

SUPPORTING INFORMATION

Total Synthesis of a furostan saponin, Timosaponin BII

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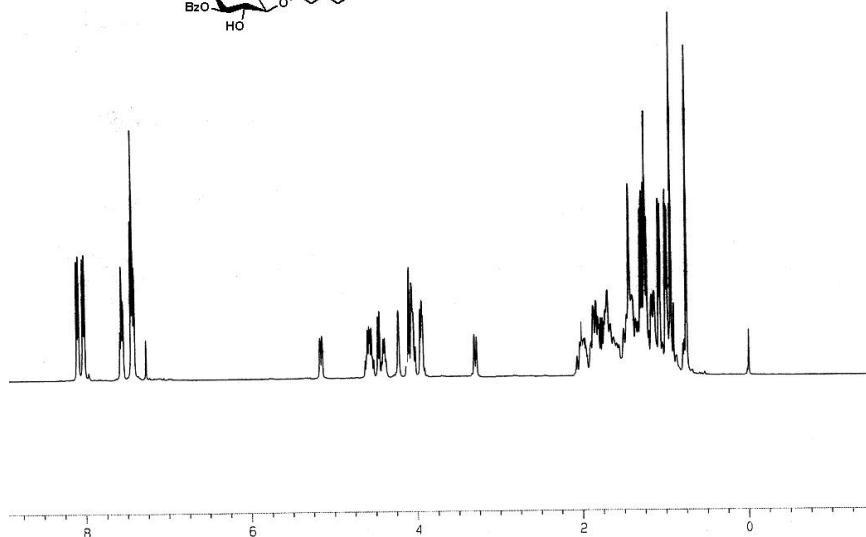
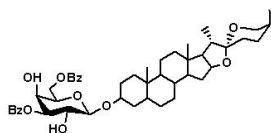
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Compound 4



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F2 - Acquisition Parameters
Date_ 20090427
Time 9.21
INSTRUM AV400
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 4
DS 0
SWH 11990.407 Hz
FIDRES 0.182959 Hz
AQ 2.7329011 sec
RG 314
DM 41.700 usec
DE 200.000 usec
TE 298.4 K
D1 2.00000000 sec
HOREST 0.00000000 sec
MORR 0.01500000 sec

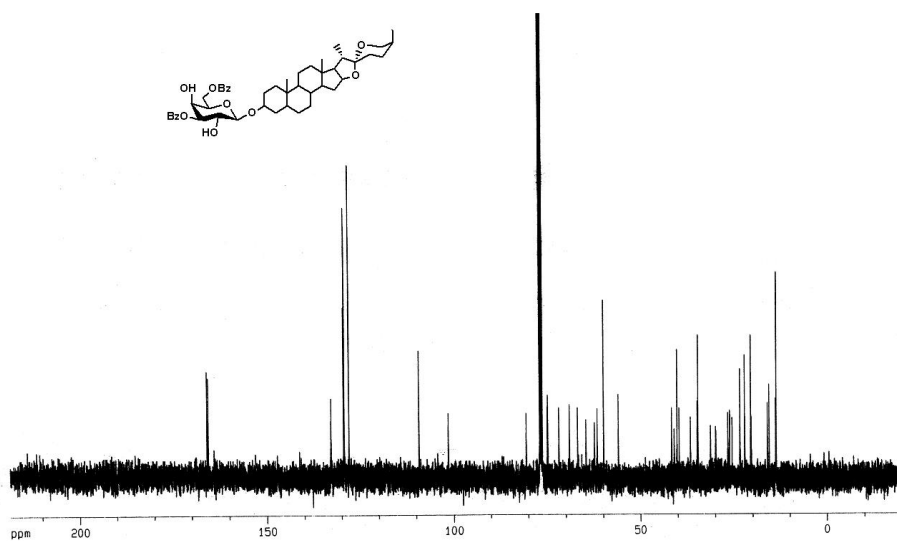
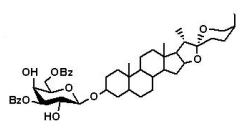
***** CHANNEL f1 *****
NUC1 1H
P1 12.10 usec
PL1 0.00 dB
SFO1 400.132618 MHz

F1 - Acquisition parameters
ND0 2
TD 256
SFO1 100.6218 MHz
FIDRES 78.81191 Hz
SW 200.001 ppm
PRMODE Echo-Antiecho

F2 - Processing parameters
SI 32768
SF 400.130085 MHz
MDM EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

F1 - Processing parameters
SI 1024
PR2 echo-antiecho
SF 100.6128172 MHz
MDM no
SSB 2
LB 0.00 Hz
GB 0

1D NMR plot parameters
CX 20.00 cm
CY 10.00 cm
F1P 9.330 ppm
F1 3733.21 Hz
F2P -1.510 ppm
F2 -604.01 Hz
PRMCH 0.54198 ppm/cm
    
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F2 - Acquisition Parameters
Date_ 20090427
Time 9.27
INSTRUM AV400
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 104
DS 0
SWH 23980.814 Hz
FIDRES 0.365919 Hz
AQ 1.3654756 sec
RG 11585.2
DM 20.850 usec
DE 6.00 usec
TE 298.5 K
D1 2.00000000 sec
d11 0.03000000 sec
HOREST 0.00000000 sec
MORR 0.01500000 sec

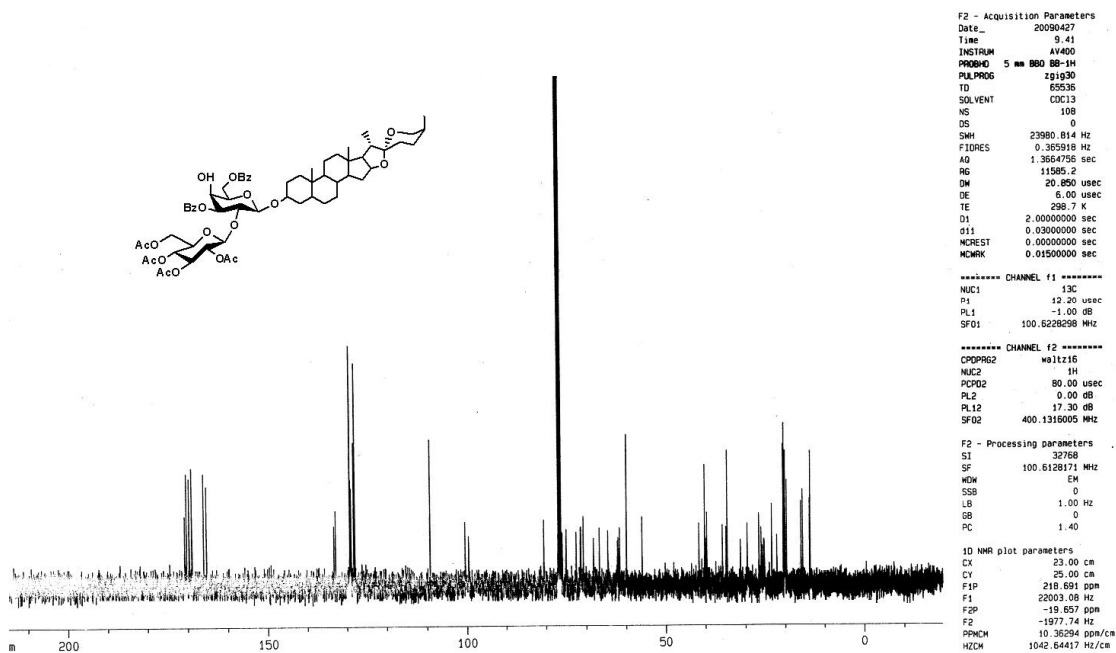
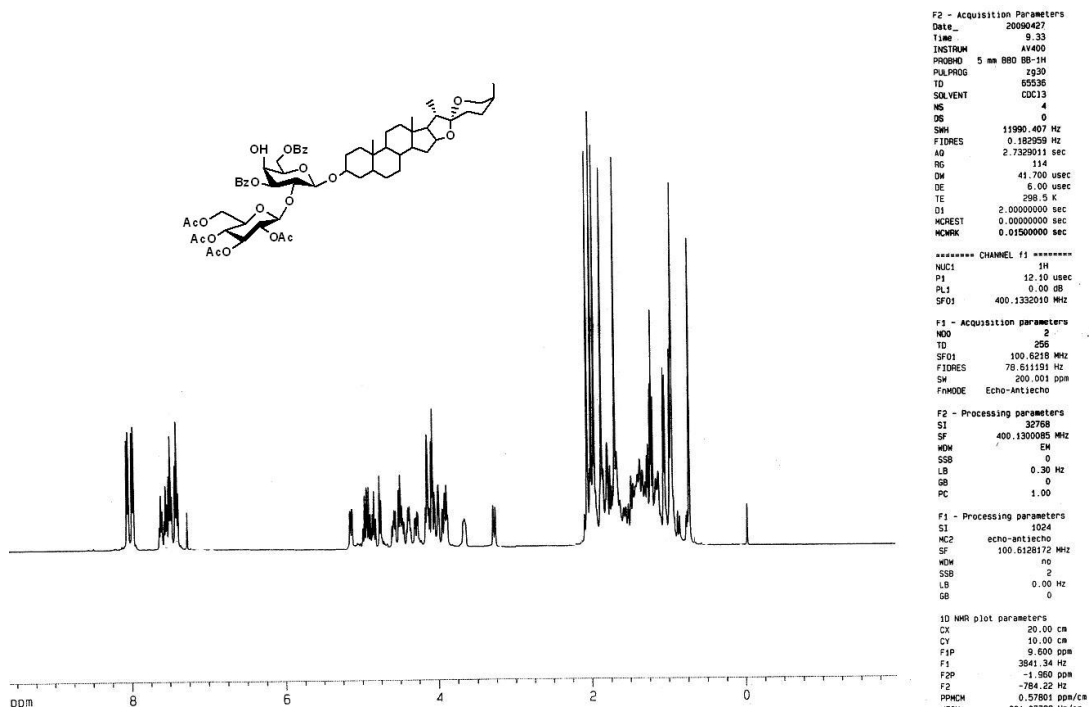
***** CHANNEL f1 *****
NUC1 13C
P1 12.20 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

***** CHANNEL f2 *****
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 17.30 dB
SFO2 400.1316000 MHz

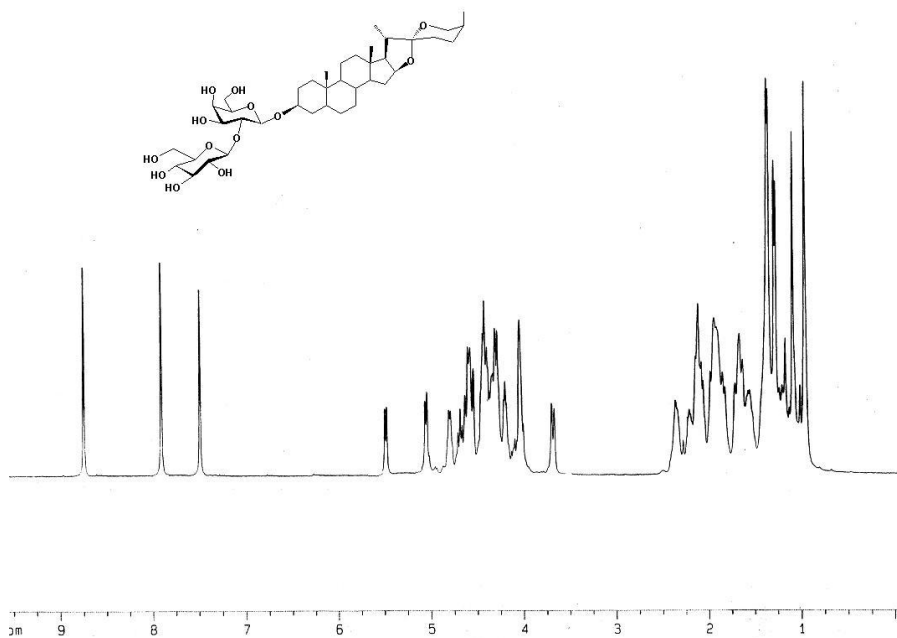
F2 - Processing parameters
SI 32768
SF 100.6128171 MHz
MDM EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

1D NMR plot parameters
CX 23.00 cm
CY 25.00 cm
F1P 218.691 ppm
F1 22003.08 Hz
F2P -19.857 ppm
F2 -1977.74 Hz
PRMCH 10.36294 ppm/cm
HZCH 1042.64417 Hz/cm
    
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Compound 7



Compound 20



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F2 - Acquisition Parameters
Date_ 20090427
Time 9.46
INSTRUM AV400
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 65536
SOLVENT Pyr
NS 8
DS 0
SMH 11990.407 Hz
FIDRES 0.182959 Hz
AQ 2.7329011 sec
RG 114
DN 41.700 usec
DE 6.00 usec
TE 298.9 K
D1 2.00000000 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec

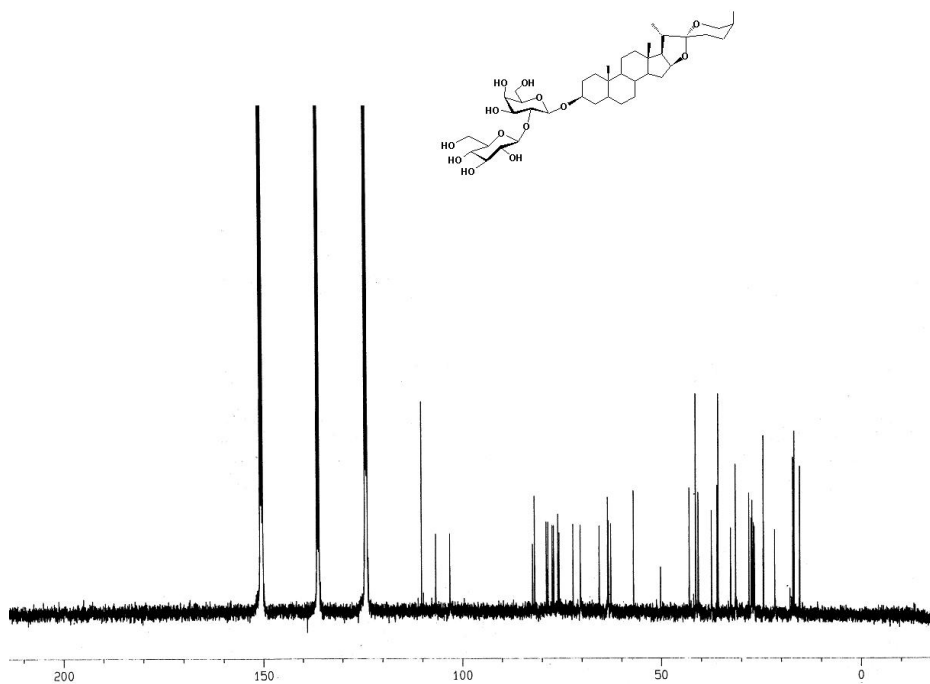
***** CHANNEL f1 *****
NUC1 1H
P1 12.10 usec
PL1 0.00 dB
SFO1 400.1332010 MHz

F1 - Acquisition parameters
ND0 2
TD 256
SFO1 100.6218194 MHz
FIDRES 78.61191 Hz
SW 200.001 ppm
FMODE Echo-Antiecho

F2 - Processing parameters
SI 32768
SF 400.1311833 MHz
WDW EN
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

F1 - Processing parameters
SI 1024
HC2 echo-antiecho
SF 100.6128172 MHz
WDW no
SSB 2
LB 0.00 Hz
GB 0

1D NMR plot parameters
CX 20.00 cm
CY 10.00 cm
F1P 0.687 ppm
F1 3867.96 Hz
F2P -0.092 ppm
F2 -96.73 Hz
PPMCH 0.4873 ppm/cm
HTW 195.23462 Hz/cm
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F2 - Acquisition Parameters
Date_ 20090429
Time 12.06
INSTRUM AV400
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 65536
SOLVENT Pyr
NS 1912
DS 0
SMH 23980.814 Hz
FIDRES 0.35518 Hz
AQ 1.3664756 sec
RG 11585.2
DN 20.850 usec
DE 6.00 usec
TE 298.9 K
D1 2.00000000 sec
D11 0.03000000 sec
MCREST 0.00000000 sec
MCWRK 0.01500000 sec

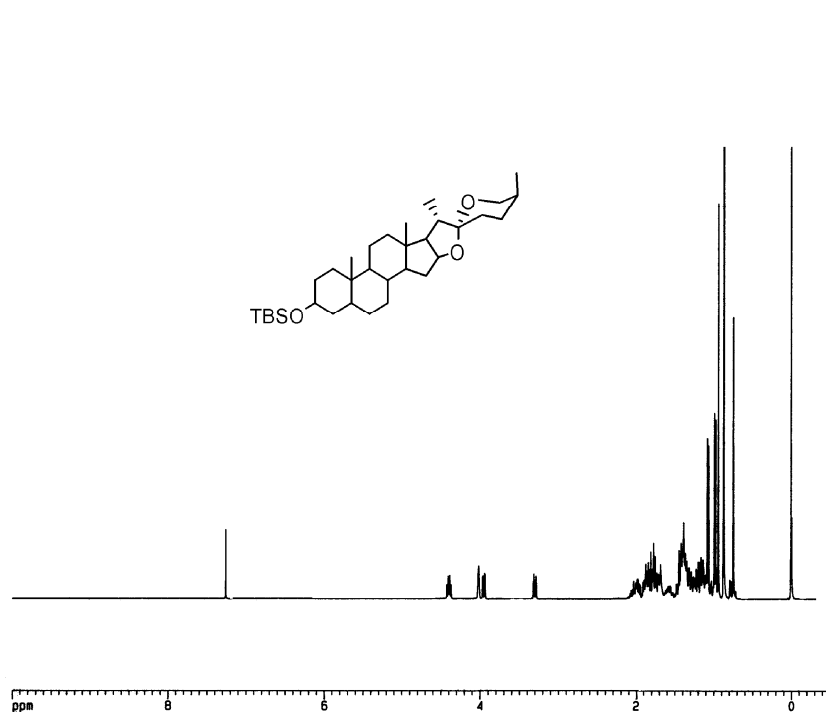
***** CHANNEL f1 *****
NUC1 13C
P1 12.20 usec
PL1 -1.00 dB
SFO1 100.6228298 MHz

***** CHANNEL f2 *****
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 0.00 dB
PL12 17.30 dB
SFO2 400.1316005 MHz

F2 - Processing parameters
SI 32768
SF 100.6126053 MHz
WDW EN
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

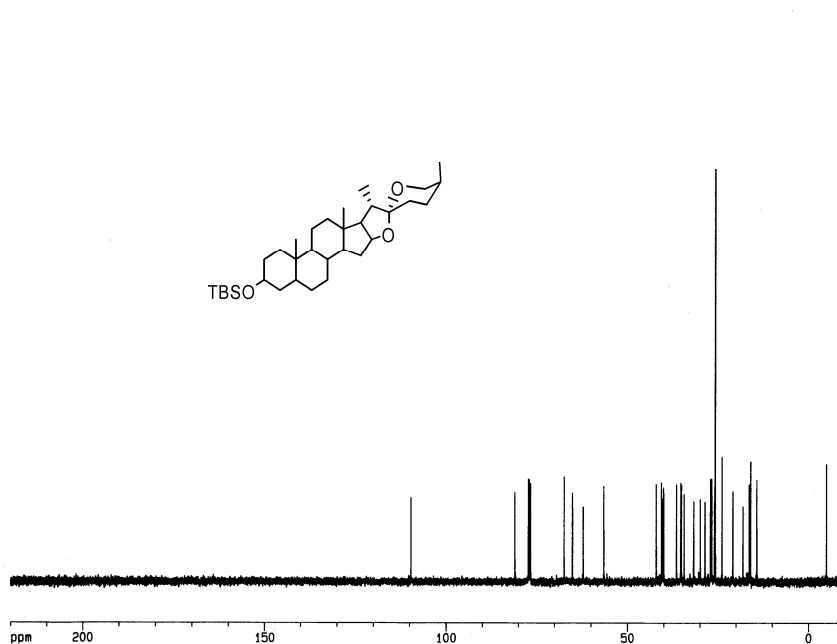
1D NMR plot parameters
CX 23.00 cm
CY 100.00 cm
F1P 219.902 ppm
F1 22124.94 Hz
F2P -18.446 ppm
F2 -1855.87 Hz
PPMCH 10.36295 ppm/cm
HTW 1042.64417 Hz/cm
```

Compound 10



F2 - Acquisition Parameters
Date_ 20070424
Time 15.46
INSTRUM ARX400
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 32
DS 0
SWH 7246.377 Hz
FIDRES 0.221142 Hz
AQ 2.2610421 sec
RG 360
DM 69.000 usec
DE 98.57 usec
TE 300.0 K
D1 2.00000000 sec
P1 3.00 usec
DE 98.57 usec
SF01 400.1318844 MHz
NUCLEUS 1H

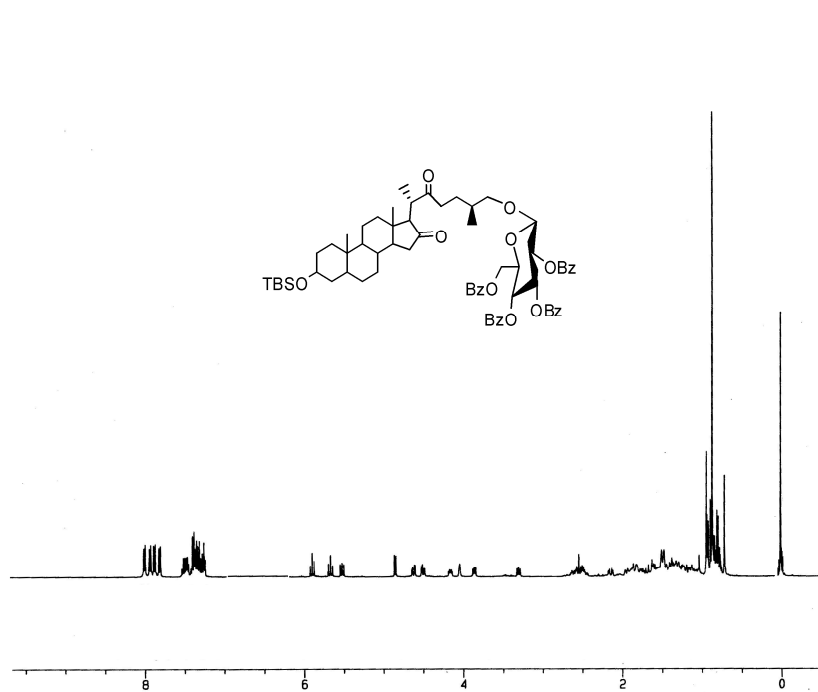
F2 - Processing parameters
SI 16384
SF 400.1300091 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 4.00



F2 - Acquisition Parameters
Date_ 20070704
Time 16.20
INSTRUM ARX400
PROBHD 5 mm Multinu
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 104
DS 2
SWH 25000.000 Hz
FIDRES 0.762938 Hz
AQ 0.6554100 sec
RG 8192
DM 20.000 usec
DE 25.00 usec
TE 300.0 K
D12 0.00002000 sec
DLS 22.20 dB
CPDPRG waltz16
P31 100.00 usec
D1 2.00000000 sec
P1 2.50 usec
DE 25.00 usec
SF01 100.6263880 MHz
NUCLEUS 13C
D11 0.03000000 sec

F2 - Processing parameters
SI 32768
SF 100.6127712 MHz
WDW EM
SSB 0
LB 0.50 Hz
GB 0
PC 1.00

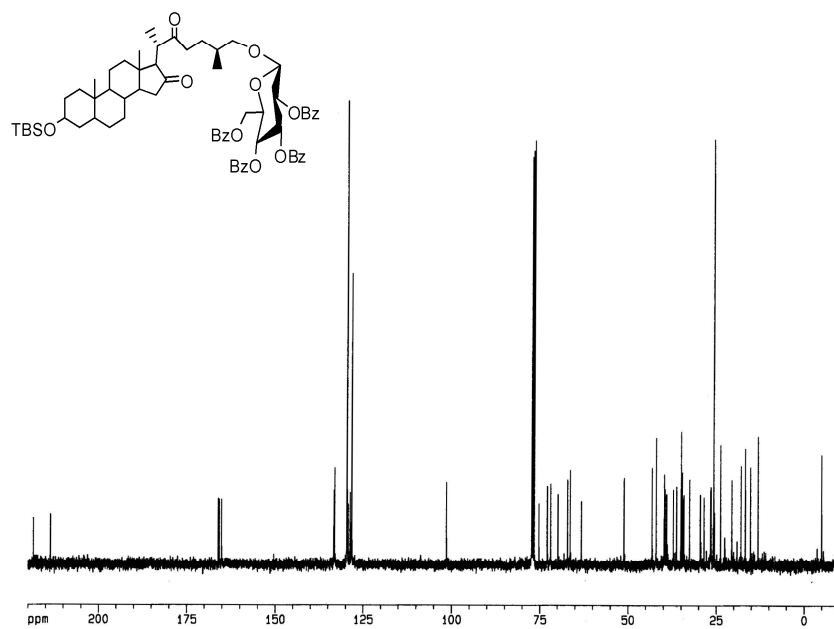
Compound 13



F2 - Acquisition Parameters
 Date_ 20070711
 Time 16.55
 INSTRUM ARX400
 PROBHD 5 mm Multinu
 PULPROG zg
 TD 32768
 SOLVENT CDC13
 NS 39
 DS 0
 SMH 6756.757 Hz
 FIDRES 0.206200 Hz
 AQ 2.4248819 sec
 RG 256
 DW 74.000 usec
 DE 92.50 usec
 TE 300.0 K
 D1 2.0000000 sec
 P1 3.00 usec
 DE 92.50 usec
 SFO1 400.1324000 MHz
 NUCLEUS 1H

F2 - Processing parameters
 SI 16384
 SF 400.1300106 MHz
 WDW no
 SSB 0
 LB 0.00 Hz
 GB 0
 PC 0.50

1D NMR plot parameters
 CX 20.00 cm
 F1P 10.000 ppm
 F1 4001.30 Hz
 F2P -0.500 ppm
 F2 -200.07 Hz
 PPMCM 0.52500 ppm/cm
 HZCM 210.06825 Hz/cm

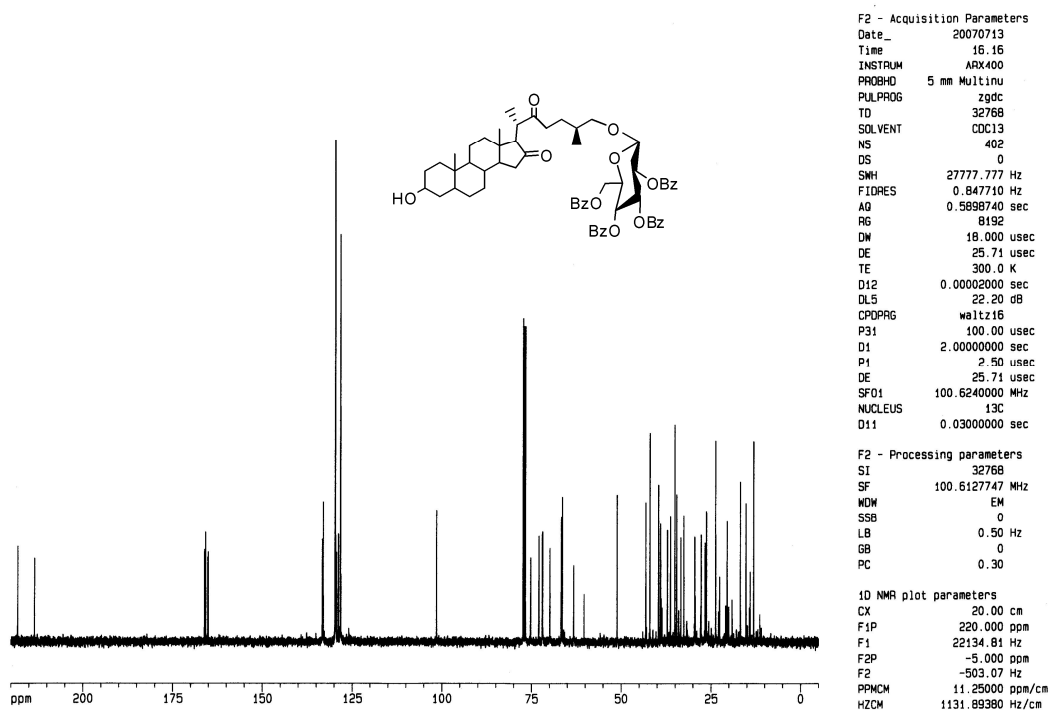
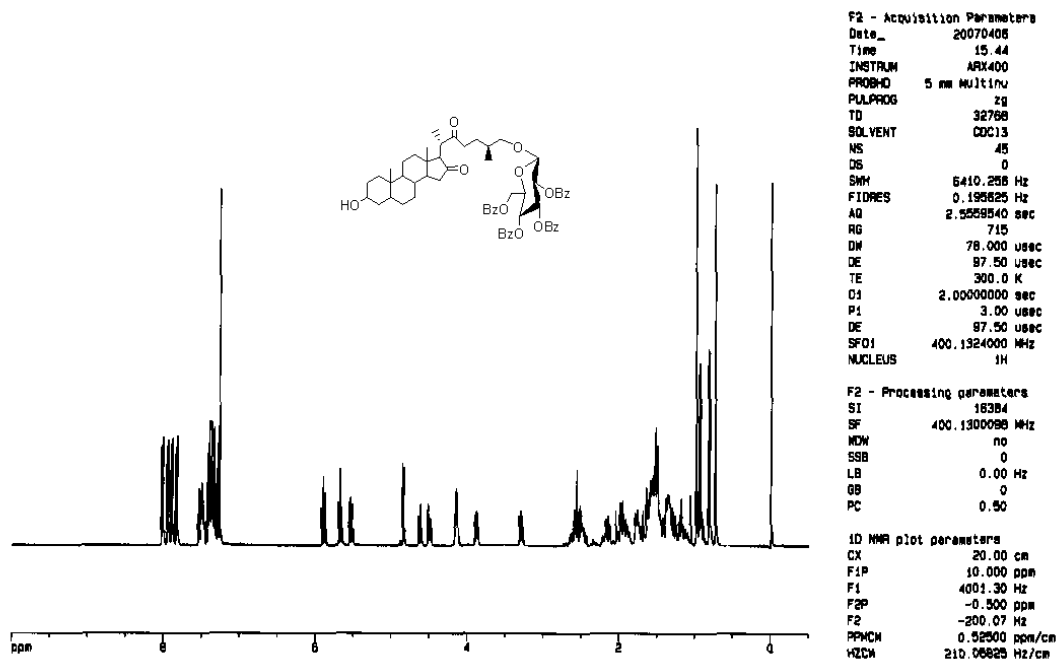


F2 - Acquisition Parameters
 Date_ 20070711
 Time 17.01
 INSTRUM ARX400
 PROBHD 5 mm Multinu
 PULPROG zgdc
 TD 32768
 SOLVENT CDC13
 NS 300
 DS 0
 SMH 27777.777 Hz
 FIDRES 0.847710 Hz
 AQ 0.5898740 sec
 RG 8192
 DW 18.000 usec
 DE 25.71 usec
 TE 300.0 K
 D12 0.00002000 sec
 DL5 22.20 dB
 CPUPRG waltz16
 P31 100.00 usec
 D1 2.0000000 sec
 P1 2.50 usec
 DE 25.71 usec
 SFO1 100.6240000 MHz
 NUCLEUS 13C
 D11 0.03000000 sec

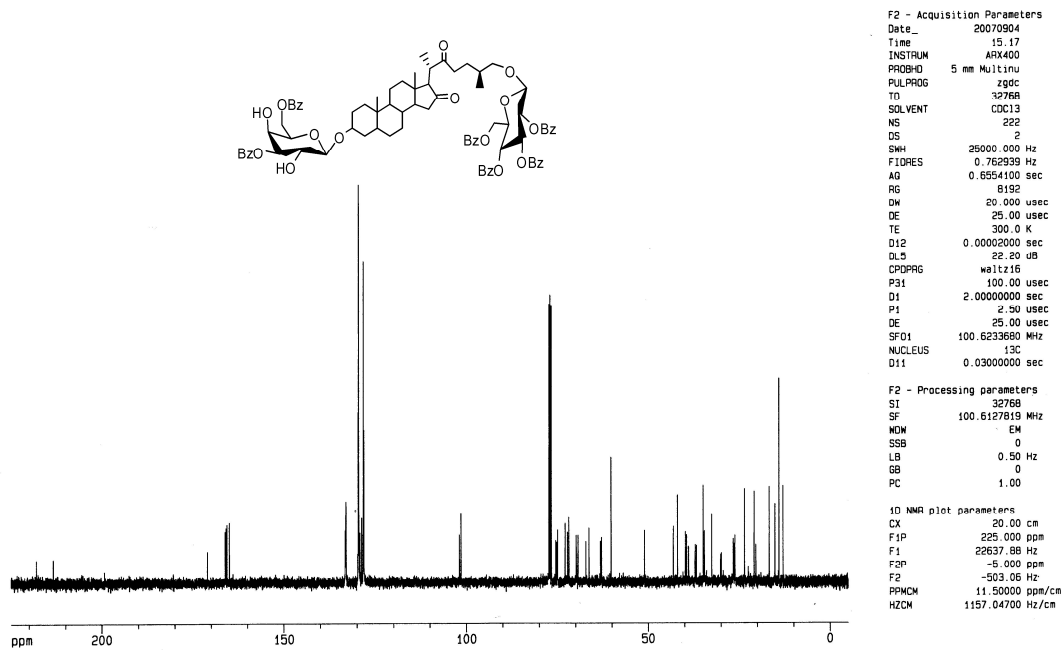
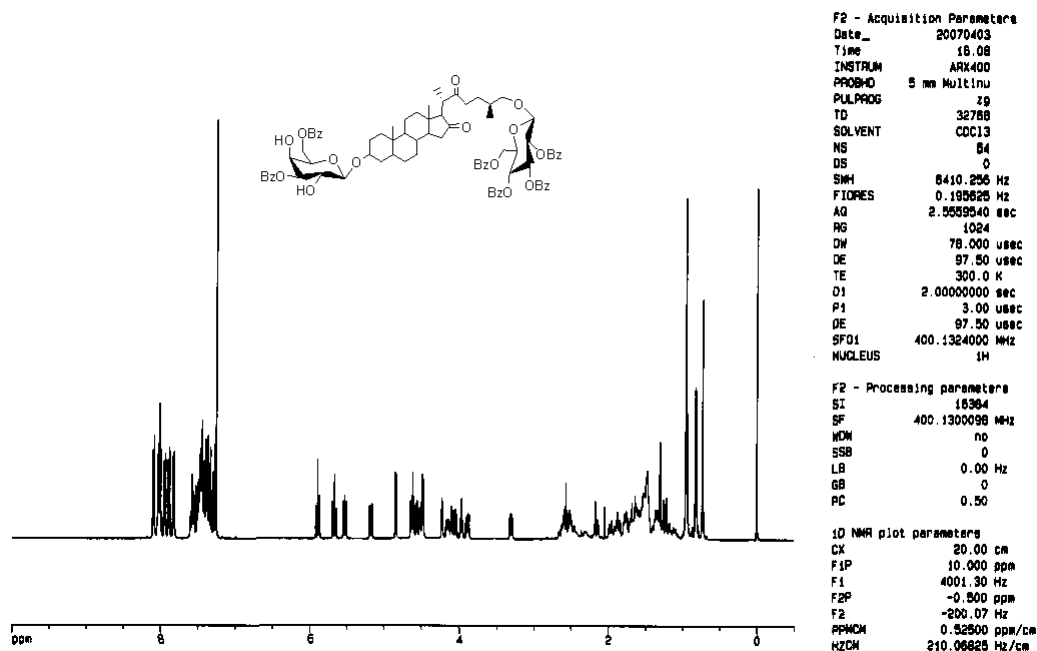
F2 - Processing parameters
 SI 32768
 SF 100.6127747 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 0.30

1D NMR plot parameters
 CX 20.00 cm
 F1P 220.000 ppm
 F1 22134.81 Hz
 F2P -10.000 ppm
 F2 -1006.13 Hz
 PPMCM 11.50000 ppm/cm
 HZCM 1157.04675 Hz/cm

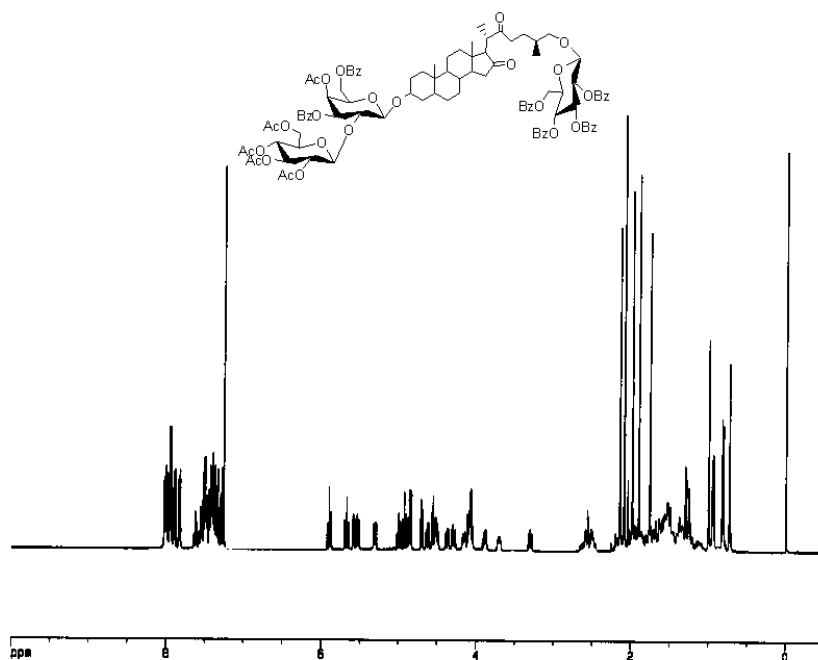
Compound 14



Compound 15



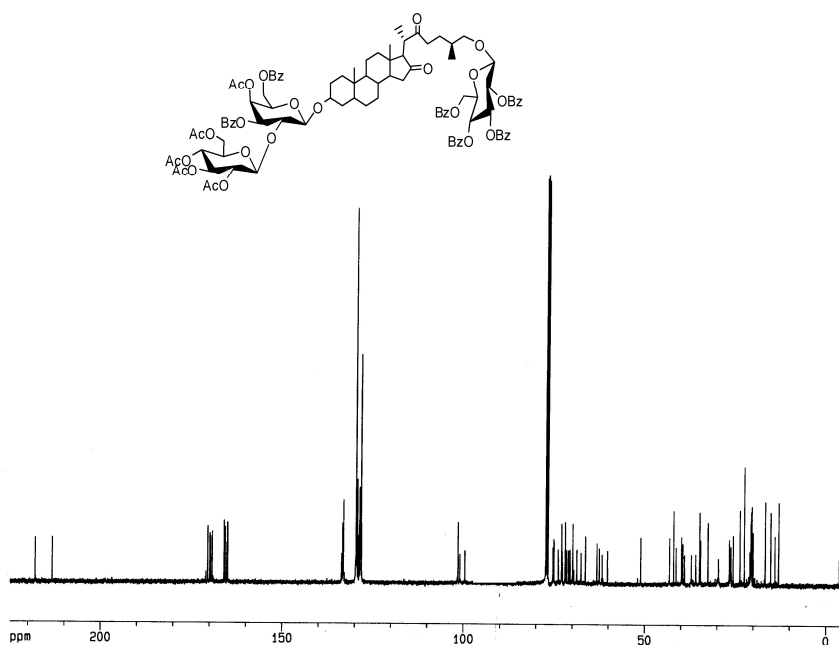
Compound 17



F2 - Acquisition Parameters
Date_ 20070403
Time 16.17
INSTRUM ARX400
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDCl3
NS 64
DS 0
SWH 8410.256 Hz
FIDRES 0.198825 Hz
AQ 2.5659540 sec
RG 715
DM 78.000 usec
DE 97.50 usec
TE 300.0 K
D1 2.00000000 sec
P1 3.00 usec
DE 97.50 usec
SFO1 400.1324000 MHz
NUCLEUS 1H

F2 - Processing parameters
SI 16384
SF 400.1300098 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 0.50

1D NMR plot parameters
CX 20.00 cm
F1P 10.000 ppm
F1 4001.30 Hz
F2P -0.500 ppm
F2 -200.07 Hz
PPMCM 0.52500 ppm/cm
HZCM 210.06825 Hz/cm

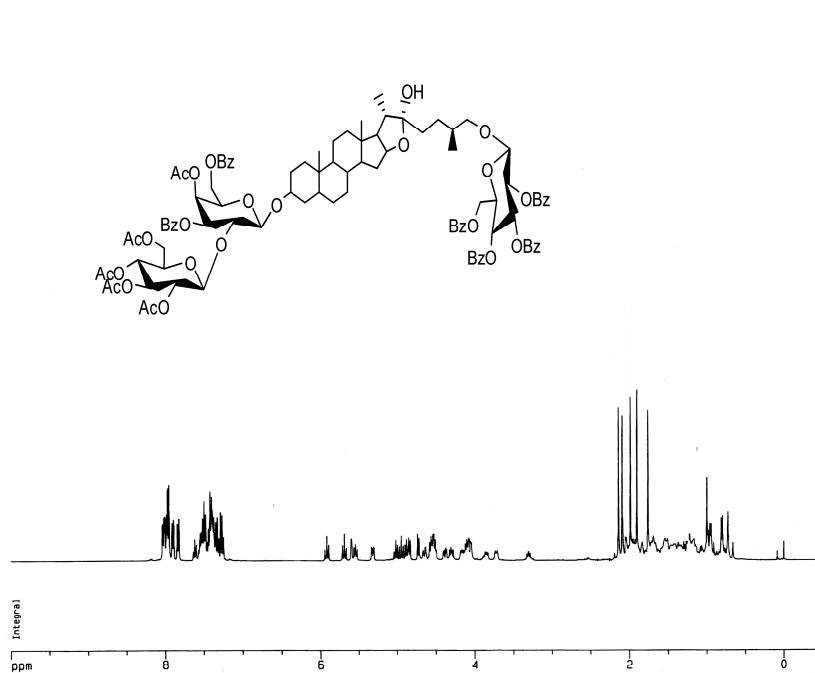


F2 - Acquisition Parameters
Date_ 20070605
Time 19.21
INSTRUM ARX400
PROBHD 5 mm Multinu
PULPROG zgpg
TD 32768
SOLVENT CDCl3
NS 3000
DS 2
SWH 25000.000 Hz
FIDRES 0.762939 Hz
AQ 0.6554100 sec
RG 8192
DM 20.000 usec
DE 25.00 usec
TE 300.0 K
D12 0.00002000 sec
DL5 22.20 usec
CPDPRG waltz16
P31 100.00 usec
D1 2.00000000 sec
P1 2.50 usec
DE 25.00 usec
SFO1 100.6233680 MHz
NUCLEUS 13C
D11 0.03000000 sec

F2 - Processing parameters
SI 32768
SF 100.6127750 MHz
WDW EM
SSB 0
LB 0.50 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
F1P 225.000 ppm
F1 22637.88 Hz
F2P -5.000 ppm
F2 -503.06 Hz
PPMCM 11.50000 ppm/cm
HZCM 1157.04700 Hz/cm

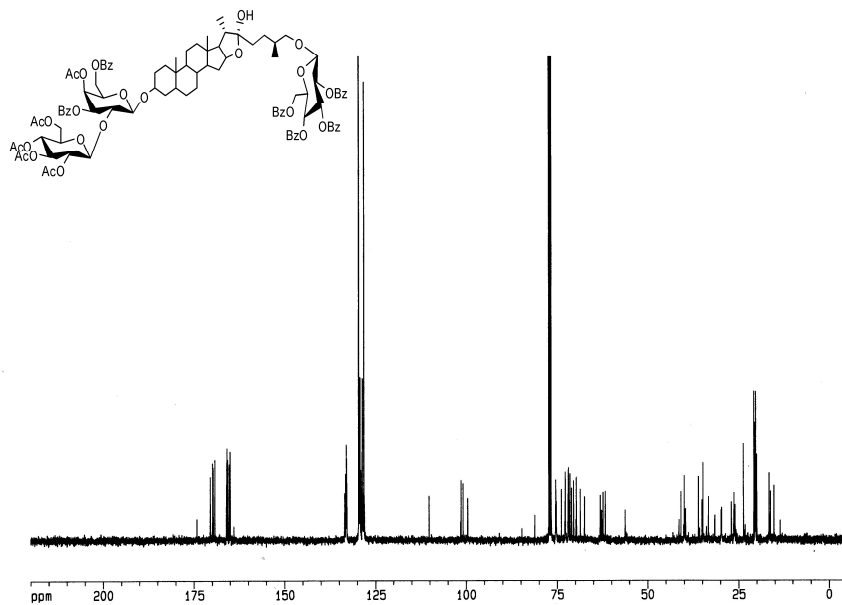
Compound 18



F2 - Acquisition Parameters
Date_ 20071017
Time 10.41
INSTRUM ARX400
PROBHD 5 mm Multinu
PULPROG zg
TD 32768
SOLVENT CDC13
NS 64
DS 0
SWH 6410.256 Hz
FIDRES 0.195625 Hz
AQ 2.5559540 sec
RG 128
DW 78.000 usec
DE 97.50 usec
TE 300.0 K
D1 2.00000000 sec
P1 3.00 usec
DE 97.50 usec
SF01 400.1324000 MHz
NUCLEUS 1H

F2 - Processing parameters
SI 16384
SF 400.1299989 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 0.50

1D NMR plot parameters
CX 20.00 cm
F1P 10.000 ppm
F1 4001.30 Hz
F2P -0.500 ppm
F2 -200.07 Hz
PPMCM 0.52500 ppm/cm
HZCM 210.06825 Hz/cm

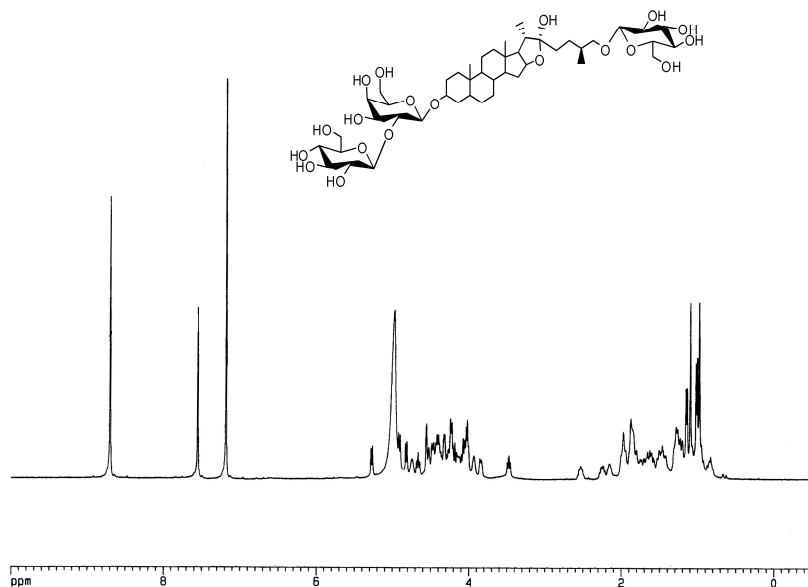


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Time 10.46
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PROBHD 5 mm Multinu
PULPROG zgdc
TD 32768
SOLVENT CDC13
NS 950
DS 0
SWH 27777.777 Hz
FIDRES 0.847710 Hz
AQ 0.5898740 sec
RG 8192
DW 18.000 usec
DE 25.71 usec
TE 300.0 K
D12 0.00002000 sec
DL5 22.20 dB
CPDPRG waltz16
P31 100.00 usec
D1 2.00000000 sec
P1 2.50 usec
DE 25.71 usec
SF01 100.6240000 MHz
NUCLEUS 13C
D11 0.03000000 sec

F2 - Processing parameters
SI 32768
SF 100.6127840 MHz
WDW EM
SSB 0
LB 0.50 Hz
GB 0
PC 0.30

1D NMR plot parameters
CX 20.00 cm
F1P 220.000 ppm
F1 22134.81 Hz
F2P -5.000 ppm
F2 -503.07 Hz
PPMCM 11.25000 ppm/cm
HZCM 1131.89380 Hz/cm

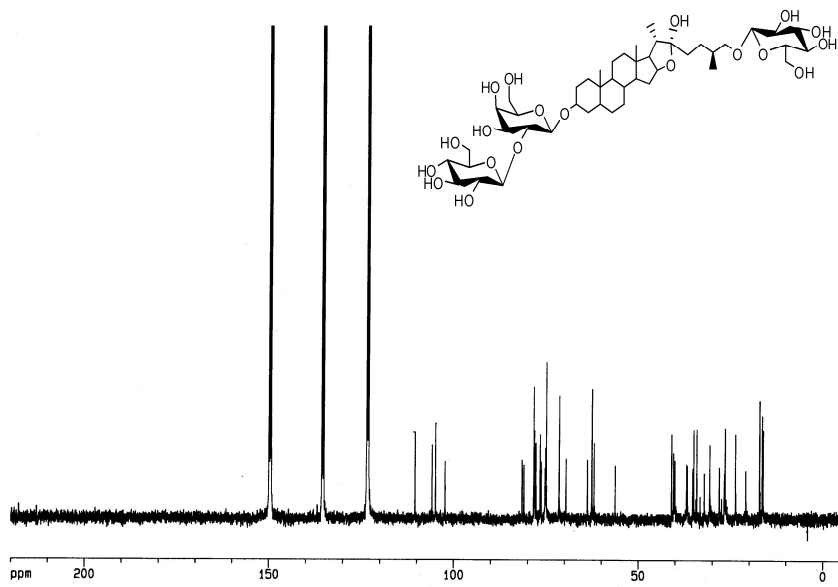
Compound 1



F2 - Acquisition Parameters
 Date_ 20070704
 Time 16.05
 INSTRUM ARX400
 PROBHD 5 mm Multinu
 PULPROG zg
 TD 32768
 SOLVENT Pyr
 NS 32
 DS 0
 SWH 7246.377 Hz
 FIDRES 0.221142 Hz
 AQ 2.2610421 sec
 RG 512
 DW 69.000 usec
 DE 98.57 usec
 TE 300.0 K
 D1 2.00000000 sec
 P1 3.00 usec
 DE 98.57 usec
 SF01 400.1324000 MHz
 NUCLEUS 1H

F2 - Processing parameters
 SI 16384
 SF 400.1304571 MHz
 WDW no
 SSB 0
 LB 0.00 Hz
 GB 0
 PC 4.00

1D NMR plot parameters
 CX 20.00 cm
 F1P 10.000 ppm
 F1 4001.30 Hz
 F2P -0.500 ppm
 F2 -200.07 Hz
 PPMCM 0.52500 ppm/cm
 HZCM 210.06850 Hz/cm



F2 - Acquisition Parameters
 Date_ 20070612
 Time 16.21
 INSTRUM ARX400
 PROBHD 5 mm Multinu
 PULPROG zgdc
 TD 32768
 SOLVENT Pyr
 NS 708
 DS 0
 SWH 27777.777 Hz
 FIDRES 0.847710 Hz
 AQ 0.5898740 sec
 RG 8192
 DW 18.000 usec
 DE 25.71 usec
 TE 300.0 K
 D12 0.00002000 sec
 DL5 22.20 dB
 CPDPRG waltz16
 F31 100.00 usec
 D1 2.00000000 sec
 P1 3.00 usec
 DE 25.71 usec
 SF01 100.6240000 MHz
 NUCLEUS 13C
 D11 0.03000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6129118 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 0.30

1D NMR plot parameters
 CX 20.00 cm
 F1P 220.000 ppm
 F1 22134.84 Hz
 F2P -5.000 ppm
 F2 -503.07 Hz
 PPMCM 11.25000 ppm/cm
 HZCM 1131.89526 Hz/cm