Supporting Information

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Two New Lignans from *Lycopodium japonicum* Thunb.

Qin Ren[1,2], Zhenxing Zou[2], Yang Liu[1], Xi Chen[2], Kangping Xu[2] and Guishan Tan[1,2*]

[1]*Xiangya Hospital of Central South University, Changsha 410008, PR China*

[2]*Xiangya School of Pharmaceutical Sciences, Central South University, Changsha 410013, PR China*

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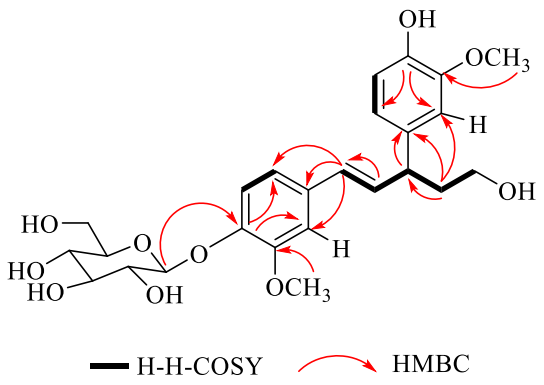


Figure S1: Key ^{1}H-^{1}H COSY and HMBC correlations of compound **1**

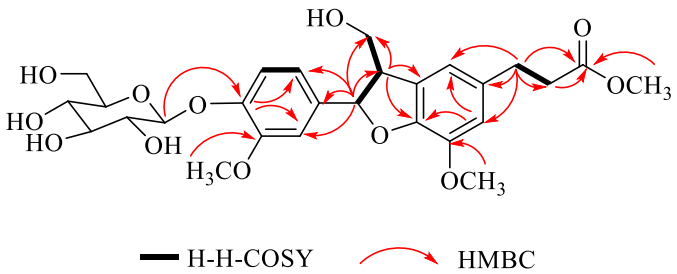
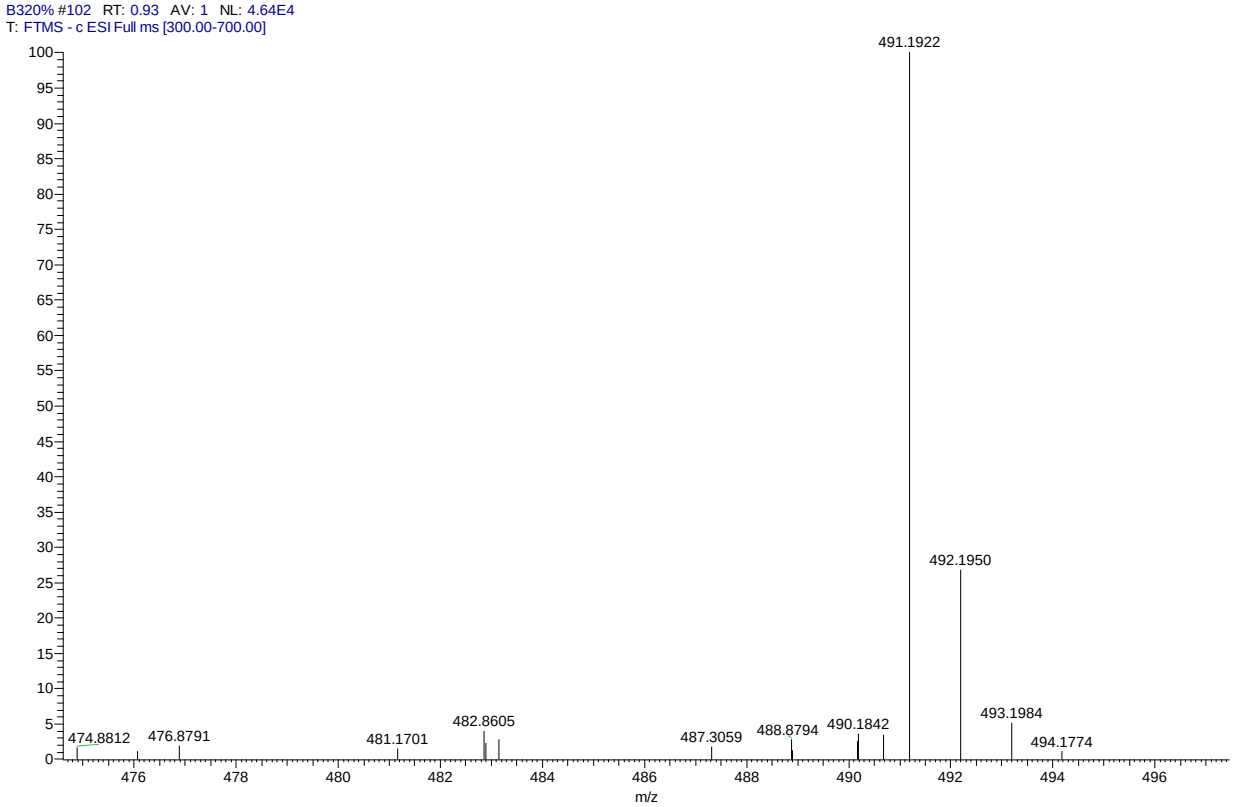


Figure S2: Key ^{1}H-^{1}H COSY and HMBC correlations of compound **2**



Formula (M)	Ion Formula	m/z	Calc m/z
C25 H32 O10	C25 H31 O10	491.1922	491.1917

Figure S3: HRESIMS of compound **1**

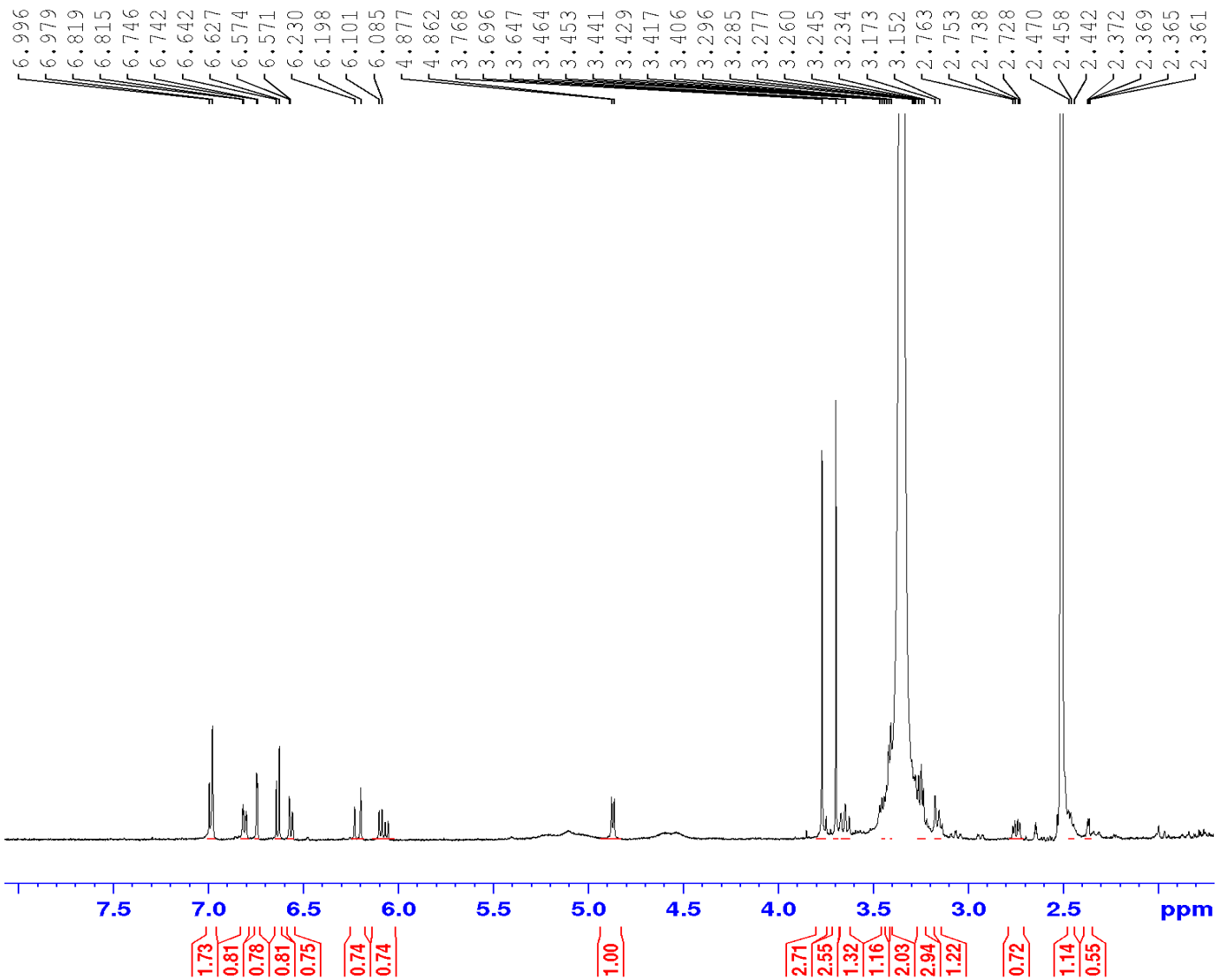


Figure S4: ^{1}H NMR spectrum of compound **1** (DMSO-d_6, 500 MHz)

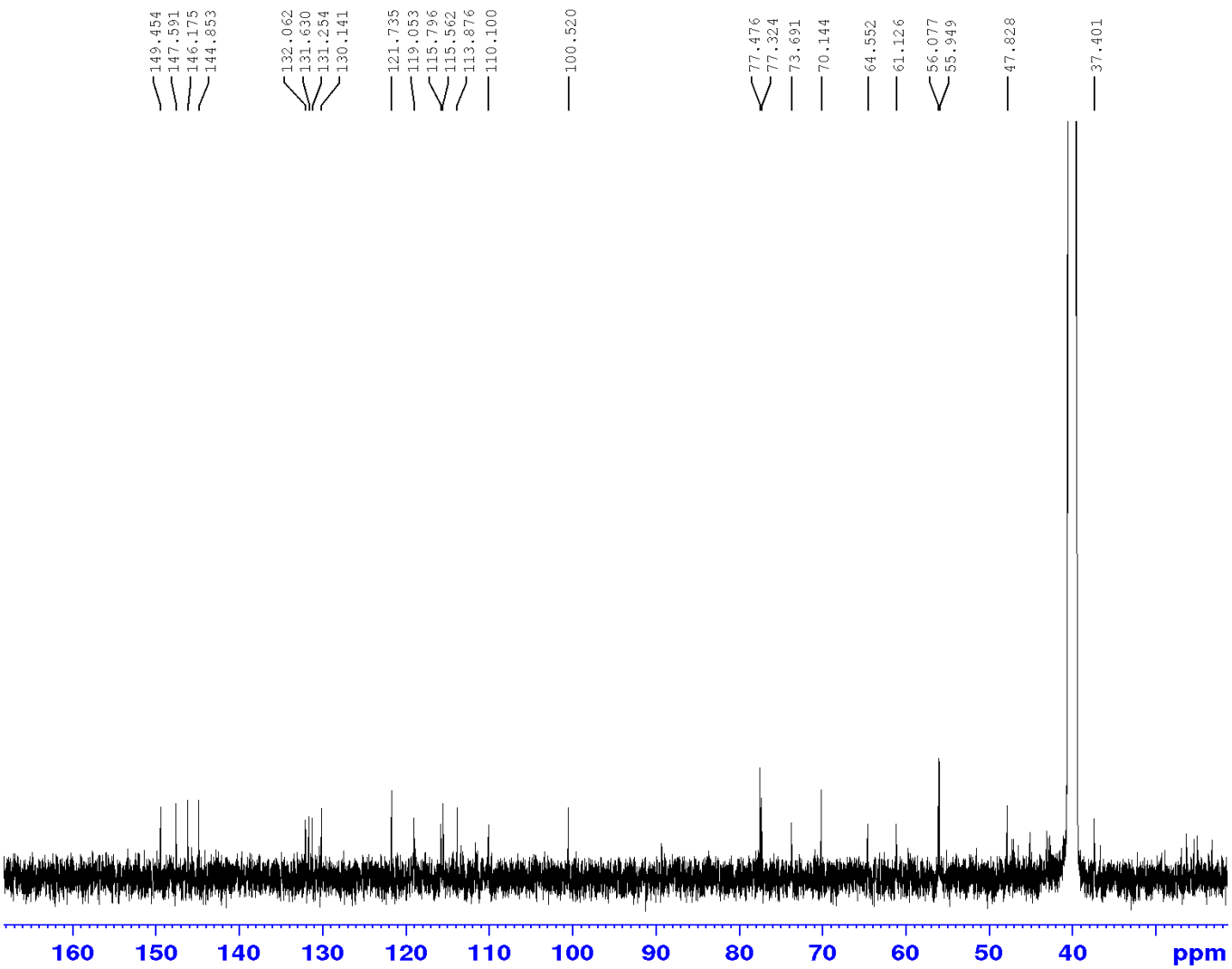


Figure S5: ^{13}C NMR spectrum of compound **1** (DMSO-d_6, 125 MHz)

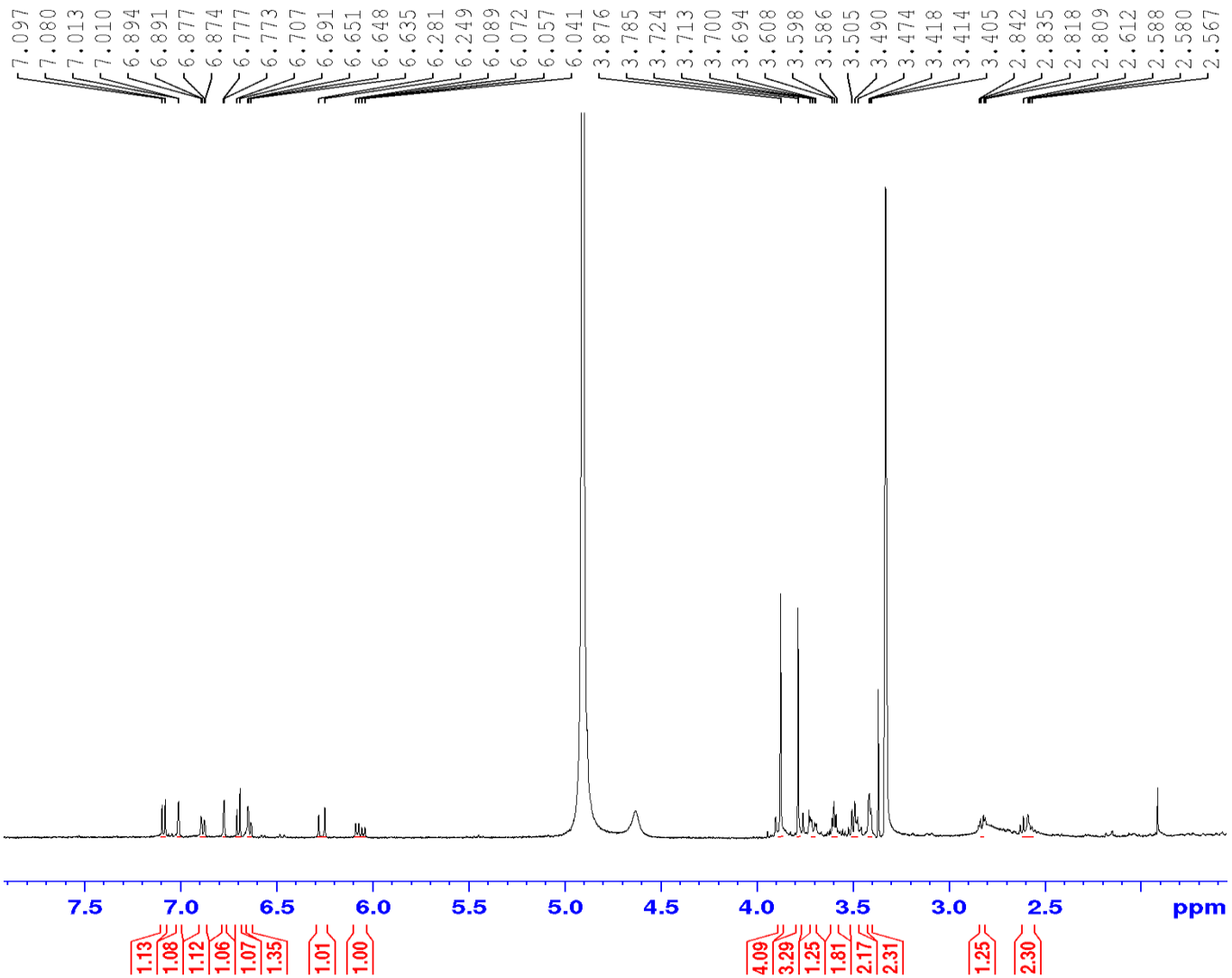


Figure S6: ^{1}H NMR spectrum of compound **1** (CD_3OD, 500 MHz)

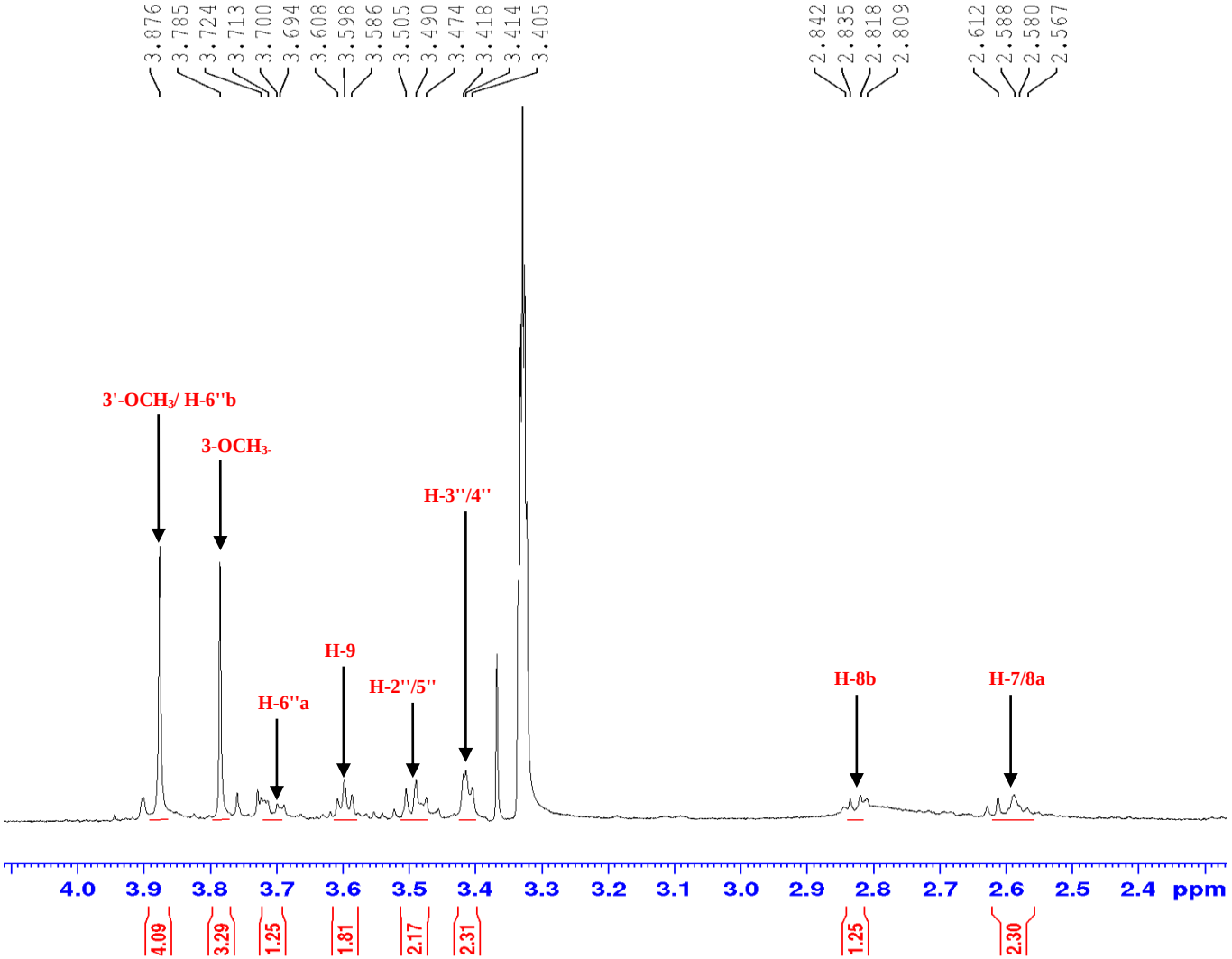


Figure S7: ^{1}H NMR spectrum of compound **1** (CD_3OD, 500 MHz, from 2.5 to 4.0 ppm)

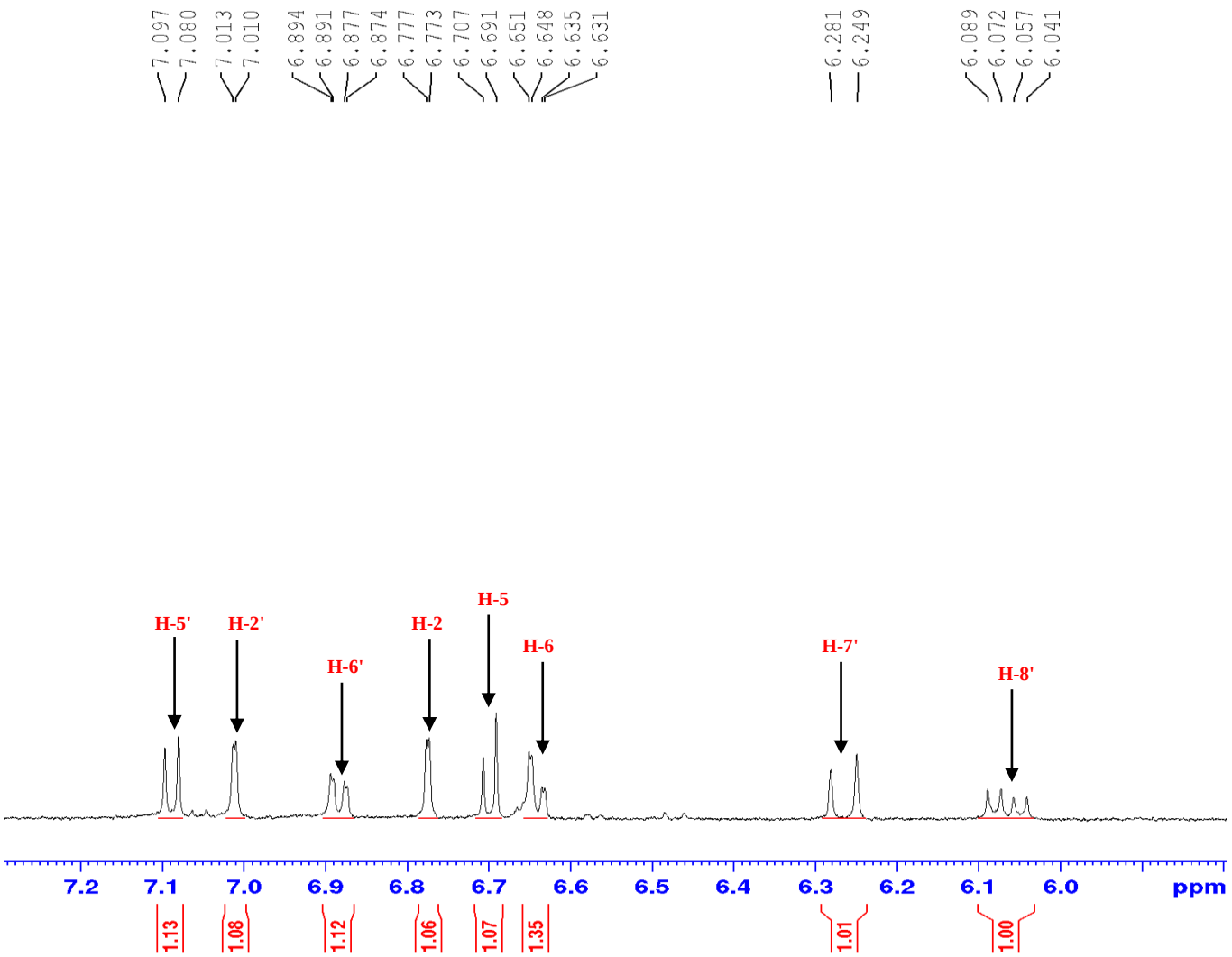


Figure S8: ^{1}H NMR spectrum of compound **1** (CD_3OD, 500 MHz, from 6.0 to 7.2 ppm)

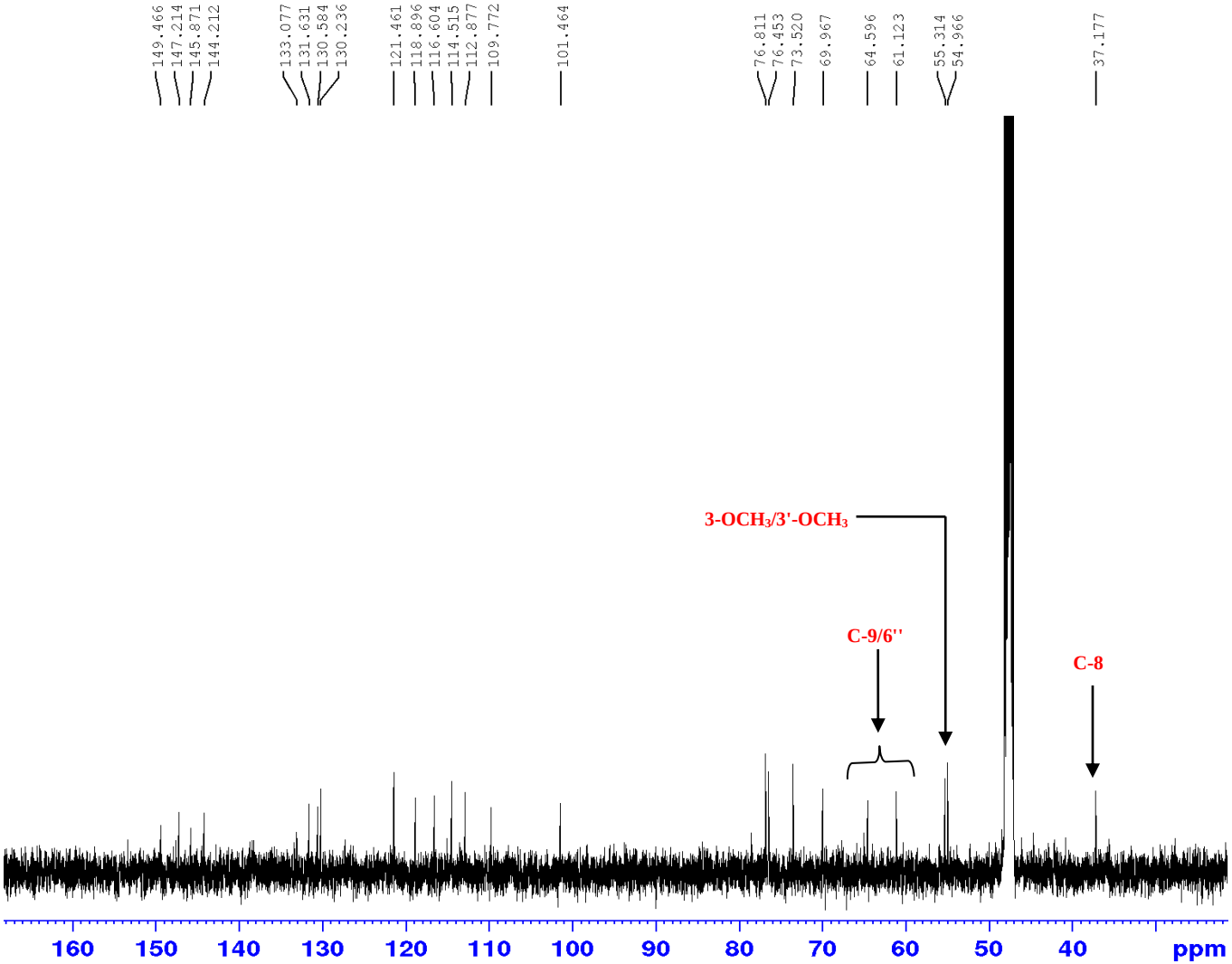


Figure S9: ^{13}C NMR spectrum of compound **1** (CD_3OD, 125 MHz)

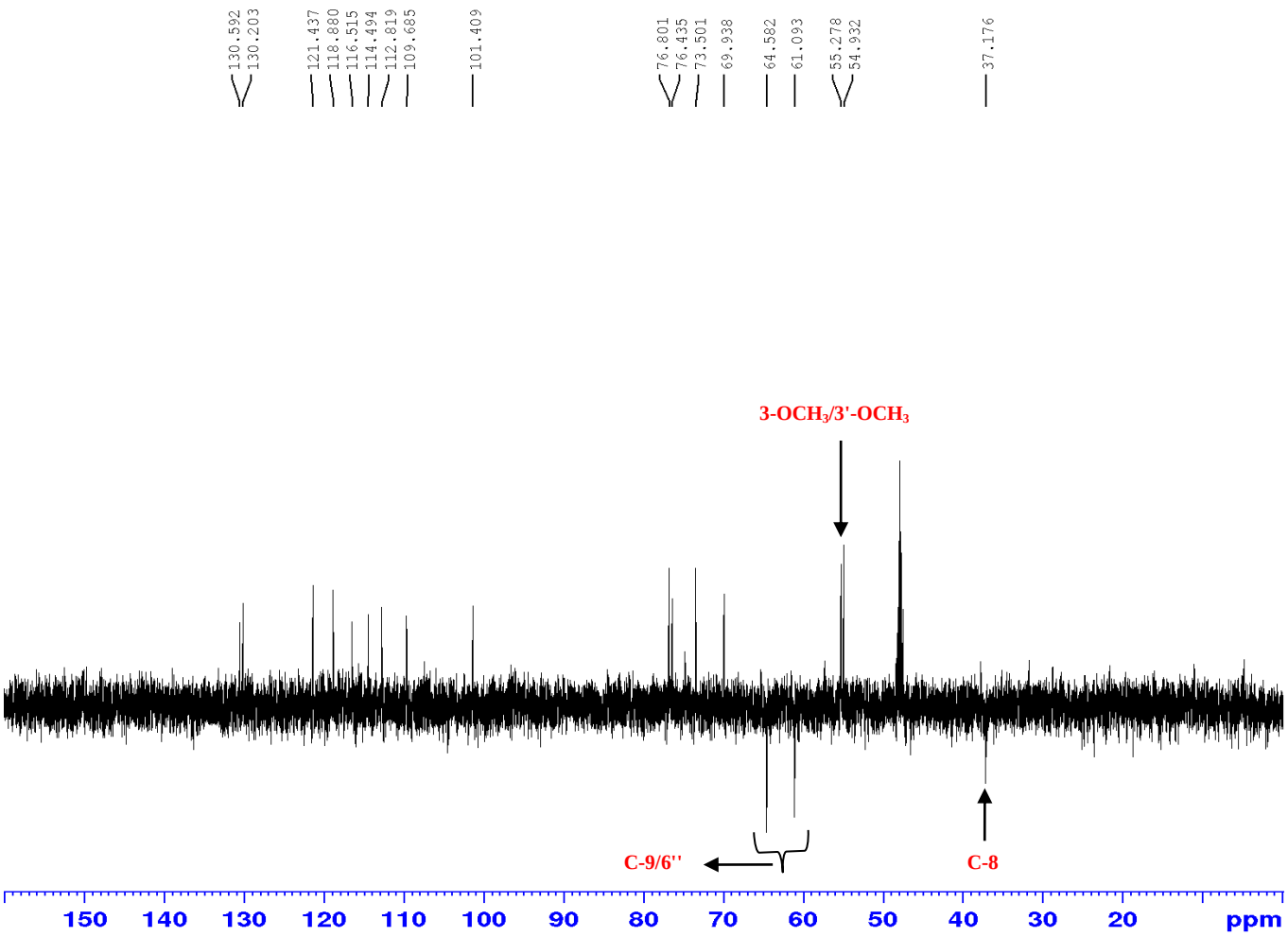


Figure S10: DEPT135 spectrum of compound **1** (CD_3OD, 125 MHz)

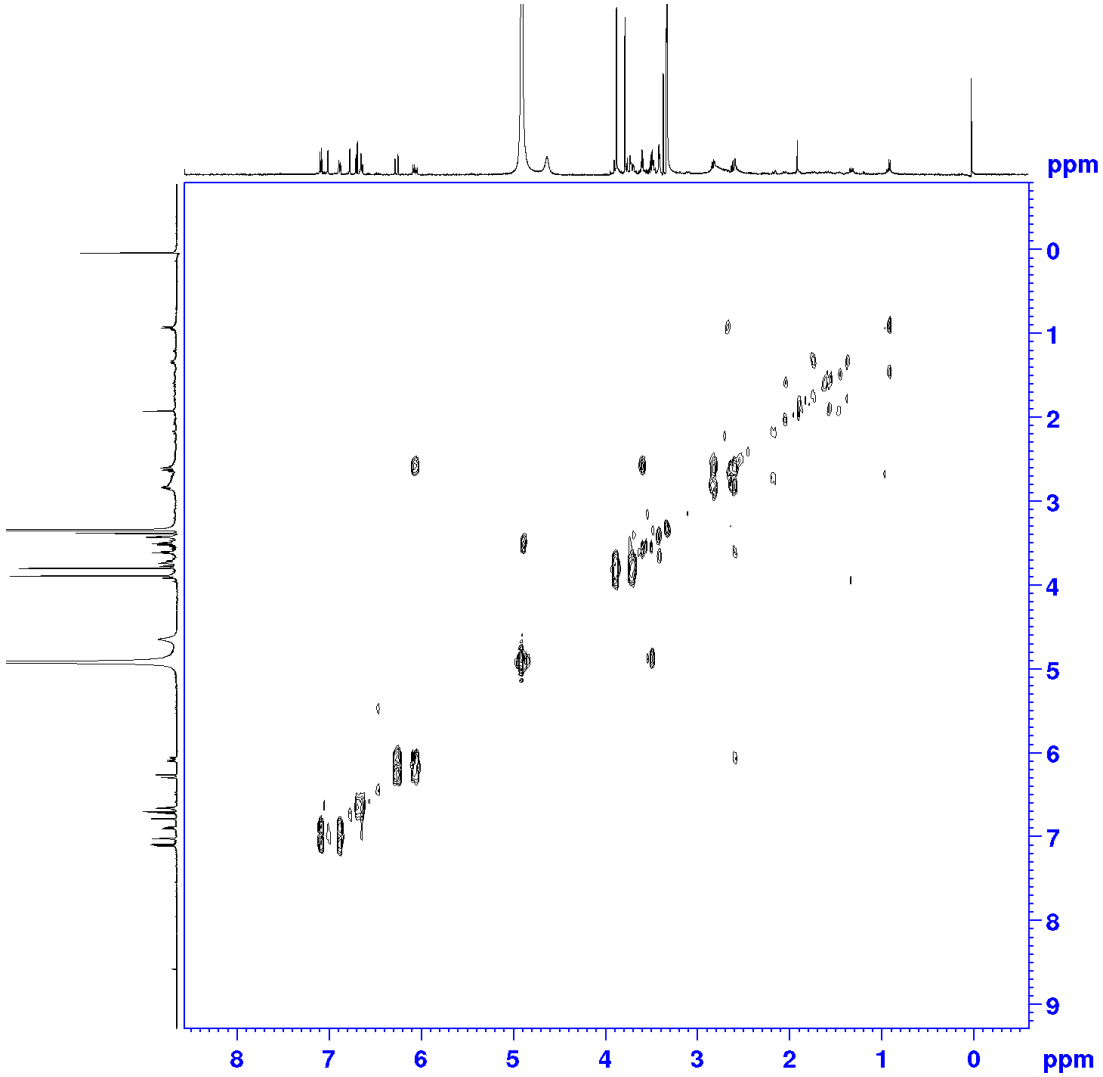


Figure S11: ^{1}H-^{1}H COSY spectrum of compound **1** (CD_3OD, 500 MHz)

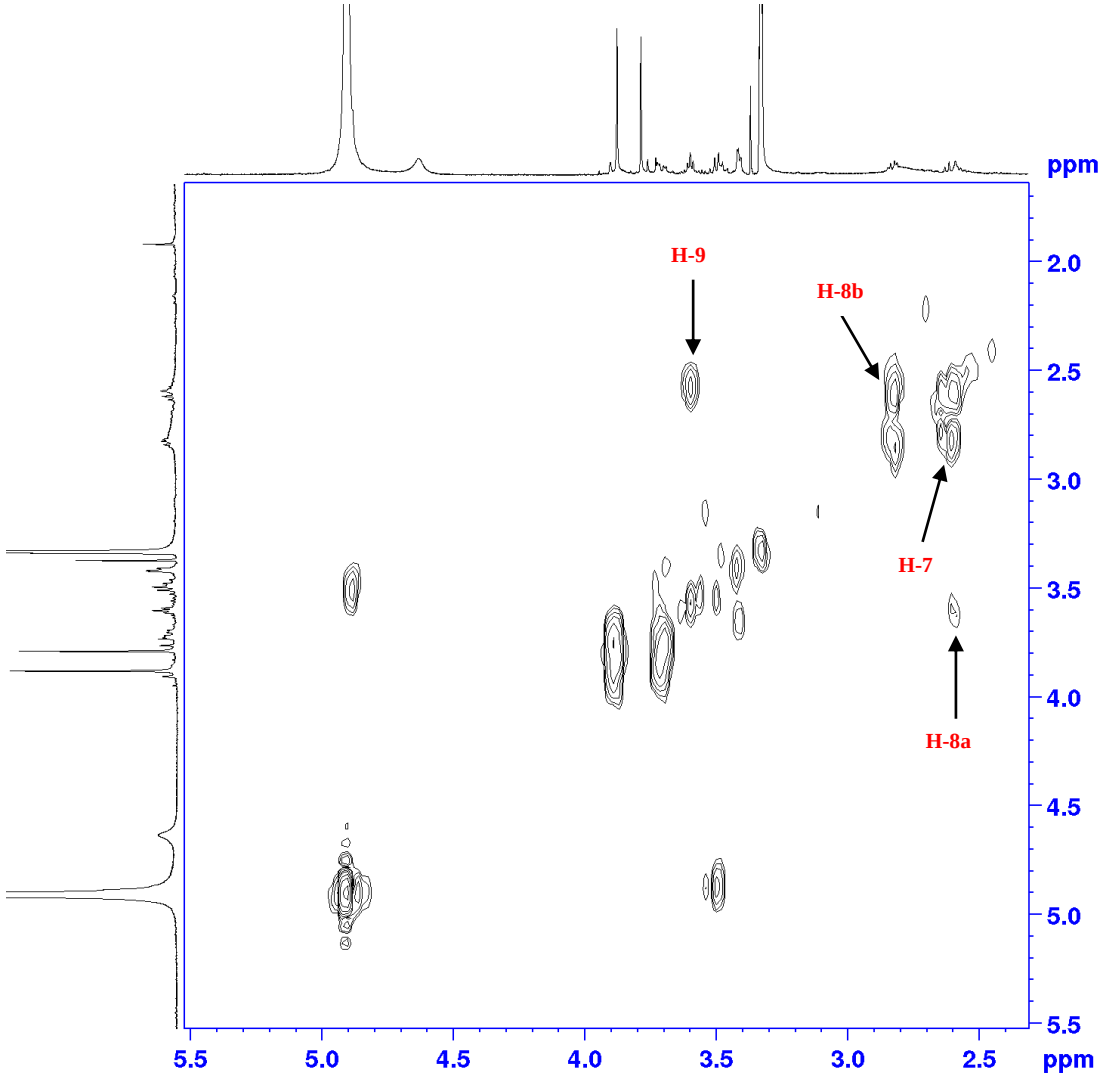


Figure S12: ^{1}H-^{1}H COSY spectrum of compound **1** (CD_3OD, 500 MHz, from 2.5 to 5.5 ppm)

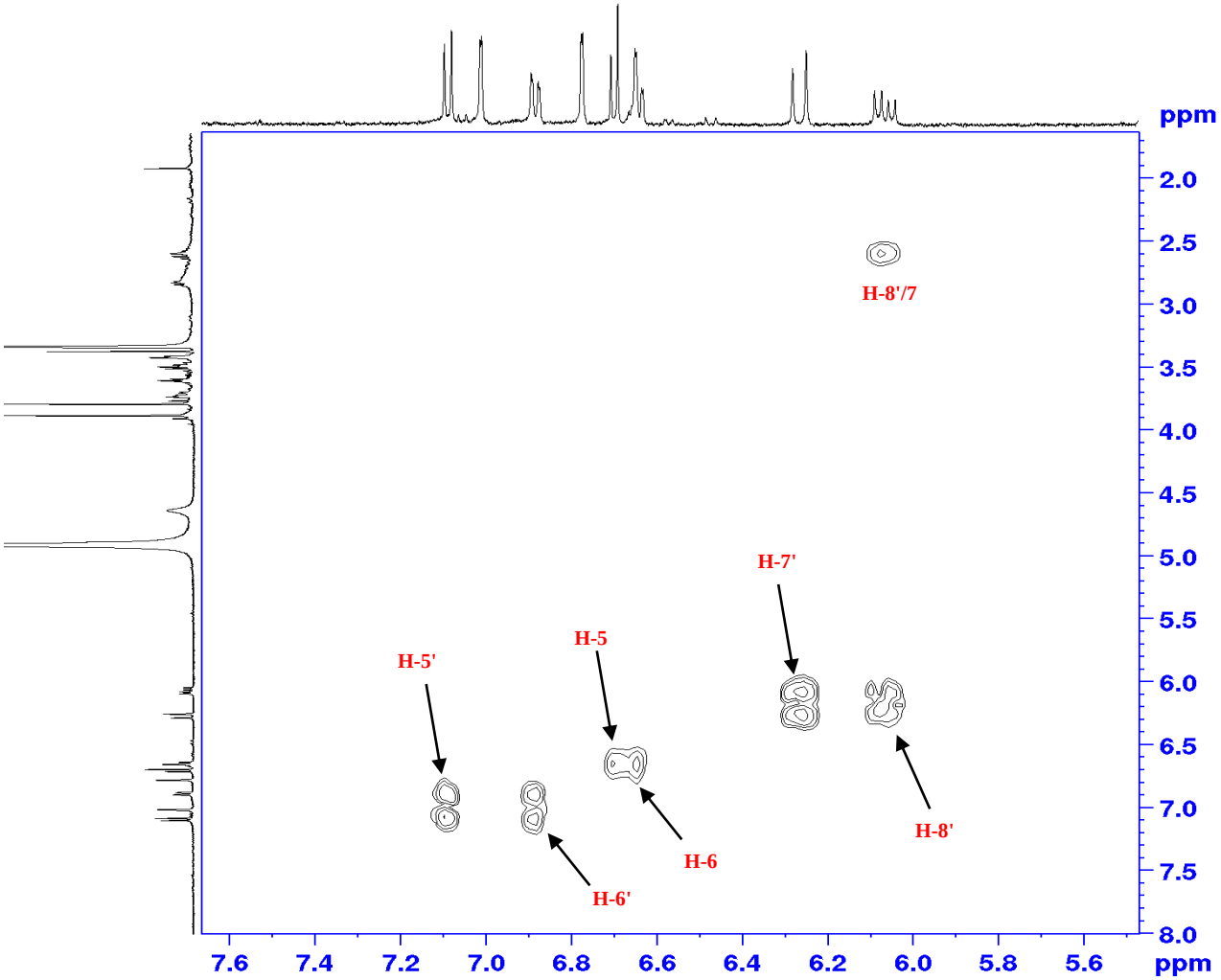


Figure S13: ^{1}H-^{1}H COSY spectrum of compound **1** (CD_3OD, 500 MHz, from 5.6 to 7.6 ppm)

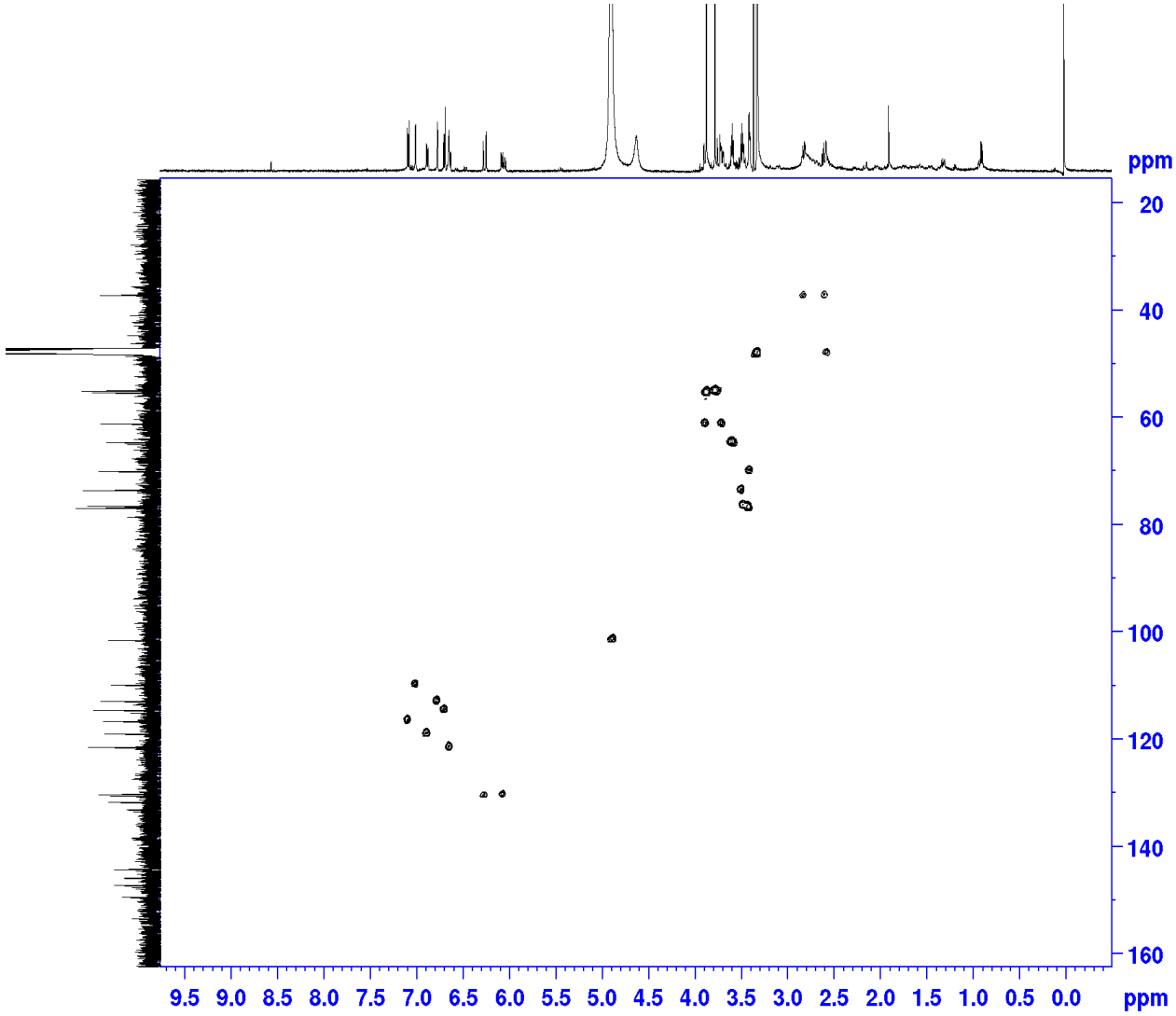


Figure S14: HSQC spectrum of compound **1** (CD_3OD, 500 MHz)

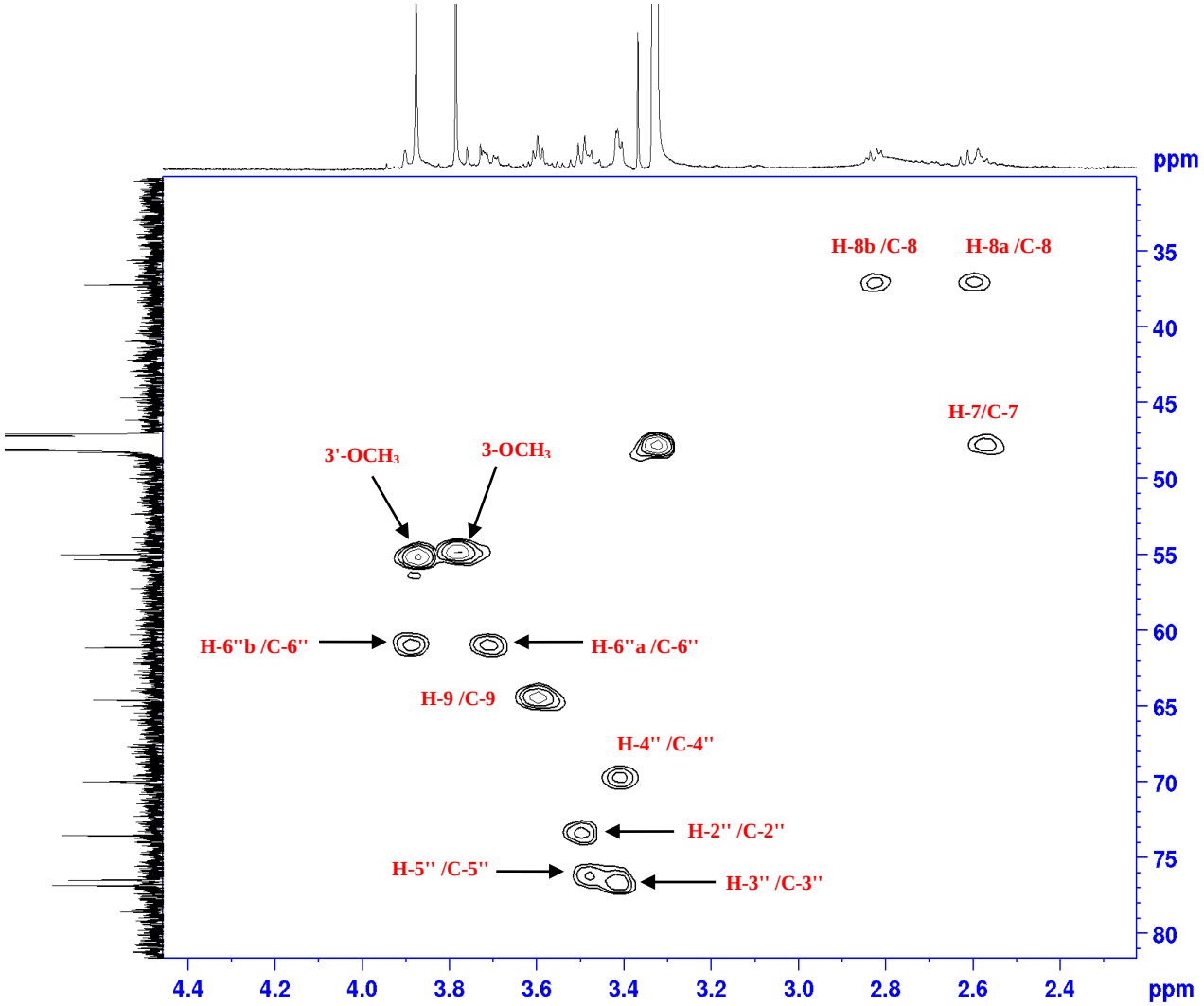


Figure S15: HSQC spectrum of compound **1** (CD_3OD, 500 MHz, from 30 to 80 ppm)

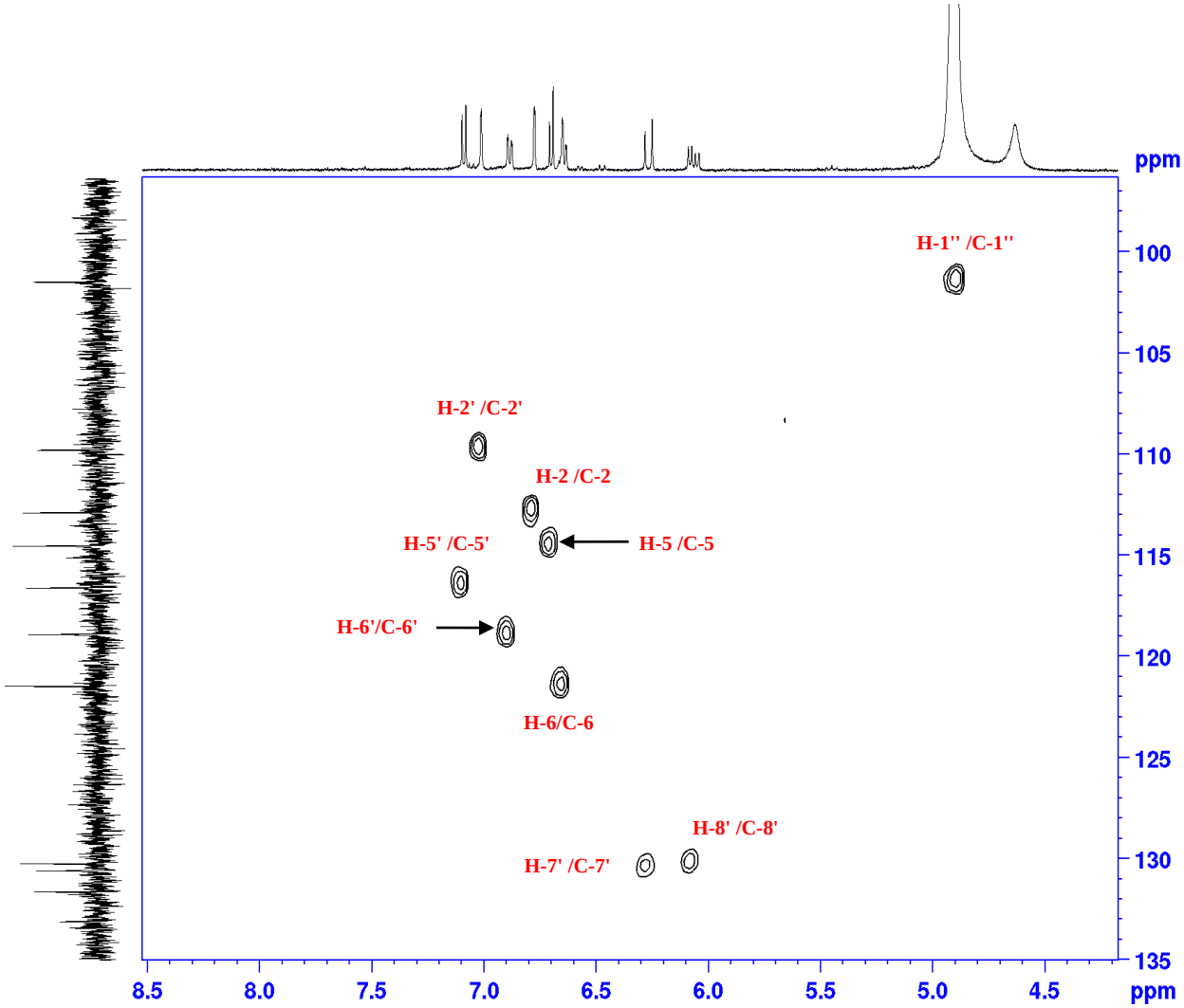


Figure S16: HSQC spectrum of compound **1** (CD_3OD, 500 MHz, from 90 to 135 ppm)

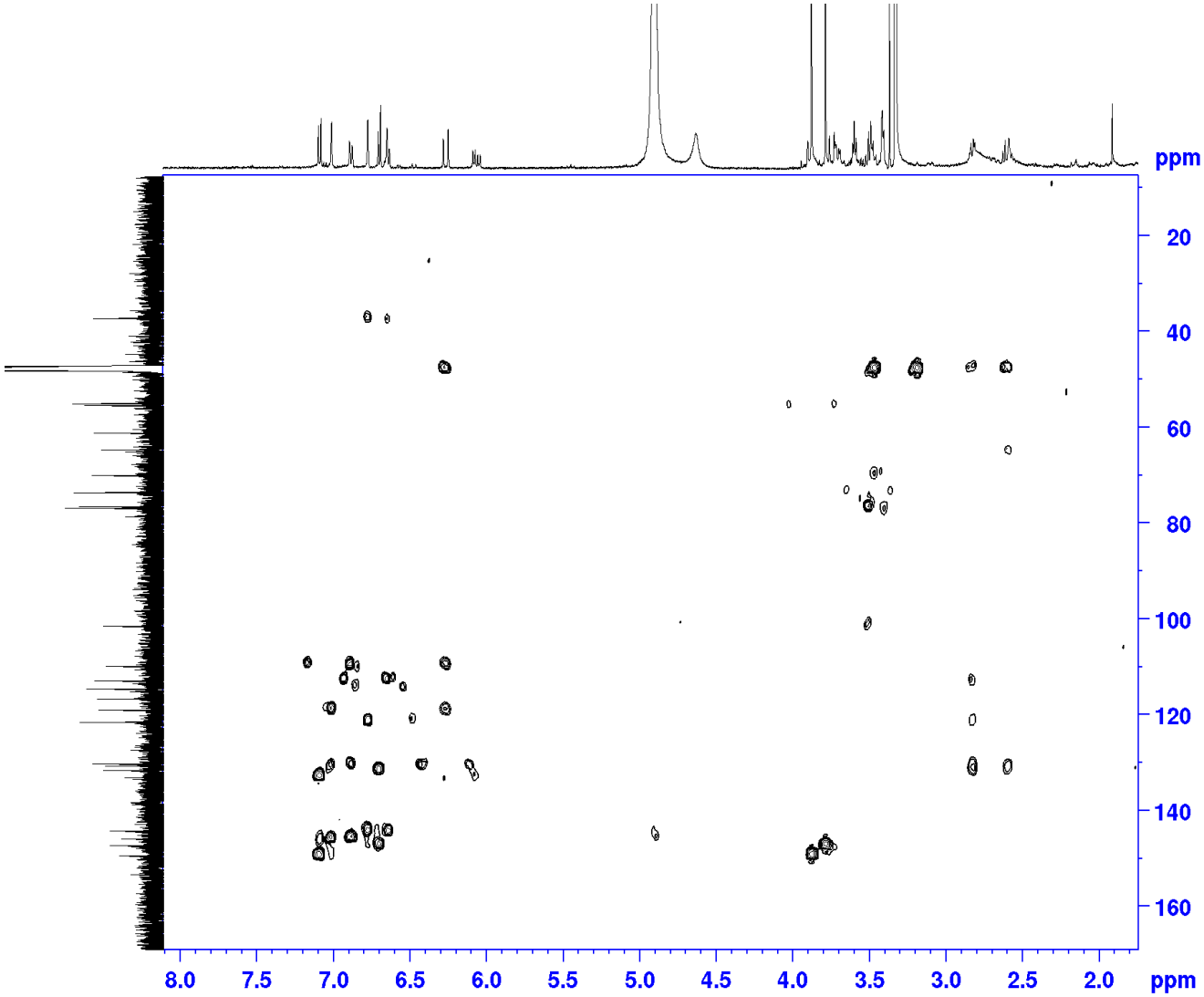


Figure S17: HMBC spectrum of compound **1** (CD_3OD, 500 MHz)

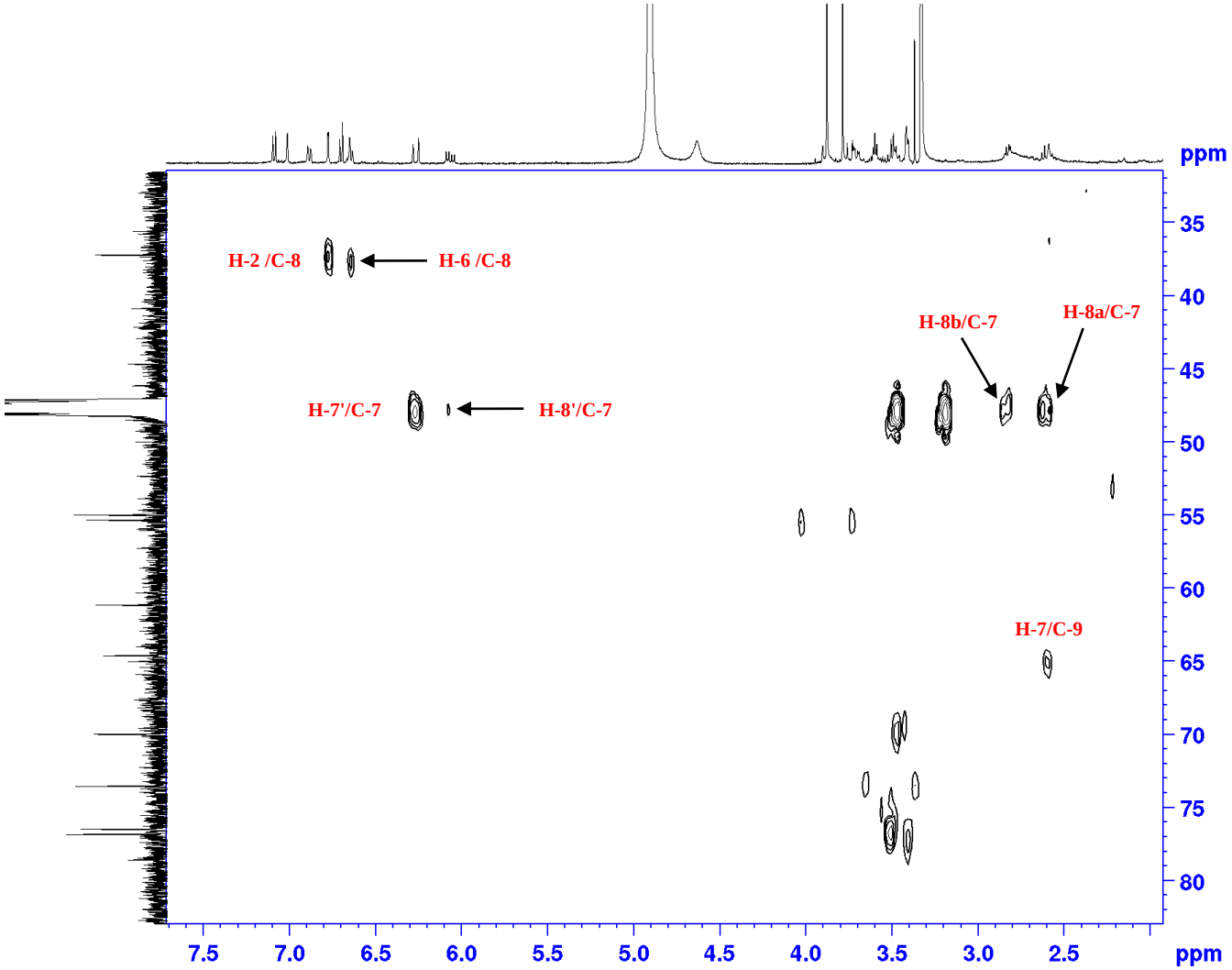


Figure S18: HMBC spectrum of compound **1** (CD_3OD, 500 MHz, from 35 to 80 ppm)

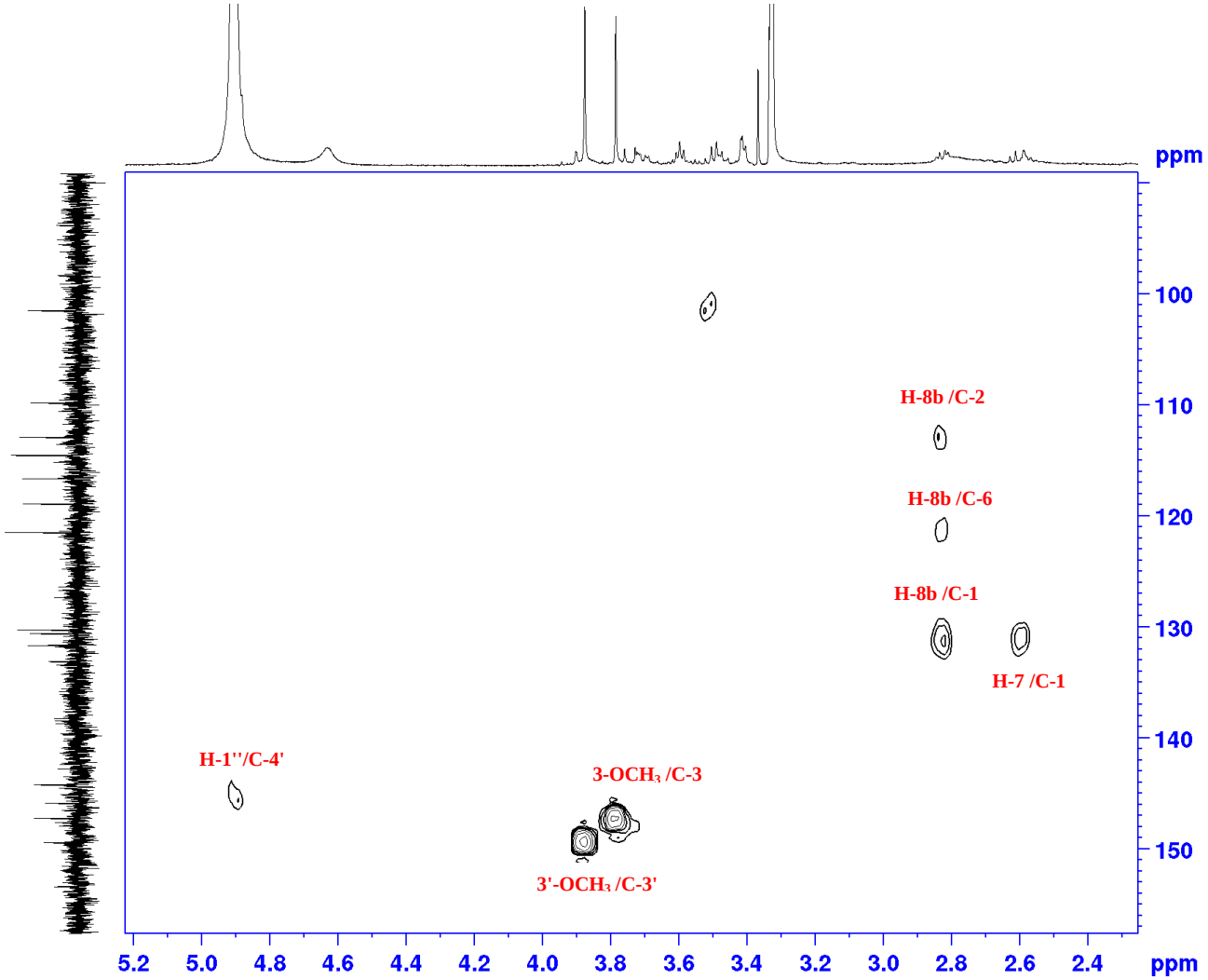


Figure S19: HMBC spectrum of compound **1** (CD_3OD, 500 MHz, from 90 to 160 ppm)

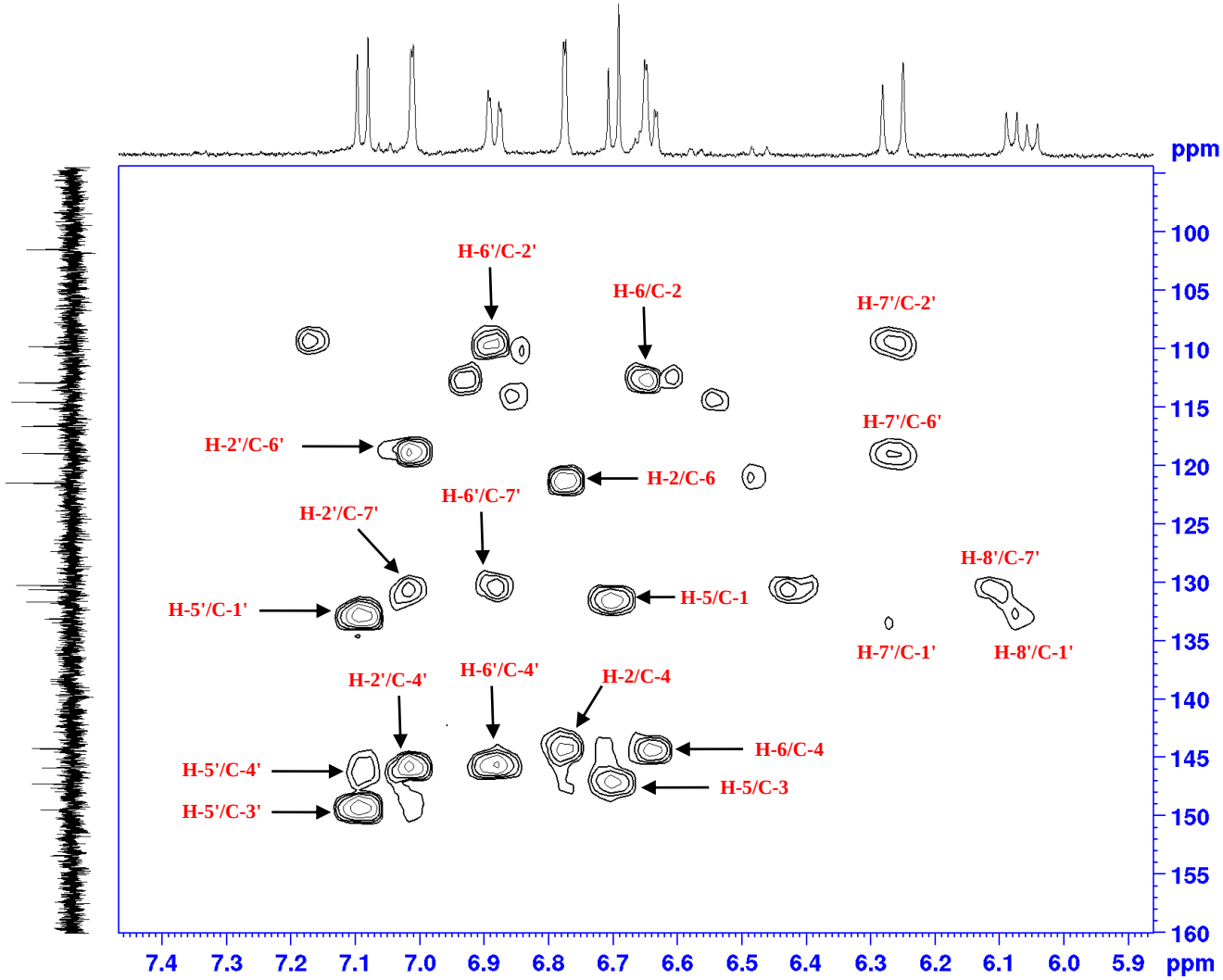


Figure S20: HMBC spectrum of compound **1** (CD_3OD, 500 MHz, from 90 to 160 ppm)

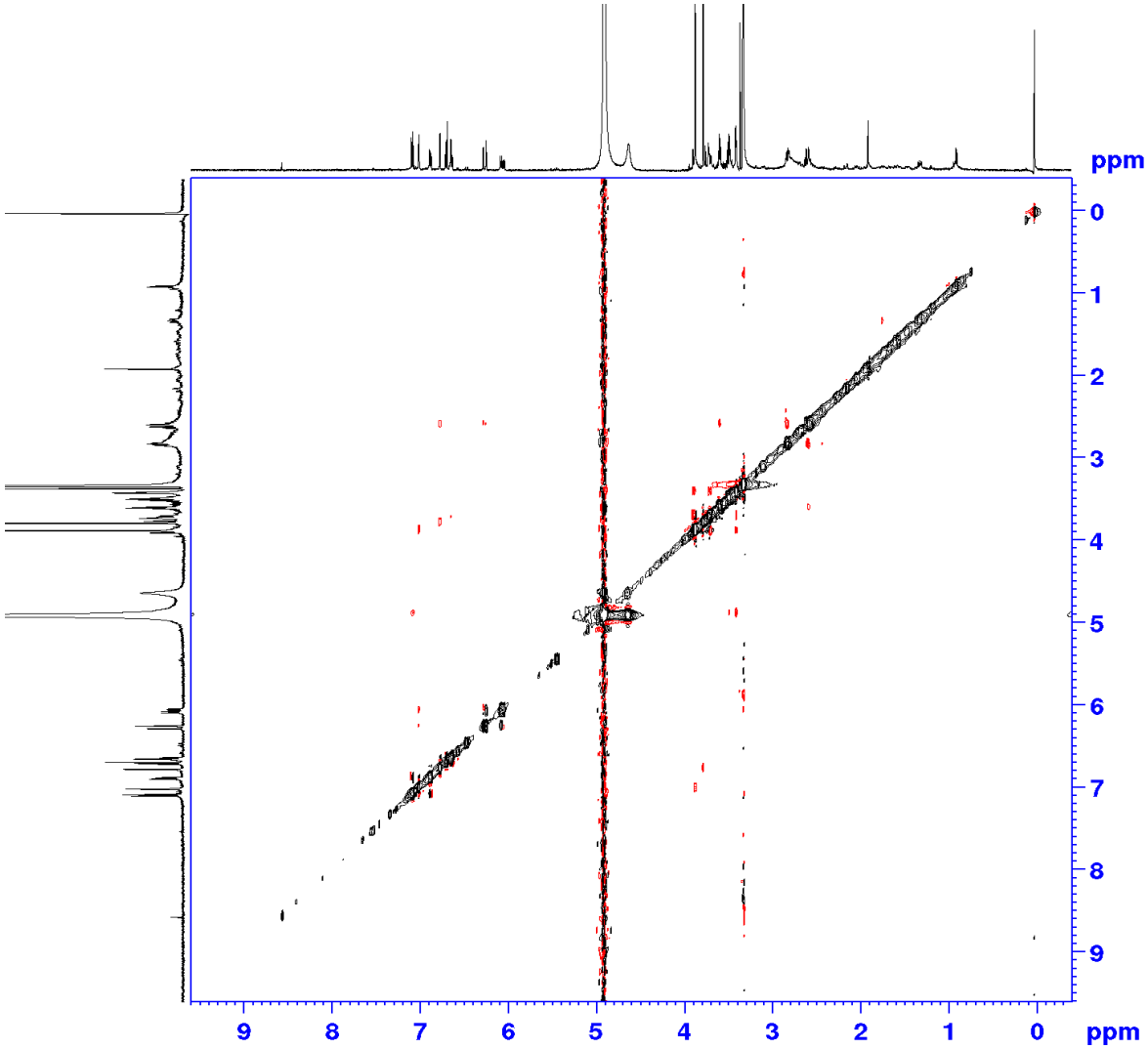


Figure S21: NOESY spectrum of compound **1** (CD_3OD, 500 MHz)

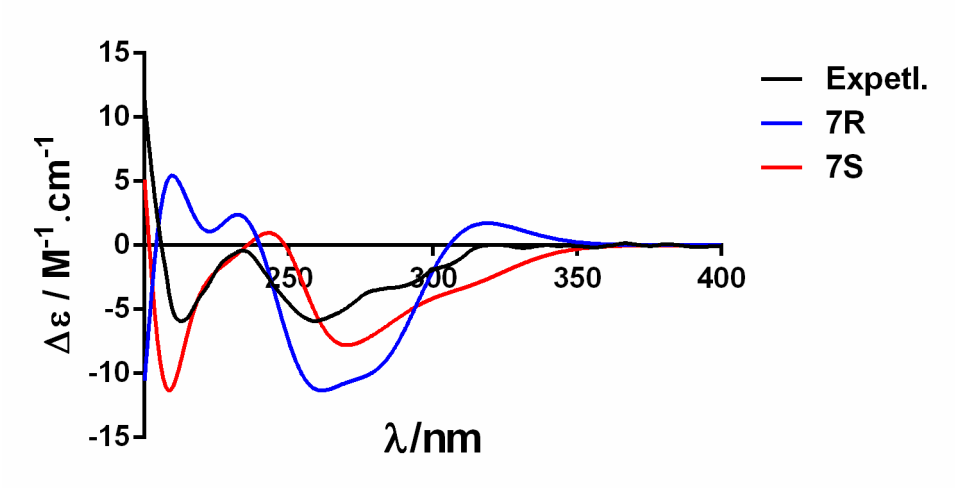


Figure S22: Experimental and calculated ECD spectra of compound **1**

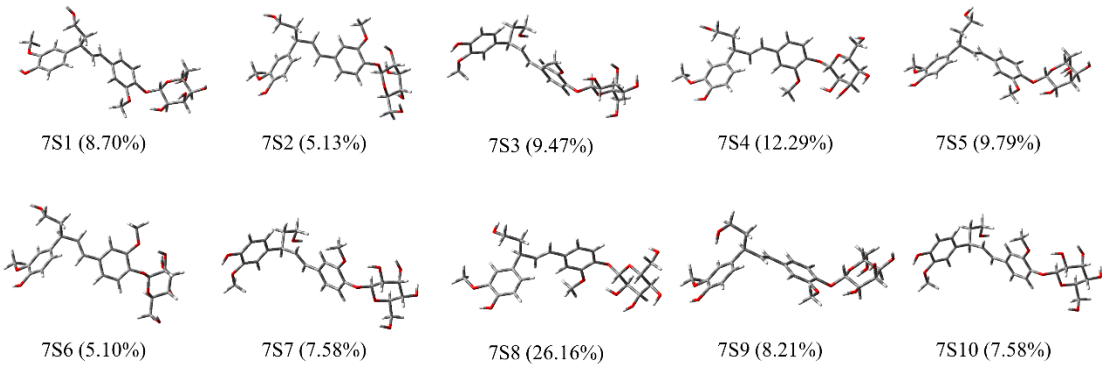


Figure S23: The optimized 10 conformers and equilibrium population of conformers of 7*S* for ECD calculation of compound **1**

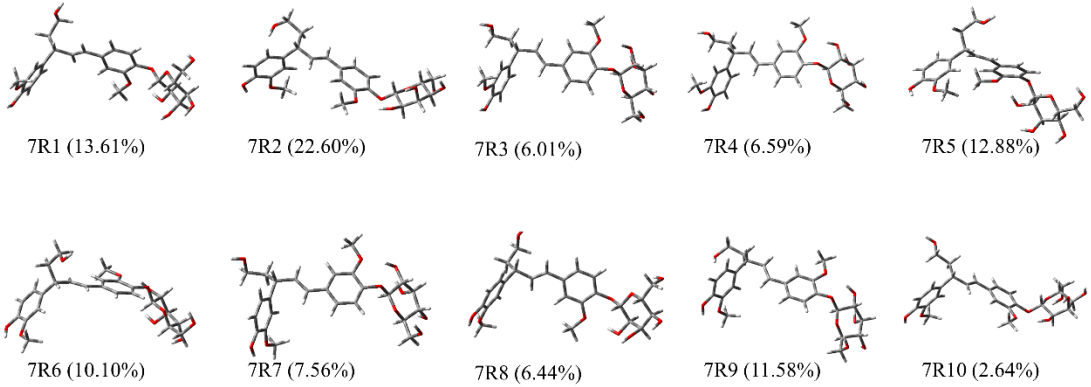


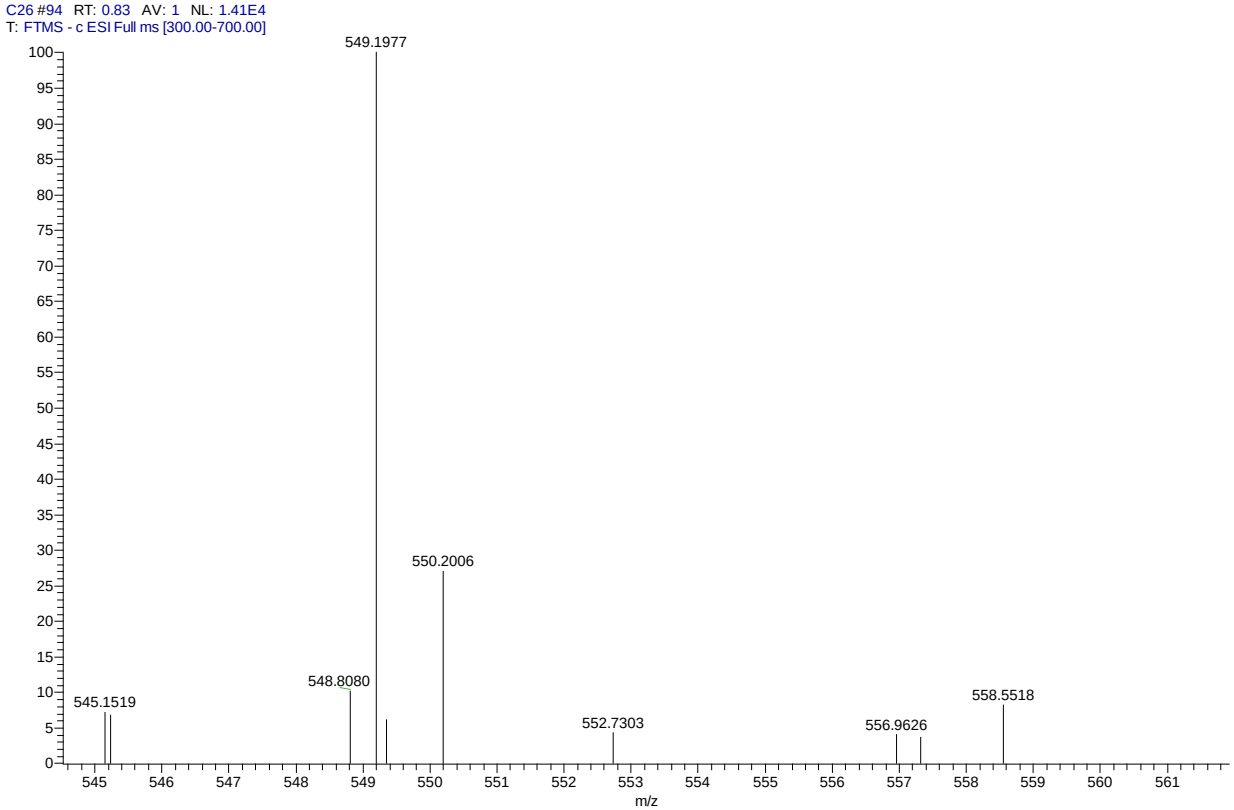
Figure S24: The optimized 10 conformers and equilibrium population of conformers of 7*R* for ECD calculation of compound **1**

Table S1: Stable conformational energy and Maxwell-Boltzmann distribution population of 7*S* for ECD calculation of compound **1**

conformer	*E*(kcal/mol)	*P*(%)
1	-1081940.00260574	8.70
2	-1081939.68941549	5.13
3	-1081940.05274378	9.47
4	-1081940.20673474	12.29
5	-1081940.07200834	9.79
6	-1081939.68583869	5.10
7	-1081939.92046468	7.58
8	-1081940.65389836	26.16
9	-1081939.96790443	8.21
10	-1081939.92046468	7.58

Table S2: Stable conformational energy and Maxwell-Boltzmann distribution population of 7*R* for ECD calculation of compound **1**

conformer	*E*(kcal/mol)	*P*(%)
1	-1081940.14335623	13.61
2	-1081940.44343151	22.60
3	-1081939.65935776	6.01
4	-1081939.71395114	6.59
5	-1081940.11066296	12.88
6	-1081939.96690042	10.10
7	-1081939.79502543	7.56
8	-1081939.70027142	6.44
9	-1081940.04784921	11.58
10	-1081939.17253551	2.64



Formula (M)	Ion Formula	m/z	Calc m/z
C27 H34 O12	C27 H33 O12	549.1977	549.1972

Figure S25: HRESIMS of compound **2**

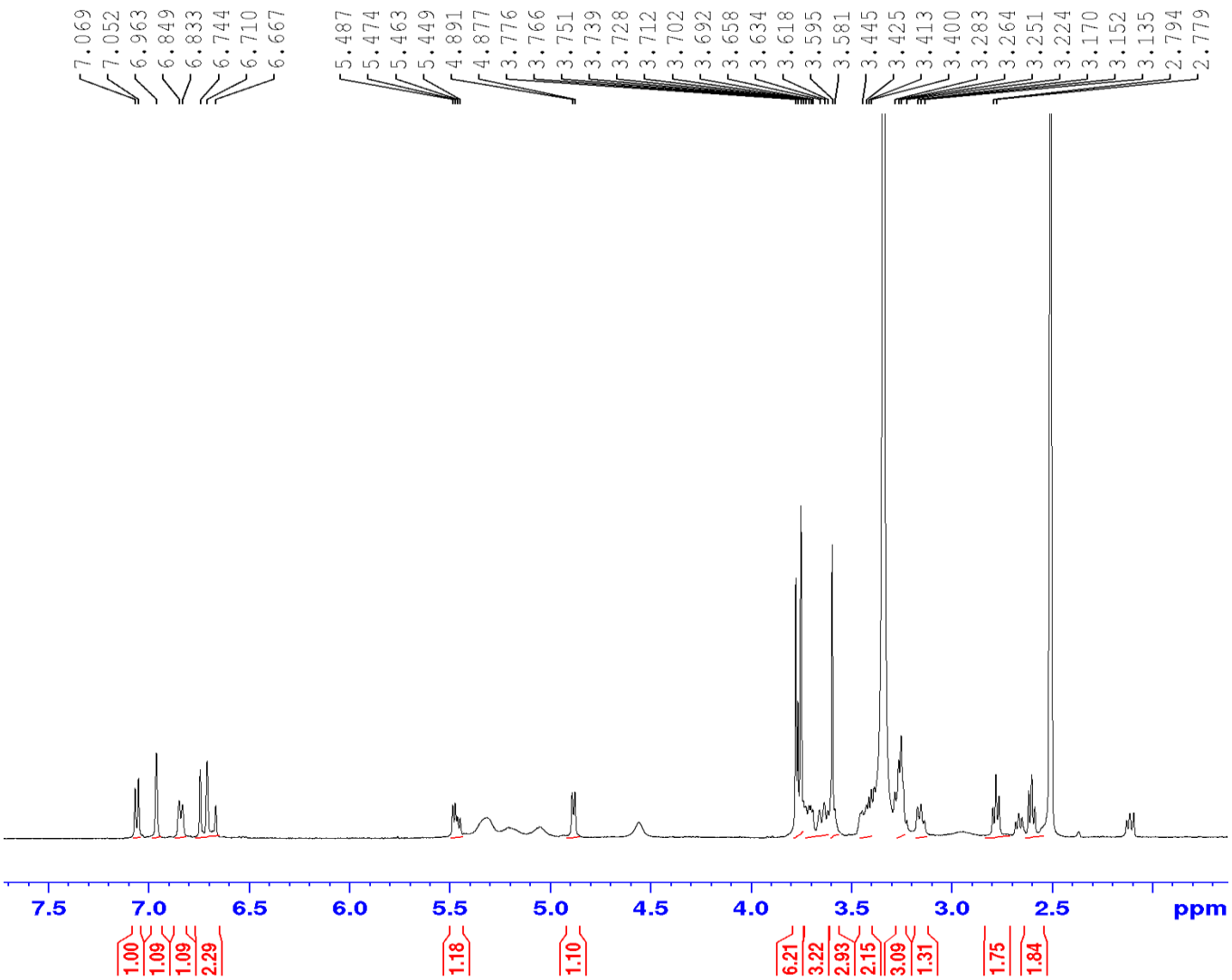


Figure S26: ^{1}H NMR spectrum of compound **2** (DMSO-d_6, 500 MHz)

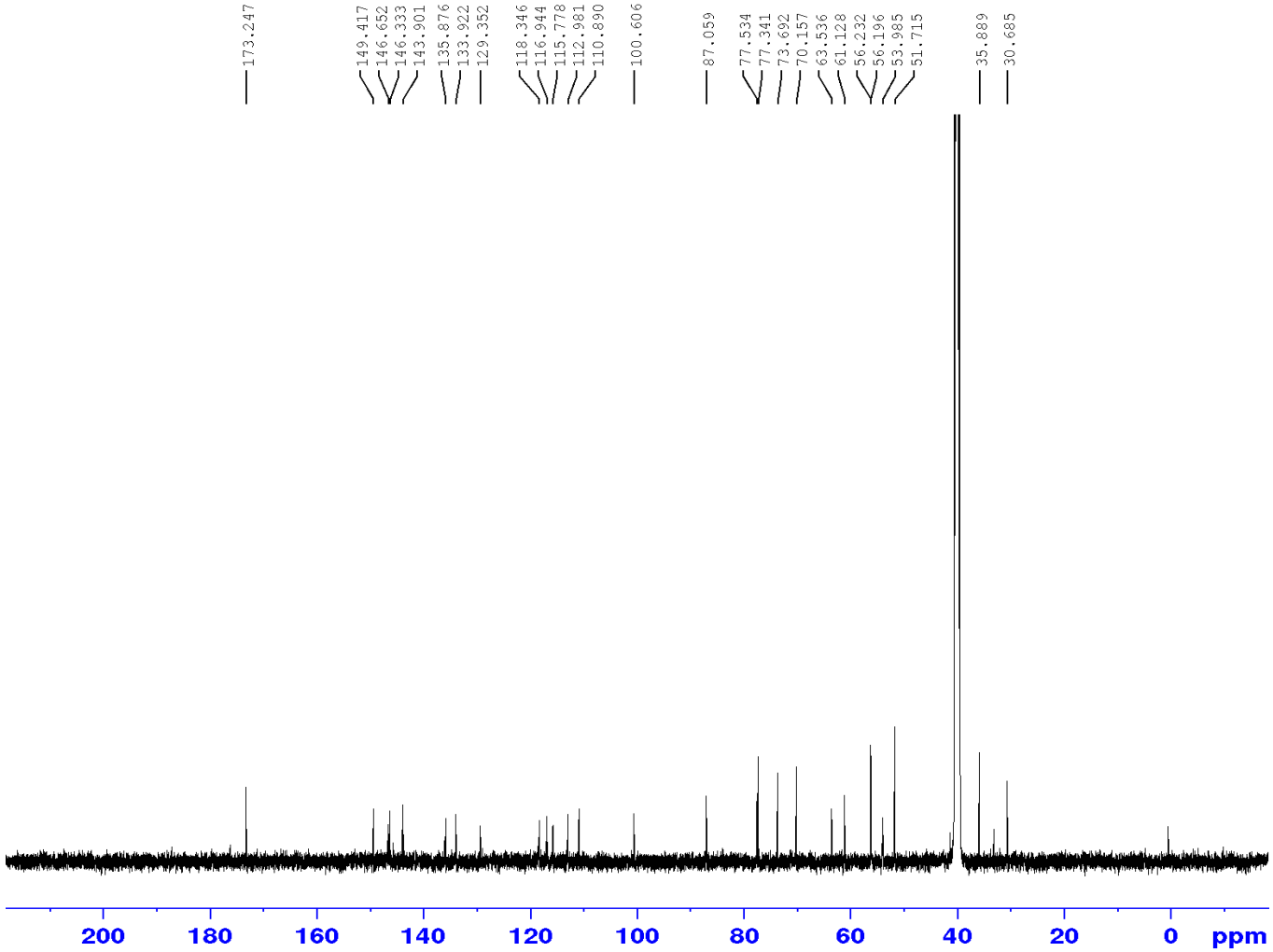


Figure S27: ^{13}C NMR spectrum of compound **2** (DMSO-d_6, 125 MHz)

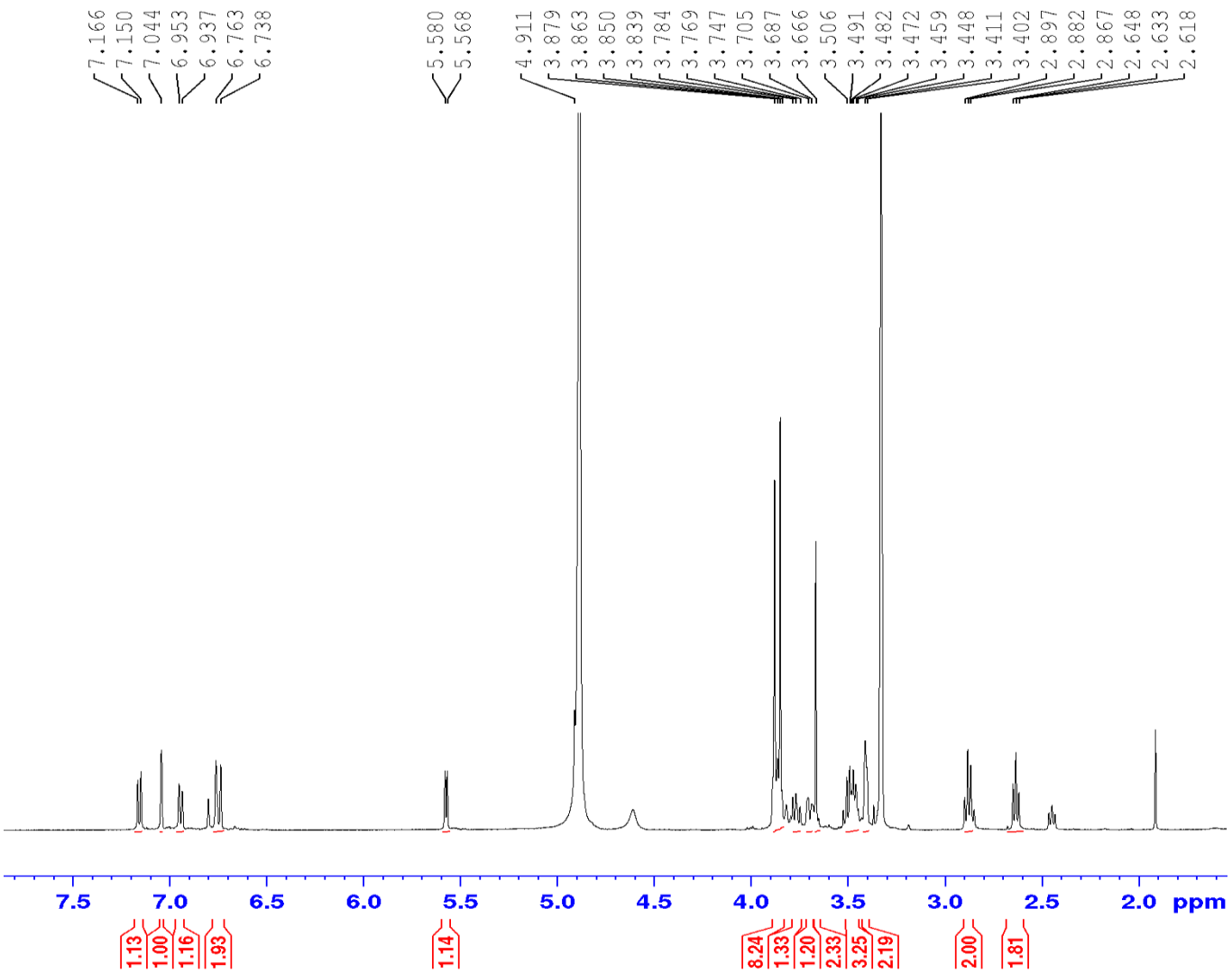


Figure S28: ^{1}H NMR spectrum of compound **2** (CD_3OD, 500 MHz)

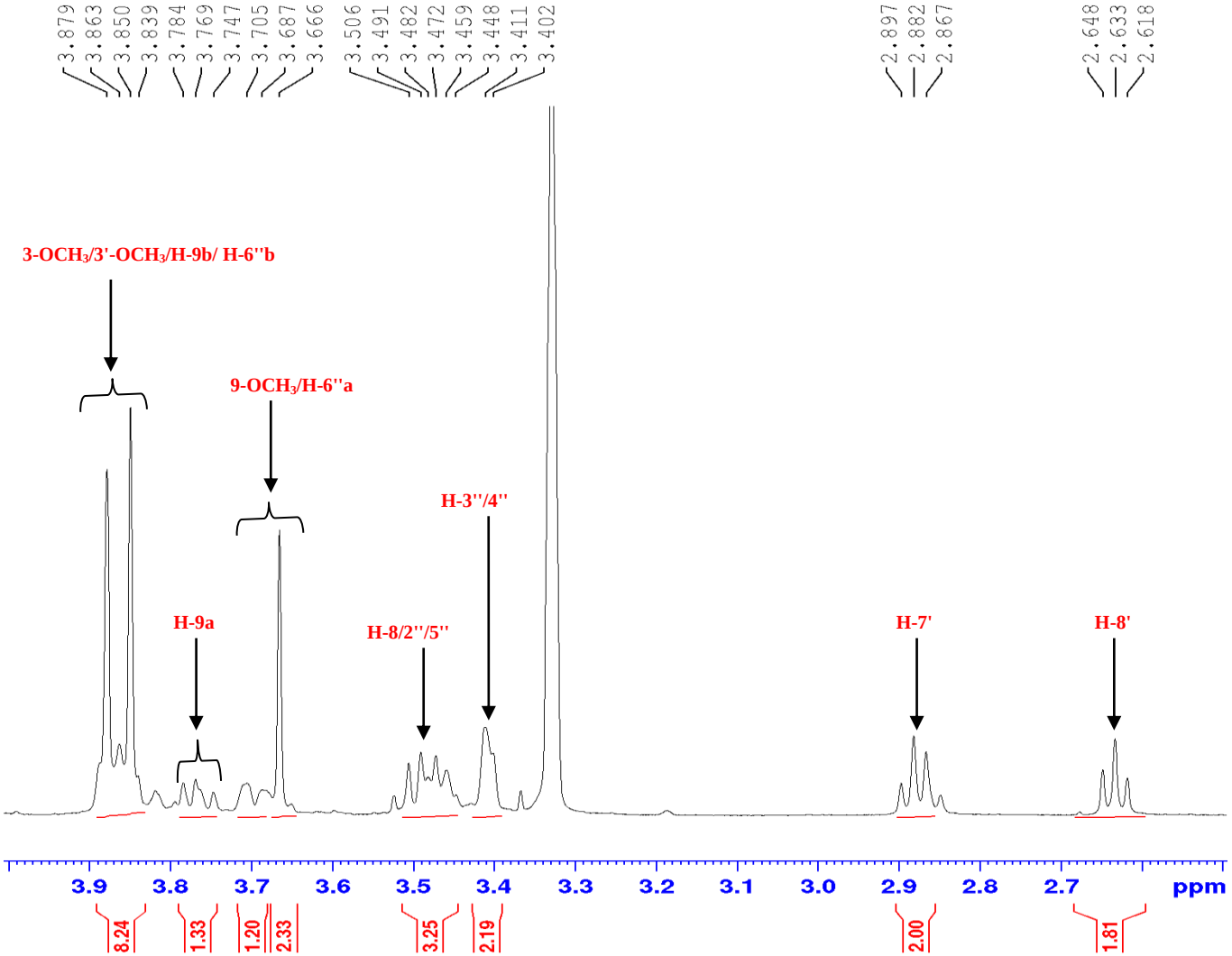


Figure S29: ^{1}H NMR spectrum of compound **2** (CD_3OD, 500 MHz, from 2.5 to 4.0 ppm)

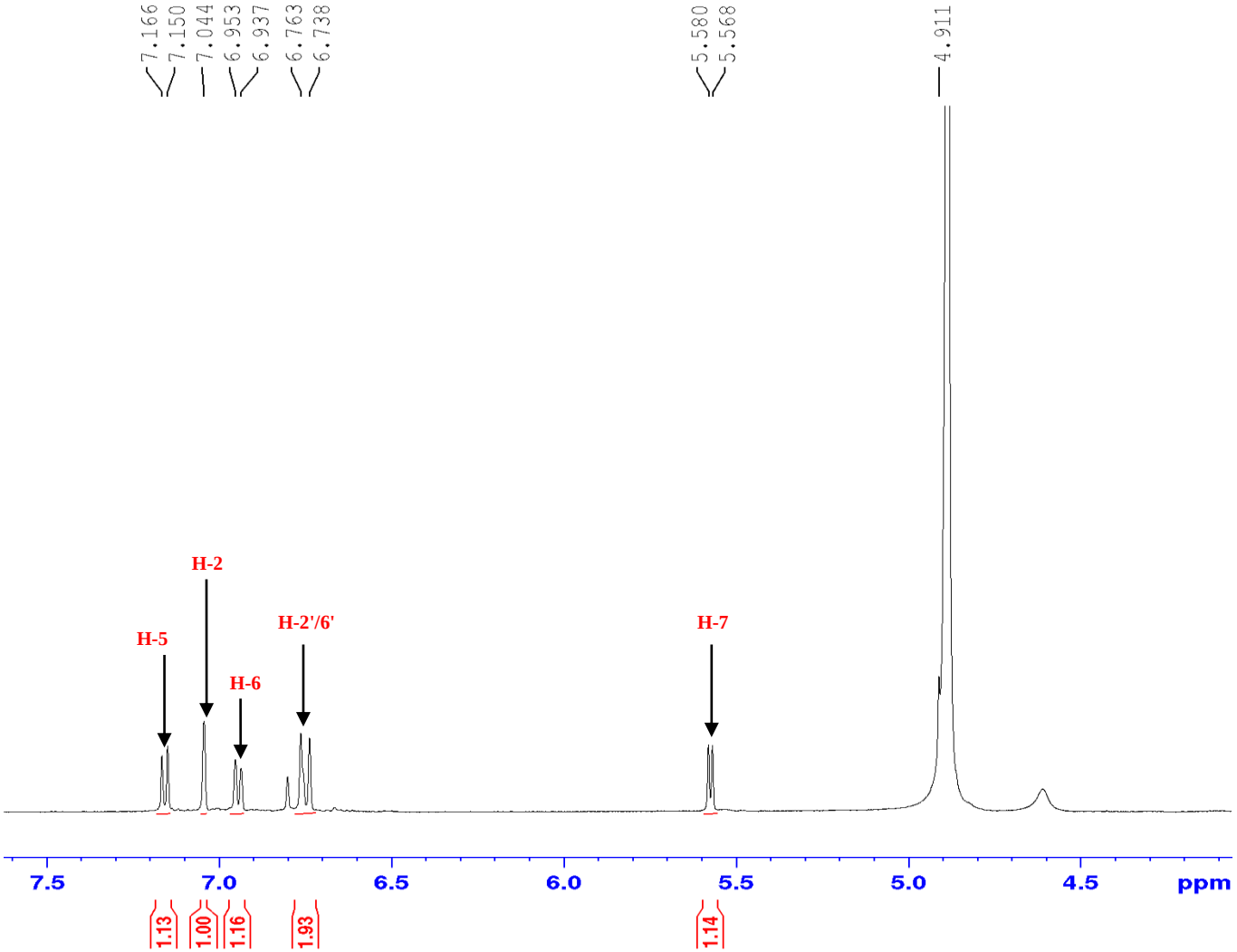


Figure S30: ^{1}H NMR spectrum of compound **2** (CD_3OD, 500 MHz, from 4.5 to 7.5 ppm)

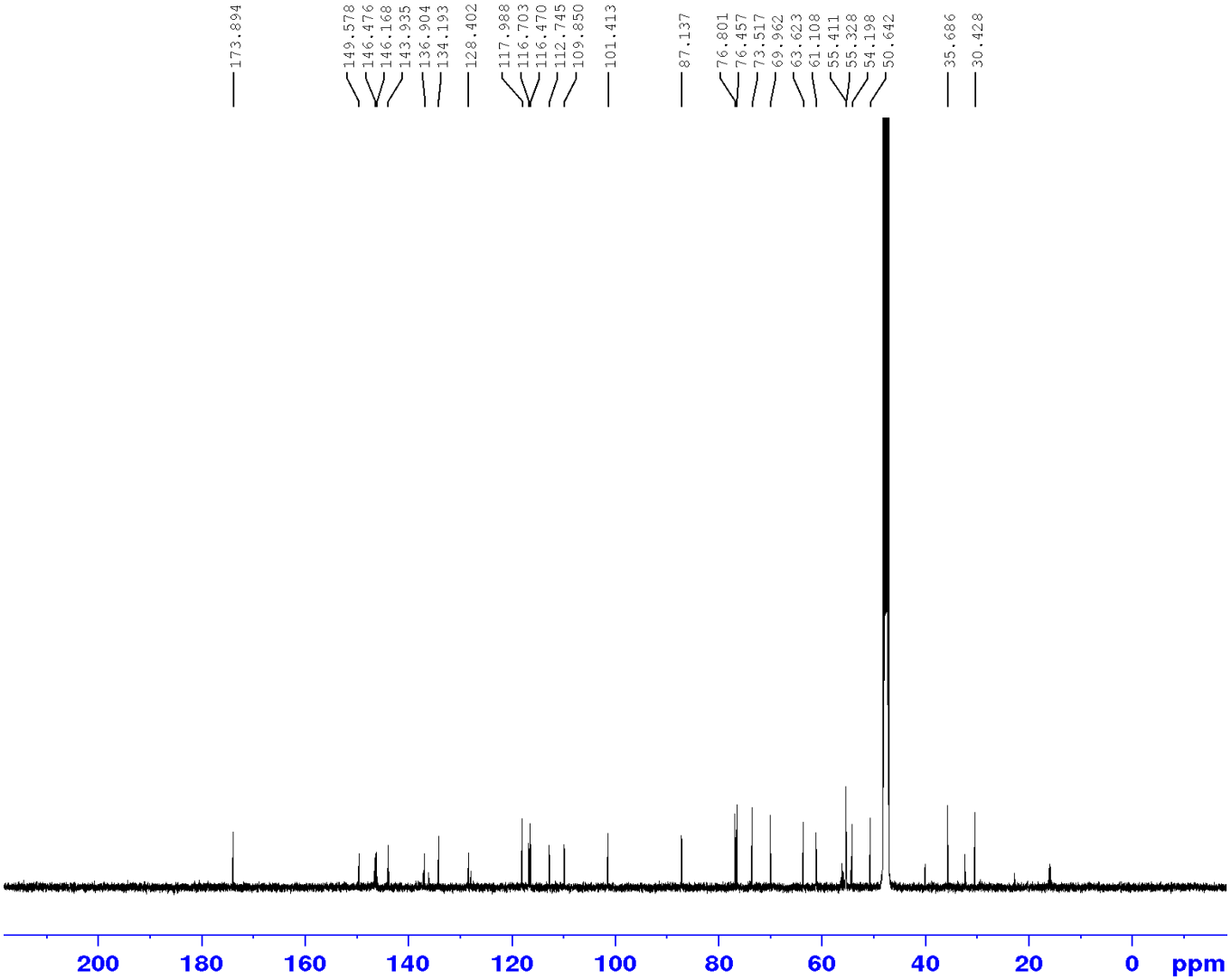


Figure S31: ^{13}C NMR spectrum of compound **2** (CD_3OD, 125 MHz)

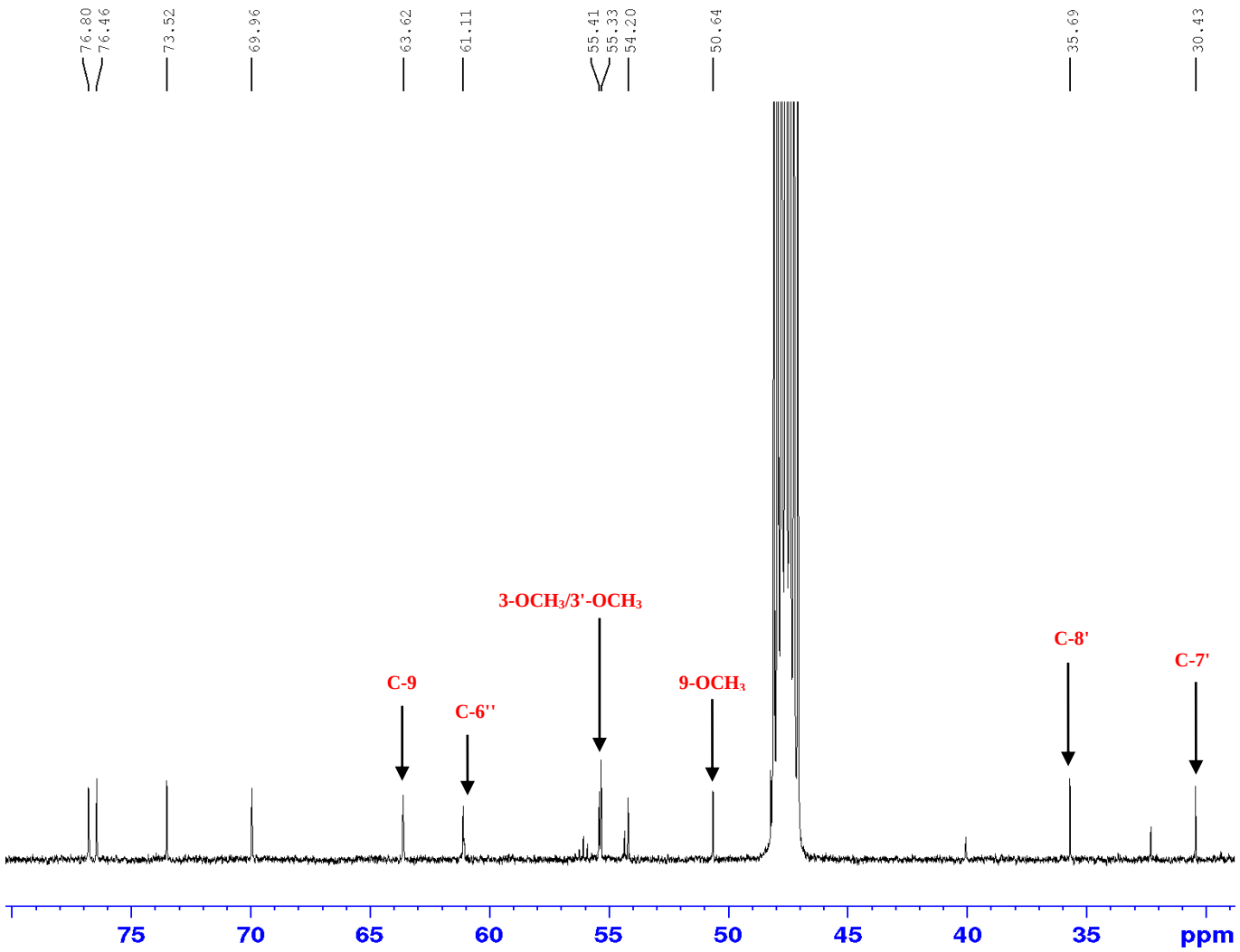


Figure S32: ^{13}C NMR spectrum of compound **2** (CD_3OD, 125 MHz, from 29 to 80 ppm)

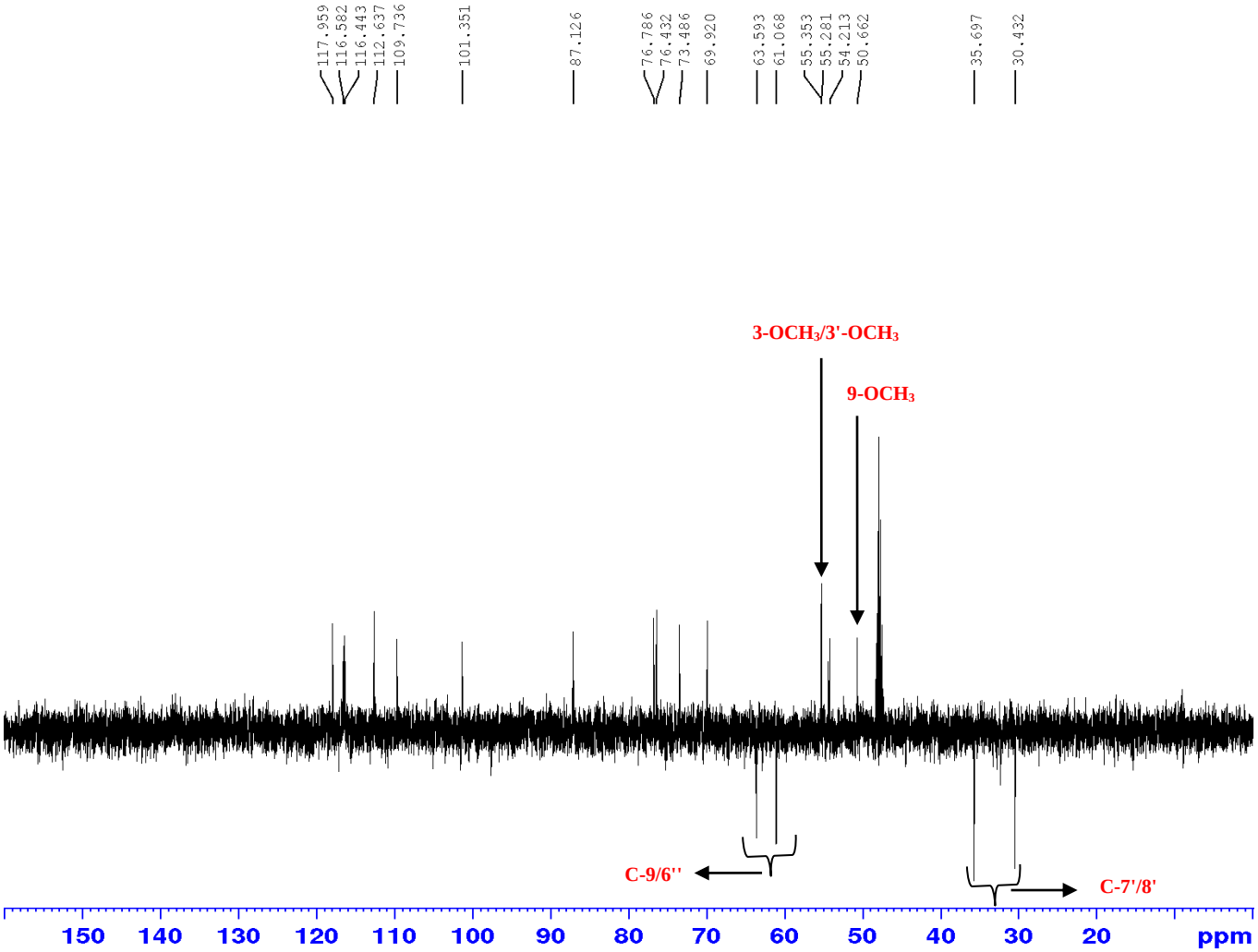


Figure S33: DEPT135 spectrum of compound **2** (CD_3OD, 125 MHz)

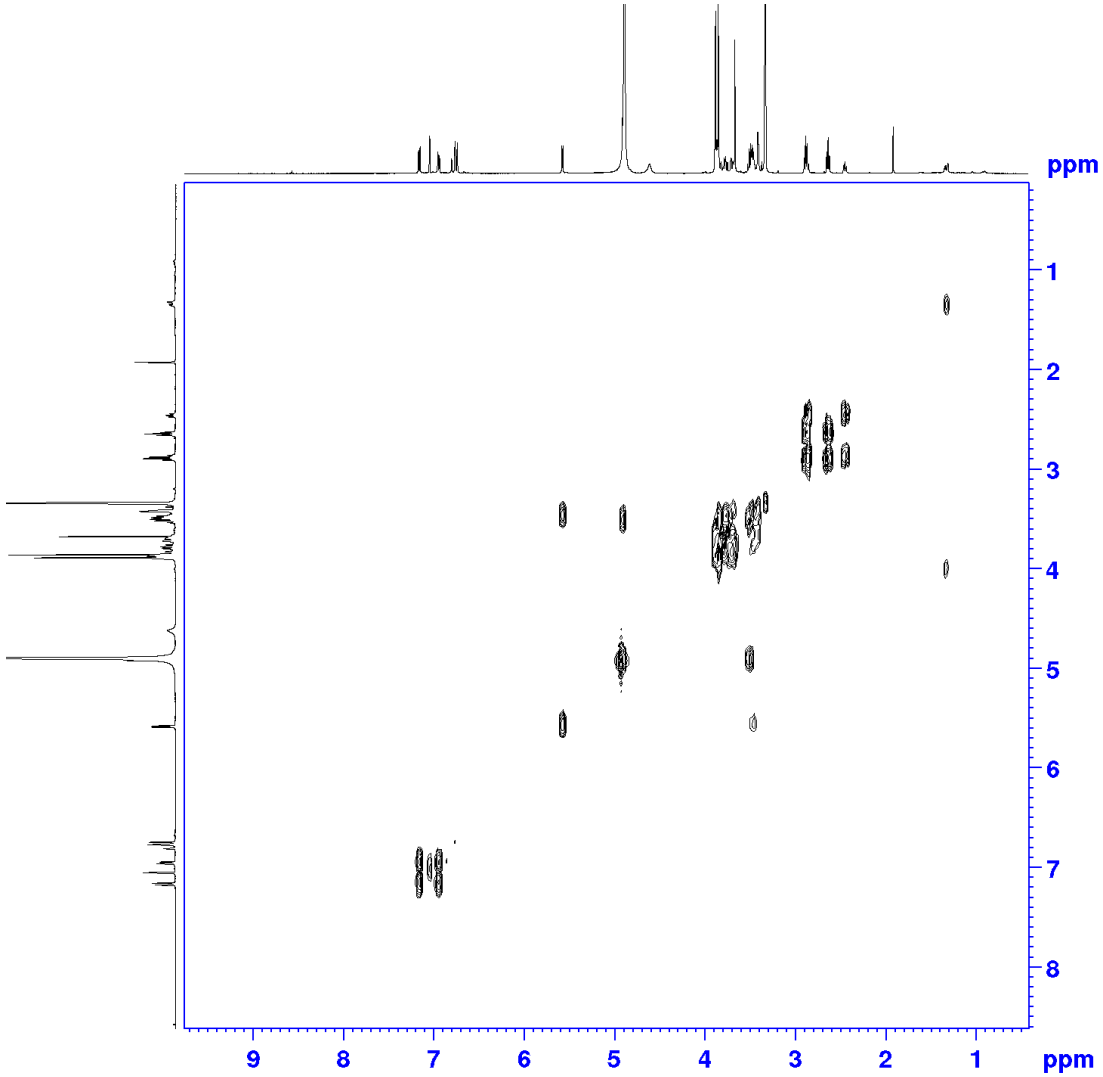


Figure S34: ^{1}H-^{1}H COSY spectrum of compound **2** (CD_3OD, 500 MHz)

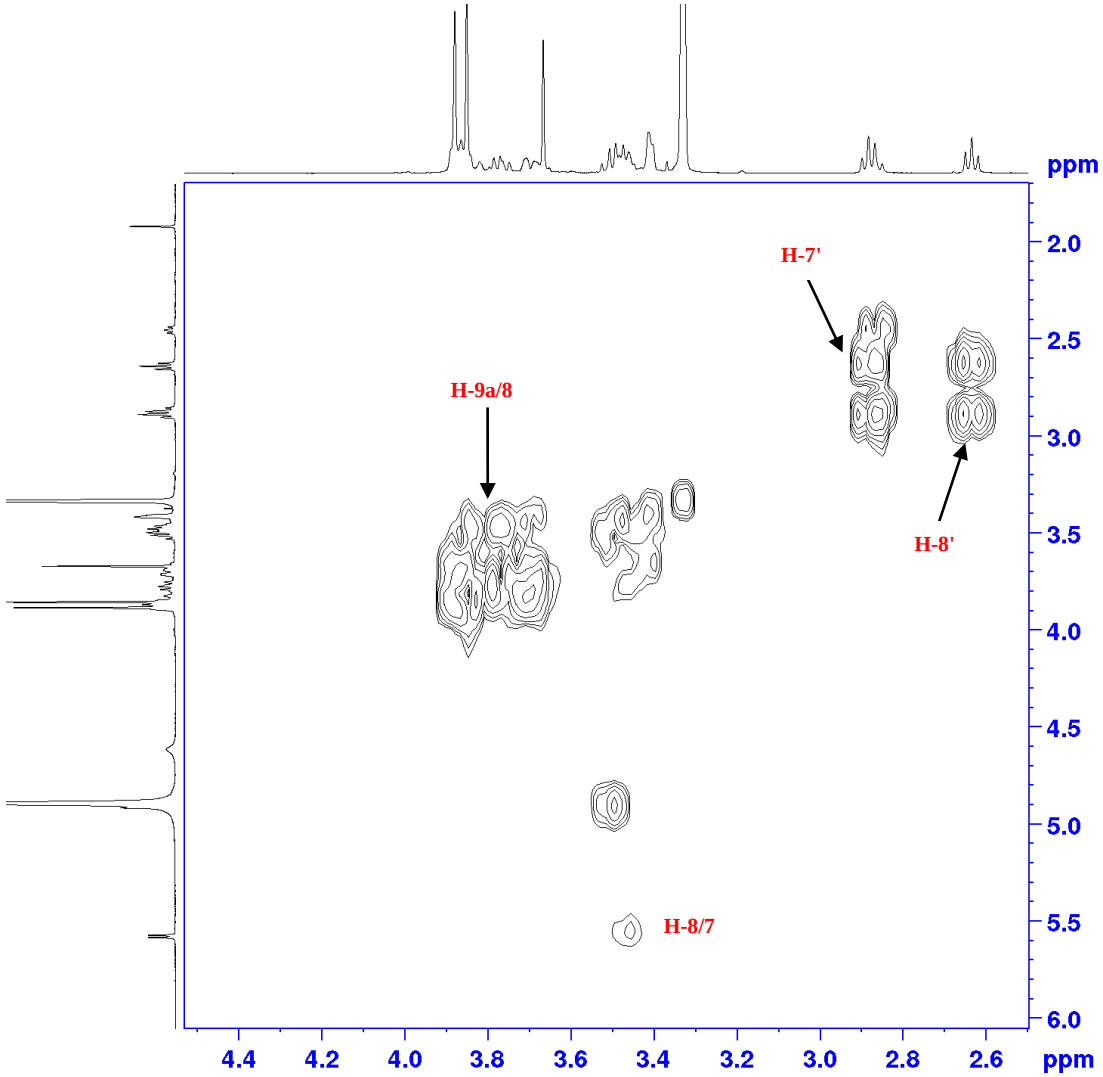


Figure S35: ^{1}H-^{1}H COSY spectrum of compound **2** (CD_3OD, 500 MHz, from 2.5 to 4.4 ppm)

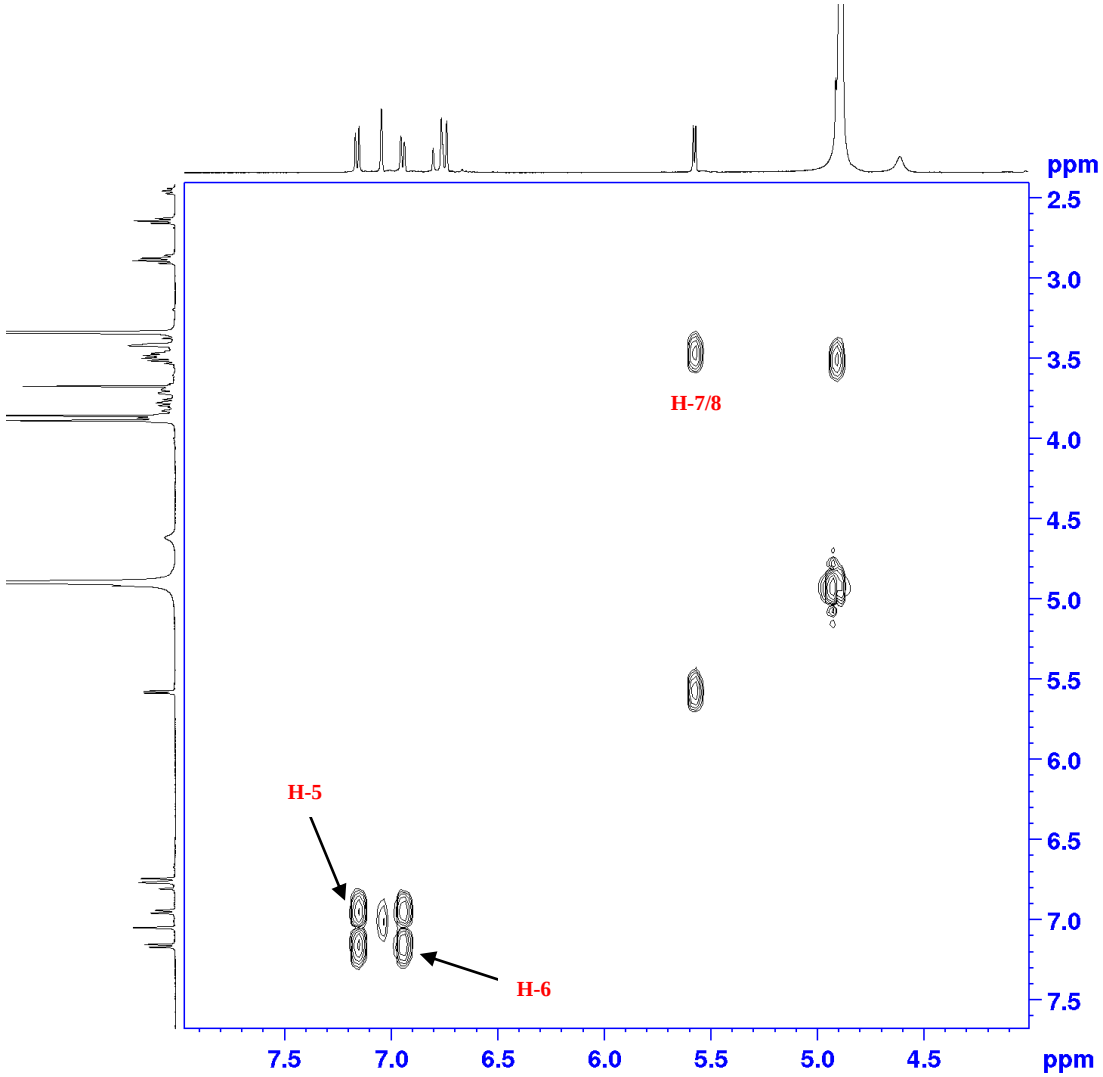


Figure S36: ^{1}H-^{1}H COSY spectrum of compound **2** (CD_3OD, 500 MHz, from 4.5 to 7.5 ppm)

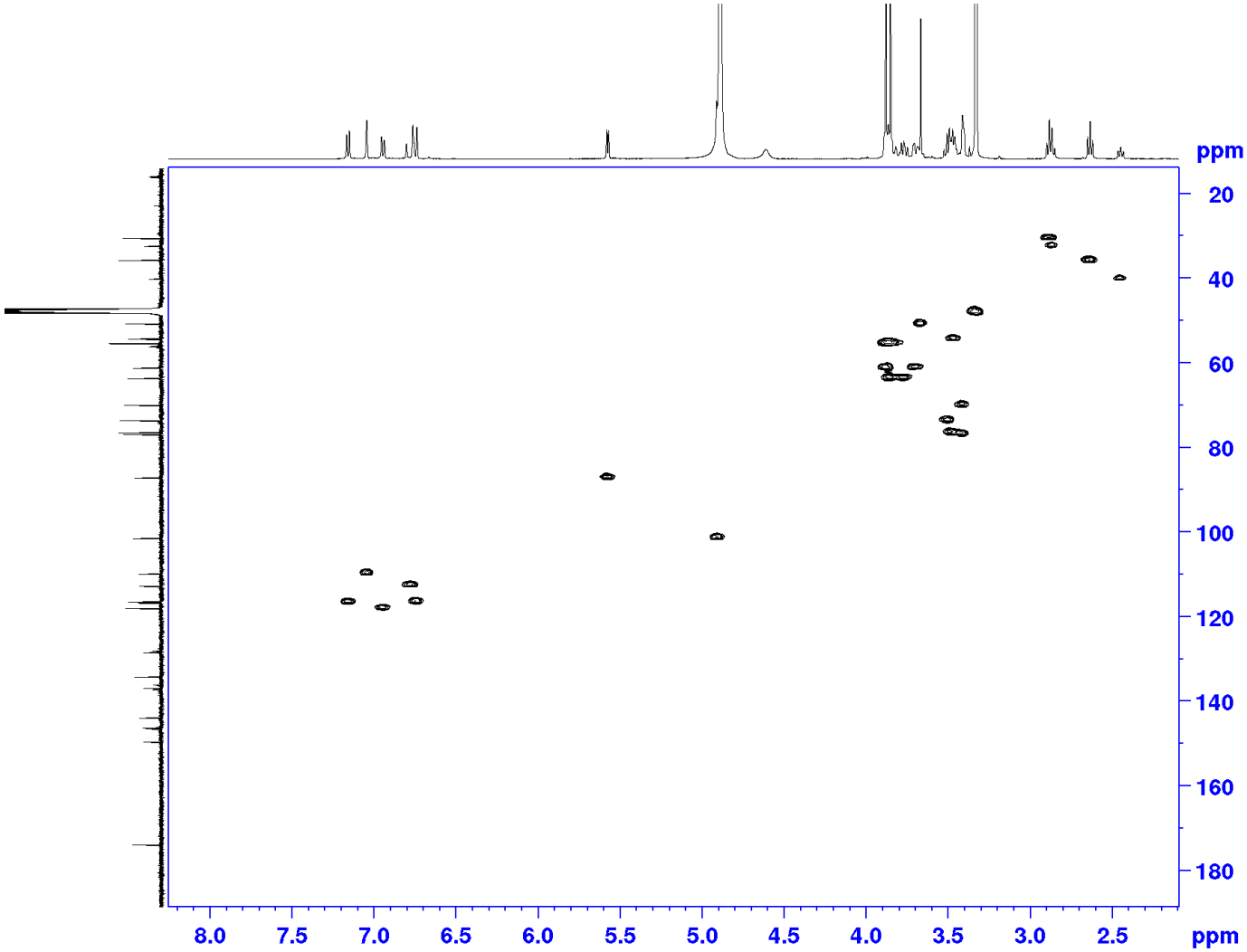


Figure S37: HSQC spectrum of compound **2** (CD_3OD, 500 MHz)

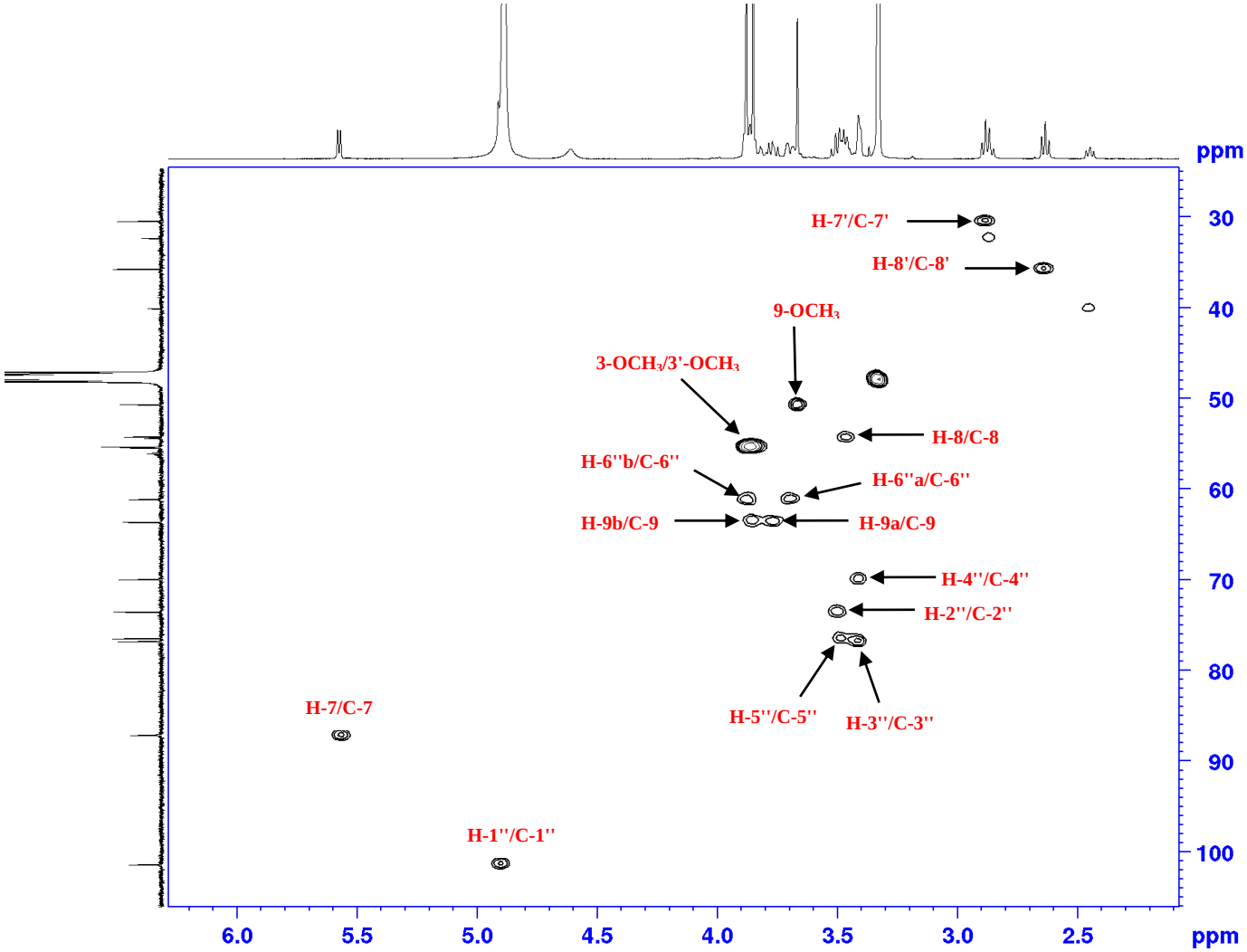


Figure S38: HSQC spectrum of compound **2** (CD_3OD, 500 MHz, from 25 to 105 ppm)

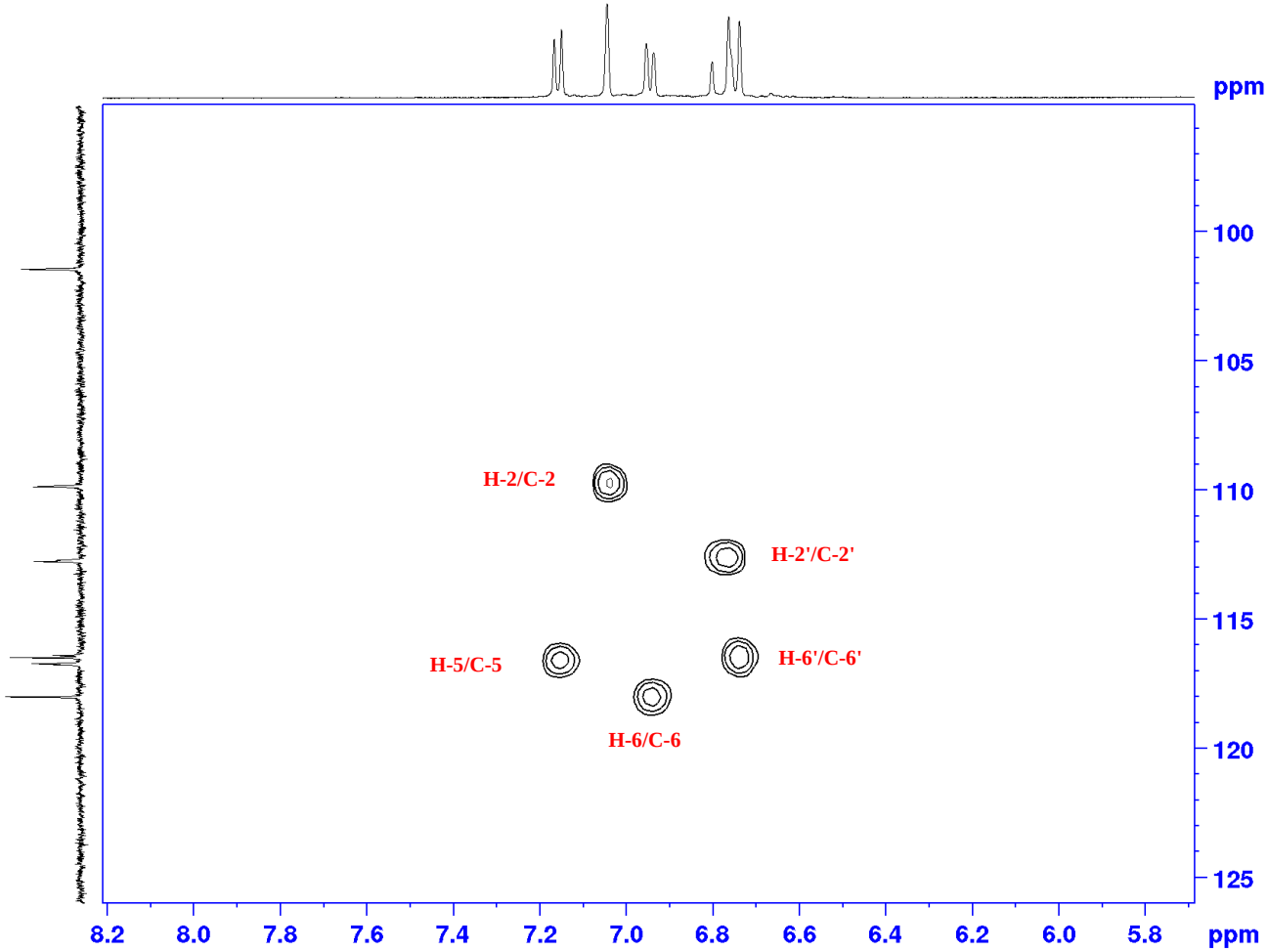


Figure S39: HSQC spectrum of compound **2** (CD_3OD, 500 MHz, from 105 to 125 ppm)

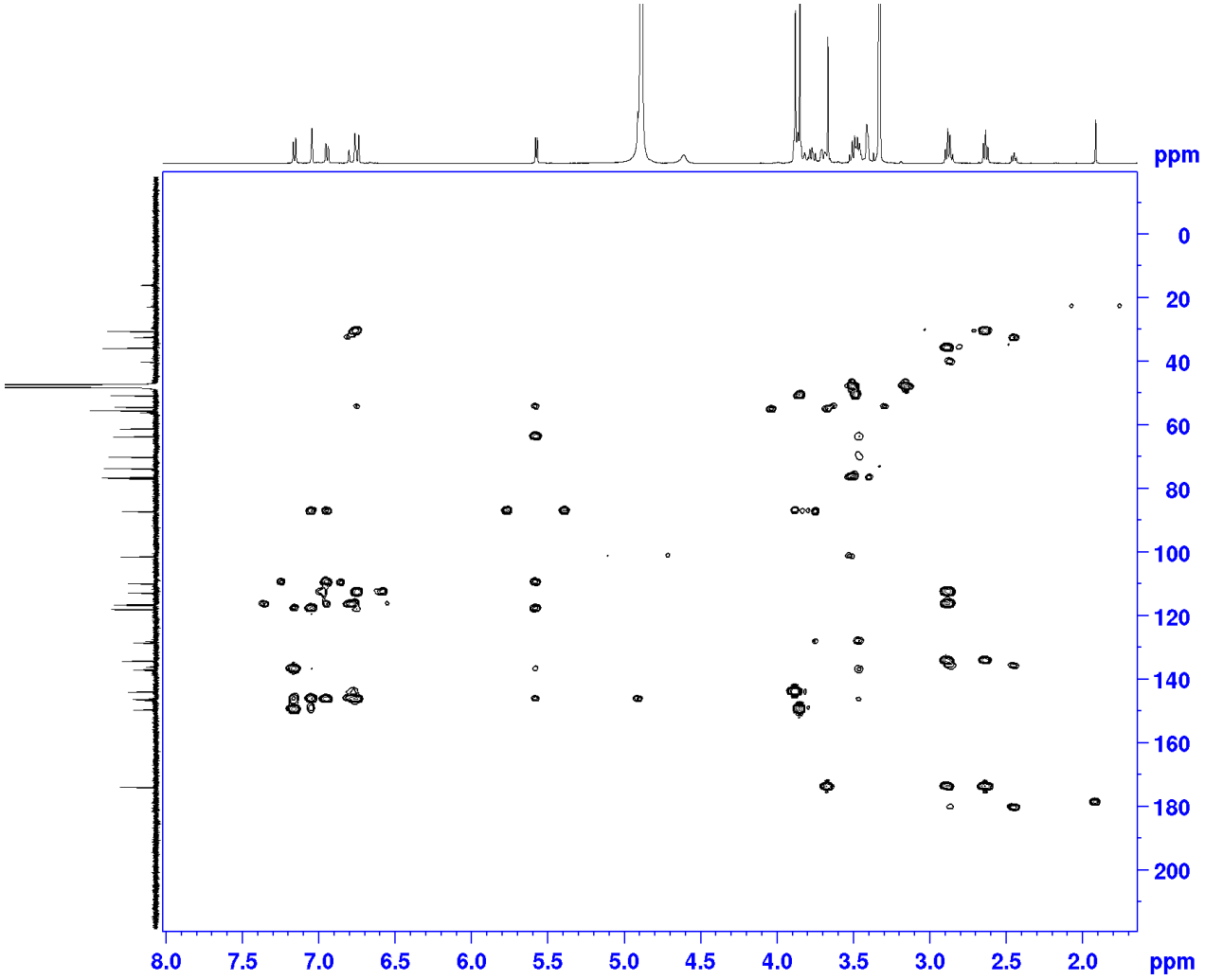


Figure S40: HMBC spectrum of compound **2** (CD_3OD, 500 MHz)

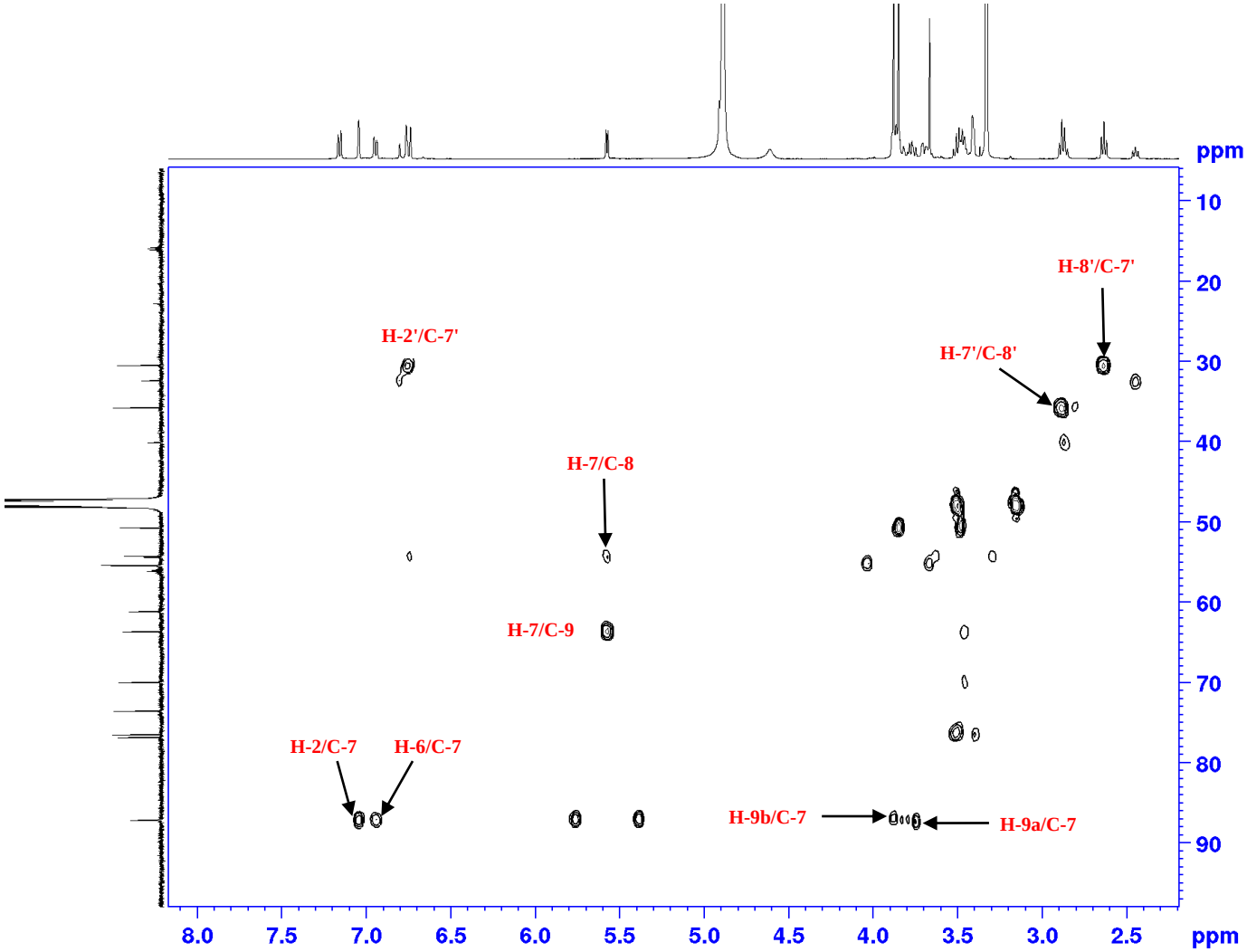


Figure S41: HMBC spectrum of compound **2** (CD_3OD, 500 MHz, from 20 to 95 ppm)

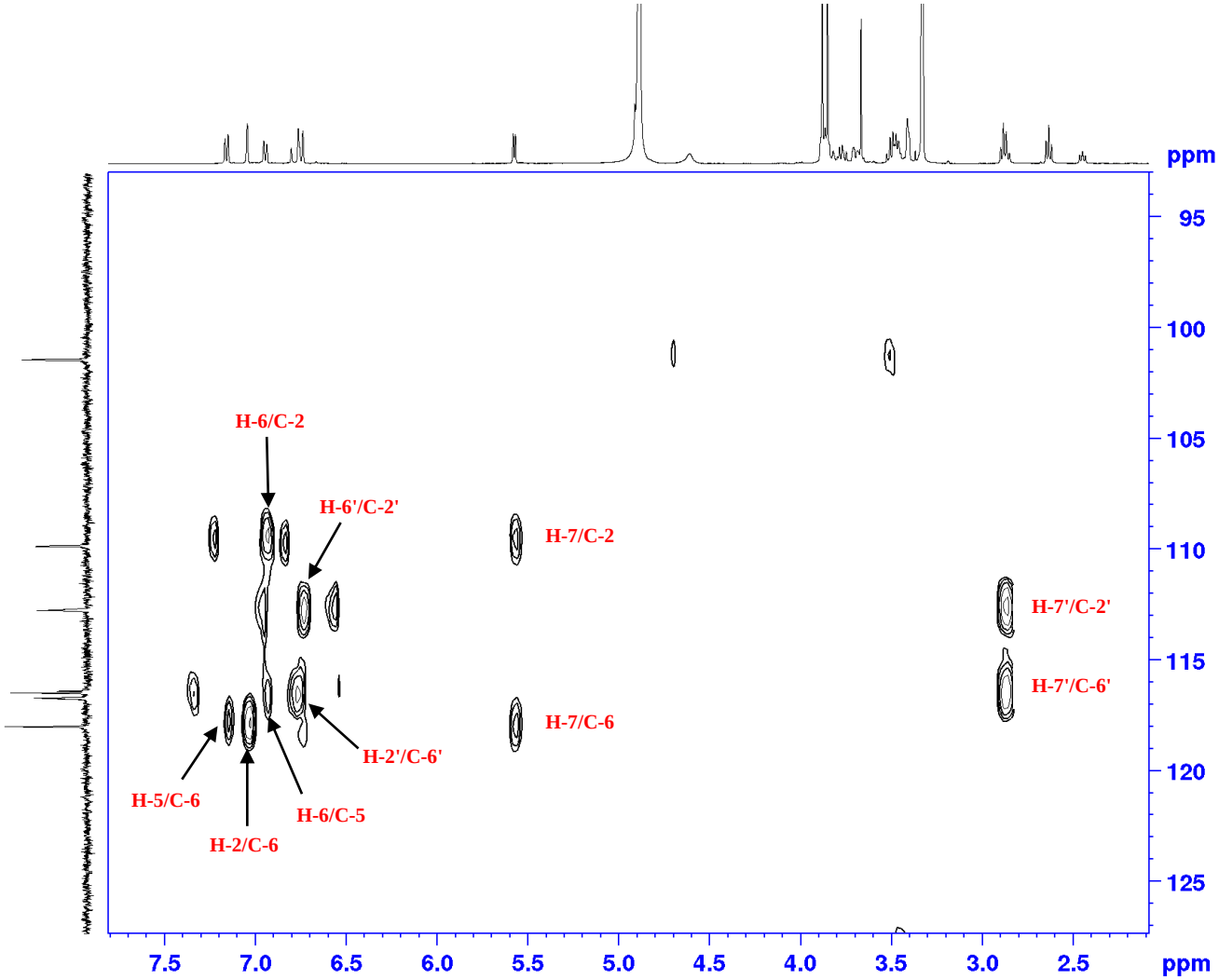


Figure S42: HMBC spectrum of compound **2** (CD_3OD, 500 MHz, from 95 to 125 ppm)

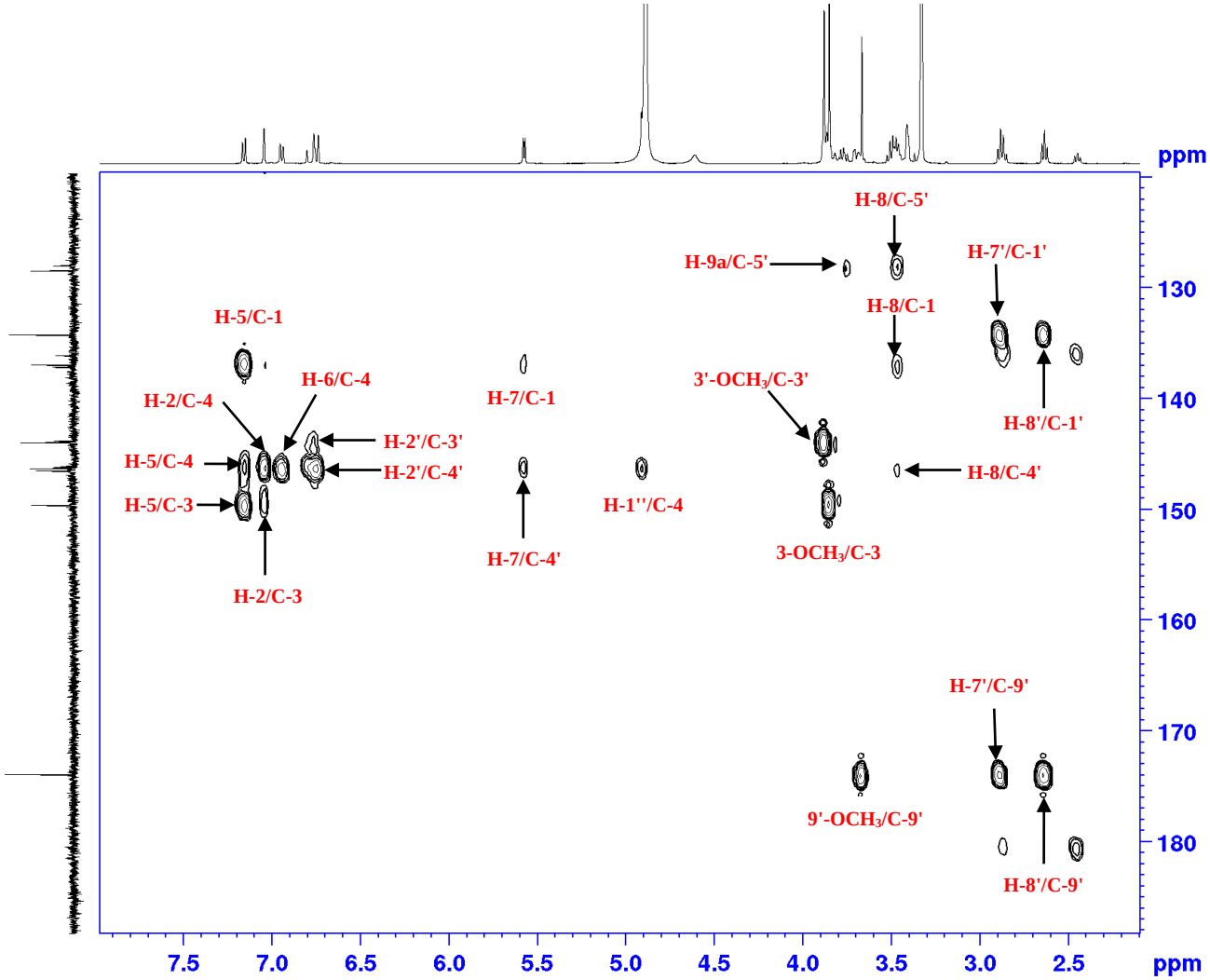


Figure S43: HMBC spectrum of compound **2** (CD_3OD, 500 MHz, from 125 to 175 ppm)

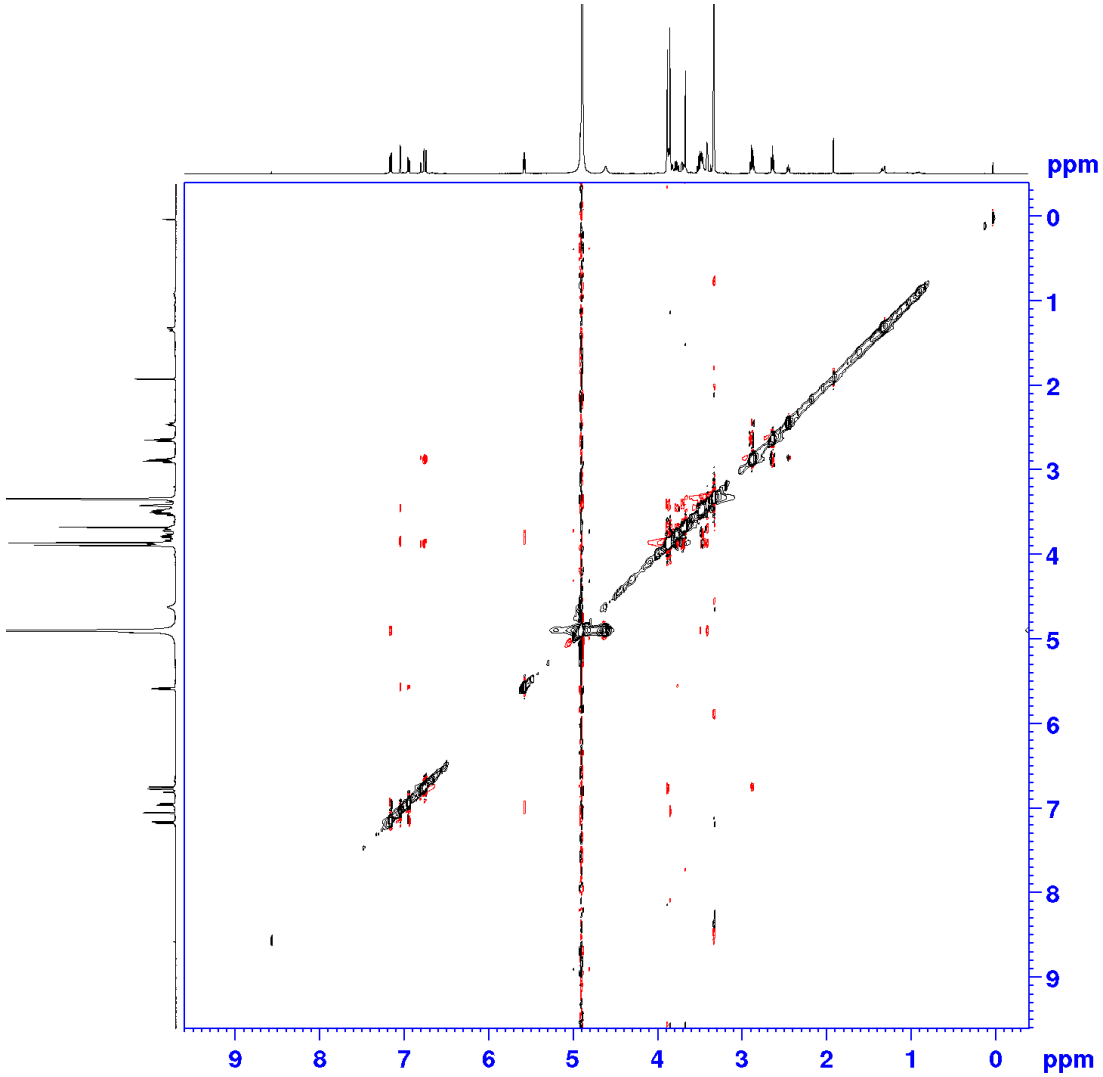


Figure S44: NOESY spectrum of compound **2** (CD_3OD, 500 MHz)

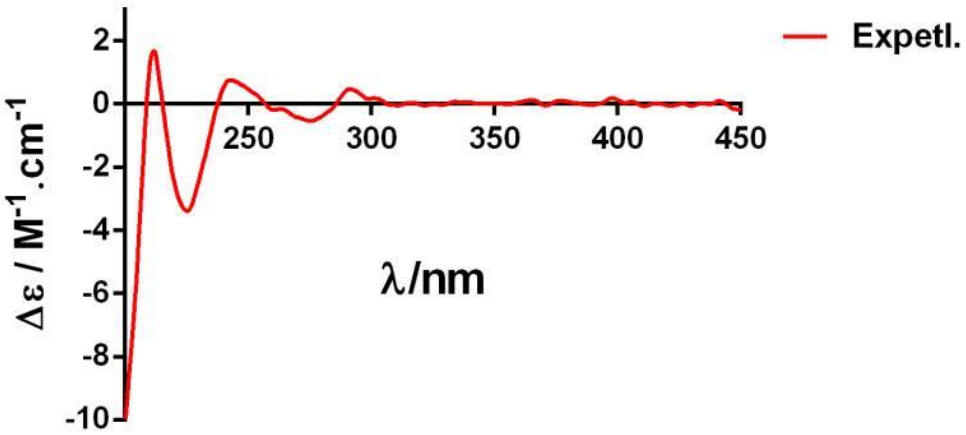


Figure S45: CD spectra of compound **2**