Supporting Information

Butenolides from the Coral-Derived Fungus *Aspergillius terreus* SCSIO41404

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ITS sequence of the strain *Aspergillus terreus* SCSIO41404.

GGTAAAGCGCTGGTCTTATGGCCACCTCCCACCCGTGACTATTGTACCTTGT
TGCTTCGGCGGGCCCGCCAGCGTTTGCTGGCCGCCGGGGGGCGACTCGCC
CCCGGGCCCGTGCCCGCCGGAGACCCCAACATGAACCCTGTTCTGAAAGC
TTGCAGTCTGAGTGTGATTCTTTGCAATCAGTTAAAACTTTCAACAATGGAT
CTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAACTAATGT
GAATTGCAGAATTCAGTGAATCATCGAGTCTTTGAACGCACATTGCGCCCC
CTGGTATTCCGGGGGGCATGCCTGTCCGAGCGTCATTGCTGCCCTCAAGCC
CGGCTTGTGTGTTGGGCCCTCGTCCCCCGGCTCCCGGGGGACGGGCCCGA
AAGGCAGCGGCGGCACCGCGTCCGGTCCTCGAGCGTATGGGGCTTCGTCT
TCCGCTCCGTAGGCCCGGCCGGCGCCCGCCGACGCATTTATTTGCAACTTG
TTTTTTTTTCCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAACTTAA
GCATATCAATAAGCGGAGGAA

Physicochemical data of 4–13.

Butyrolactone II (**4**): yellow oil; $[\alpha]_D^{20}$ = +30.5 (*c* 0.1, MeOH); ^{1}H NMR (700 MHz, DMSO-d_6) δ_H 10.57 (1H, s, 2-OH), 9.95 (1H, s, 4′-OH), 9.22 (1H, s, 4″-OH), 7.49 (2H, d, *J* = 8.7 Hz, H-2′, H-6′), 6.85 (2H, d, *J* = 8.7 Hz, H-3′, H-5′), 6.56 (2H, d, *J* = 8.5 Hz, H-2″, H-6″), 6.48 (2H, d, *J* = 8.5 Hz, H-3″, H-5″), 3.71 (3H, s, 5-OCH_3), 3.37 (2H, d, *J* = 9.7 Hz, H-6); ^{13}C NMR (175 MHz, DMSO-d_6) δ_C 169.8 (qC, C-5), 167.9 (qC, C-1), 157.9 (qC, C-4′), 156.3 (qC, C-4″), 138.1 (qC, C-2), 131.2 (CH, C-2″, C-6″), 128.8 (CH, C-2′, C-6′), 127.5 (qC, C-3), 123.2 (qC, C-1″), 121.0 (qC, C-1′), 115.9 (CH, C-3′, C-5′), 114.6 (CH, C-3″, C-5″), 84.7 (qC, C-4), 53.5 (CH_3, 5-OCH_3), 38.0 (CH_2, C-6).

Methyl (*R*)-2-benzyl-4-hydroxy-3-(4-hydroxyphenyl)-5-oxo-2,5-dihydrofuran-2-carboxylate (**5**): yellow oil; $[\alpha]_D^{25}$ = +65.6 (*c* 0.1, MeOH); ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.58 (2H, d, *J* = 8.8 Hz, H-2′, H-6′), 7.13 (1H, t, *J* = 7.3 Hz, H-4″), 7.09 (2H, t, *J* = 7.3 Hz, H-3″, H-5″), 6.87 (2H, d, *J* = 8.8 Hz, H-3′, H-5′), 6.83 (2H d, *J* = 7.3 Hz, H-2″, H-6″), 3.79 (3H, s, 5-OCH_3), 3.56 (2H, s, H-6); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.4 (qC, C-5) 170.1 (qC, C-1), 159.4 (qC, C-4′), 139.7 (qC, C-2), 134.7 (qC, C-1″), 131.5 (CH, C-2′, C-6′), 130.3 (CH, C-2″, C-6″), 129.0 (qC, C-3), 128.8 (CH, C-3″, C-5″), 128.1 (CH, C-4″), 123.0 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 86.5 (qC, C-4), 53.9 (CH_3, 5-OCH_3), 40.2 (CH_2, C-6).

Butyrolactone I (**6**): yellow oil; $[\alpha]_D^{20}$ = +64.0 (*c* 0.2, MeOH); ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.59 (2H, d, *J* = 8.8 Hz, H-2′, H-6′), 6.87 (2H, d, *J* = 8.8 Hz, H-3′, H-5′)，6.54 (1H, dd, *J* = 8.2, 2.1 Hz, H-6″), 6.50 (1H, d, *J* = 8.2 Hz, H-5″), 6.41 (1H, d,

J = 2.1 Hz, H-2″), 5.06 (1H, m, H-8″), 3.78 (3H, s, 5-OCH_3), 3.45 (1H, d, J = 14.8 Hz, H_a-6), 3.41 (1H, d, J = 14.8 Hz, H_b-6), 3.07 (2H, m, H-7″), 1.67 (3H, br s, H-11″), 1.57 (3H, br s, H-10″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.6 (qC, C-5), 170.4 (qC, C-1), 159.3 (qC, C-4′), 155.1 (qC, C-4″), 139.7 (qC, C-2), 133.0 (qC, C-9″), 132.4 (CH, C-2″), 130.4 (CH, C-2′, C-6′), 129.8 (CH, C-6″), 129.1 (qC, C-3), 128.4 (qC, C-3″), 125.1 (qC, C-1″), 123.6 (CH, C-8″), 123.2 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 115.0 (CH, C-5″), 86.8 (qC, C-4), 53.8 (CH_3, 5-OCH_3), 39.6 (CH_2, C-6), 28.7 (CH_2, C-7″), 26.0 (CH_3, C-11), 17.8 (CH_3, C-10″).

Versicolactone B (**7**): white powder; $[\alpha]_D^{25}$ = +67.7 (c 0.1, MeOH);; ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.70 (2H, d, J = 7.5 Hz, H-2′, H-6′), 7.46 (2H, t, J = 7.5 Hz, H-3′, H-5′), 7.38 (1H, t, J = 7.5 Hz, H-4′), 6.51 (1H, dd, J = 8.2, 2.0 Hz, H-6″), 6.49 (1H, d, J = 8.2 Hz, H-5″), 6.40 (1H, d, J = 2.0 Hz, H-2″), 5.06 (1H, m, H-8″), 3.79 (3H, s, 5-OCH_3), 3.45 (2H, br s, H-6), 3.07 (2H, m, H-7″), 1.65 (3H, br s, H-11″), 1.57 (3H, br s, H-10″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.5 (qC, C-5), 169.9 (qC, C-1), 155.2 (qC, C-4″), 141.9 (qC, C-2), 132.9 (qC, C-9″), 132.4 (CH, C-2″), 131.9 (CH, C-2′, C-6′), 129.8 (CH, C-3′, C-5′, C-6″), 129.7 (qC, C-3), 128.6 (CH, C-4′), 128.5 (qC, C-3″), 128.0 (qC, C-1′), 125.0 (qC, C-1″), 123.6 (CH, C-8″), 115.1 (CH, C-5″), 86.9 (qC, C-4), 53.9 (CH_3, 5-OCH_3), 39.5 (CH_2, C-6), 28.8 (CH_2, C-7″), 26.0 (CH_3, C-11), 17.8 (CH_3, C-10″).

Aspernolide D (**8**): white powder; $[\alpha]_D^{25}$ = +61.3 (c 0.1, MeOH); ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.58 (2H, d, J = 8.7 Hz, H-2′, H-6′), 6.87 (2H, d, J = 8.7 Hz, H-3′, H-5′), 6.50 (1H, dd, J = 8.1, 1.9 Hz, H-6″), 6.48 (1H, d, J = 8.1 Hz, H-5″), 6.47 (1H, d, J = 1.9 Hz, H-2″), 5.39 (1H, m, H-8″), 3.91 (2H, br s, H-10″), 3.78 (3H, s, 5-OCH_3), 3.45 (1H, d, J = 14.6 Hz, H_a-6), 3.41 (1H, d, J = 14.6 Hz, H_b-6), 3.15 (2H, d, J = 7.4 Hz, H-7″), 1.65 (3H, br s, H-11″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.6 (qC, C-5), 170.4 (qC, C-1), 159.4 (qC, C-4′), 155.2 (qC, C-4″), 139.8 (qC, C-2), 136.3 (qC, C-9″), 132.7 (CH, C-2″), 130.4 (CH, C-2′, C-6′), 129.9 (CH, C-6″), 129.2 (qC, C-3), 127.9 (qC, C-3″), 125.3 (CH, C-8″), 125.2 (qC, C-1″), 123.2 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 115.1 (CH, C-5″), 86.9 (qC, C-4), 69.1 (CH_2, C-10″), 53.9 (CH_3, 5-OCH_3), 39.5 (CH_2, C-6), 28.6 (CH_2, C-7″), 13.8 (CH_3, C-11).

Aspernolide A (**9**): yellow oil; $[\alpha]_D^{25}$ = +38.6 (c 0.1, MeOH); ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.56 (2H, d, J = 8.9 Hz, H-2′, H-6′), 6.87 (2H, d, J = 8.9 Hz, H-3′, H-5′), 6.51 (1H, dd, J = 8.3, 2.1 Hz, H-6″), 6.48 (1H, d, J = 2.1 Hz, H-2″), 6.43 (1H, d, J = 8.3 Hz, H-5″), 3.79 (3H, s, 5-OCH_3), 3.44 (2H, s, H-6), 2.58 (2H, m, H-7″), 1.72 (2H,

t, J = 6.8 Hz, H-8″), 1.25(3H, s, H-11″), 1.24 (3H, s, H-10″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.5 (qC, C-5), 170.3 (qC, C-1), 159.4 (qC, C-4′), 154.3 (qC, C-4″), 139.7 (qC, C-2), 132.6 (CH C-2″), 130.4 (CH, C-2′, C-6′), 130.2 (CH, C-6″), 129.3 (qC, C-3), 125.5 (qC, C-3″), 123.1 (qC, C-1″), 121.4 (qC, C-1′), 117.4 (CH, C-5″), 116.6 (CH, C-3′, C-5′), 86.8 (qC, C-4), 75.1 (qC, C-9″), 53.9 (CH_3, 5-OCH_3), 39.6 (CH_2, C-6), 33.7 (CH_2, C-8″), 27.0 (CH_3, C-10″), 26.9 (CH_3, C-11″), 23.2 (CH_2, C-7″).

Butyrolactone V (**10**): yellow oil; $[\alpha]_D^{20}$ = +70.0 (*c* 0.1, MeOH); ^{1}H NMR (700 MHz, $CDCl_3$) δ_H 7.59 (2H, d, J = 8.6 Hz, H-2′, H-6′), 6.90 (2H, d, J = 8.6 Hz, H-3′, H-5′), 6.59 (1H, br s, H-2″), 6.54 (2H, overlapped, H-5″, H-6″), 3.78 (3H, s, 5-OCH_3), 3.76 (1H. t, J = 4.9 Hz, H-8″), 3.54 (1H, d, J = 14.8 Hz, H_a-6), 3. 45 (1H, d, J = 14.8 Hz, H_b-6), 2.87 (1H, dd, J = 16.8, 4.9 Hz, H_a-7″), 2.62 (1H, dd, J = 16.8, 4.9 Hz, H_b-7″), 1.31(3H, s, H-10″), 1.24 (3H, s, H-11″); ^{13}C NMR (175 MHz, $CDCl_3$) δ_C 169.9 (qC, C-5), 169.4 (qC, C-1), 156.7 (qC, C-4′), 152.1 (qC, C-4″), 137.5 (qC, C-2), 132.2 (CH C-2″), 129.8 (CH, C-6″), 129.7 (CH, C-2′, C-6′), 128.3 (qC, C-3), 124.9 (qC, C-1″), 122.4 (qC, C-1′), 118.3 (qC, C-3″), 116.9 (CH, C-5″), 116.2 (CH, C-3′, C-5′), 86.1 (qC, C-4), 76.9 (qC, C-9″), 69.8 (CH, C-8″), 53.7 (CH_3, 5-OCH_3), 38.8 (CH_2, C-6), 31.2 (CH_2, C-7″), 24.8 (CH_3, C-10″), 22.5 (CH_3, C-11″).

Terrelactone (**11**): yellow oil; $[\alpha]_D^{25}$ = +54.1 (*c* 0.1, MeOH); ESIMS *m/z* 465.5 [M + Na]$^+$; ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.58 (2H, d, J = 8.8 Hz, H-2′, H-6′), 6.87 (2H, d, J = 8.8 Hz, H-3′, H-5′), 6.50 (1H, dd, J = 8.1, 2.1 Hz, H-6″), 6.48 (1H, d, J = 8.1 Hz, H-5″), 6.45 (1H, d, J = 2.1 Hz, H-2″), 3.79 (3H, s, 5-OCH_3), 3.45 (1H, d, J = 14.7 Hz, H_a-6), 3.41 (1H, d, J = 14.7 Hz, H_b-6), 2.49 (1H, m, H_a-7″), 2.40 (1H, m, H_b-7″), 1.53 (2H, m, H-8″), 1.20 (3H, s, H-10″), 1.19 (3H, s, H-11″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.6 (qC, C-5), 170.4 (qC, C-1), 159.4 (qC, C-4′), 155.2 (qC, C-4″), 139.7 (qC, C-2), 132.9 (CH, C-2″), 130.4 (CH, C-2′, C-6′), 129.7 (CH, C-6″), 129.6 (qC, C-3), 129.2 (qC, C-3″), 125.2 (qC, C-1″), 123.2 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 115.2 (CH, C-5″), 86.9 (qC, C-4), 71.5 (qC, C-9″), 53.9 (CH_3, 5-OCH_3), 44.7 (CH_2, C-8″), 39.5 (CH_2, C-6), 29.3 (CH_3, C-11″), 29.0 (CH_3, C-10″), 25.8 (CH_2, C-7″).

Butyrolactone VI (**12**): white solid; $[\alpha]_D^{25}$ = +38.2 (*c* 0.1, MeOH); ^{1}H NMR (700 MHz, CD_3OD): δ_H 7.58 (2H, d, J = 8.9 Hz, H-2′, H-6′), 6.87 (2H, d, J = 8.9 Hz, H-3′, H-5′), 6.61 (1H, d, J = 2.0 Hz, H-2″), 6.52 (1H, d, J = 8.2 Hz, H-5″), 6.49 (1H, dd, J = 8.2, 2.0 Hz, H-6″), 3.79 (3H, s, 5-OCH_3), 3.45 (2H, s, H-6), 3.44 (1H, m, H-8″), 2.68

(1H, dd, J = 14.1, 2.2 Hz, H_a-7″), 2.54 (1H, dd, J = 14.1, 10.0 Hz, H_b-7″), 1.18 (3H, s, H-10″), 1.17 (3H, s, H-11″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.6 (qC, C-5), 170.4 (qC, C-1), 159.4 (qC, C-4′), 155.9 (qC, C-4″), 139.8 (qC, C-2), 134.3(CH, C-2″), 130.5 (CH C-6″), 130.4 (CH, C-2′, C-6′), 129.3 (qC, C-3), 127.3 (qC, C-3″), 125.5 (qC, C-1″), 123.1 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 115.9 (CH, C-5″), 86.8 (qC, C-4), 80.6 (CH, C-8″), 73.8 (qC, C-9″), 53.9 (CH_3, 5-OCH_3), 39.5 (CH_2, C-6), 34.0 (CH_2, C-7″), 25.5 (CH_3, C-10″), 25.1 (CH_3, C-11″).

Butyrolactone IV (**13**): yellow oil; $[\alpha]_D^{20}$ = +40.0 (c 0.1, MeOH); ^{1}H NMR (700 MHz, CD_3OD) δ_H 7.58 (2H, d, J = 8.9 Hz, H-2′, H-6′), 6.87 (2H, d, J = 8.9 Hz, H-3′, H-5′), 6.61 (1H, br s, H-2″), 6.54 (1H, dd, J = 8.2, 1.6 Hz, H-6″), 6.46 (1H, d, J = 8.2 Hz, H-5″), 4.50 (1H, dd, J = 9.4, 8.5 Hz, H-8″), 3.79 (3H, s, 5-OCH_3), 3.47 (2H, s, H-6), 3.03 (1H, dd, J = 15.8, 8.5 Hz, H_a-7″), 2.97 (1H, dd, J = 15.8, 9.4 Hz, H_b-7″), 1.19 (3H, s, H-10″), 1.16 (3H, s, H-11″); ^{13}C NMR (175 MHz, CD_3OD) δ_C 171.5 (qC, C-5), 170.2 (qC, C-1), 160.5 (qC, C-4″), 159.4 (qC, C-4′), 139.7 (qC, C-2), 131.0 (CH, C-6″), 130.4 (CH, C-2′, C-6′), 129.1 (qC, C-3), 128.1 (qC, C-3″), 127.9 (CH C-2″), 126.2 (qC, C-1″), 123.1 (qC, C-1′), 116.6 (CH, C-3′, C-5′), 109.1 (CH, C-5″), 90.4 (CH, C-8″), 86.8 (qC, C-4), 72.5 (qC, C-9″), 53.9 (CH_3, 5-OCH_3), 39.7 (CH_2, C-6), 31.3 (CH_2, C-7″), 25.3 (CH_3, C-10″), 25.2 (CH_3, C-11″).

Table S1. X-ray crystallographic data for **1**

Empirical formula	$C_{16}H_{12}O_4$
Formula weight	269.08
Temperature/K	293(2)
Crystal system	monoclinic
Space group	P2/c
a/Å	23.6601(13)
b/Å	5.4446(3)
c/Å	21.0558(17)
α/°	90
β/°	99.555(7)
γ/°	90
Volume/Å^3	2674.8(3)
Z	4
ρ_{calc}g/cm^3	1.412
μ/mm^{-1}	0.856
F(000)	1192.0
Crystal size/mm^3	0.4 × 0.1 × 0.05
Radiation	CuKα (λ = 1.54184)
2Θ range for data collection/°	8.518 to 148.942
Index ranges	-29 ≤ h ≤ 28, -6 ≤ k ≤ 6, -7 ≤ l ≤ 26
Reflections collected	5257
Independent reflections	5257 [R_{int} = ?, R_{sigma} = 0.0622]
Data/restraints/parameters	5257/0/389
Goodness-of-fit on F^2	1.061
Final R indexes [I>=2σ (I)]	R_1 = 0.1083, wR_2 = 0.2959
Final R indexes [all data]	R_1 = 0.1280, wR_2 = 0.3097
Largest diff. peak/hole / e Å^{-3}	0.62/-0.48

Table S2. The primer sequences for the genes.

Gene	Forward(5'-3' sequence)	Reverse (5'-3' sequence)
GAPDH	GCTCTCTGCTCCTCCTGTTC	ACGACCAAATCCGTTGACTC
LXRα	TCAGCATCTTCTCTGCAGACCGG	TCATTAGCATCCGTGGGAACA
ABCA1	ACCCACCCTATGAACAACATGA	GAGTCGGGTAACGGAAACAGG
UGT1A1	CATGCTGGGAAGATACTGTTGAT	GCCCGAGACTAACAAAAGACTCT
TNFα	CAAGCCTGTAGCCCATGTTGTA	ACCAGCTGGTTATCTCTCAGCT
CXCL10	GTGGCATTCAAGGAGTACCTC	TGATGGCCTTCGATTCTGGATT
CYP3A5	AATGTTTTGTCCTATCGTCAGGG	AGACCTTCGATTTGTGAAGACAG
CYP3A7	AAACTTGGCCGTGGAAACCT	CAGCATAGGCTGTTGACAGTC
ALDH3A1	CTCTGTGACCCCTCGATCCA	GCATCTTCCCCGTAGAACTCTT
UGT2B10	GAAATGGACTACAGTTCTGCTGA	GTGGATGAGTCGTTGGGATCA
CYP1A1	TCGGCCACGGAGTTTCTTC	GGTCAGCATGTGCCCAATCA
GSTA2	TACTCCAATATACGGGGCAGAA	TCCTCAGGTTGACTAAAGGGC
gapdh	CTTTGGCATTGTGGAAGGGC	TGCAGGGATGATGTTCTGGG
Il6	TAGTCCTTCCTACCCCAATTTCC	TTGGTCCTTAGCCACTCCTTC
Cxcl10	CTCATCCTGCTGGGTCTGAG	CCTATGGCCCTCATTCTCAC
Bcl2	GCTACCGTCGTGACTTCGC	CCCCACCGAACTCAAAGAAGG
Bax	AGACAGGGGCCTTTTTGCTAC	AATTCGCCGGAGACACTCG
Pcna	TTGCACGTATATGCCGAGACC	GGTGAACAGGCTCATTCATCTCT
Tnfα	GACGTGGAACTGGCAGAAGAG	TTGGTGGTTTGTGAGTGTGAG
Ccl2	CCTGCTGTTCACAGTTGCC	ATTGGGATCATCTTGCTGGT
Lxrα	AGGAGTGTCGACTTCGCAAA	CTCTTCTTGCCGCTTCAGTTT

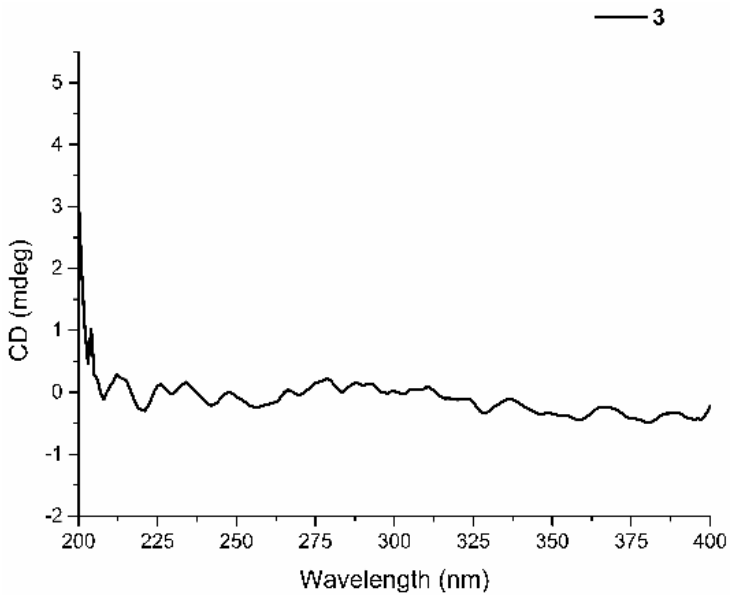

Figure S1. Experimental ECD spectrum of **3**.

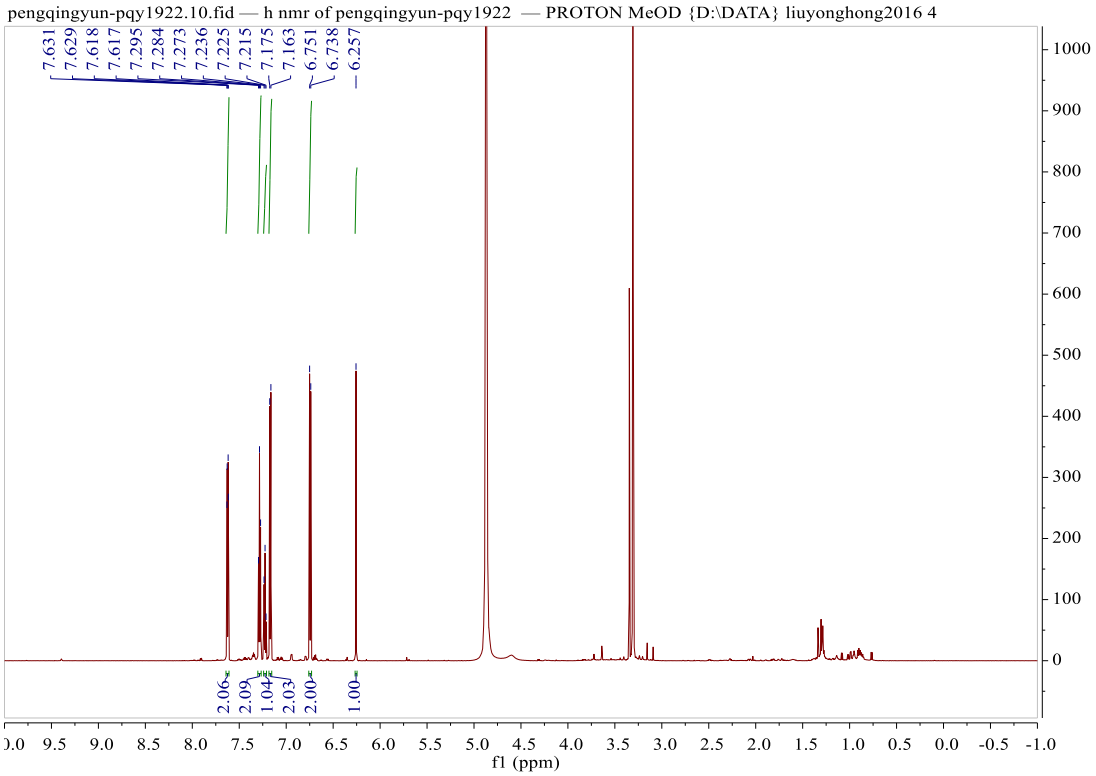

Figure S2. ^{1}H NMR spectrum of **1** (CD_3OD, 700 MHz)

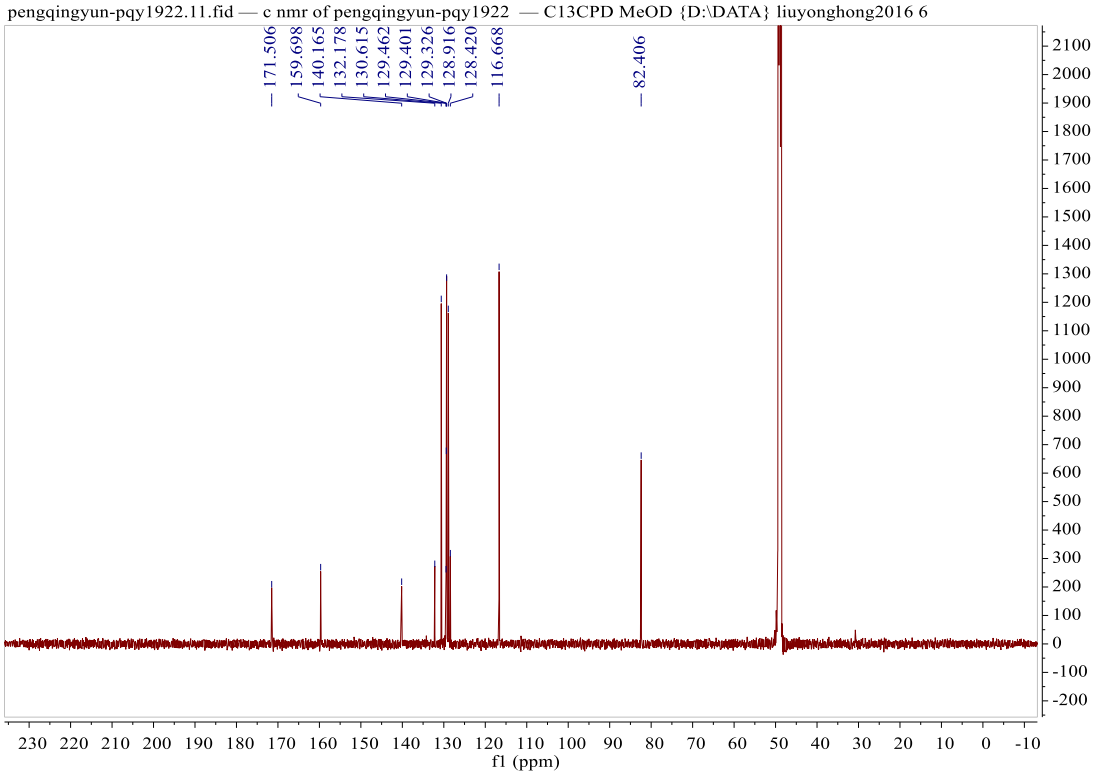

Figure S3. ^{13}C NMR spectrum of **1** (CD_3OD, 175 MHz).

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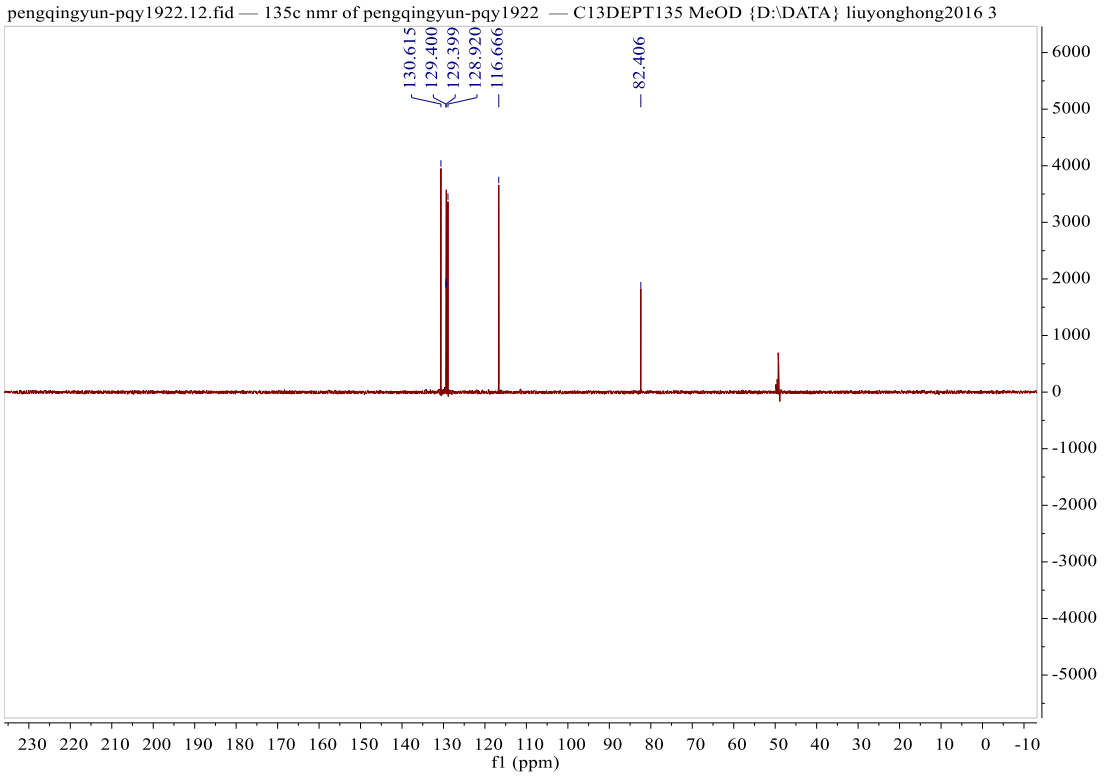

Figure S4. DEPT spectrum of **1** (CD_3OD).

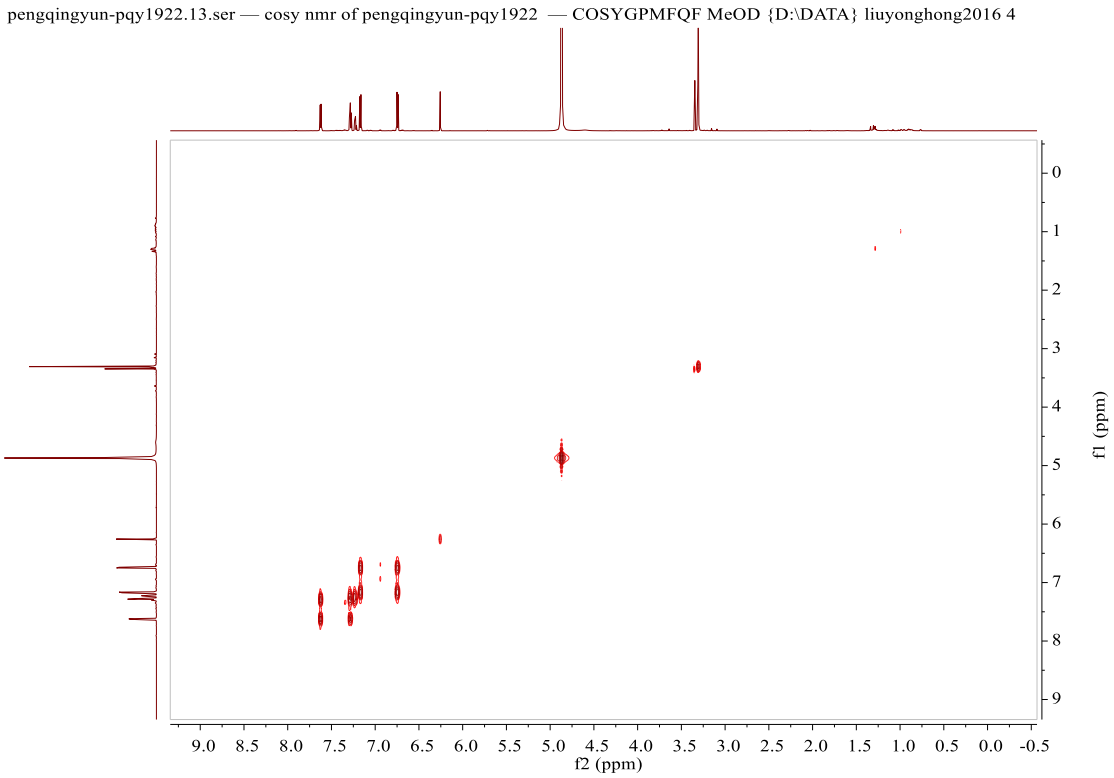

Figure S5. COSY spectrum of **1** (CD_3OD).

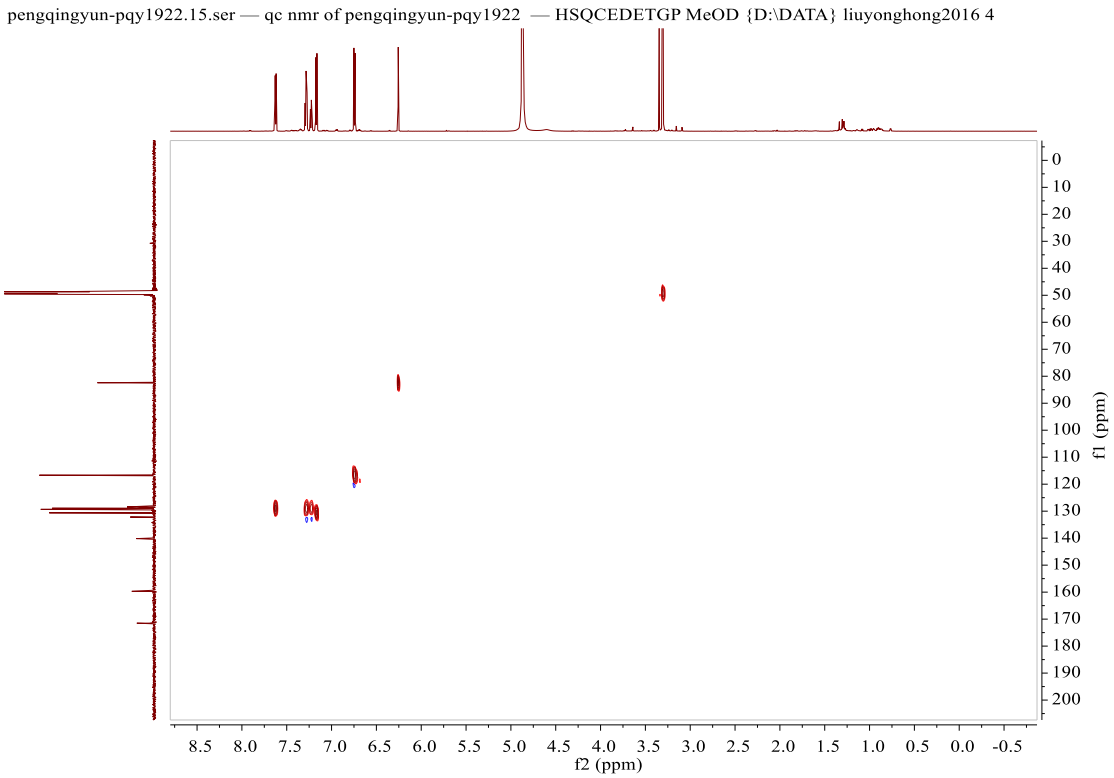

Figure S6. HSQC spectrum of **1** (CD_3OD).

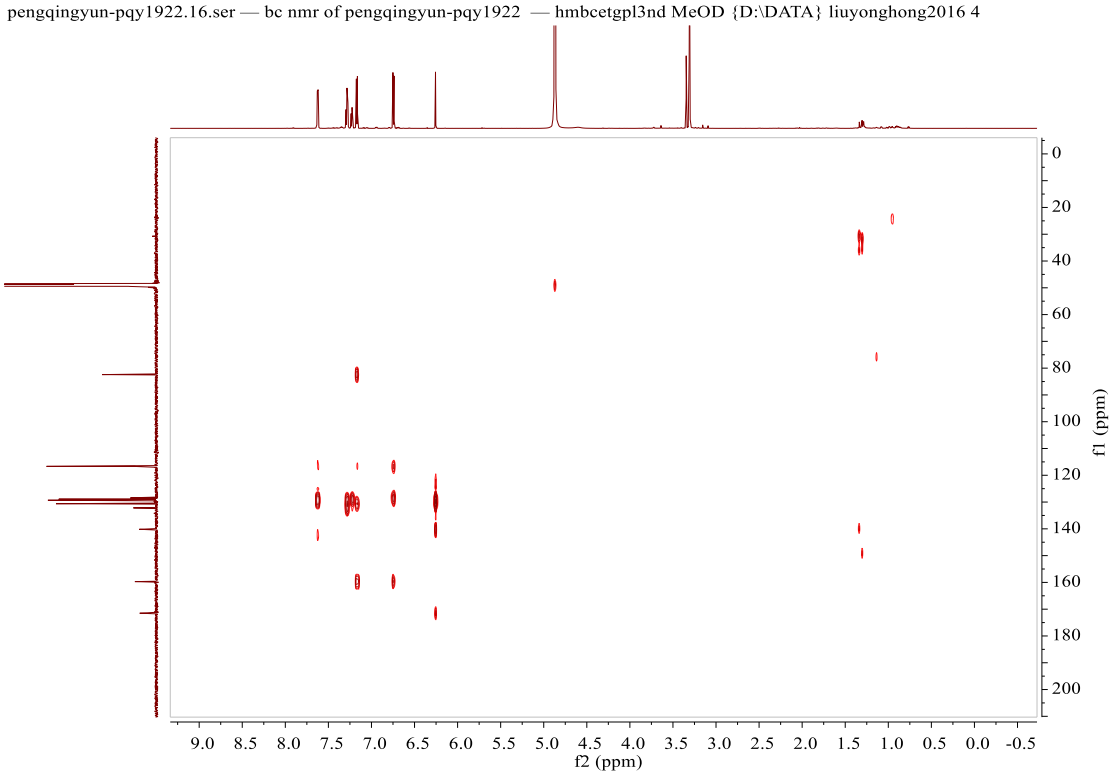

Figure S7. HMBC spectrum of **1** (CD_3OD).

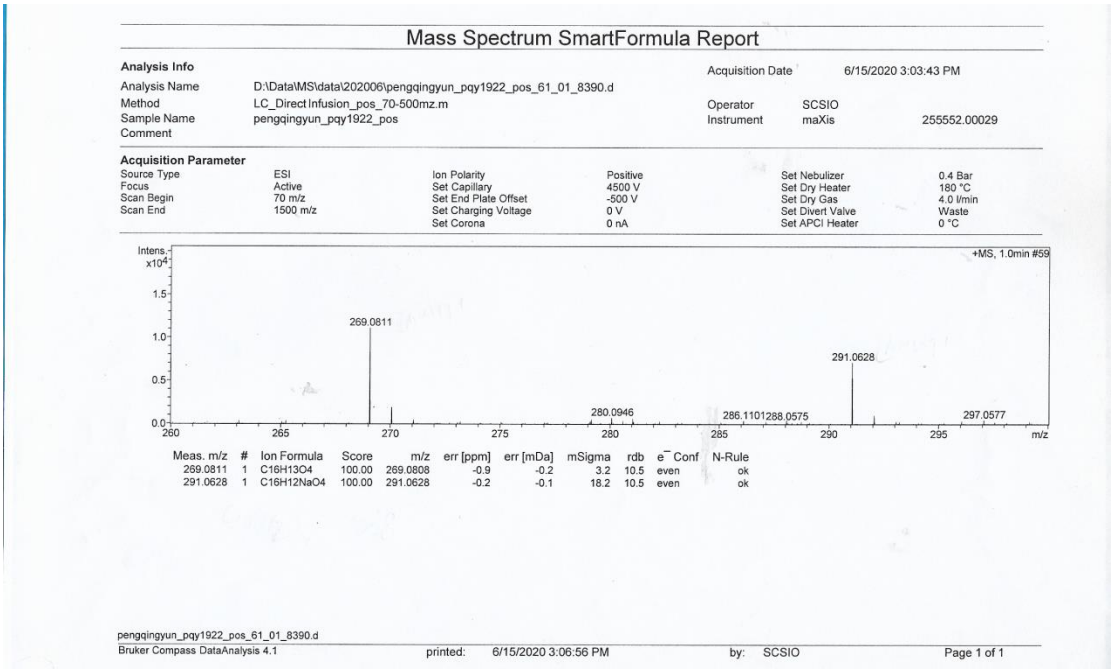

Figure S8. HRESIMS spectrum of **1**.

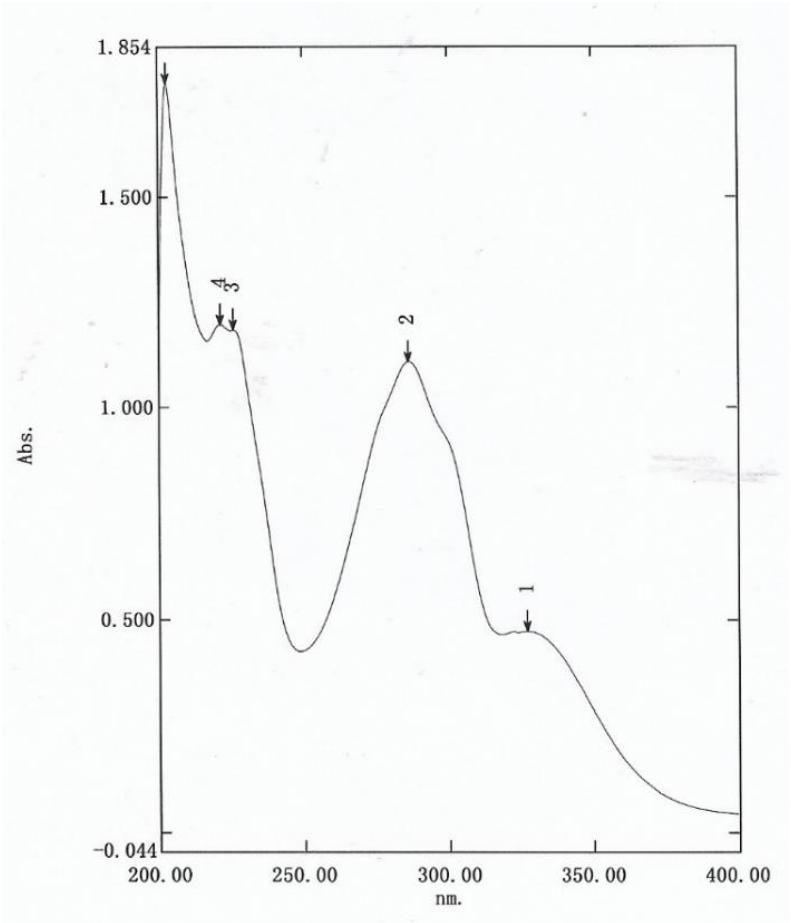

Figure S9. UV spectrum of **1**.

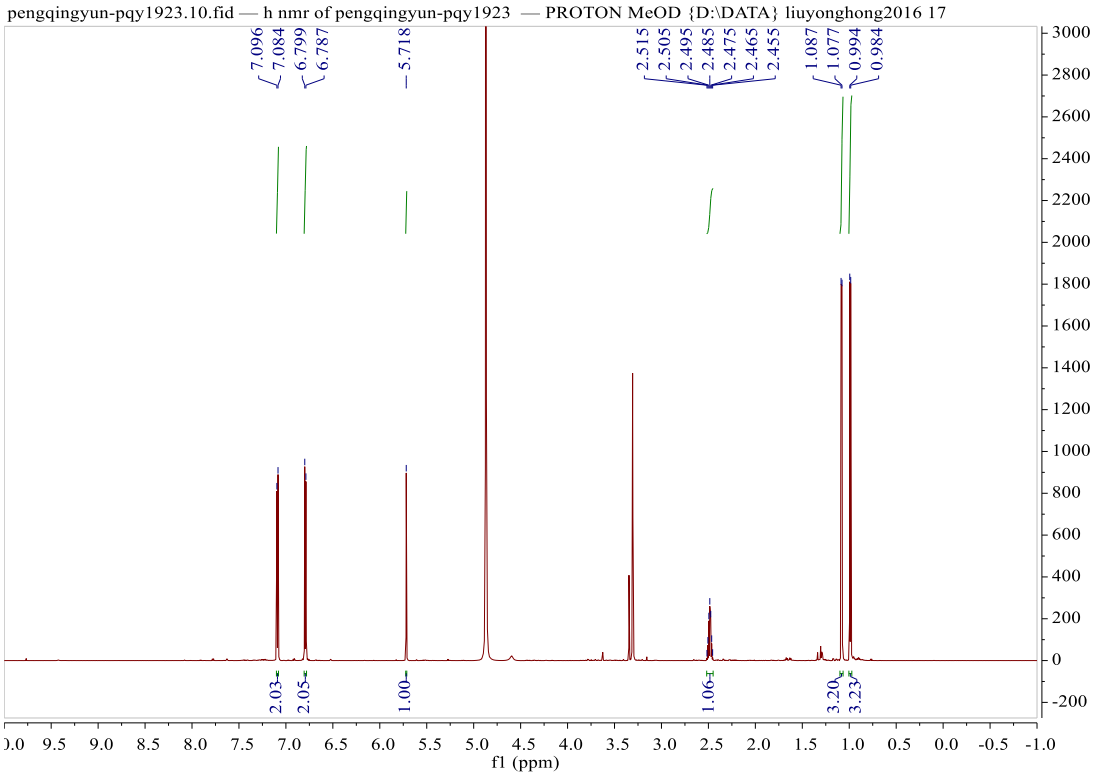

Figure S10. ^{1}H NMR spectrum of **2** (CD_3OD, 700 MHz).

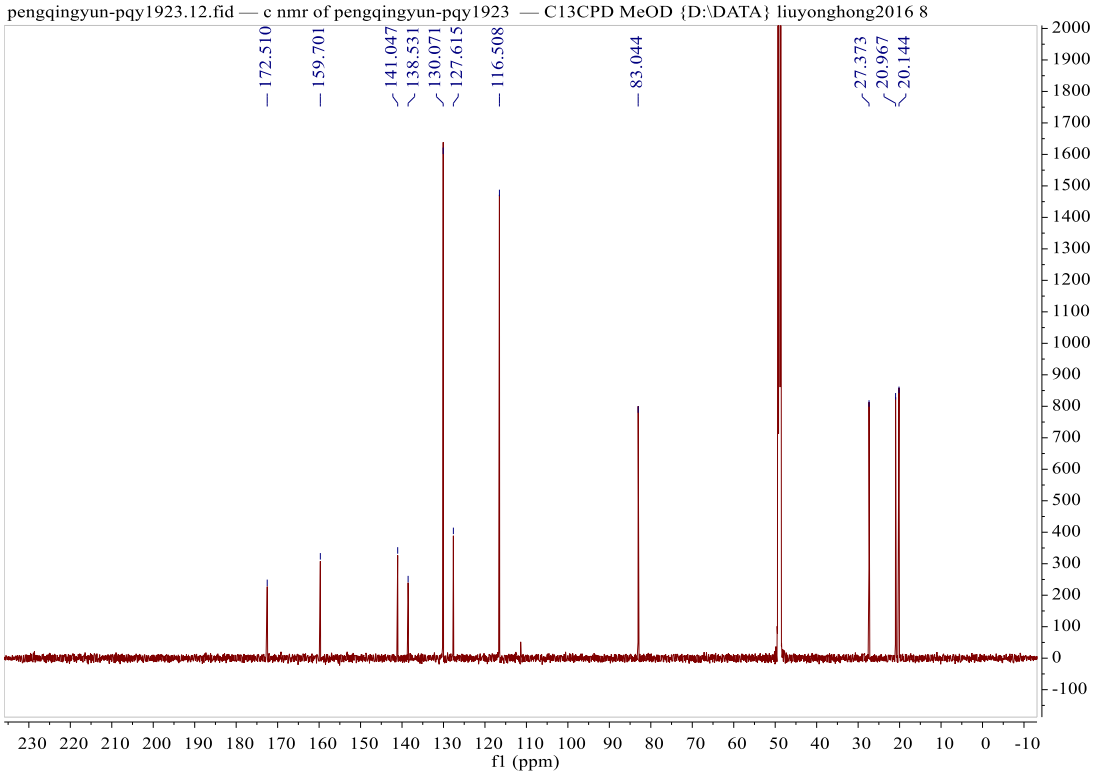

Figure S11. ^{13}C NMR spectrum of **2** (CD_3OD, 175 MHz).

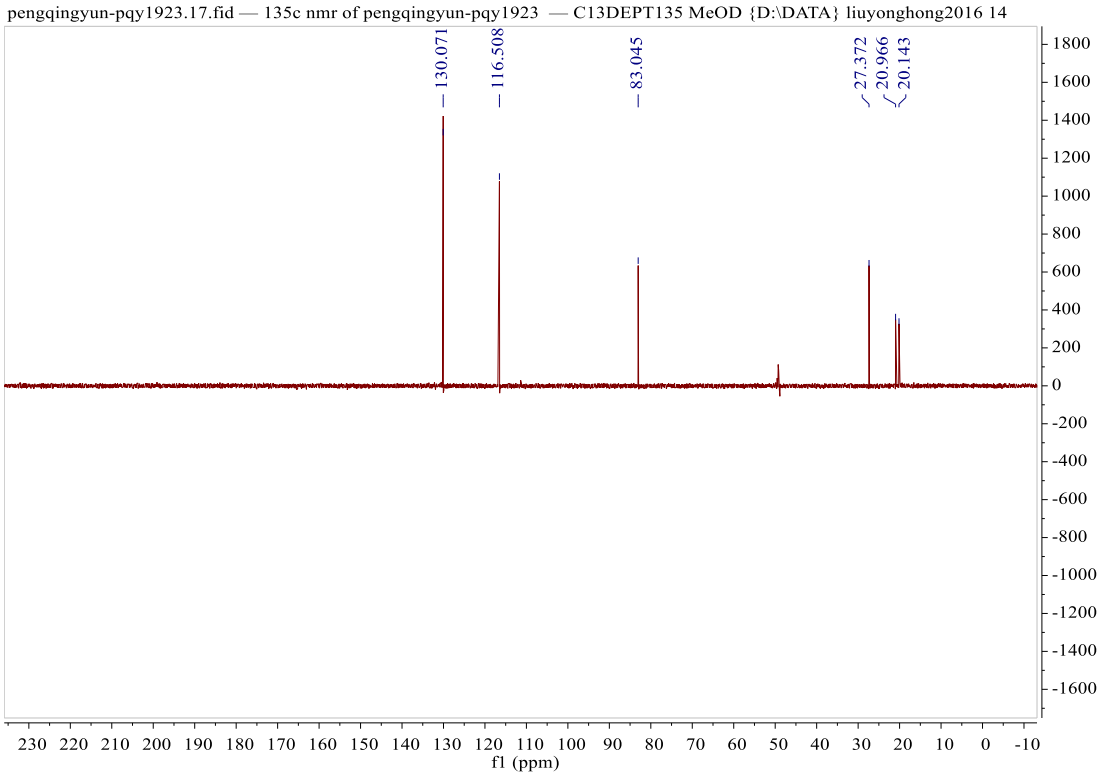

Figure S12. DEPT spectrum of **2** (CD_3OD).

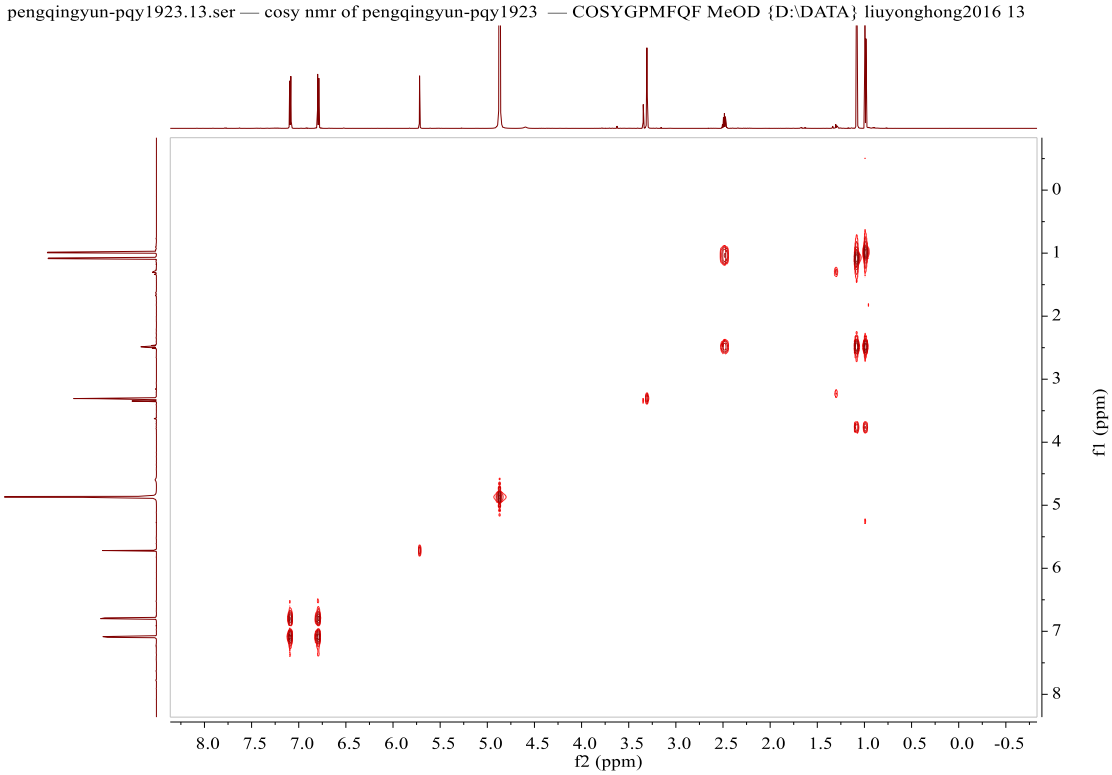

Figure S13. COSY spectrum of **2** (CD_3OD).

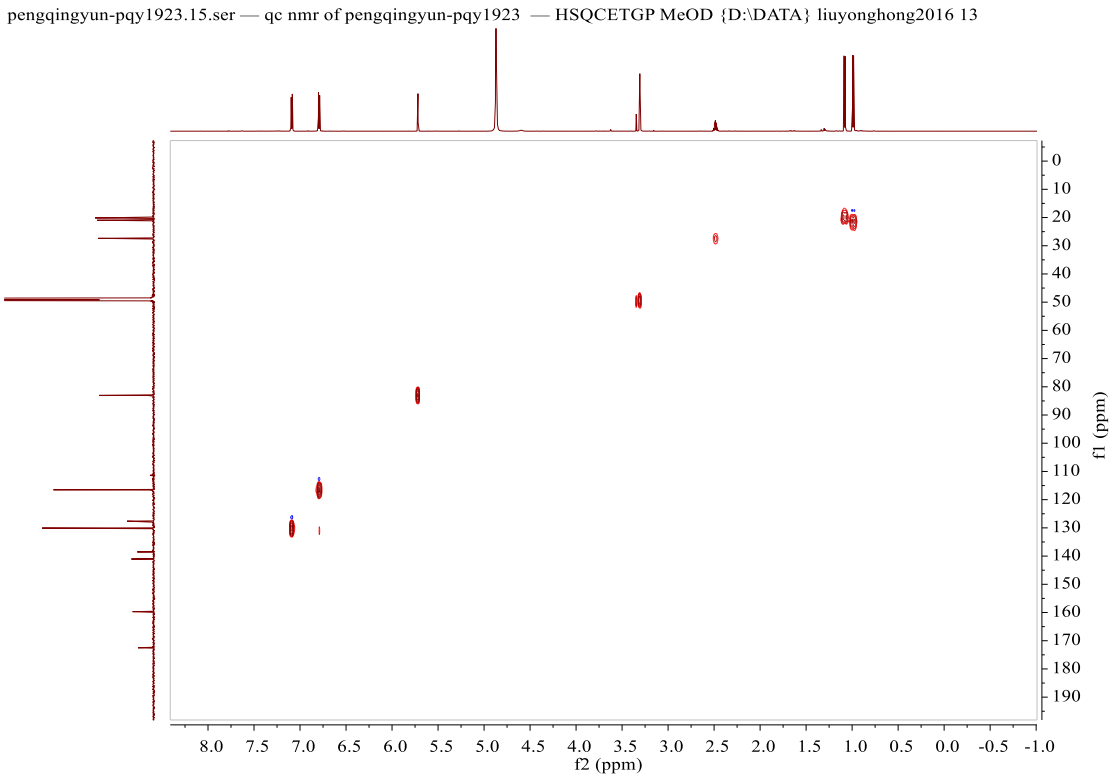

Figure S14. HSQC spectrum of **2** (CD_3OD).

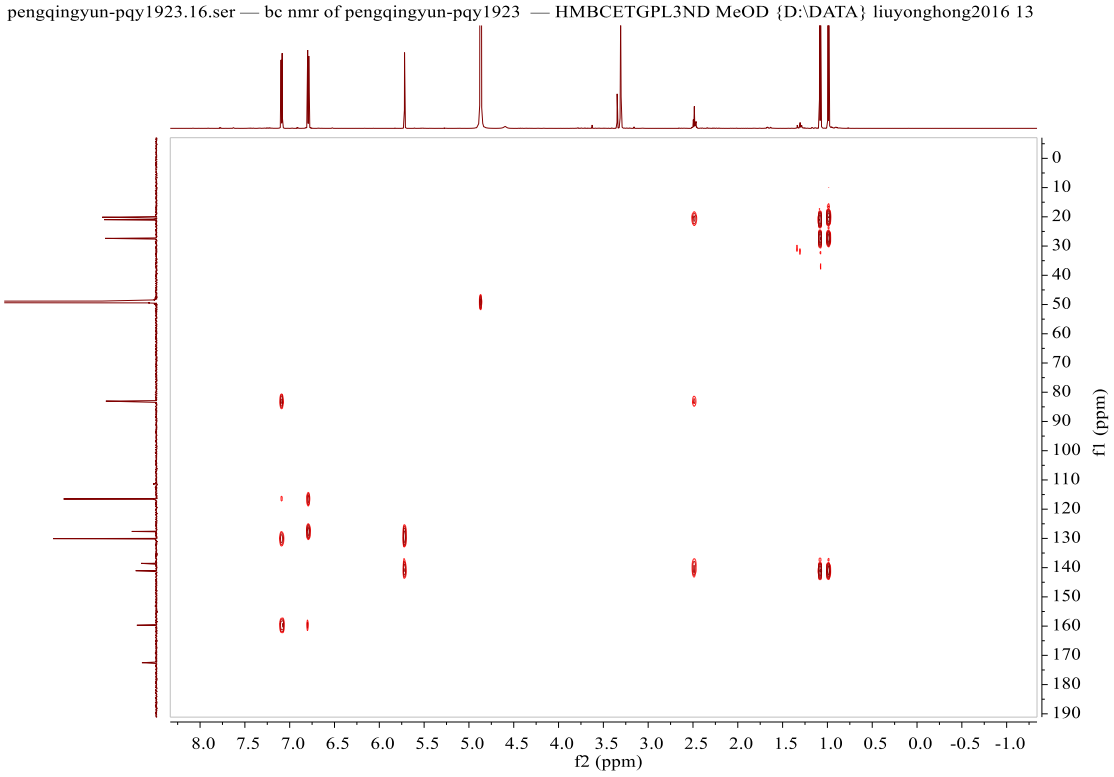

Figure S15. HMBC spectrum of **2** (CD_3OD).

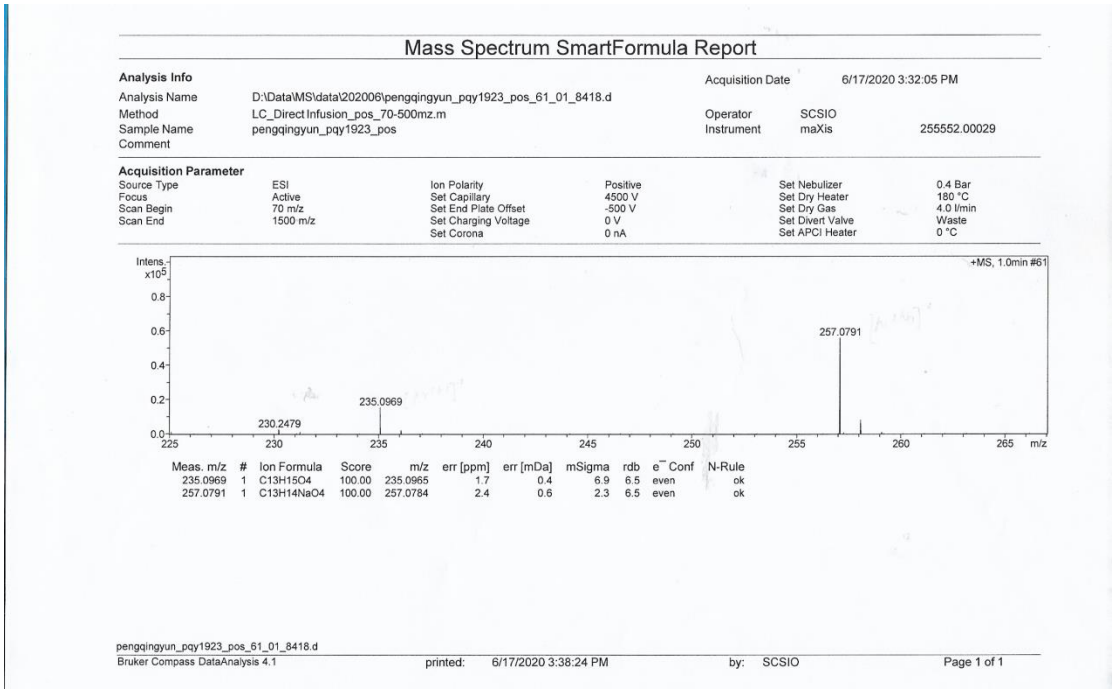

Figure S16. HRESIMS spectrum of **2**.

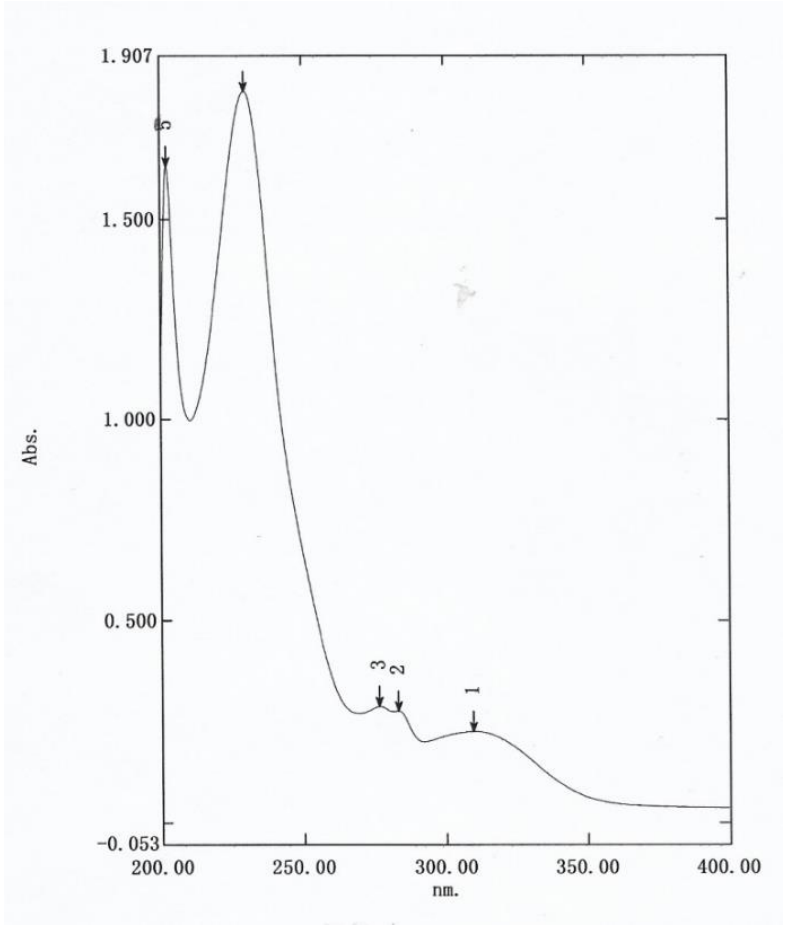

Figure S17. UV spectrum of **2**.

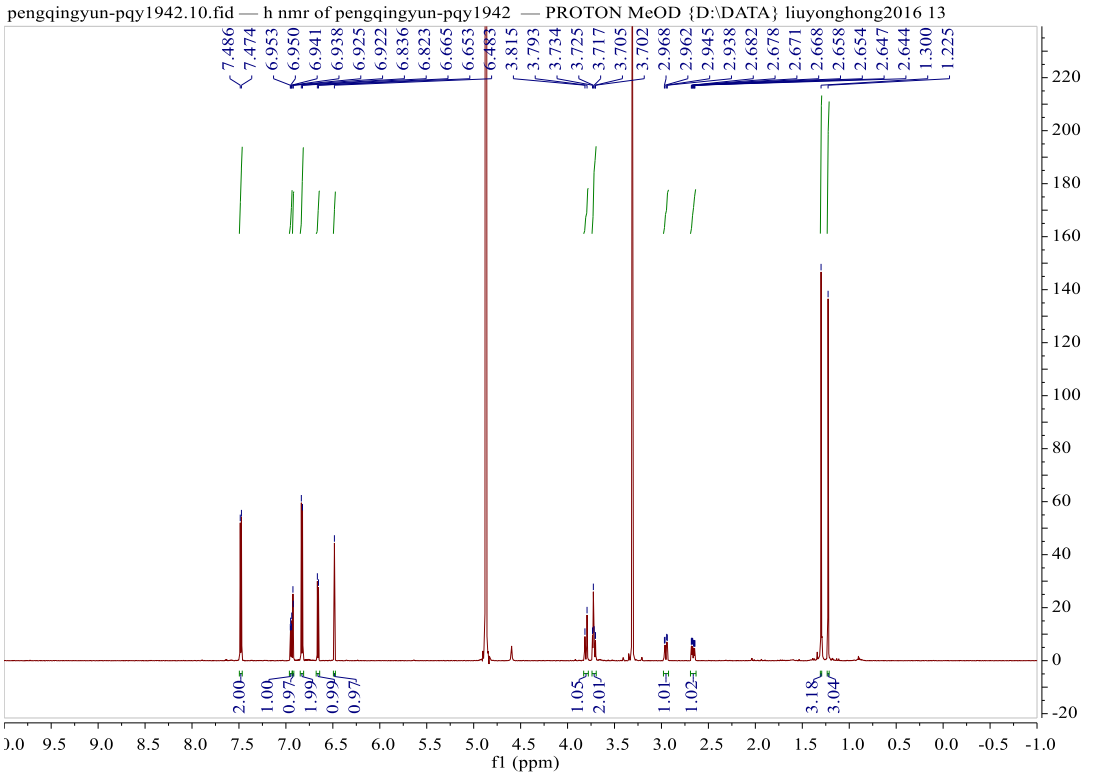

Figure S18. ^{1}H NMR spectrum of **3** (CD_3OD, 700 Hz).

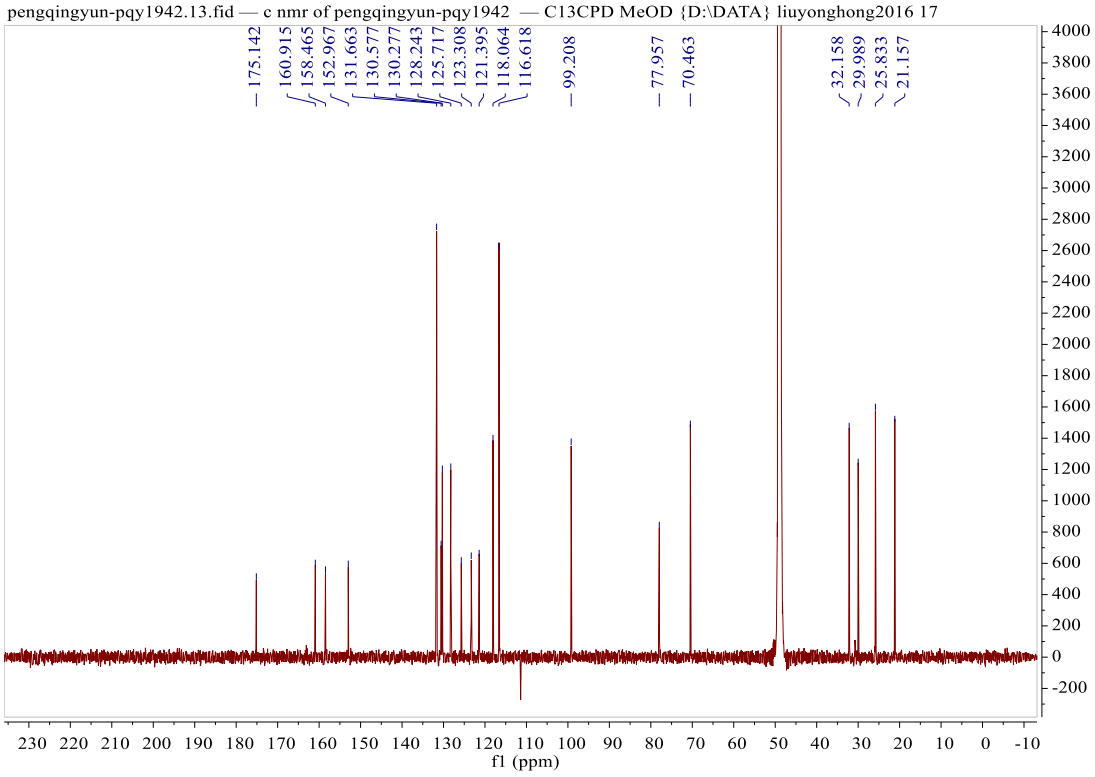

Figure S19. ^{13}C NMR spectrum of **3** (CD_3OD, 175 Hz).

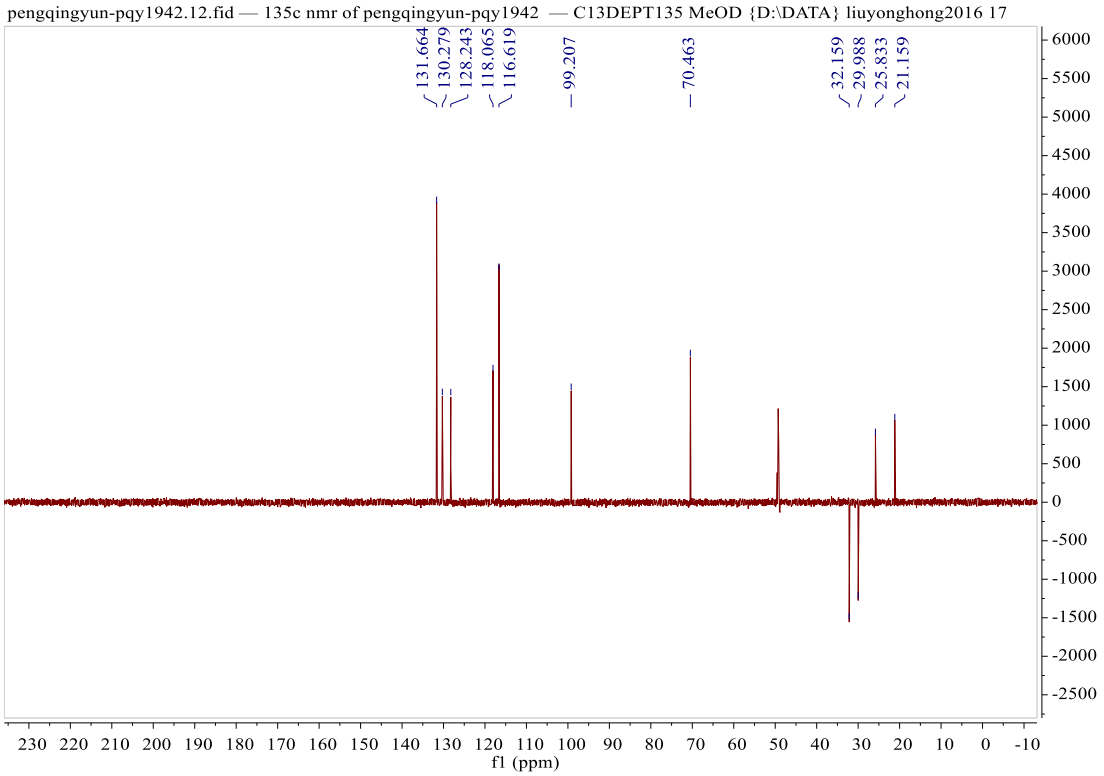

Figure S20. DEPT spectrum of **3** (CD_3OD).

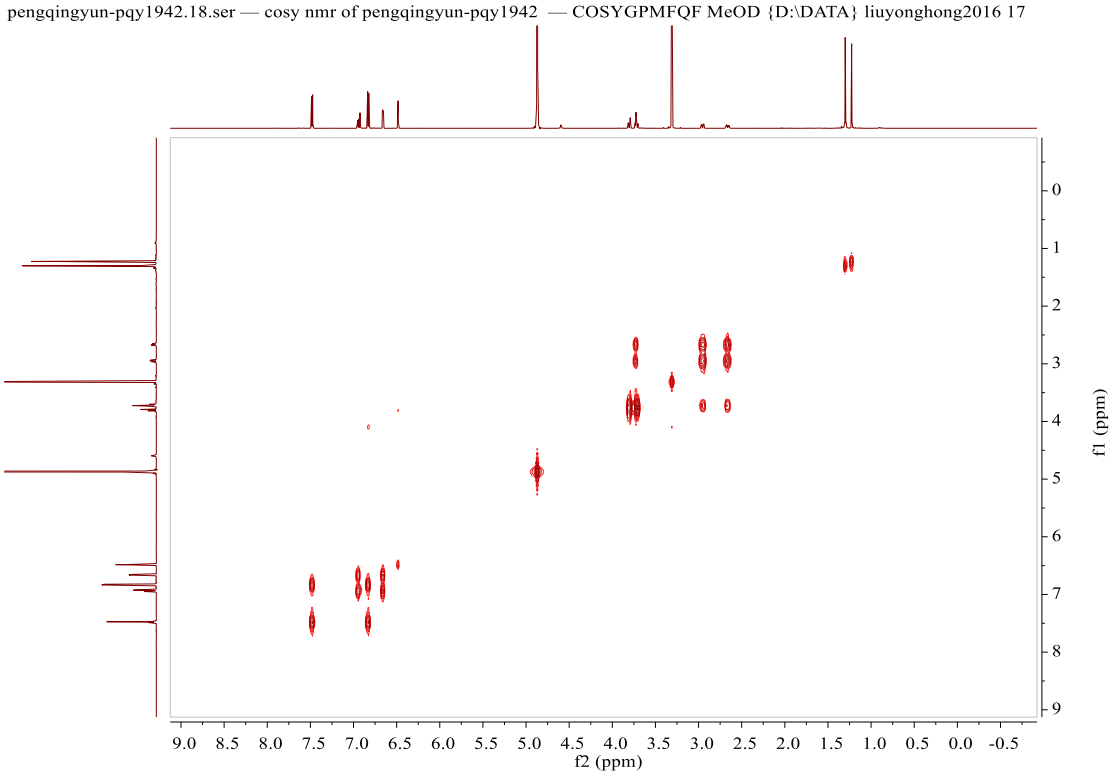

Figure S21. COSY of spectrum of **3** (CD_3OD).

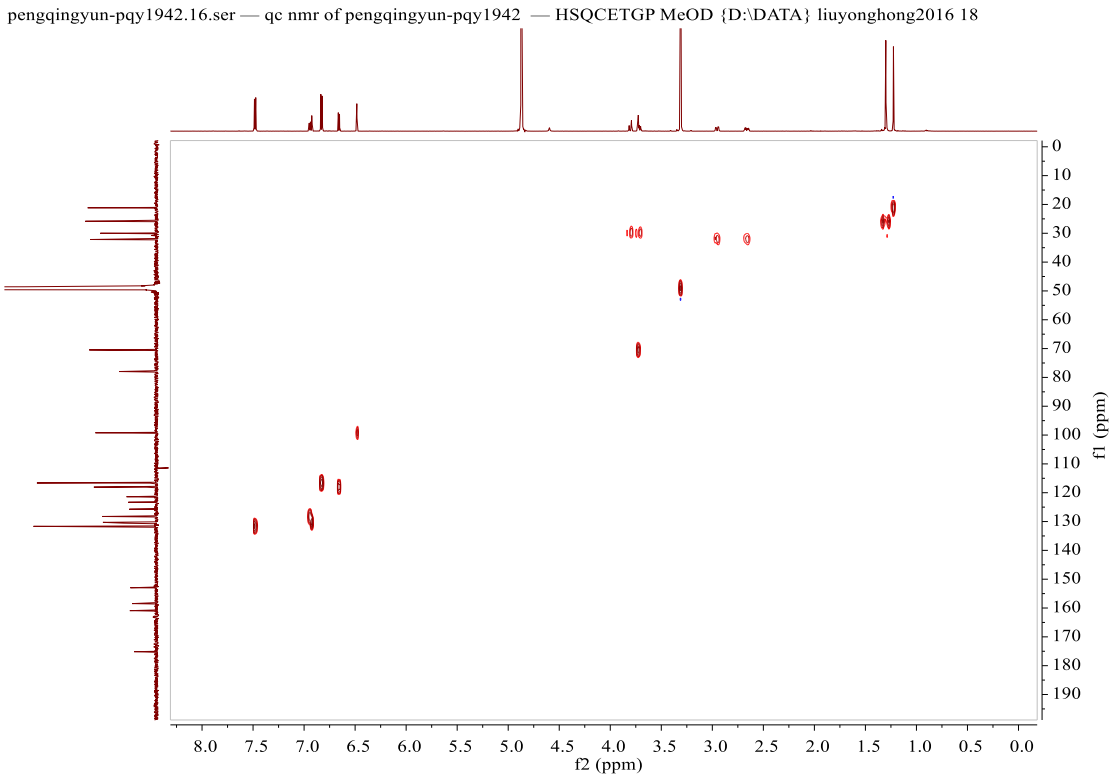

Figure S22. HSQC of spectrum of **3** (CD_3OD).

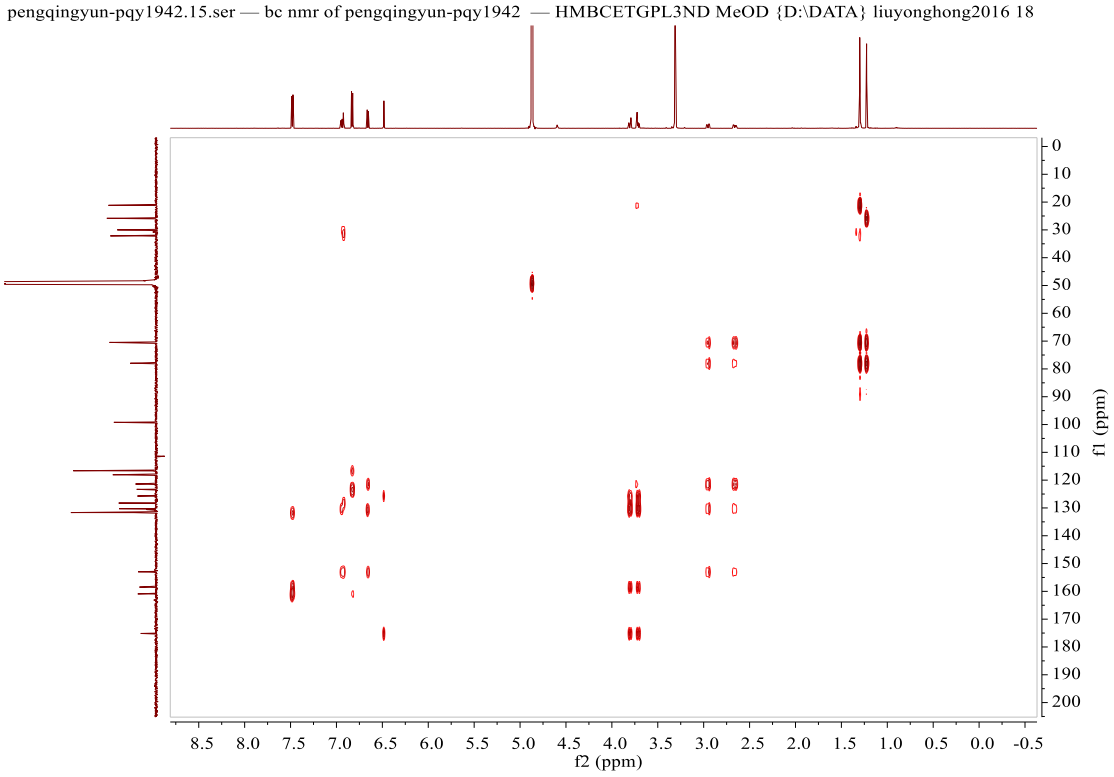

Figure S23. HMBC of spectrum of **3** (CD_3OD).

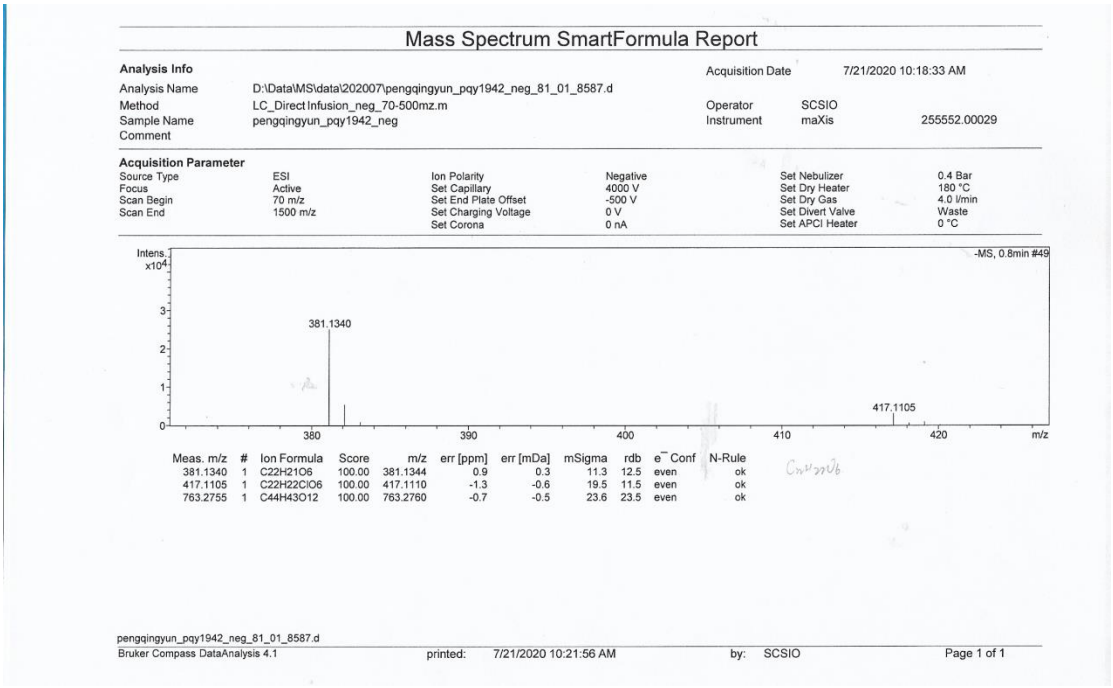

Figure S24. HRESIMS spectrum of **3**.

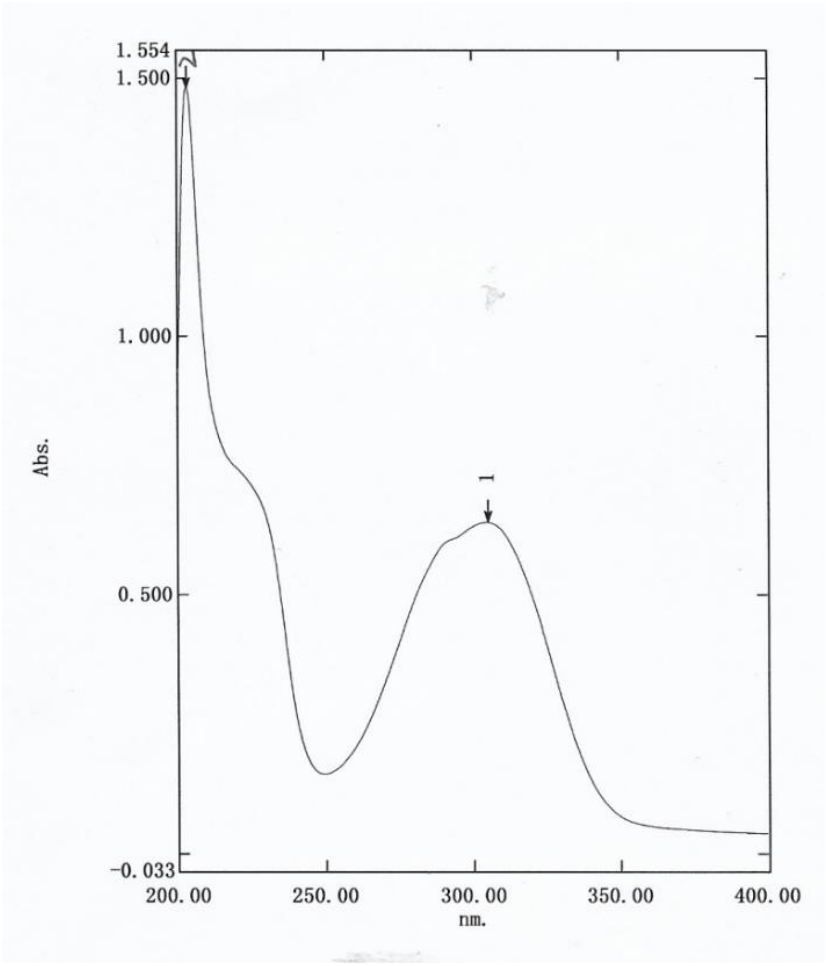

Figure S25. UV spectrum of **3**.

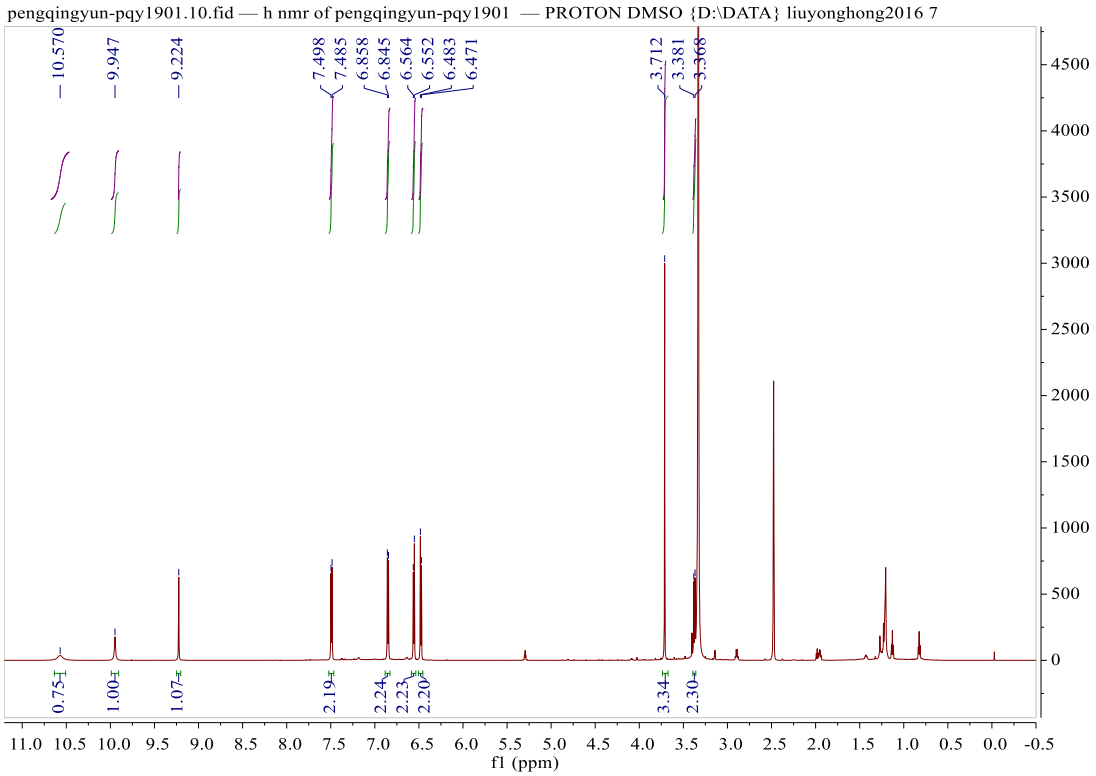

Figure S26. ^{1}H NMR spectrum of **4** (DMSO-d_6, 700 MHz).

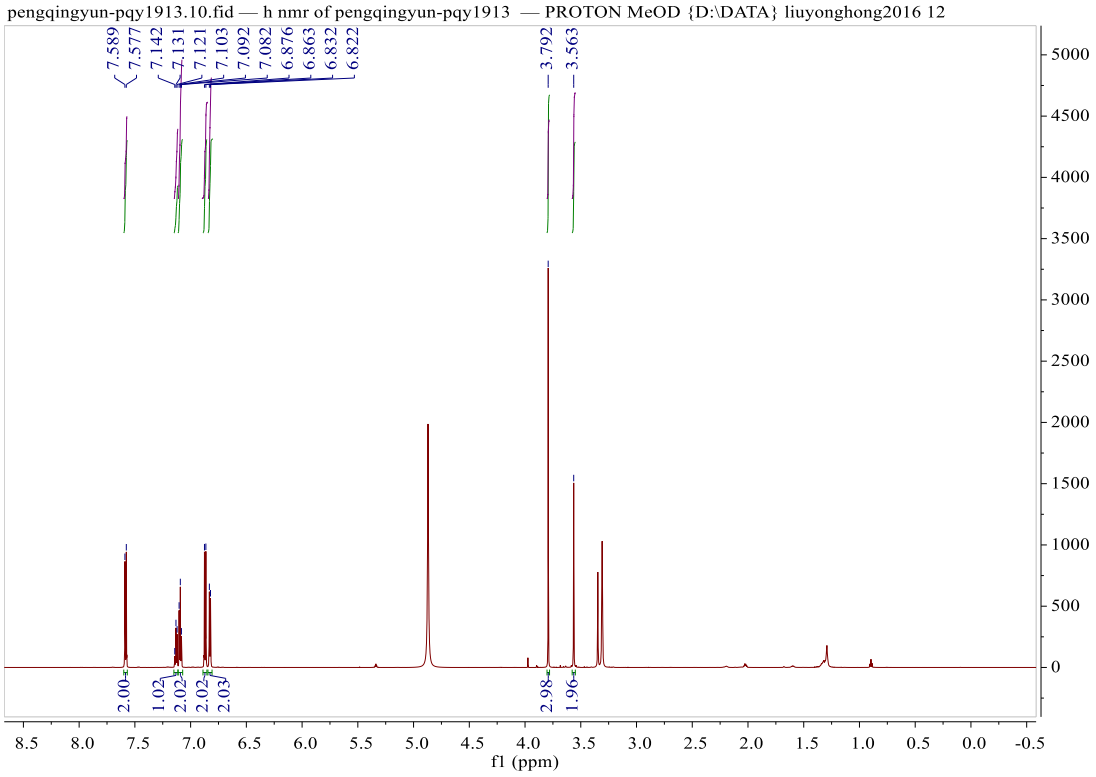

Figure S27. ^{1}H NMR spectrum of **5** (CD_3OD, 700 MHz).

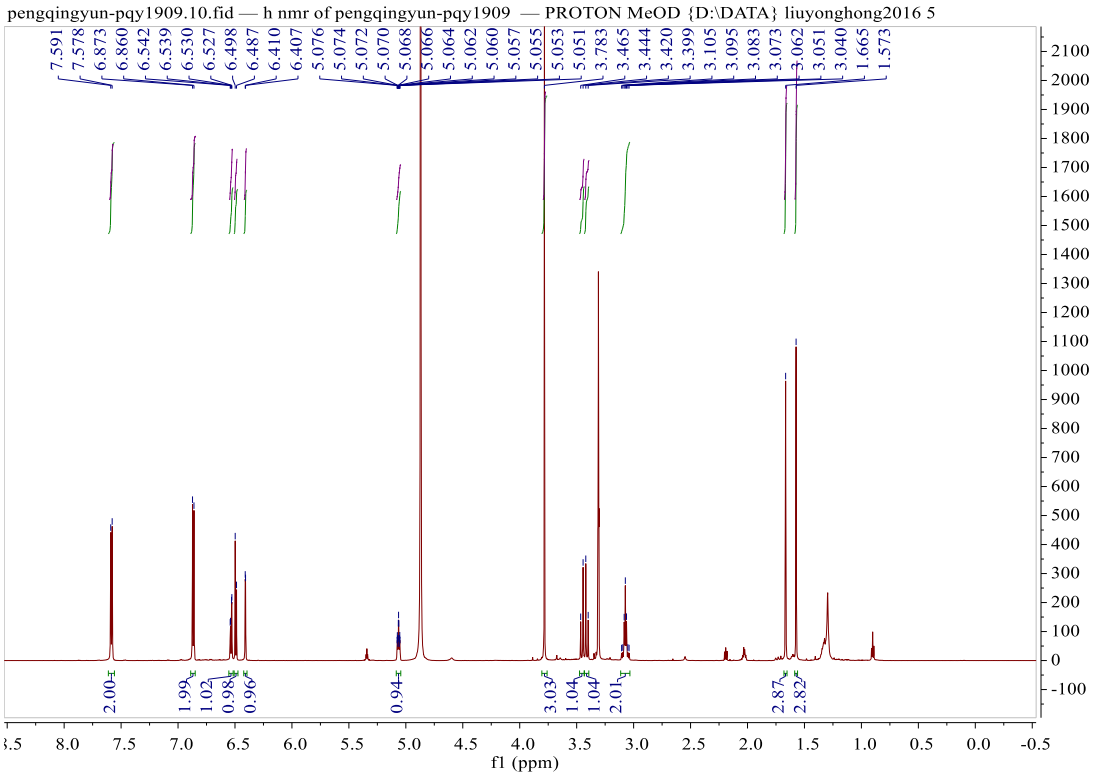

Figure S28. ^{1}H NMR spectrum of **6** (CD_3OD, 700 MHz).

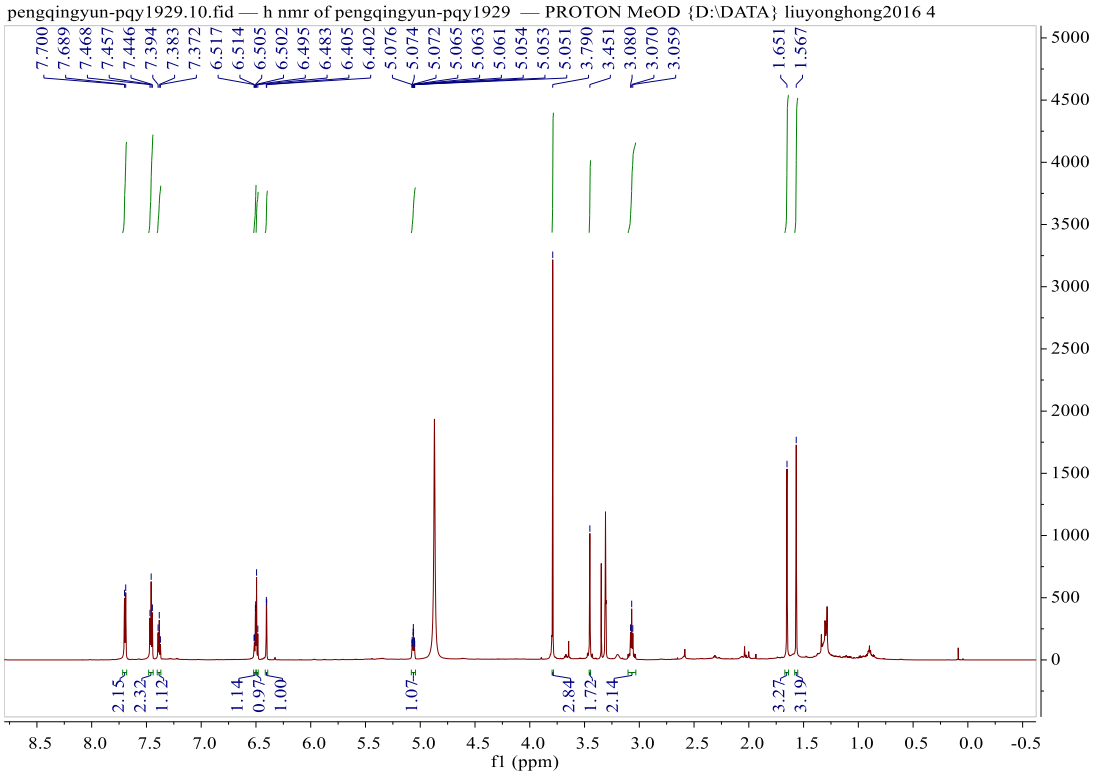

Figure S29. ^{1}H NMR spectrum of **7** (CD_3OD, 700 MHz).

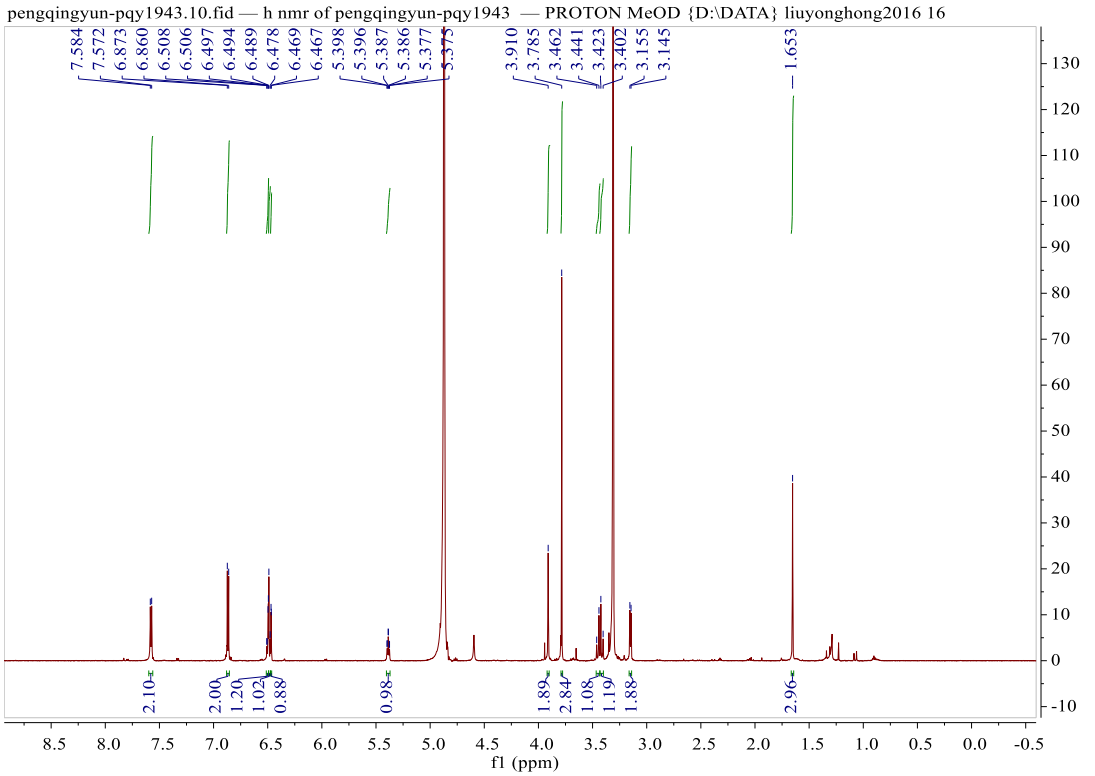

Figure S30. ^{1}H NMR spectrum of **8** (CD_3OD, 700 MHz).

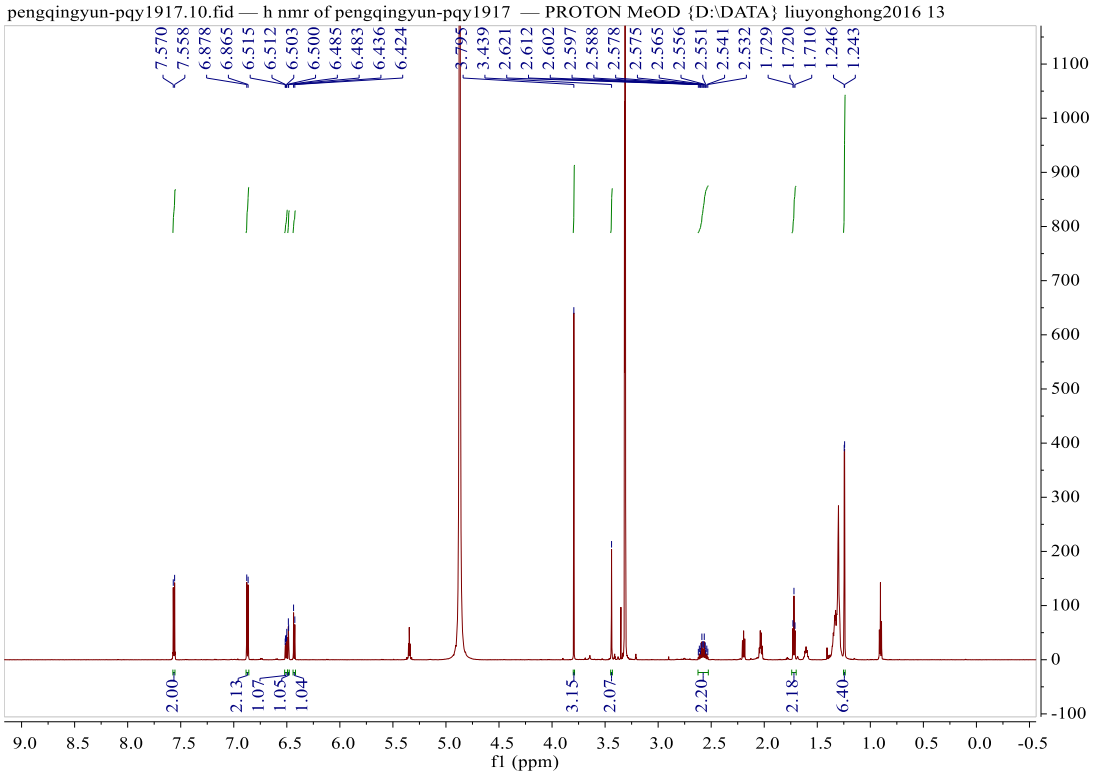

Figure S31. ^{1}H NMR spectrum of **9** (CD_3OD, 700 MHz).

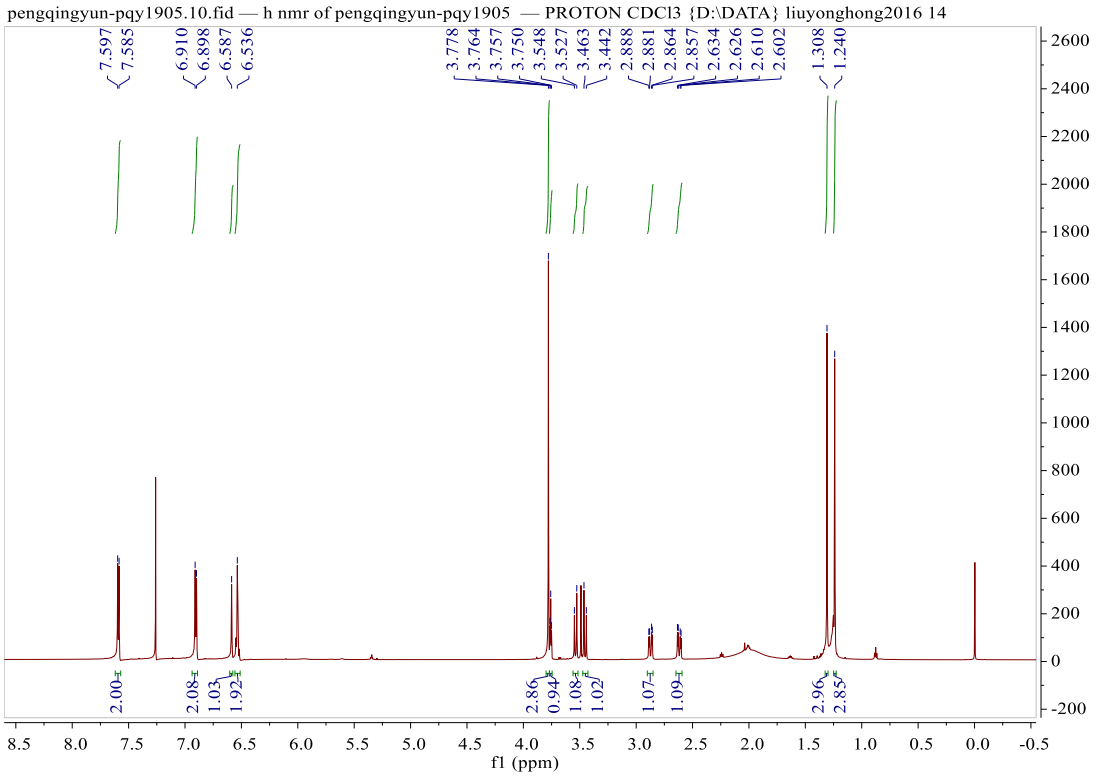

Figure S32. ^{1}H NMR spectrum of **10** ($CDCl_3$, 700 MHz).

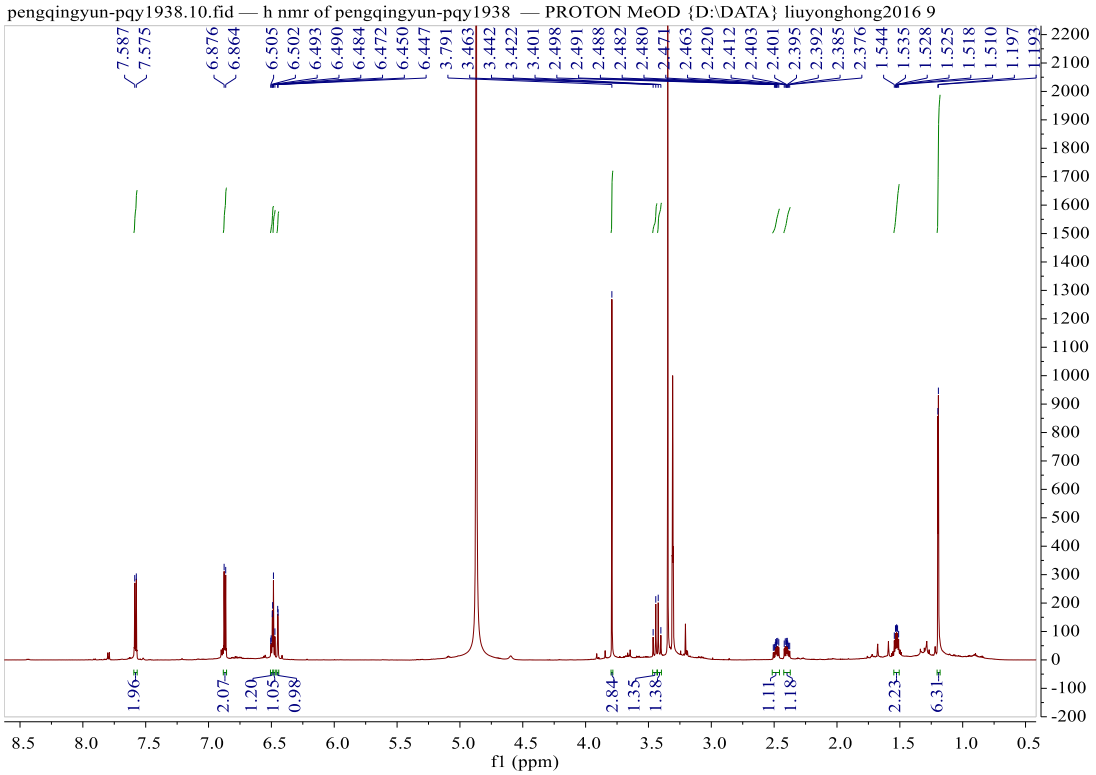

Figure S33. ^{1}H NMR spectrum of **11** (CD_3OD, 700 MHz).

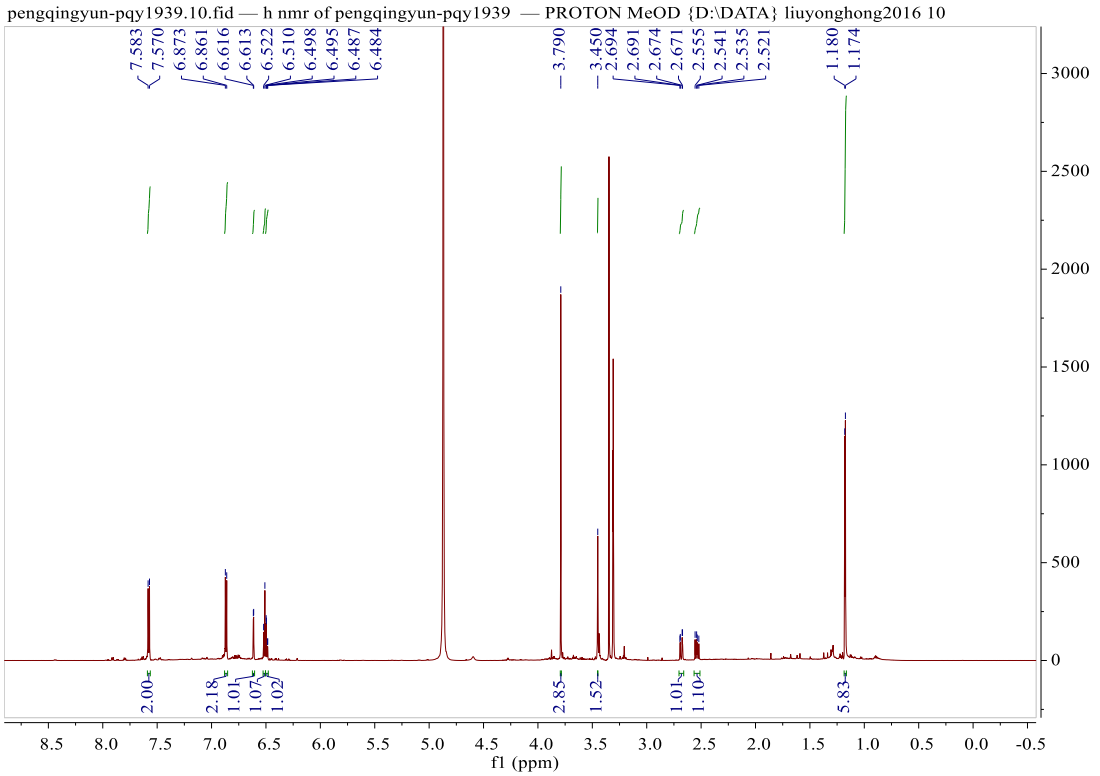

Figure S34. ^{1}H NMR spectrum of **12** (CD_3OD, 700 MHz).

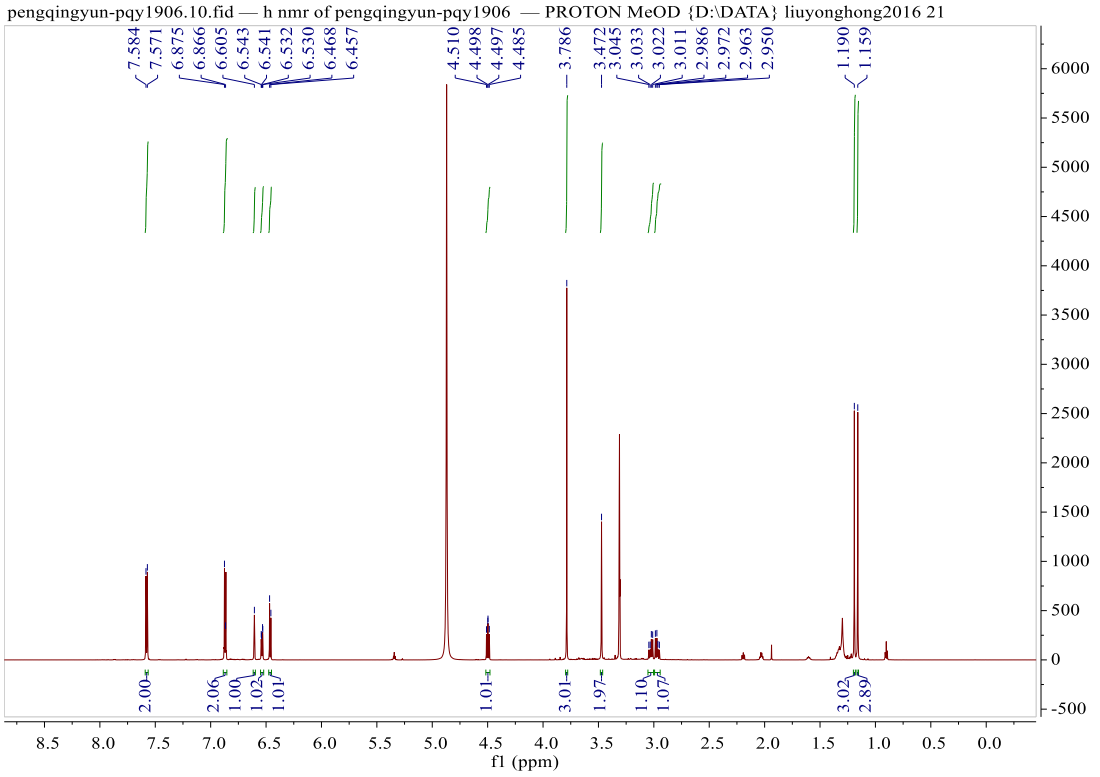

Figure S35. ^{1}H NMR spectrum of **13** (CD_3OD, 700 MHz).

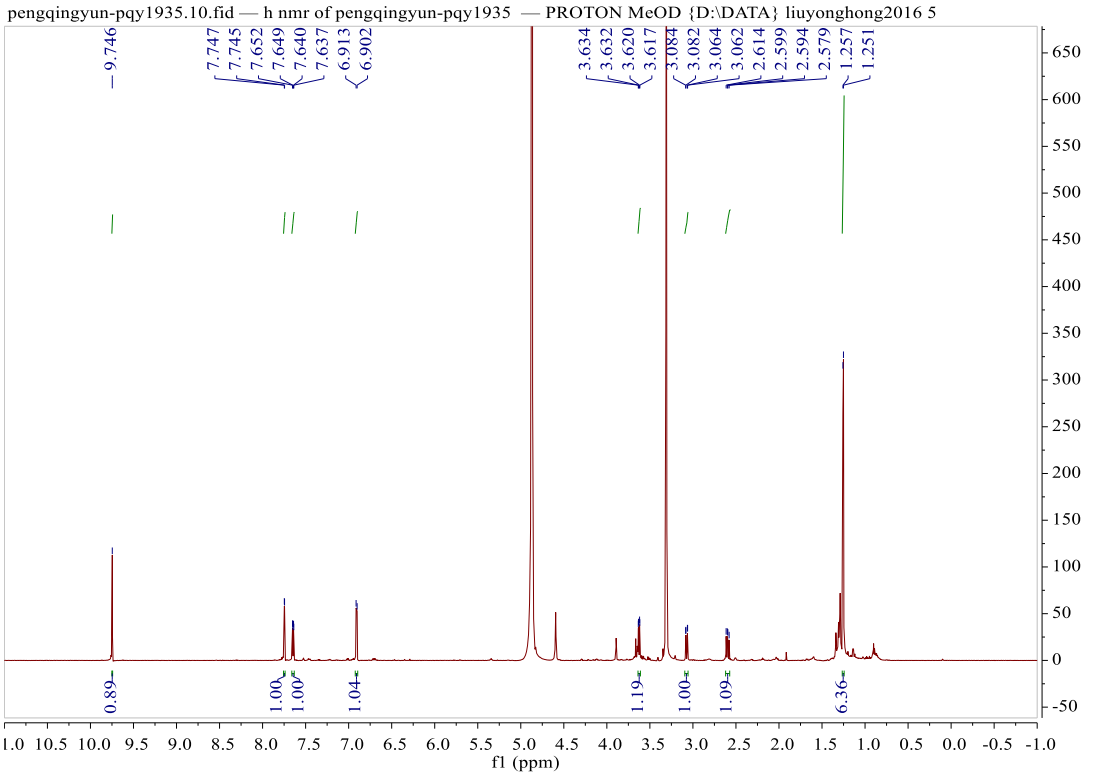

Figure S36. ^{1}H NMR spectrum of **14** (CD_3OD, 700 MHz).

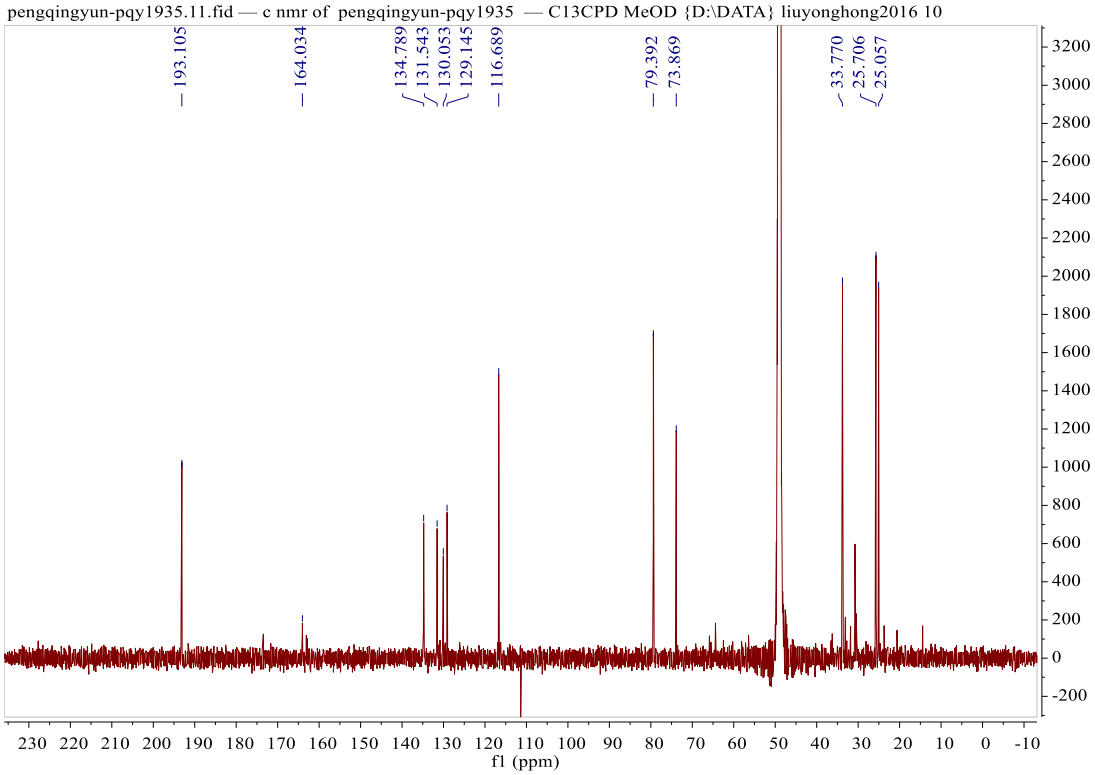

Figure S37. ^{13}C NMR spectrum of **14** (CD_3OD, 175 MHz).

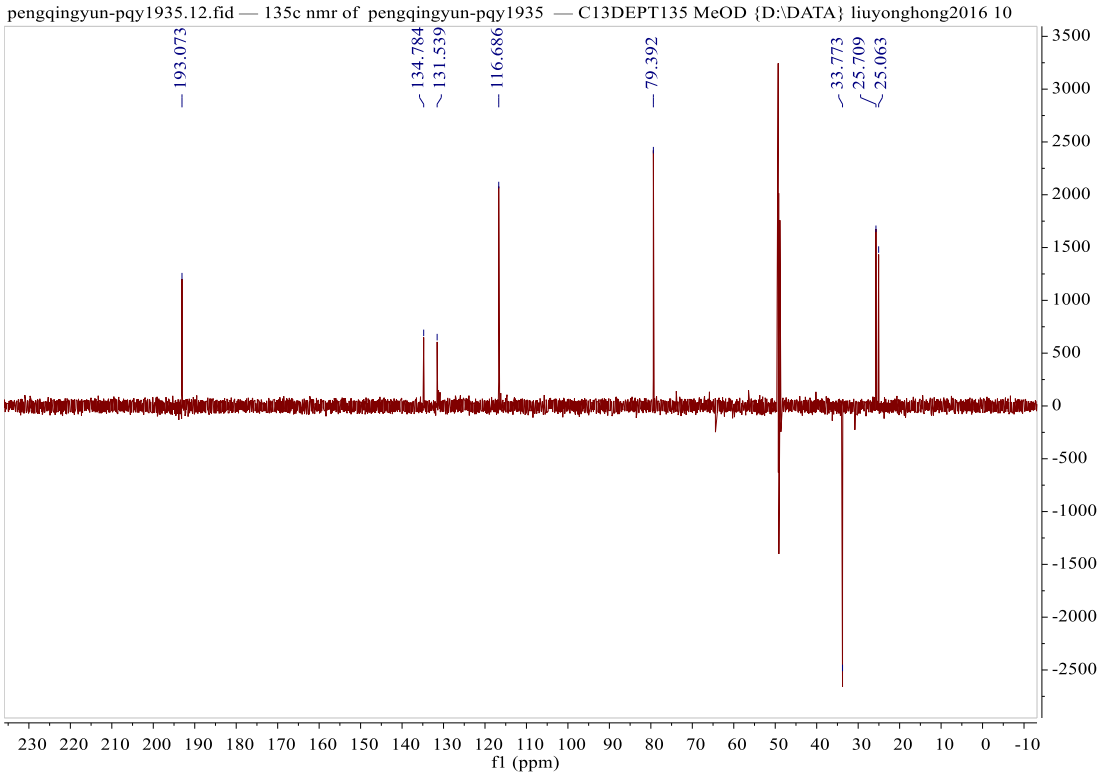

Figure S38. DEPT spectrum of **14** (CD_3OD).

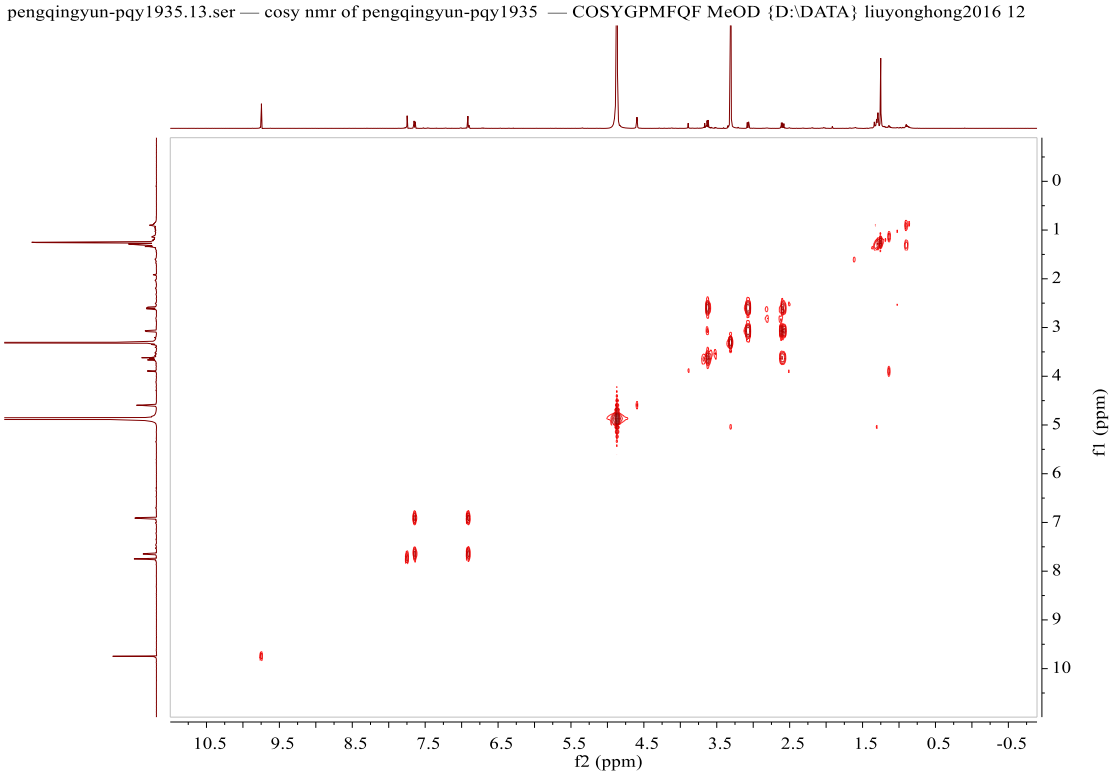

Figure S39. COSY spectrum of **14** (CD_3OD).

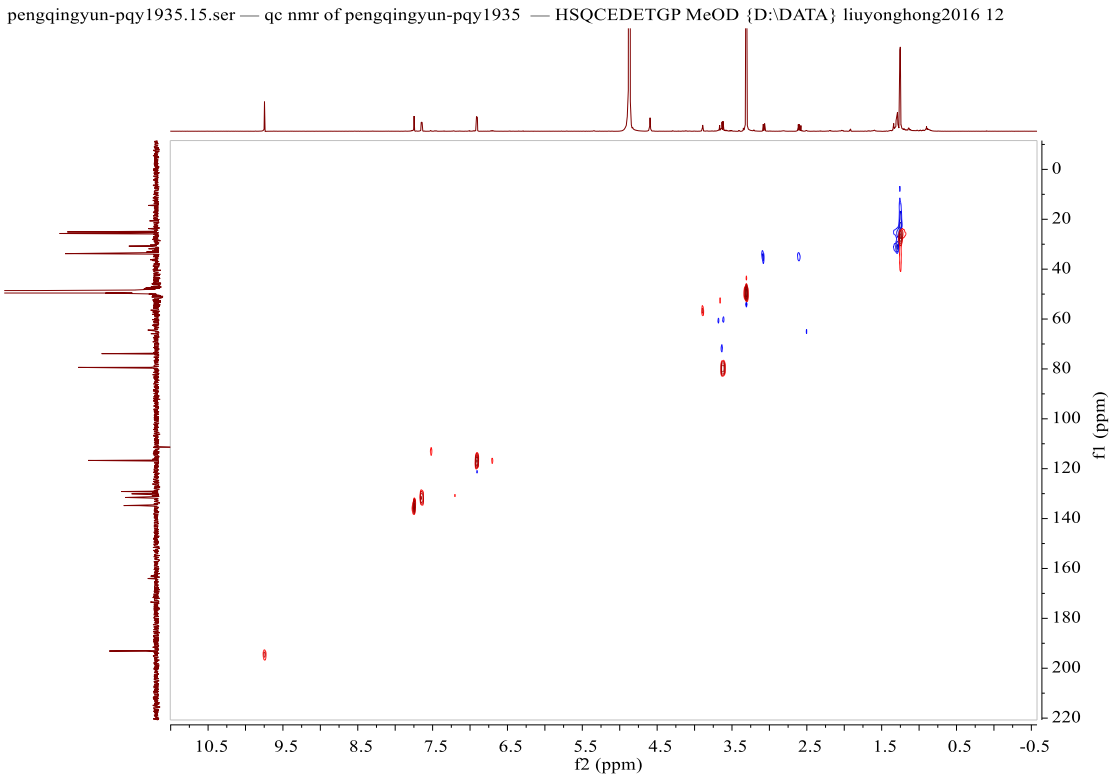

Figure S40. HSQC spectrum of **14** (CD_3OD).

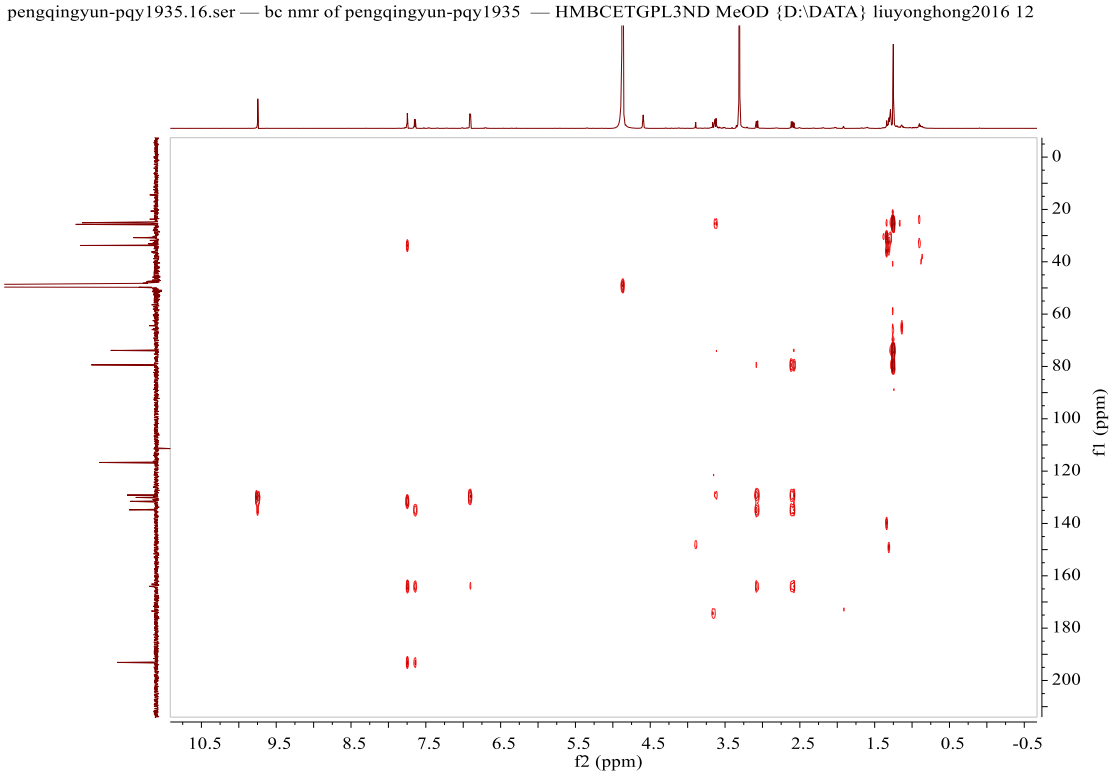

Figure S41. HMBC spectrum of **14** (CD_3OD).

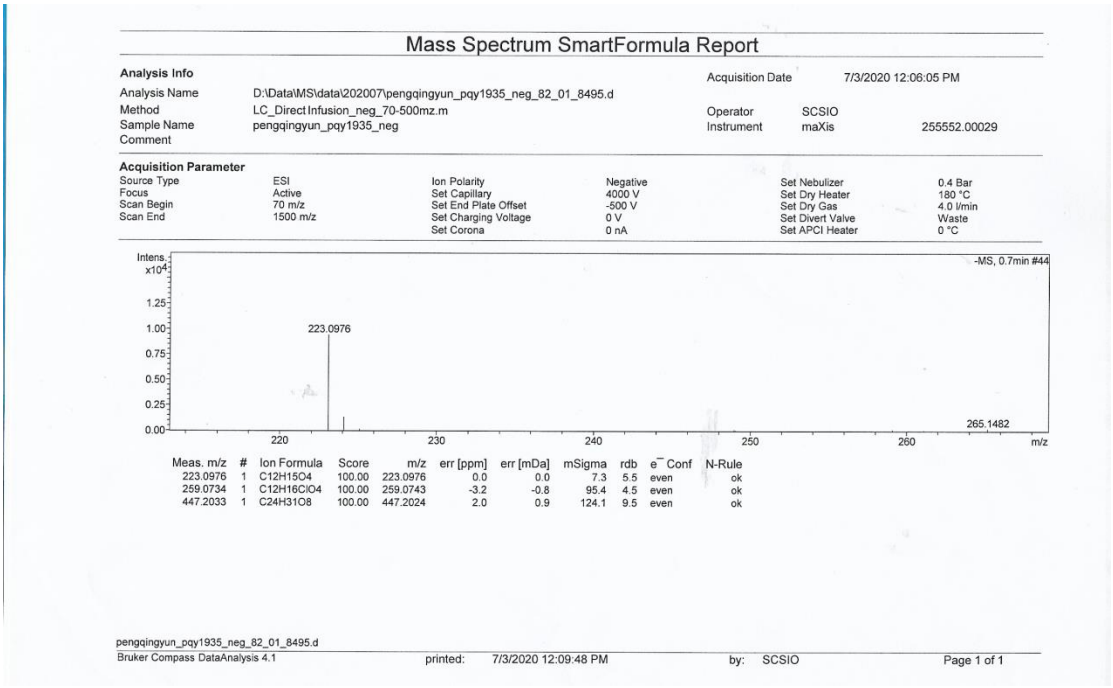

Figure S42. HRESIMS spectrum of **14**.

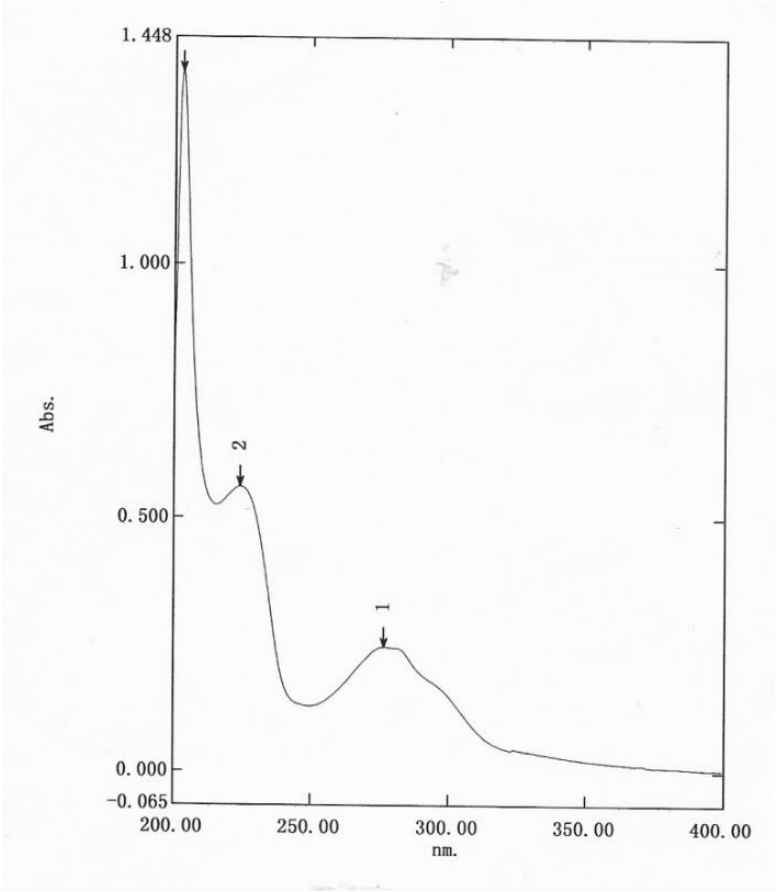

Figure S43. UV spectrum of **14**.