

Supplementary Materials

Two New 4-Hydroxy-2-pyridone Alkaloids with Antimicrobial and Cytotoxic Activities from *Arthrinium* sp. GZWMJZ-606 Endophytic with *Houttuynia cordata* Thunb.

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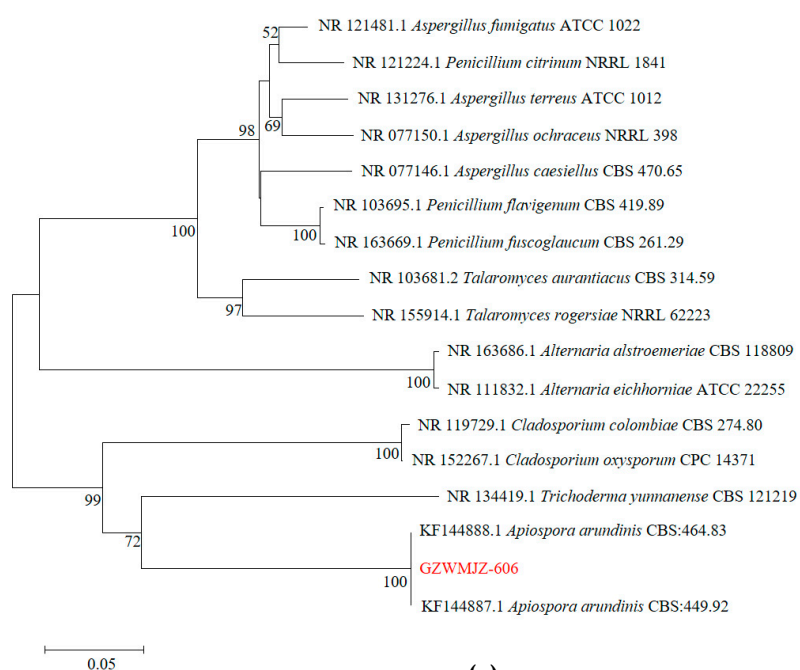
† These authors contributed equally to the work.

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ITS sequence (GenBank accession no. OP810989):

ATGCGGAGGGATCATTACAGAGTTATACAACTCCCATACCATCTGTAACTACCCAGTTA
TGCCTCGGCGTAAGCTCGGTTGGAGGCACCTGCAGCTACCCTGTAGTTGCGGACTGCCAA
CTCCAGCCGCGGCCCGCCGGCGGTACACTAACTCTGTTTTATTTTATATTCTGAGCGTCTT
ATTTAATAAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCTGGCATCGATGAAGAACGC
AGCGAAATGCGATAAGTAATGTGAATTGCAGAATTCAGTGAATCATCGAATCTTTGAACG
CACATTGCGCCCATCAGTATTCTGGTGGGCATGCCTGTTCGAGCGTCATTTCAACCCTTAA
GCCTAGCTTAGTGTTGGGAATCTGCTGTACTGCAGTTCCTTAAAGACAGTGGCGGAGCGG
CGGTAGTCCTCTGAGCGTAGTAATTTATTTCTCGCTTTTGTGAGGCTCTGTCCTCCCGCCAT
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GCATATCAAAACGGGGGAAGGAAA



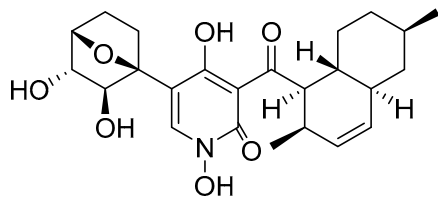
(b)

Figure S1. Species identification of endophytic fungi strain from *Houttuynia cordata*. **(a)** Phylogenetic tree of fungal strain *Arthrinium* sp. GZWMJZ-606 based on ITS sequences. **(b)** Colony of *Arthrinium* sp. GZWMJZ-606 was observed by growth on a PDA plate for 3 days.

Table S1. ^1H (600 MHz) and ^{13}C (150 MHz) NMR data of **1** in $\text{DMSO-}d_6$

Position	1 ($\text{DMSO-}d_6$)	
	δ_{C}	δ_{H} (J in Hz)
1	29.5, CH_2	0.78-0.86, m 1.83, dd (12.4, 2.9)
2	35.0, CH_2	0.93-1.02, m 1.67, d (12.0)
3	32.5, CH	1.47-1.51, overlap
4	41.4, CH_2	0.72-0.78, overlap 1.70-1.74, overlap
5	41.3, CH	1.77, "t" like (10.5)
6	130.4, CH	5.39, d (9.8)
7	131.4, CH	5.57-5.63, m
8	30.6, CH	2.70-2.78, m
9	52.2, CH	4.35, dd (11.4, 5.7)
10	35.7, CH	1.42-1.47, overlap
11	22.4, CH_3	0.88, d (6.5)
12	17.8, CH_3	0.75, d (7.1)
13	209.4, C	
14	106.6, C	
15	157.5, C	
16	138.8, CH	7.71, s
17	108.8, C	
18	171.9, C	
19	87.6, C	
20	80.4, CH	3.59, brs
21	81.0, CH	3.79, d (4.8)
22	76.6, CH	4.32, "t" like (4.7)
23	22.9, CH_2	1.51-1.54, overlap 2.06-2.10, overlap
24	31.6, CH_2	1.47-1.51, overlap 1.99-2.06, overlap
20-OH		4.83, brs
21-OH		5.33, brs
N-OH		11.66, s

YY12-18 #24 RT: 0.10 AV: 1 NL: 2.41E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]



The figure displays two ^1H NMR spectra of compound **1**. The top spectrum is the full ^1H NMR (400 MHz, CDCl_3) showing peaks from 0.5 to 8.5 ppm. The bottom spectrum is an expanded view of the 0.5–2.5 ppm region, enclosed in a red box with an arrow pointing to the corresponding region in the top spectrum.

Top Spectrum (Full ^1H NMR):

- Chemical shifts (ppm): 7.9324, 5.6200, 5.5974, 5.4285, 5.4042, 4.4415, 4.0034, 3.9926, 3.8750, 2.8723, 2.2313, 1.9626, 1.9348, 1.8301, 1.7933, 1.7555, 1.7254, 1.6467, 1.6192, 1.5913, 1.5627, 1.5333, 1.0928, 1.0666, 1.0332, 0.9995, 0.9498, 0.8975, 0.8594, 0.8368, 0.8194, 0.7981.
- Peak labels: H-16, H-7, H-6, H-22, H-9, H-20, H-21, H-8, H-24, H-23, H-11, H-12.
- Integrations: 0.9, 1.0, 1.0, 2.0, 1.0, 1.0, 1.0, 2.0, 1.4, 1.4, 1.4, 1.4, 1.0, 1.0, 1.0, 1.0, 3.0, 3.0, 1.0.

Bottom Spectrum (Expanded 0.5–2.5 ppm):

- Chemical shifts (ppm): 2.2313, 1.9626, 1.9348, 1.8569, 1.8301, 1.7933, 1.7555, 1.7254, 1.6467, 1.6192, 1.5913, 1.5627, 1.5333, 1.0928, 1.0666, 1.0332, 0.9995, 0.9498, 0.9337, 0.8975, 0.8594, 0.8368, 0.8194, 0.7981.
- Peak labels: H-24, H-23, H-1, H-5, H-4, H-2, H-24, H-10, H-3, H-11, H-1, H-4.
- Integrations: 2.0, 1.1, 1.1, 1.1, 1.1, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 3.0, 1.0, 1.0, 1.0.

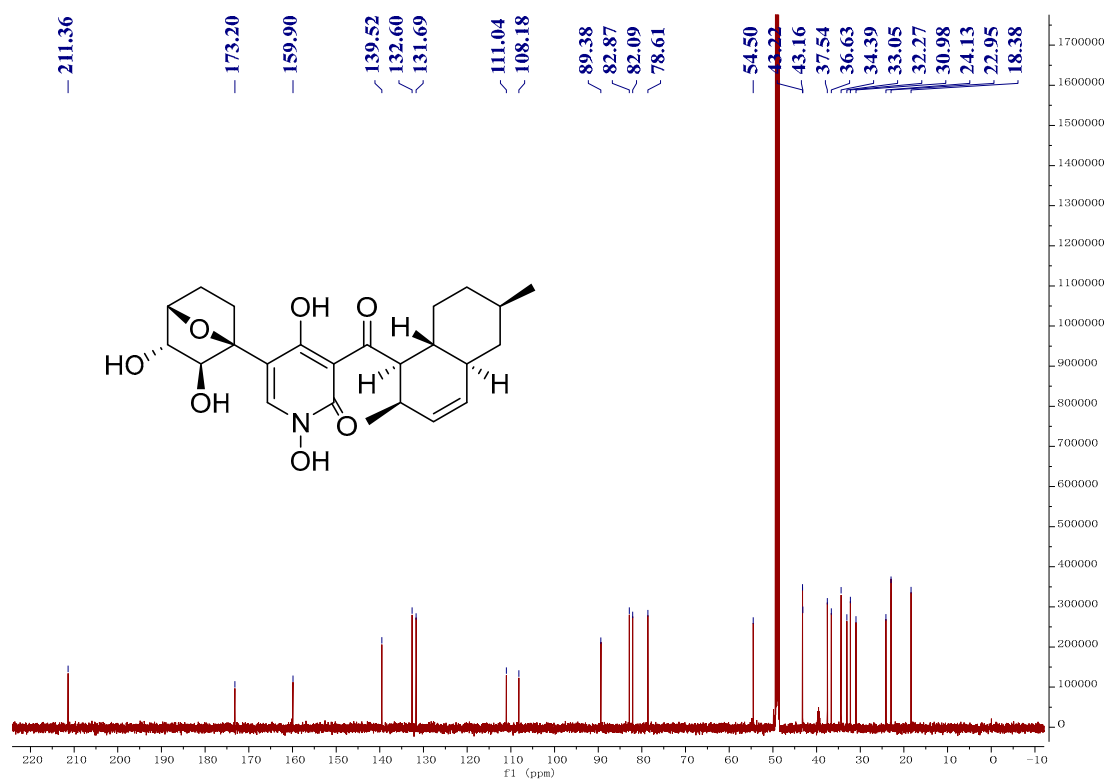
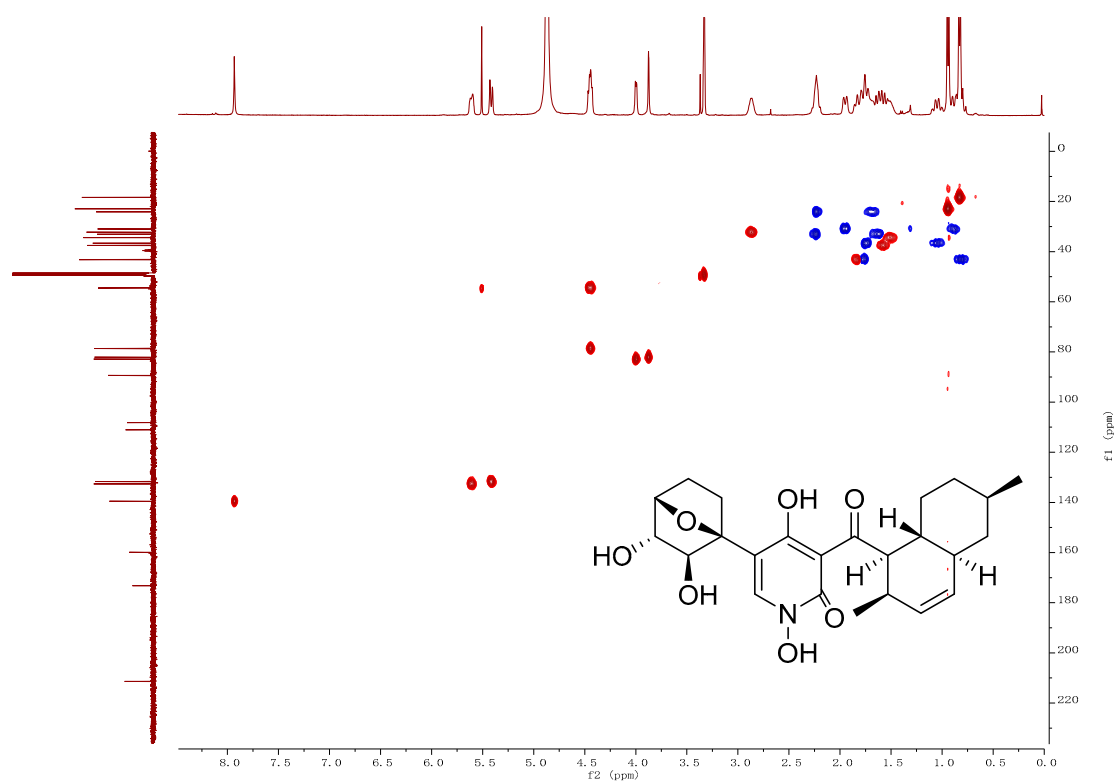
Figure S4. ^{13}C NMR (150 MHz, Methanol- d_4) of **1****Figure S5.** HSQC spectrum (Methanol- d_4) of **1**

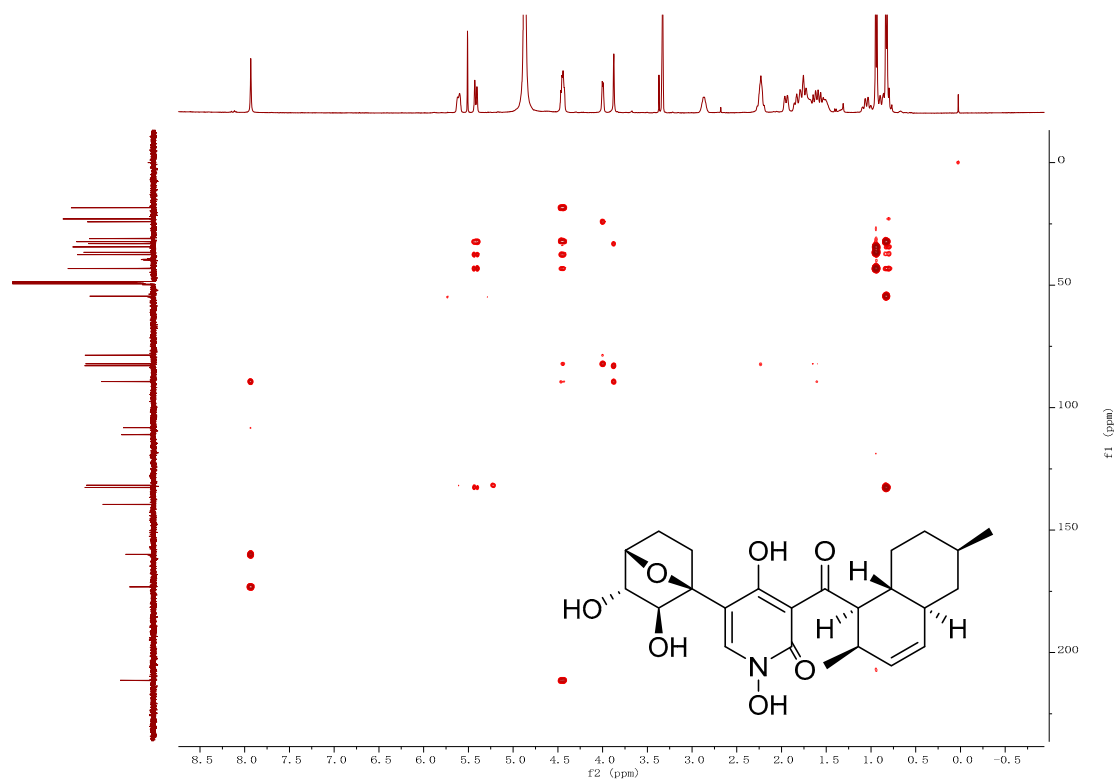
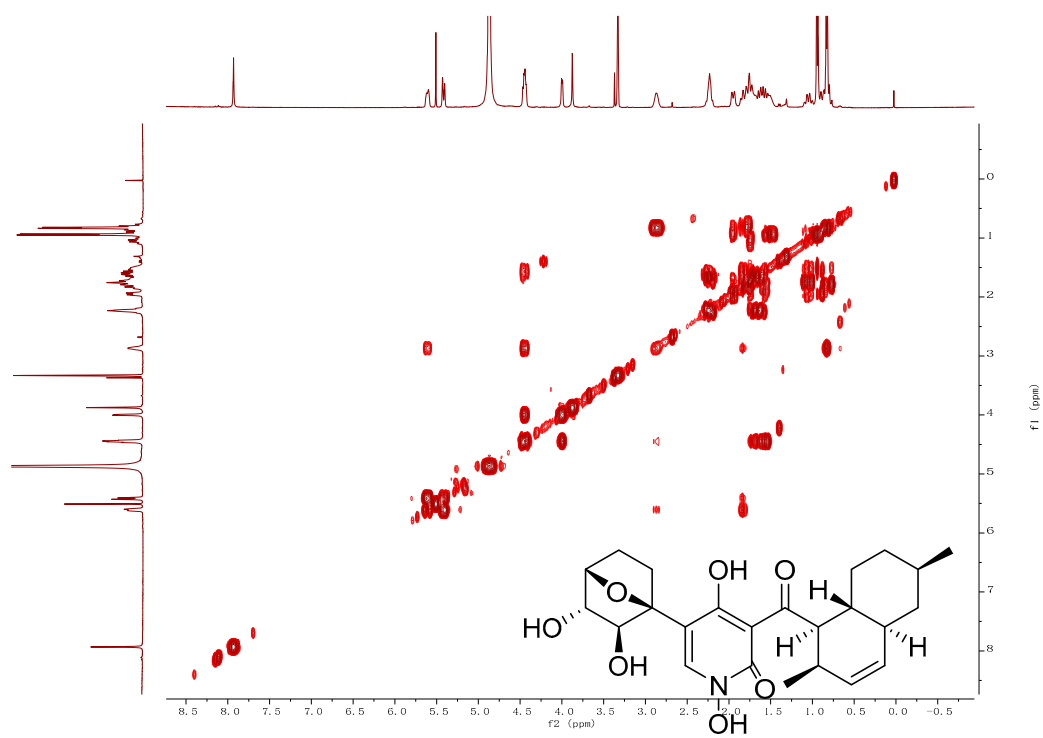
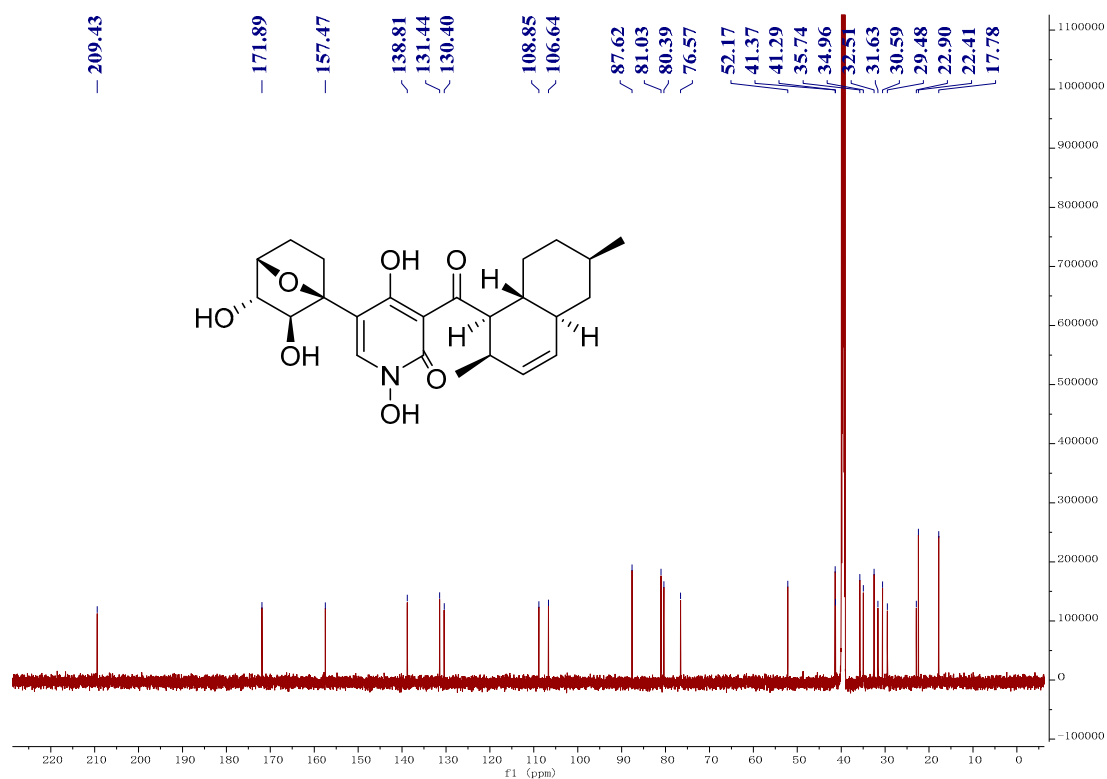
Figure S6. HMBC spectrum (Methanol- d_4) of **1****Figure S7.** ^1H - ^1H COSY spectrum (Methanol- d_4) of **1**

Figure S10. ^{13}C NMR (150 MHz, $\text{DMSO}-d_6$) of **1****Figure S11.** HRESIMS spectrum of **2**

YY12-45 #16 RT: 0.07 AV: 1 NL: 2.48E8
T: FTMS + p ESI Full ms [100.0000-1500.0000]

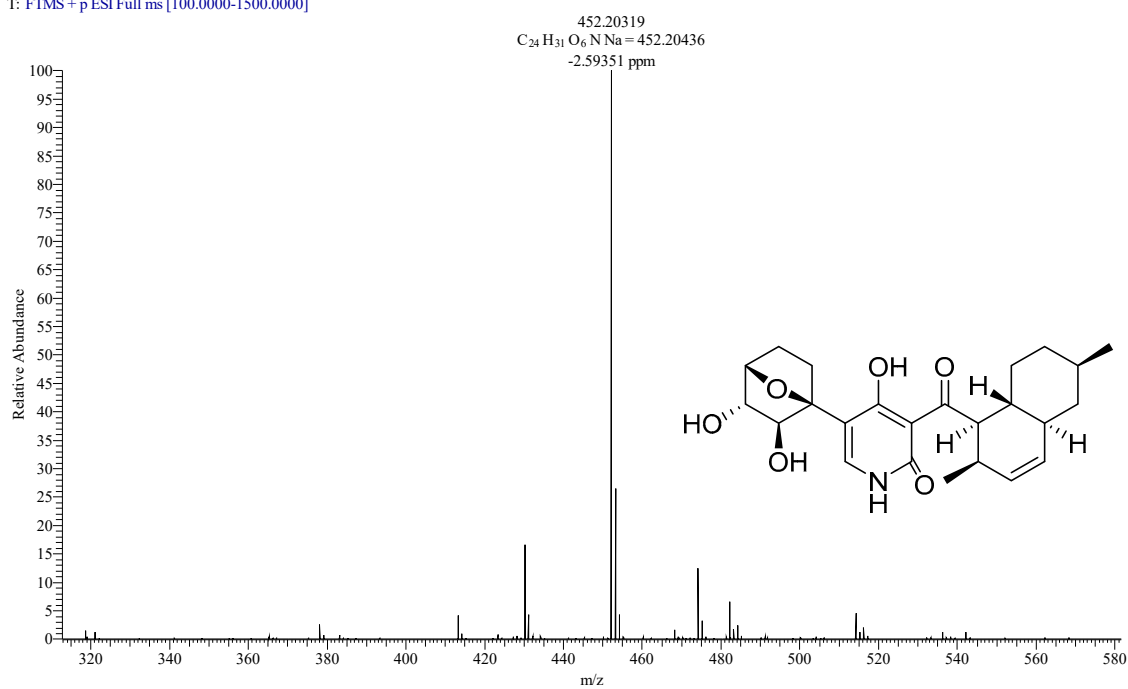


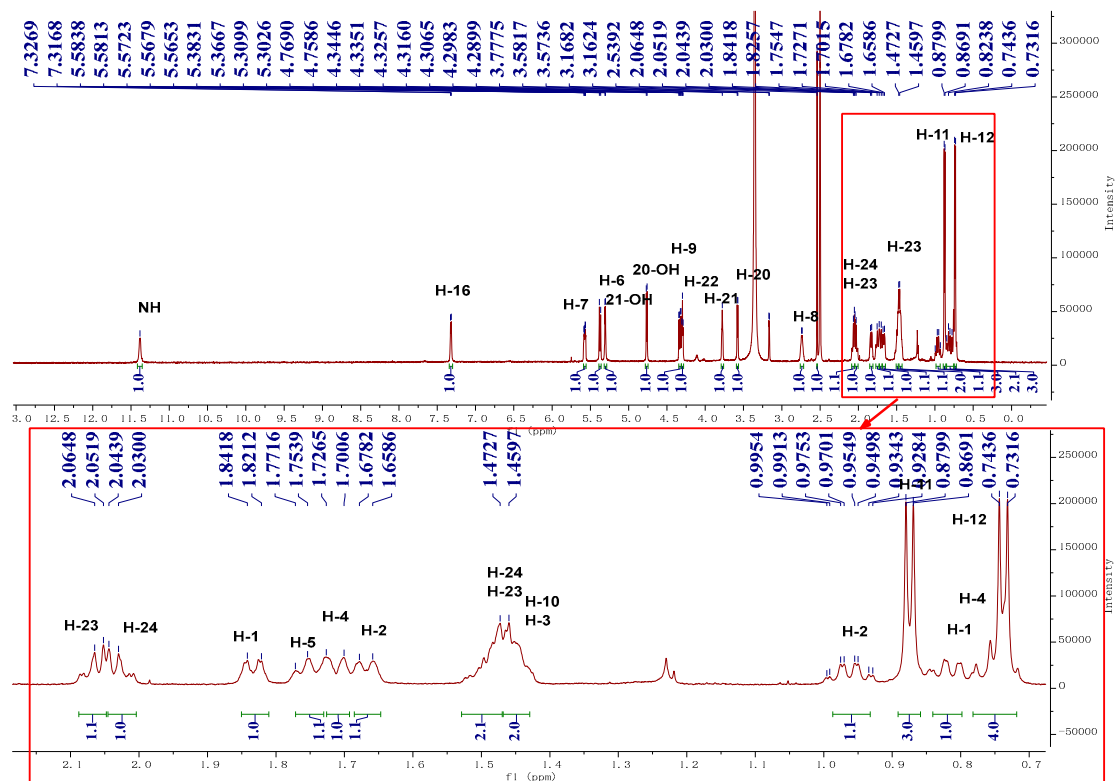
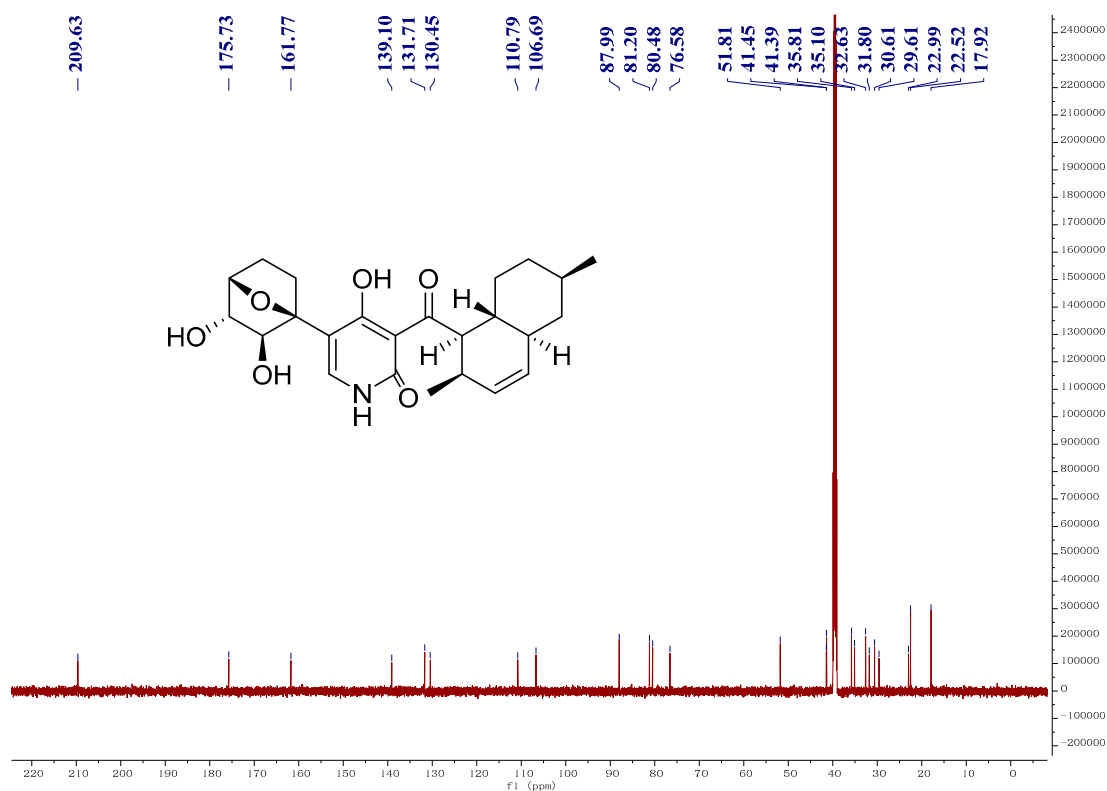
Figure S12. ^1H NMR (600MHz, $\text{DMSO}-d_6$) of 2Figure S13. ^{13}C NMR (150 MHz, $\text{DMSO}-d_6$) of 2

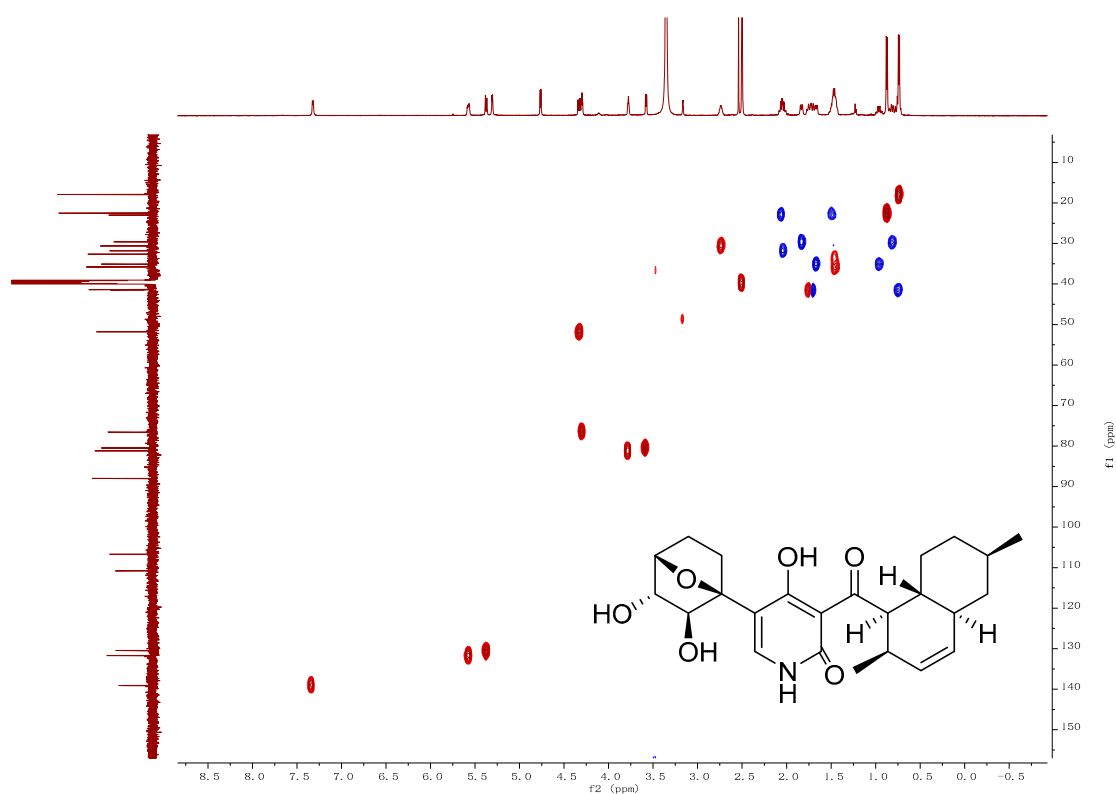
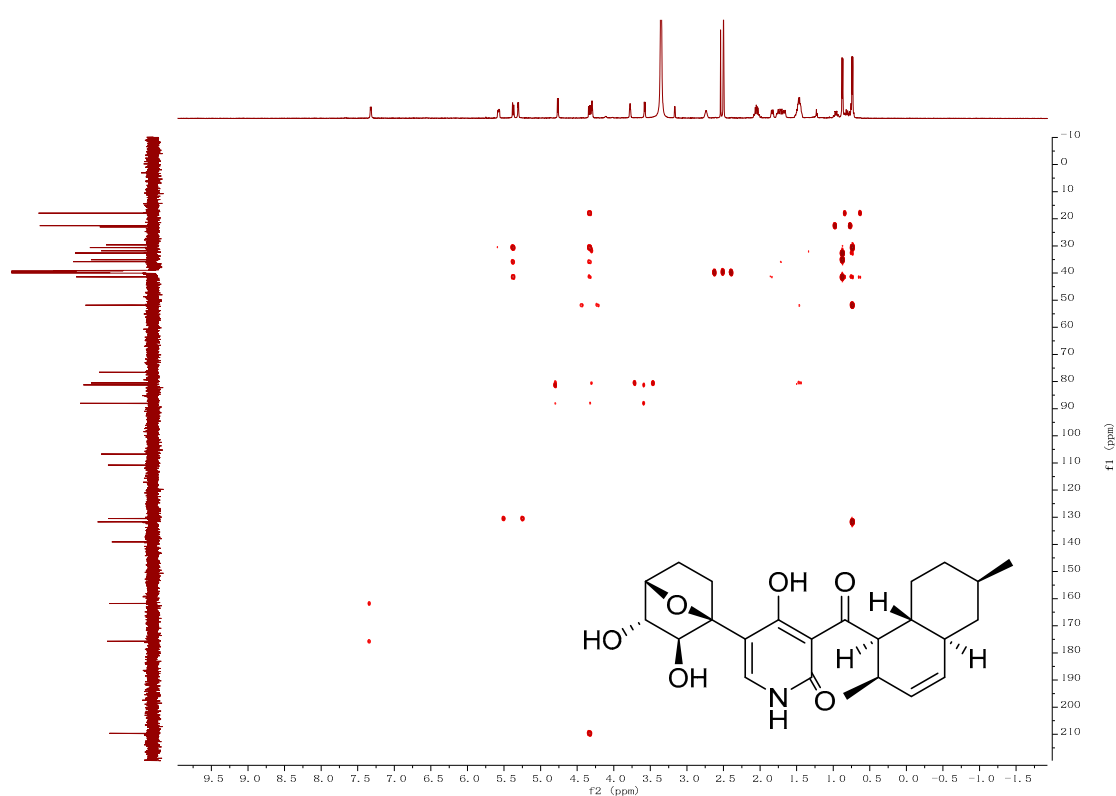
Figure S14. HSQC spectrum (DMSO- d_6) of **2****Figure S15.** HMBC spectrum (DMSO- d_6) of **2**

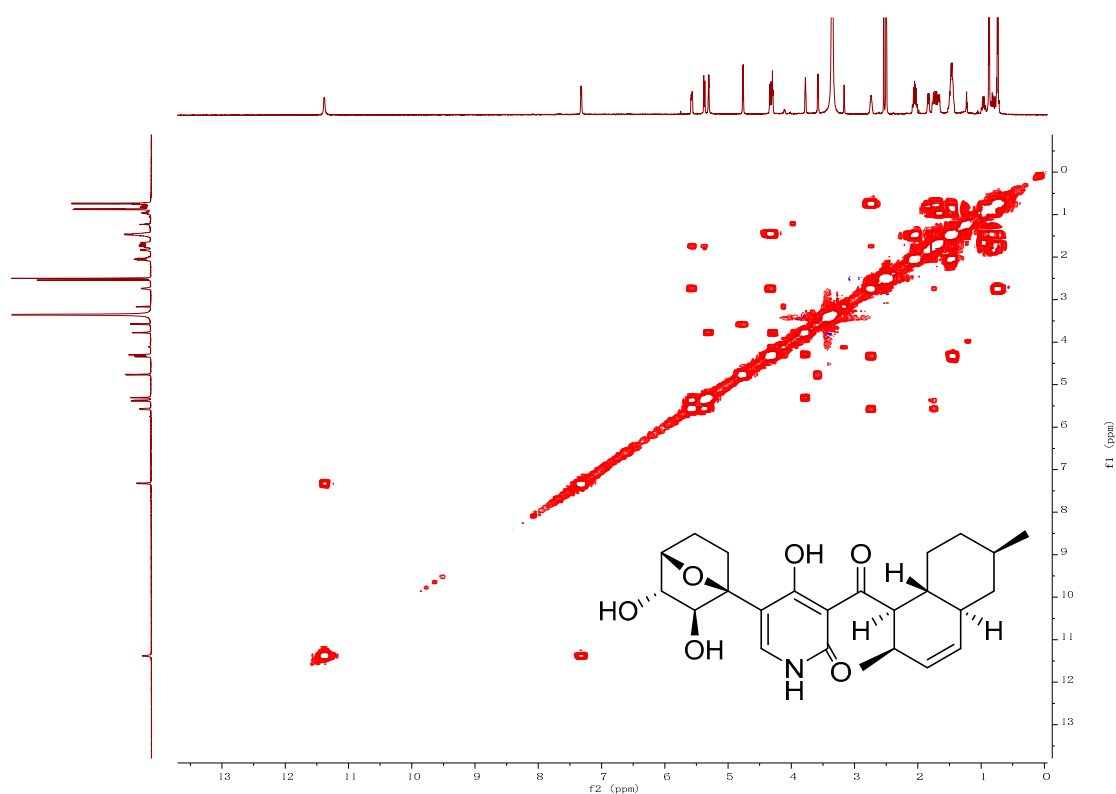
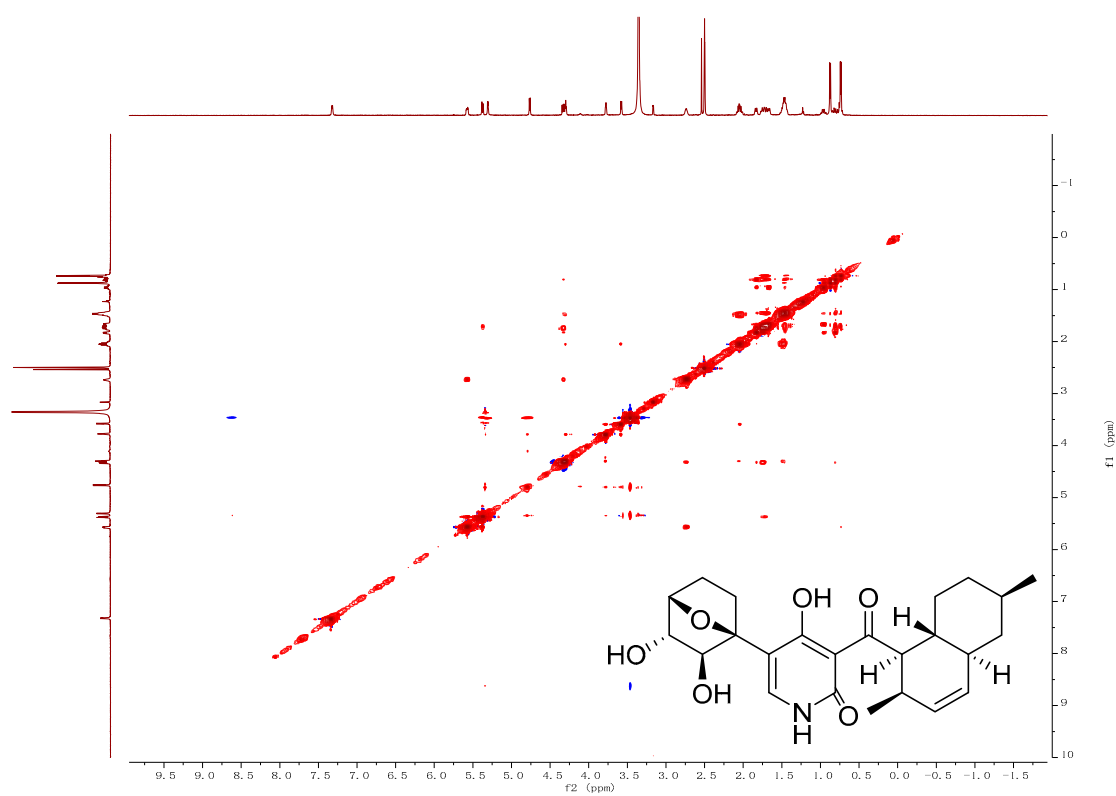
Figure S16. ^1H - ^1H COSY spectrum (DMSO- d_6) of **2****Figure S17.** NOESY spectrum (DMSO- d_6) of **2**

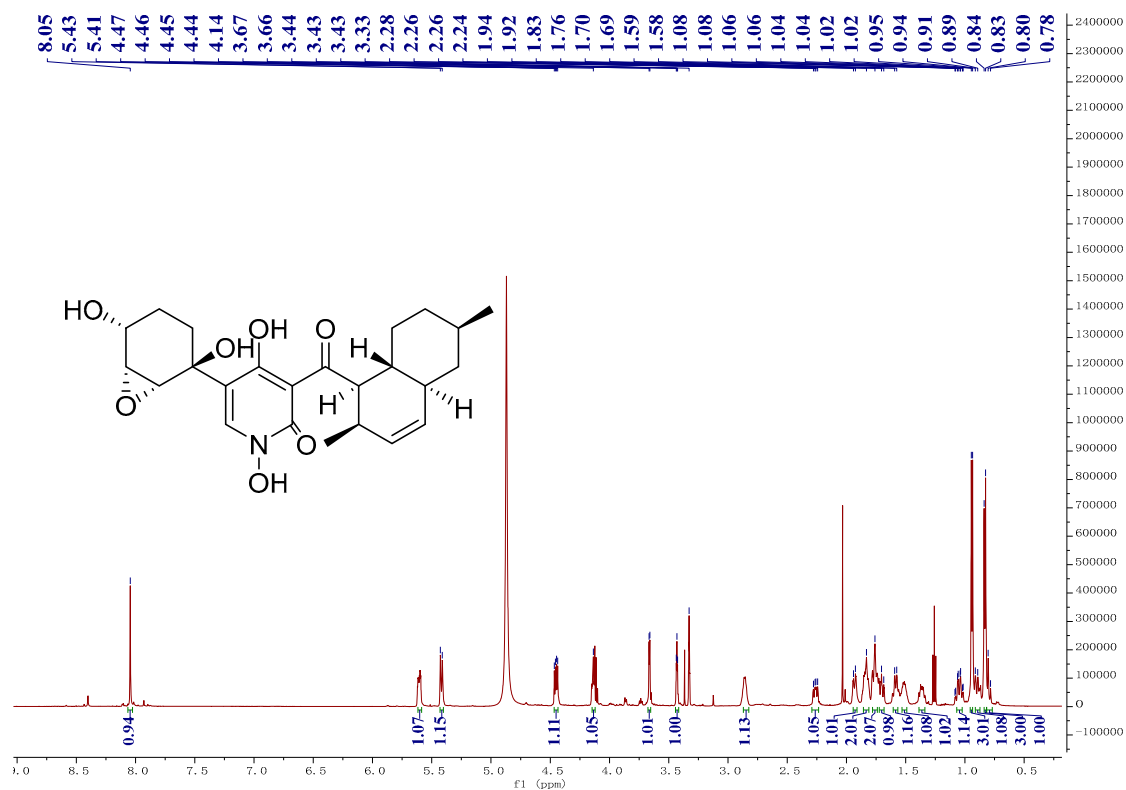
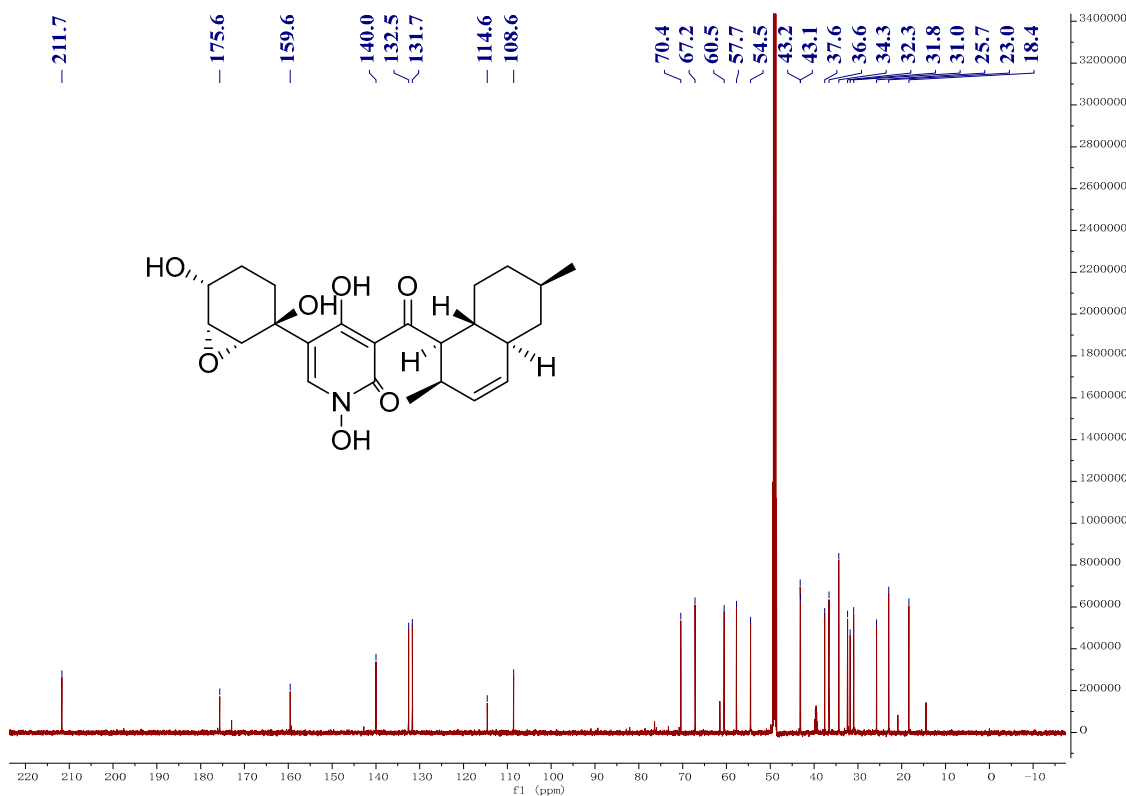
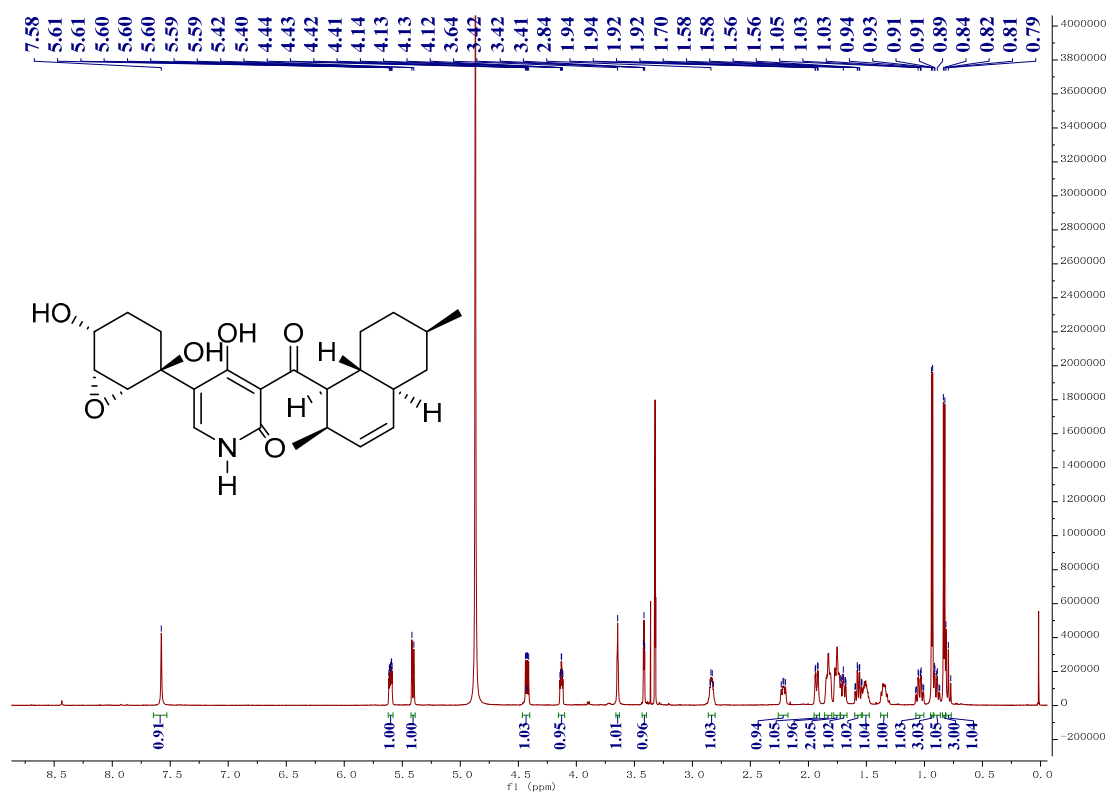
Figure S18. ^1H NMR spectrum (600MHz, Methanol- d_4) of **3****Figure S19.** ^{13}C NMR spectrum (150 MHz, Methanol- d_4) of **3**

Figure S20. ^1H NMR spectrum (600MHz, Methanol- d_4) of **4****Figure S21.** ^{13}C NMR spectrum (150 MHz, Methanol- d_4) of **4**