Supporting Information

A Short Synthesis of the Monoterpene Indole Alkaloid (±)-Arbornamine

Yu Zheng, [†,‡] Bei-Bei Yue, [†,‡] Kun Wei,[†] and Yu-Rong Yang*[,†]

[†]State Key Laboratory of Phytochemistry and Plant Resources in West China, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China

[‡]University of Chinese Academy of Sciences, Beijing 100049, China

yangyurong@mail.kib.ac.cn

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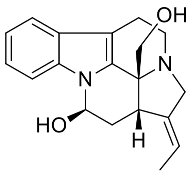
1. NMR data comparison of synthetic and natural arbornamine (1) [1]

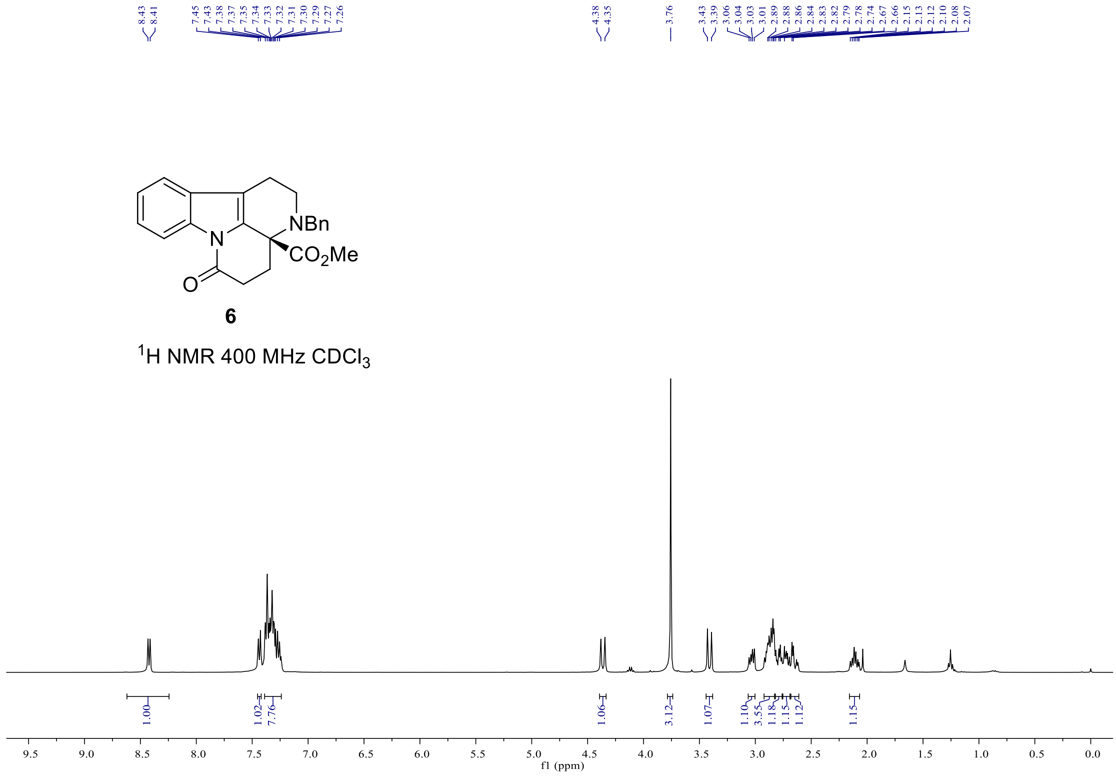


Arbornamine (1)

^{1}H NMR		^{13}C NMR	
Natural[a]	**Synthetic**[b]	**Natural**[c]	**Synthetic**[d]
7.52, d, 8.0, 1H	7.50, d, 8.1, 1H	140.5	140.8
7.44, d, 8.0, 1H	7.43, d, 8.1, 1H	138.0	137.8
7.23, t, 8.0, 1H	7.21, t, 7.8, 1H	134.0	134.3
7.15, t, 8.0, 1H	7.14, t, 7.8, 1H	128.2	128.2
5.86, t, 3.0, 1H	5.82, t, 2.8, 1H	122.2	122.0
5.36, q, 6.0, 1H	5.34, q, 6.2, 1H	120.3	120.3
4.13, d, 11.0, 1H	4.07, d, 10.8, 1H	118.8	118.8
3.80, d, 11.0, 1H	3.73, d, 10.8, 1H	116.8	116.3
3.56, dd, 10.0, 8.0, 1H	3.50, t, 8.9, 1H	110.0	109.9
3.43, m, 1H	3.41 – 3.38, m, 1H	107.8	108.0
3.35, d, 11.0, 1H	3.36, d, 10.8, 1H	76.0	76.1
3.30, d, 11.0, 1H	3.31, d, 10.8, 1H	67.1	67.0
3.21, dd, 15.0, 6.0, 1H	3.18, dd, 14.7, 6.1 1H	64.3	63.8
2.91, ddd, 16.0, 11.0, 6.0, 1H	2.86, ddd, 15.6, 11.1, 6.2, 1H	54.2	54.2
2.68, ddd, 14.0, 8.0, 3.0, 1H	2.66, ddd, 13.5, 8.1, 3.2, 1H	41.4	41.2
2.64, dd, 16.0, 6.0, 1H	2.61, dd, 15.7, 6.1, 1H	37.1	36.9
1.65, d, 6.0, 3H	1.63, d, 6.3, 3H	36.1	36.0
1.09, ddd, 14.0, 10.0, 3.0, 1H	1.05, ddd, 13.5, 10.5, 2.7, 1H	16.6	16.6
		14.1	14.0

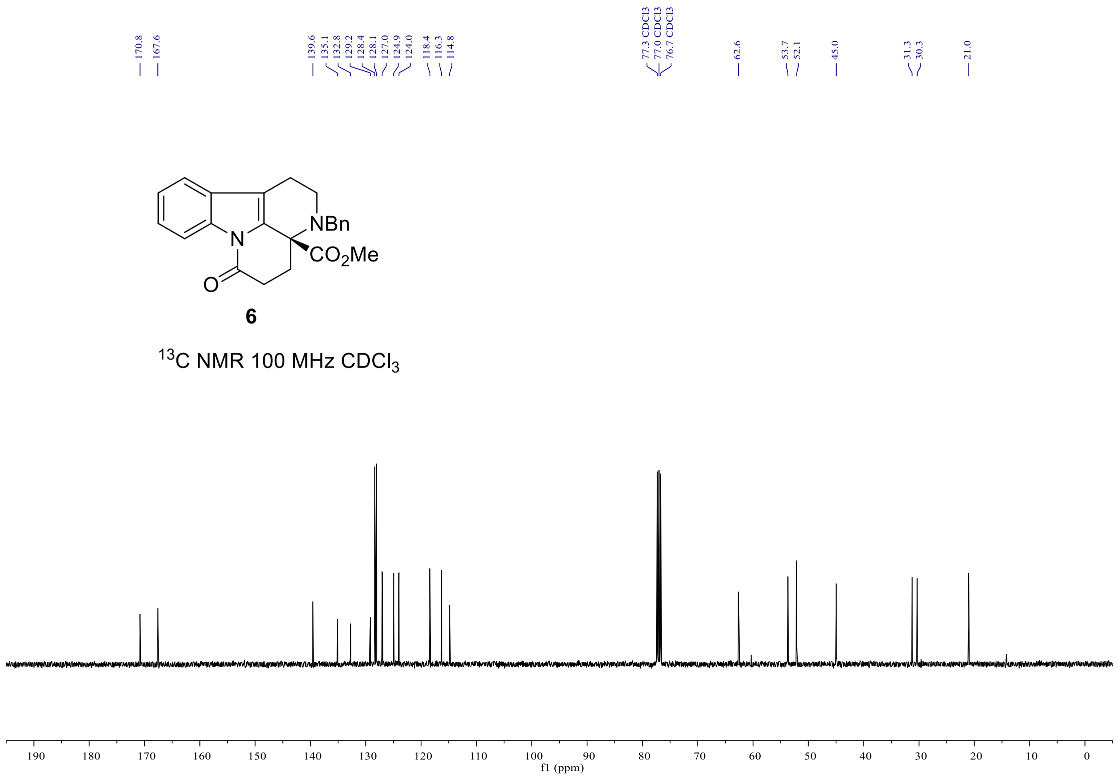
[a] Bruker 600 MHz spectrometers (600 MHz), $CDCl_3$, δ [ppm, mult, J (Hz)]
[b] Bruker AVIII-400 spectrometer (400 MHz), $CDCl_3$, δ [ppm, mult, J (Hz)]
[c] JEOL 400 MHz spectrometer (100 MHz), $CDCl_3$, δ (ppm)
[d] Bruker AVIII-400 spectrometer (100 MHz), $CDCl_3$, δ (ppm)

2. Copies of ^{1}H and ^{13}C NMR spectra



6

^{1}H NMR 400 MHz $CDCl_3$



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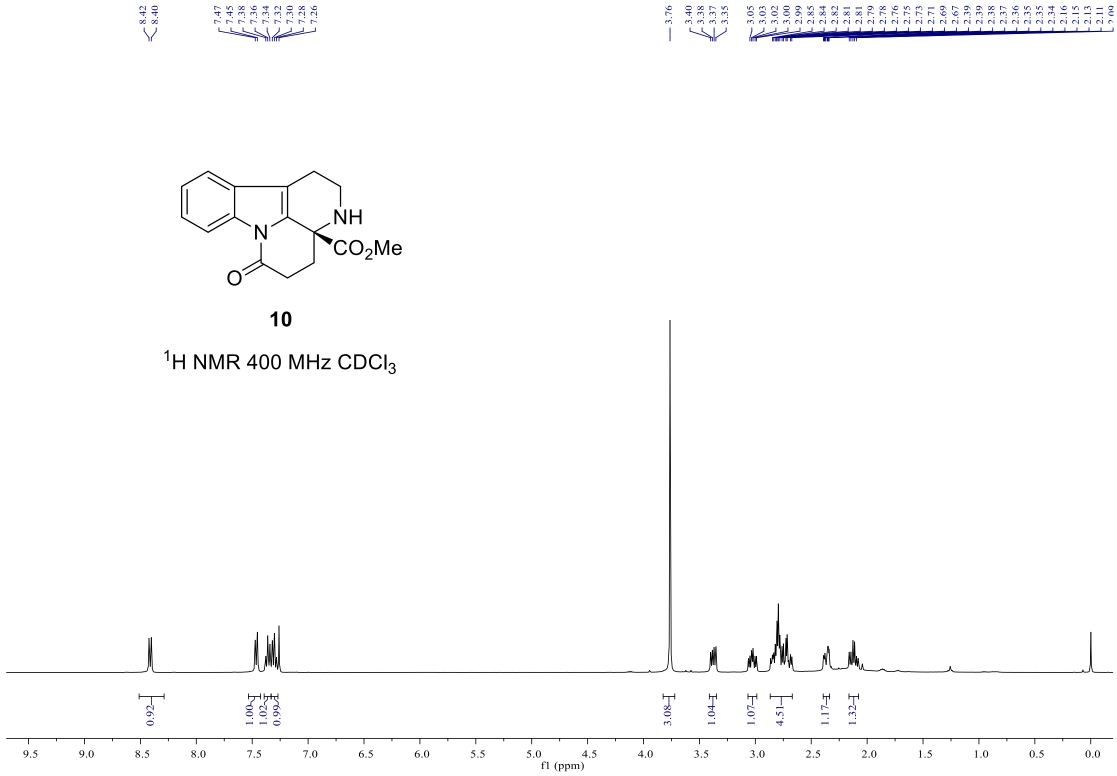
^{13}C NMR 100 MHz $CDCl_3$



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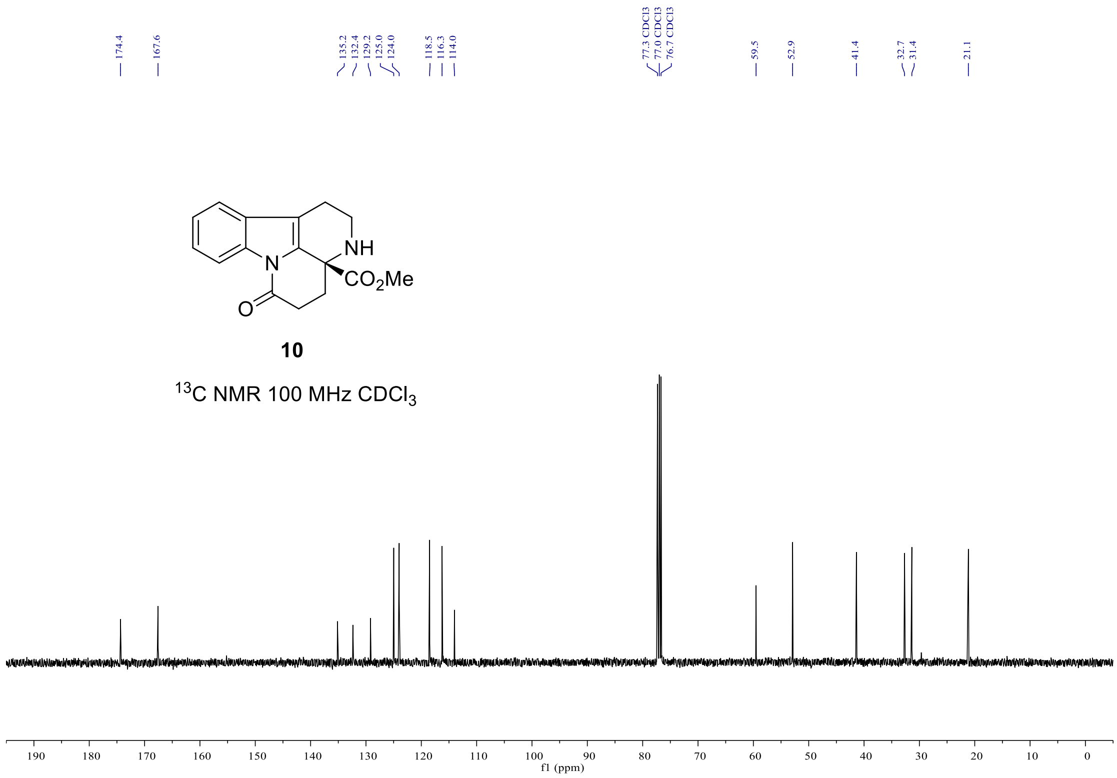
^1H NMR 400 MHz $CDCl_3$



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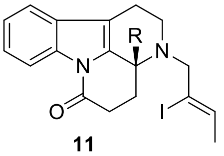
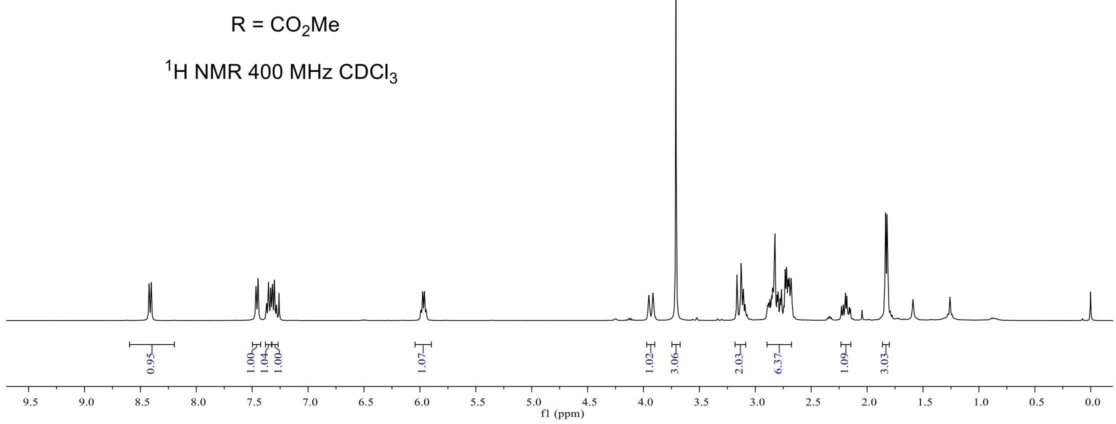
^{13}C NMR 100 MHz $CDCl_3$

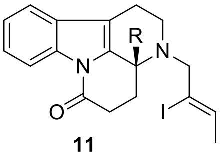


11

R = CO_2Me

^1H NMR 400 MHz $CDCl_3$





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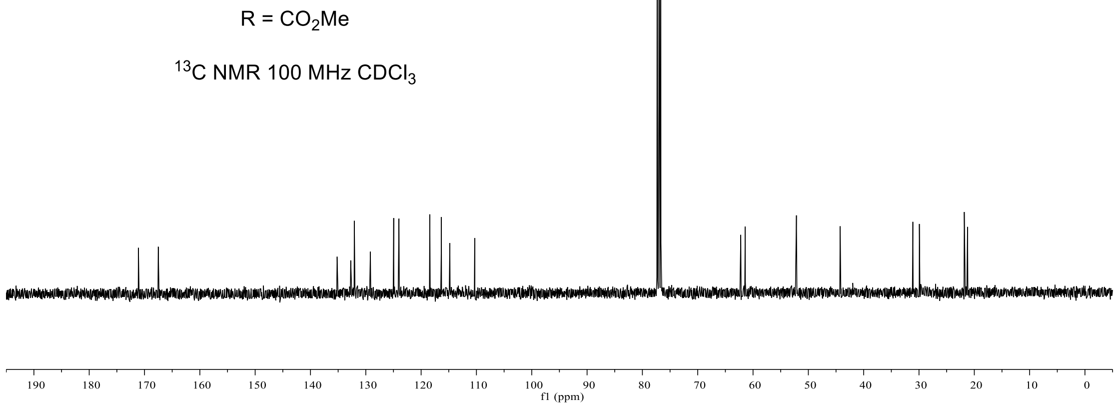
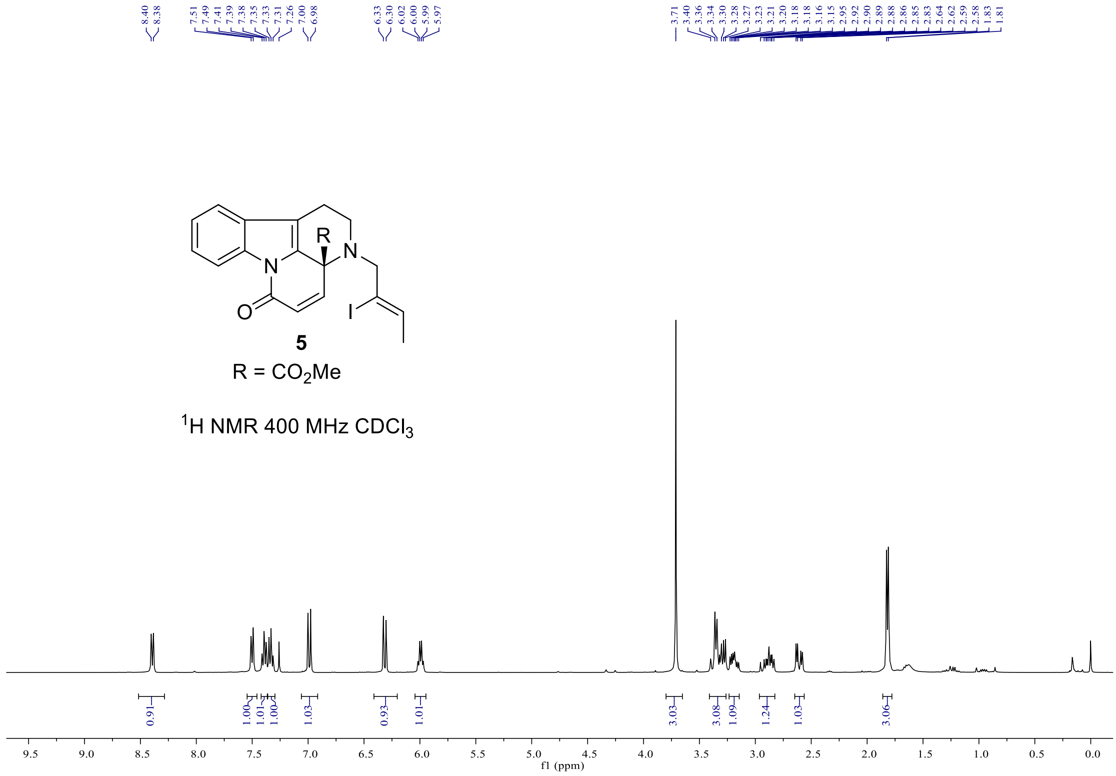
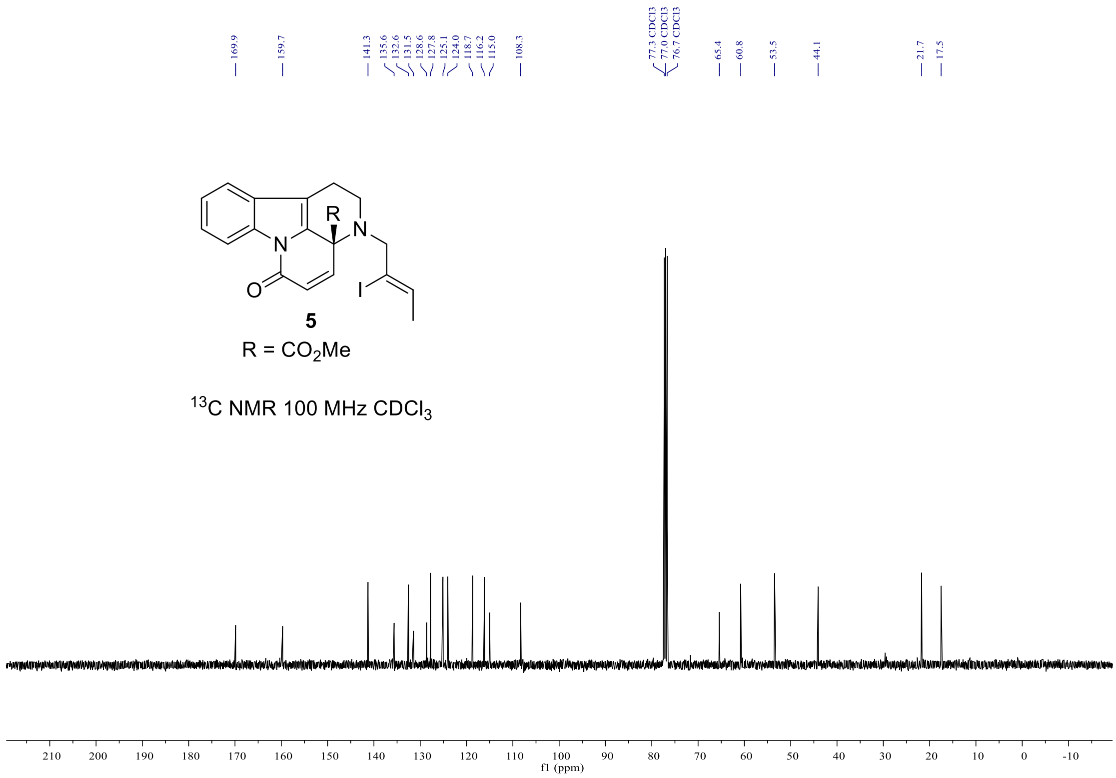
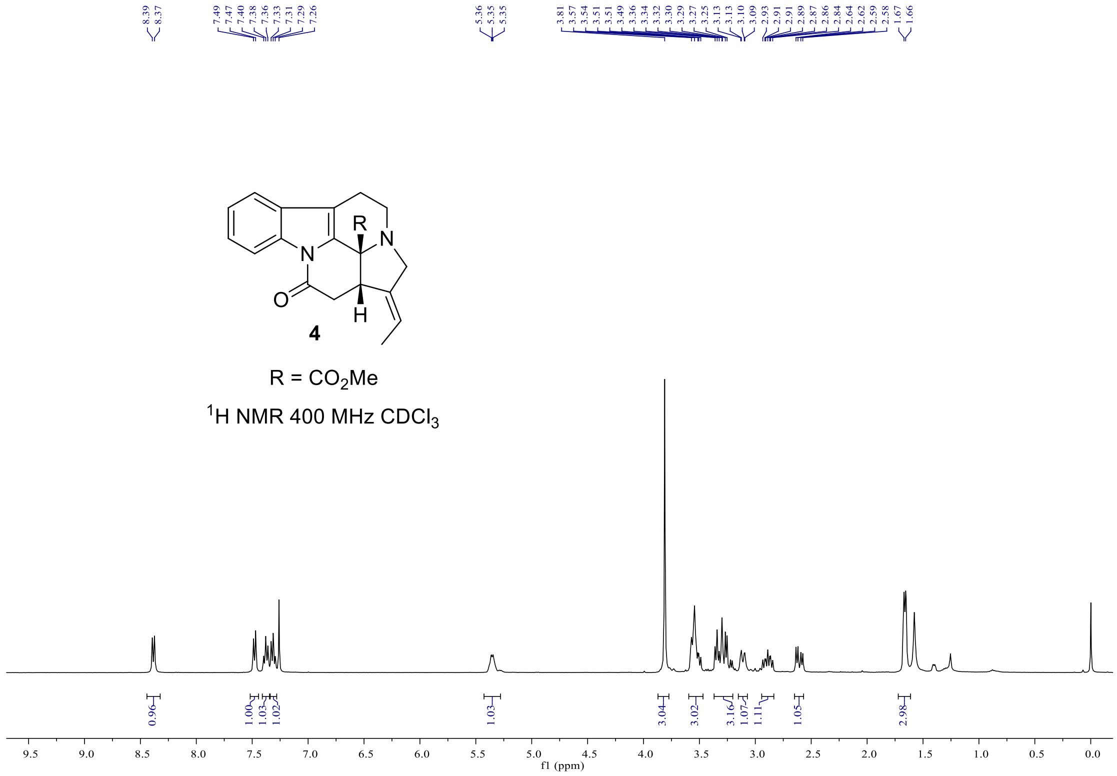
R = CO_2Me

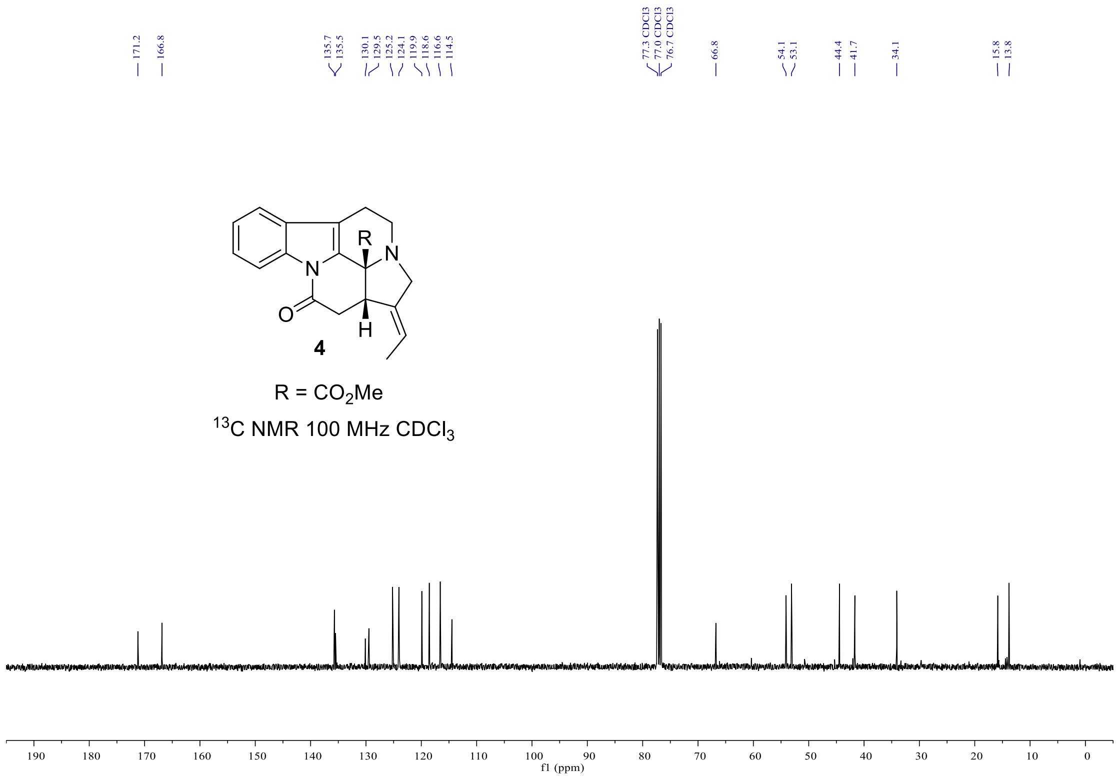
^{13}C NMR 100 MHz $CDCl_3$

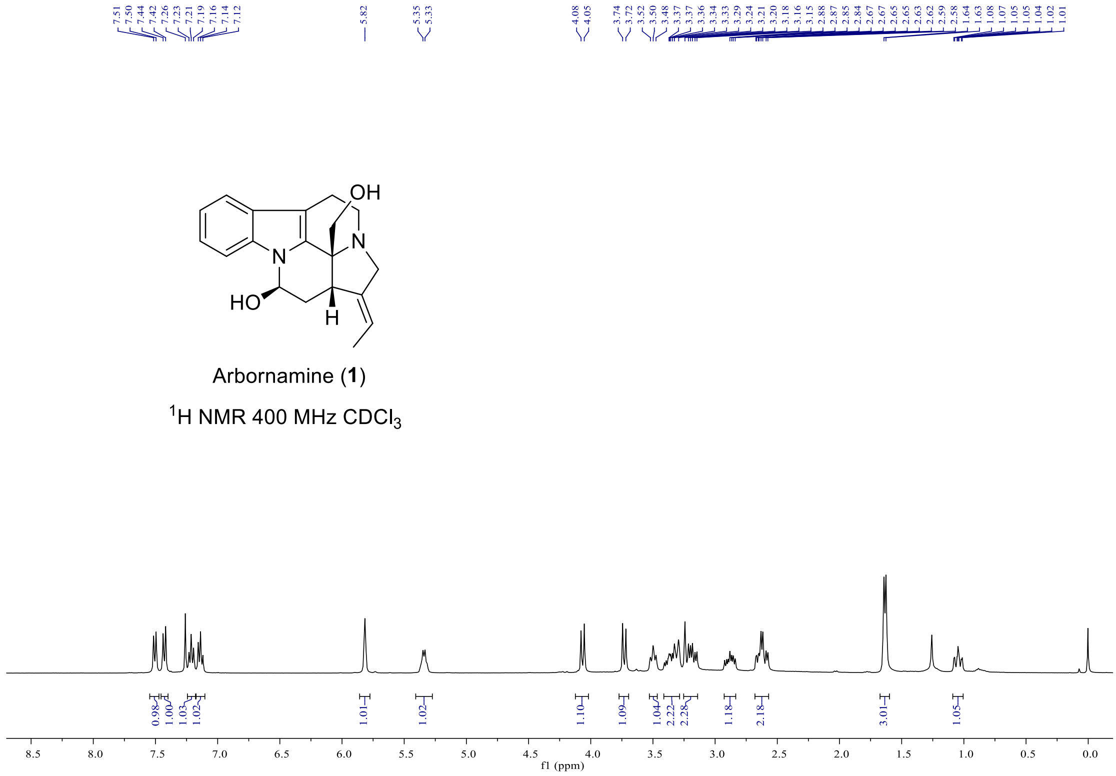



R
N
N
O
I
5
R = CO_2Me
^1H NMR 400 MHz $CDCl_3$
f1 (ppm)


169.9
159.7
141.3
135.6
132.6
131.5
128.6
127.8
125.1
124.0
118.7
116.2
115.0
108.3
77.3 CDCl3
77.0 CDCl3
76.7 CDCl3
65.4
60.8
53.5
44.1
21.7
17.5
R
N
N
O
I
5
R = CO_2Me
^{13}C NMR 100 MHz $CDCl_3$
f1 (ppm)

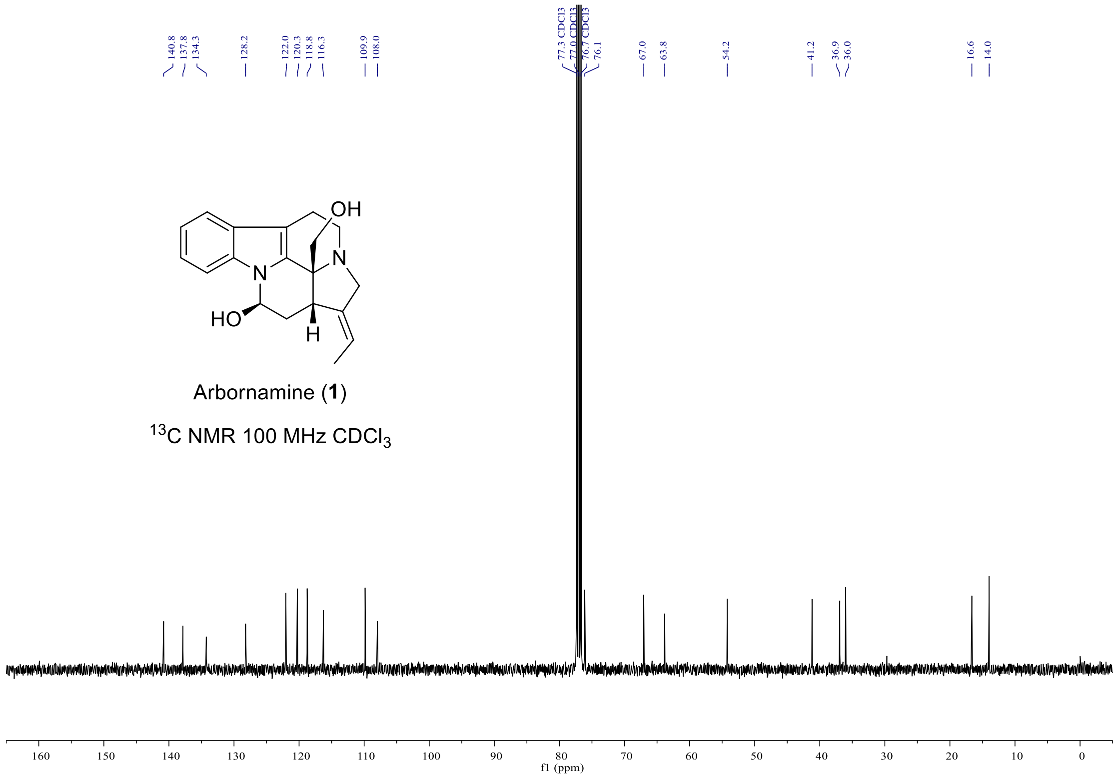

8.39
8.37
7.49
7.47
7.40
7.38
7.36
7.33
7.31
7.29
7.26
5.36
5.35
5.35
3.81
3.57
3.54
3.51
3.51
3.49
3.36
3.34
3.32
3.30
3.29
3.27
3.25
3.13
3.13
3.10
3.09
2.93
2.91
2.91
2.89
2.87
2.86
2.84
2.64
2.62
2.59
2.58
1.67
1.66
R
N
N
O
H
4
R = CO_2Me
^{1}H NMR 400 MHz $CDCl_3$
0.96
1.00
1.03
1.02
1.03
3.04
3.02
3.16
1.07
1.11
1.05
2.98
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
f1 (ppm)


171.2
166.8
135.7
135.5
130.1
129.5
125.2
124.1
119.9
118.6
116.6
114.5
77.3 CDCl3
77.0 CDCl3
76.7 CDCl3
66.8
54.1
53.1
44.4
41.7
34.1
15.8
13.8
R
N
N
O
H
4
R = CO_2Me
^{13}C NMR 100 MHz $CDCl_3$
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)



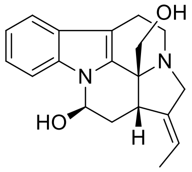
Arbornamine (**1**)

^{1}H NMR 400 MHz $CDCl_3$



Arbornamine (**1**)

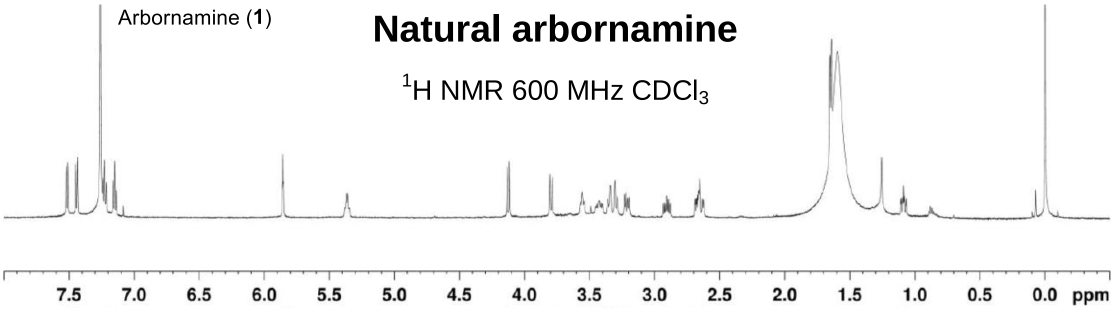
^{13}C NMR 100 MHz $CDCl_3$



Arbornamine (**1**)

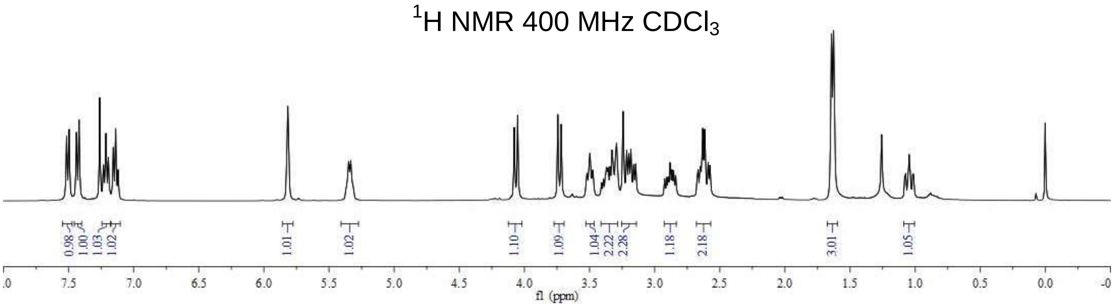
Natural arbornamine

^{1}H NMR 600 MHz $CDCl_3$



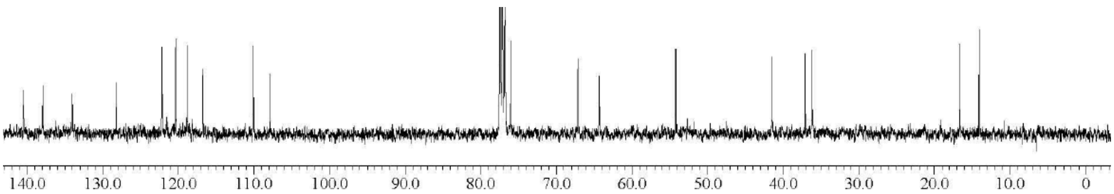
Synthetic arbornamine

^{1}H NMR 400 MHz $CDCl_3$



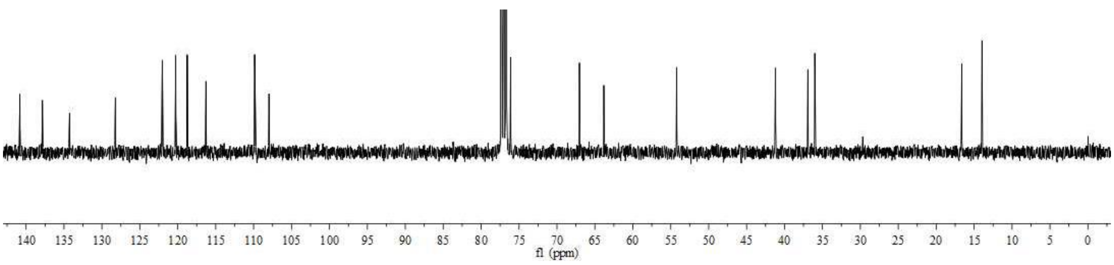
Natural arbornamine

^{13}C NMR 100 MHz $CDCl_3$



Synthetic arbornamine

^{13}C NMR 100 MHz $CDCl_3$



Reference

[1] Wong S. P.; Chong K. W.; Lim K. H.; Lim S. H.; Low Y. Y.; Kam T. S. *Org. Lett*. **2016**, 18, 1618.