

SUPPORTING INFORMATION

Concise Synthetic Approach to Parvistemin A and (±)-Diperezone

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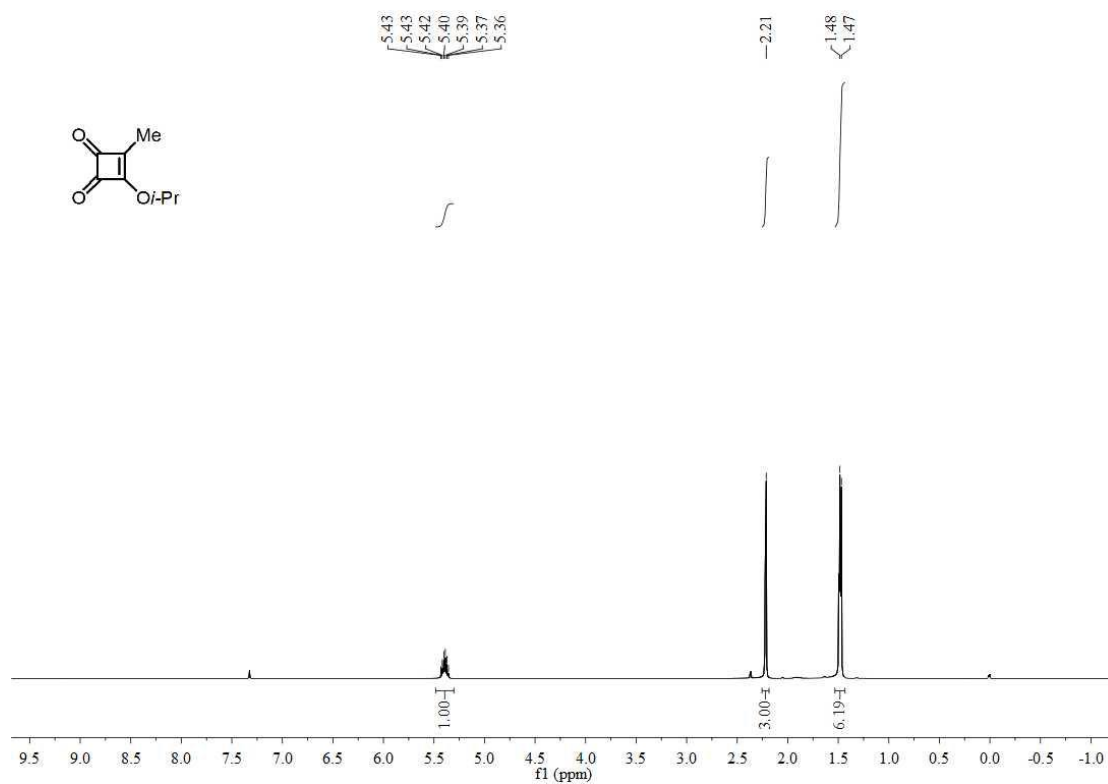
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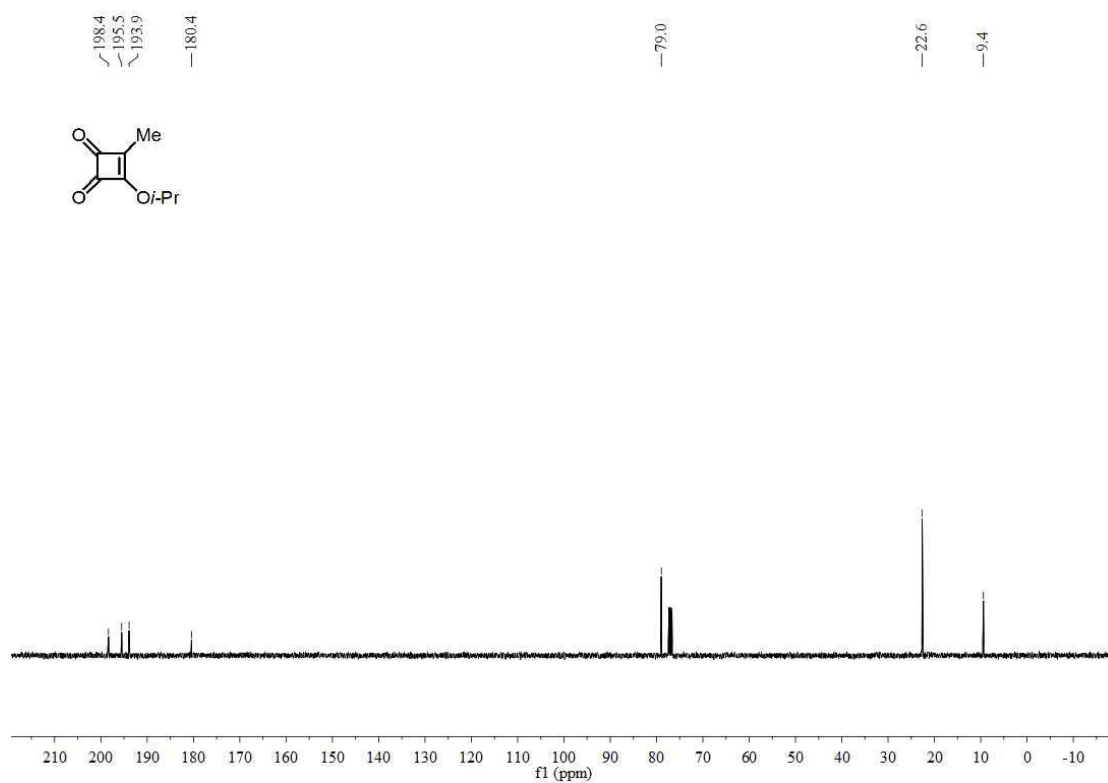
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1. ^1H and ^{13}C NMR Spectrum of Compounds

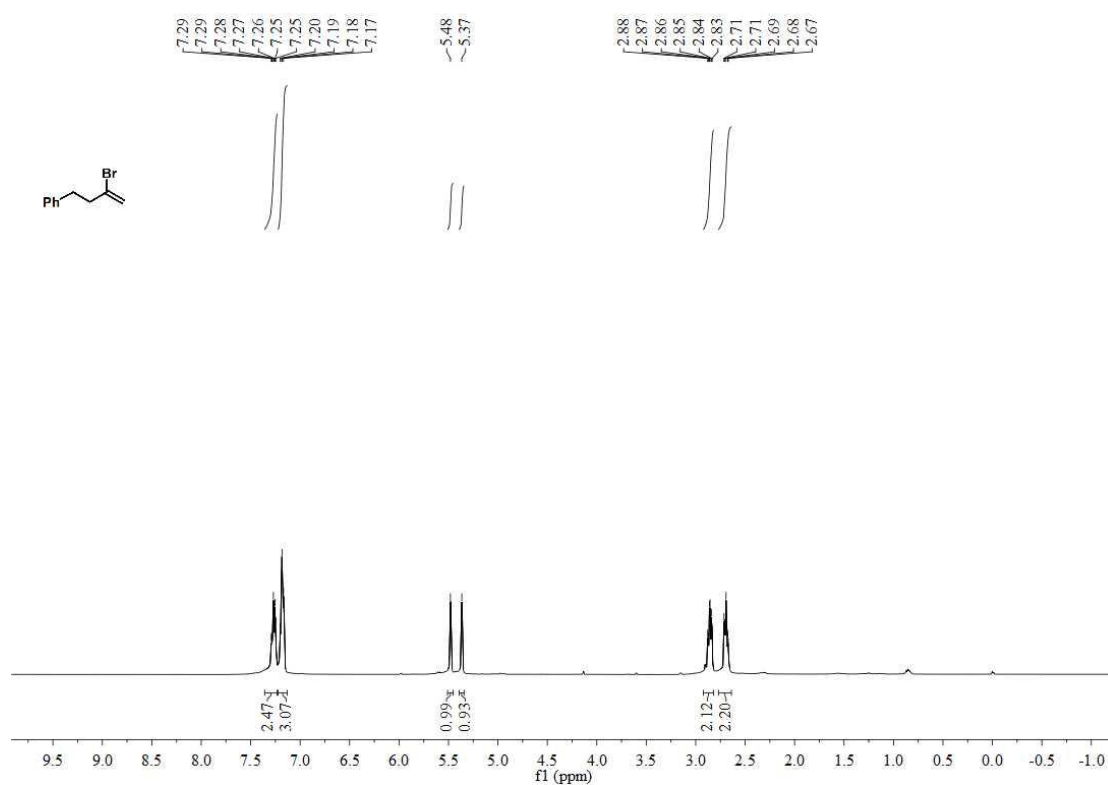
^1H NMR Spectrum for compound **6** (400 MHz, CDCl_3)



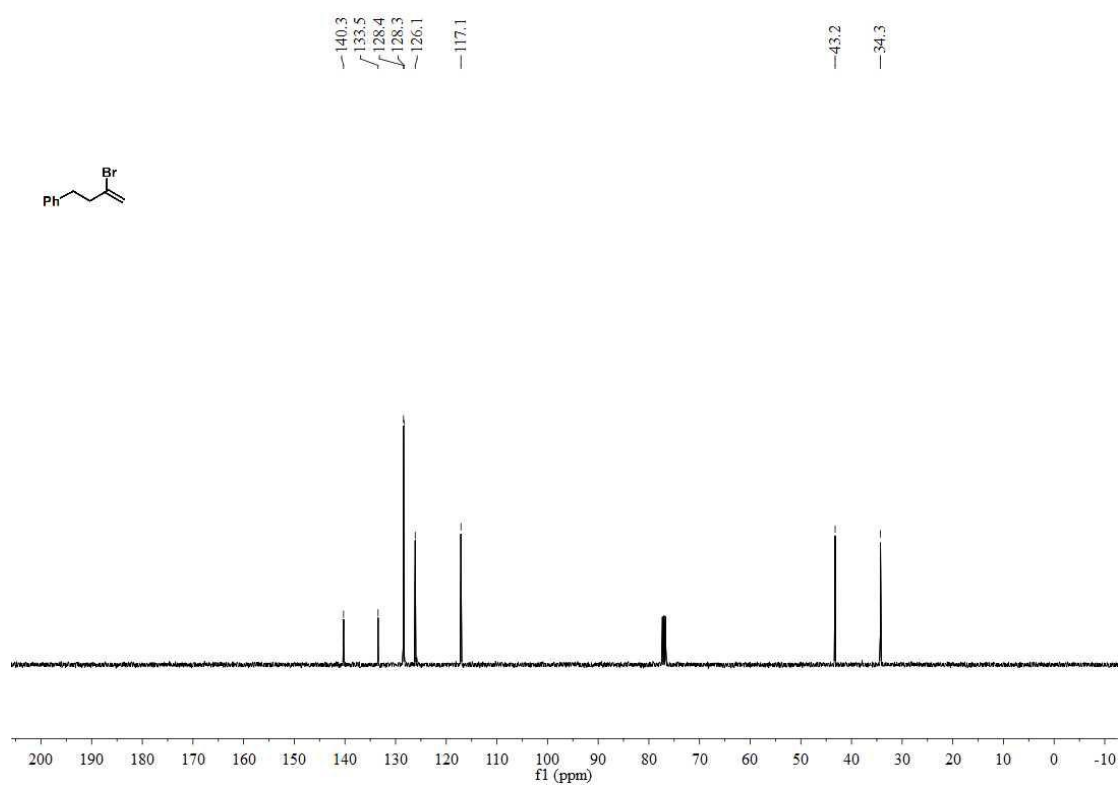
^{13}C NMR Spectrum for compound **6** (100 MHz, CDCl_3)



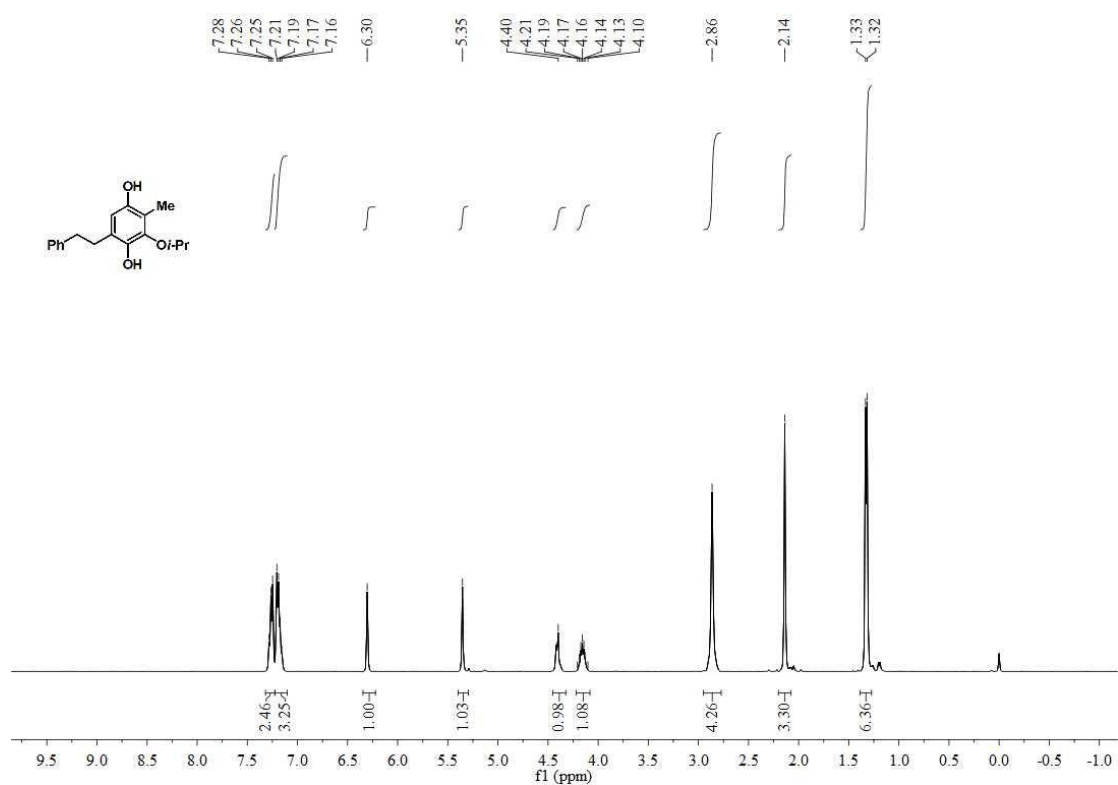
^1H NMR Spectrum for compound **7** (400 MHz, CDCl_3)



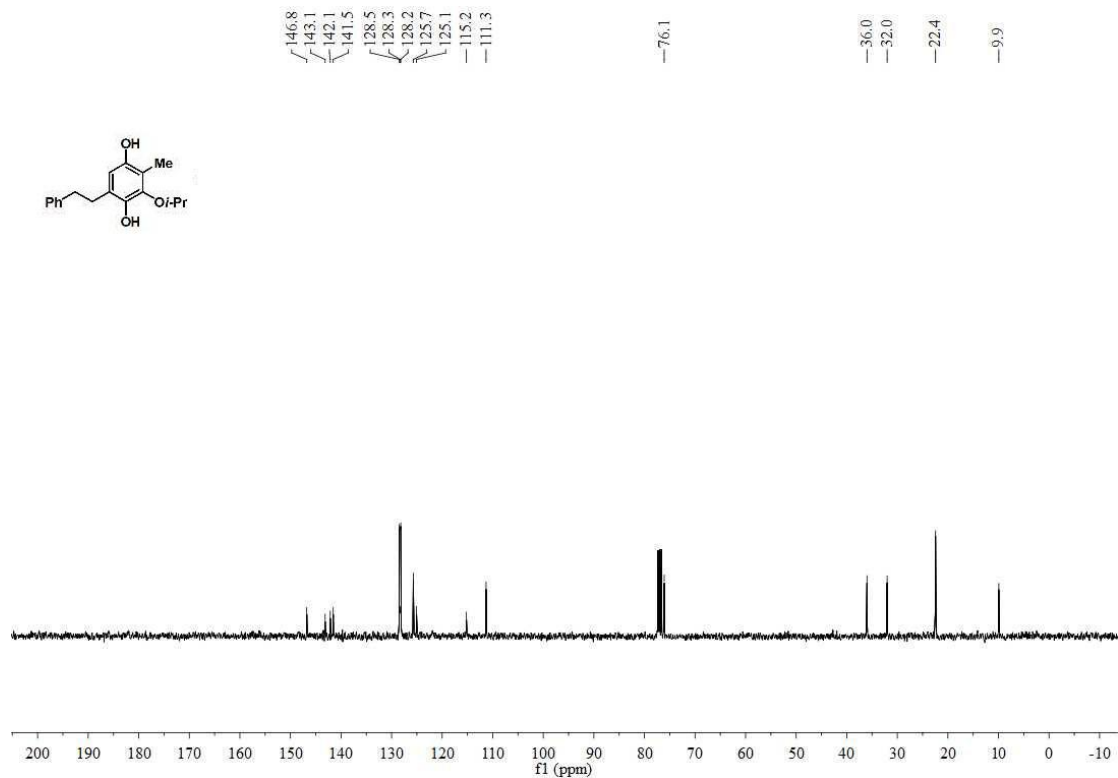
^{13}C NMR Spectrum for compound **7** (100 MHz, CDCl_3)



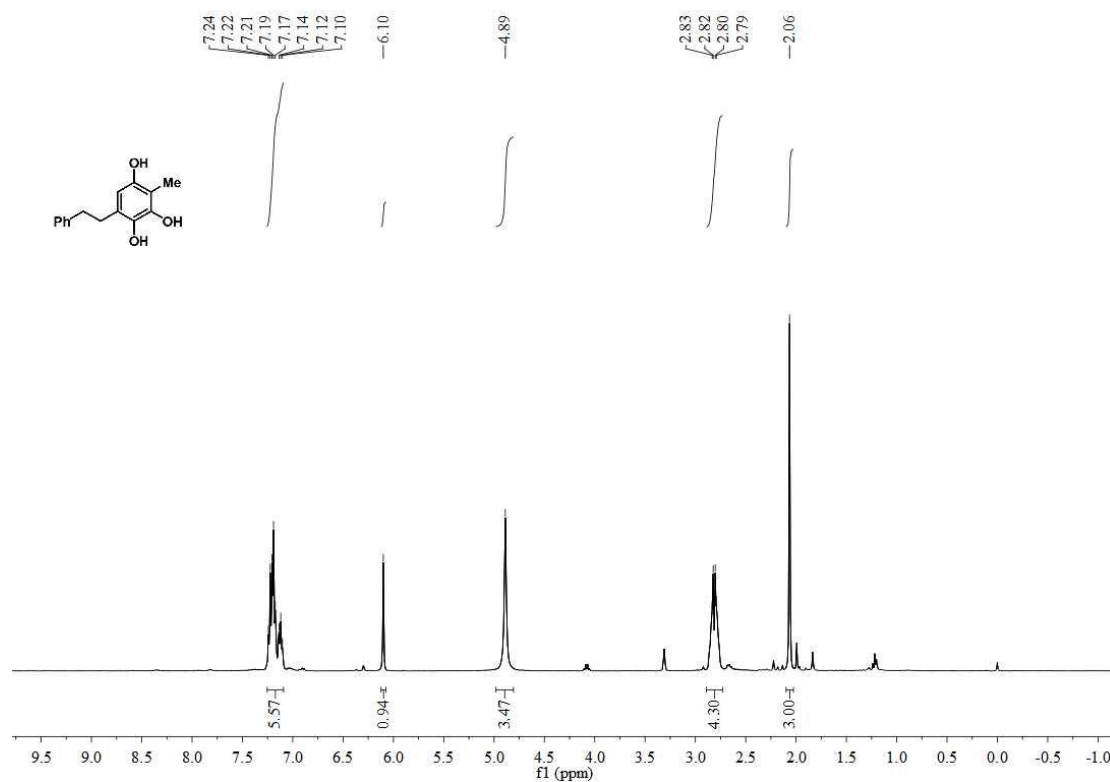
¹H NMR Spectrum for compound **8** (400 MHz, CDCl₃)



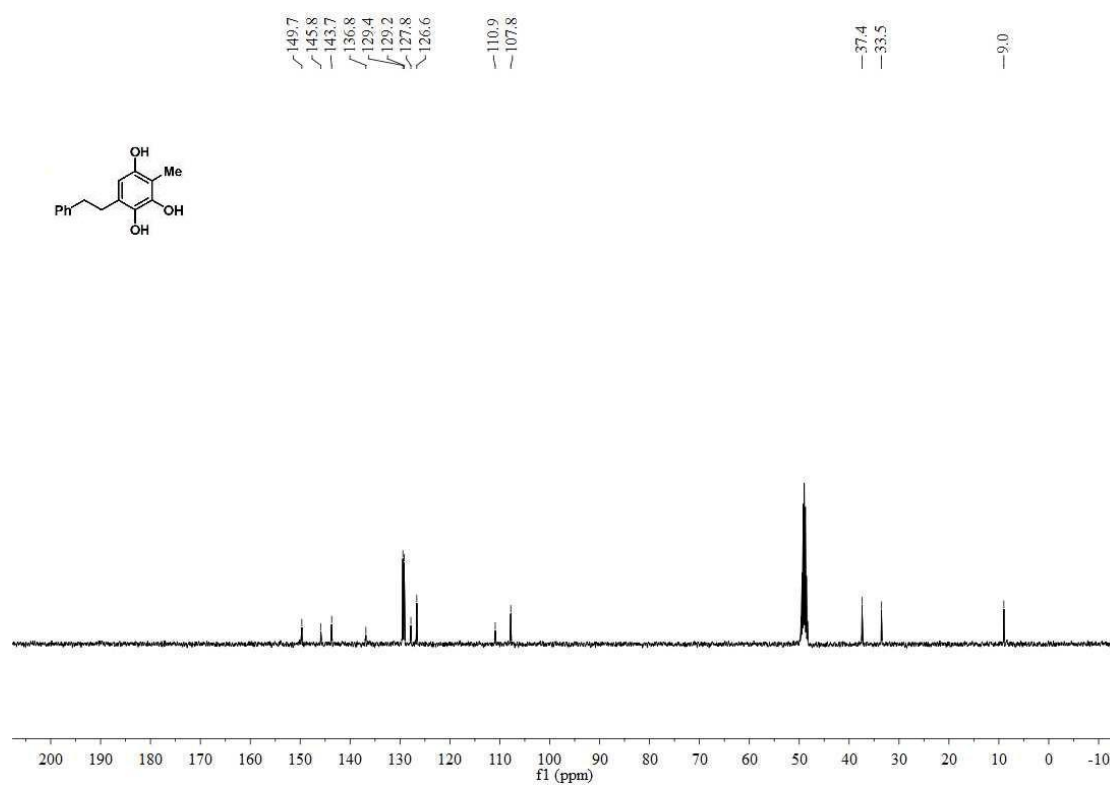
¹³C NMR Spectrum for compound **8** (100 MHz, CDCl₃)



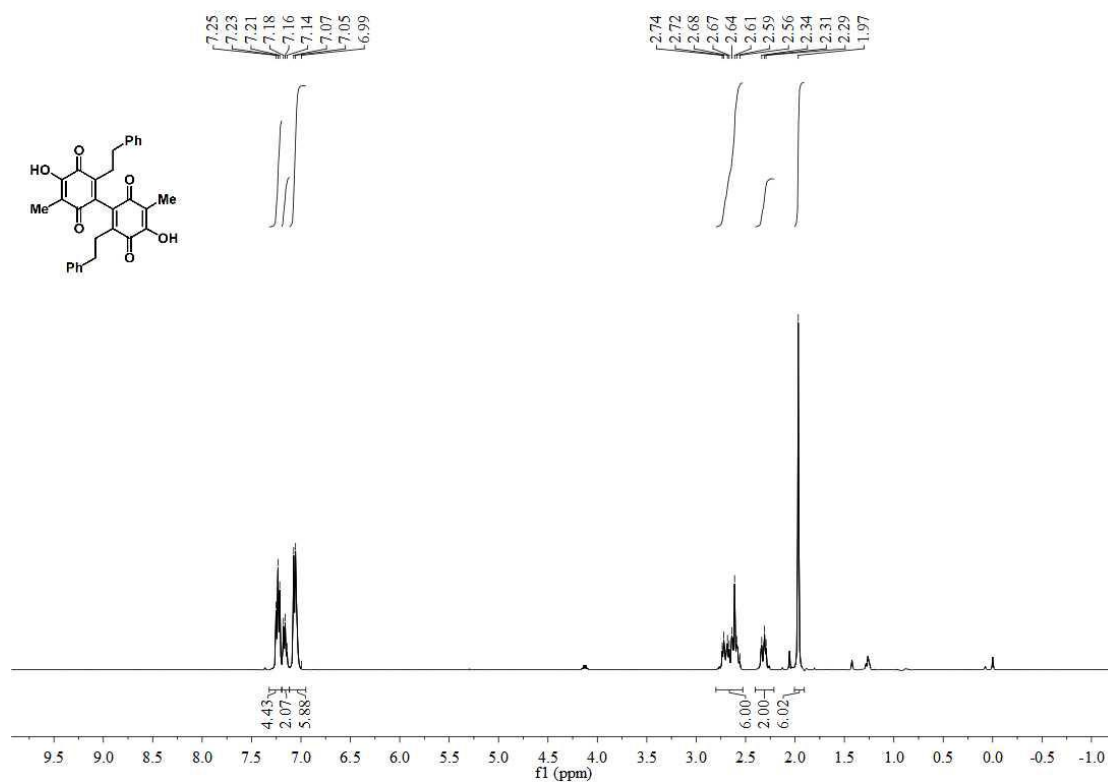
¹H NMR Spectrum for compound **9** (400 MHz, CD₃OD)



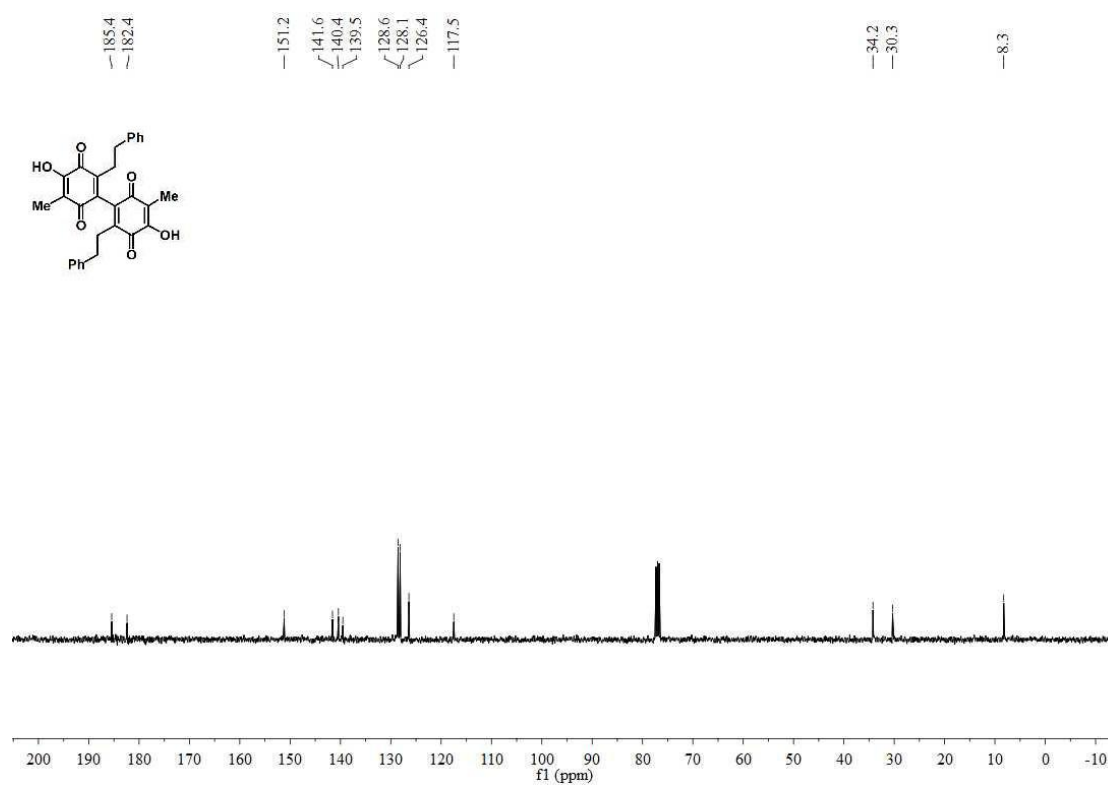
¹³C NMR Spectrum for compound **9** (100 MHz, CD₃OD)



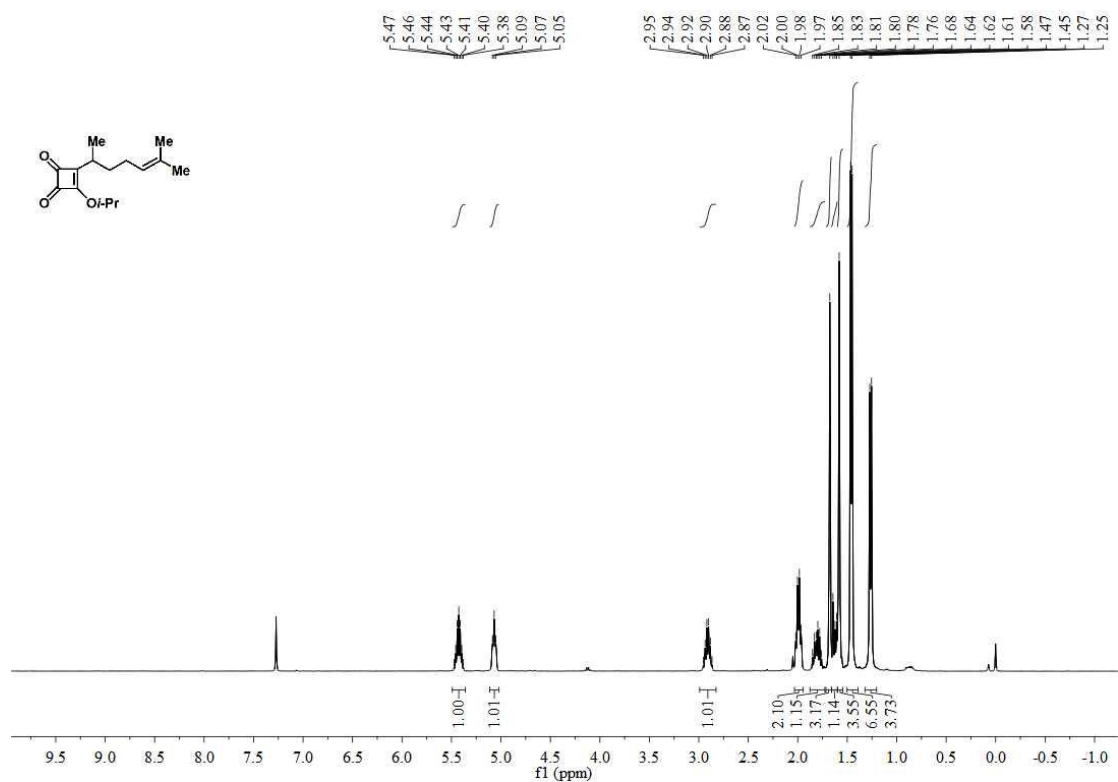
^1H NMR Spectrum for Parvistemin A (**1**) (400 MHz, CDCl_3)



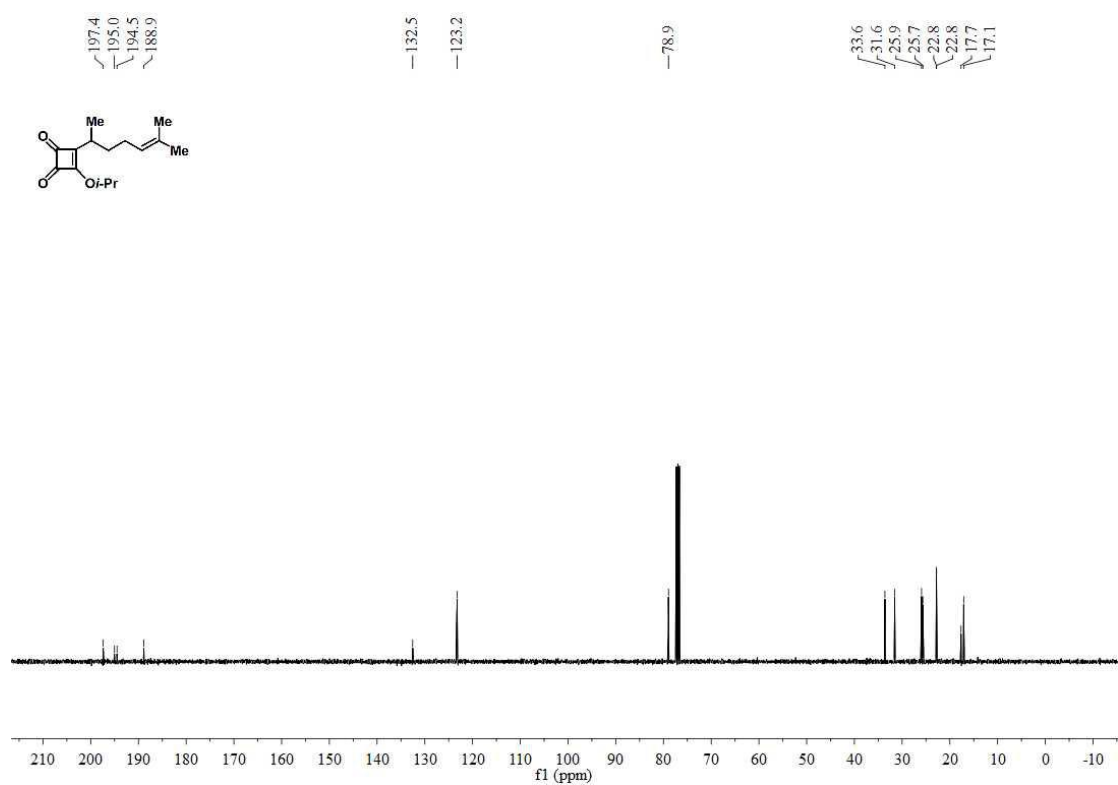
^{13}C NMR Spectrum for Parvistemin A (**1**) (100 MHz, CDCl_3)



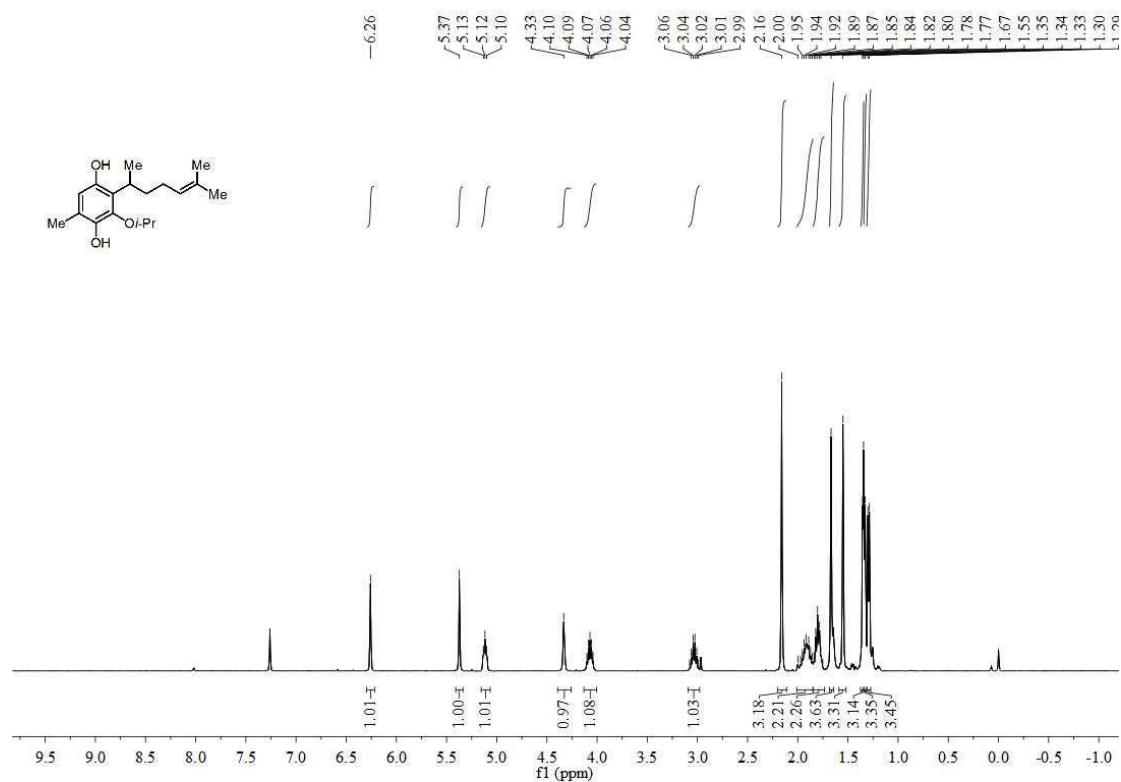
^1H NMR Spectrum for cyclobutenedione **14** (400 MHz, CDCl_3)



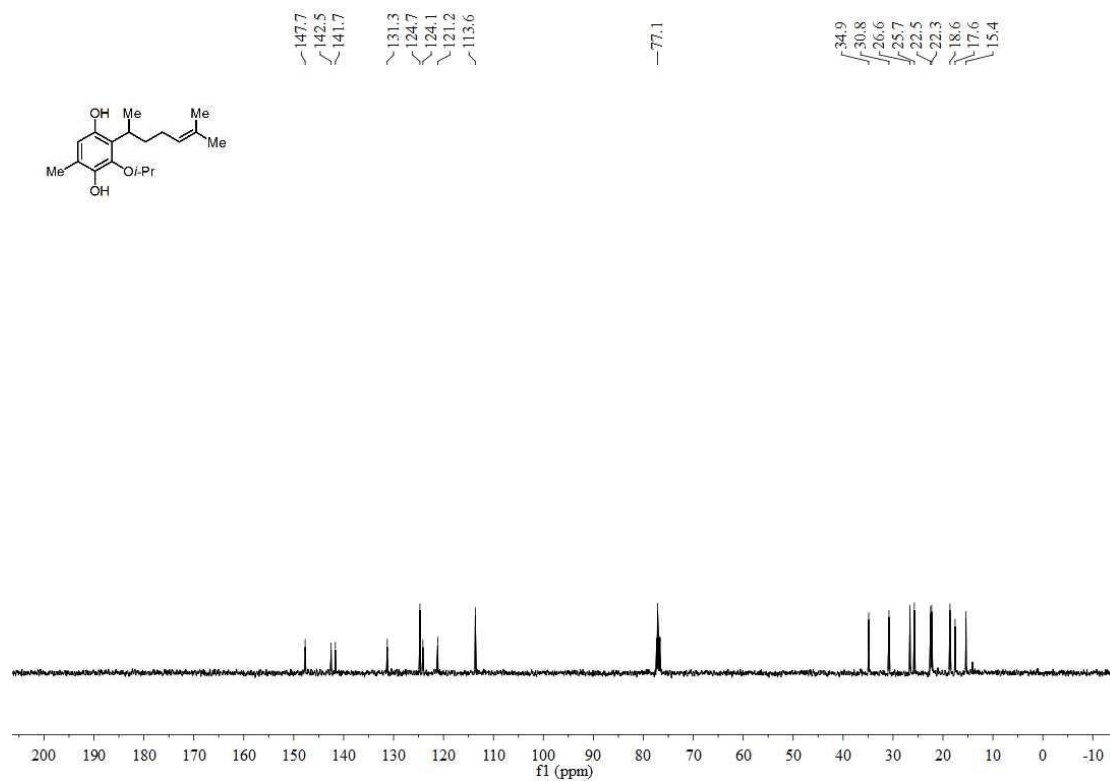
^{13}C NMR Spectrum for cyclobutenedione **14** (100 MHz, CDCl_3)



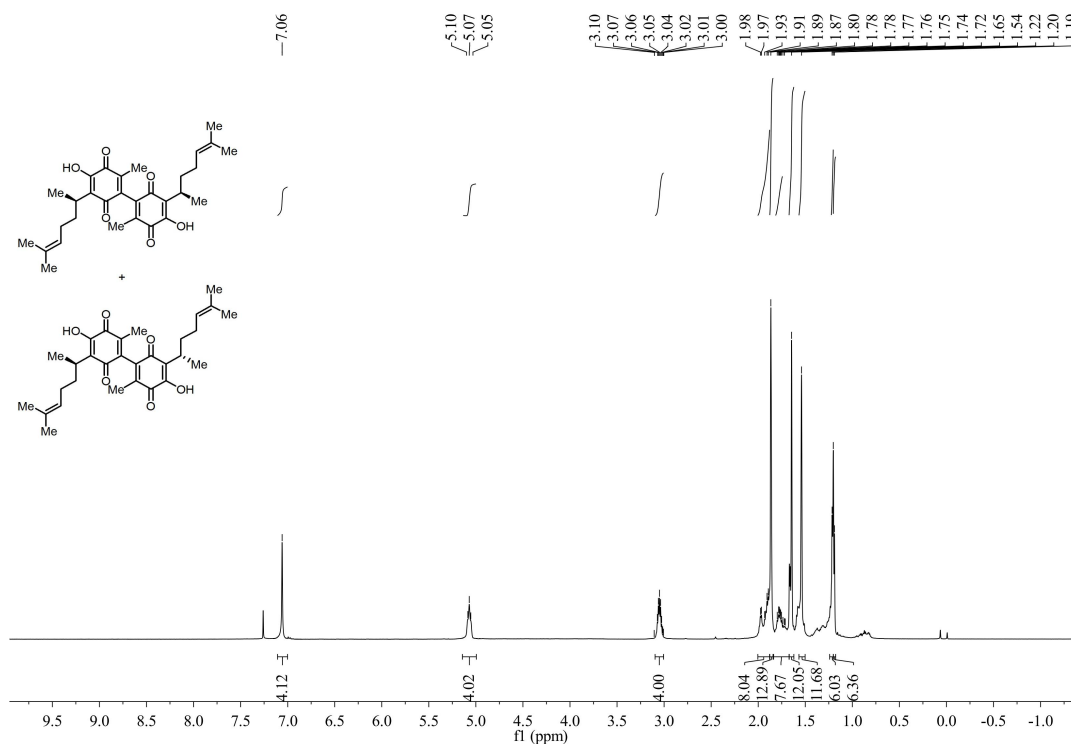
^1H NMR Spectrum for compound **17** (400 MHz, CDCl_3)



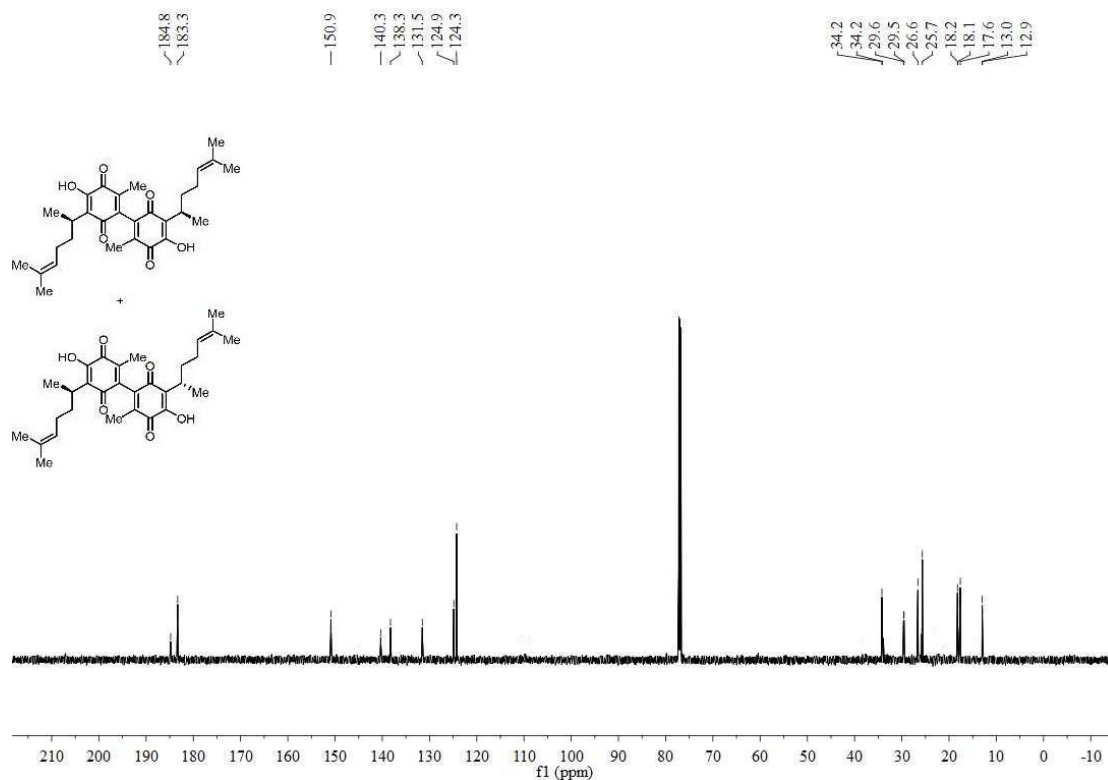
^{13}C NMR Spectrum for compound **17** (100 MHz, CDCl_3)



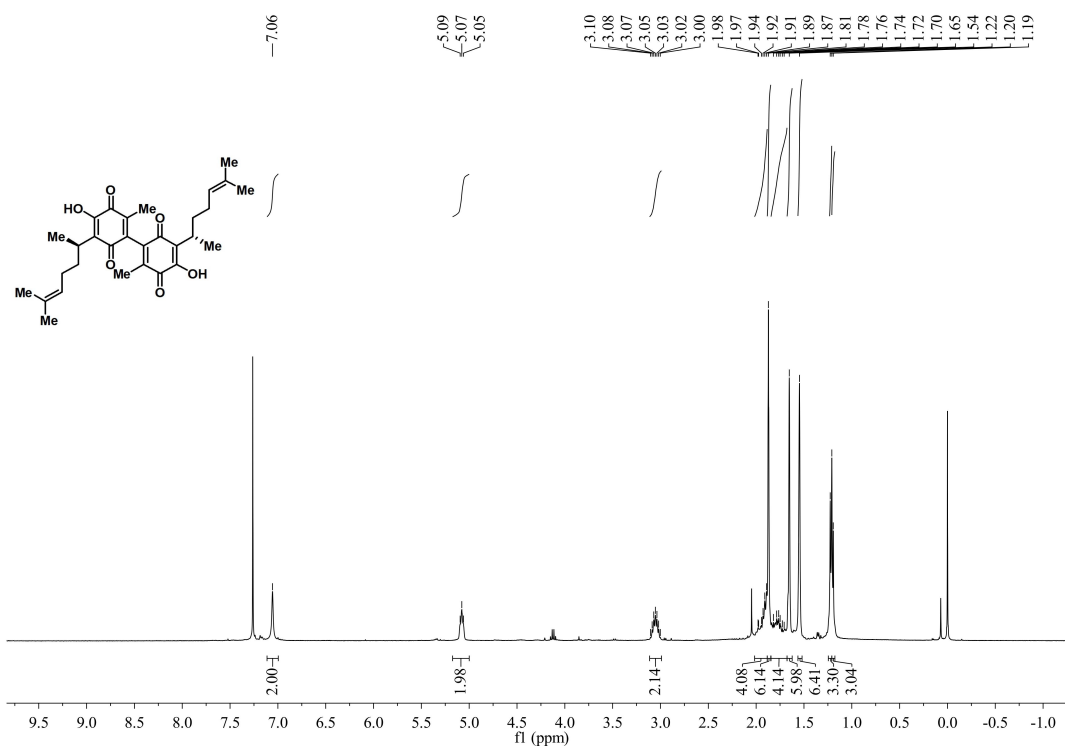
^1H NMR Spectrum for unseperatable mixture of ($\pm$)-diperezone (**2**) and *meso*-diperezone (**16**) (600 MHz, CDCl_3 , **16** : **2**=1:1)



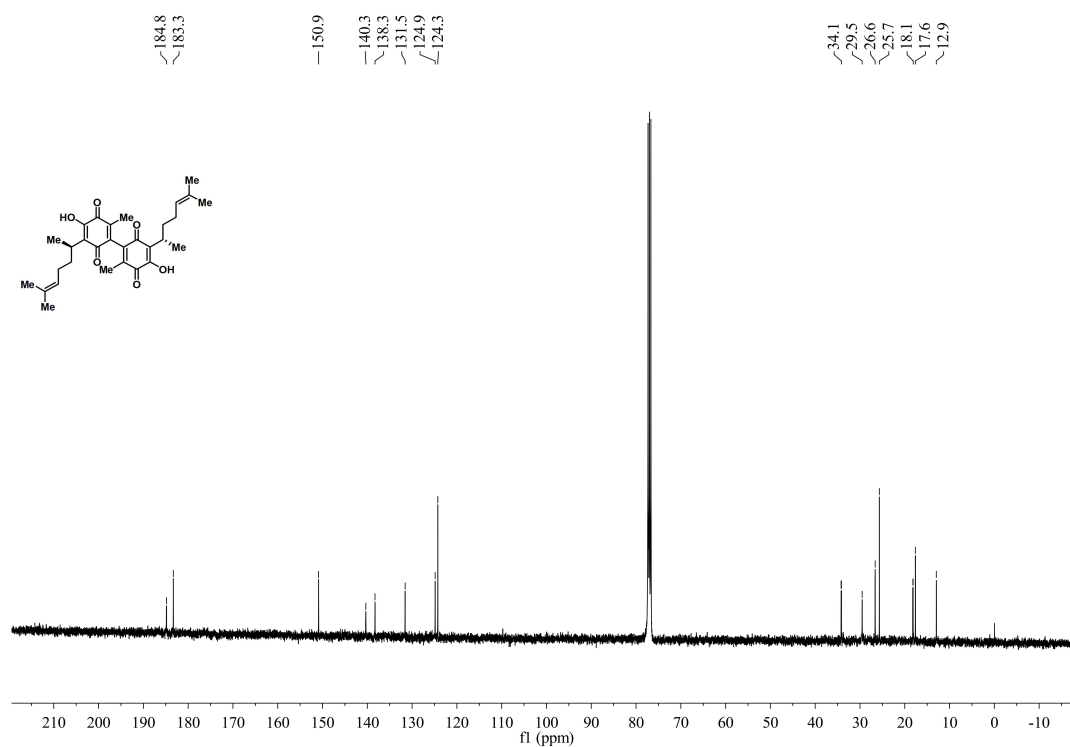
^{13}C NMR Spectrum for unseperatable mixture of ($\pm$)-diperezone (**2**) and *meso*-diperezone (**16**) (150 MHz, CDCl_3 , **16** : **2**=1:1)



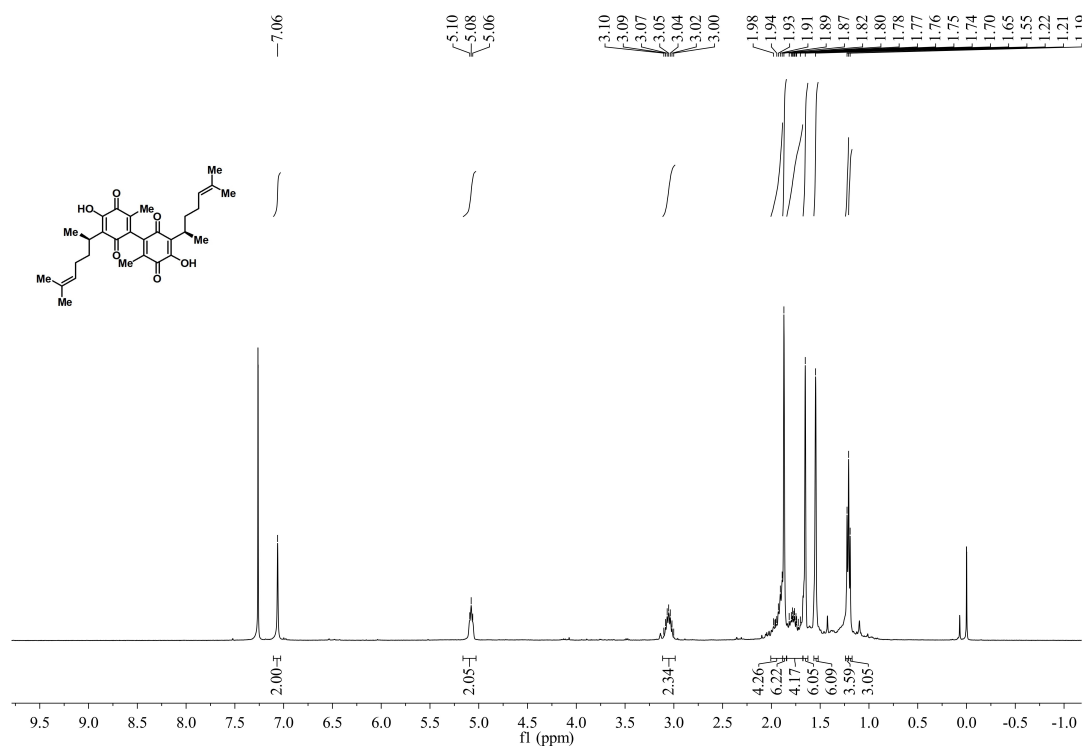
^1H NMR Spectrum for *meso*-diperezone (**16**) (600 MHz, CDCl_3)



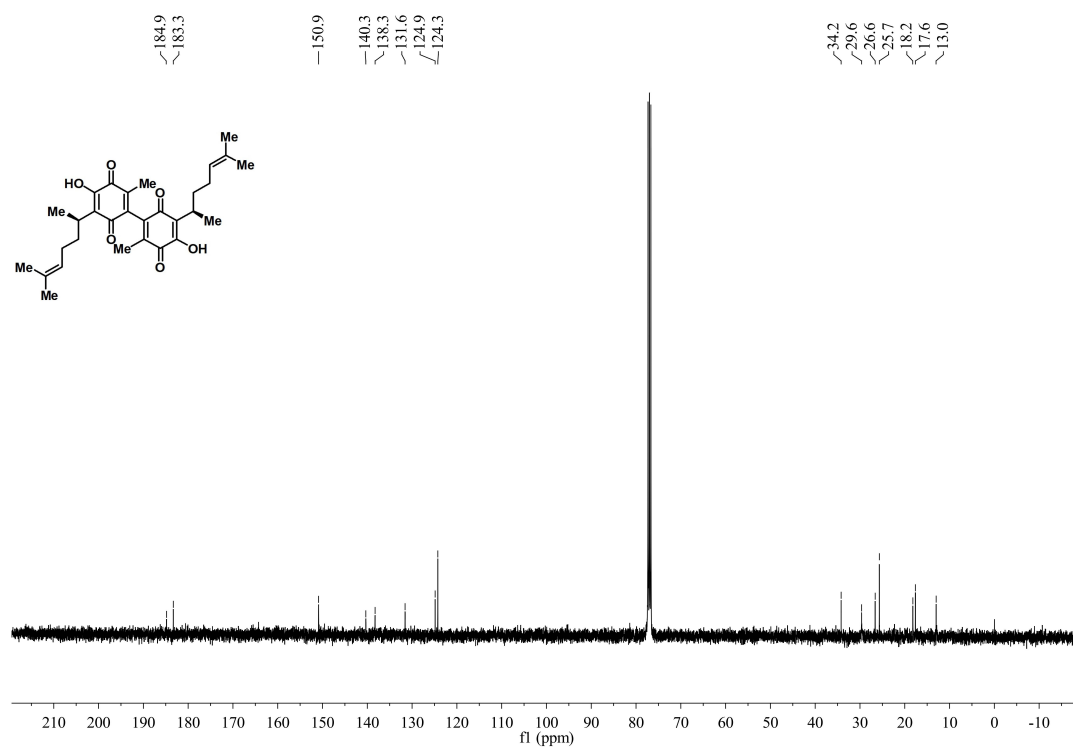
^{13}C NMR Spectrum for *meso*-diperezone (**16**) (150 MHz, CDCl_3)



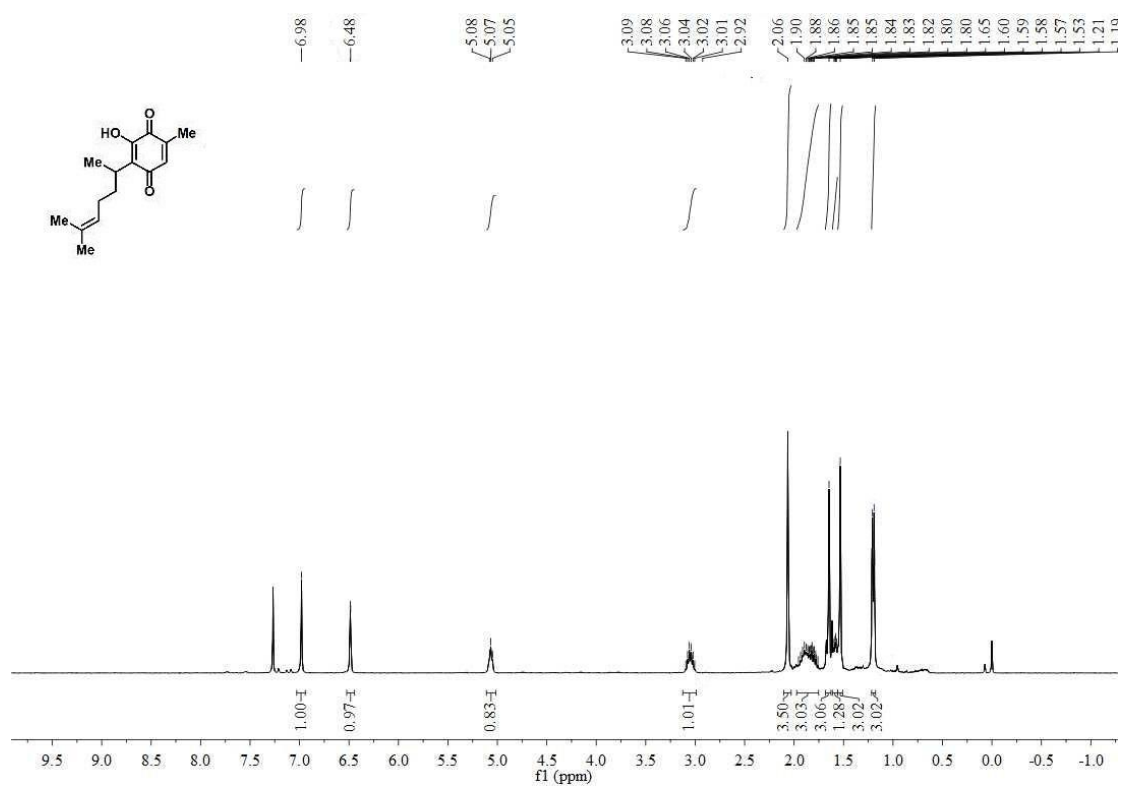
^1H NMR Spectrum for ($\pm$)-diperezone (**2**) (600 MHz, CDCl_3)



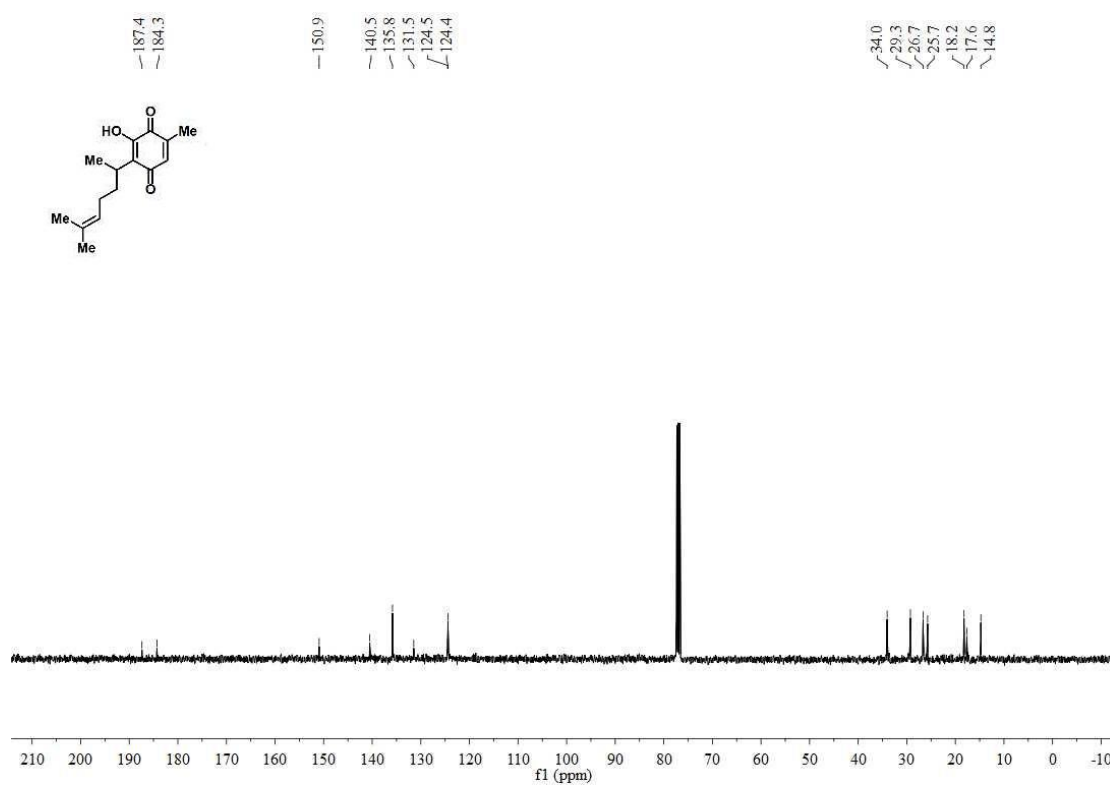
^{13}C NMR Spectrum for ($\pm$)-diperezone (**2**) (150 MHz, CDCl_3)



¹H NMR Spectrum for (±)-perezone (**12**)



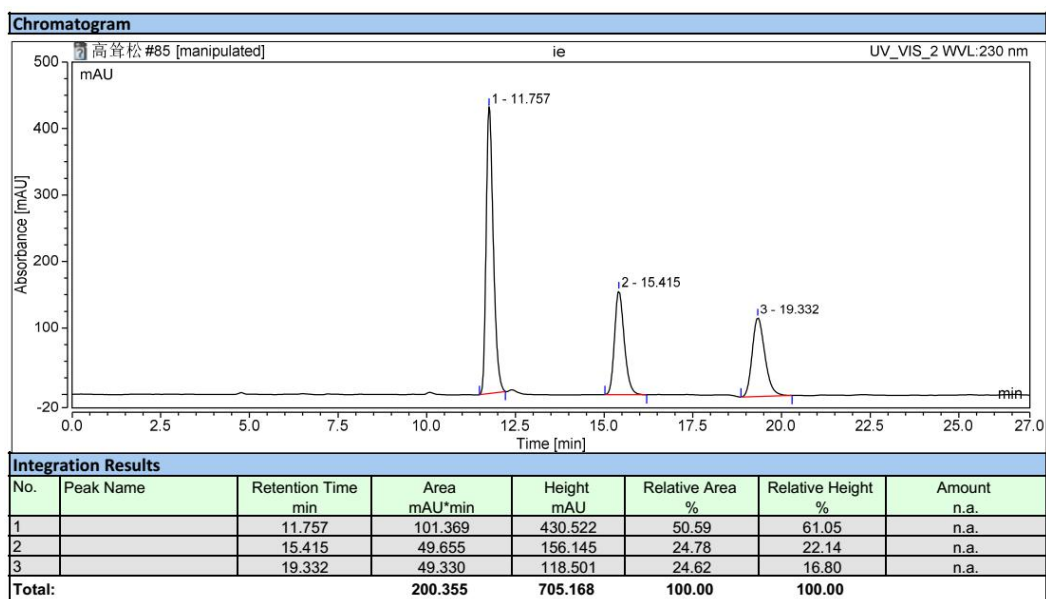
¹³C NMR Spectrum for (±)-perezone (**12**)



2. The HPLC spectrum for the mixture of (±)-diperezone (2) and *meso*-diperezone (16) and the comparison of HPLC spectrum for (±)-diperezone (2) and *meso*-diperezone (16)

The HPLC spectrum for the mixture of (±)-diperezone (2) and *meso*-diperezone (16) .

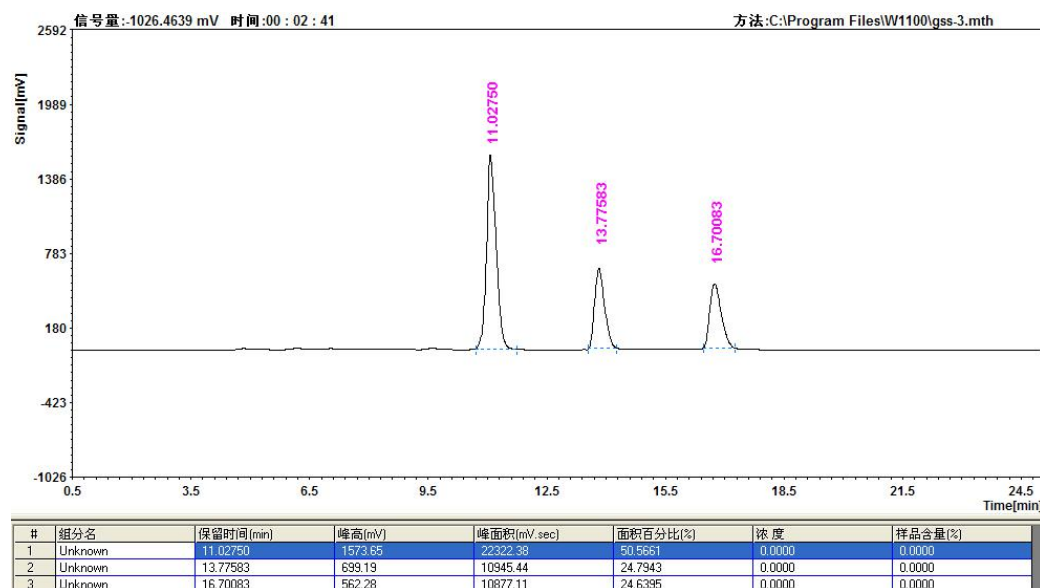
Condition: HPLC (Daicel Chiralpak IE, temperature: 6°C, i-PrOH/hexane=7/93, flow rate 1.0mL/min, λ =230nm), t_1 = 11.8min(major), t_2 = 15.4min(major), t_3 = 19.3min(major).



The comparison of HPLC spectrum for (±)-diperezone (2) and *meso*-diperezone (16).

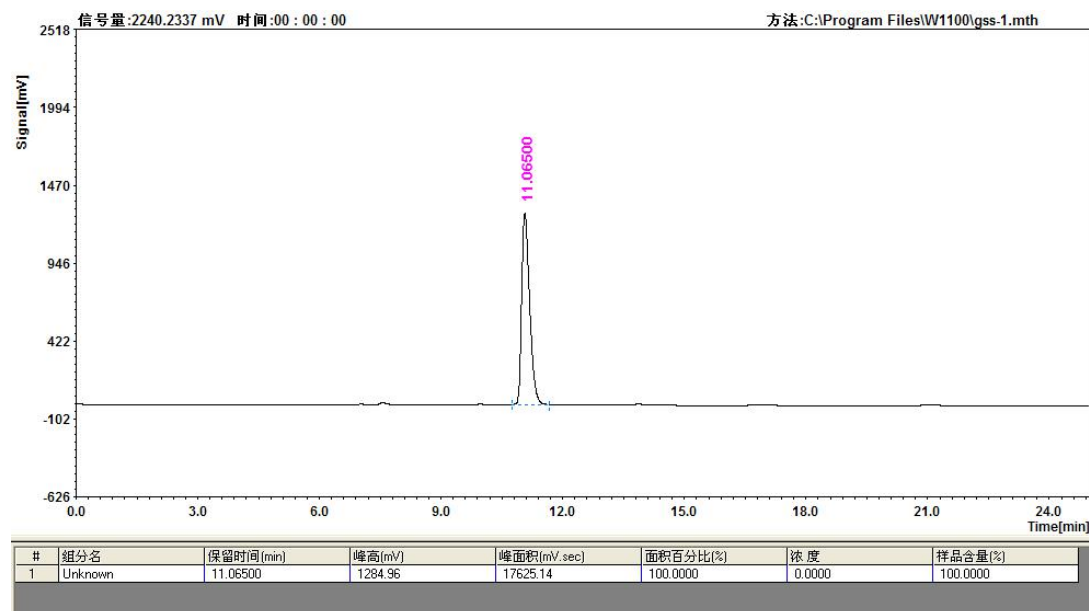
The HPLC spectrum for the mixture of (±)-diperezone (2) and *meso*-diperezone (16).

Condition: HPLC (Daicel Chiralpak IE, temperature: 15°C, i-PrOH/hexane=7/93, flow rate 1.0mL/min, λ =230nm) t_1 = 11.0min(major), t_2 = 13.8min(major), t_3 = 16.7min(major).



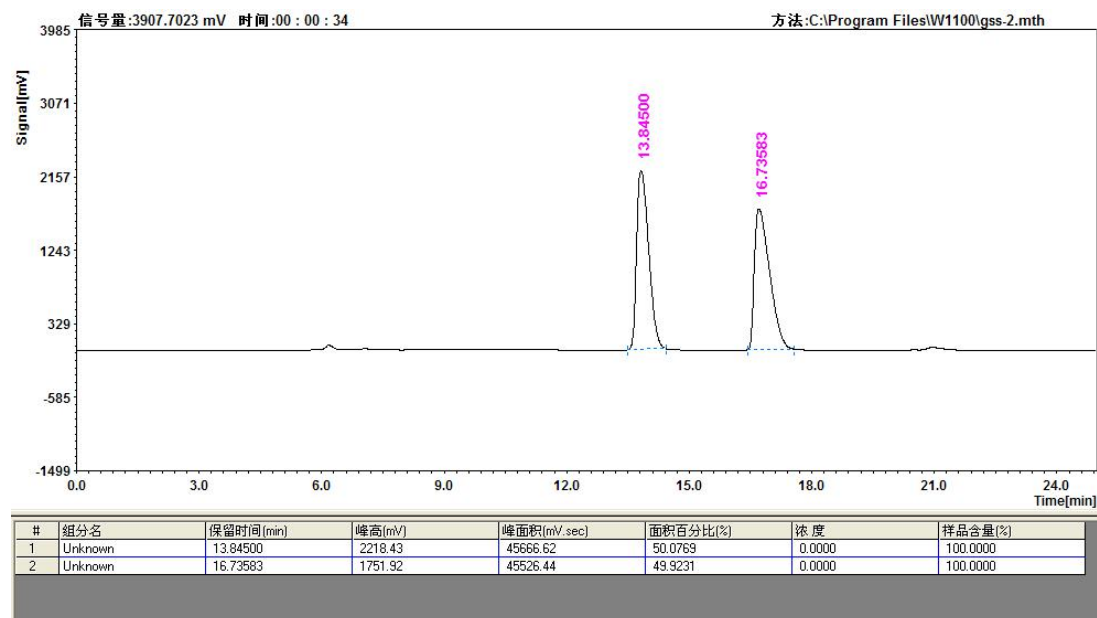
The HPLC spectrum for *meso*-diperezone (**16**).

Condition: HPLC (Daicel Chiralpak IE, temperature: 15°C, i-PrOH/hexane=10/90, flow rate 1.0mL/min, λ =230nm) t_1 = 11.0min(major).

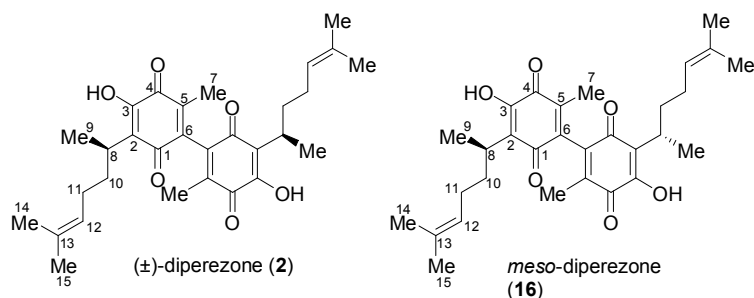


The HPLC spectrum for ($\pm$)-diperezone (**2**).

Condition: HPLC (Daicel Chiralpak IE, temperature: 15°C, i-PrOH/hexane=10/90, flow rate 1.0mL/min, λ =230nm) t_1 = 13.8min(major), t_2 = 16.7min(major).



3. The table for the ^1H and ^{13}C NMR data of ($\pm$)-diperezone (2**), *meso*-diperezone (**16**) by synthesis and the ($\pm$)-diperezone (**2**) in isolation papers.¹**



No.	$^1\text{HNMR}$			$^{13}\text{CNMR}$		
	Synthetic 2	Synthetic 16	Natural 2	Synthetic 2	Synthetic 16	Natural 2
1,1'				184.9	184.8	184.7
2,2'				124.3	124.3	124.8
3,3'				150.9	150.9	150.9
4,4'				183.3	183.3	183.0
5,5'				138.3	138.3	138.1
6,6'				140.3	140.3	140.1
7,7'	1.87 s	1.87 s	1.88 s	13.0	12.9	12.8
8,8'	3.10-3.00 m	3.10-3.00 m	3.07 sextet	29.6	29.5	29.6
9,9'	1.21 d, 1.20 d	1.21 d, 1.20 d	1.21 d	18.2	18.1	18.2
10,10'	1.98-1.89 m	1.98-1.89 m		34.2	34.1	34.2
11,11'	1.82-1.70m	1.81-1.70m		26.6	26.6	26.6
12,12'	5.08 t	5.07 t	5.09 t	124.9	124.9	124.2
13,13'				131.6	131.5	131.1
14,14'	1.55 s	1.54 s	1.56 s	17.6	17.6	17.5
15,15'	1.65 s	1.65 s	1.66 s	25.7	25.7	25.6
3,3'-OH	7.06 s	7.06 s	7.07 s			

Reference:

1 P. Joseph-Nathan, J. D. Hernández, L. U. Román, E. Garcia G., V. Mendoza and S. Mendoza, *Phytochemistry*, 1982, **21**, 1129.