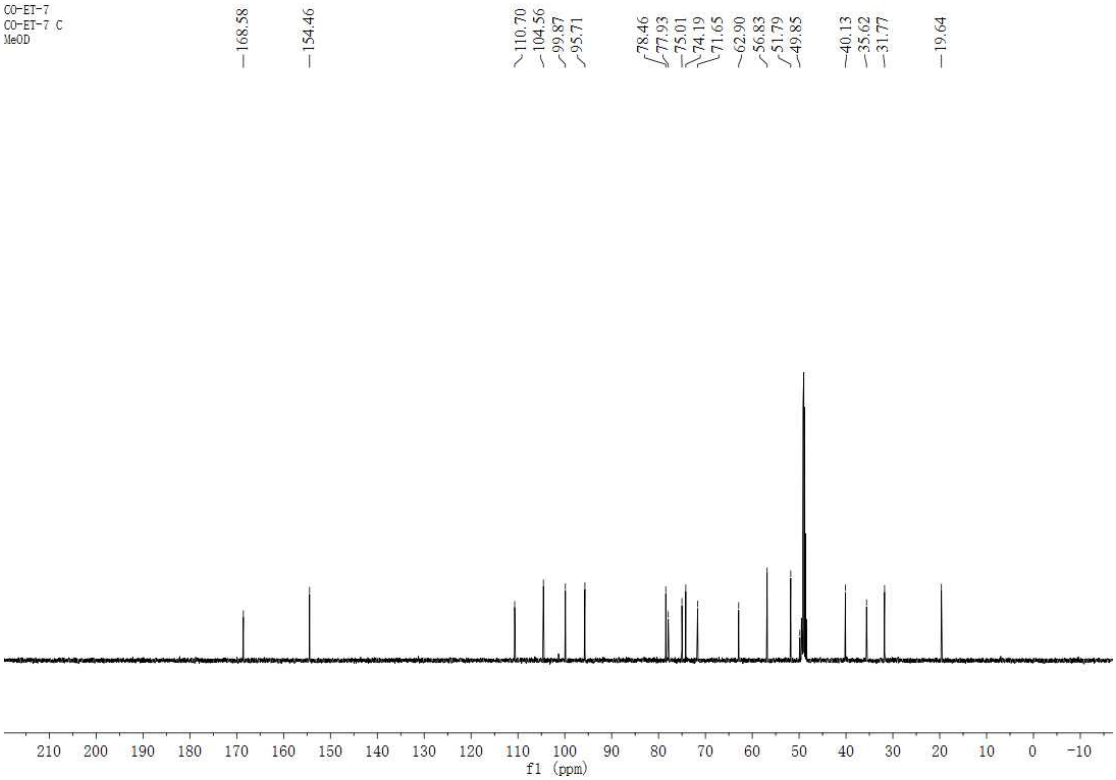


Figure S48. ^{13}C NMR spectrum of compound **6** (125 MHz, MeOD)

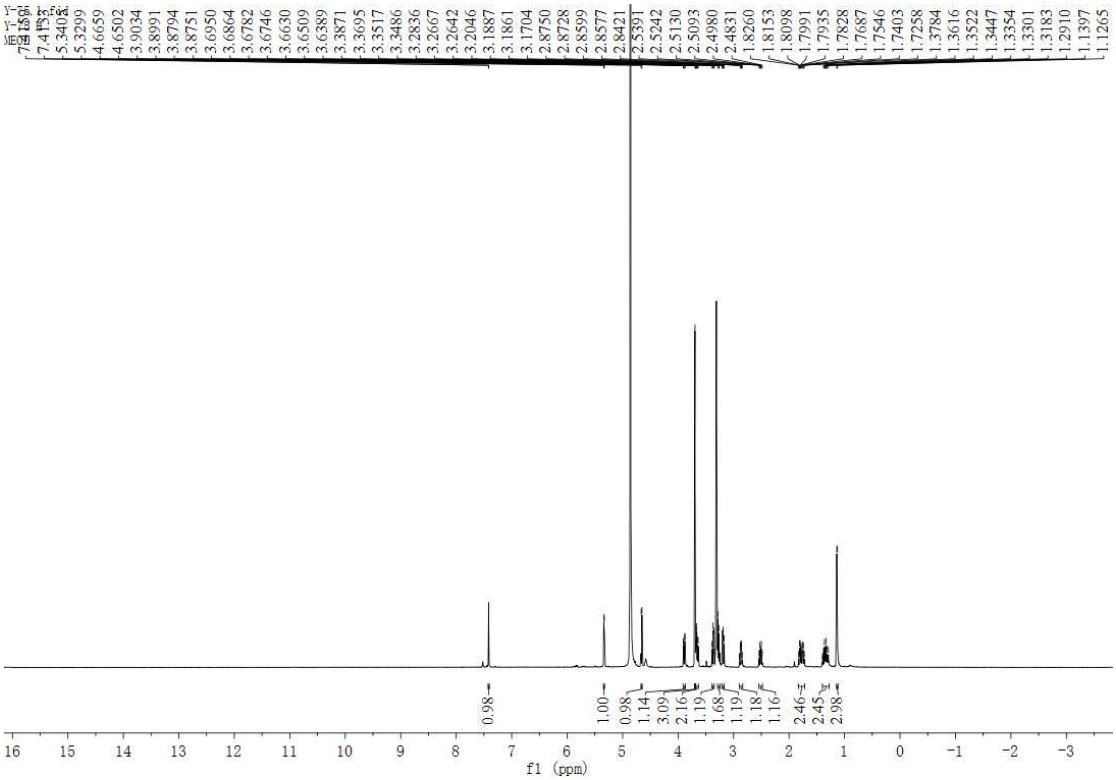


Figure S49. ^{1}H NMR spectrum of compound **7** (500 MHz, MeOD)

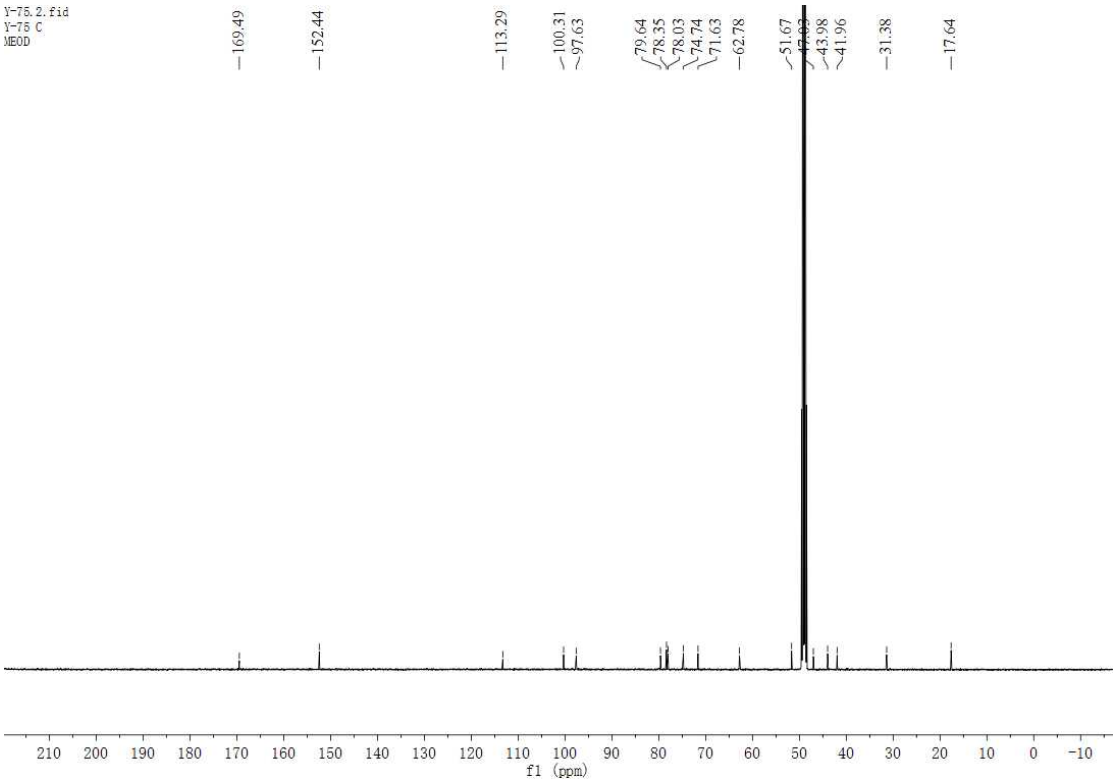


Figure S50. ^{13}C NMR spectrum of compound **7** (125 MHz, MeOD)

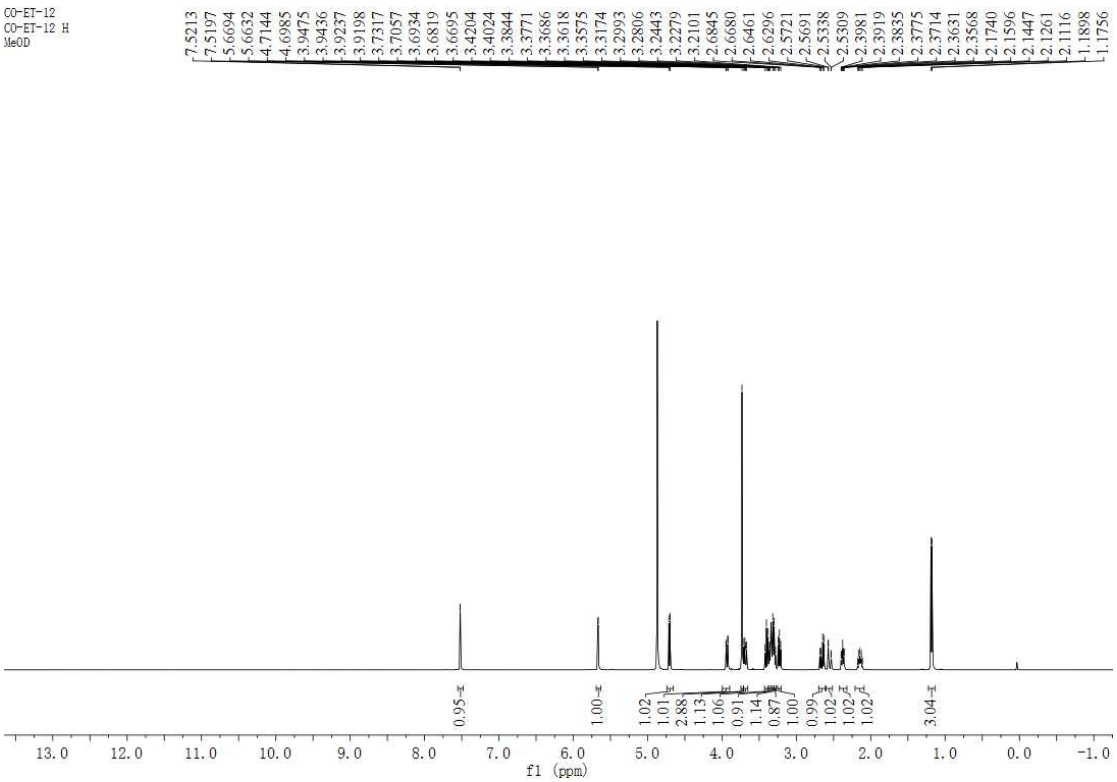


Figure S51. ^{1}H NMR spectrum of compound **8** (500 MHz, MeOD)

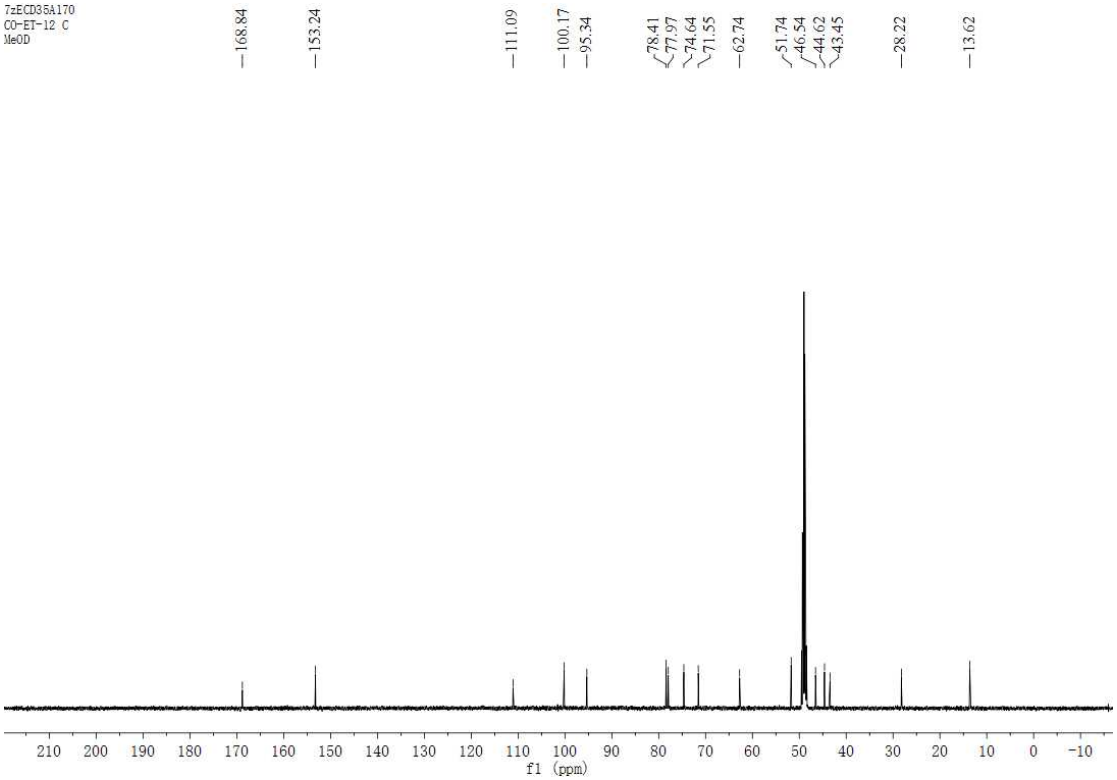


Figure S52. ^{13}C NMR spectrum of compound **8** (125 MHz, MeOD)

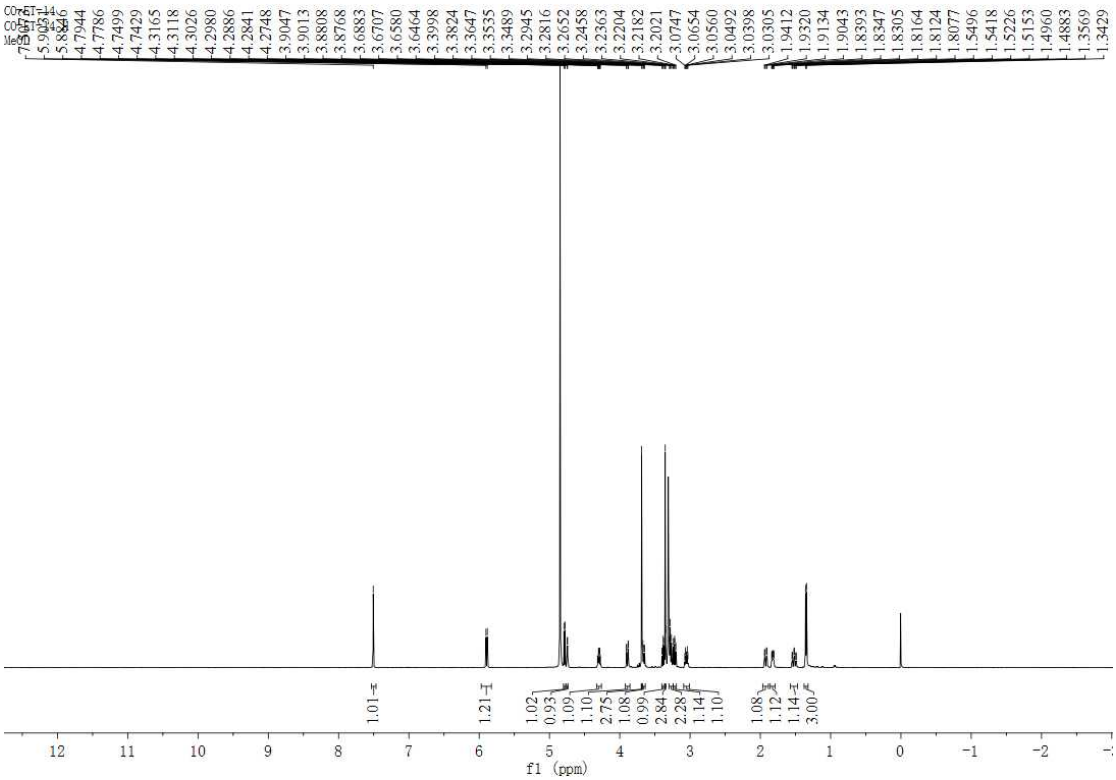


Figure S53. ^{1}H NMR spectrum of compound **9** (500 MHz, MeOD)

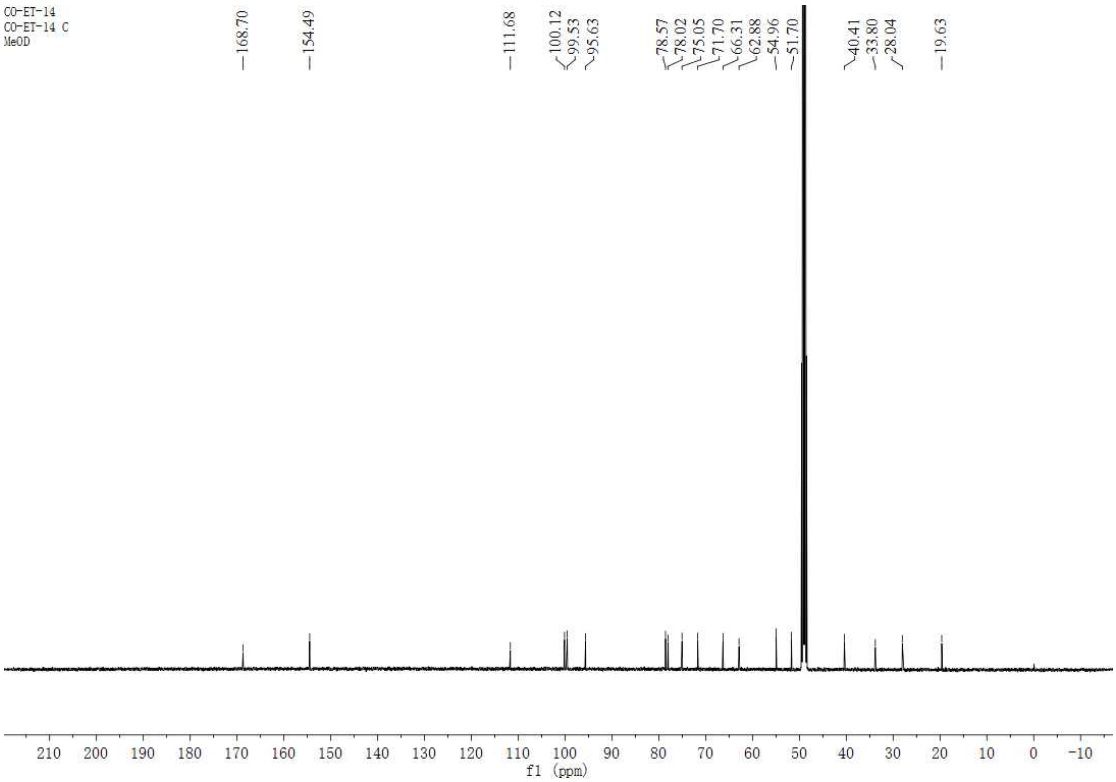


Figure S54. ^{13}C NMR spectrum of compound **9** (125 MHz, MeOD)

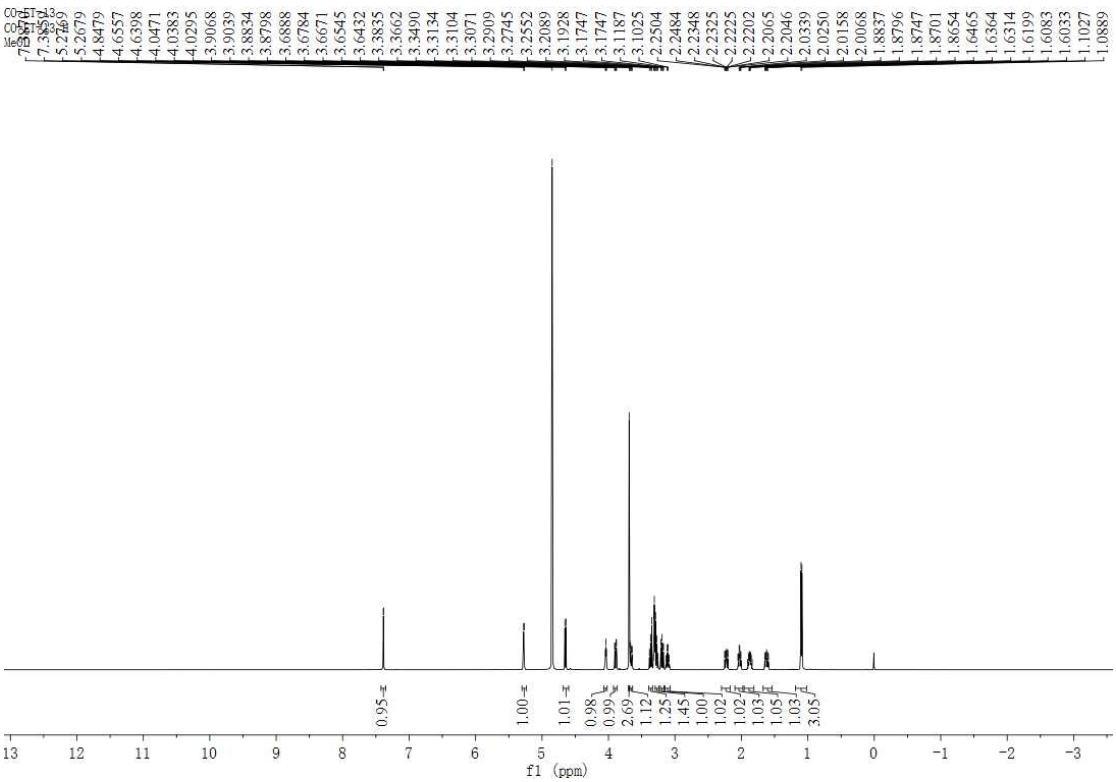


Figure S55. ^{1}H NMR spectrum of compound **10** (500 MHz, MeOD)

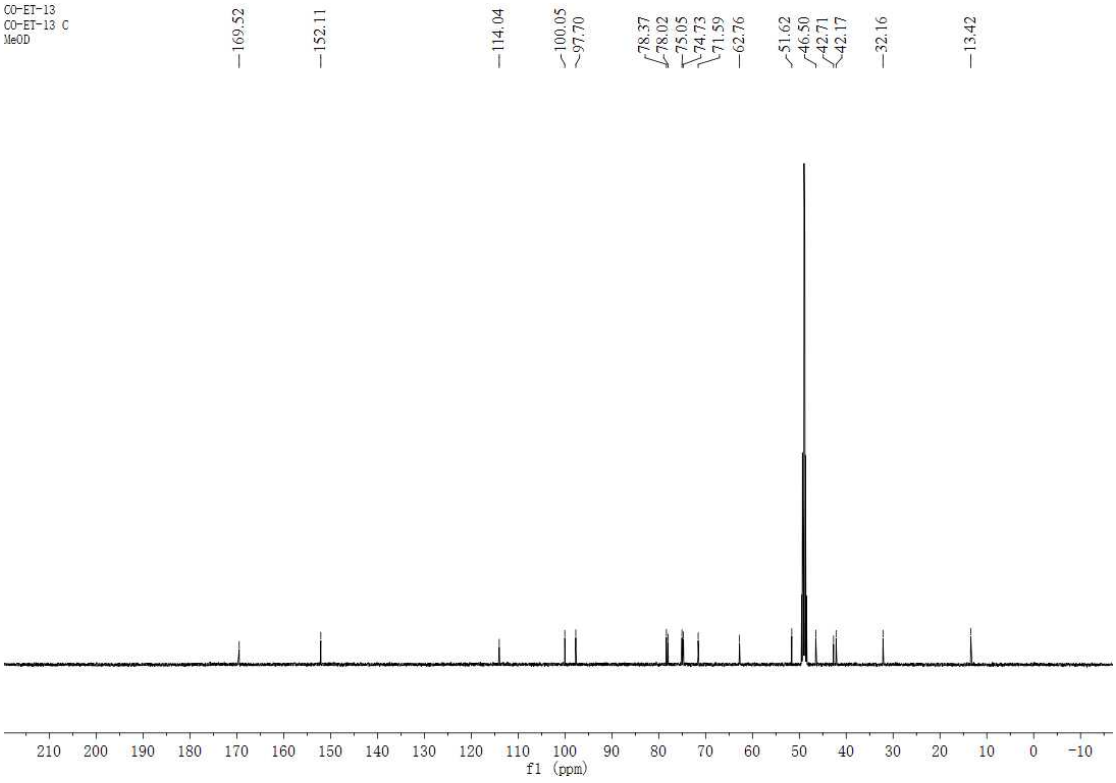


Figure S56. ^{13}C NMR spectrum of compound **10** (125 MHz, MeOD)

Table S1. Effect of compounds **1**–**10** on the relative glucose consumption in insulin-induced HepG2 cells ($\bar{x}$ ± s, n = 4).

Group	Dose (μM)	The relative glucose consumption (mM/OD)
Control		1.430 ± 0.044**
Model		0.480 ± 0.121$^{\#\#}$
Rosiglitazone	10	1.330 ± 0.090**
1	10	1.290 ± 0.330**
2	10	0.780 ± 0.070
3	10	0.980 ± 0.120*
4	10	0.720 ± 0.170
5	10	0.910 ± 0.081
6	10	0.850 ± 0.228
7	10	1.020 ± 0.099*
8	10	0.656 ± 0.116
9	10	0.245 ± 0.050
10	10	0.546 ± 0.174

$^{\#}P < 0.05$ or $^{\#\#}P < 0.01$, versus control group; $^{*}P < 0.05$ or $^{**}P < 0.01$, versus insulin group.

Table S2. Effect of compounds **1**, **3**, and **7** on the relative glucose consumption in insulin-induced HepG2 cells ($\bar{x}$ ± s, n = 6).

Group	Dose (μM)	The relative glucose consumption (mM/OD)
Control		2.731 ± 0.994
Model		0.558 ± 0.281
Rosiglitazone	0.625	1.261 ± 0.322
	1.25	1.603 ± 0.613
	2.5	1.719 ± 0.548
	5	1.771 ± 0.103
	10	2.280 ± 0.554
	20	2.133 ± 0.436
	30	2.106 ± 0.528
1	0.625	0.374 ± 0.146
	1.25	0.972 ± 0.479
	2.5	1.053 ± 0.280
	5	1.656 ± 0.228
	10	1.712 ± 0.572
	20	1.767 ± 0.401
	30	3.342 ± 1.557
3	0.625	0.738 ± 0.300
	1.25	0.858 ± 0.510
	2.5	1.428 ± 0.134
	5	1.508 ± 0.122
	10	1.585 ± 0.165
	20	1.715 ± 0.470
	30	1.891 ± 0.434
7	0.625	0.356 ± 0.068
	1.25	1.530 ± 0.834
	2.5	1.768 ± 0.352
	5	2.178 ± 1.167
	10	1.788 ± 0.628
	20	1.758 ± 0.514
	30	1.791 ± 0.210