Supplementary Data

Abiesatrines A–J: anti-inflammatory and anti-tumor triterpenoids from *Abies georgei* Orr

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Legend for figures

Fig. **S1**. ^{13}C NMR spectrum of abiesatrine A (**1**) in $CDCl_3$.

Fig. **S2**. ^{1}H NMR spectrum of abiesatrine A (**1**) in $CDCl_3$.

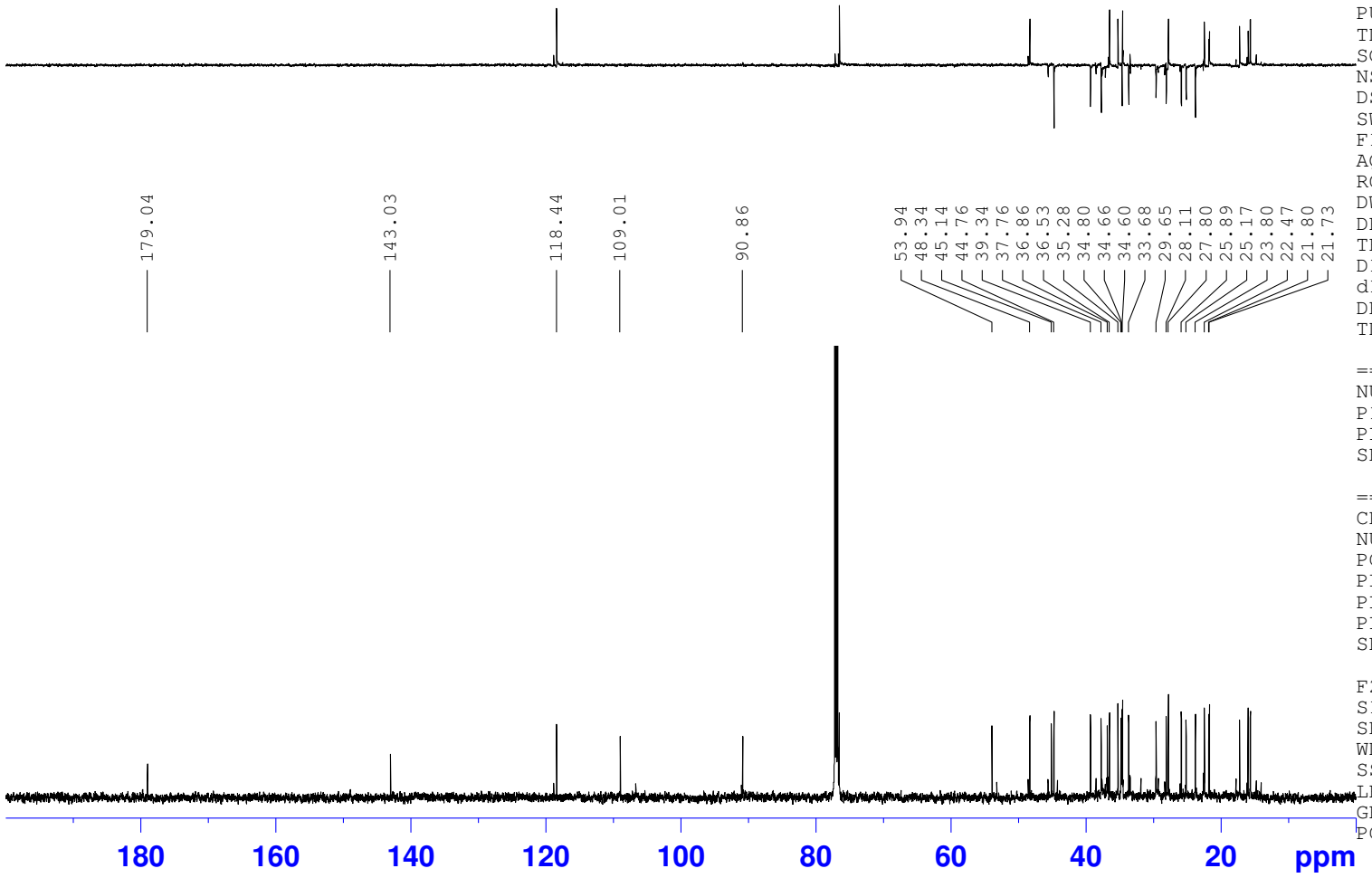
Fig. **S3**. HSQC NMR spectrum of abiesatrine A (**1**) in $CDCl_3$.

Fig. **S4**.^{1}H–^{1}H COSY NMR spectrum of abiesadine A (**1**) in $CDCl_3$.

Fig. **S5**. HMBC NMR spectrum of abiesatrine A (**1**) in $CDCl_3$.

Fig. **S6**. NOESY NMR spectrum of abiesatrine A (**1**) in $CDCl_3$.

Fig. S1. 13C NMR spectrum of abiesatrine A (1) in CDCl3.



Current Data Parameters
NAME zhangwd-yagc2-39
EXPNO 2
PROCNO 1

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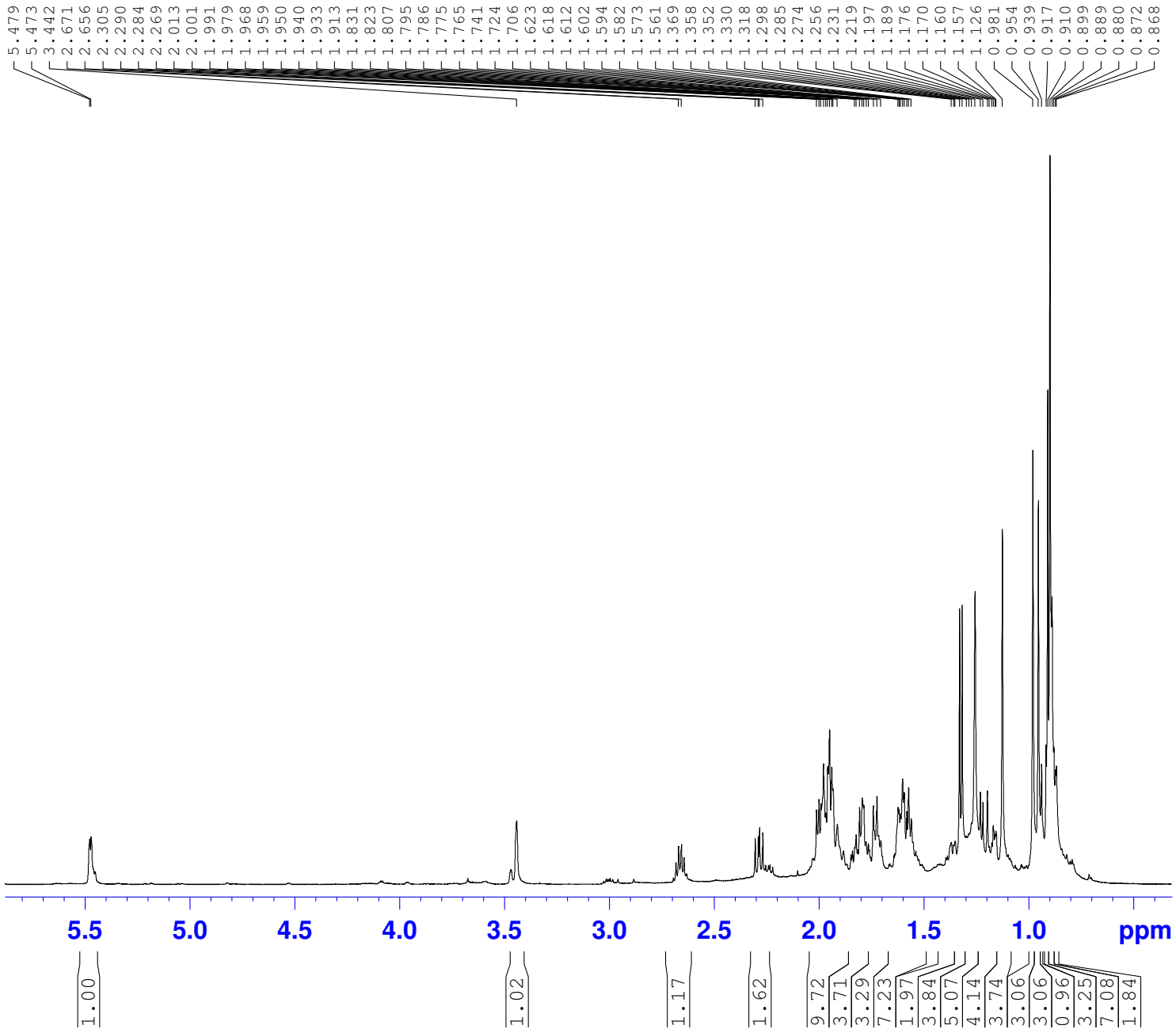
Time 14.47
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 128
DS 2
SWH 45454.547 Hz
FIDRES 0.693581 Hz
AQ 0.7209460 sec
RG 32768
DW 11.000 usec
DE 6.00 usec
TE 301.2 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
TD0 1

======== CHANNEL f1 ========
NUC1 13C
P1 8.50 usec
PL1 2.00 dB
SFO1 150.9178988 MHz

======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -1.00 dB
PL12 14.00 dB
PL13 14.00 dB
SFO2 600.1324005 MHz

F2 - Processing parameters
SI 65536
SF 150.9028138 MHz
WDW EM
SSB 0
LB 3.00 Hz
GB 0
PC 1.40

Fig. S2. 1H NMR spectrum of abiesatrine A (1) in CDCl3.

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PROCNO                   1

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PULPROG             zg30
TD                 49152
SOLVENT            CDCl3
NS                    16
DS                     2
SWH             9014.423 Hz
FIDRES          0.183399 Hz
AQ             2.7263477 sec
RG                    16
DW                55.467 usec
DE                 6.00 usec
TE                300.0 K
D1           2.00000000 sec
TD0                    1

======== CHANNEL f1 ========
NUC1                  1H
P1                13.70 usec
PL1               -1.00 dB
SFO1        600.1325750 MHz

F2 - Processing parameters
SI                 65536
SF          600.1300022 MHz
WDW                   EM
SSB                    0
LB                0.00 Hz
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PC                1.00
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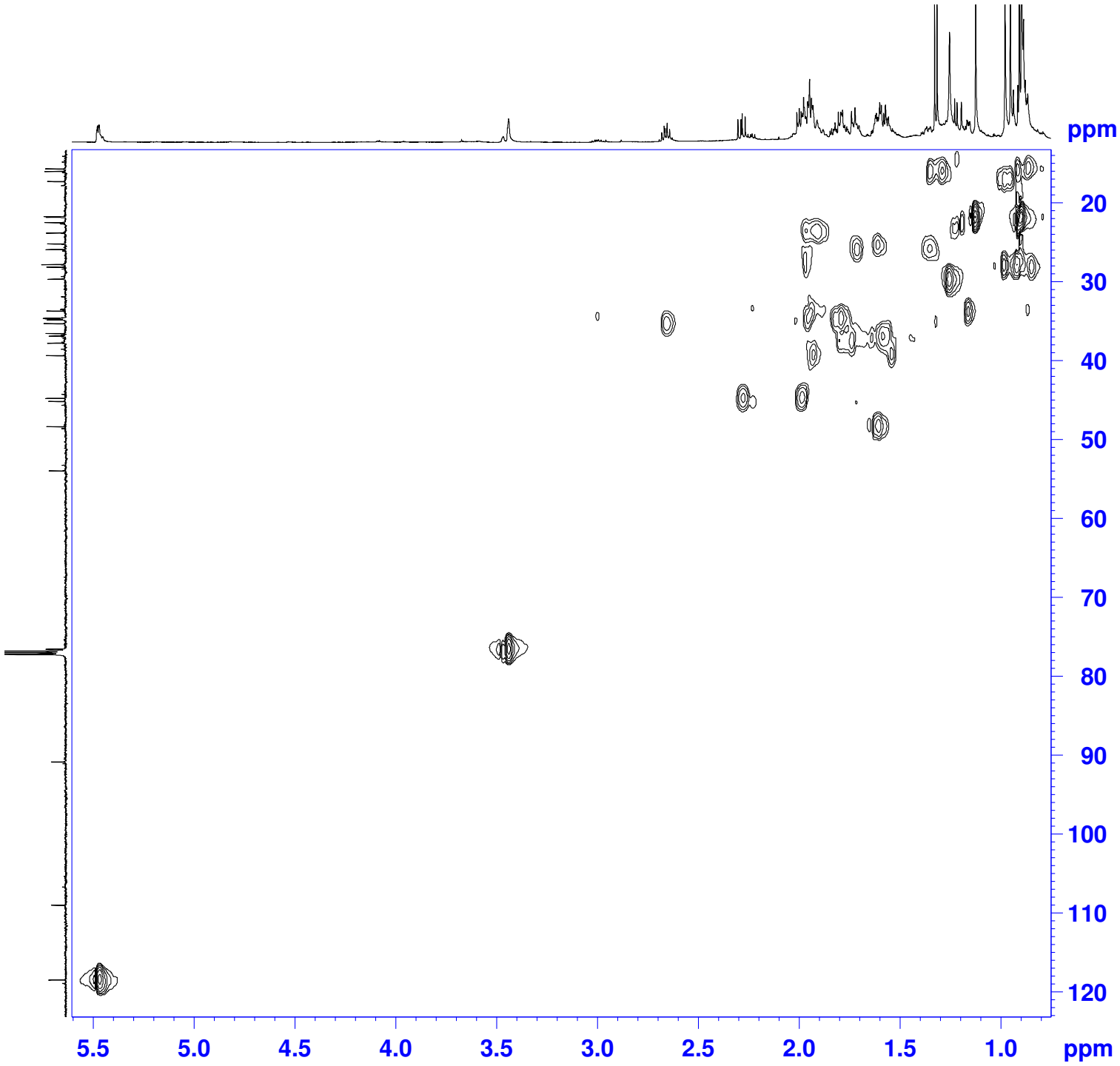
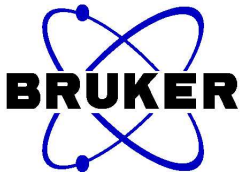
Fig. S3. HSQC NMR spectrum of abiesatrine A (1) in CDCl3.



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EXPNO                    5
PROCNO                   1

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Time              17.03
INSTRUM           spect
PROBHD   5 mm PABBO BB-
PULPROG     hsqcetgpsi2
TD                 1024
SOLVENT            CDCl3
NS                    8
DS                   16
SWH            4795.396 Hz
FIDRES         4.683004 Hz
AQ             0.1068191 sec
RG                 2050
DW              104.267 usec
DE                6.00 usec
TE                300.1 K
CNST2        145.0000000
d0            0.00000300 sec
D1            1.50000000 sec
d4            0.00172414 sec
d11           0.03000000 sec
d13           0.00000400 sec
D16           0.00010000 sec
D24           0.00086207 sec
DELTA         0.00118340 sec
DELTA1        0.00110800 sec
DELTA2        0.00026207 sec
DELTA3        0.00062414 sec
IN0           0.00001840 sec
ST1CNT               128
ZGOPTNS

======== CHANNEL f1 ========
NUC1                 1H
P1                13.70 usec
p2                27.40 usec
P28                1.00 usec
PL1               -1.00 dB
SFO1         600.1325750 MHz

======== CHANNEL f2 ========
CPDPRG2             garp
NUC2                13C
P3                 9.80 usec
p4                19.60 usec
PCPD2             75.00 usec
PL2                2.00 dB
PL12              19.60 dB
SFO2         150.9178988 MHz

====== GRADIENT CHANNEL =====
GPNAM1          SINE.100
GPNAM2          SINE.100
GPNAM3          SINE.100
GPNAM4          SINE.100
GPZ1               80.00 %
GPZ2               20.10 %
GPZ3               11.00 %
GPZ4               -5.00 %
P16              1000.00 usec
P19               500.00 usec

F1 - Acquisition parameters
ND0                   2
TD                  160
SFO1          150.9179 MHz
FIDRES        169.836960 Hz
SW             180.058 ppm
FnMODE    Echo-Antiecho

F2 - Processing parameters
SI                 2048
SF           600.1300020 MHz
WDW                QSINE
SSB                   2
LB                 0.00 Hz
GB                    0
PC                 1.40

F1 - Processing parameters
SI                 1024
MC2        echo-antiecho
SF           150.9028138 MHz
WDW                QSINE
SSB                   0
LB                 0.00 Hz
GB                    0
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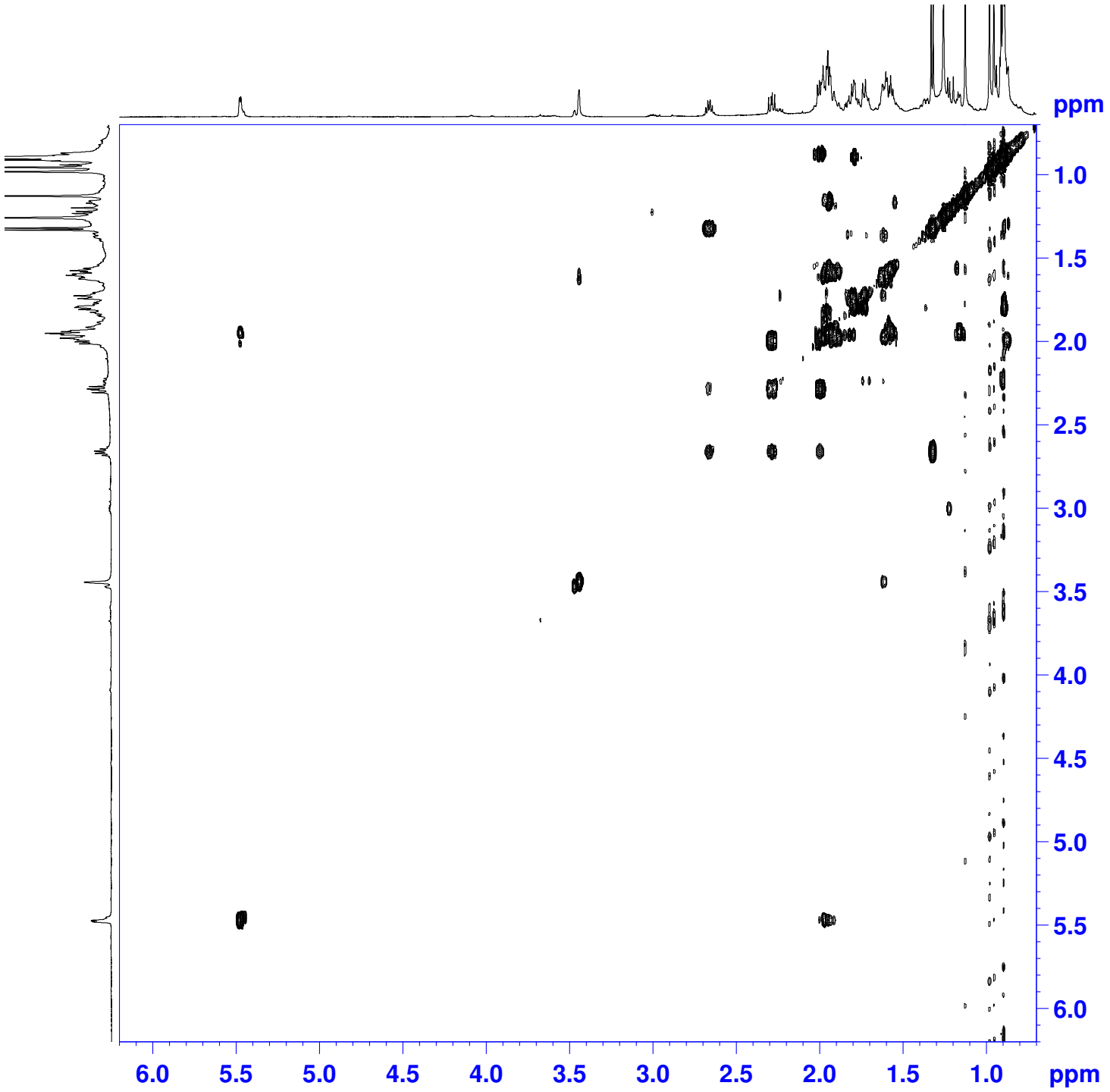
Fig S4.1H-1H COSY NMR spectrum of abiesadine A (1) in CDCl3.



BRUKER

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Current Data Parameters
NAME      zhangwd-yagc2-39
EXPNO                    4
PROCNO                   1

F2 - Acquisition Parameters
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Time                 16.52
INSTRUM              spect
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PULPROG          cosygpqf
TD                   2048
SOLVENT              CDCl3
NS                       1
DS                      16
SWH              4795.396 Hz
FIDRES           2.341502 Hz
AQ               0.2135881 sec
RG                     128
DW                104.267 usec
DE                  6.00 usec
TE                 300.0 K
d0              0.00000300 sec
D1              2.00000000 sec
d13             0.00000400 sec
D16             0.00010000 sec
IN0             0.00020855 sec

======== CHANNEL f1 ========
NUC1                    1H
P0                  13.70 usec
P1                  13.70 usec
PL1                 -1.00 dB
SFO1          600.1325750 MHz

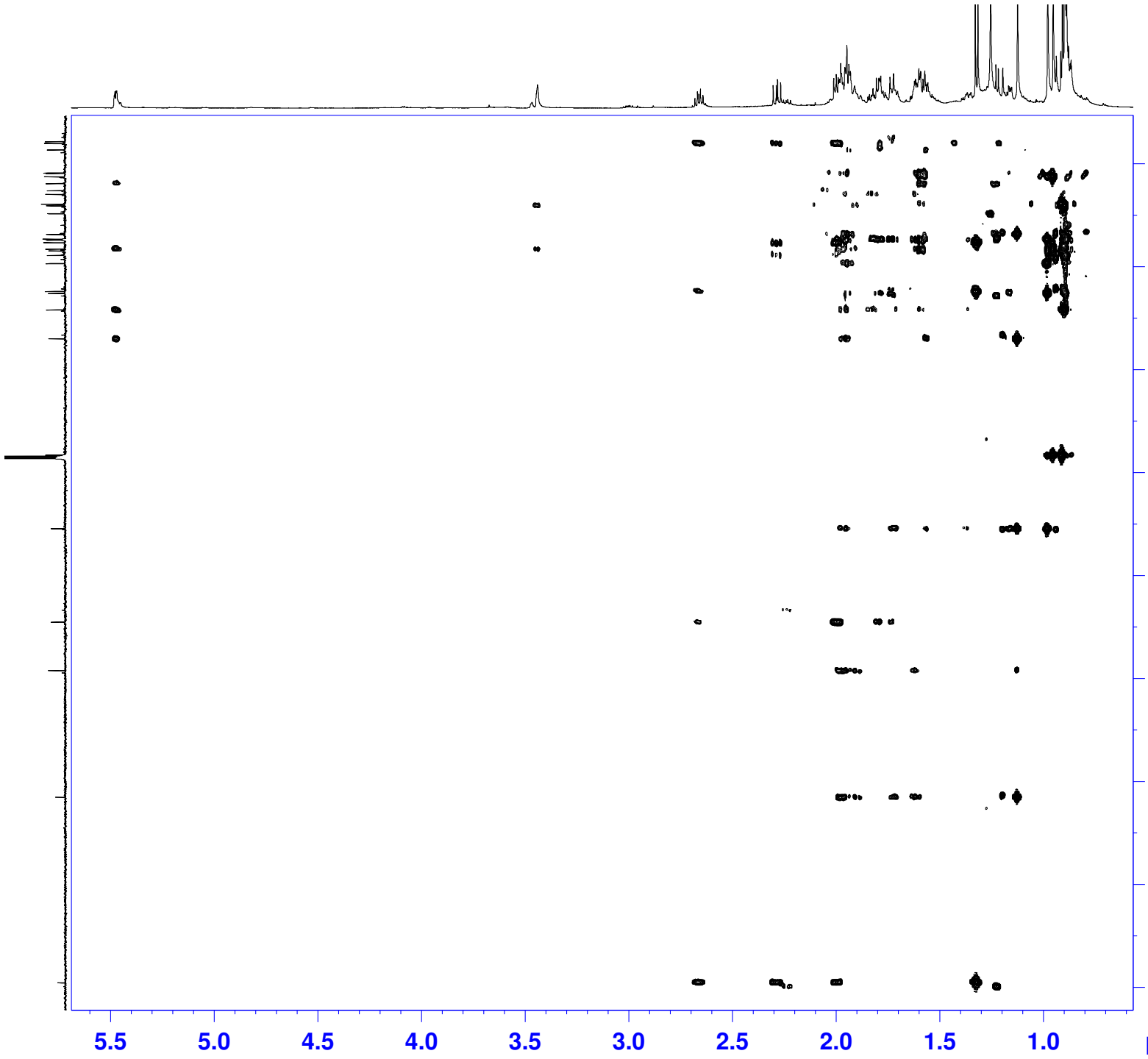
====== GRADIENT CHANNEL =====
GPNAM1           SINE.100
GPNAM2           SINE.100
GPZ1                10.00 %
GPZ2                10.00 %
P16               1000.00 usec

F1 - Acquisition parameters
ND0                      1
TD                     256
SFO1             600.1326 MHz
FIDRES          18.730520 Hz
SW                  7.990 ppm
FnMODE                 QF

F2 - Processing parameters
SI                    2048
SF            600.1300020 MHz
WDW                 QSINE
SSB                     0
LB                   0.00 Hz
GB                      0
PC                   1.40

F1 - Processing parameters
SI                    2048
MC2                     QF
SF            600.1300020 MHz
WDW                 QSINE
SSB                     0
LB                   0.00 Hz
GB                      0
```

Fig. S5. HMBC NMR spectrum of abiesatrine A (1) in CDCl3.



BRUKER

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Current Data Parameters
NAME      zhangwd-yagc2-39
EXPNO                    6
PROCNO                   1

F2 - Acquisition Parameters
Date_           20070902
Time               17.39
INSTRUM            spect
PROBHD   5 mm PABBO BB-
PULPROG    hmbcgplpndqf
TD                 2048
SOLVENT            CDC13
NS                     8
DS                    16
SWH             4795.396 Hz
FIDRES          2.341502 Hz
AQ            0.2135881 sec
RG                  2050
DW               104.267 usec
DE                 6.00 usec
TE                300.0 K
CNST2        145.0000000
CNST13         8.0000000
d0           0.00000300 sec
D1           1.50000000 sec
d2           0.00344828 sec
d6           0.06250000 sec
D16          0.00010000 sec
IN0          0.00001840 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                 13.70 usec
p2                 27.40 usec
PL1                -1.00 dB
SFO1         600.1325750 MHz

======== CHANNEL f2 ========
NUC2                  13C
P3                 9.80 usec
PL2                2.00 dB
SFO2         150.9178988 MHz

====== GRADIENT CHANNEL =====
GPNAM1          SINE.100
GPNAM2          SINE.100
GPNAM3          SINE.100
GPZ1               50.00 %
GPZ2               30.00 %
GPZ3               40.10 %
P16              1000.00 usec

F1 - Acquisition parameters
ND0                    2
TD                   192
SFO1           150.9179 MHz
FIDRES       141.530792 Hz
SW             180.058 ppm
FnMODE                 QF

F2 - Processing parameters
SI                  2048
SF           600.1300020 MHz
WDW                 SINE
SSB                    2
LB                  0.00 Hz
GB                     0
PC                  1.40

F1 - Processing parameters
SI                  1024
MC2                   QF
SF           150.9028138 MHz
WDW                 SINE
SSB                    0
LB                  0.00 Hz
GB                     0
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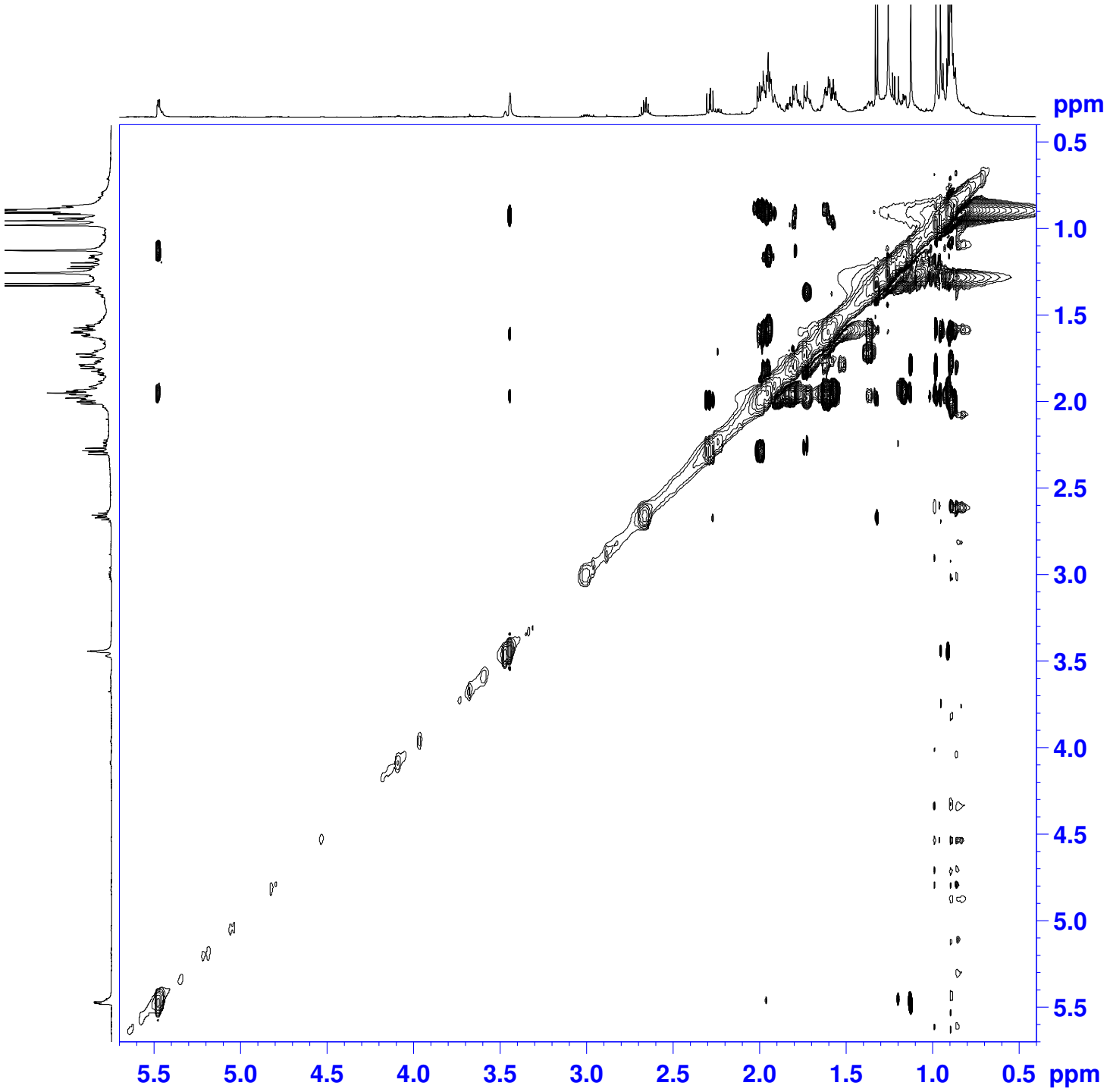
Fig. S6. NOESY NMR spectrum of abiesatrine A (1) in CDCl3.



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Current Data Parameters
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EXPNO                    7
PROCNO                   1

F2 - Acquisition Parameters
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Time                 18.26
INSTRUM              spect
PROBHD   5 mm PABBO BB-
PULPROG           noesyph
TD                   2048
SOLVENT              CDCl3
NS                      8
DS                     16
SWH               4795.396 Hz
FIDRES            2.341502 Hz
AQ                0.2135881 sec
RG                      64
DW                 104.267 usec
DE                   6.00 usec
TE                  300.0 K
d0              0.00008683 sec
D1              2.00000000 sec
D8              0.80000001 sec
IN0             0.00020855 sec
ST1CNT                 128

======== CHANNEL f1 ========
NUC1                    1H
P1                   13.70 usec
PL1                  -1.00 dB
SFO1          600.1325750 MHz

F1 - Acquisition parameters
ND0                      1
TD                     192
SFO1             600.1326 MHz
FIDRES           24.974028 Hz
SW                   7.990 ppm
FnMODE         States-TPPI

F2 - Processing parameters
SI                    2048
SF            600.1300020 MHz
WDW                  QSINE
SSB                      2
LB                    0.00 Hz
GB                       0
PC                    1.00

F1 - Processing parameters
SI                    2048
MC2            States-TPPI
SF            600.1300020 MHz
WDW                  QSINE
SSB                      2
LB                    0.00 Hz
GB                       0
```

Table S1 ^{1}H NMR spectroscopic data for compounds **11**, **13**–**15**, and **17**–**20** (*J* in Hz within parentheses)

No.	**11** [a]	**13** [b]	**14** [b]	**15** [a]	**17** [a]	**18** [b]	**19** [b]	**20** [b]
1	1.61 m	2.05 m; 1.38 m	2.04 (dd, 12.9, 2.1); 1.99 m	2.45 m; 1.60 m	2.48 m; 1.75 m	1.94 m; 0.89 m	1.94 m; 0.88 m	1.69 m; 1.62 m
2	1.61 m; 1.57 m	2.50 m; 2.26 m	1.95 m; 1.56 m	2.51 m; 1.62 m	2.41 m; 1.89 m	3.78 m	3.69 (dt, 9.6, 4.8)	1.55 m; 0.97
3	3.22 (dd, 10.8,4.8)		3.38 (t, 1.8)			3.05 (d, 9.0)	3.35 (d, 9.6)	3.15 (dd, 11.7, 4.5)
5	1.25 m	2.48 (dd, 11.4, 5.7)	1.46 m	1.46 m	1.48 m	0.94 m	1.27 m	0.74 (d, 11.7)
6	1.54 m; 0.79 m	1.48 m	1.92 m	1.92 m; 0.98 m	1.93 m; 1.81 m	1.61 m; 1.37 m	1.44 m; 1.33 m	1.53 m; 1.37 m
7	1.58 m; 1.03 m	1.32 m	5.66 (d, 6.0)	5.67 (dt, 7.5, 2.7)	5.69 (dt, 7.5, 2.8)	1.37 m; 1.31 m	1.64 m; 1.28 m	1.52 m; 1.32 m
8	1.49 (d, 4.5)	1.60 m						
9			1.42 m	2.25 m	2.27 m	1.59 m	1.63 m	1.55 m
11	1.31 m	2.17 m	2.21 m	1.67 m	1.65 m	1.93 m	1.95 m	1.92 (dd, 9.0, 3.6)
	1.06 m	1.32 m	1.83 (dt, 13.2, 2.4)	1.20 m	0.95 m	1.02 m	1.01 m	1.08(brd, 13.8)
12	1.27 m	1.70 m	5.56 (dd, 8.4, 2.4)	2.52 m; 1.65 m	2.52 m; 1.67 m	5.23 (t, 3.3)	5.23 (t, 3.6)	5.22 (t, 3.6)
15	1.53 m; 1.27 m	1.33 m	1.40 m	1.42 m	1.63 m; 1.48 m	1.90 m; 1.06 m	1.03 m	0.98 m?
16	2.03 m; 1.09 m	1.92 m	1.93 m	1.28 m; 1.08 m	1.99 m; 1.33 m	2.03 (dt, 13.8, 4.2)	2.02 m	2.03 (dt, 12.6, 4.2)
						1.64 m	1.63 m	1.63 m
17	1.61 m	1.66 m		1.57 m	1.60 m			
18	0.97 s	1.01 s	0.96 s	0.83 s	0.86 s	2.20 (d, 11.4)	2.20 (d, 11.4)	2.19 (d, 11.7)
19	0.54 (d, 4.0)	0.76 (d, 4.5)	0.95 s	0.99 s	1.00 s	1.35 m	1.36 m	0.98 m
	0.33 (d, 4.0)	0.42 (d, 4.5)						
20	1.33 m	1.44 m	2.22 m	1.96 m; 1.26 m	2.03 m	0.95 m	0.95 m	0.95 m
21	0.88 (d, 7.2)	0.95 (d, 6.6)	0.89 (d, 6.6)	0.88 (d, 6.0)	0.90 (d, 6.3)	1.68 m; 1.57 m	1.48 m; 1.32 m	1.47 m; 1.29 m
22	1.79 (dt, 12.9, 3.0)	1.58 m	2.92 (dd, 15.0, 2.4)	2.62 m	2.65 (dd, 14.4, 2.7)	1.48 m	1.68 m	1.36 m
	0.97 m	1.19 m	2.30 (dd, 15.0, 10.2)	2.26 (dd, 15.9, 9.9)	2.24 m	1.34 m	1.57 m	1.00 m
23	1.90 m; 1.31 m	2.25 m; 2.12 m				1.22 s	0.69 s	0.95 s
24	3.16 (dd, 10.2, 1.5)	6.77 (t, 7.2)	6.94 brs	3.34 s	6.88 (d, 1.5)	4.02 (d, 11.4); 3.37 (d, 11.4)	3.50 (d, 10.8); 3.26 (d, 10.8)	0.77 s
25						0.99 s	1.04 s	0.95 s
26	1.14 s	1.81 s				0.82 s	0.84 s	0.84 s
27	0.92 s		2.15 (d, 1.2)	6.10 (d, 2.1); 5.45 m	2.19 (d, 1.5)	1.11 s	1.13 s	1.10 s
28	0.90 s	4.82 m	0.94 s	1.07 s	1.08 s			
		4.73 (t, 1.2)						
29	0.78 s	1.69 s	0.92 s	1.08 s	1.09 s	0.88 (d, 6.6)	0.88 (d, 6.6)	0.88 (d, 6.6)
30	1.13 s	0.99 s	1.20 s	1.05 s	1.06 s	0.94 (d, 6.6)	0.96 s	0.97 (d, 6.0)
OMe		3.62 s						

[a] Measured at 300 MHz in CD_3OD. [b] Measured at 600 MHz in $CDCl_3$.

Table S2 ^{13}C NMR spectroscopic data for compounds **11**–**20**

No.	**11** [a]	**12** [a]	**13** [b]	**14** [b]	**15** [a]	**16** [a]	**17** [a]	**18** [b]	**19** [b]	**20** [b]
1	33.8 t	28.7 t	30.3 t	30.7 t	35.2 t	35.2 t	35.2 t	48.0 t	48.0 t	38.1 t
2	30.7 t	30.8 t	32.4 t	26.5 t	35.3 t	35.3 t	35.3 t	69.6 d	69.7 d	27.9 t
3	79.2 d	77.7 d	176.2 s	77.2 d	221.8 s	221.7 s	221.8 s	85.9 d	78.2 d	79.7 d
4	41.3 s	40.6 s	150.8 s	38.0 s	48.0 s	48.1 s	48.1 s	44.4 s	44.1 s	39.8 s
5	48.2 d	42.2 d	47.2 d	39.4 d	53.7 d	53.7 d	53.7 d	57.1 d	48.1 d	56.8 d
6	22.0 t	22.2 t	29.0 t	24.3 t	23.9 t	24.0 t	23.9 t	19.8 t	19.1 t	19.5 t
7	29.0 t	29.1 t	26.6 t	120.1 d	122.8 d	122.8 d	122.8 d	34.5 t	33.6 t	34.3 t
8	49.1 d	49.6 d	49.3 d	147.4 s	149.9 s	149.9 s	149.9 s	40.8 s	40.8 s	38.1 s?
9	20.8 s	20.9 s	22.7 s	52.6 d	46.8 d	46.8 d	46.8 d	49.1 d	48.8 d	48.9 d
10	27.0 s	27.8 s	28.4 s	36.0 s	37.0 s	37.0 s	37.0 s	39.0 s	39.0 s	40.8 s
11	26.9 t	27.4 t	28.1 t	29.1 t	21.8 t	21.9 t	21.8 t	24.7 t	24.4 t	24.4 t
12	36.4 t	34.9 t	34.3 t	123.8 d	35.5 t	35.6 t	35.5 t	126.6 d	126.7 d	126.9 d
13	46.1 s	46.4 s	46.4 s	157.4 s	45.2 s	45.2 s	45.3 s	139.7 s	139.8 s	139.6 s
14	49.6 s	50.1 s	50.2 s	51.2 s	53.2 s	53.2 s	53.2 s	43.2 s	43.4 s	43.3 s
15	32.9 t	36.7 t	36.8 t	37.9 t	34.2 t	34.2 t	34.2 t	29.2 t	29.1 t	29.2 t
16	27.3 t	26.9 t	29.1 t	39.3 t	29.3 t	29.5 t	29.4 t	25.3 t	25.3 t	25.3 t
17	53.3 d	53.7 d	53.5 d	47.6 s	54.3 d	54.7 d	54.5 d	49.1 s	49.1 s	54.4 s
18	18.6 q	18.6 q	18.7 q	25.3 q	22.9 q	22.9 q	22.9 q	54.3 d	54.3 d	54.4 d
19	30.7 t	33.6 t?	31.0 t	22.8 q	23.5 q	23.5 q	23.4 q	40.4 d	40.4 d	40.4 d
20	37.4 d	37.8 d	37.2 d	40.1 d	34.0 d	34.2 d	34.9 d	40.4 d	40.4 d	40.4 d
21	18.9 q	19.0 q	18.7 q	16.2 q	19.9 q	20.8 q	19.9 q	38.1 t	31.7 t	31.8 t
22	34.5 t	34.2 t	36.1 t	49.4 t	50.3 t	50.1 t	52.9 t	31.8 t	38.1 t	40.0 t
23	28.8 t	29.6 t	26.2 t	205.1 s	211.8 s	200.0 s	205.5 s	23.8 q	13.9 q	28.8 q
24	80.3 d	80.6 d	144.4 d	131.2 d	48.6 t	128.1 d	129.3 d	66.2 t	66.3 t	16.4 q
25	73.7 s	73.9 s	128.6 s	146.5 s	140.8 s	150.2 s	149.9 s	17.6 q	17.7 q	16.0 q
26	24.9 q	24.9 q	12.4 q	173.5 s	173.1 s	16.5 q	175.3 s	17.6 q	17.8 q	17.8 q
27	25.9 q	26.6 q	171.8 s	15.4 q	125.4 t	173.6 s	16.0 q	24.1 q	24.2 q	24.1 q
28	25.3 q	25.7 q	112.1 t	28.9 q	28.4 q	28.4 q	28.4 q	181.6 s	181.6 s	181.6 s
29	14.6 q	21.9 q	20.1 q	23.6 q	21.7 q	21.7 q	21.7 q	17.6 q	17.7 q	17.6 q
30	19.8 q	19.8 q	19.9 q	26.6 q	27.8 q	27.9 q	27.8 q	21.6 q	21.6 q	21.6 q
OMe			52.1 q							

[a] Measured at 75 MHz in CD_3OD. [b] Measured at 150 MHz in $CDCl_3$.

(24*R*)-Cycloartane-3*β*,24,25-triol (11)

Amorphous powder; ^{1}H and ^{13}C NMR data, see Tables S1 and S2; ESIMS (positive) *m/z* 483 $[M+Na]^+$, 943 $[2M+Na]^+$; ESIMS (negative) *m/z* 496 $[M+Cl]^-$.

(24*R*)-Cycloartane-3*α*,24,25-triol (12)

Amorphous powder; ^{1}H NMR (CD_3OD, 300 MHz) δ 3.39 (1H, t, J = 2.1 Hz, H-3), 3.16 (1H, dd, J = 10.2, 1.5 Hz, H-24), 1.16 (3H, s, Me-27), 1.12 (3H, s, Me-26), 1.01 (3H, s, Me-18), 0.95 (3H, s, Me-27), 0.92 (3H, s, Me-28), 0.91 (3H, d, J = 6.3 Hz, Me-21), 0.89 (3H, s, Me-29), 0.52 (1H, d, J = 4.0 Hz, H-19a), 0.36 (1H, d, J = 4.0 Hz, H-19b); ^{13}C NMR data, see Table S2; ESIMS (positive) *m/z* 483 $[M+Na]^+$; ESIMS (negative) *m/z* 496 $[M+Cl]^-$.

Methyl (24*E*)-26-carboxy-3,4-seco-cycloarta-4(29),24-dien-3-oate (13)

Amorphous powder; ^{1}H and ^{13}C NMR ($CDCl_3$, 150 MHz) spectroscopic data, see Tables S1 and S2; ESIMS (positive) *m/z* 485 $[M+H]^+$; 507 $[M+Na]^+$; ESIMS (negative) *m/z* 483 $[M-H]^-$, 967 $[2M-H]^-$.

23-*Oxo*-mariesiic acid B (14)

Amorphous powder; $[\alpha]_D^{20}$ −125.9 (*c* 0.50, MeOH); IR (KBr) ν_{max} 3441, 2965, 2851, 1688, 1621, 1563, 1453, 1373, 1282, 1063, 986 cm^{-1}; for ^{1}H and ^{13}C NMR data, see Tables S1 and S2; ESIMS (positive) *m/z* 491 $[M+Na]^+$; ESIMS (negative) *m/z* 467 $[M-H]^-$, 935 $[2M-H]^-$; HRESIMS (negative) $[M-H]^-$ *m/z* 467.3157, calcd for $C_{30}H_{43}O_4$, 467.3161.

Isofirmanoic acid (15)

Amorphous powder; for ^{1}H and ^{13}C NMR data, see Tables S1 and S2; ESIMS (positive) *m/z* 491 $[M+Na]^+$; ESIMS (negative) *m/z* 491 $[M-H]^-$.

(24*Z*)-3,23-Dioxo-9*β*-lanosta-7,24-dien-27-oic acid (16)

Amorphous powder; ^{1}H NMR (CD3OD, 300 MHz) δ 5.67 (1H, dt, J = 7.5, 2.7 Hz, H-7), 1.94 (3H, d, J = 1.2 Hz, Me-26), 1.08 (3H, s, Me-29), 1.07 (3H, s, Me-28), 1.05 (3H, s, Me-30), 0.99 (3H, s, Me-19), 0.95 (3H, d, J = 6.0 Hz, Me-21), 0.82 (3H, s, Me-18); ^{13}C NMR spectroscopic data, see Table S2; ESIMS (positive) *m/z* 491 $[M+Na]^+$; ESIMS (negative) *m/z* 467 $[M-H]^-$.

Firmanoic acid (17)

Amorphous powder; ^{1}H and ^{13}C NMR spectroscopic data, see Tables S1 and S2; ESIMS (positive) *m/z* 491 $[M+Na]^{+}$; ESIMS (negative) *m/z* 467 $[M-H]^{-}$.

2*α*,3*β*,24-Trihydroxy-12-ursen-28-oic acid (18)

Amorphous powder; $[\alpha]_{D}^{20}$ +25.9 (c 0.50, MeOH); ^{1}H and ^{13}C NMR spectroscopic data, see Tables S1 and S2; ESIMS (positive) *m/z* 511 $[M+Na]^{+}$; ESIMS (negative) *m/z* 487 $[M-H]^{-}$, 975 $[2M-H]^{-}$.

Dammarolic acid (19)

Amorphous powder; ^{1}H and ^{13}C NMR spectroscopic data, see Tables S1 and S2; ESIMS (positive) *m/z* 511 $[M+Na]^{+}$; ESIMS (negative) *m/z* 487 $[M-H]^{-}$, 975 $[2M-H]^{-}$.

Ursolic acid (20)

Amorphous powder; ^{1}H and ^{13}C NMR spectroscopic data, see Tables S1 and S2; ESIMS (positive) *m/z* 479 $[M+Na]^{+}$, 935 $[2M+Na]^{+}$; ESIMS (negative) *m/z* 455 $[M-H]^{-}$, 911 $[2M-H]^{-}$.

Table S3. Crystal data and structure refinement for abiesatrine A,CH3OH (**1**).

Identification code	abiesatrine A (1)
Empirical formula	C31 H50 O5
Formula weight	502.71
Temperature	293(2) K
Wavelength	0.71073 A
Crystal system, space group	Orthorhombic, P2(1)2(1)2(1)
Unit cell dimensions	a = 8.165(15) Å α = 90°.
	b = 13.02(3) Å β = 90°.
	c = 26.83(6) Å γ = 90°.
Volume	2852(10) $Å^3$
Z, Calculated density	4, 1.171 Mg/m^3
Absorption coefficient	0.077 mm^{-1}
F(000)	1104
Crystal size	0.15 x 0.10 x 0.04 mm
Theta range for data collection	1.52 to 25.01°.
Limiting indices	-8<=h<=9, -15<=k<=14, -31<=l<=23
Reflections collected / unique	11872 / 5047 [R(int) = 0.2995]
Completeness to theta = 25.01	100.0 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9969 and 0.9885
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	5047 / 0 / 327
Goodness-of-fit on F^2	0.948
Final *R* indices [I>2σ(I)]	R_1 = 0.0711, wR_2 = 0.1422
R indices (all data)	R_1 = 0.2828, wR_2 = 0.1882
Absolute structure parameter	0(3)
Largest diff. peak and hole	0.166 and -0.180 $e.A^{-3}$