Supplementary Materials

Genome Mining of Marine-derived *Streptomyces* sp. SCSIO 40010 Leads to New Polycyclic Tetramate Macrolactams

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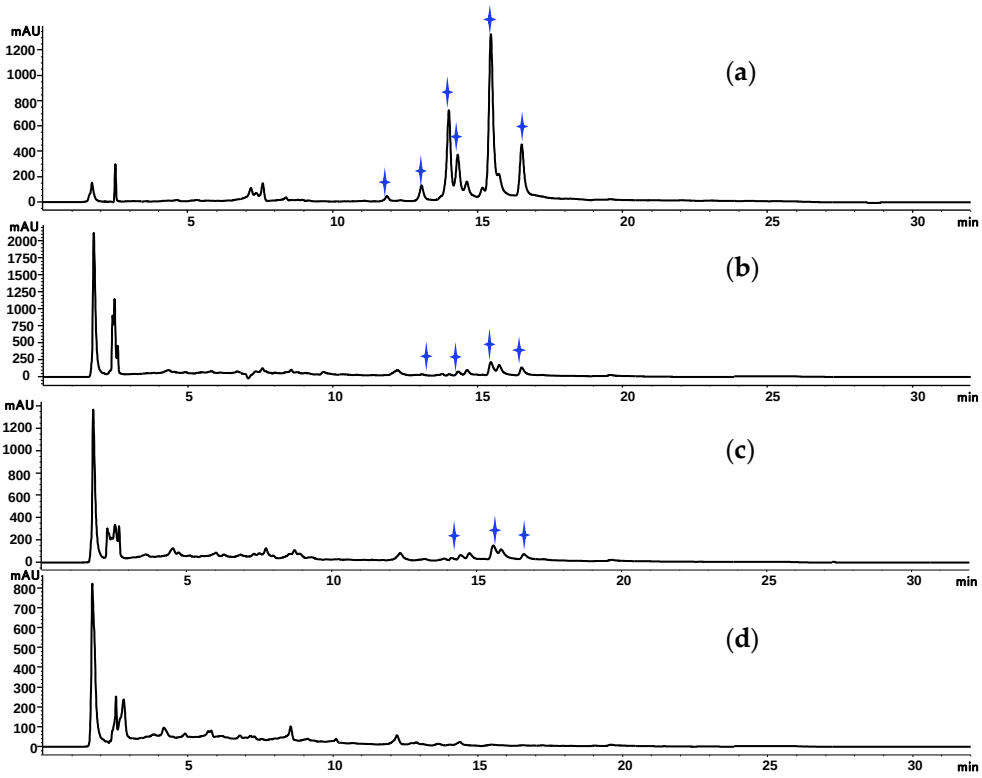
Content

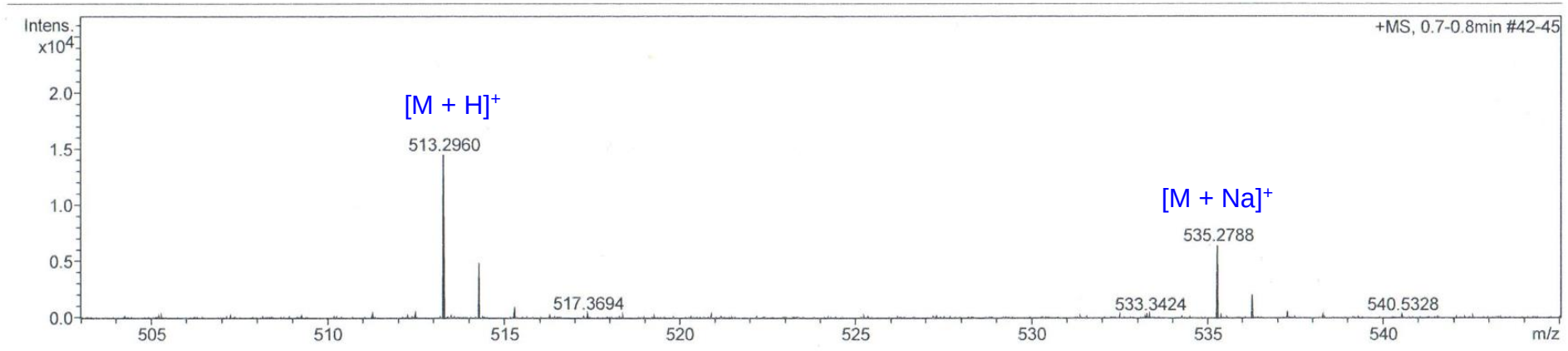
Figure S1. HPLC analysis of metabolite profiles of *Streptomyces* sp. SCSIO 40010 cultured in different media.



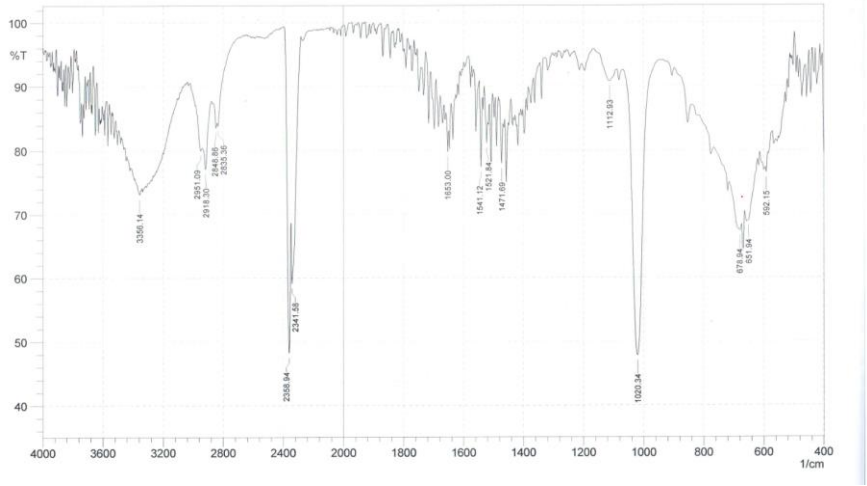
Note: bule star-PTM analogue.(**a**) modifed-A1BFe+C (soluble starch 1.0%, yeast extract 0.4%, tryptone 0.2%, $CaCO_3$ 0.2%, sea salts 3%, pH 7.2–7.4); (**b**) AM6 medium (soluble starch 2.0%, glucose 1.0%, tryptone 0.5%, yeast extract 0.5%, $CaCO_3$ 0.2%, sea salts 3%, pH 7.2–7.4); (**c**) AM6-4 (glycerol 0.1%, bacterial peptone 0.5%, glycine 0.01%, alanine 0.01%, $CaCO_3$ 0.5%, sea salts 3%, pH 7.2-7.4). (**d**) Modified-ISP3 (oat meal 1.5%, $FeSO_4$ 0.0001%, MnCl2 0.0001%, $ZnSO_4$ 0.0001%, sea salts 3%, pH 7.2–7.4).

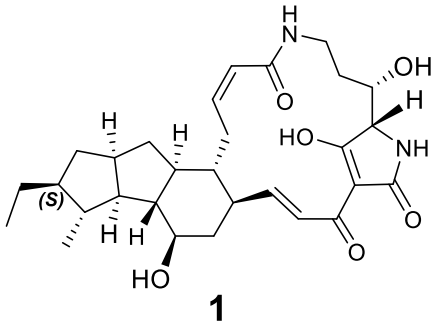
Figure S2. HRESIMS (**a**) and IR(**b**) of compound **1**.

(**a**) **HRESIMS**



(**b**) **IR**





1

Chemical Formula: $C_{29}H_{40}N_2O_6$

caculated for $[M+H]^+$: 513.2965

caculated for $[M+Na]^+$: 535.2784

Figure S3. ^{1}H NMR spectrum of compound **1** in DMSO-d_6.

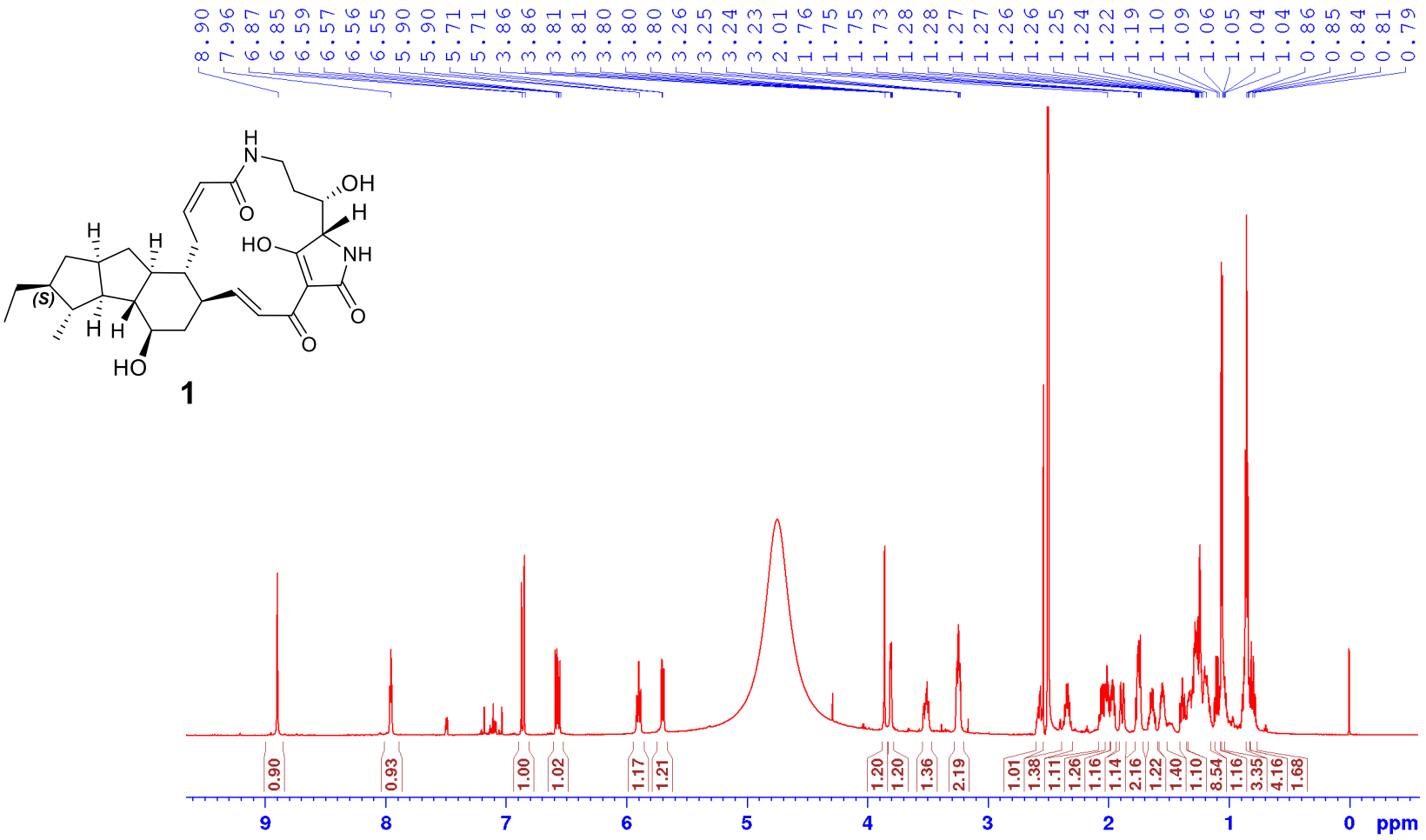


Figure S4. The ^{13}C NMR and DEPT 135 spectra of compound **1** in DMSO-d_6.

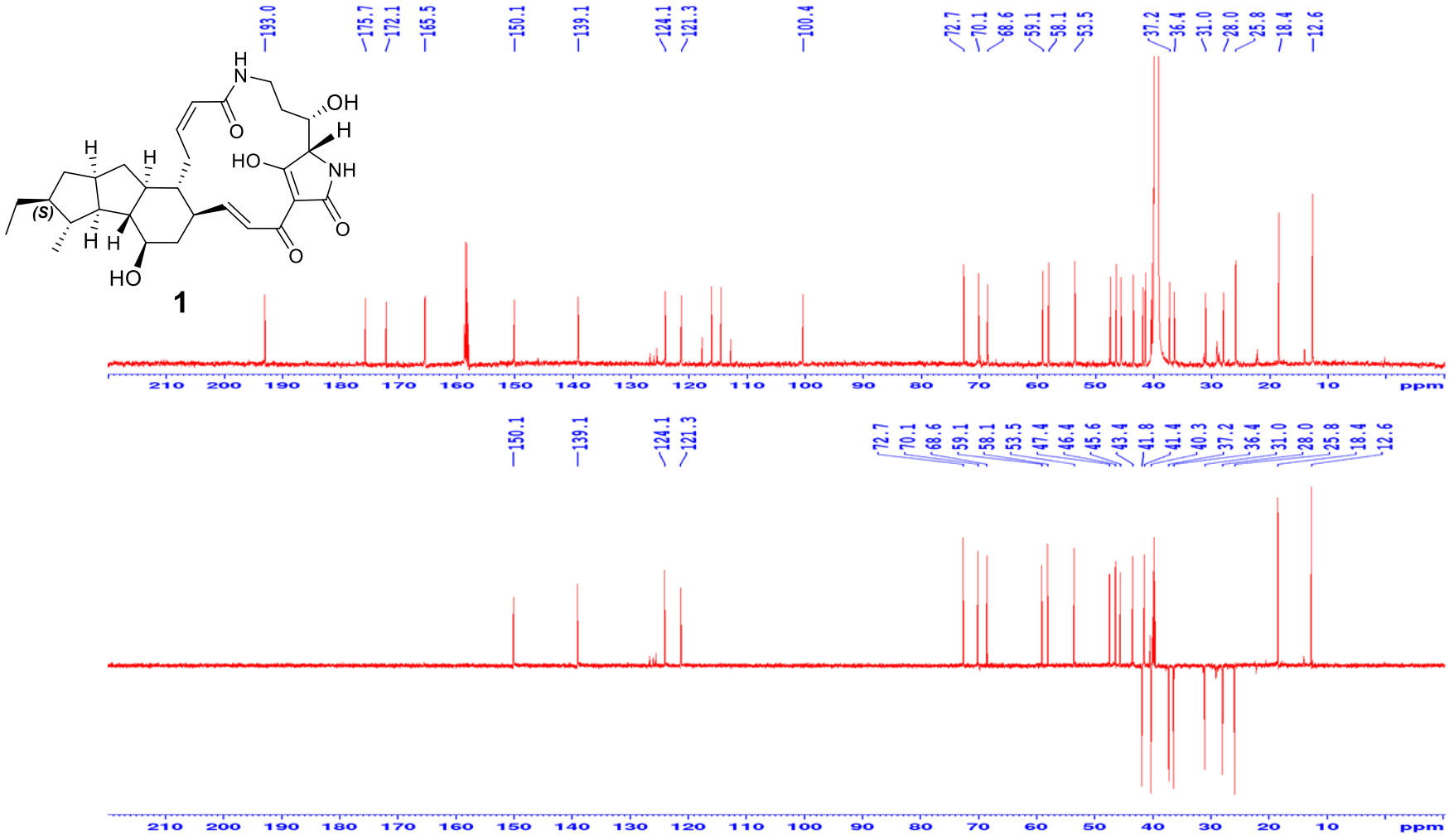


Figure S5. The HSQC spectrum of compound **1** in DMSO-d_6.

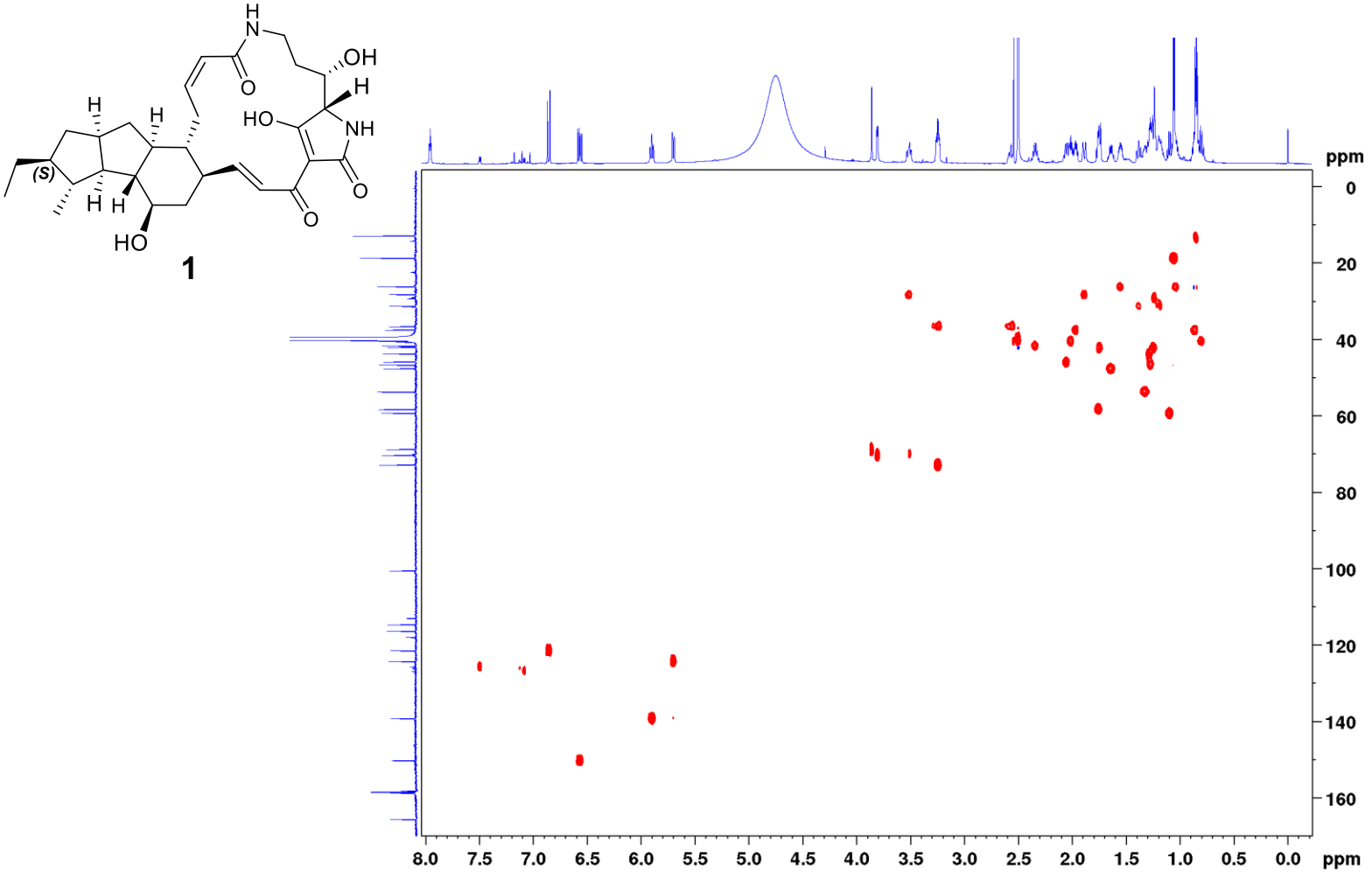


Figure S6. The HMBC spectrum of compound **1** in DMSO-d_6.

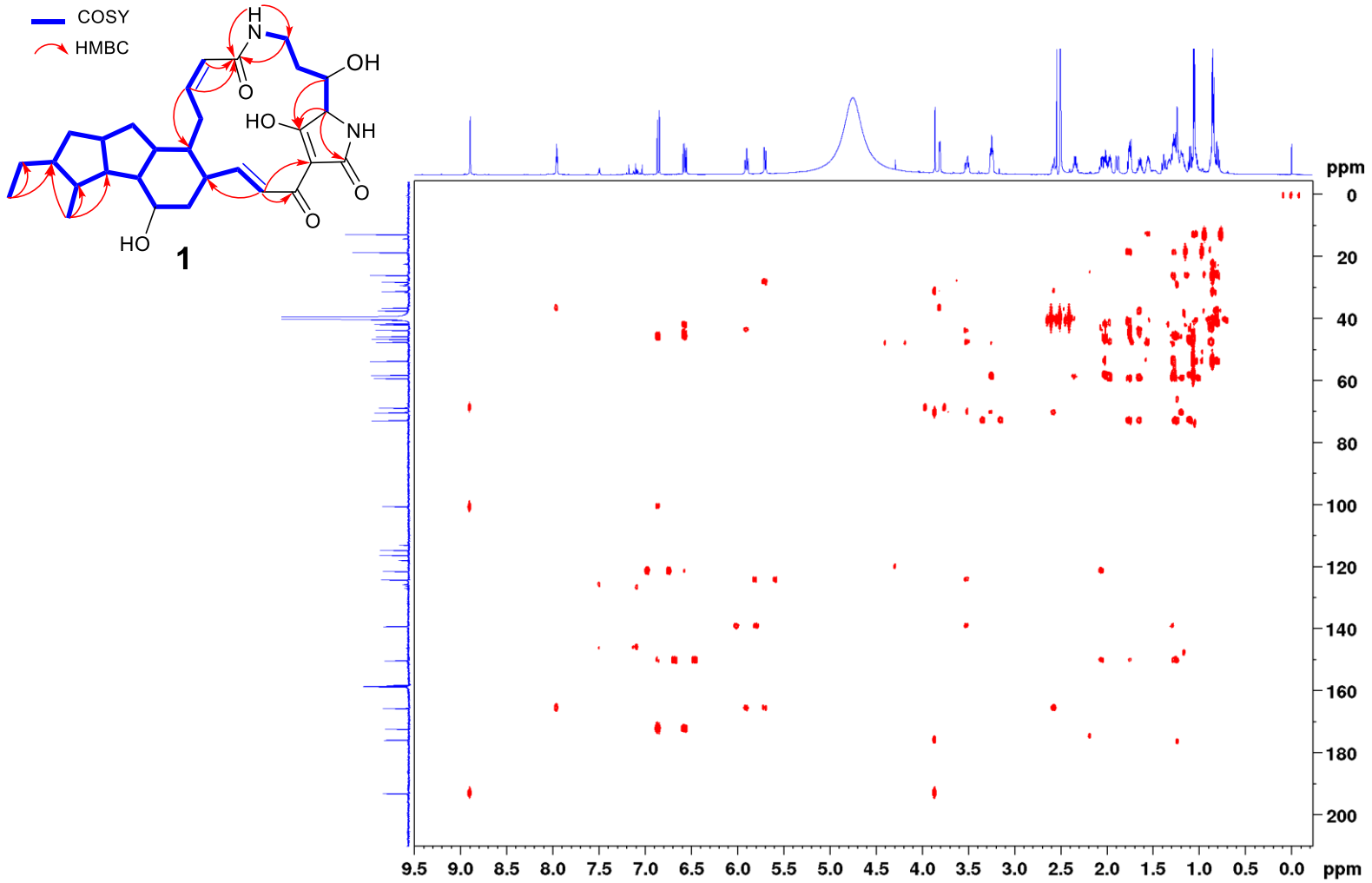


Figure S7. The ^{1}H-^{1}HCOSY spectrum of compound **1** in DMSO-d_6.

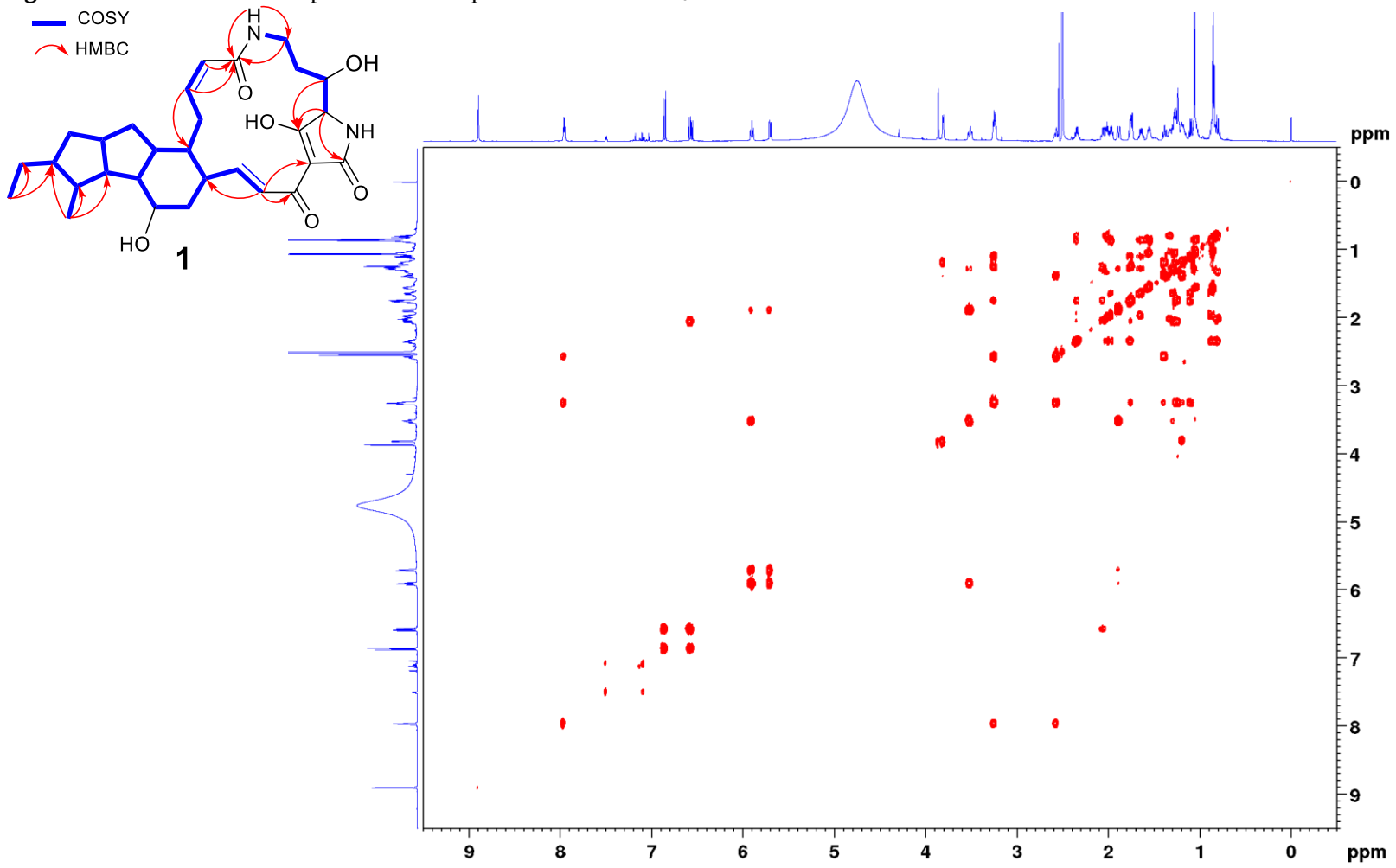


Figure S8. The NOESY spectrum of compound **1** in DMSO-d_6.

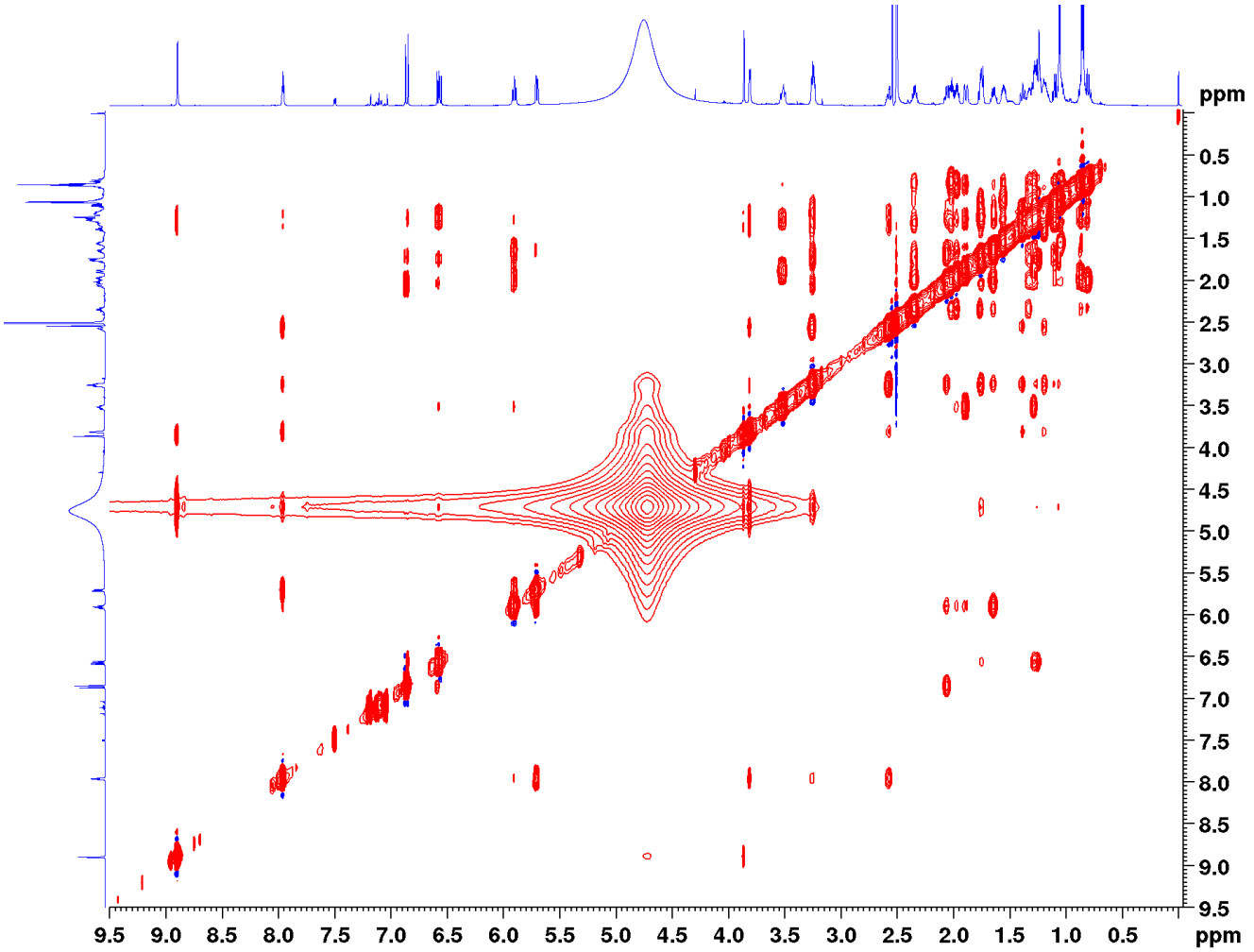


Figure S9. The key NOESY spectrum of compound **1** in DMSO-d_6.

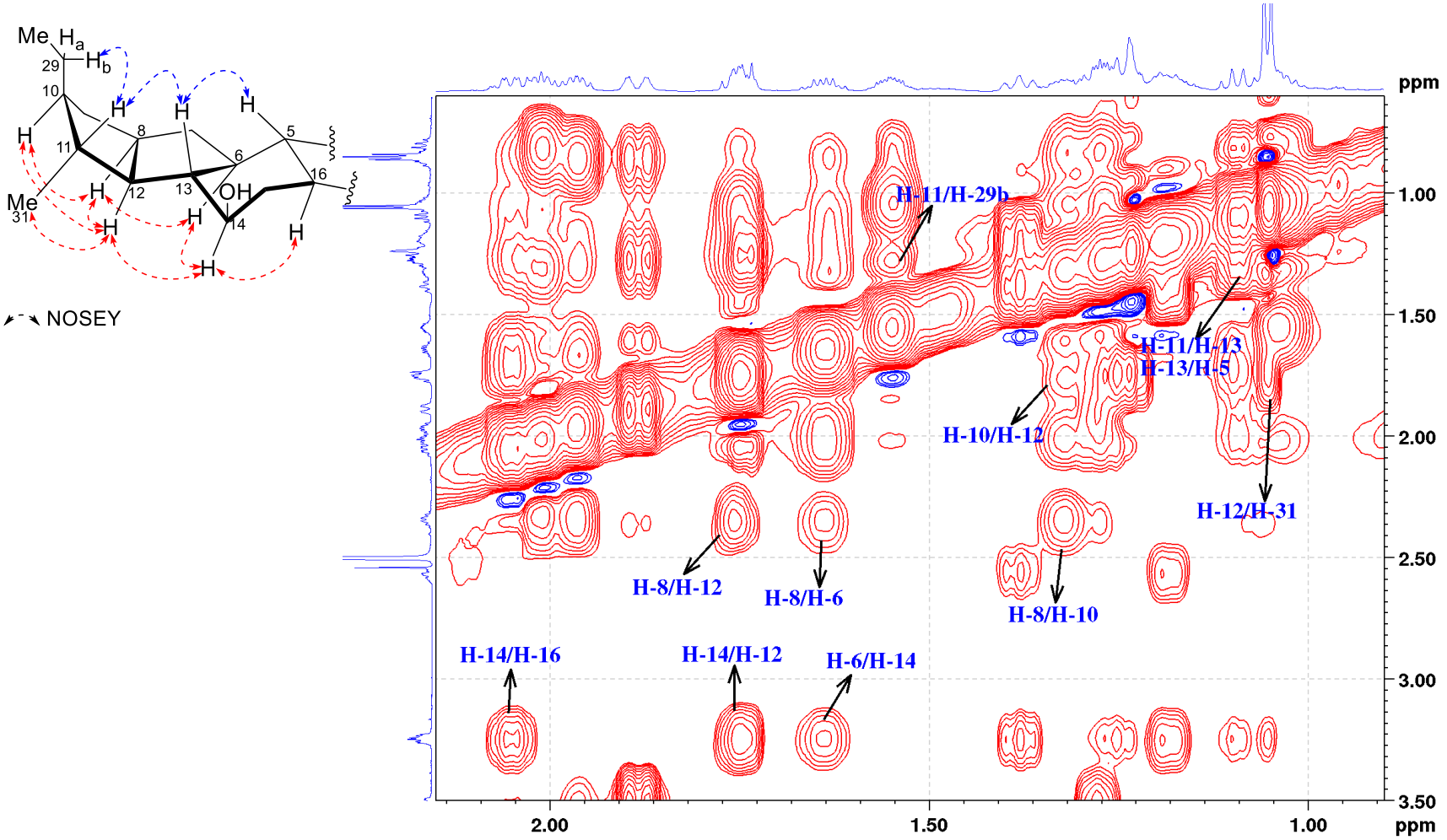
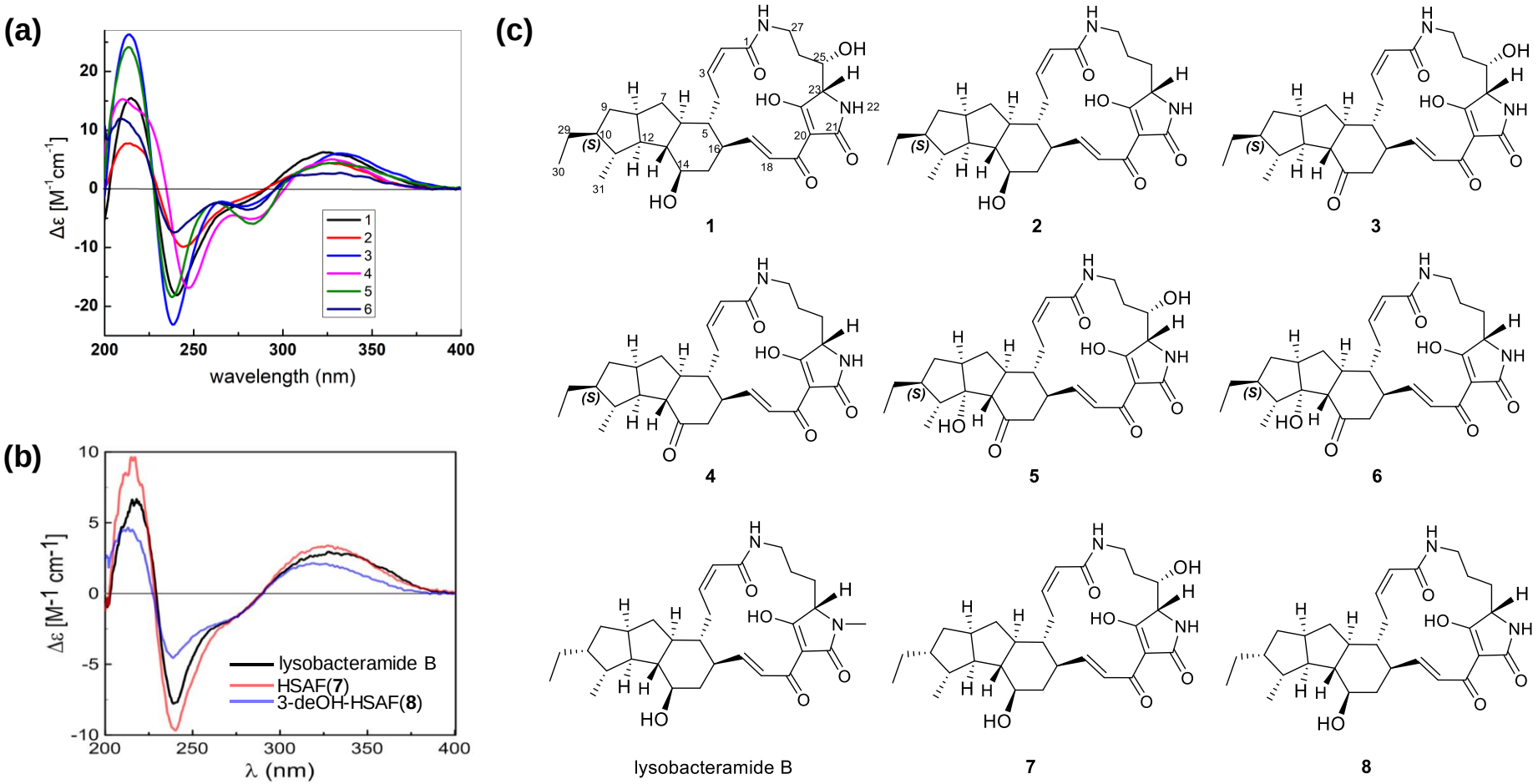


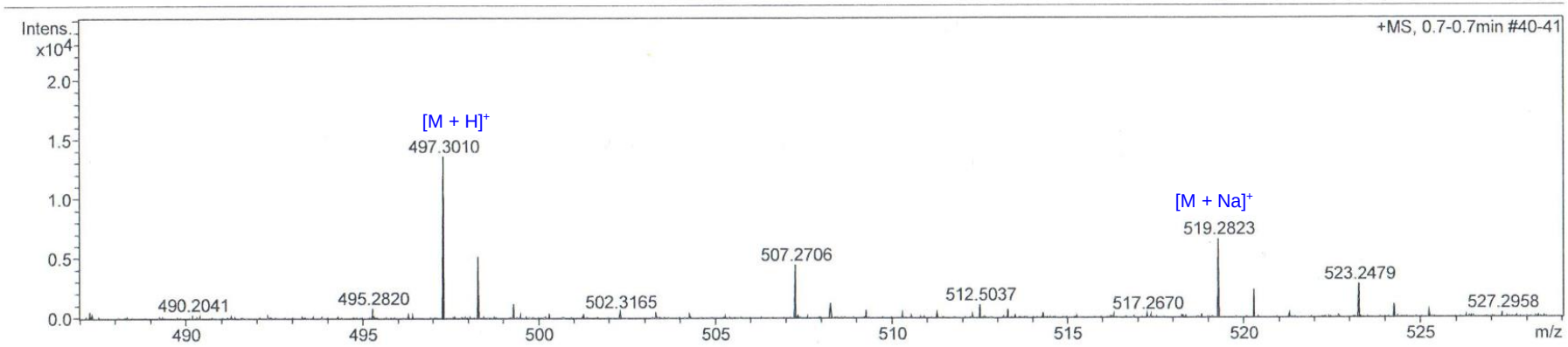
Figure S10. Comparison of ECD spectra of compound **1-6** and the known compounds.



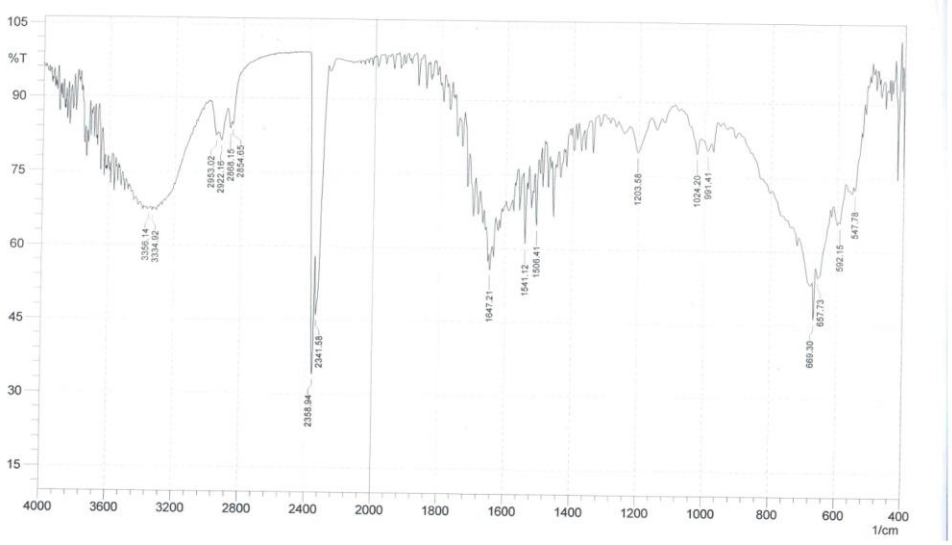
Note: **(a)** ECD spectra measured for compound **1-6**; **(b)** ECD spectra of lysobacteramide B, HSAF and 3-deOH-HSAF from reference; (**c**) Chemical structures.

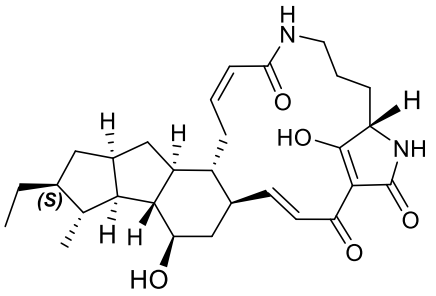
Figure S11. HRESIMS (**a**) and IR(**b**) of compound **2**.

(**a**) **HRESIMS**



(**b**) **IR**





2

Chemical Formula: $C_{29}H_{40}N_2O_5$

caculated for $[M+H]^+$: 497.3015

caculated for $[M+Na]^+$: 519.2835

Figure S12. The ^{1}H NMR spectrum of compound **2** in DMSO-d_6.

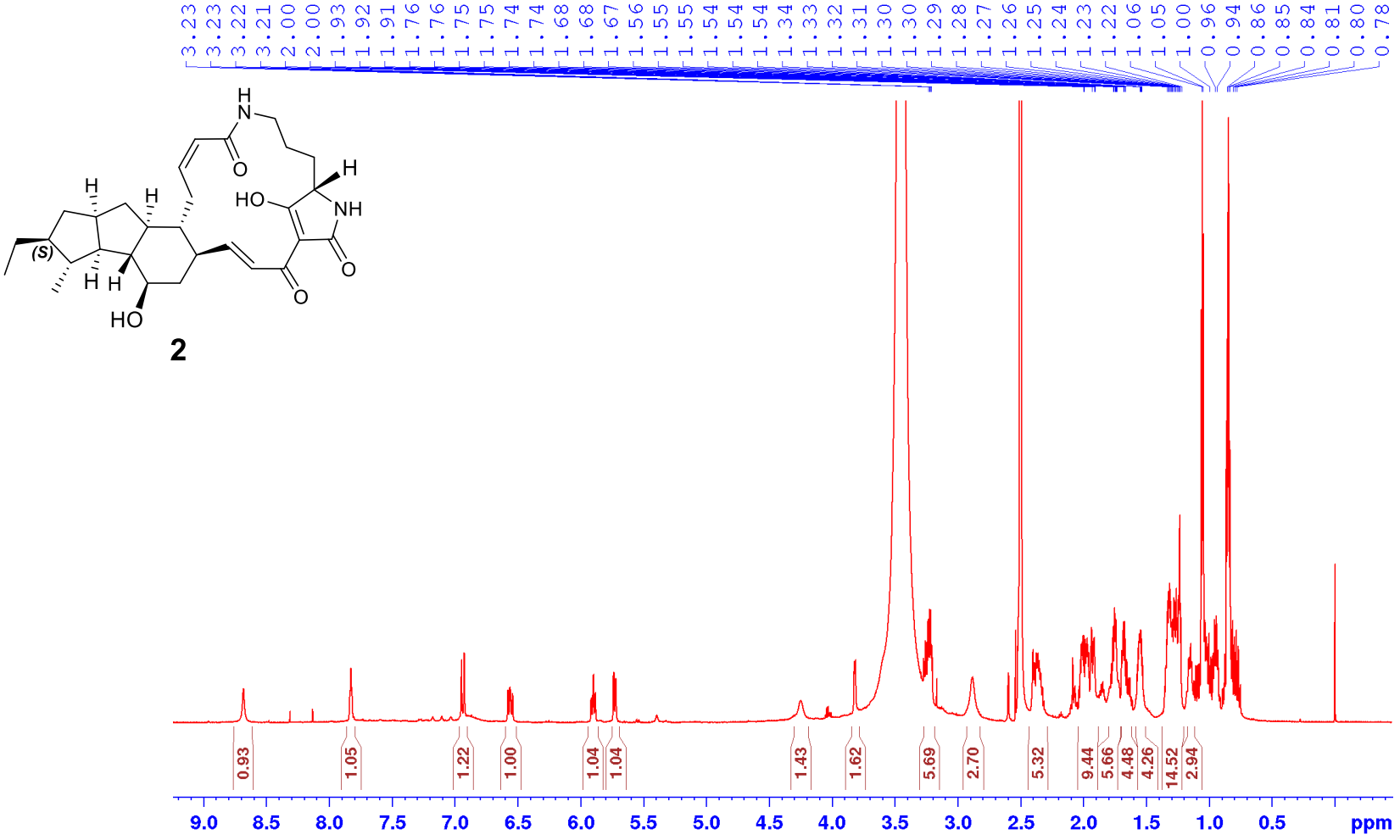
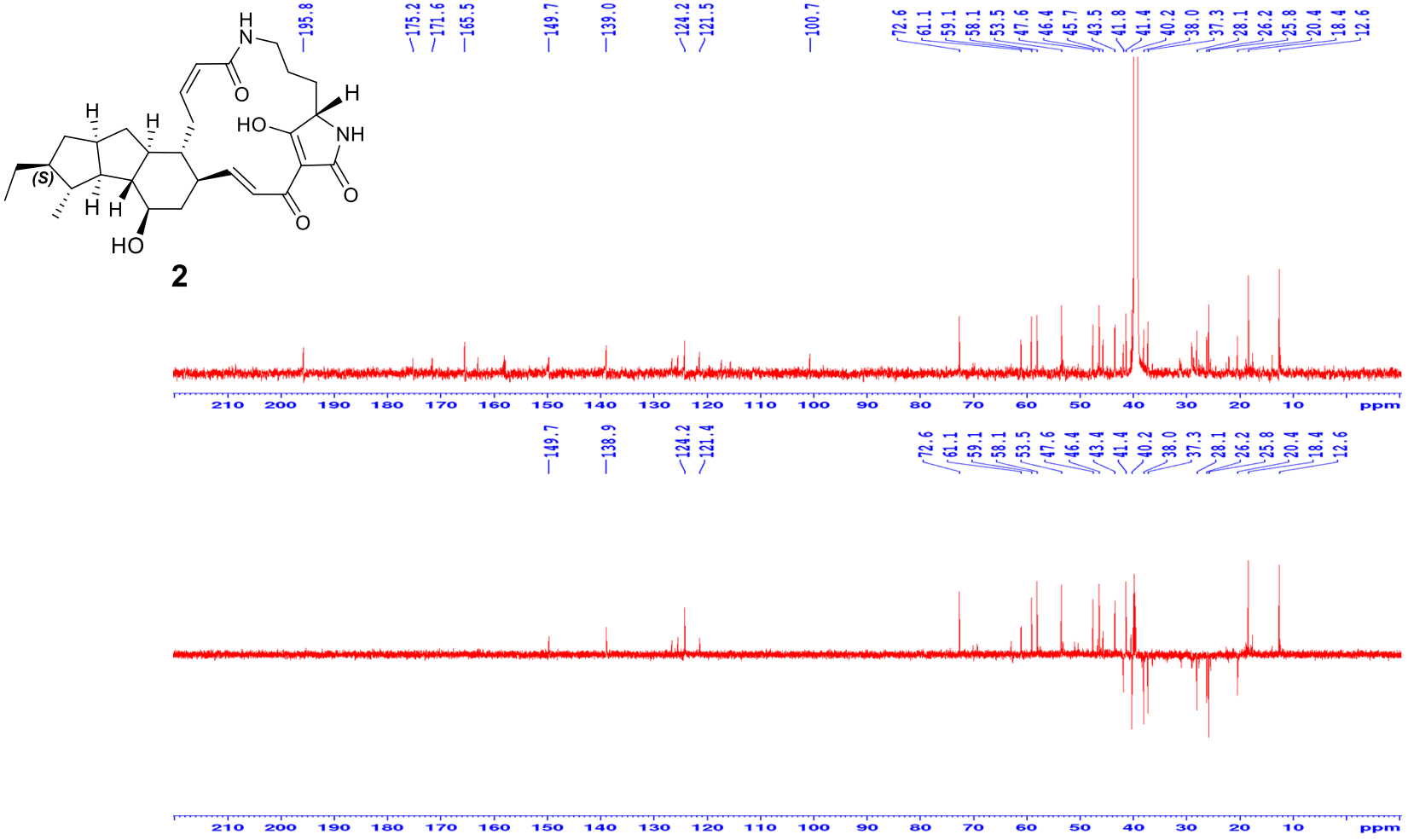


Figure S13. The ^{13}C NMR and DEPT 135 spectra of compound **2** in DMSO-d_6.



2

Figure S14. The HSQC spectrum of compound **2** in DMSO-d_6.

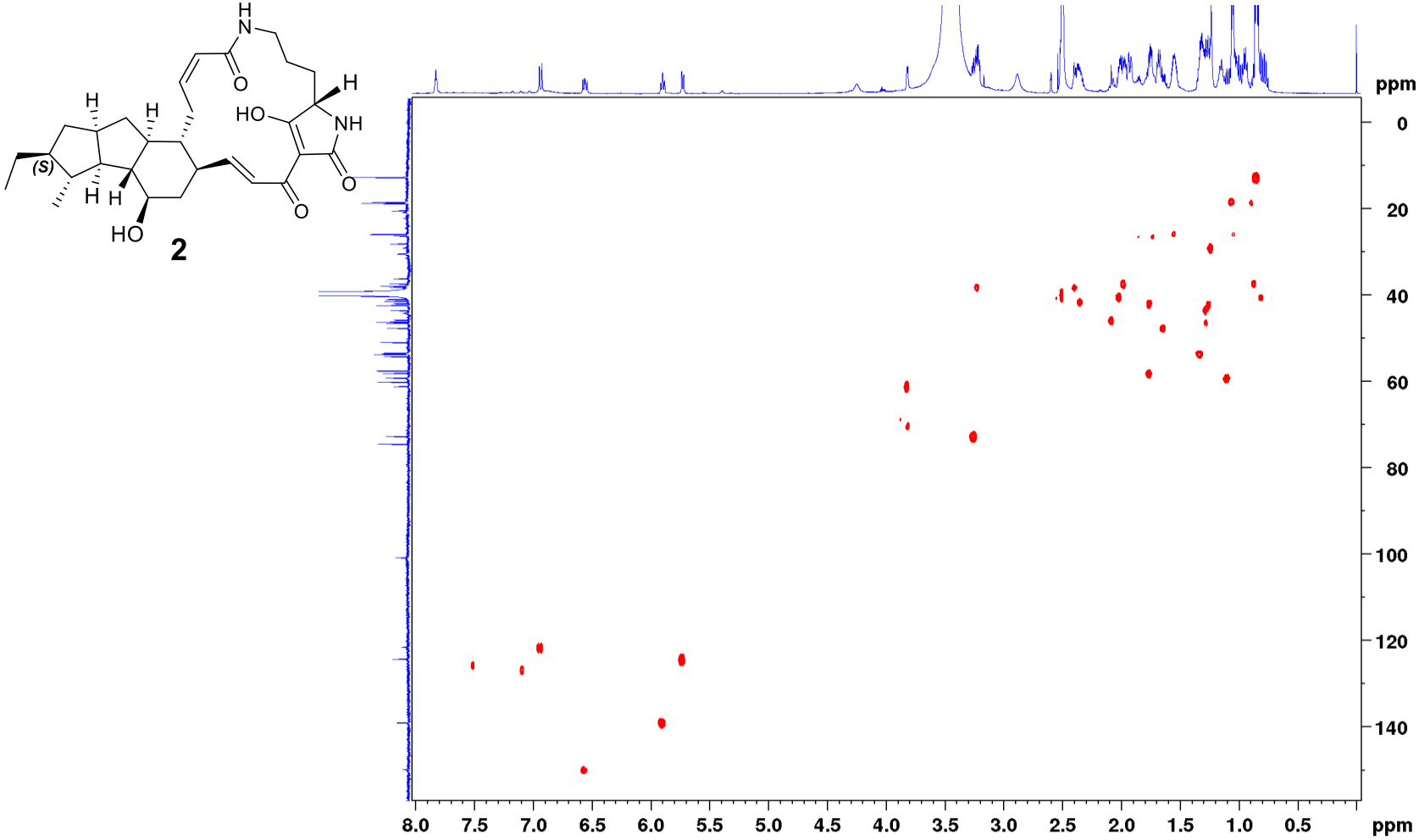


Figure S15. The HMBC spectrum of compound **2** in DMSO-d_6.

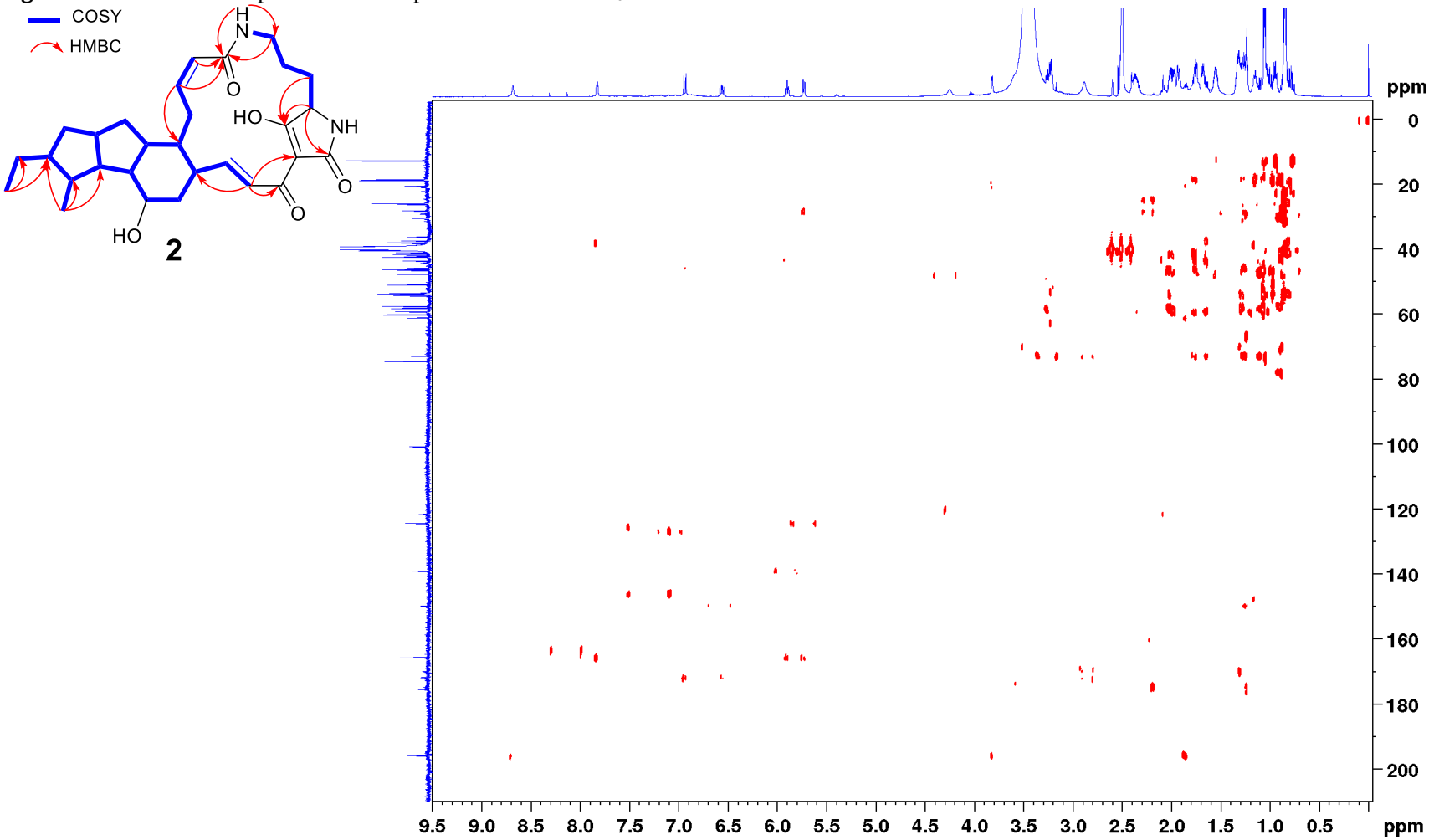


Figure S16. The ^{1}H-^{1}HCOSY spectrum of compound **2** in DMSO-d_6.

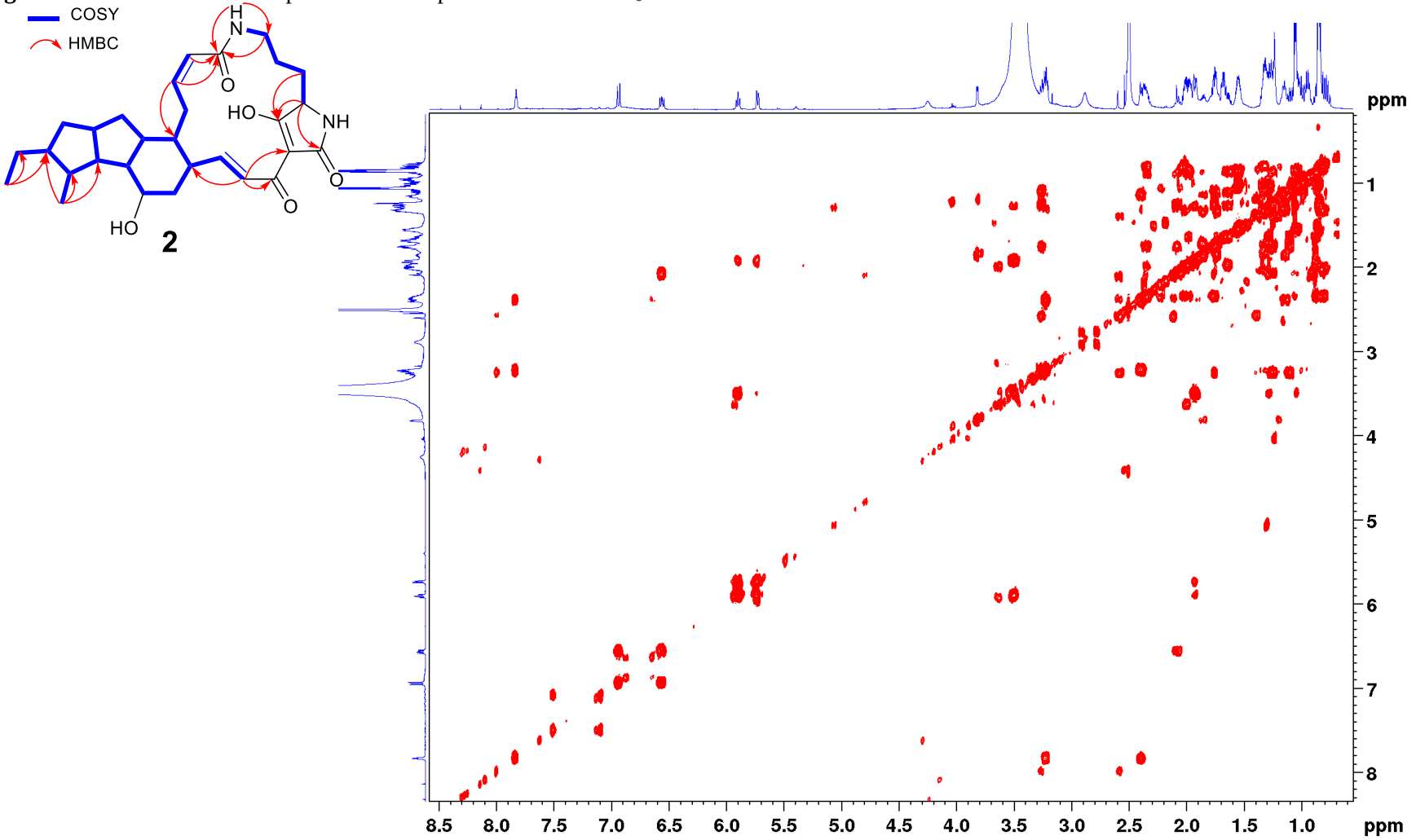


Figure S17. The NOESY spectrum of compound **2** in DMSO-d_6.

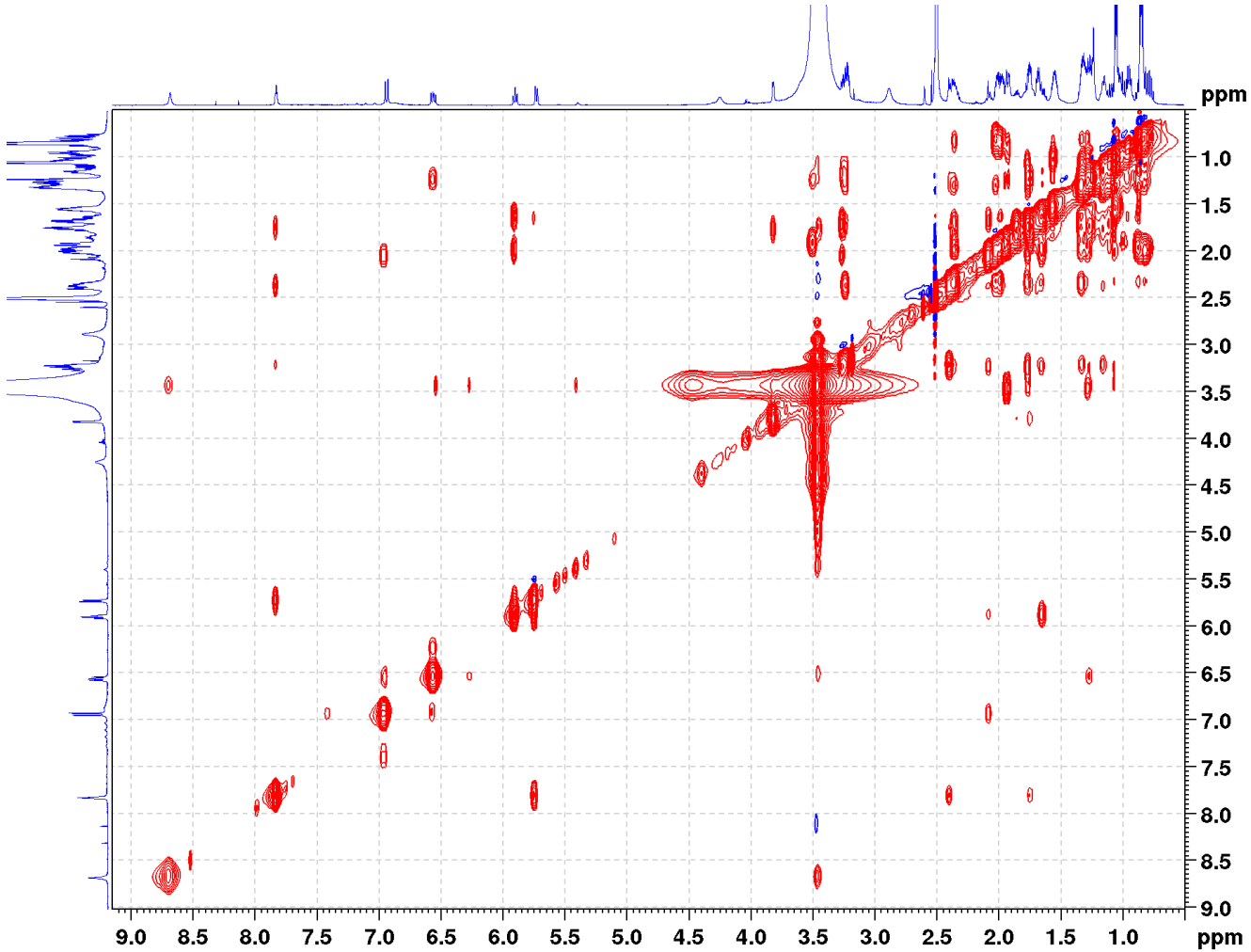


Figure S18. The key NOESY spectrum of compound **2** in DMSO-d_6.

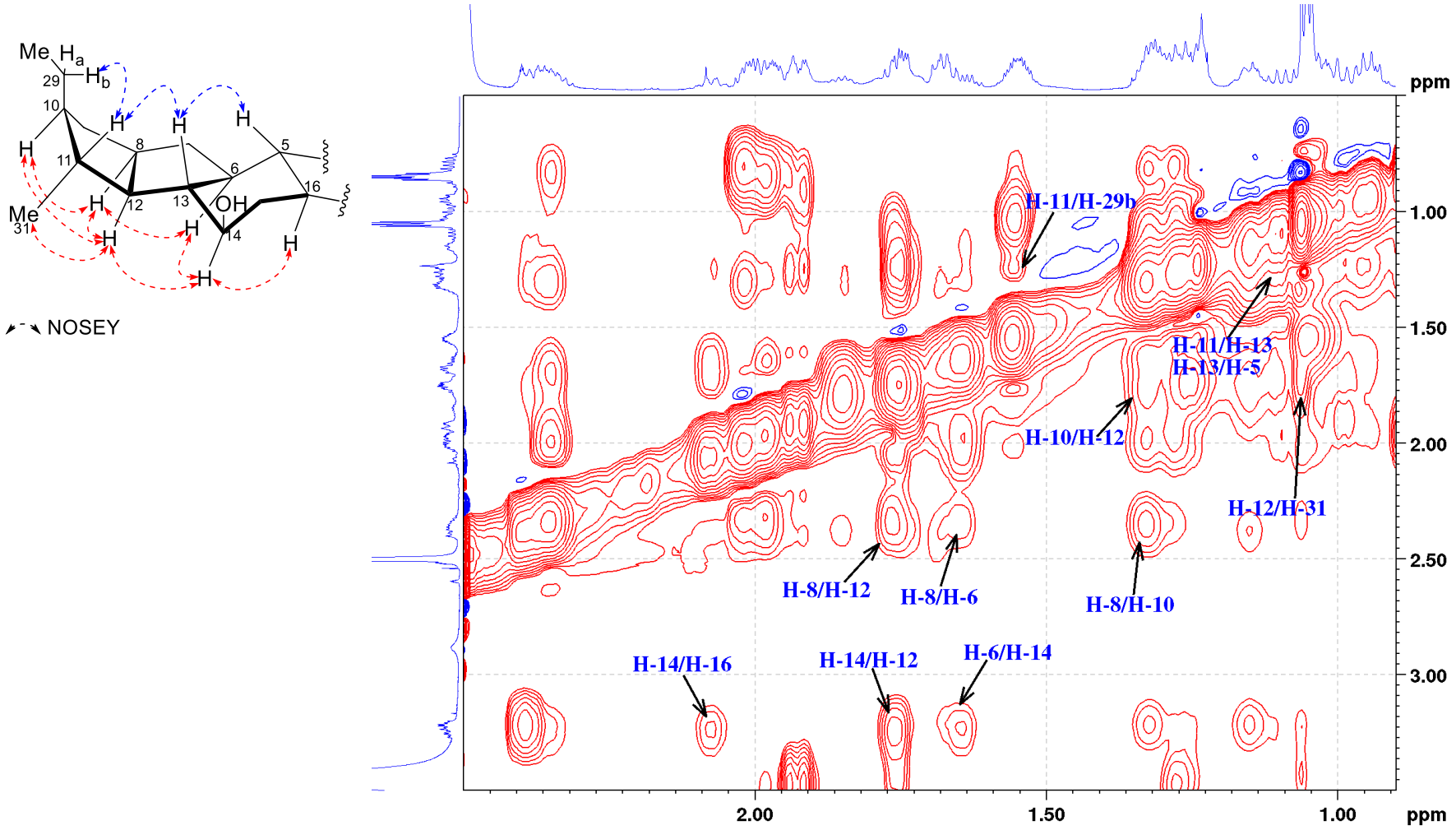
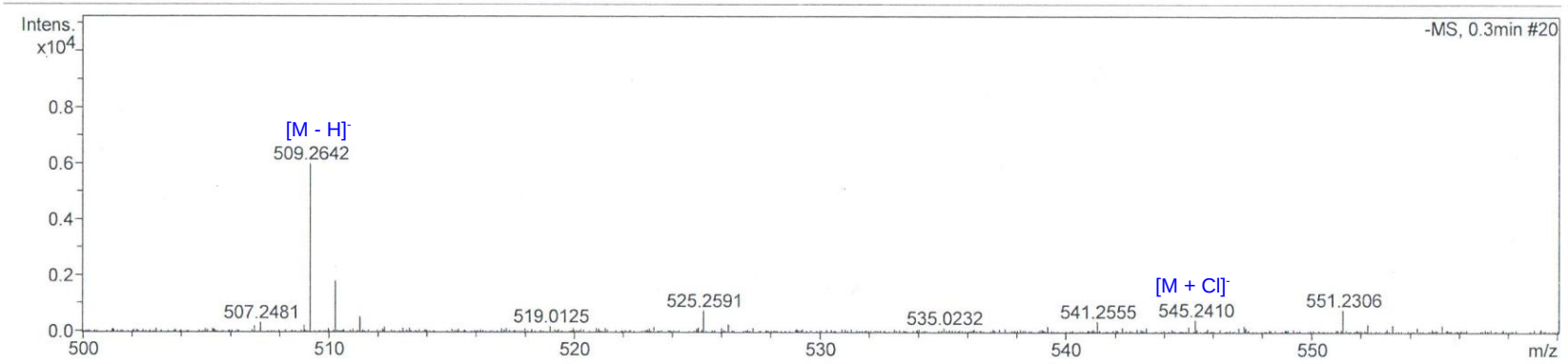
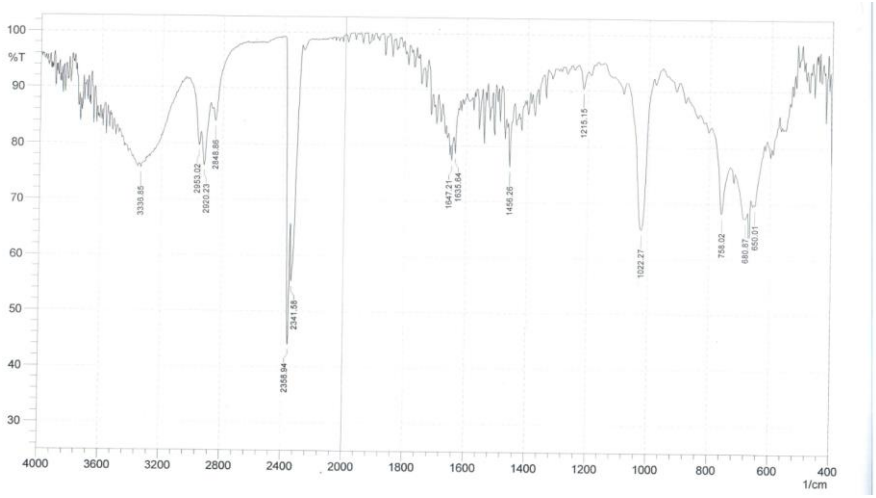


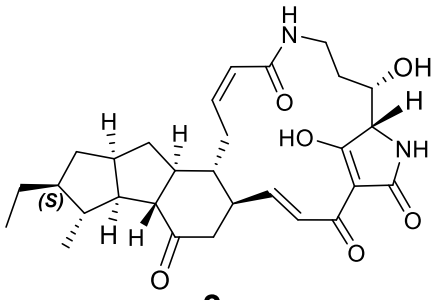
Figure S19. HRESIMS (**a**) and IR (**b**) of compound **3**.

(**a**) **HRESIMS**



(**b**) **IR**





3

Chemical Formula: $C_{29}H_{38}N_2O_6$

caculated for $[M-H]^-$: 509.2652

caculated for $[M+Cl]^-$: 545.2418

Figure S20. The ^{1}H NMR spectrum of compound **3** in DMSO-d_6.

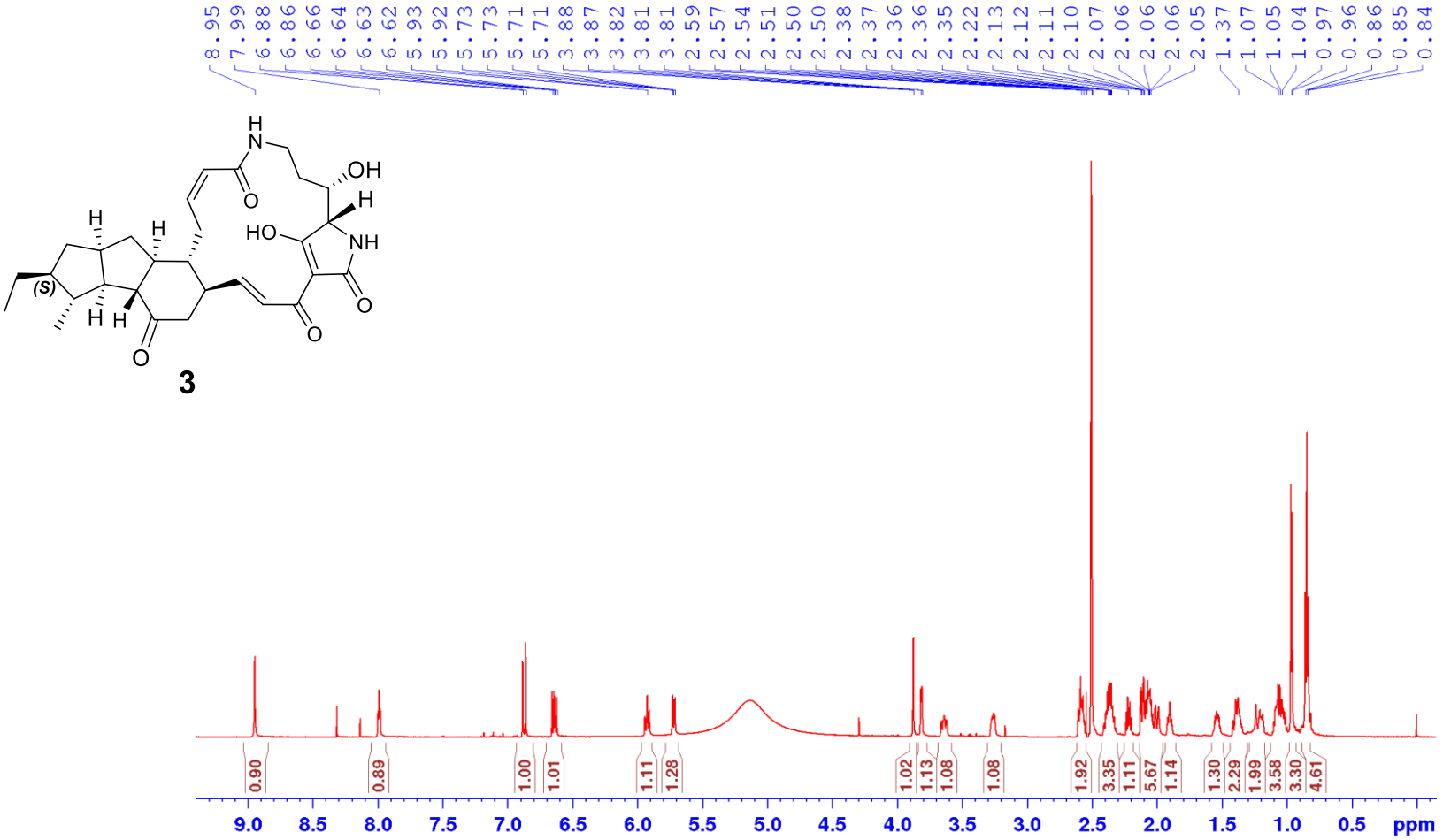


Figure S21. The ^{13}C NMR and DEPT 135 spectra of compound **3** in DMSO-d_6.

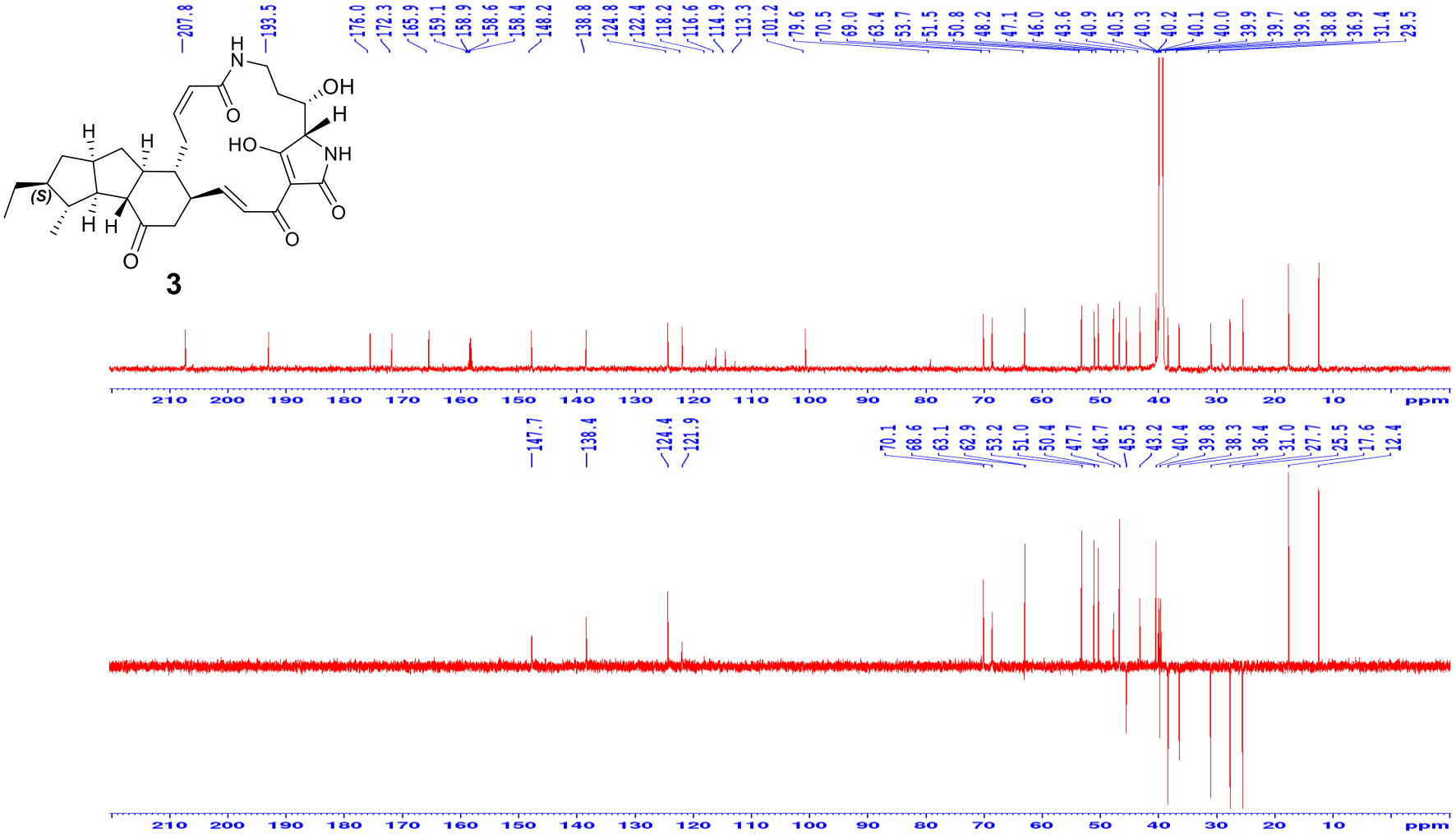


Figure S22. The HSQC spectrum of compound **3** in DMSO-d_6.

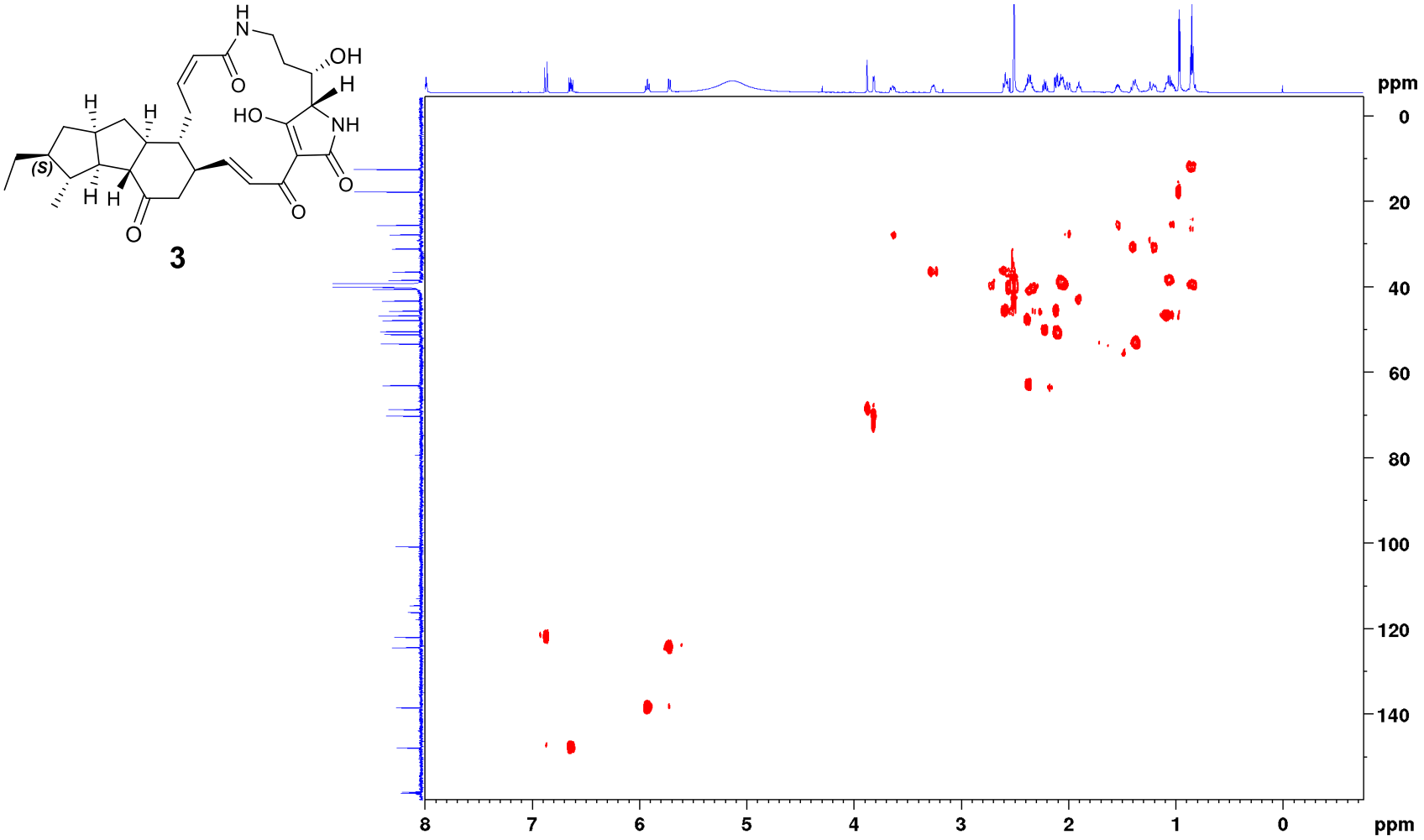


Figure S23. The HMBC spectrum of compound **3** in DMSO-d_6.

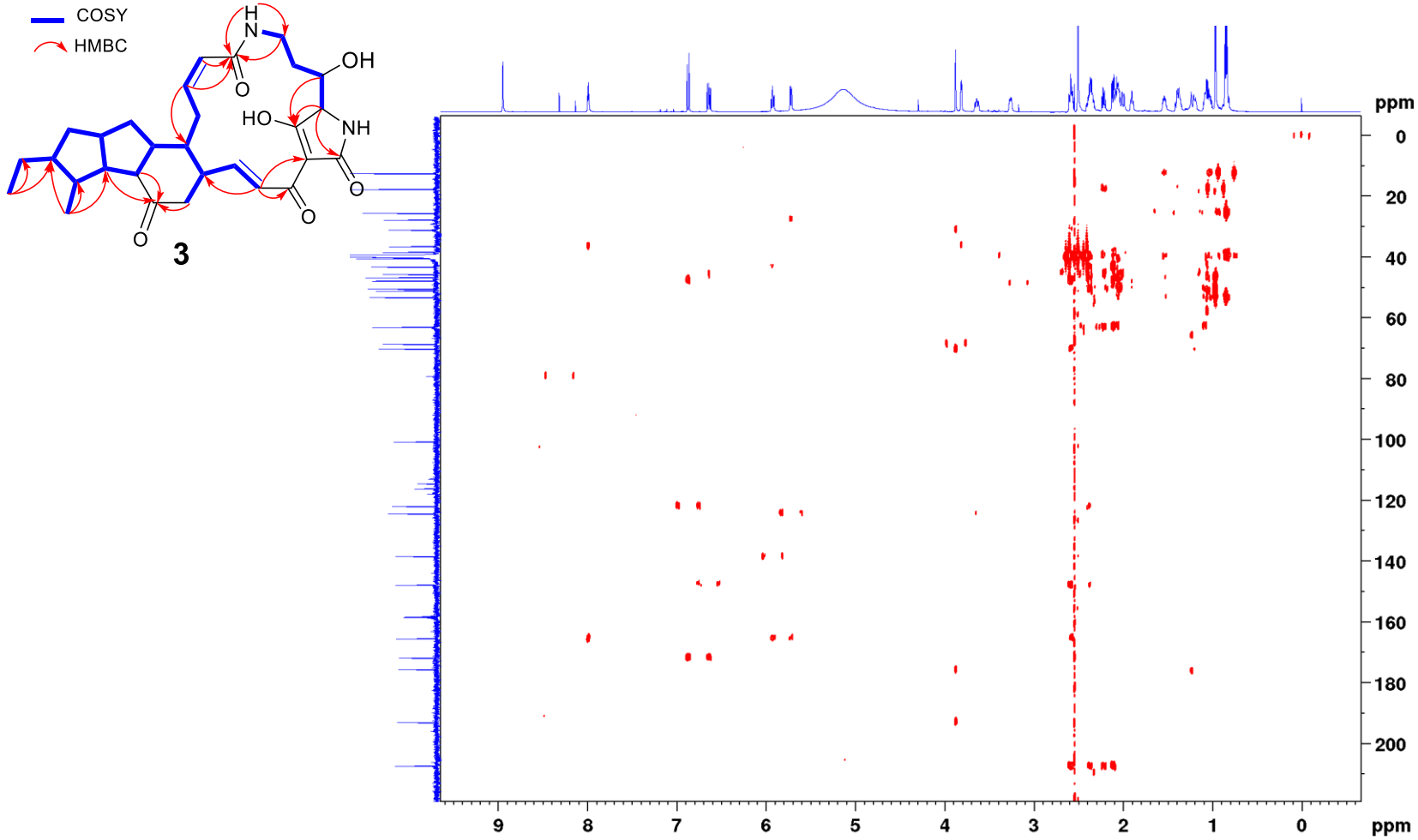


Figure S24. The ^{1}H-^{1} HCOSY spectrum of compound **3** in DMSO-d_6.

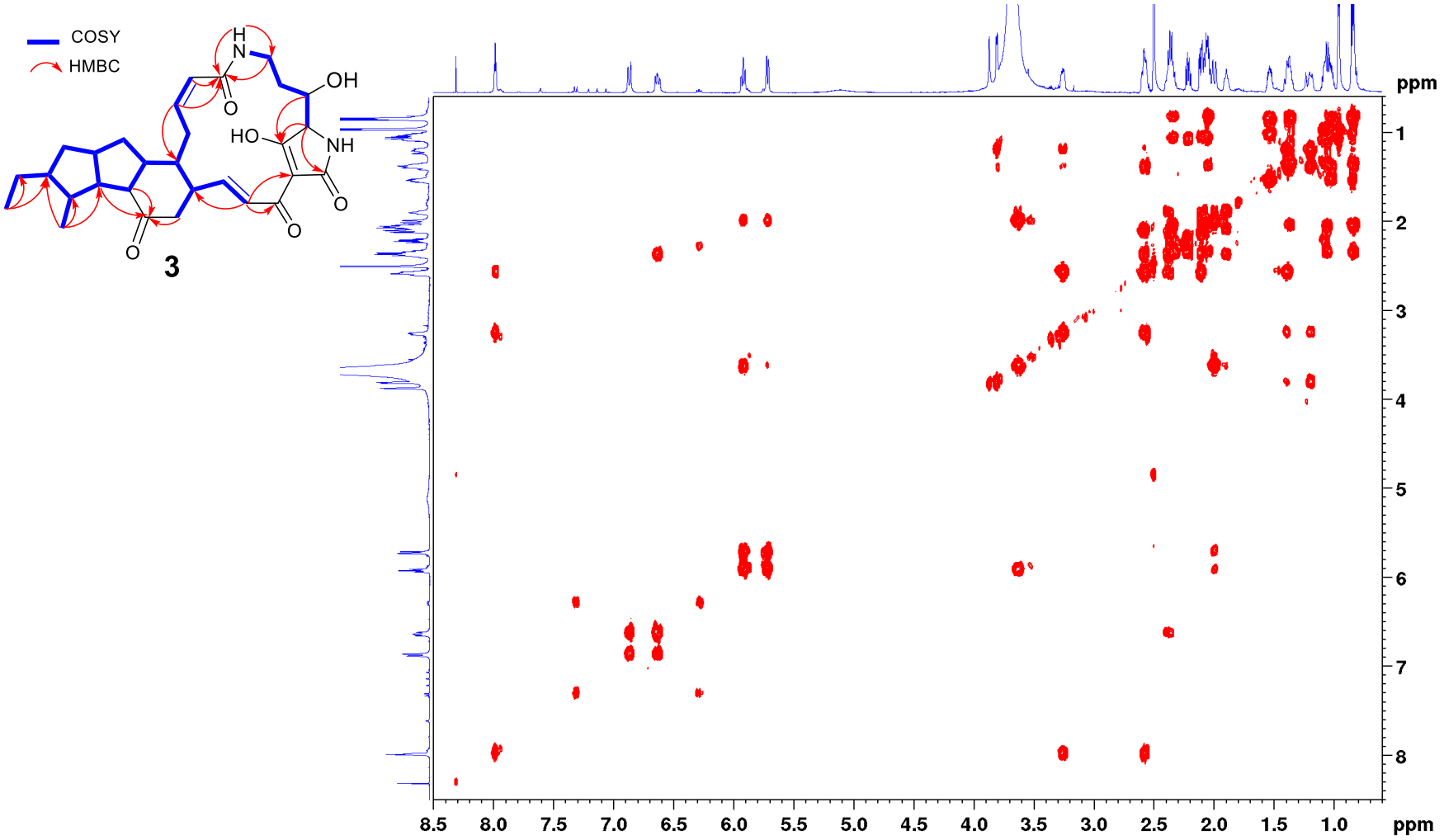


Figure S25. The NOESY spectrum of compound **3** in DMSO-d_6.

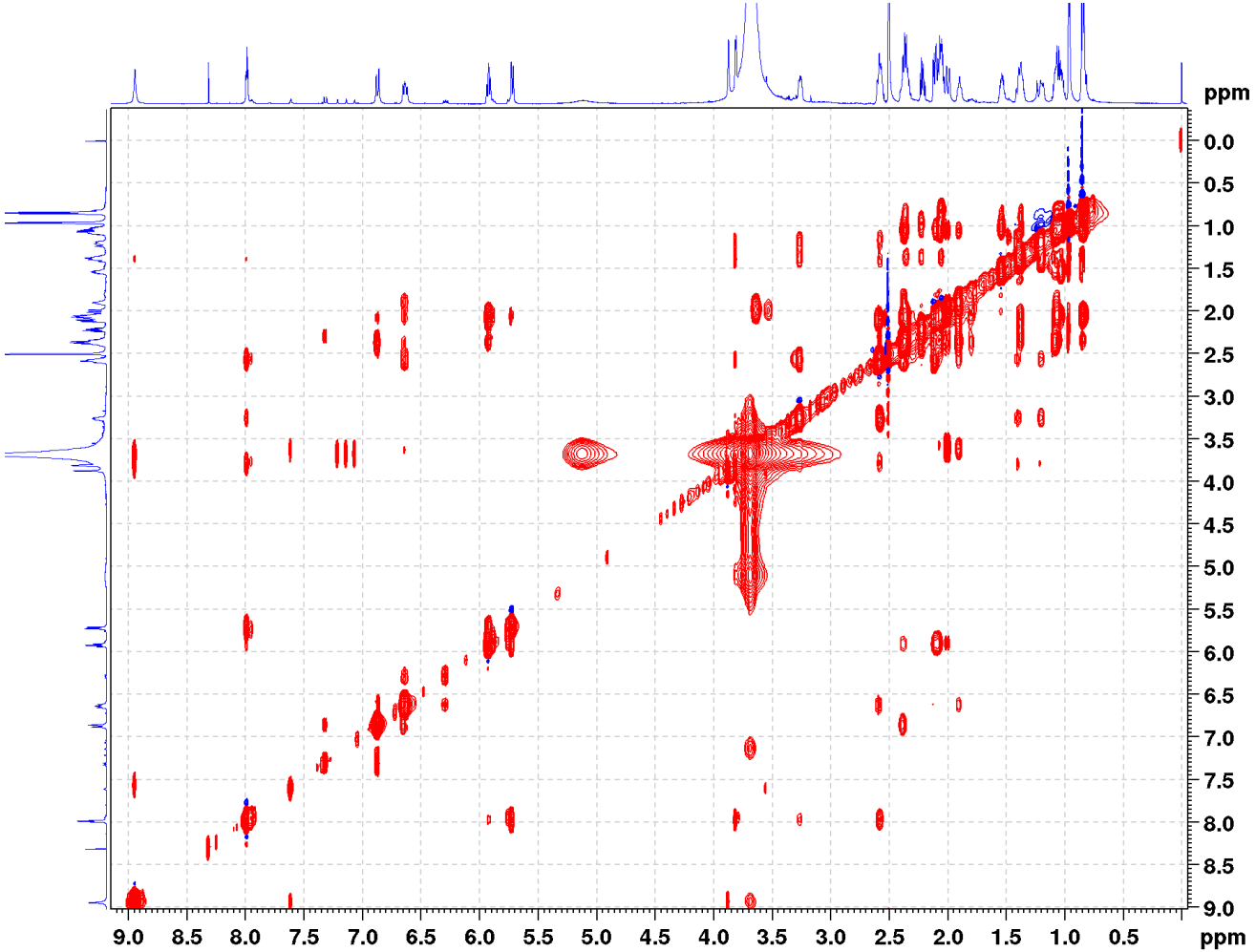


Figure S26. The key NOESY spectrum of compound **3** in DMSO-d_6.

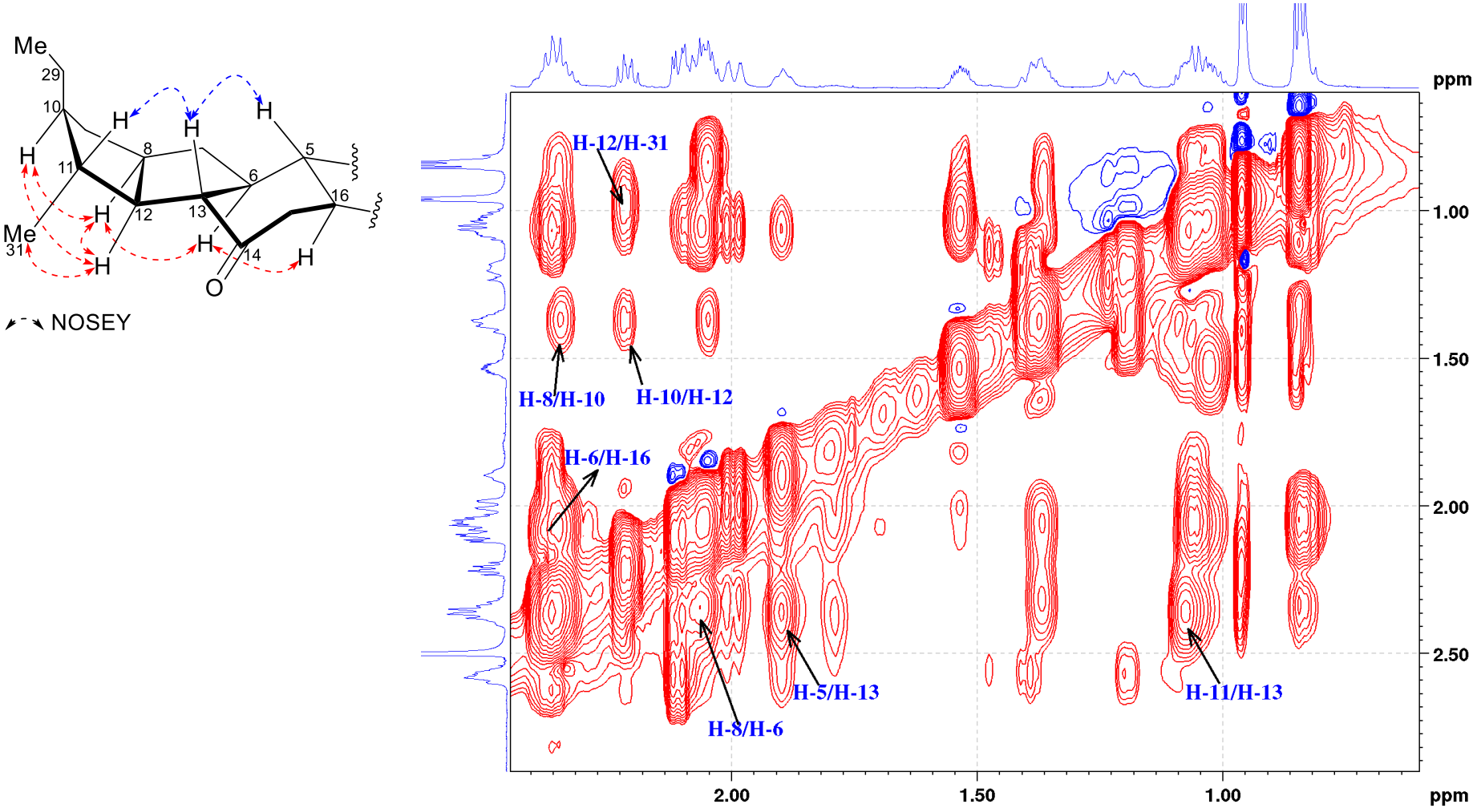
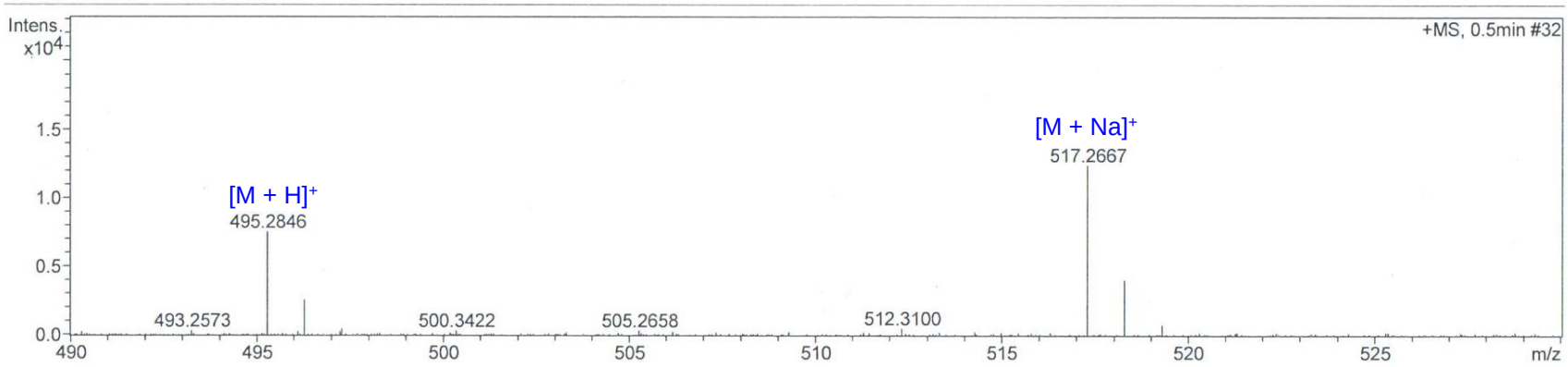
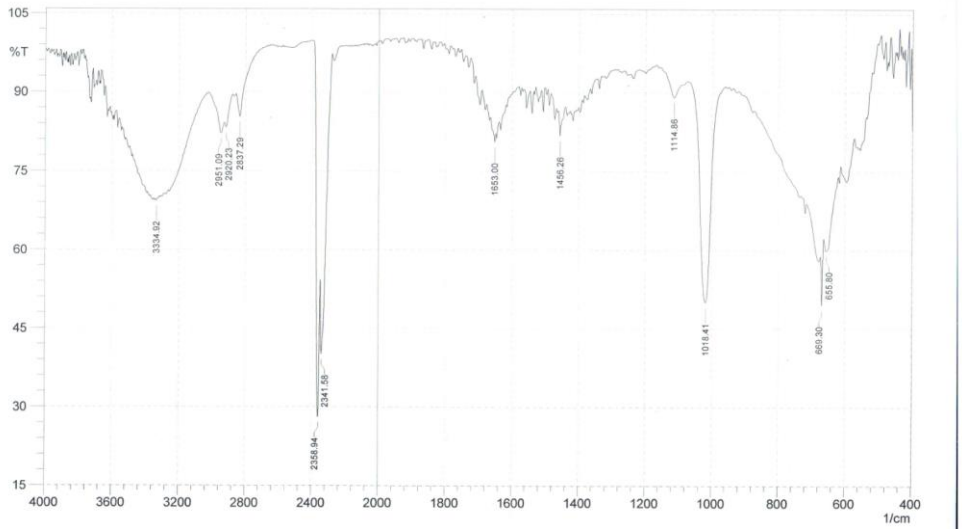


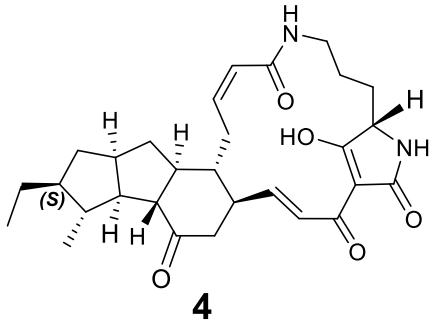
Figure S27. HRESIMS (**a**) and IR (**b**) of compound **4**.

(a) HRESIMS



(b) IR





4

Chemical Formula: $C_{29}H_{38}N_2O_5$

caculated for $[M+H]^+$:495.2859

caculated for $[M+H]^+$:517.2678

Figure S28. The ^{1}H NMR spectrum of compound **4** in DMSO-d_6.

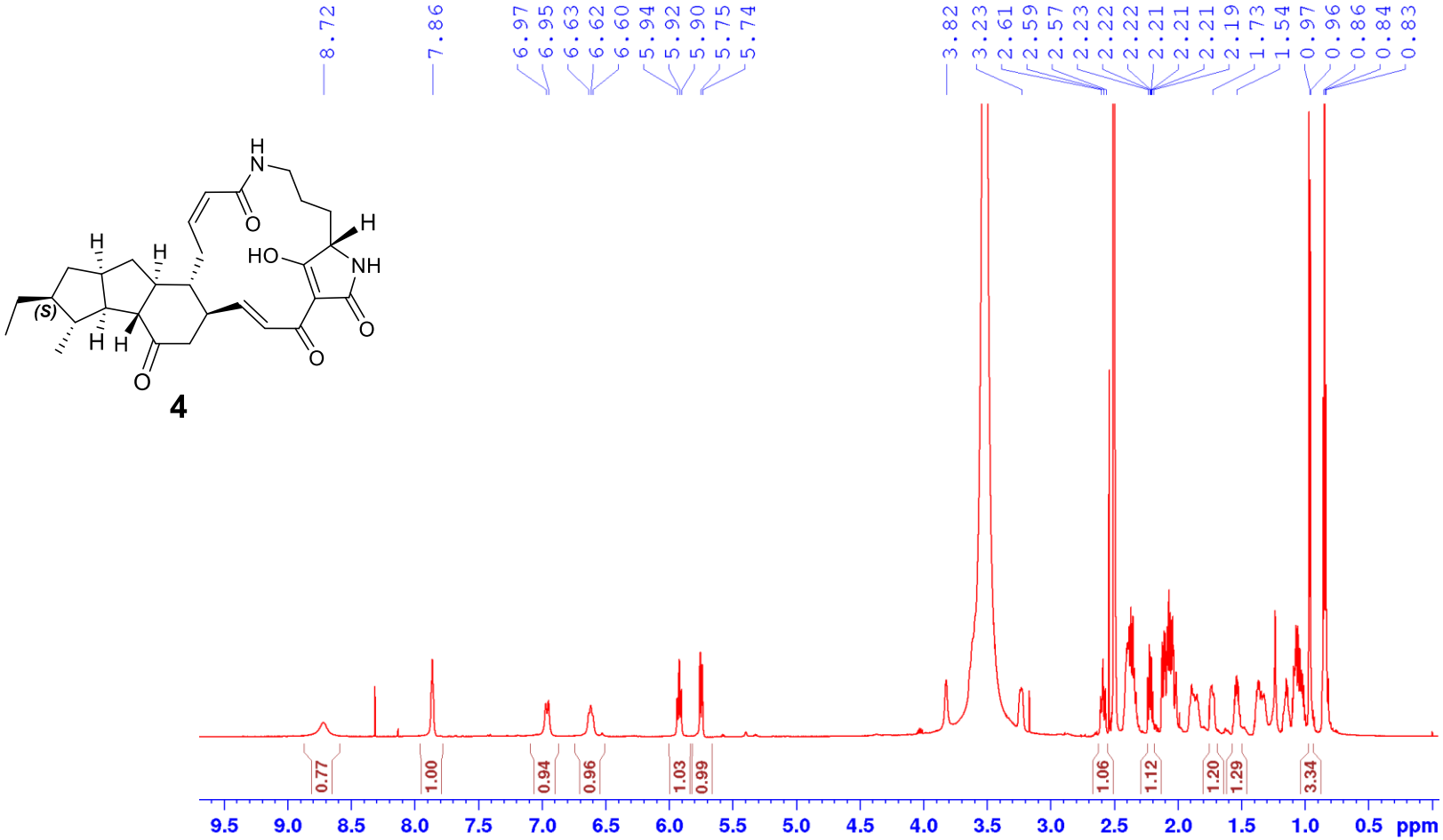


Figure S29. The ^{13}C NMR and DEPT 135 spectra of compound **4** in DMSO-d_6.

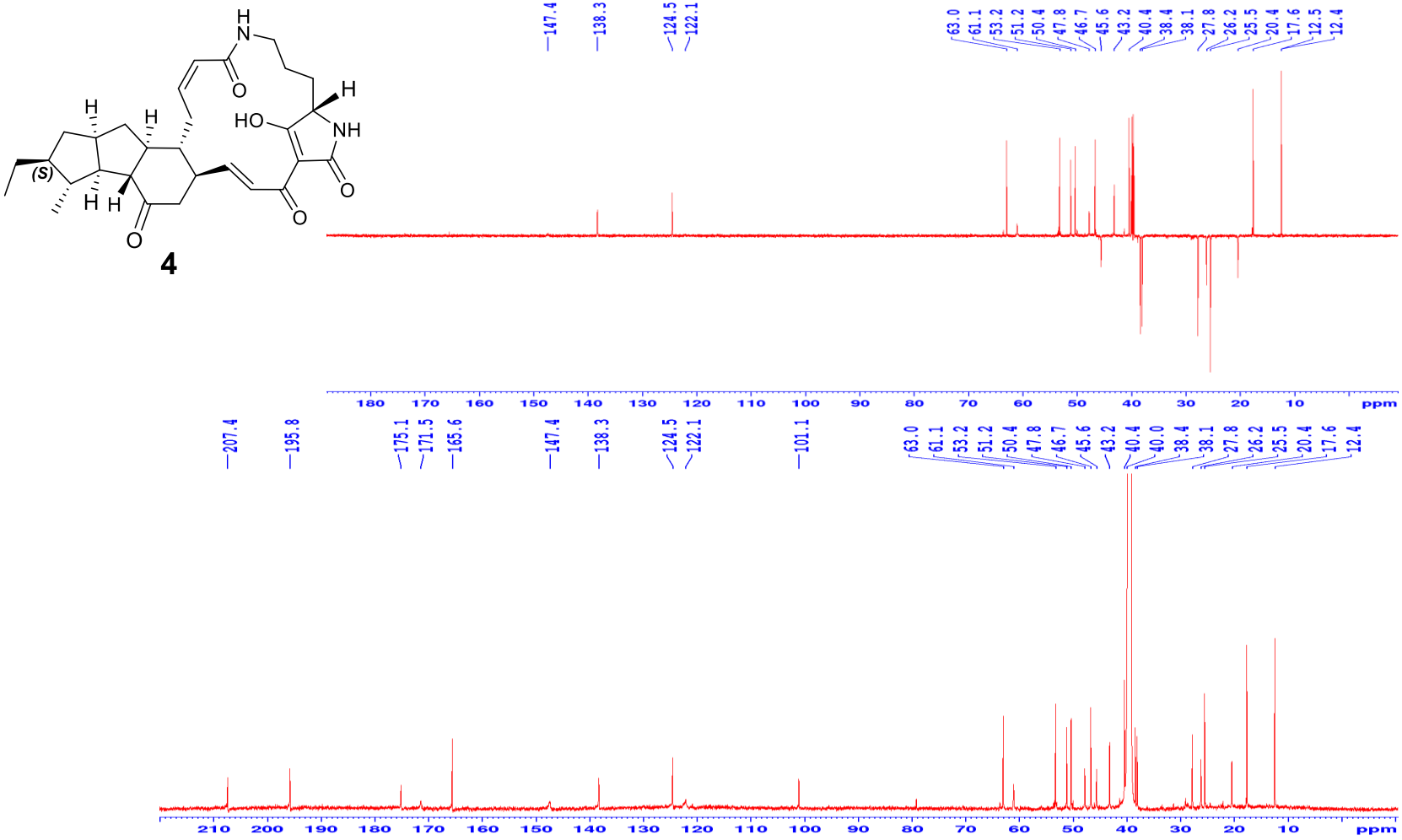


Figure S30. The HSQC spectrum of compound **4** in DMSO-d_6.

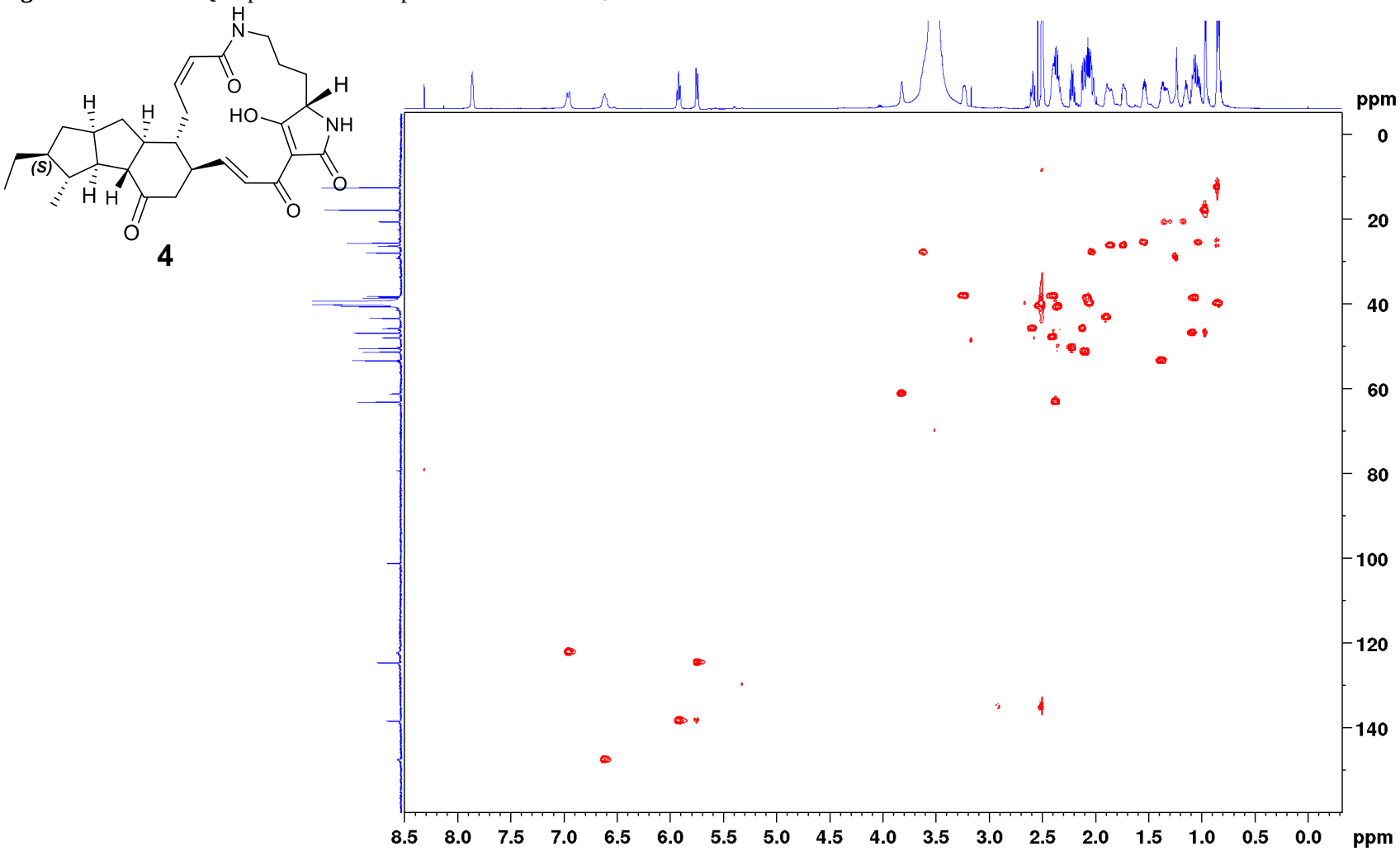


Figure S31. The HMBC spectrum of compound **4** in DMSO-d_6.

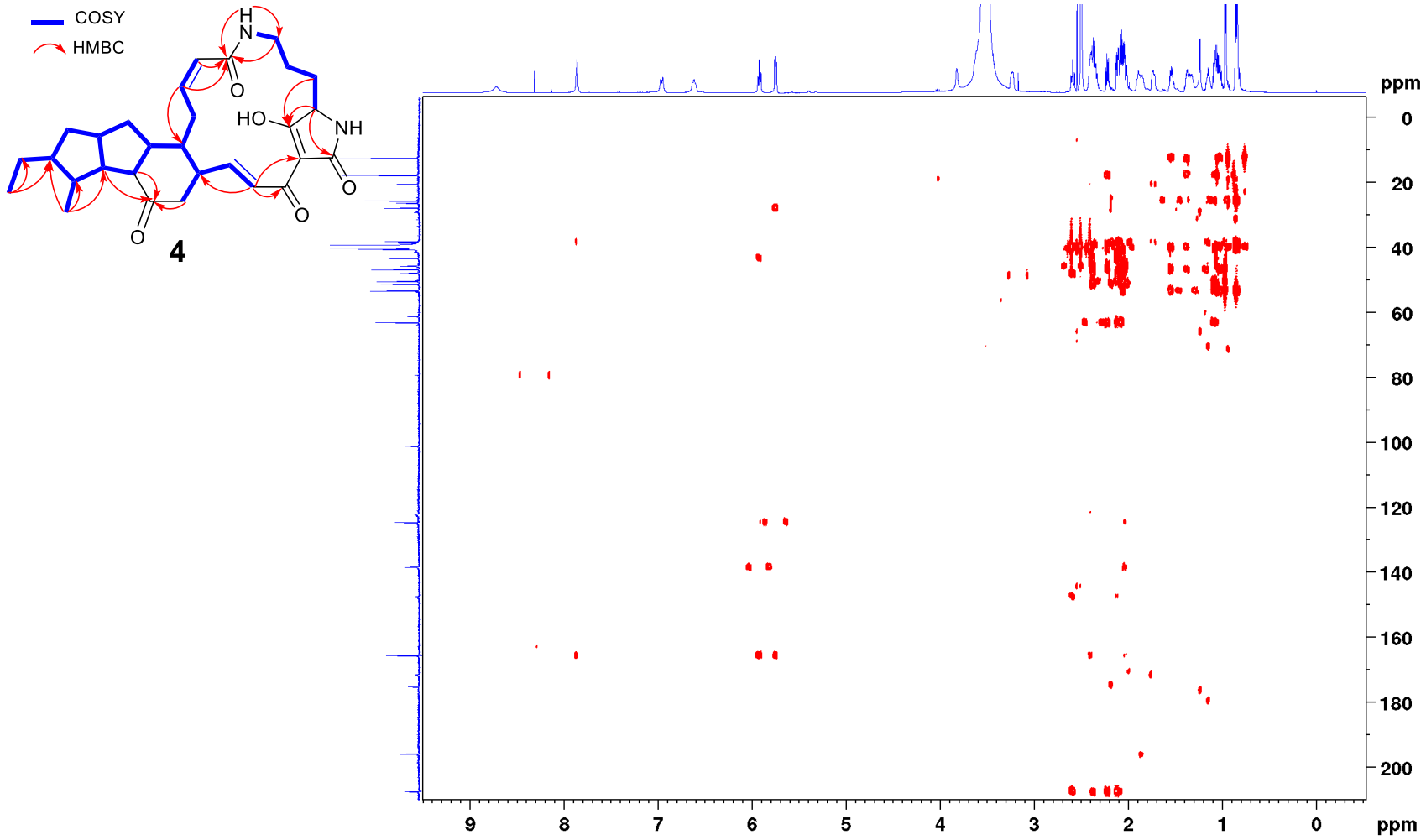


Figure S32. The ^{1}H-^{1}H COSY spectrum of compound **4** in DMSO-d_6.

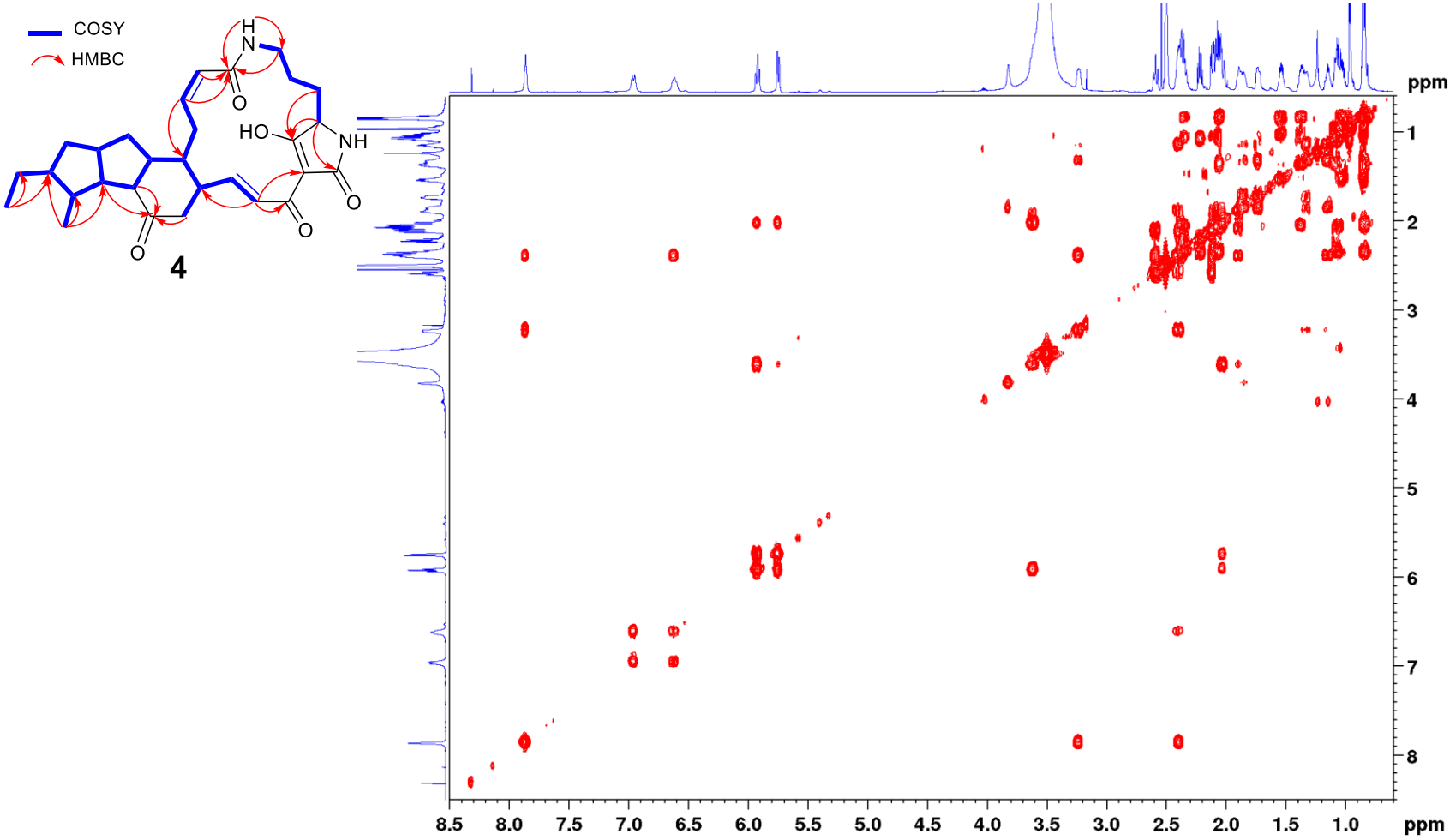


Figure S33. The NOESY spectrum of compound **4** in DMSO-d_6.

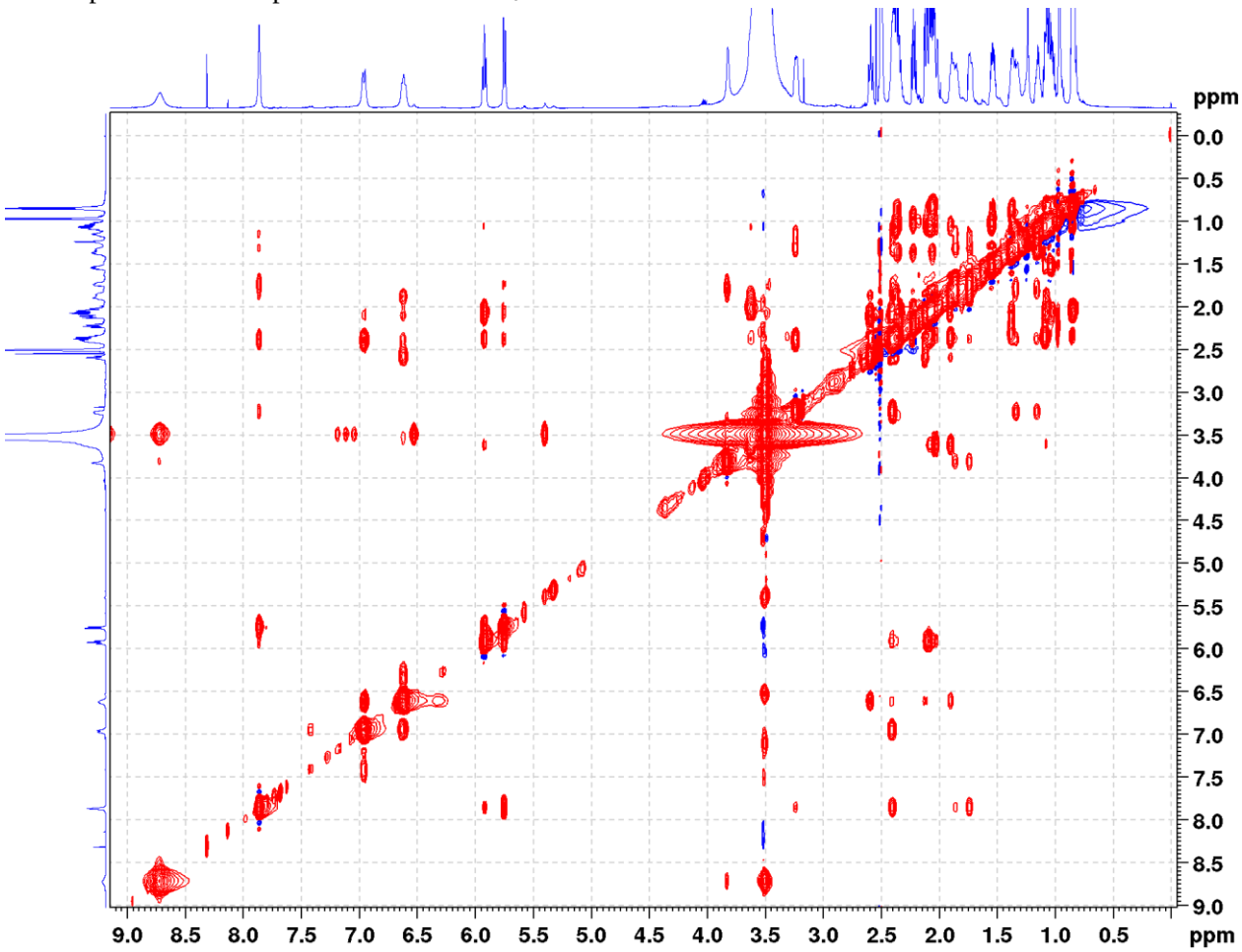


Figure S34. The key NOESY spectrum of compound **4** in DMSO-d_6.

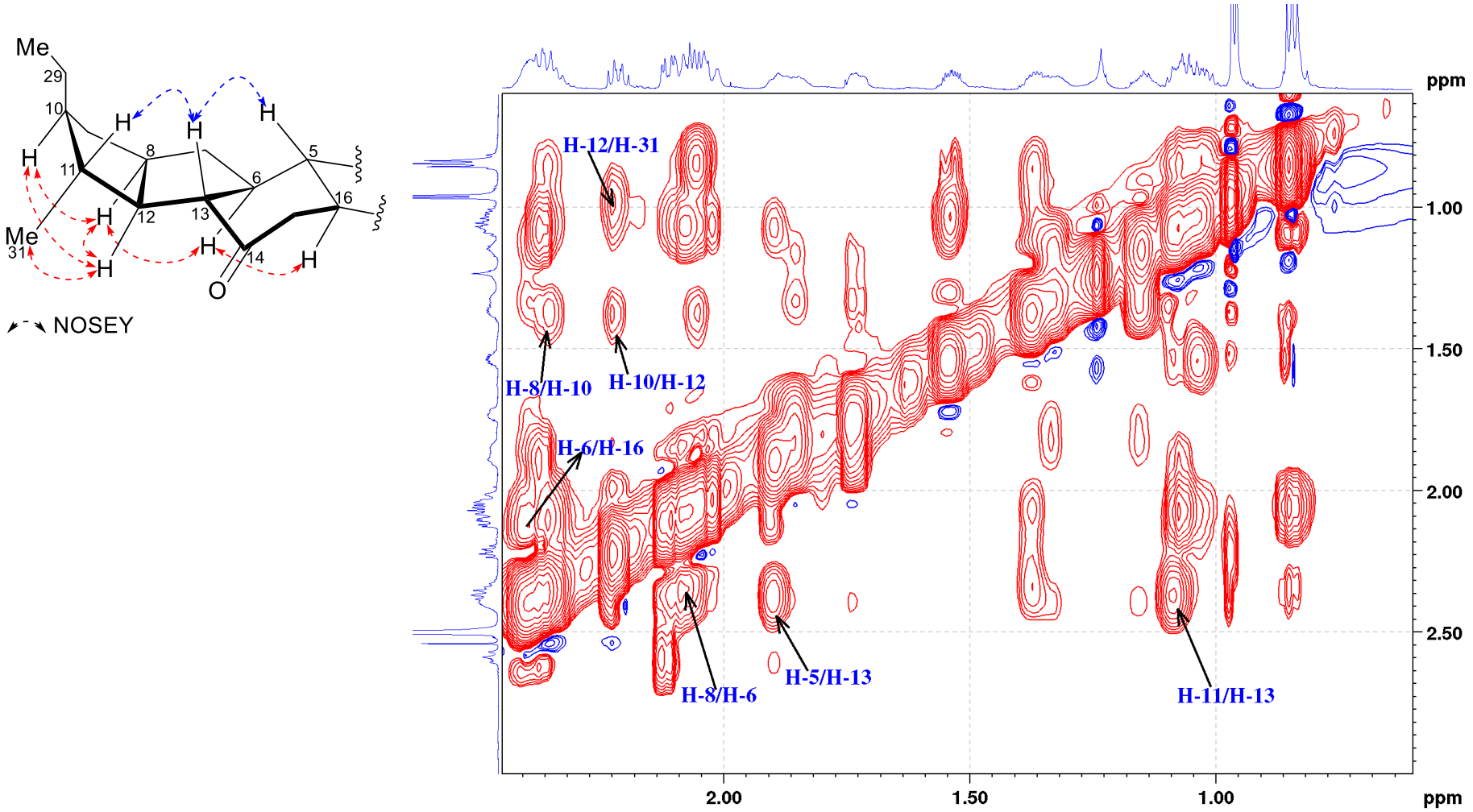
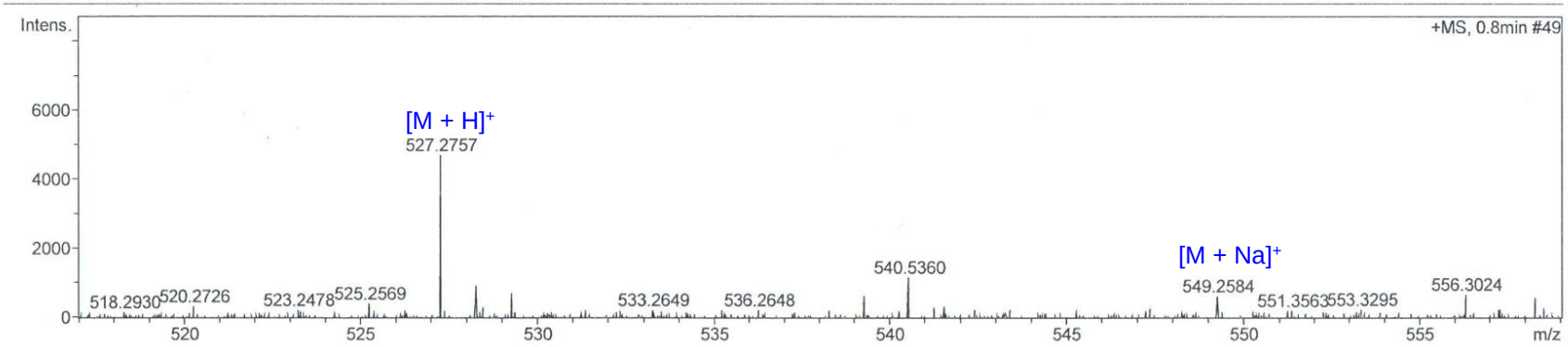
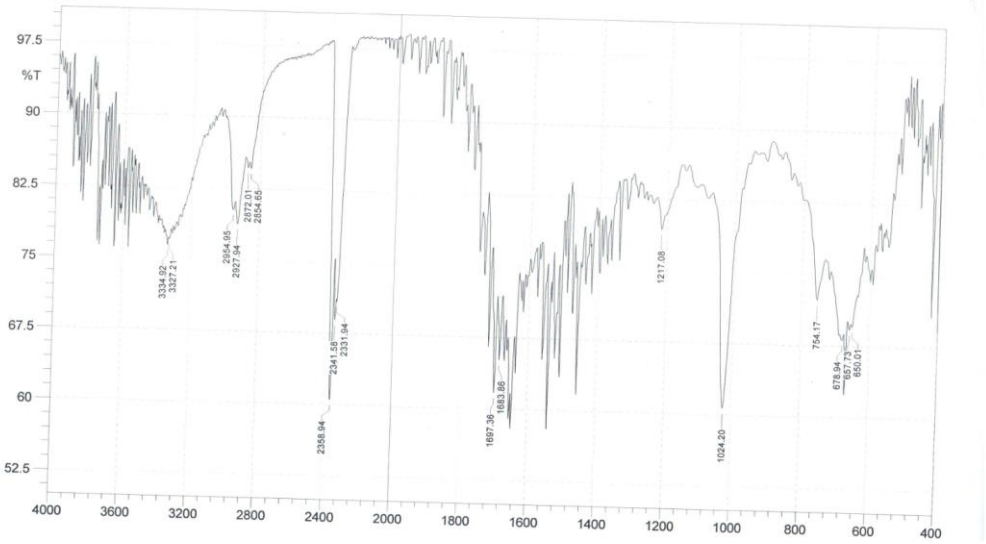


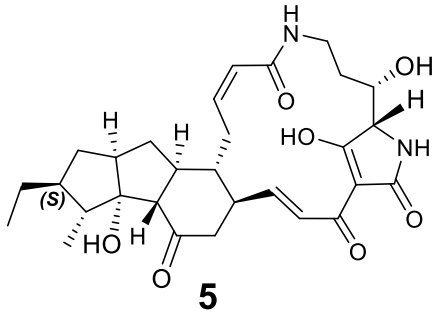
Figure S35. HRESIMS (**a**) and IR (**b**) of compound **5**.

(a) HR-ESI-MS



(b) IR





5

Chemical Formula: $C_{29}H_{38}N_2O_7$

caculated for $[M+H]^+$: 527.2757

caculated for $[M+H]^+$: 549.2577

Figure S36. The ^{1}H NMR spectrum of compound **5** in DMSO-d_6.

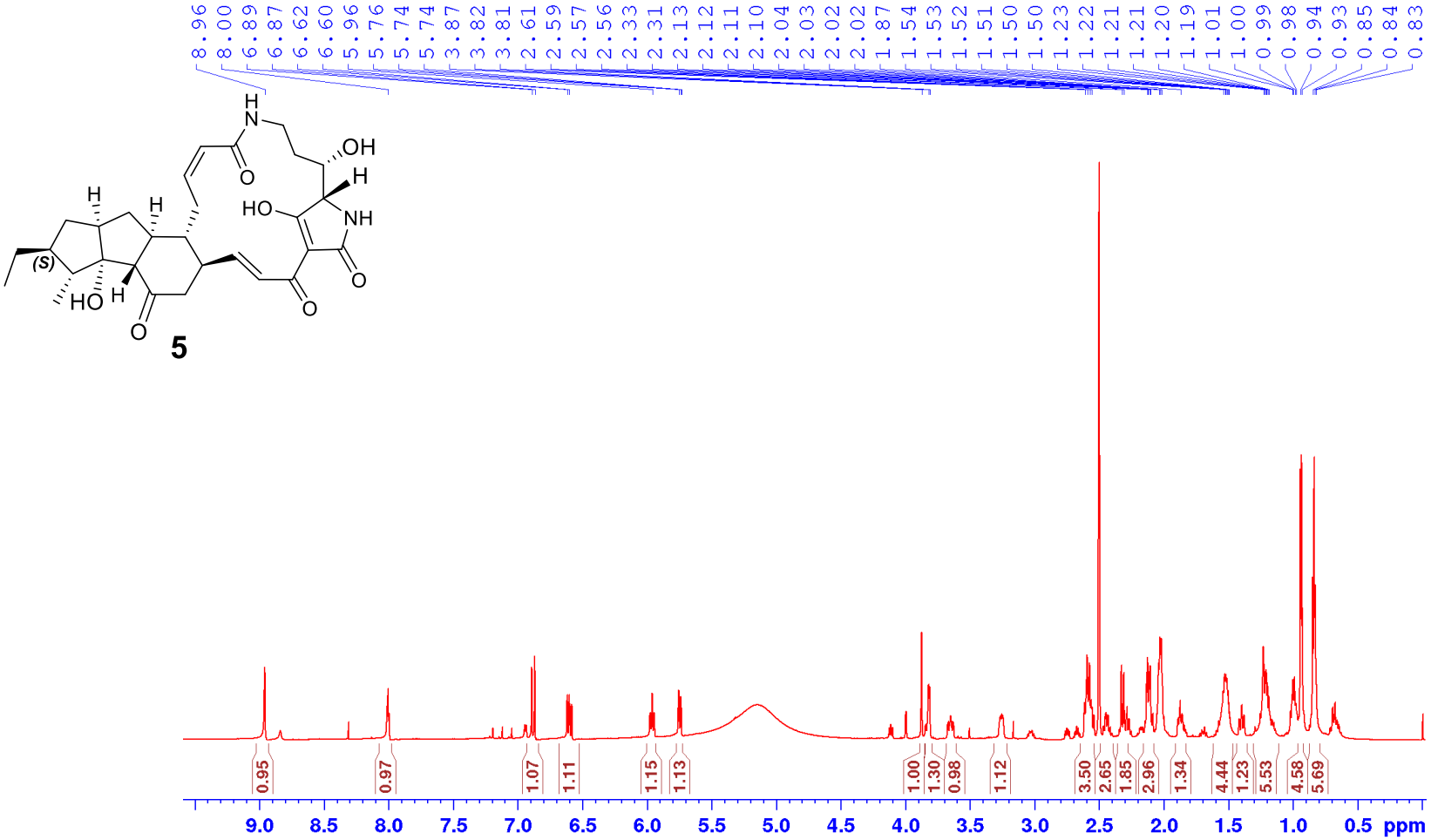


Figure S37. The ^{13}C NMR and DEPT 135 spectra of compound **5** in DMSO-d_6.

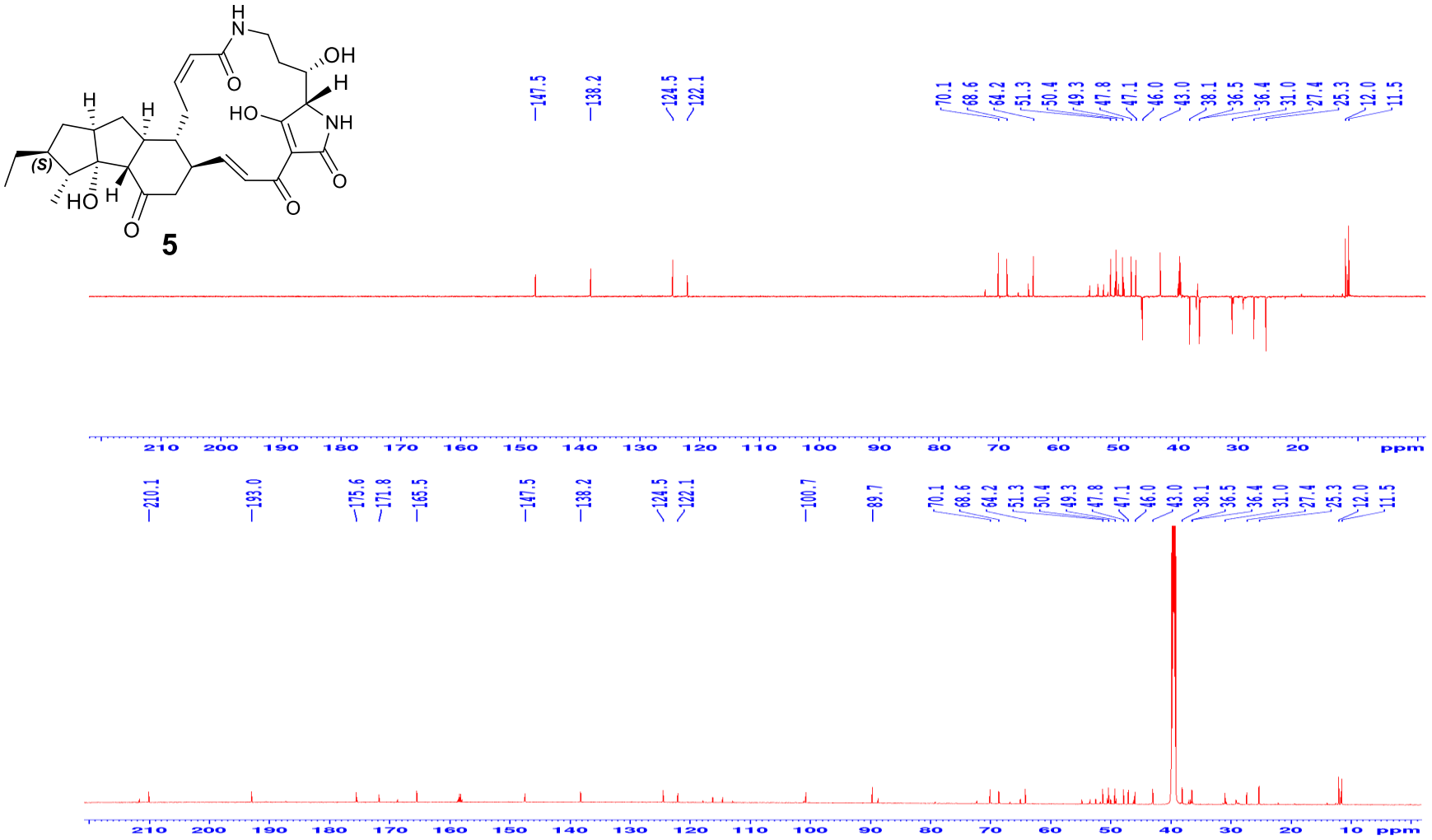


Figure S38. The HSQC spectrum of compound **5** in DMSO-d_6.

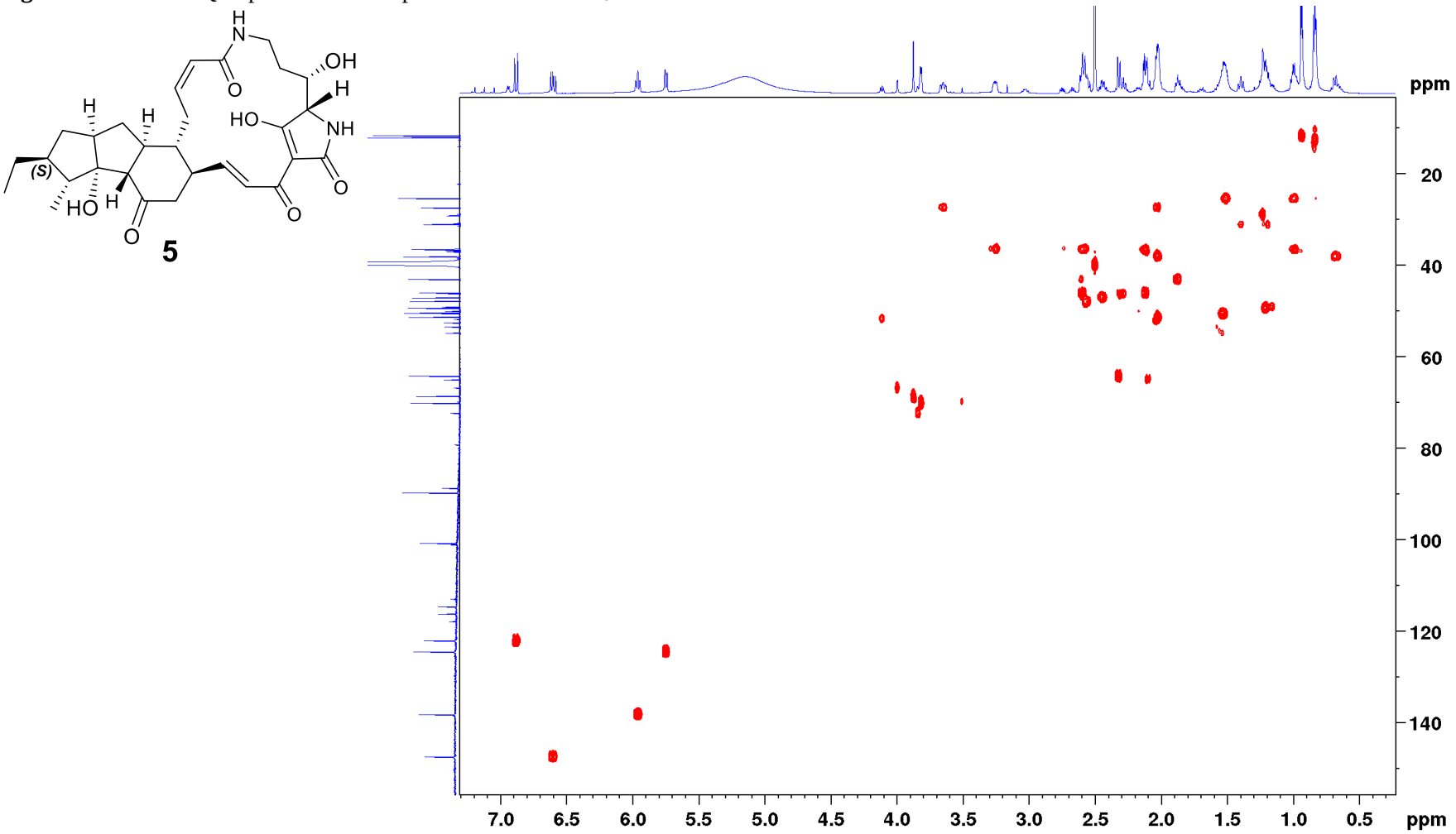


Figure S39. The HMBC spectrum of compound **5** in DMSO-d_6.

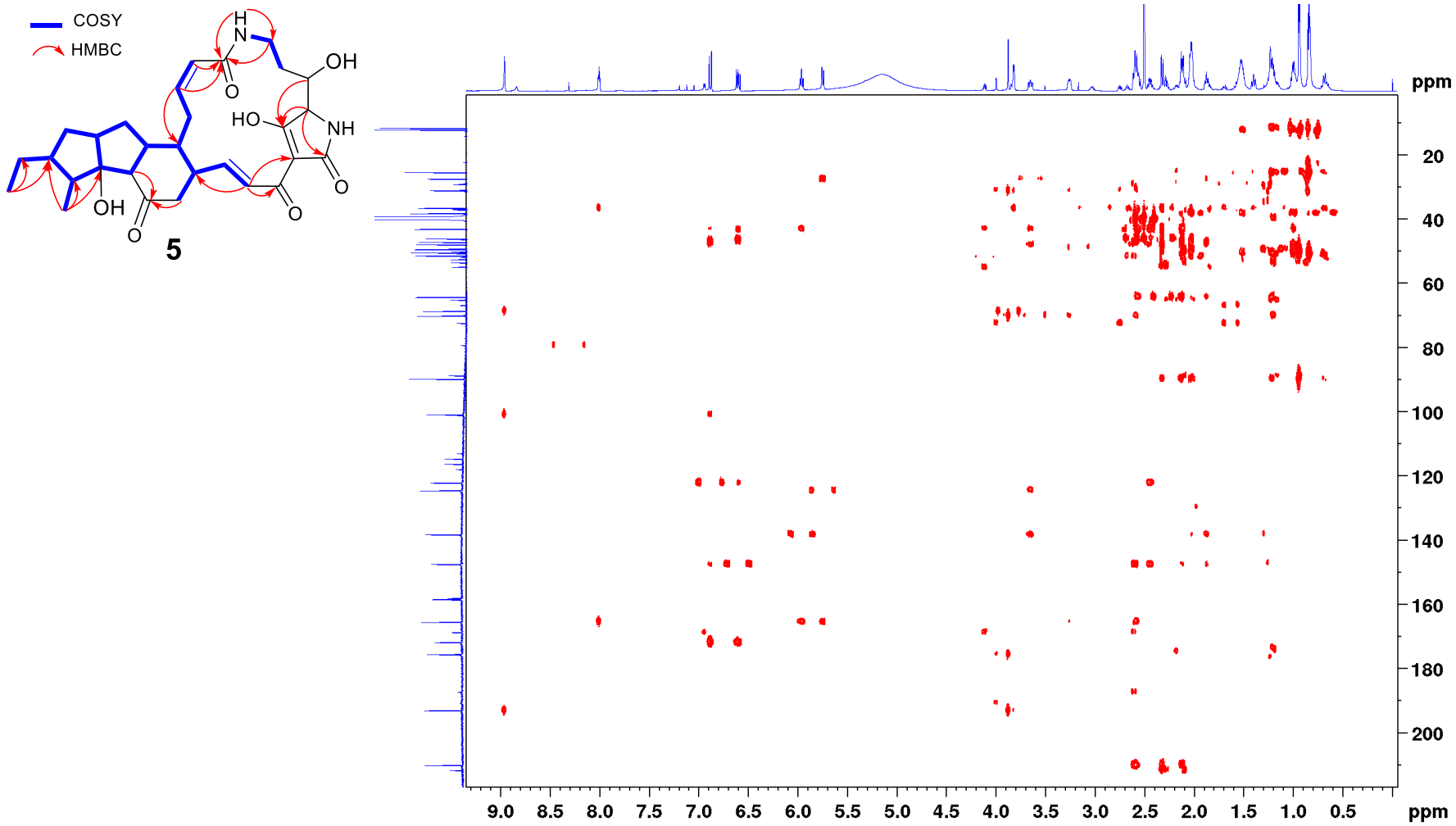


Figure S40. The ^{1}H-^{1}H COSY spectrum of compound **5** in DMSO-d_6.

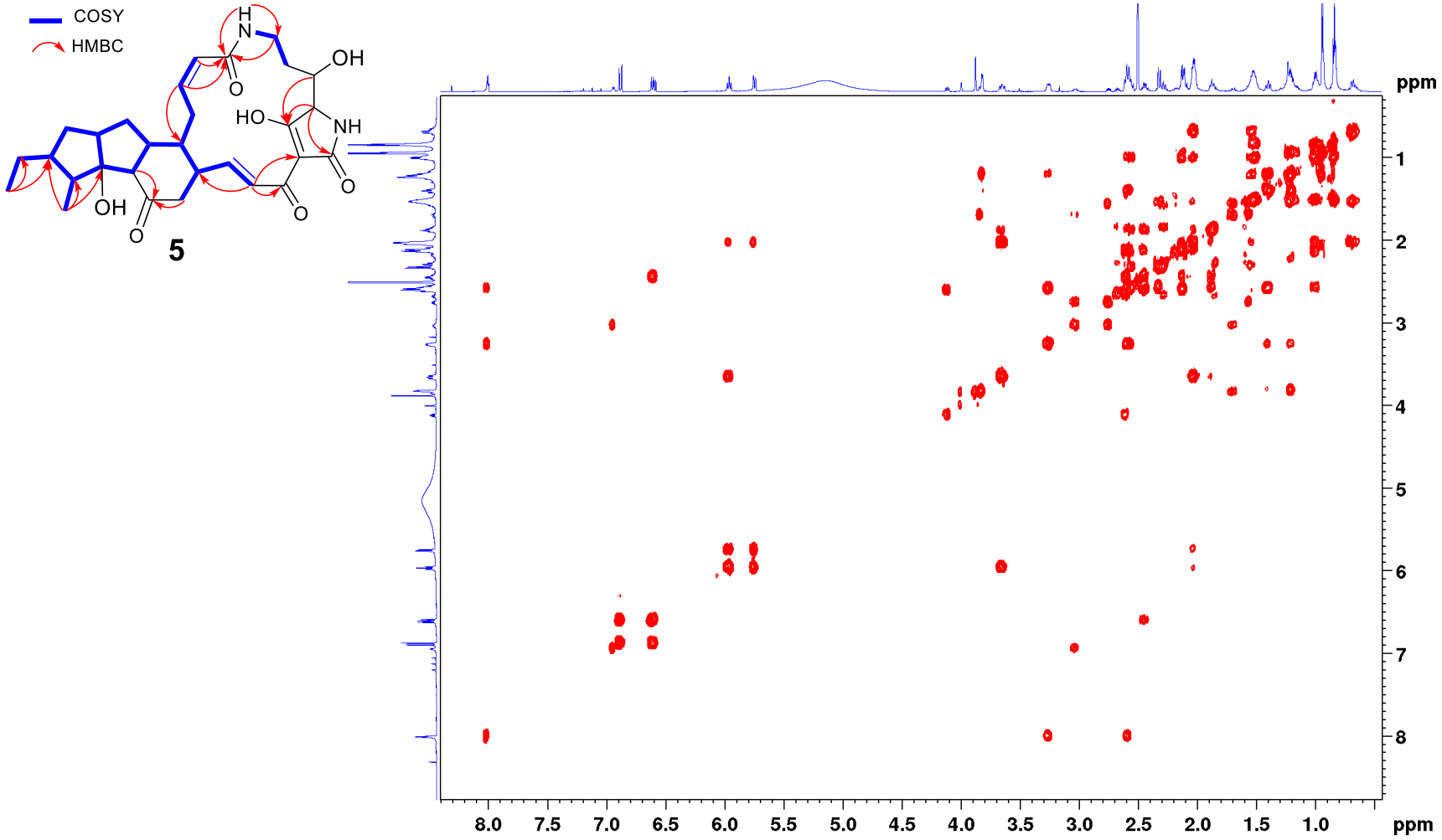


Figure S41. The NOESY spectrum of compound **5** in DMSO-d_6.

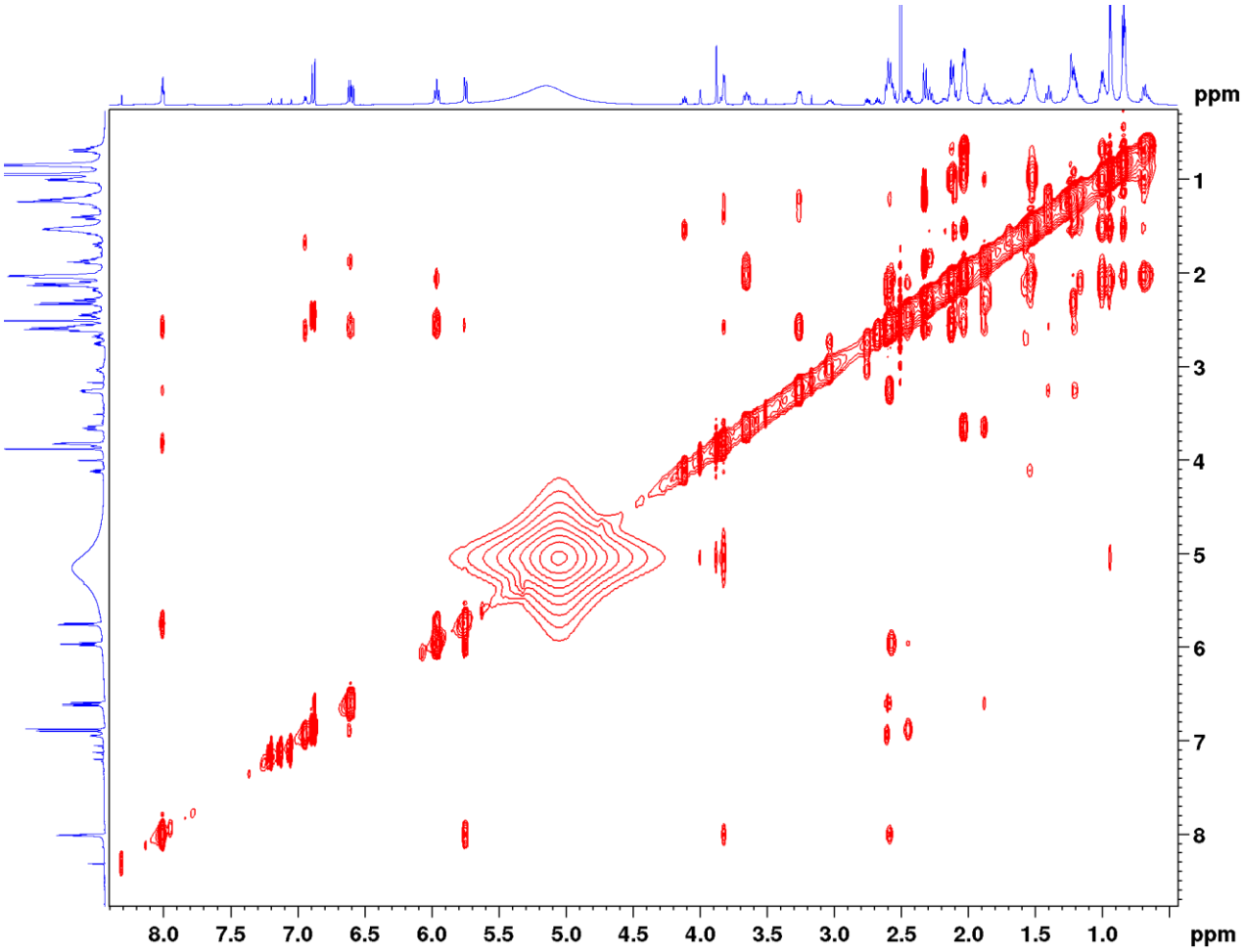


Figure S42. The key NOESY spectrum of compound **5** in DMSO-d_6.

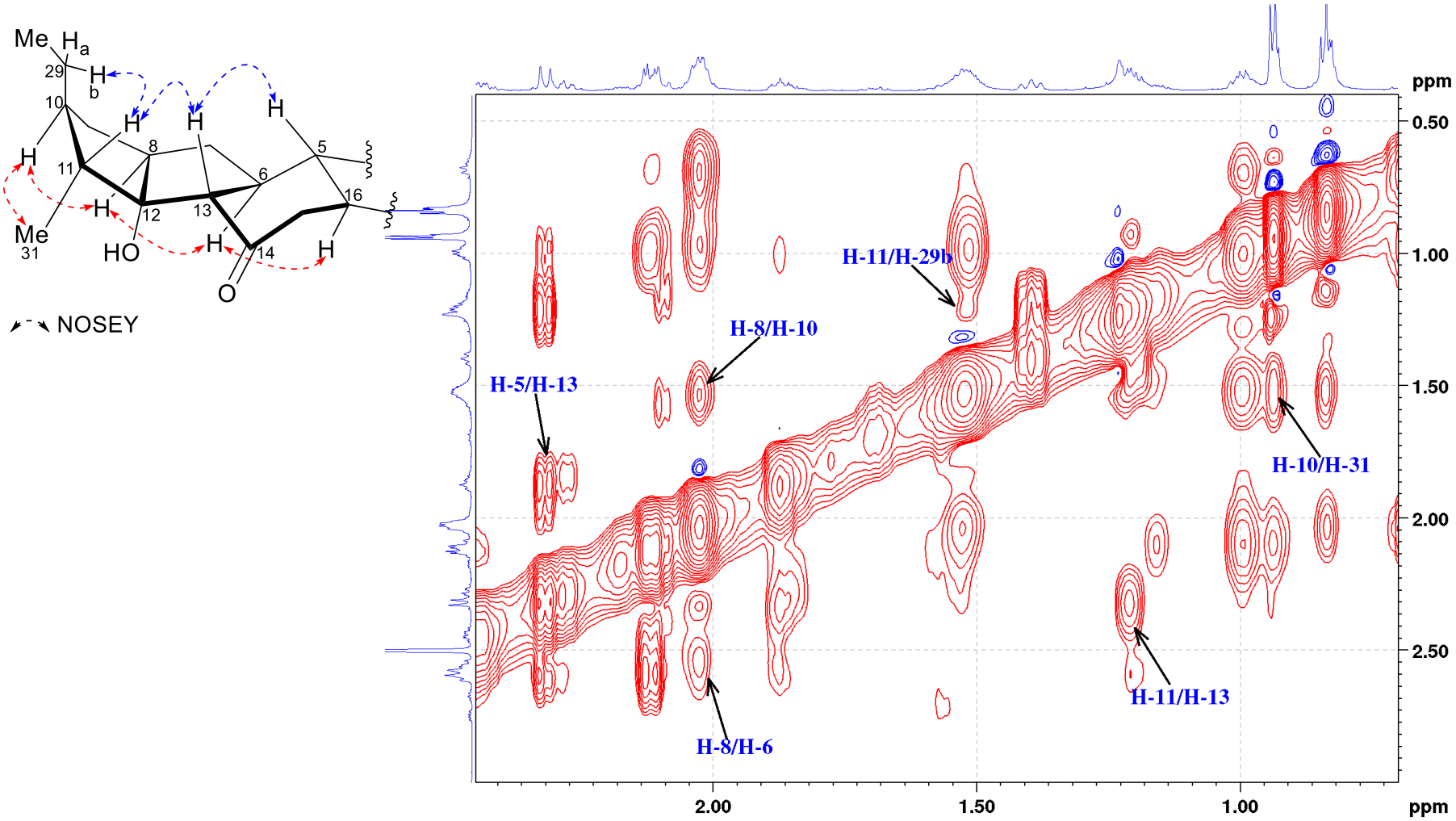
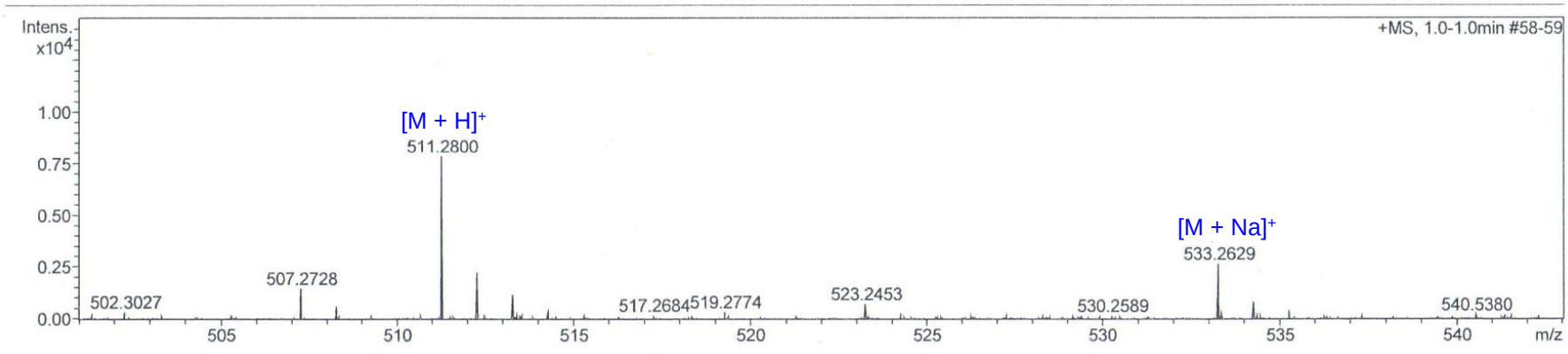
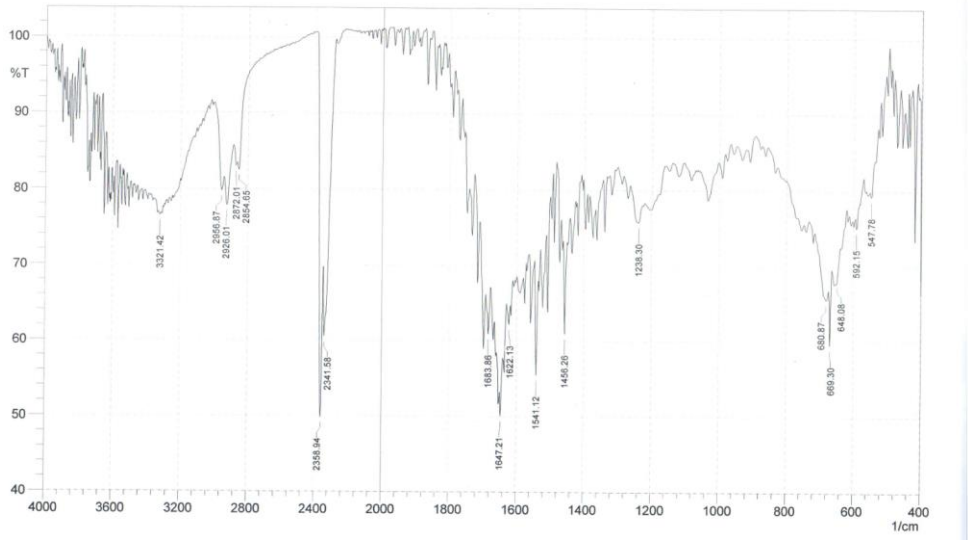


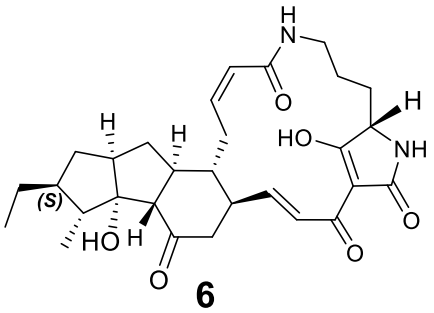
Figure S43. HRESIMS (**a**) and IR (**b**) of compound **6**.

(a) HR-ESI-MS



(b) IR





6

Chemical Formula: $C_{29}H_{38}N_2O_6$

caculated for $[M+H]^+$:511.2808

caculated for $[M+Na]^+$:533.2628

Figure S44. The ^{1}H NMR spectrum of compound **6** in DMSO-d_6.

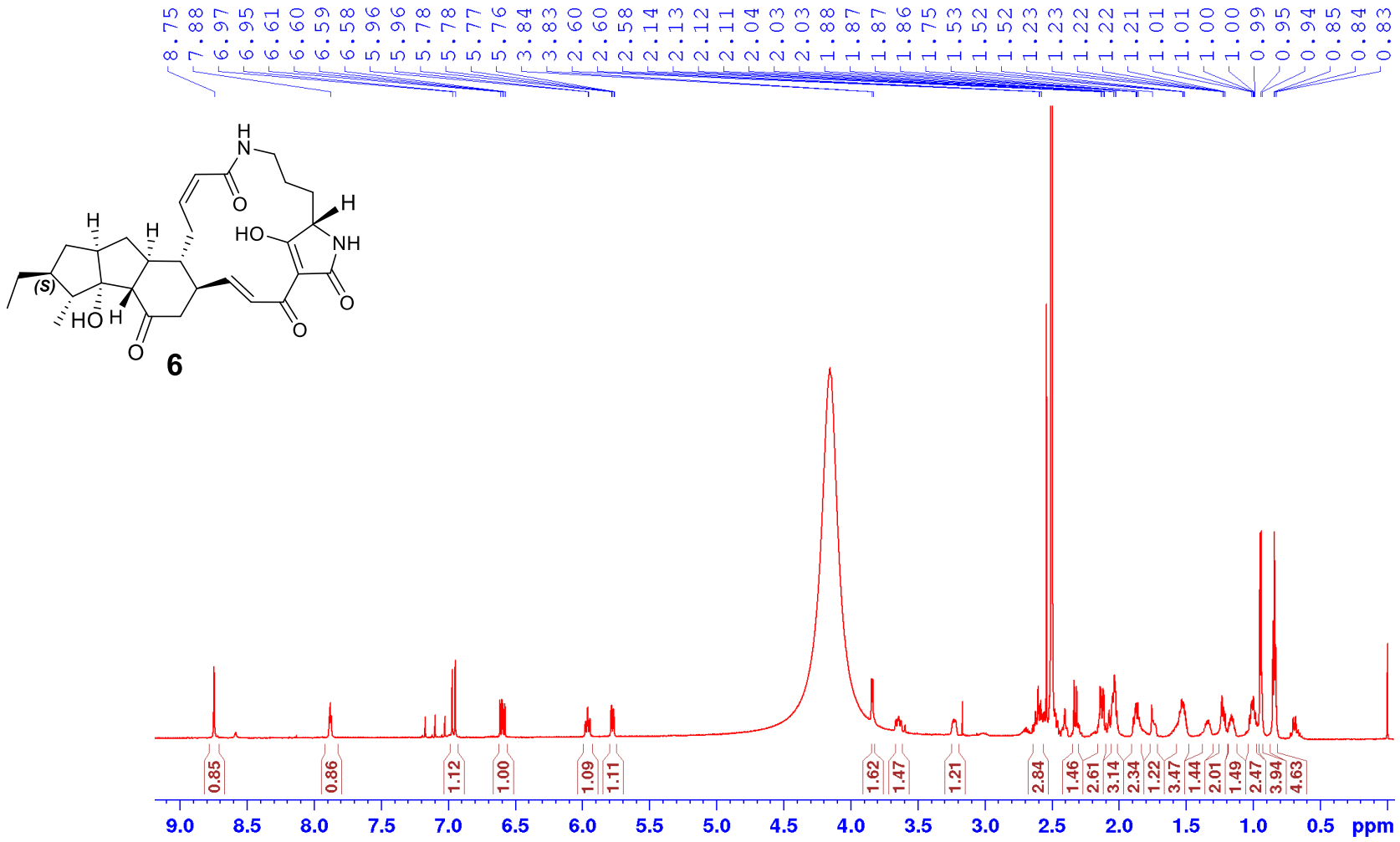


Figure S45. The ^{13}C NMR and DEPT 135 spectra of compound **6** in DMSO-d_6.

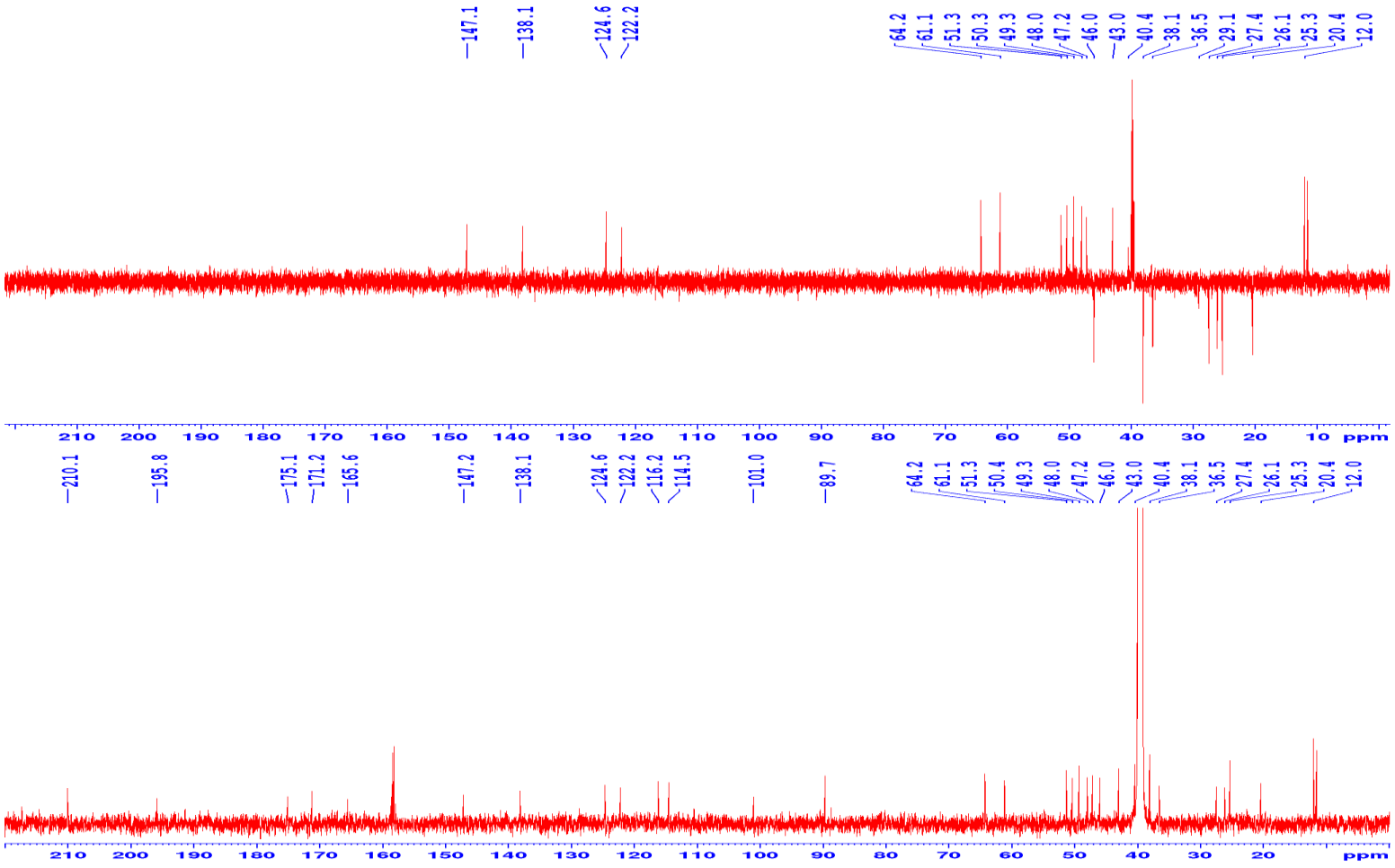

147.1
138.1
124.6
122.2
64.2
61.1
51.3
50.3
49.3
48.0
47.2
46.0
43.0
40.4
38.1
36.5
29.1
27.4
26.1
25.3
20.4
12.0
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm
210.1
195.8
175.1
171.2
165.6
147.2
138.1
124.6
122.2
116.2
114.5
101.0
89.7
64.2
61.1
51.3
50.4
49.3
48.0
47.2
46.0
43.0
40.4
38.1
36.5
27.4
26.1
25.3
20.4
12.0
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

Figure S46. The HSQC spectrum of compound **6** in DMSO-d_6.

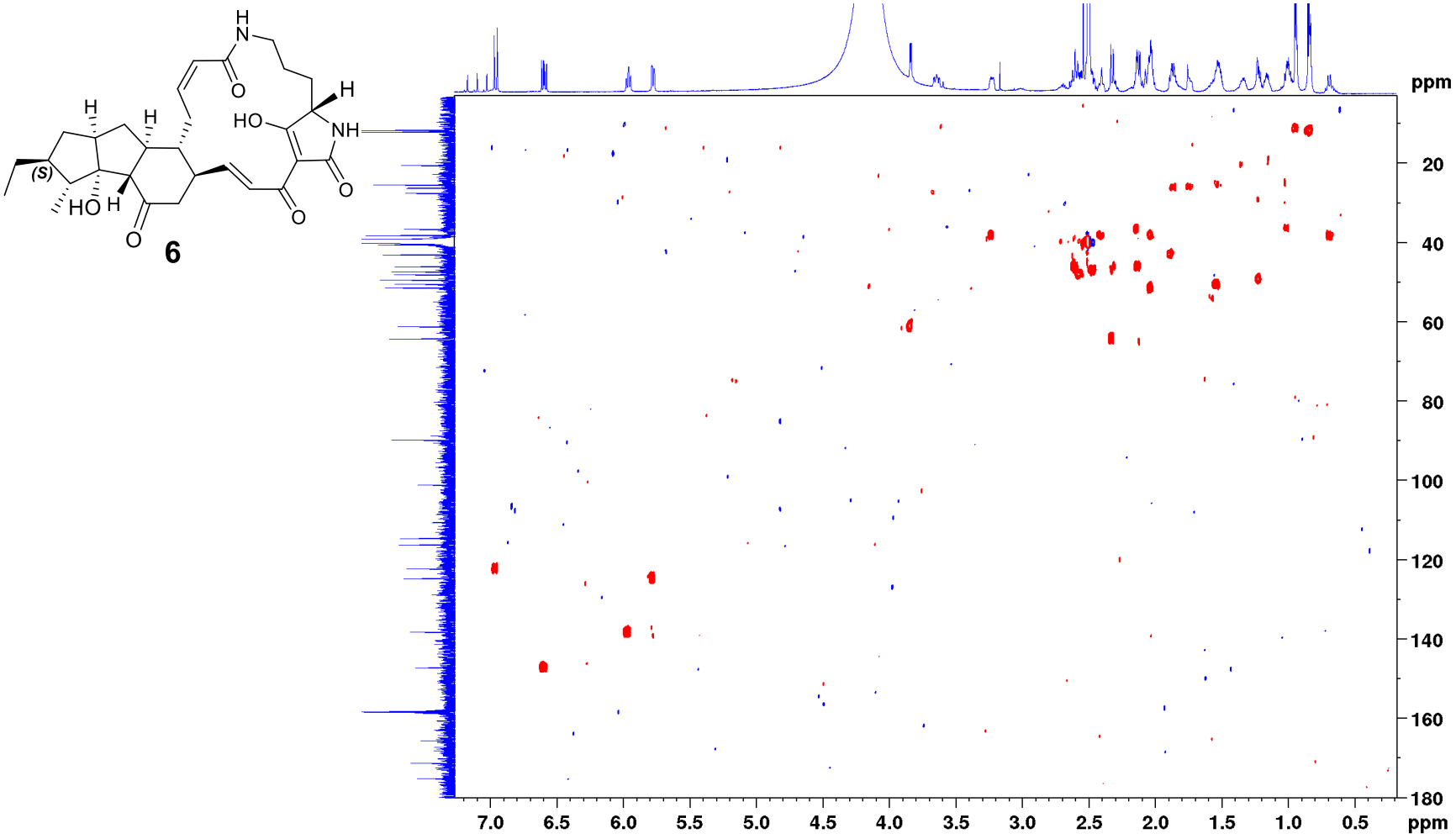


Figure S47. The HMBC spectrum of compound **6** in DMSO-d_6.

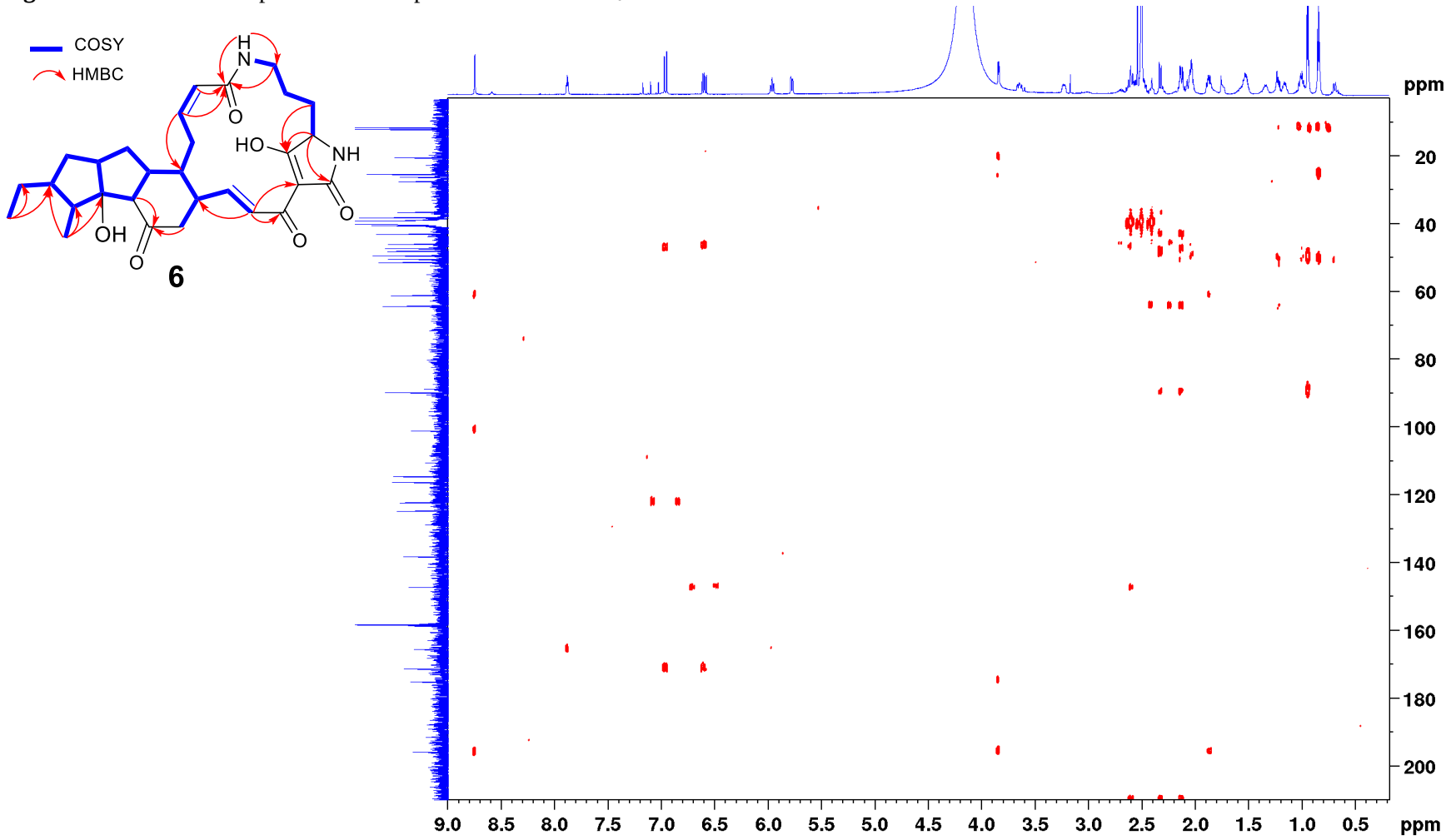


Figure S48. The ^{1}H-^{1}HCOSY spectrum of compound **6** in DMSO-d_6

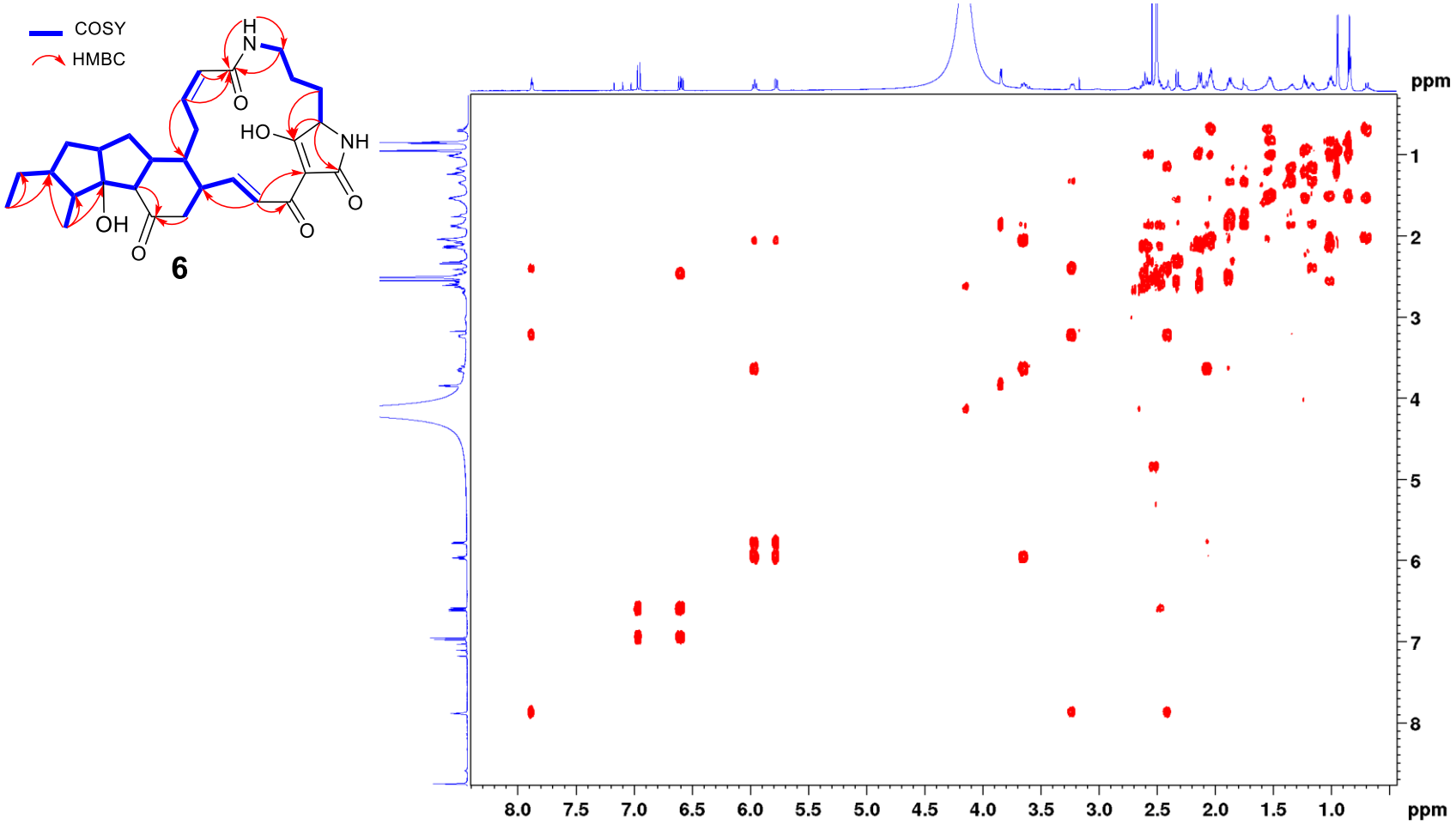


Figure S49. The NOESY spectrum of compound **6** in DMSO-d_6.

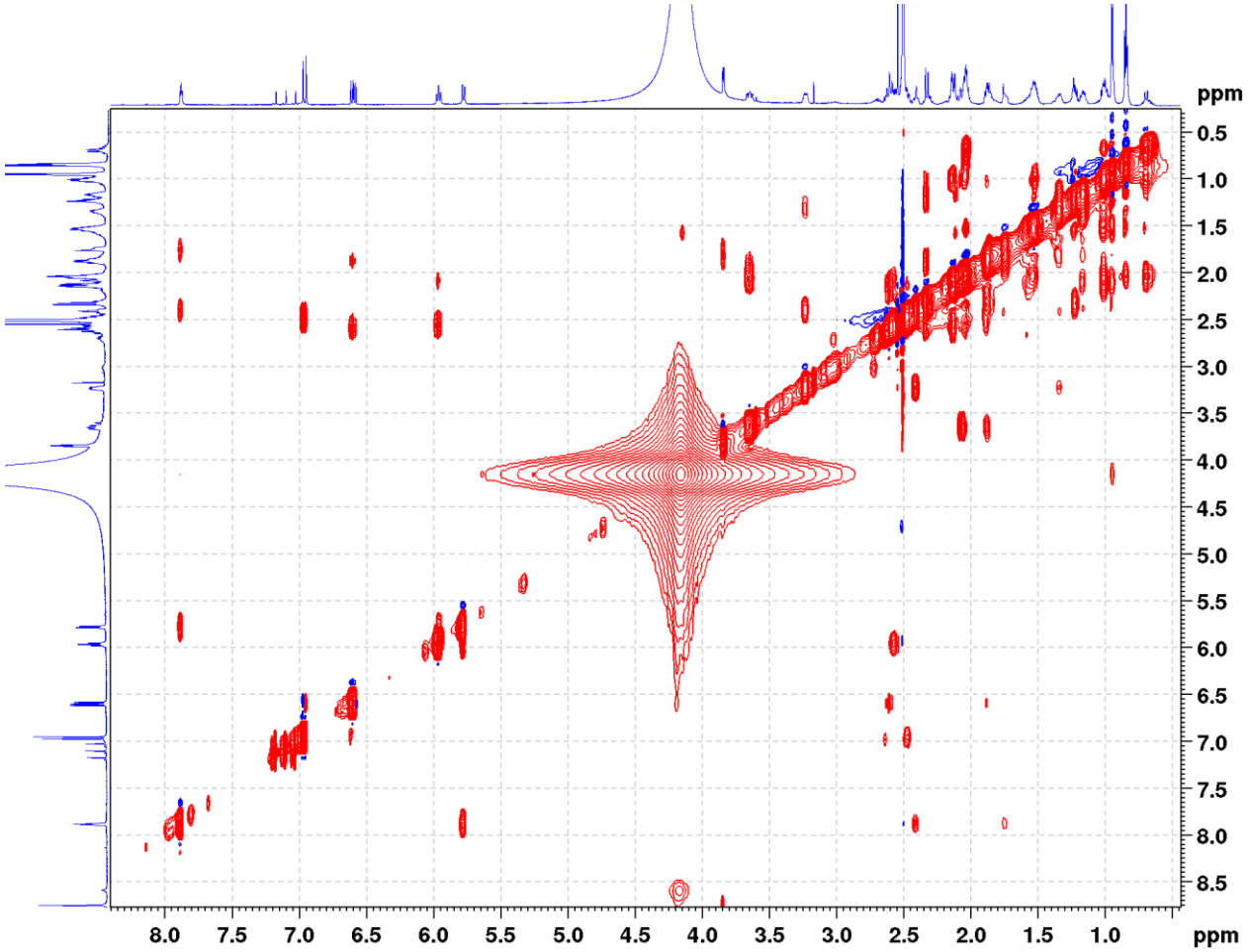


Figure S50. The key NOESY spectrum of compound **6** in DMSO-d_6.