

Supporting Information

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Quinolone Alkaloids Along with Other Constituents from *Zanthoxylum rhetsa* and their Chemotaxonomic Significance

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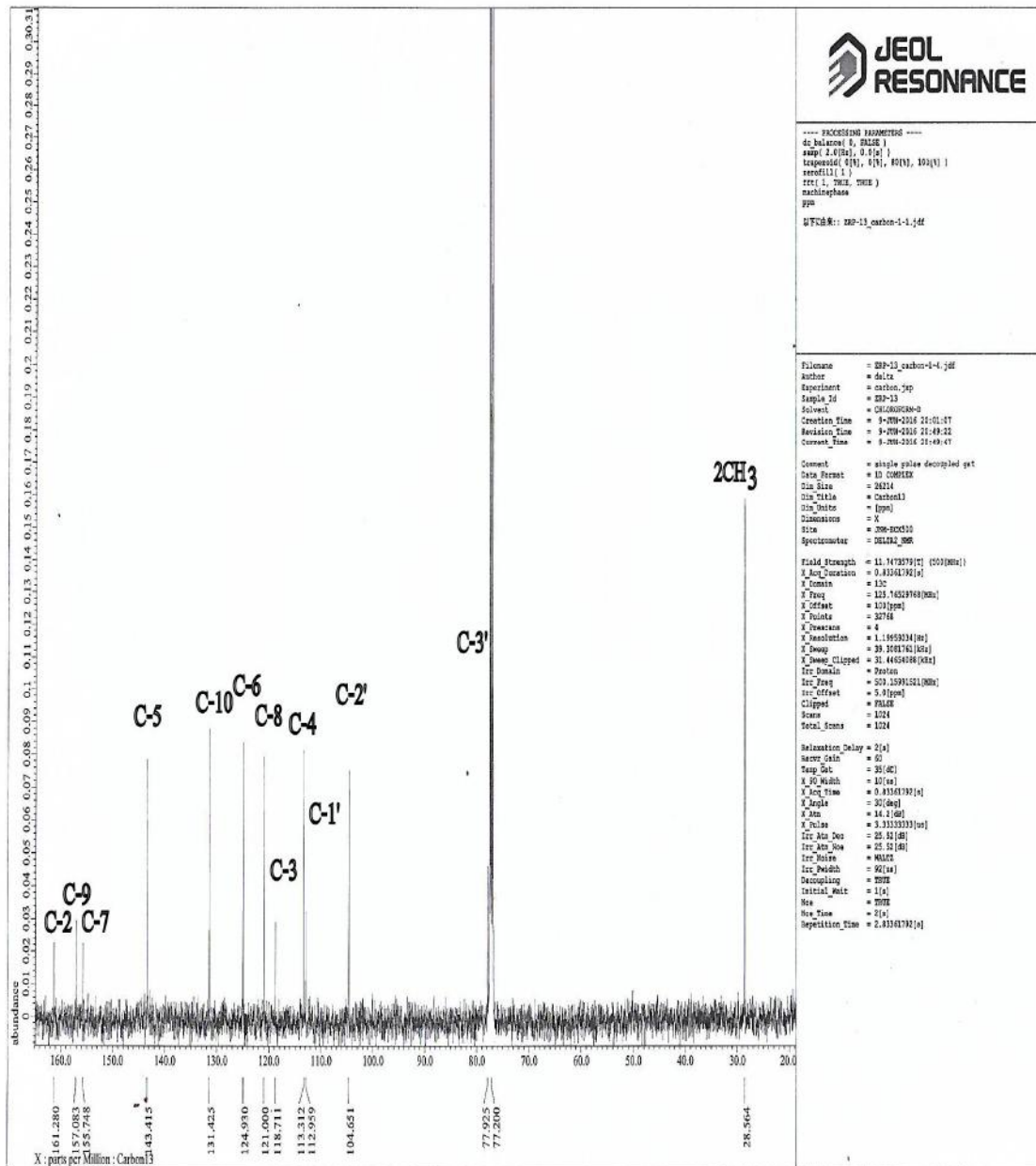
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Bangladesh*

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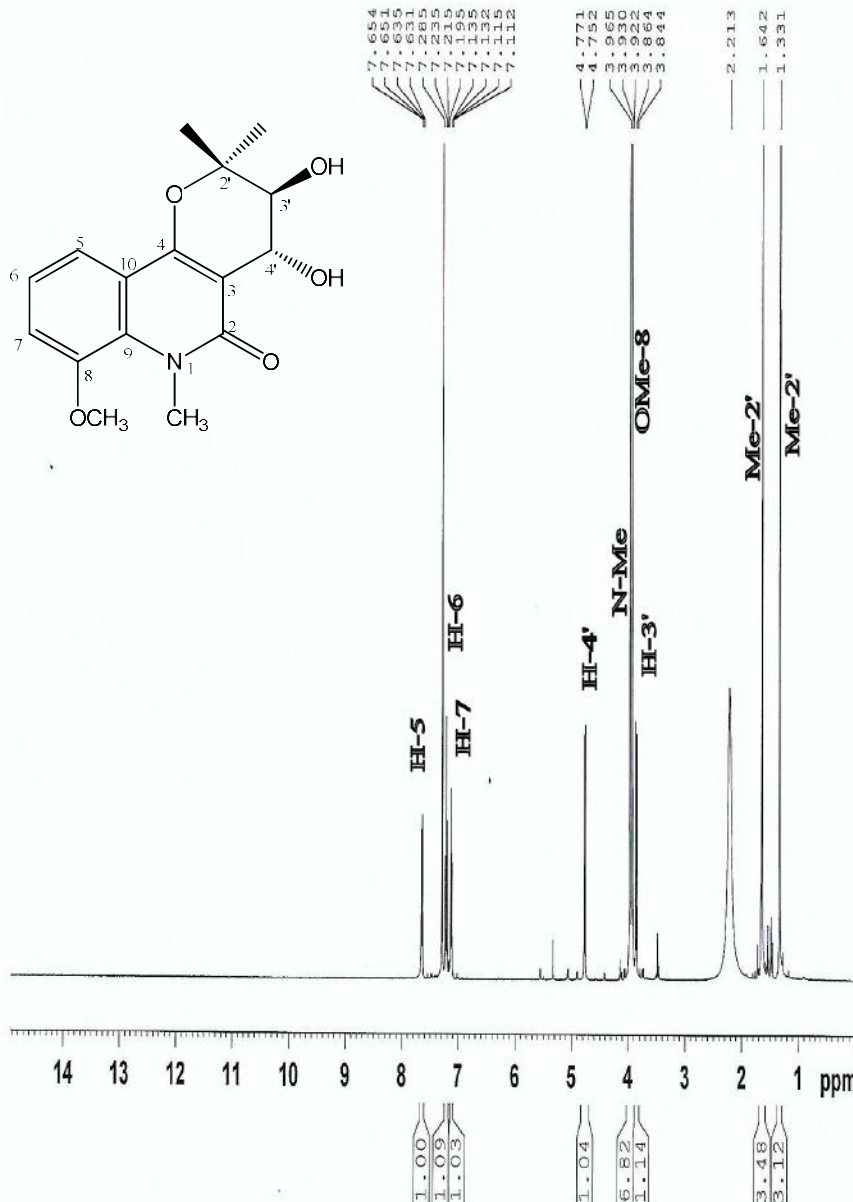
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S2: ^{13}C NMR spectrum (150 MHz, CDCl_3) of Compound 1(Xanthyletin).

Xanthyletin (**1**): white crystals; ^1H -NMR (500 MHz, CDCl_3): δ 7.56 (1H, d, J = 9.5 Hz, H-4), 7.03 (1H, s, H-5), 6.72 (1H, s, H-8), 6.33 (1H, d, J = 10.0 Hz, H-4'), 6.21 (1H, d, J = 9.5 Hz, H-3), 5.68 (1H, d, J = 10 Hz, H-3'), 1.47 (6H, s, 2 x Me, H-5', 6').

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_12



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 PROCNO 1

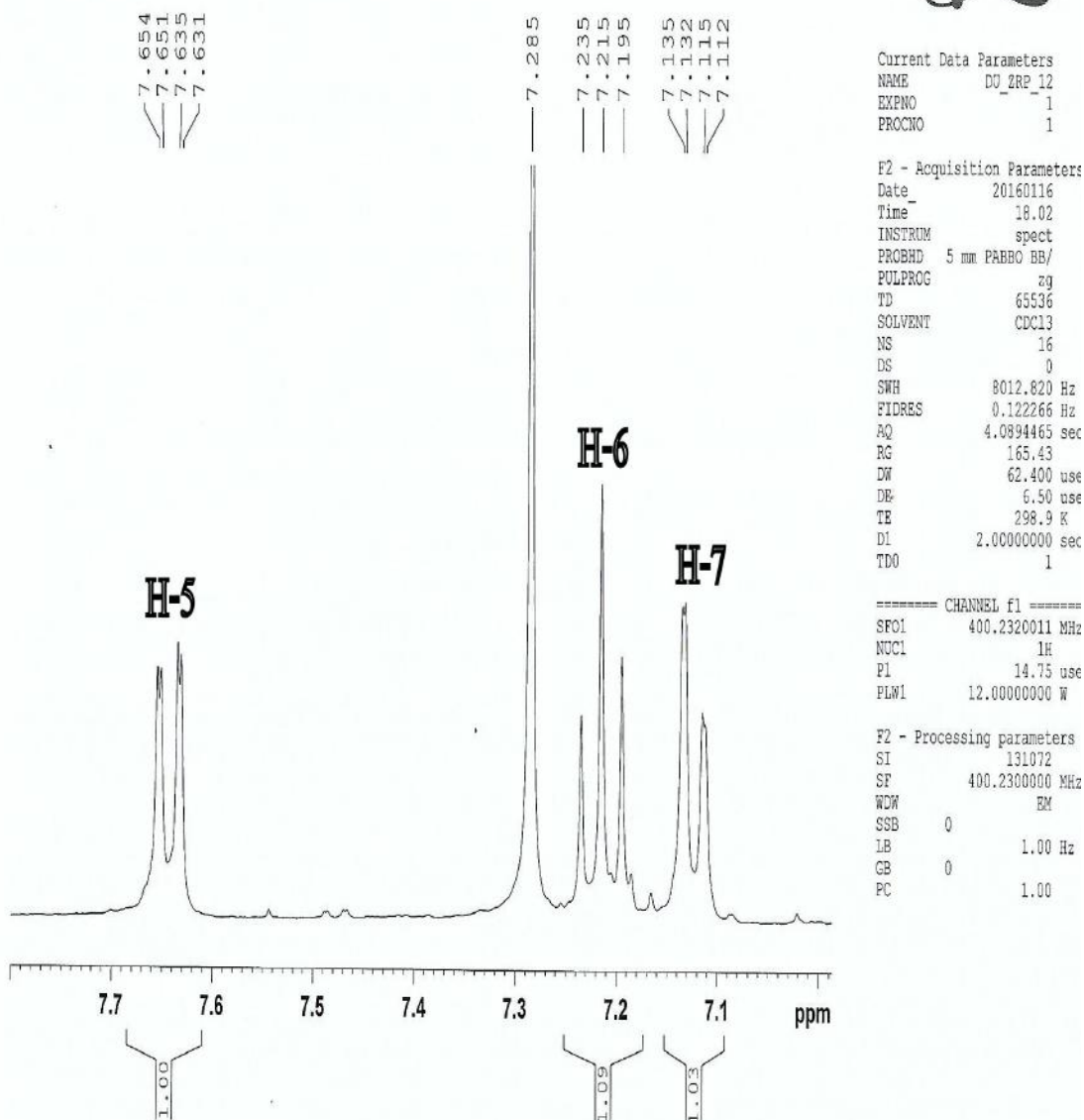
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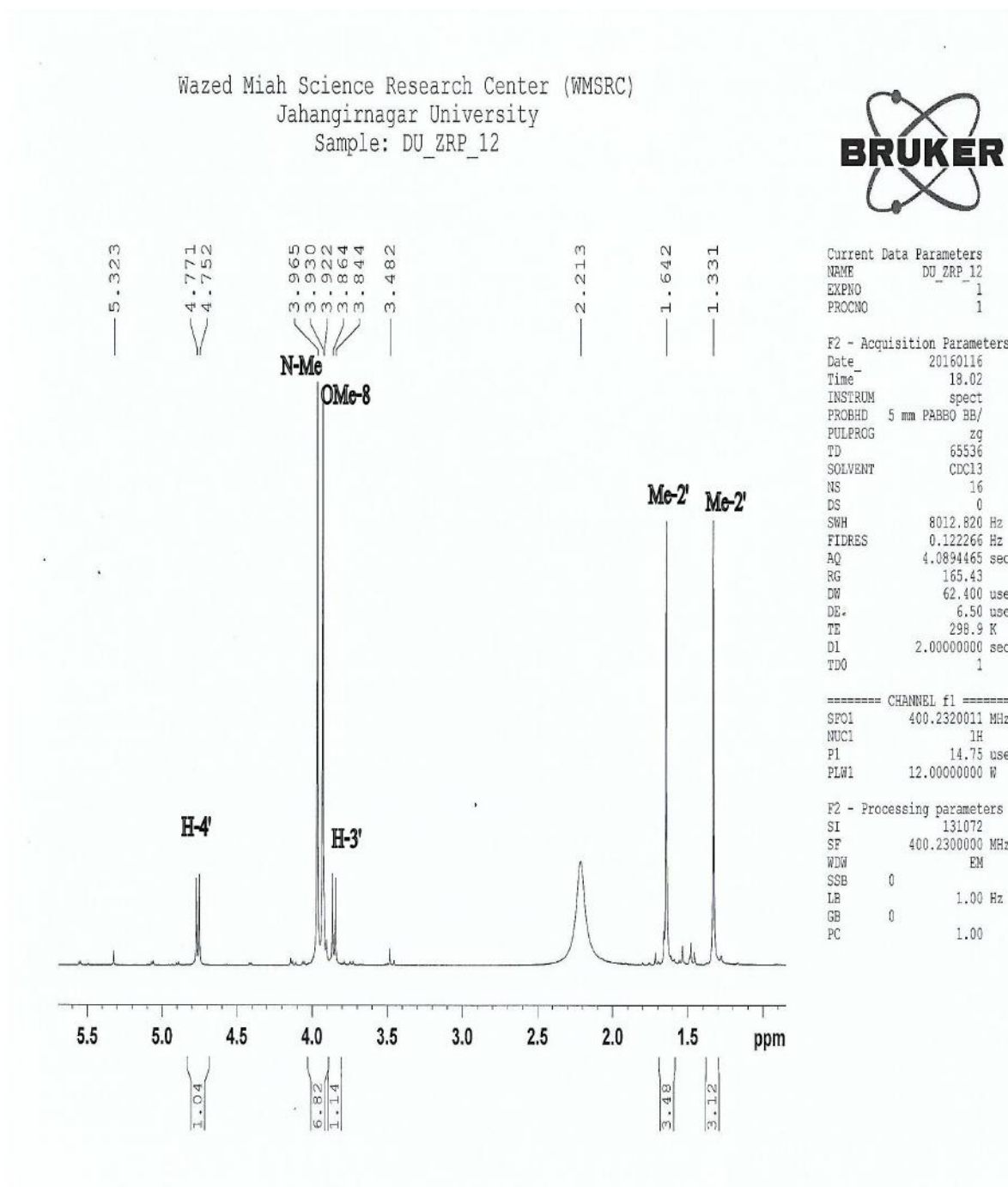
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S3: ¹H NMR (400 MHz, CDCl₃) Spectrum of Compound 2 (Zanthodioline)

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 Sample: DU_ZRP_12

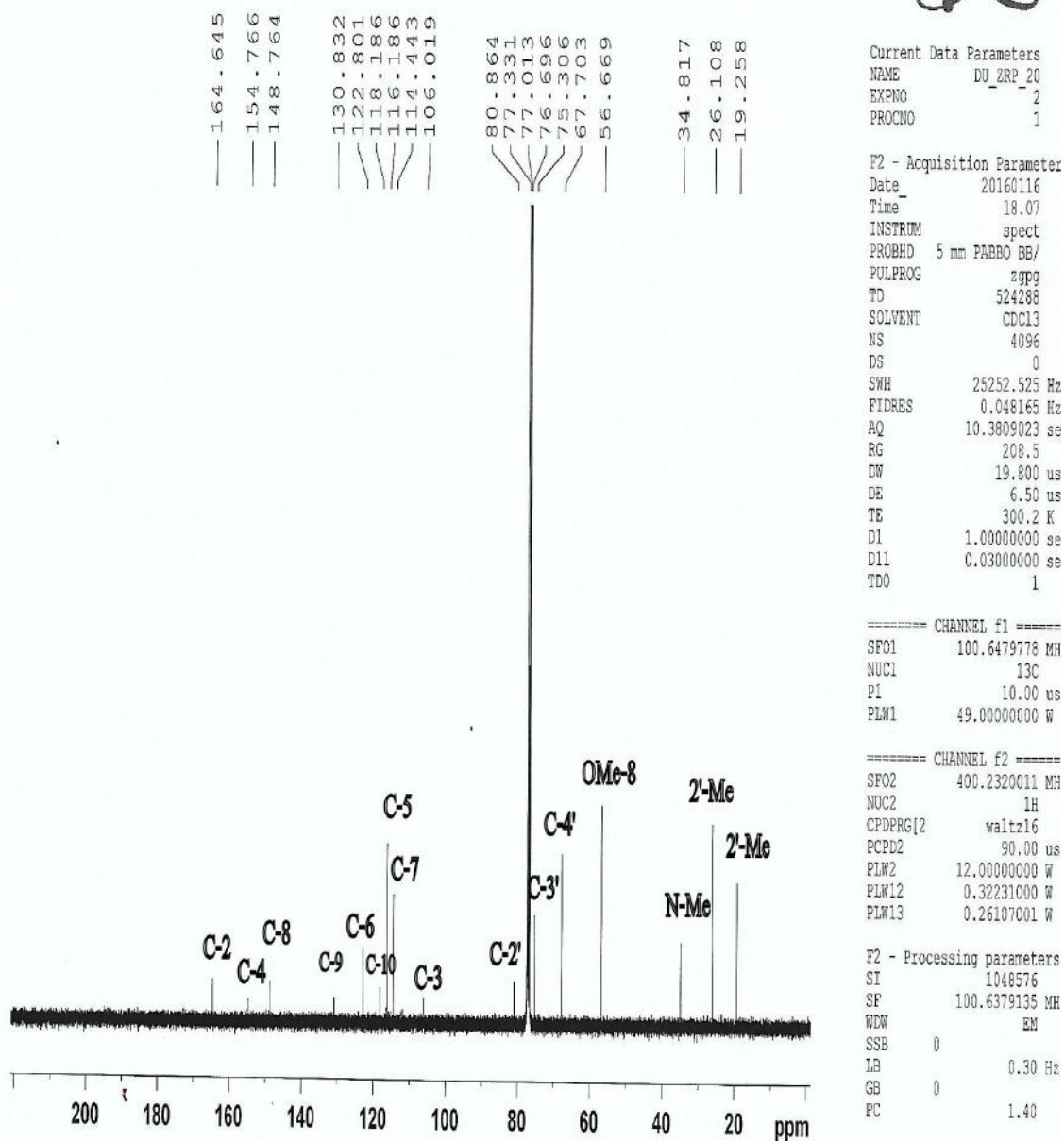


S4 : Partially expanded ^1H NMR spectrum (400 MHz, CDCl_3) of Compound 2



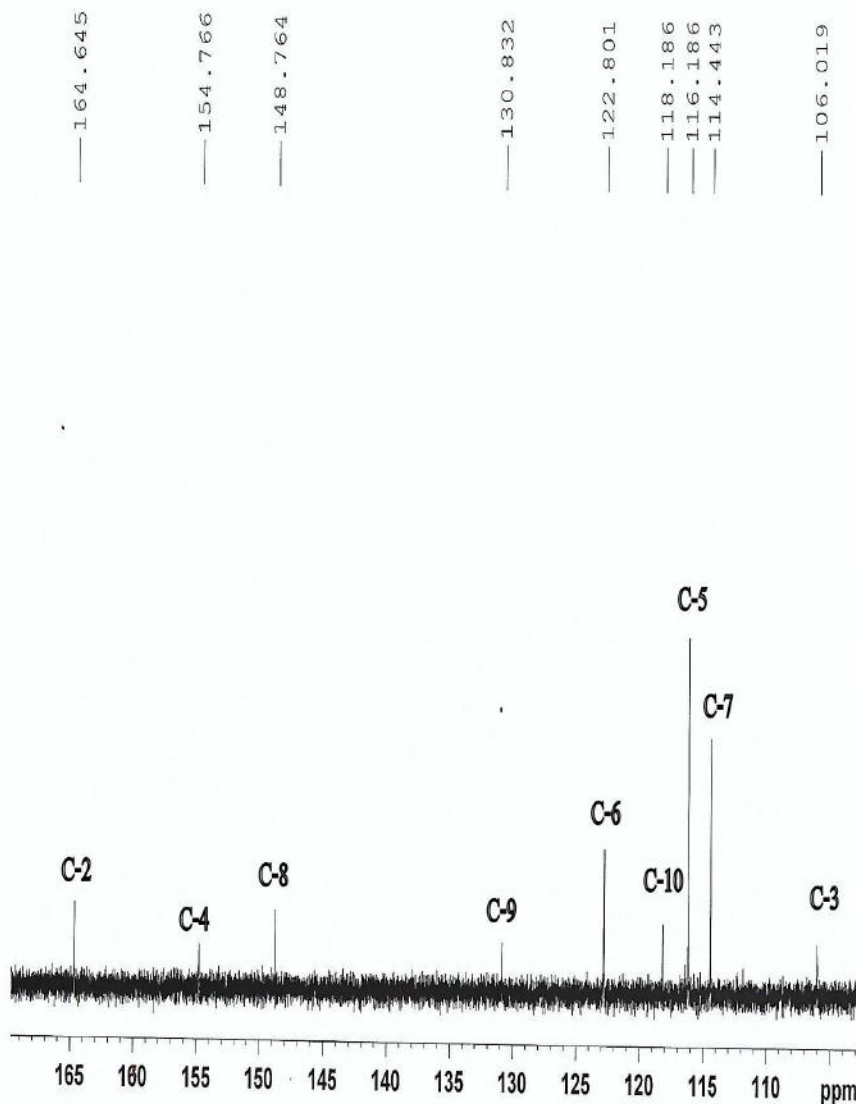
S5 : Partially expanded ^1H NMR (400 MHz, CDCl_3) Spectrum of Compound 2 (Zanthodioline)

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 Sample: DU_ZRP_12



S6: ¹³C NMR spectrum (100 MHz, CDCl₃) of Compound 2 (Zanthodioline)

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 Sample: DU_ZRP_12



Current Data Parameters
 NAME DU_ZRP_20
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
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 PULPROG zgpg
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 SOLVENT CDCl3
 NS 4096
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 FIDRES 0.048165 Hz
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 DW 19.800 usec
 DE+ 6.50 usec
 TE 300.2 K
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 D11 0.03000000 sec
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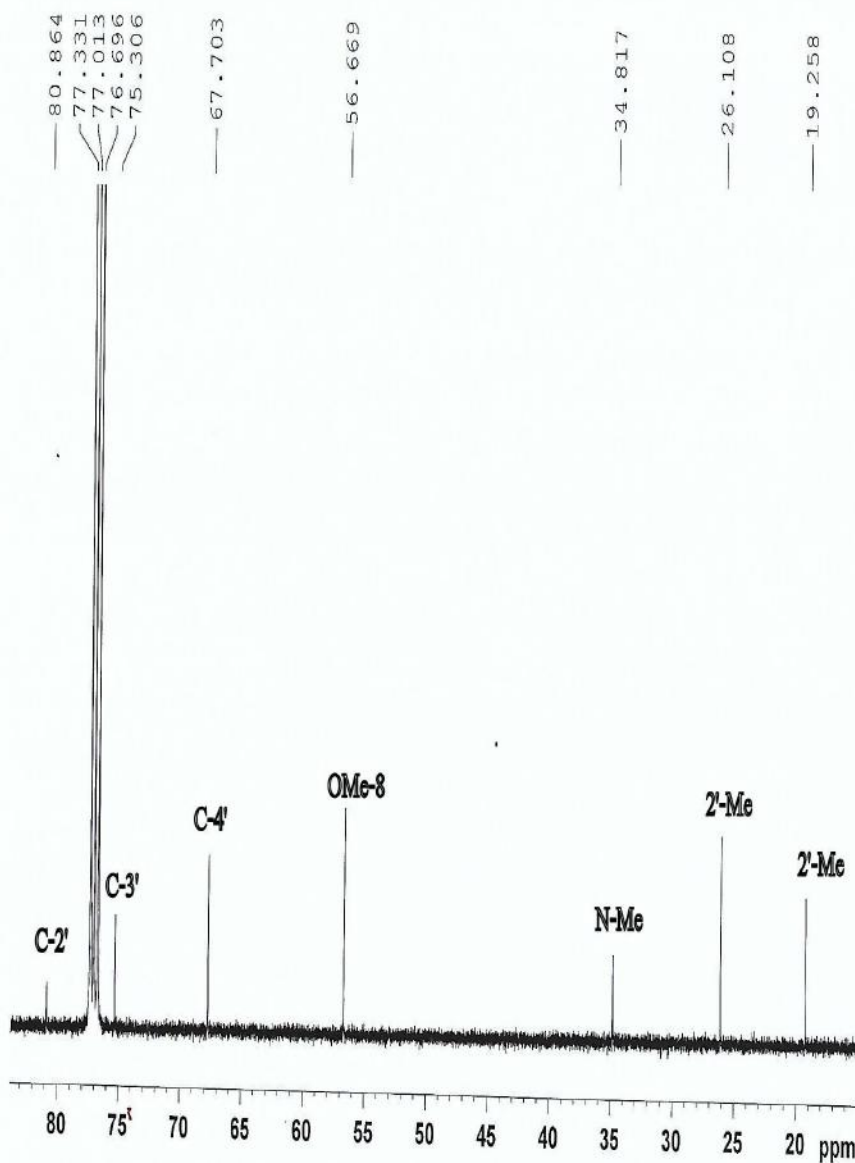
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 PLW12 0.32231000 W
 PLW13 0.26107001 W

F2 - Processing parameters
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 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.40

S7 : Partially expanded ^{13}C NMR spectrum (100 MHz, CDCl_3) of Compound 2 (Zanthodioline)

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 Sample: DU_ZRP_12



Current Data Parameters
 NAME DU_ZRP_20
 EXPNO 2
 PROCNO 1

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 FIDRES 0.048165 H
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 DW 19.800 u
 DE 6.50 u
 TE 300.2 K
 D1 1.00000000 s
 D11 0.03000000 s
 TDO 1

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 NUC1 13C
 P1 10.00 u
 PLW1 49.00000000 W

==== CHANNEL f2 =====
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 CPDPRG2 waltz16
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 PLW12 0.32231000 W
 PLW13 0.26107001 W

F2 - Processing parameters
 SI 1048576
 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.40

S8 : Partially expanded ^{13}C NMR spectrum (100 MHz, CDCl_3) of Compound 2 (Zanthodioline)

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122.795
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 56.660
 34.817
 26.108
 19.247

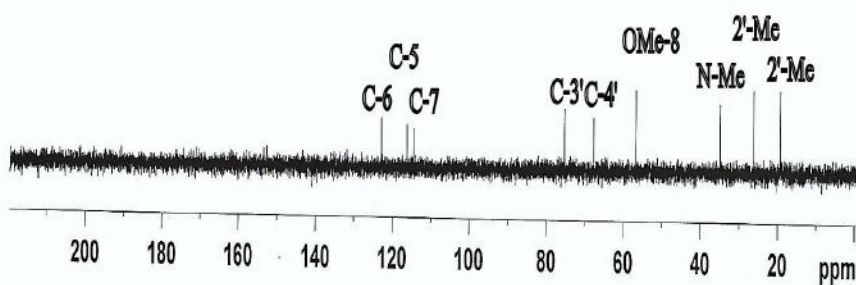
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 PROCNO 1

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 PULPROG deptspl35
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 DS 4
 SWH 25252.525 Hz
 FIDRES 0.385323 Hz
 AQ 1.2976128 sec
 RG 208.5
 DW 19.800 usec
 DE 5.50 usec
 TE 299.4 K
 CNST2 145.0000000
 D1 1.00000000 sec
 D2 0.00344828 sec
 D12 0.00002000 sec
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 P13 2000.00 usec
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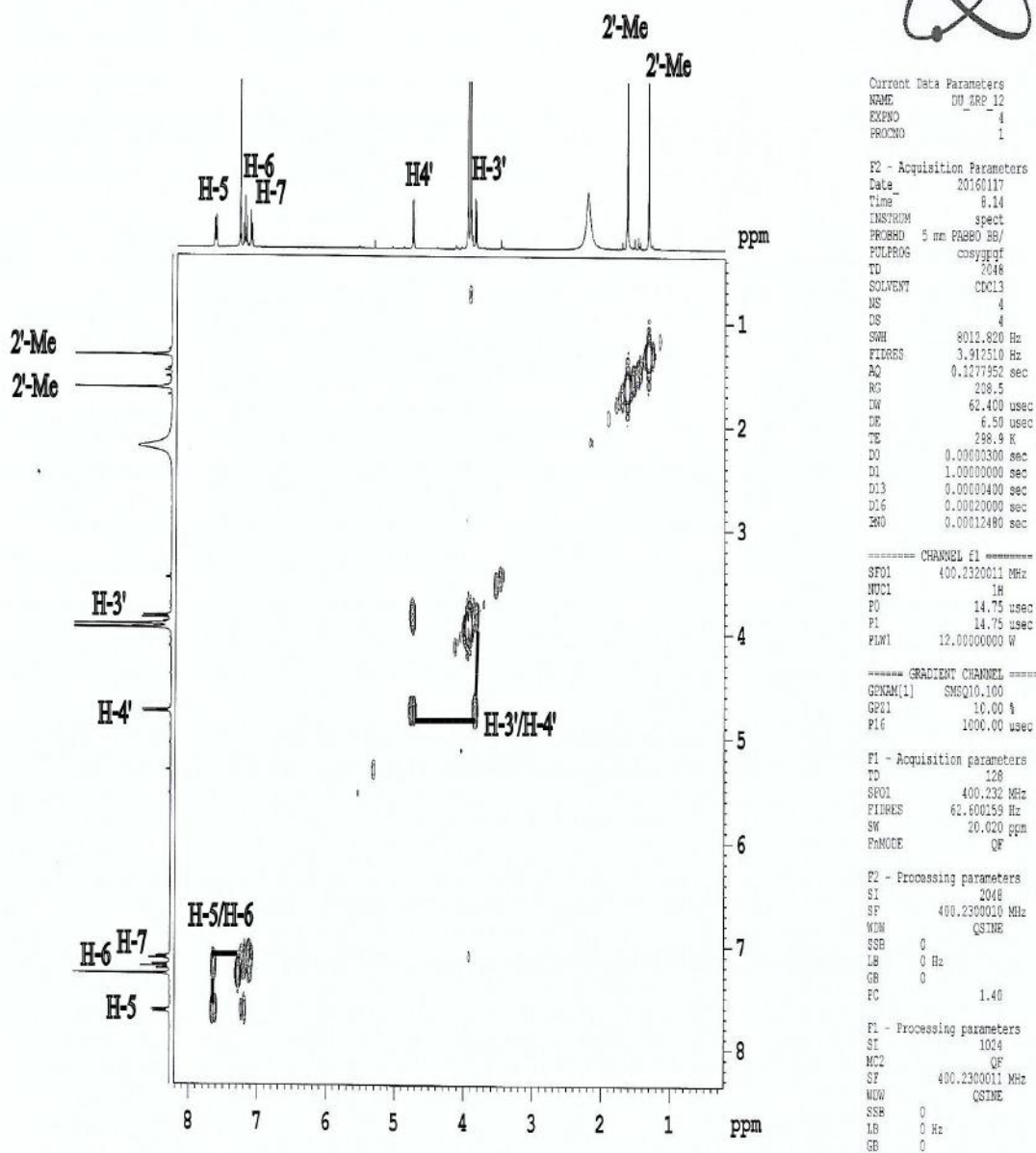
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 P4 29.50 usec
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 PLW2 12.00000000 W
 PLW12 0.32231000 W

F2 - Processing parameters
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 GB 0
 PC 1.40



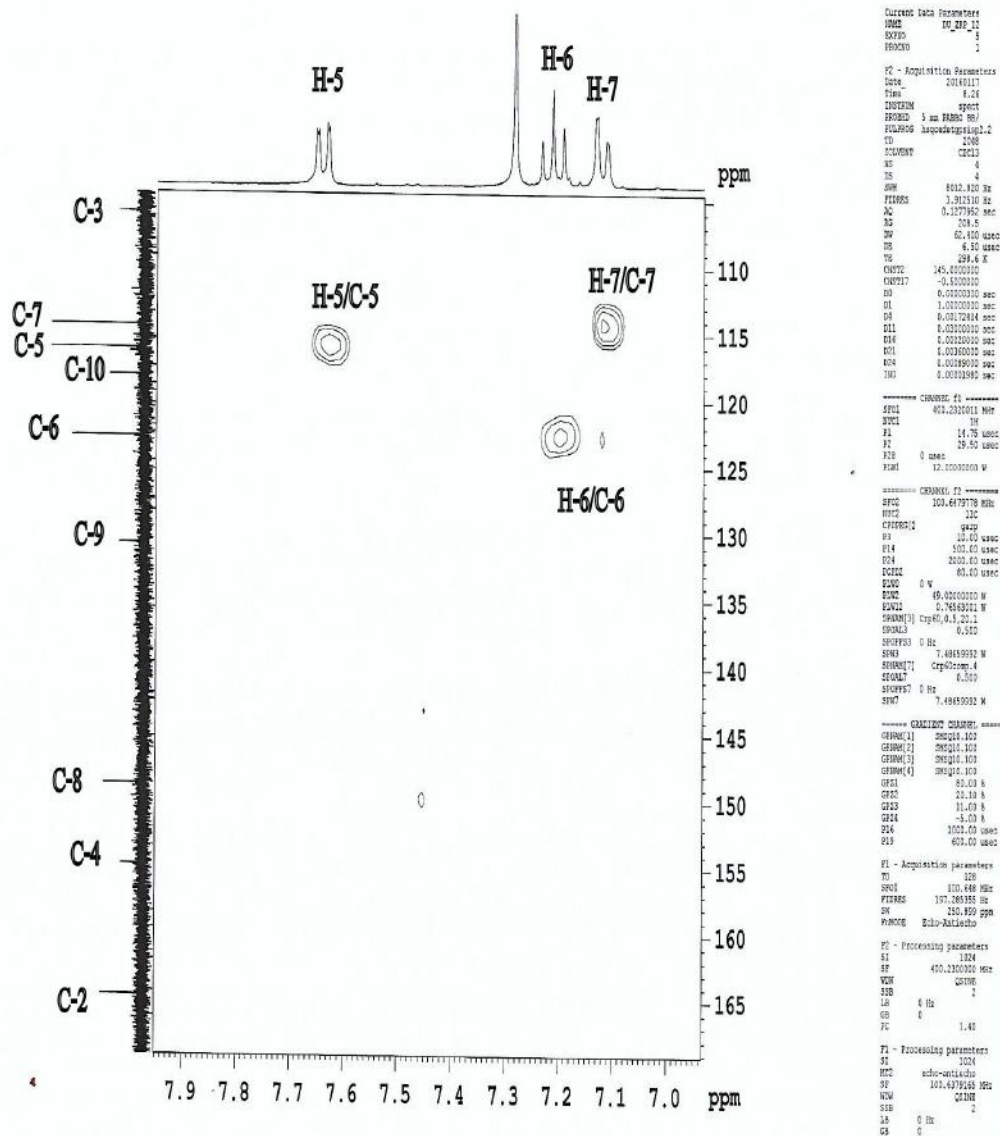
S9: DEPT-135 spectrum of Compound 2 (Zanthodioline)

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 Sample: DU_ZRP_12, cosy



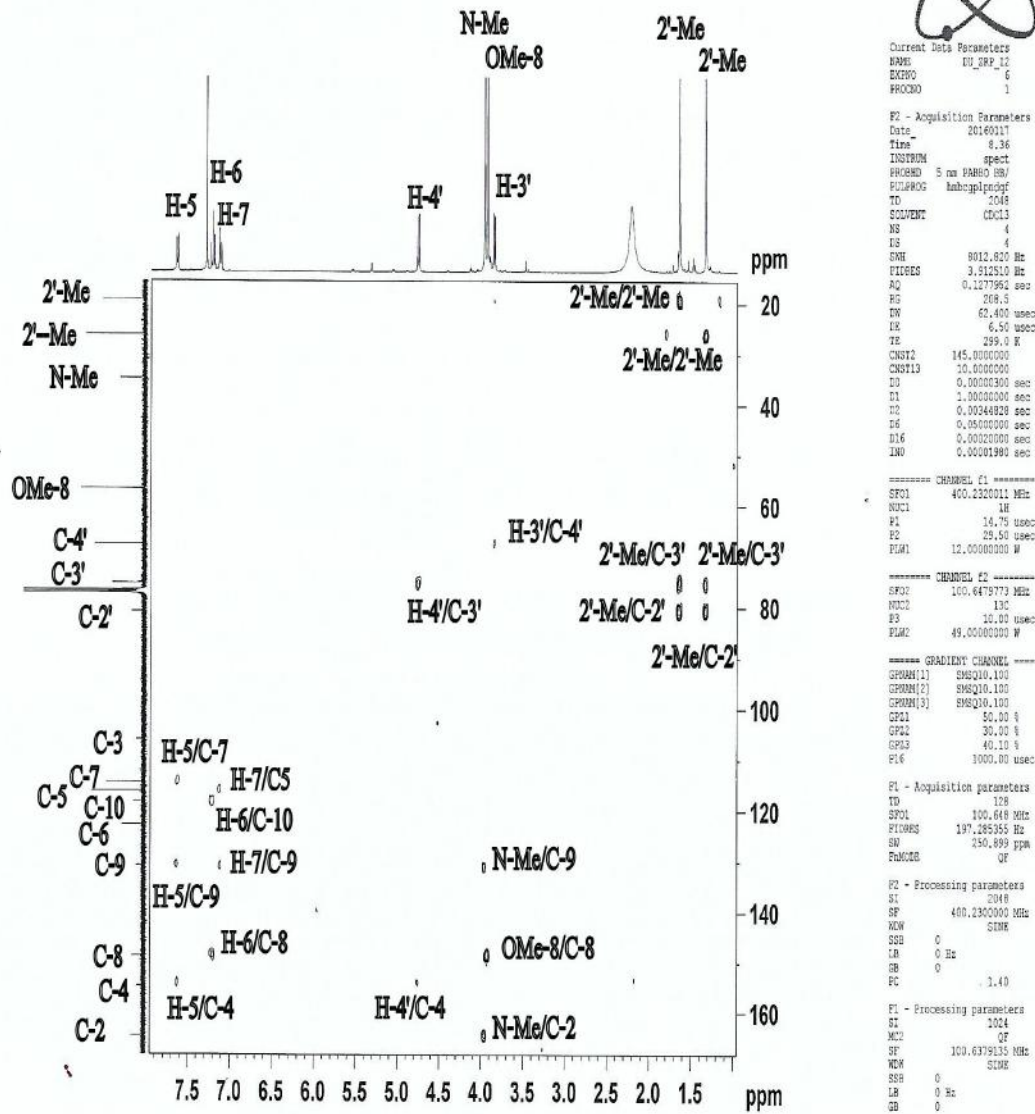
S10: COSY-NMR spectrum (400 MHz, CDCl₃) of Compound 2 (Zanthodioline)

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 Jahangirnagar University
 Sample: DU_ZRP_12, hsqc



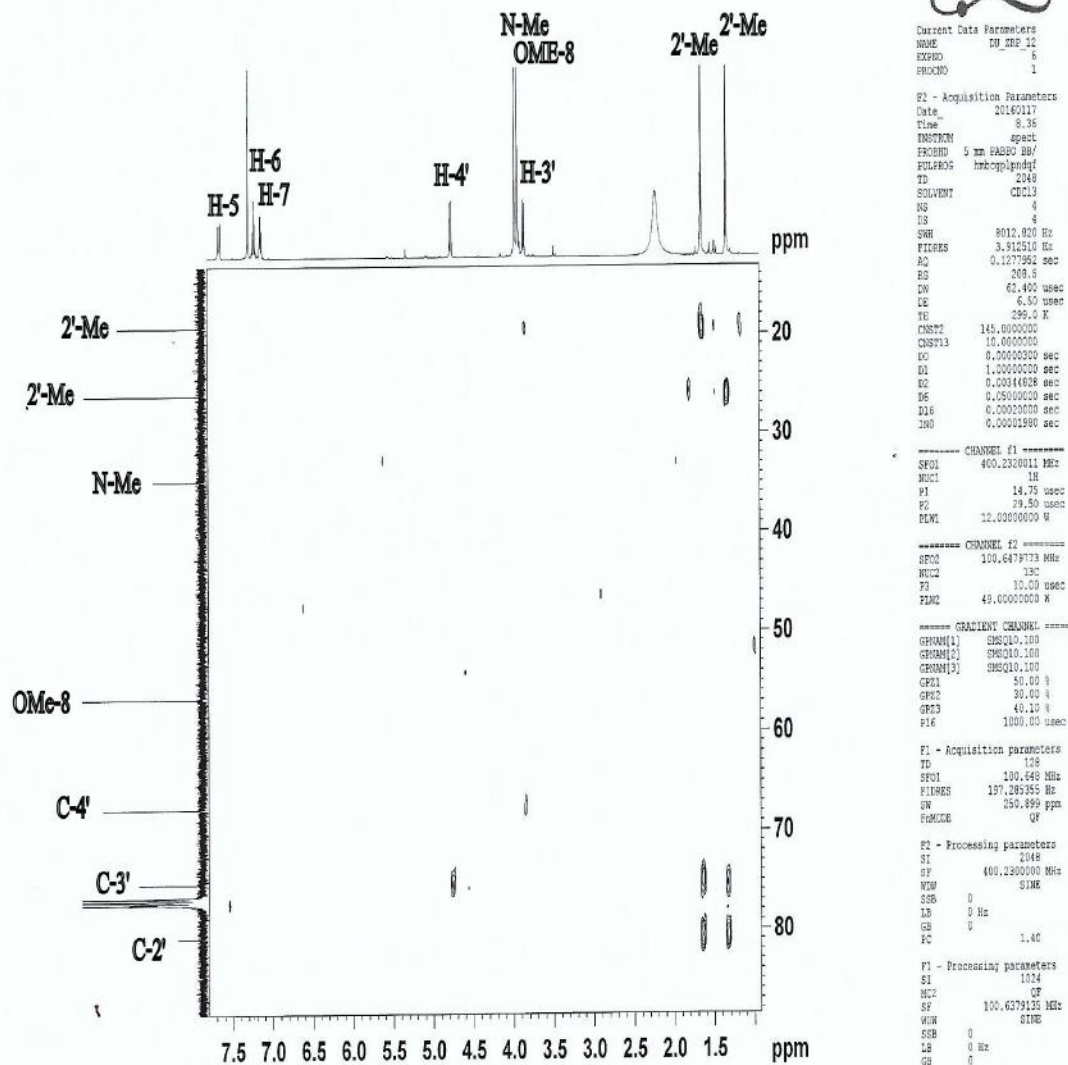
S13: Partially expanded HSQC-NMR spectrum (400 MHz, CDCl₃) of Compound 2 (Zanthodioline)

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_12, hmhc



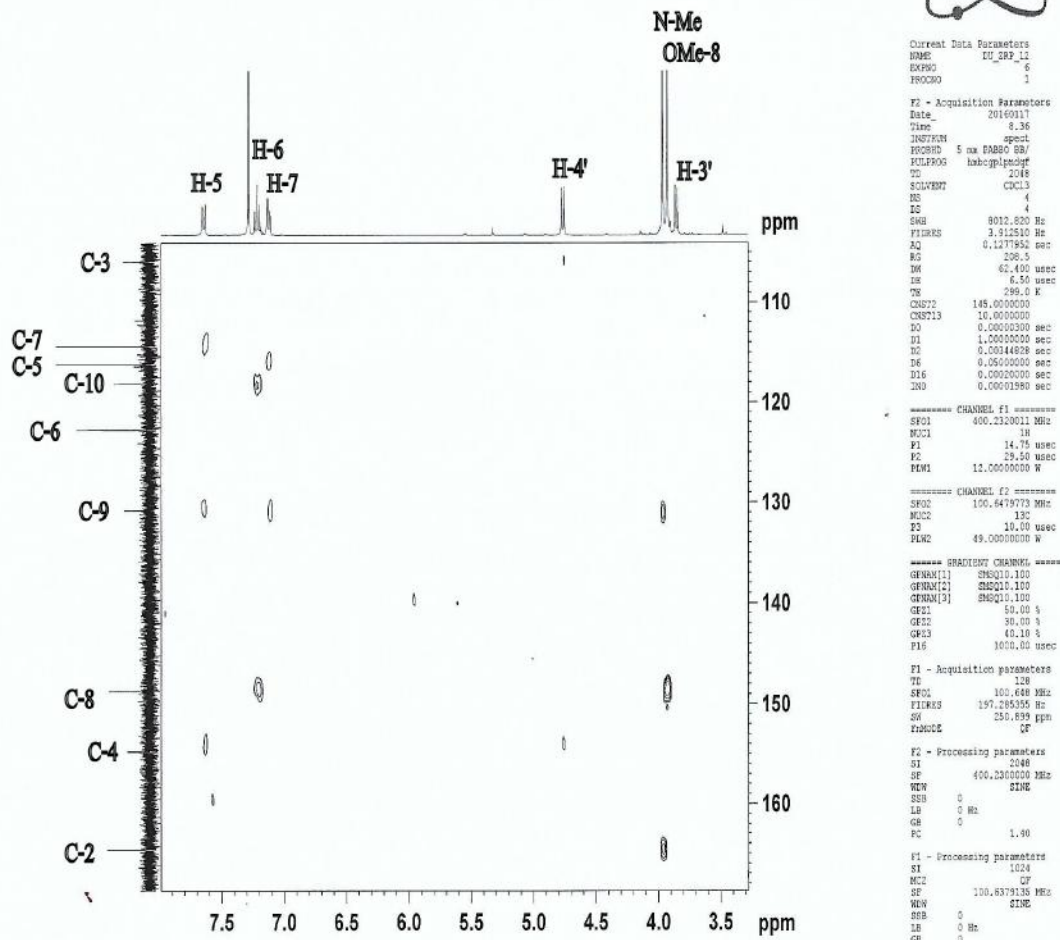
S14: HMBC- NMR spectrum (400 MHz, CDCl₃) of Compound 2 (Zanthodioline)

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 Jahangirnagar University
 Sample: DU_ZRP_12, hmbc



S15 : Partially expanded HMBC- NMR spectrum (400 MHz, CDCl₃) of Compound 2 (Zanthodioline)

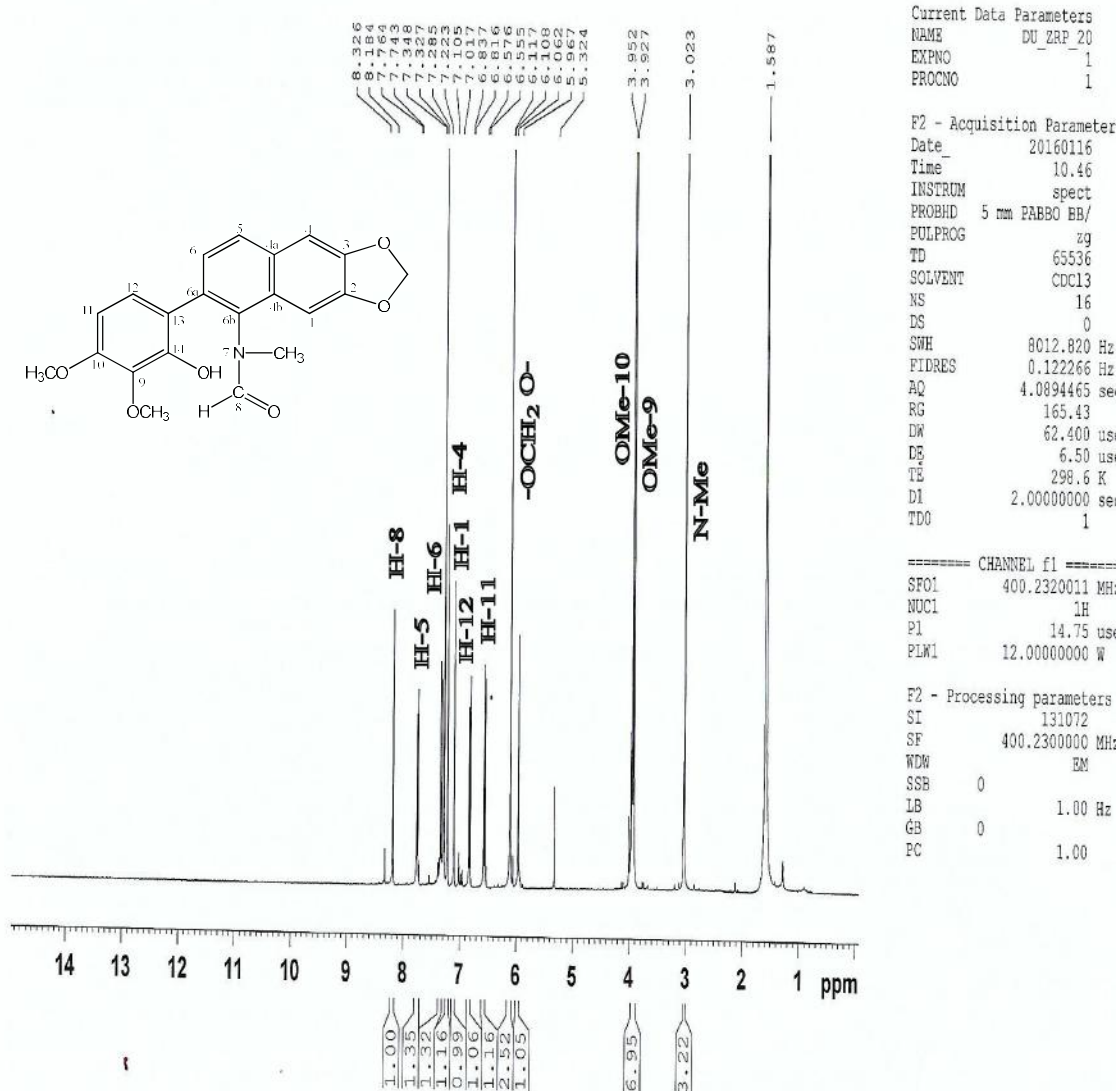
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 Jahangirnagar University
 Sample: DU_ZRP_12, hmhc



S16: Partially expanded HMBC- NMR spectrum (400 MHz, CDCl₃) of Compound 2 (Zanthodioline).

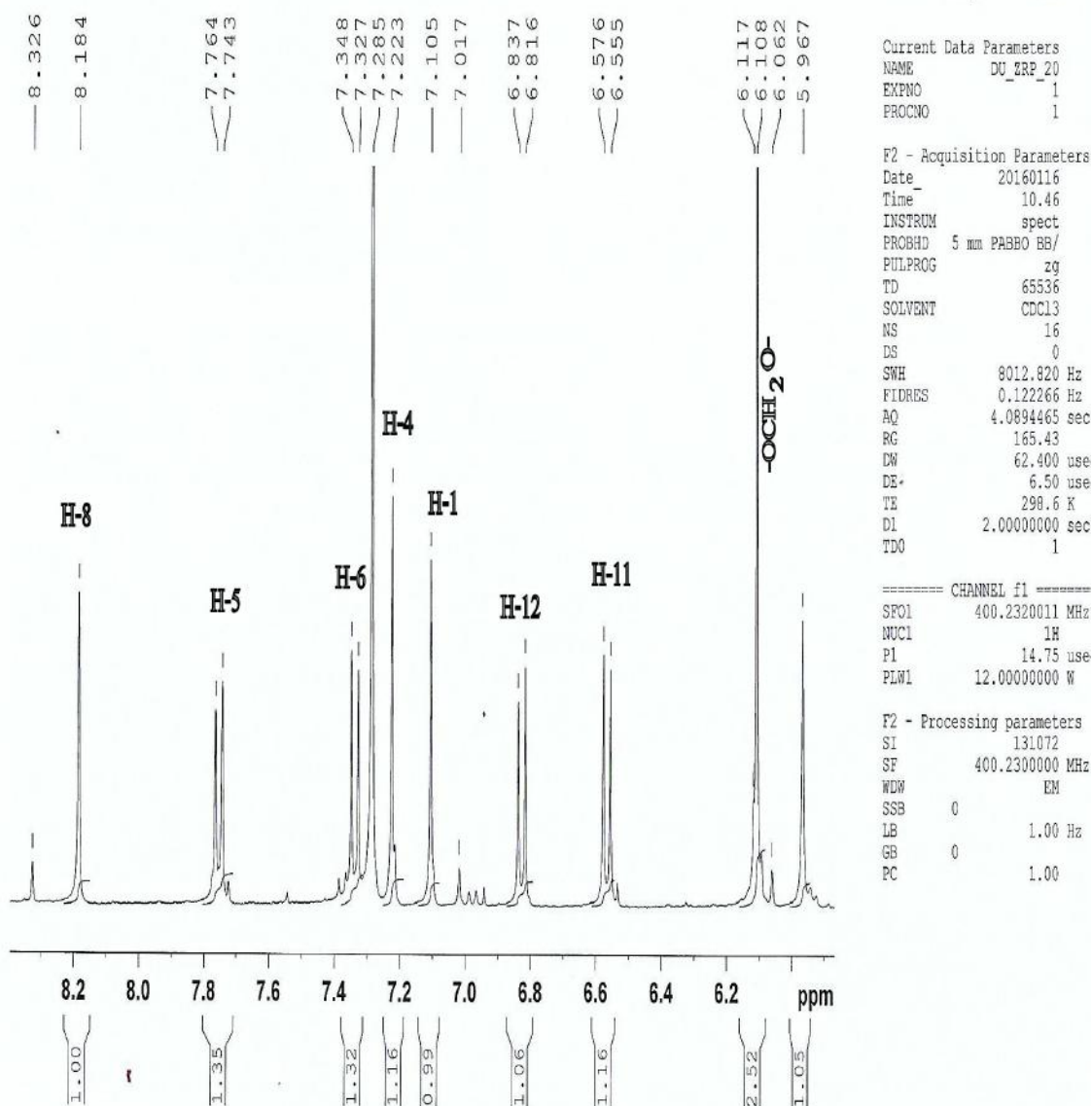
Zanthodioline (2): white crystals; ¹H-NMR (500 MHz, CDCl₃): δ 7.64 (dd, *J* = 8.0, 1.2 Hz, H-5), 7.22 (1H, t, *J* = 8.0 Hz, H-6), 7.12 (1H, dd, *J* = 8.0, 1.2 Hz, H-7), 4.76 (1H, d, *J* = 8 Hz, H-4'), 3.97 (3H, s, N-Me), 3.93 (3H, s, OMe-8), 3.84 (1H, d, *J* = 8 Hz, H-3'), 1.64 (3H s, H-2' Me), 1.33 (3H, s, H-2' Me). ¹³C-NMR (125 MHz, CDCl₃): δ 164.6 (C-2), 154.8 (C-4), 148.8 (C-8), 130.8 (C-9), 122.8 (C-6), 118.2 (C-10), 116.2 (C-5), 114.4 (C-7), 106.0 (C-3), 80.9 (C-2'), 75.3 (C-3'), 67.7 (C-4'), 56.7 (OMe-8), 34.8 (N-Me), 26.1 (C-2' Me), 19.3 (C-2' Me).

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 Sample: DU_ZRP_20



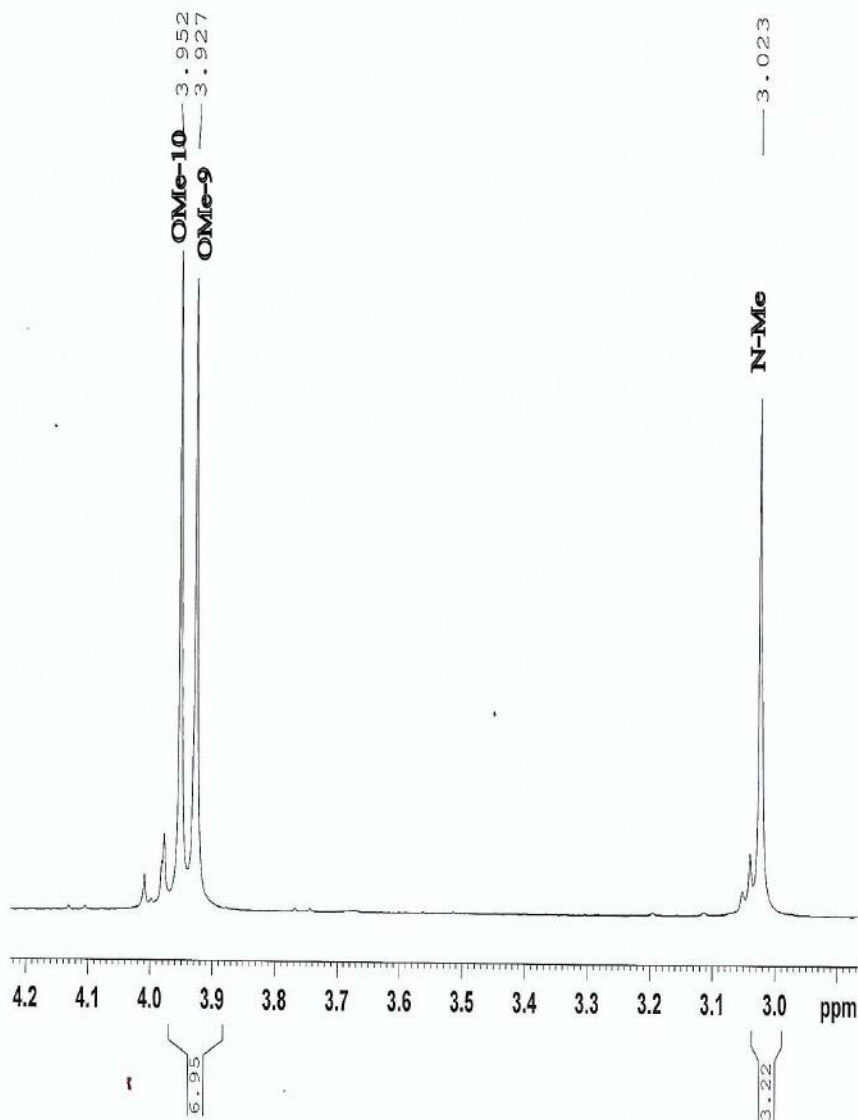
S17 : ¹H NMR (400 MHz, CDCl₃) Spectrum of Compound 3 (Arnottianamide).

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 Sample: DU_ZRP_20



S18 : Partially expanded ^1H NMR (400 MHz, CDCl_3) spectrum of Compound 3 (Arnottianamide).

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Sample: DU_ZRP_20



Current Data Parameters
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PROCNO 1

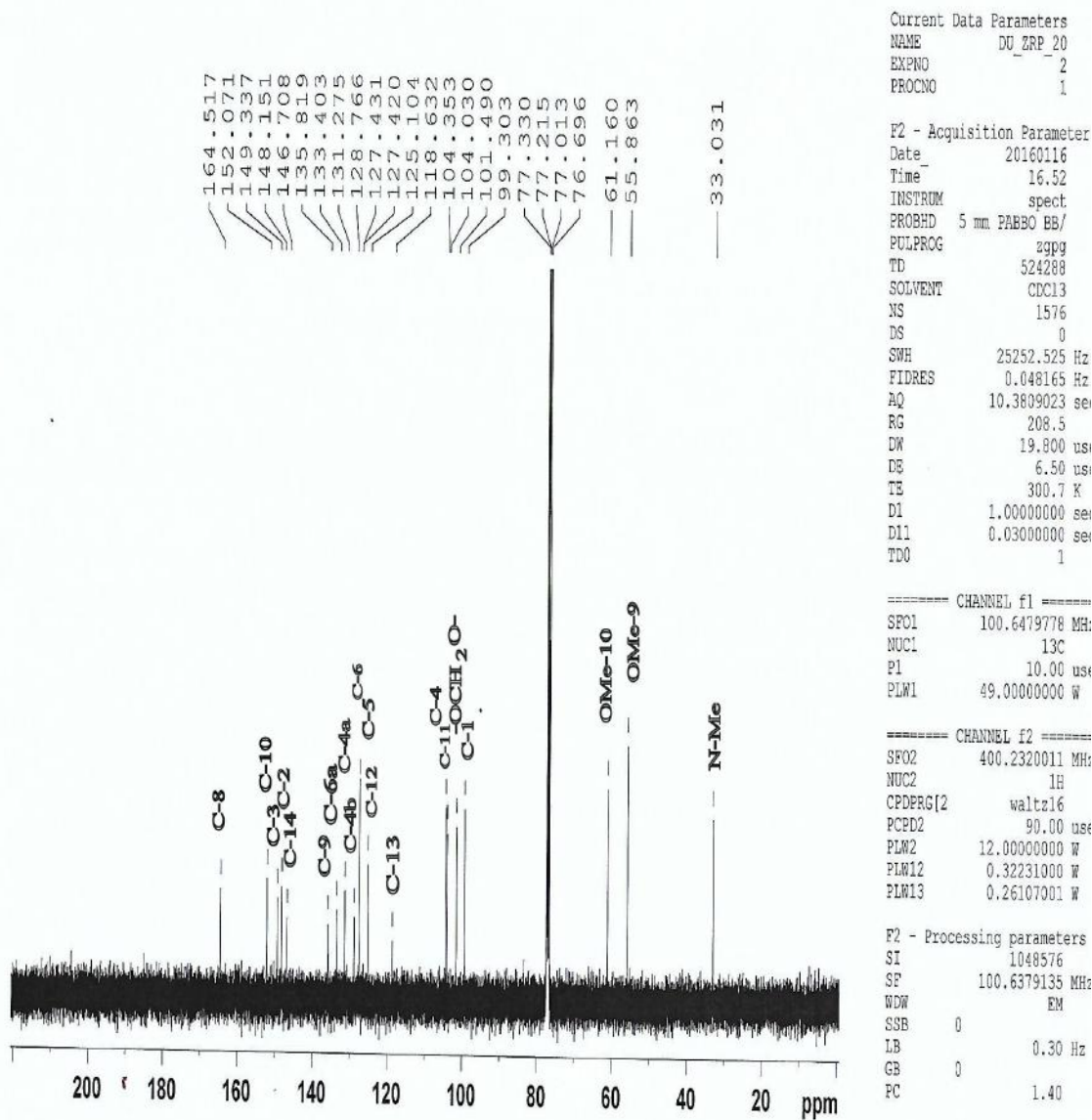
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FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 165.43
DW 62.400 us
DE 6.50 us
TE 298.6 K
DL 2.00000000 sec
TDO 1

===== CHANNEL f1 =====
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NUC1 1H
P1 14.75 us
PLW1 12.00000000 W

F2 - Processing parameters
SI 131072
SF 400.2300000 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
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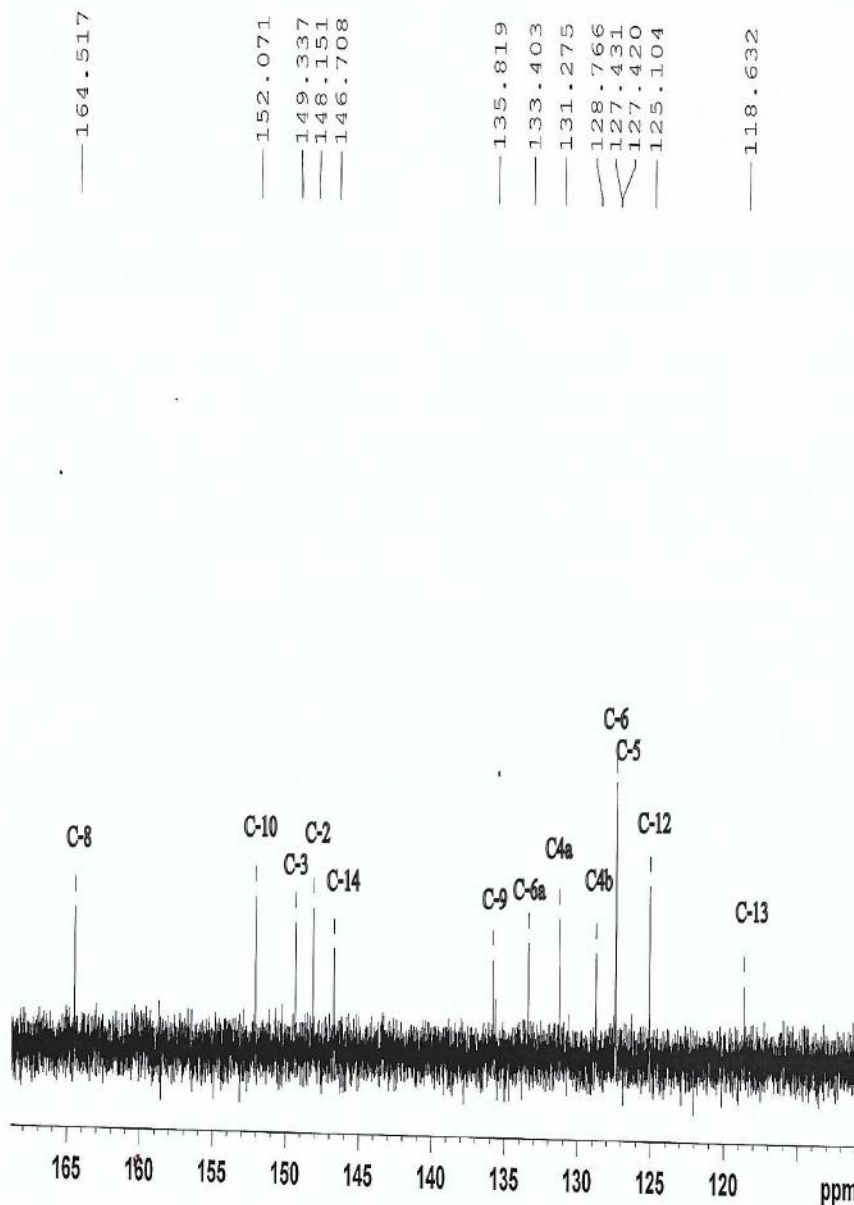
S19 : Partially expanded ^1H NMR (400 MHz, CDCl_3) spectrum of Compound 3 (Arnottianamide).

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 Sample: DU_ZRP_20



S20 : ¹³C NMR spectrum (100 MHz, CDCl₃) of Compound 3 (Arnottianamide).

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 Jahangirnagar University
 Sample: DU_ZRP_20



Current Data Parameters
 NAME DU_ZRP_20
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
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 PULPROG zgpg
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 NS 1576
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 SWH 25252.525 Hz
 FIDRES 0.048165 Hz
 AQ 10.3809023 sec
 RG 208.5
 DW 19.800 usec
 DE 6.50 usec
 TE 300.7 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TDO 1

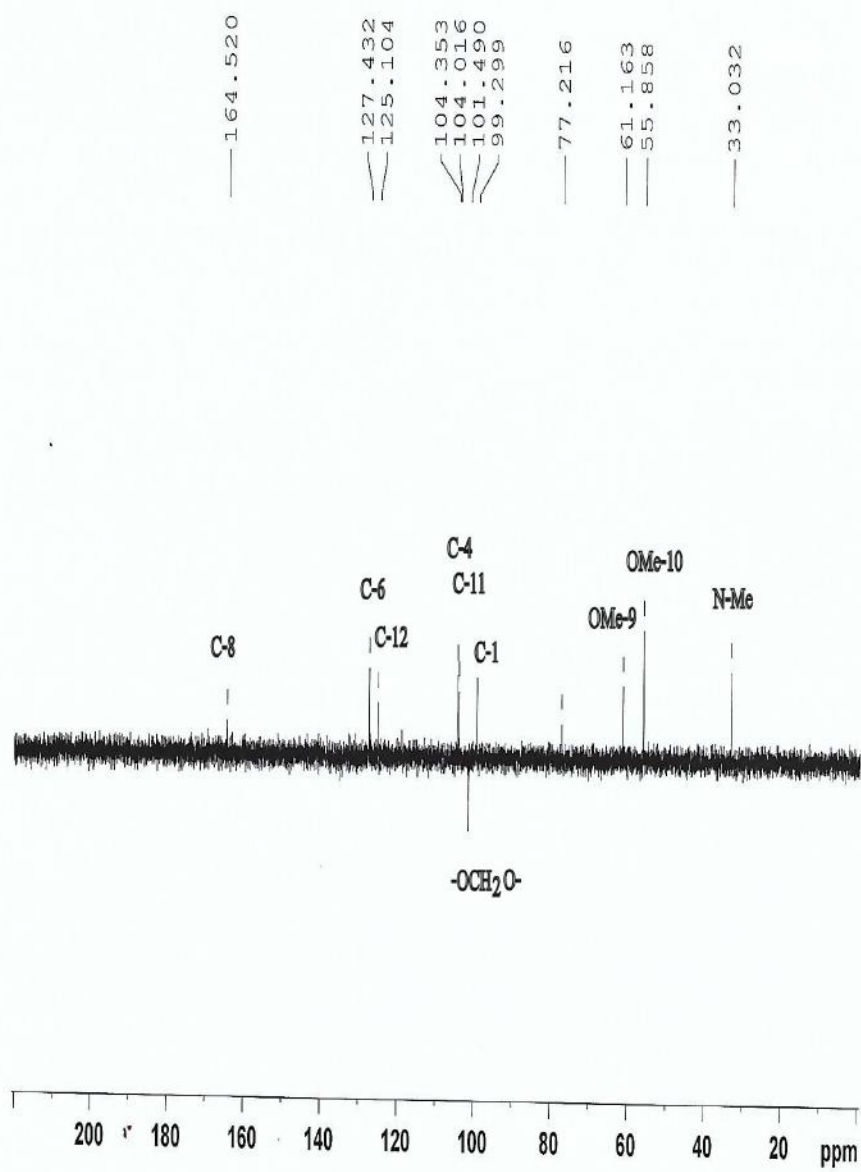
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 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
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 PLW12 0.32231000 W
 PLW13 0.26107001 W

F2 - Processing parameters
 SI 1048576
 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.40

S21: Partially expanded ¹³C NMR spectrum (100 MHz, CDCl₃) of Compound 3 (Arnottianamide).

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 Jahangirnagar University
 Sample: DU_ZRP_20, dept-135



Current Data Parameters
 NAME DU_ZRP_20
 EXPNO 3
 PROCNO 1

F2 - Acquisition Parameters
 Date 20160116
 Time 16.57
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 TD 65536
 SOLVENT CDCl3
 NS 1536
 DS 4
 SNR 25252.525 Hz
 FIDRES 0.385323 Hz
 AQ 1.2976128 sec
 RG 208.5
 LW 19.800 usec
 DE 6.50 usec
 TE 300.1 K
 CNST2 145.0000000
 D1 1.0000000 sec
 D2 0.00344828 sec
 D1.2 0.00002000 sec
 TDO 1

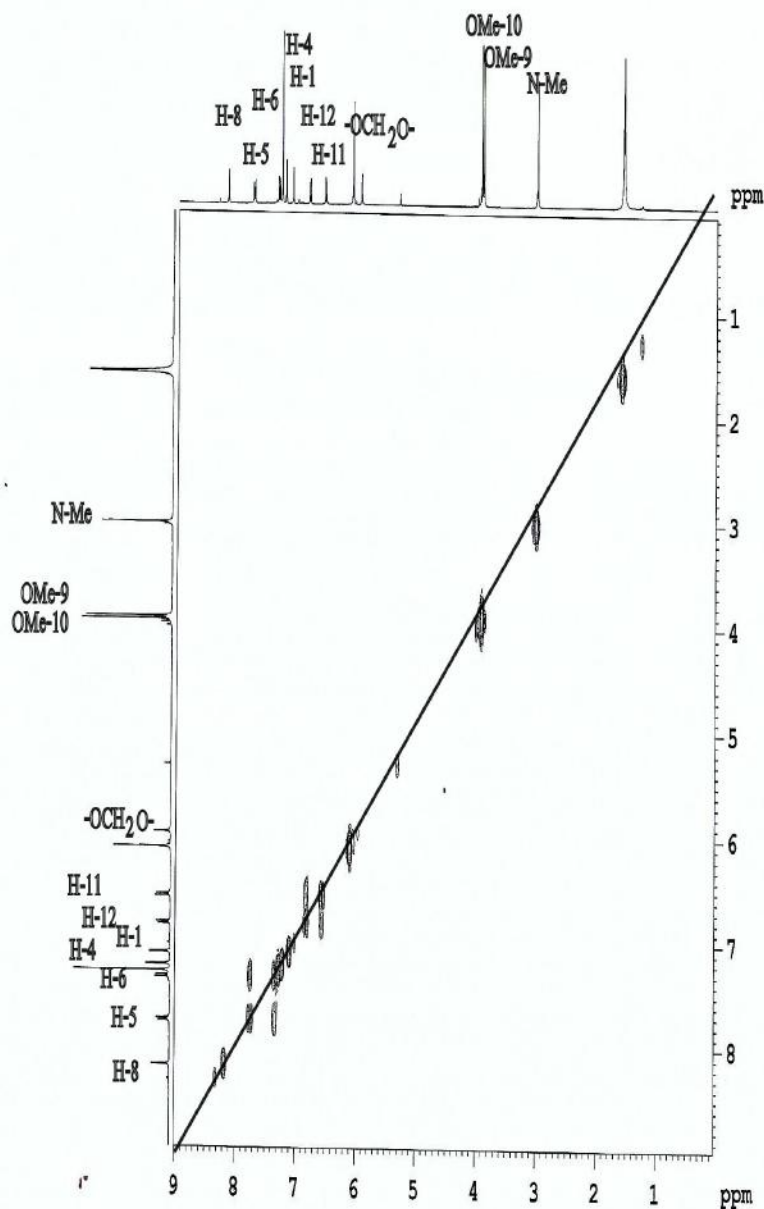
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 SPW5 7.48659992 W

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 P4 29.50 usec
 PCPD2 90.00 usec
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 PLW12 0.32231000 W

F2 - Processing parameters
 SI 32768
 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

S22 : DEPT-135 NMR spectrum (100 MHz, CDCl₃) of Compound 3 (Arnottianamide).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_20, cosy



```

Current Data Parameters
NAME      DU_ZRP_20
EXPNO     4
PROCNO    1

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Time      17.14
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SOLVENT   CDCl3
NS         4
DS         4
SWH        8012.020 Hz
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RG         208.5
IN         62.400 usec
DE         6.50 usec
TE         299.6 K
DO         0.0000300 sec
D1         1.0000000 sec
D13        0.0000400 sec
D16        0.0002000 sec
RG         0.00012480 sec

===== CHANNEL f1 =====
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NUC1       1H
P0         14.75 usec
F1         14.75 usec
PLW1      12.00000000 W

===== GRADIENT CHANNEL =====
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GRP1      10.00 %
P16       1000.00 usec

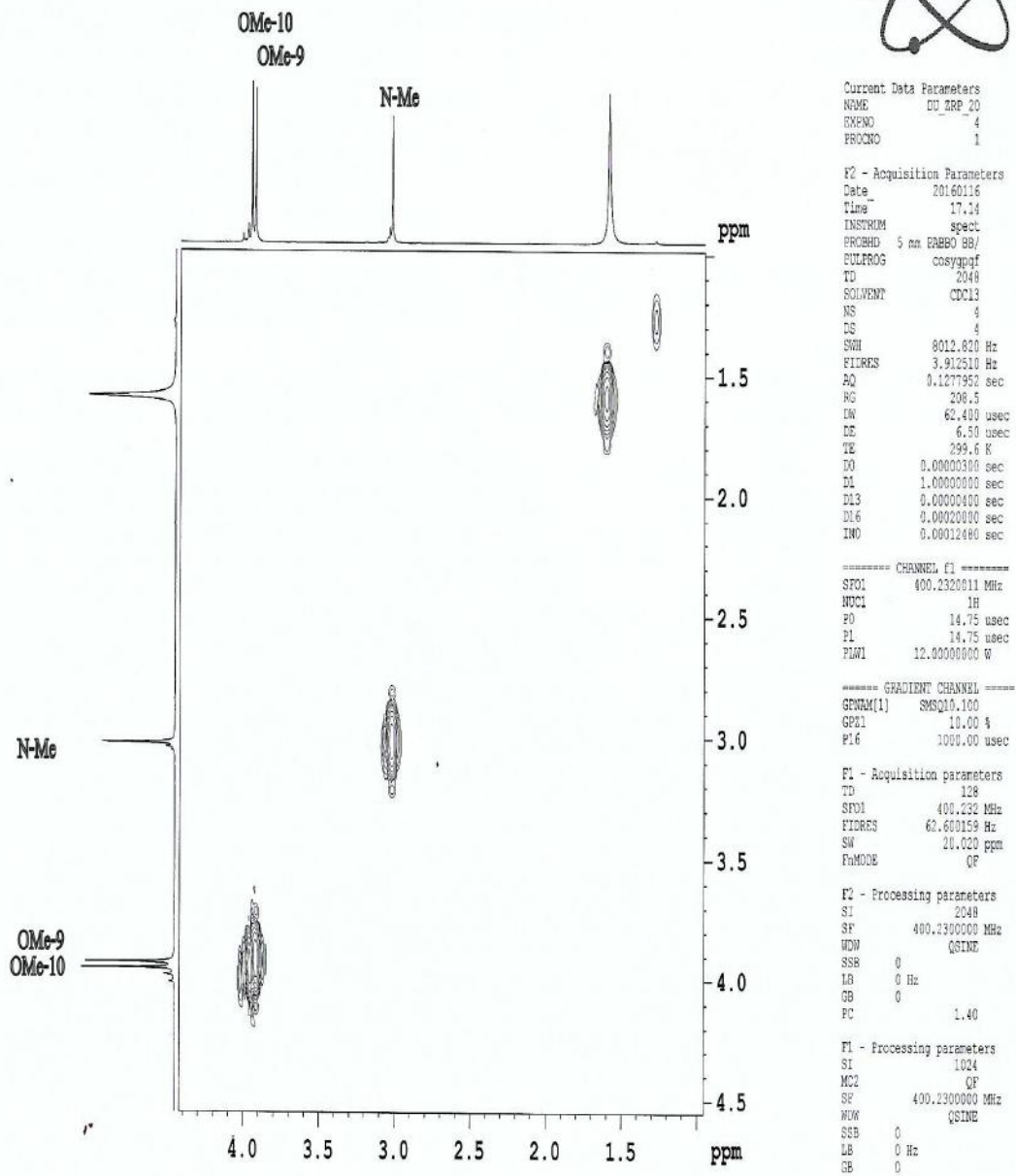
F1 - Acquisition parameters
TD         128
SF01      400.232 MHz
FIDRES     62.600159 Hz
SH         20.000 ppm
F2MODE     QF

F2 - Processing parameters
SI         2048
SF         400.2300000 MHz
WDW        QSINE
SSB        0
LB         0 Hz
GB         0
PC         1.40

F1 - Processing parameters
SI         1024
MC2        QF
SF         400.2300000 MHz
WDW        QSINE
SSB        0
LB         0 Hz
GB         0
  
```

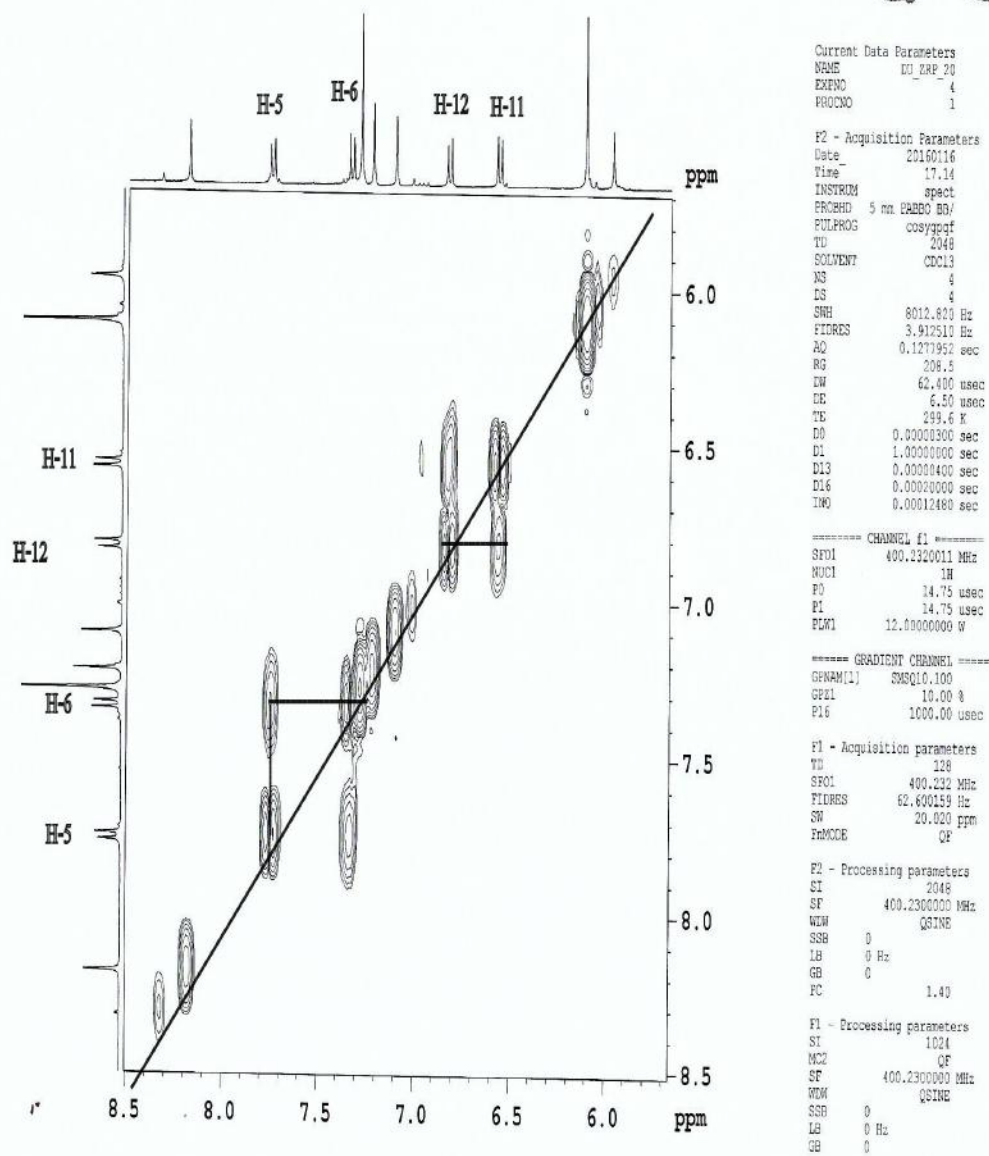
S23: COSY-NMR spectrum (400 MHz, CDCl₃) of Compound **3** (Arnottianamide).

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Jahangirnagar University
Sample: DU_ZRP_20, cosy



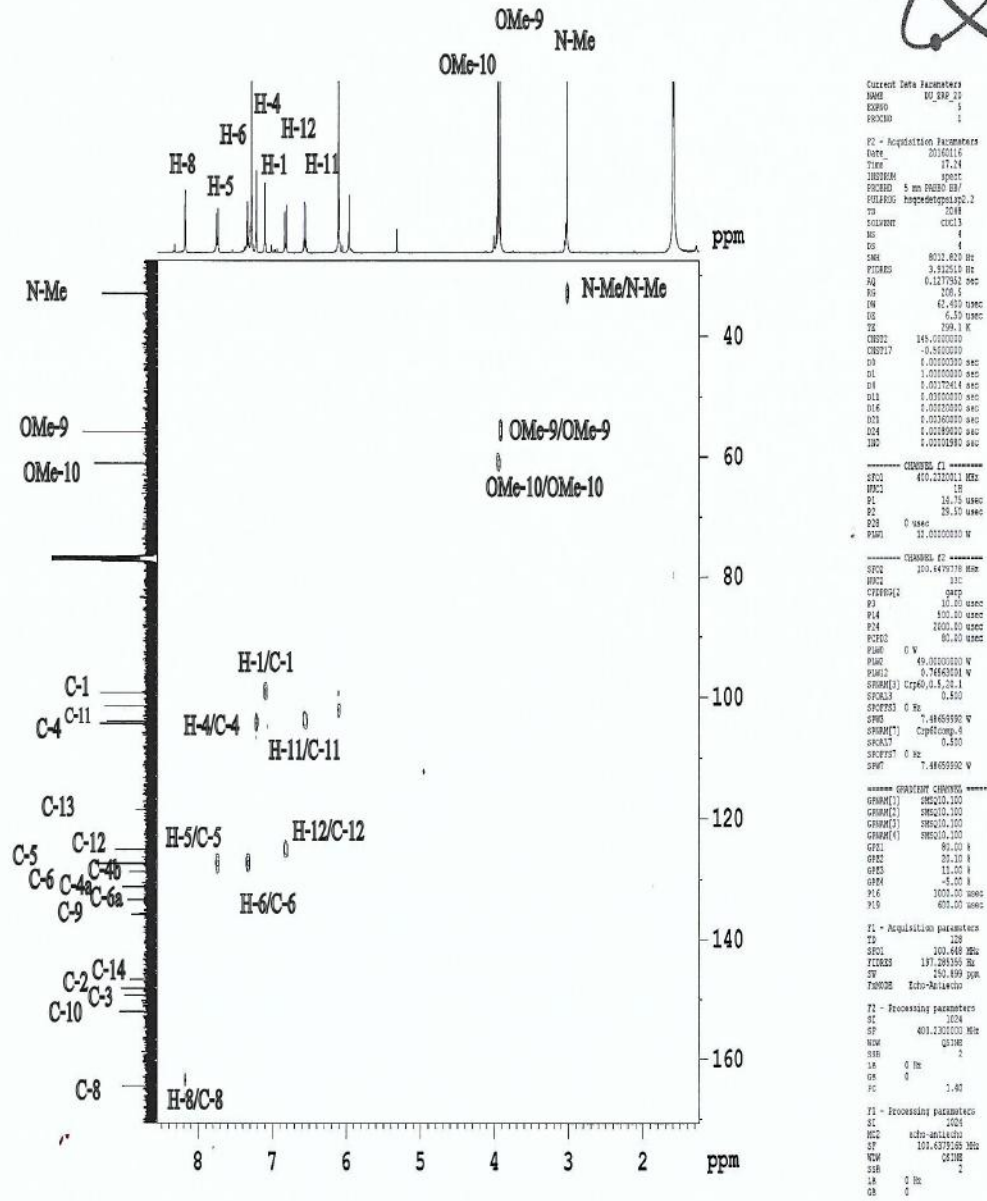
S24 : Partially expanded COSY- NMR spectrum (400 MHz, CDCl₃) of Compound 3 (Arnottianamide).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_20, cosy

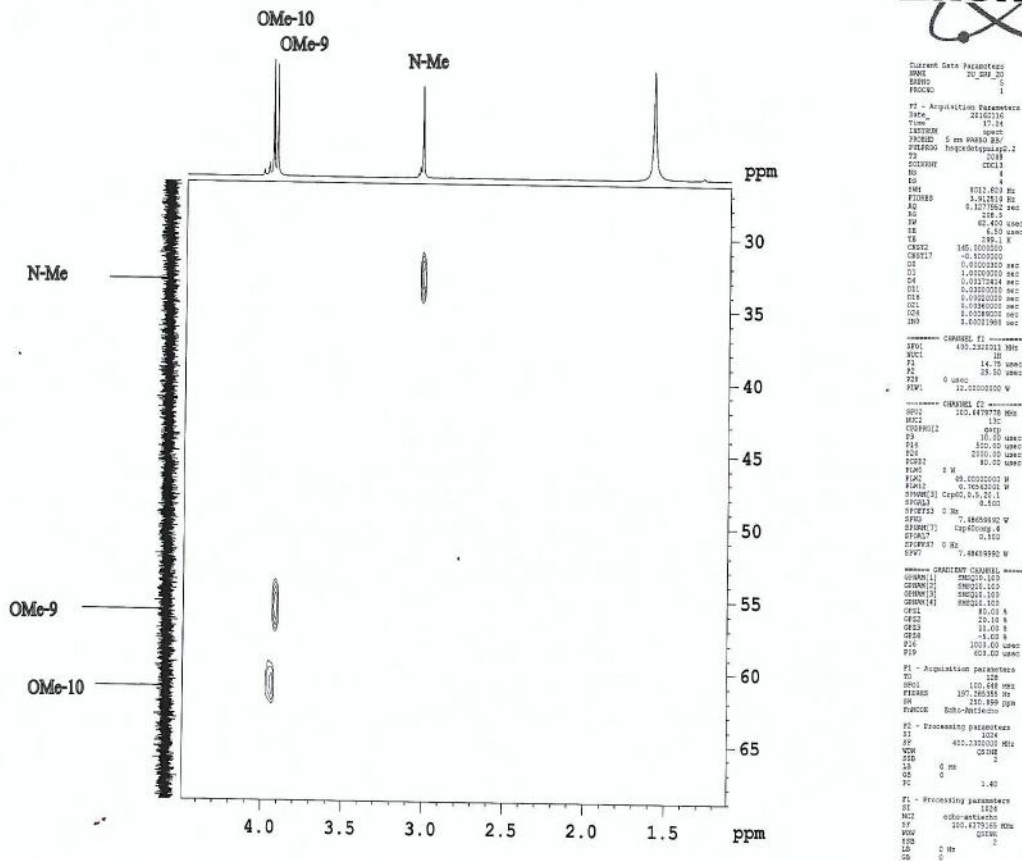


S25 : Partially expanded COSY- NMR spectrum (400 MHz, CDCl₃) of Compound **3** (Arnottianamide).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_20, hsqc



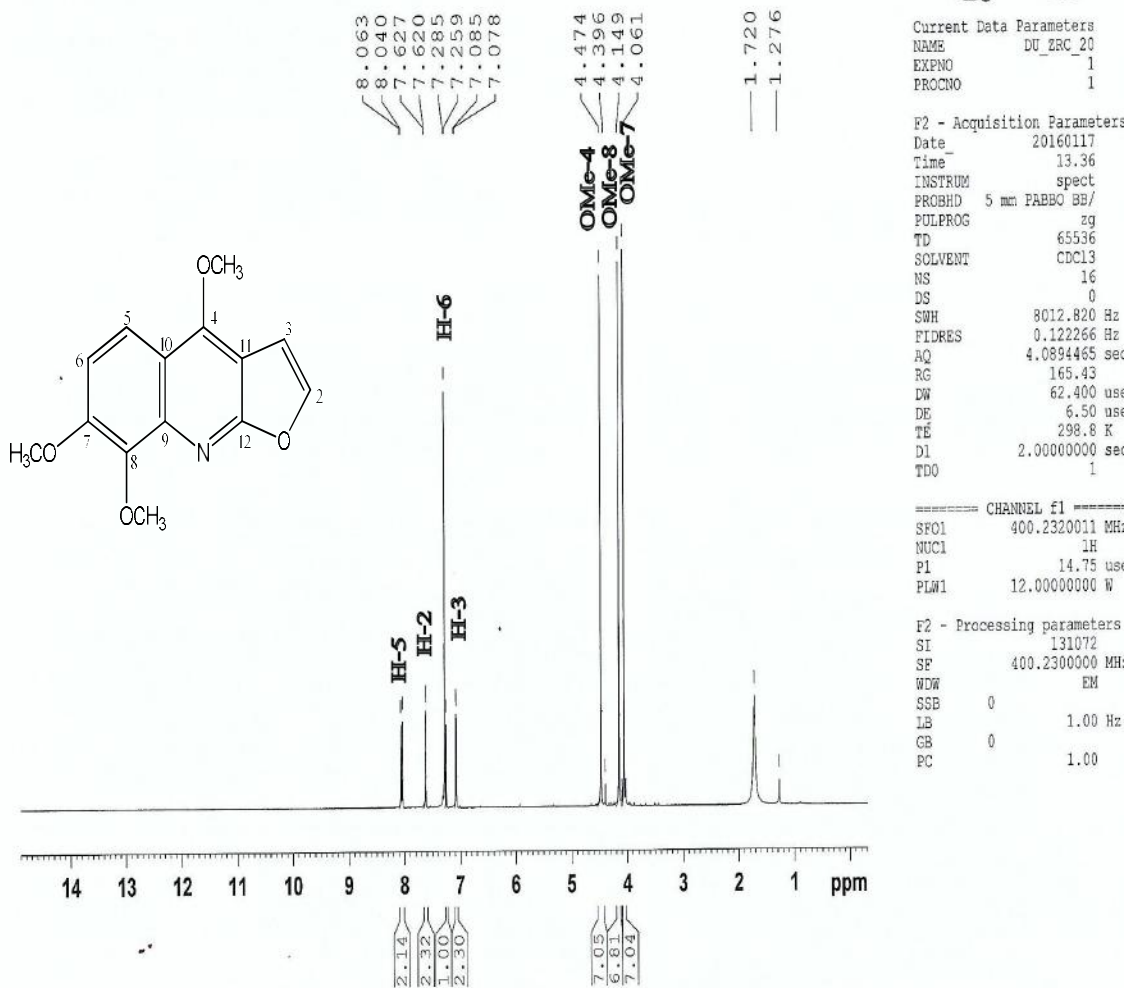
Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRP_20, hsqc



S28: Partially expanded HSQC- NMR spectrum (400 MHz, CDCl₃) of Compound 3 (Arnottianamide).

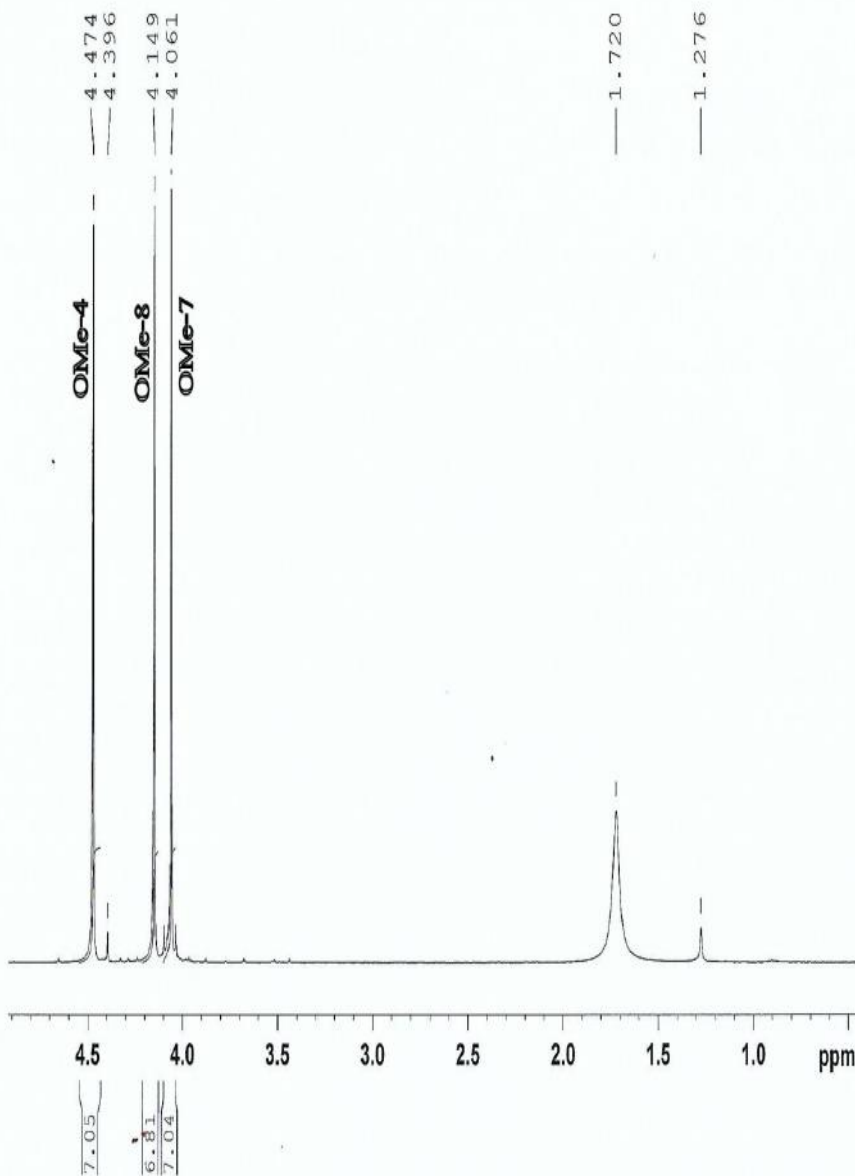
Arnottianamide (3): white amorphous; ¹H-NMR (500 MHz, CDCl₃): δ 8.18 (1H, s, H-8), 7.75 (1H, d, *J* = 8.4 Hz, H-5), 7.33 (1H, d, *J* = 8.4 Hz, H-6), 7.22 (1H, s, H-4), 7.11 (1H, s, H-1), 6.83 (1H, d, *J* = 8.4 Hz, H-12), 6.57 (1H, d, *J* = 8.4 Hz, H-11), 6.11 (2H, s, OCH₂O), 3.95 (3H, s, OMe-10), 3.93 (3H, s, OMe-9), 3.02 (3H, s, N-Me). ¹³C-NMR (125 MHz, CDCl₃): δ 164.5 (C-8), 152.1 (C-10), 149.3 (C-3), 148.2 (C-2), 146.7 (C-14), 135.8 (C-6b, 9), 133.4 (C-6a), 131.3 (C-4a), 128.8 (C-4b), 127.4 (C-5, 6), 125.1 (C-12), 118.6 (C-13), 104.4 (C-4), 104.0 (C-11), 101.5 (OCH₂O), 99.3 (C-1), 61.2 (OMe-10), 55.9 (OMe-9), 33.0 (N-Me).

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 Sample: DU_ZRC_20



S29: ¹H NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine).

Wazed Miah Science Research Center (WMSRC)
Jahangirnagar University
Sample: DU_ZRC_20



Current Data Parameters
NAME DU_ZRC_20
EXPNO 1
PROCNO 1

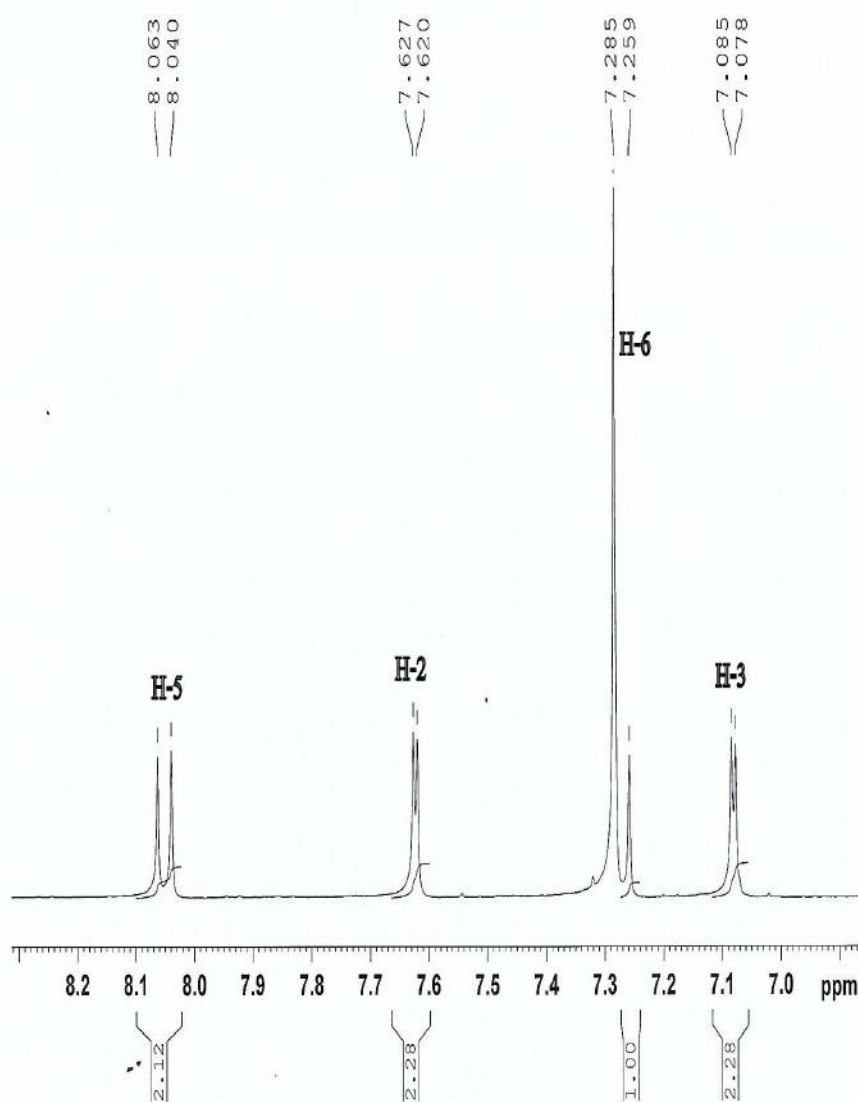
F2 - Acquisition Parameters
Date_ 20160117
Time 13.36
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 165.43
DW 62.400 usec
DE 6.50 usec
TE 298.8 K
D1 2.0000000 sec
TDO 1

==== CHANNEL f1 =====
SFO1 400.2320011 MHz
NUC1 1H
P1 14.75 usec
PLW1 12.0000000 W

F2 - Processing parameters
SI 131.072
SF 400.2300000 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

S30: Partially expanded ^1H NMR (400 MHz, CDCl_3) spectrum of Compound **4** (Skimmianine).

Wazed Miah Science Research Center (WMSRC)
Jahangirnagar University
Sample: DU_ZRC_20



Current Data Parameters
NAME DU_ZRC_20
EXNO 1
PROCNO 1

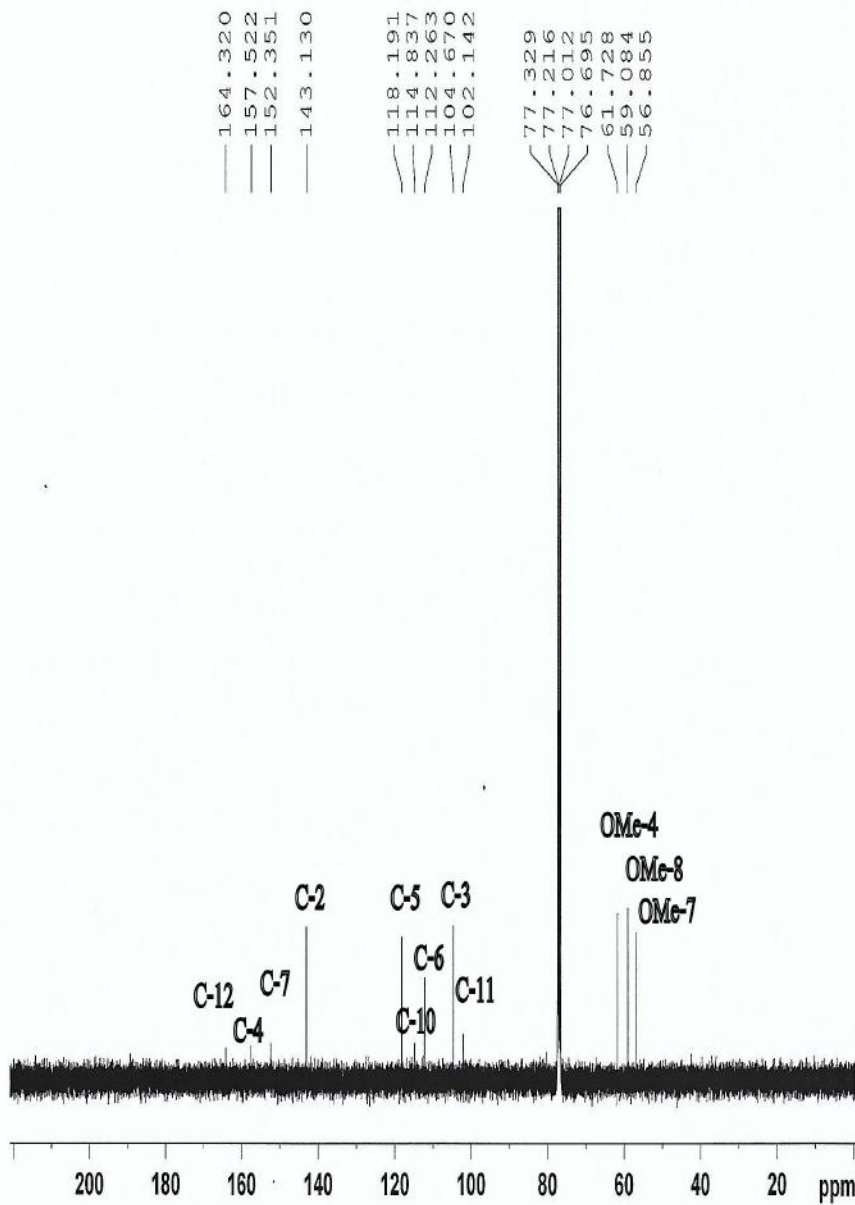
F2 - Acquisition Parameters
Date 20160117
Time 13.36
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 165.43
DW 62.400 usec
DE 6.50 usec
TE 298.8 K
D1 2.00000000 sec
TDO 1

===== CHANNEL f1 =====
SF01 400.2320011 MHz
NUC1 1H
P1 14.75 usec
PLW1 12.00000000 W

F2 - Processing parameters
SI 131072
SF 400.2300000 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

S31: Partially expanded ^1H NMR (400 MHz, CDCl_3) spectrum of Compound 4 (Skimmianine)

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_20



Current Data Parameters
 NAME DU_ZRC_20
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameter:
 Date 20160117
 Time 19.04
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zgpg
 TD 524288
 SOLVENT CDCl3
 NS 1712
 DS 0
 SWH 25252.525 Hz
 FLDRES 0.048165 Hz
 AQ 10.3809023 sec
 RG 208.5
 DW 19.800 usec
 DE 6.50 usec
 TE 300.6 K
 DI 1.00000000 sec
 D11 0.03000000 sec
 TDO 1

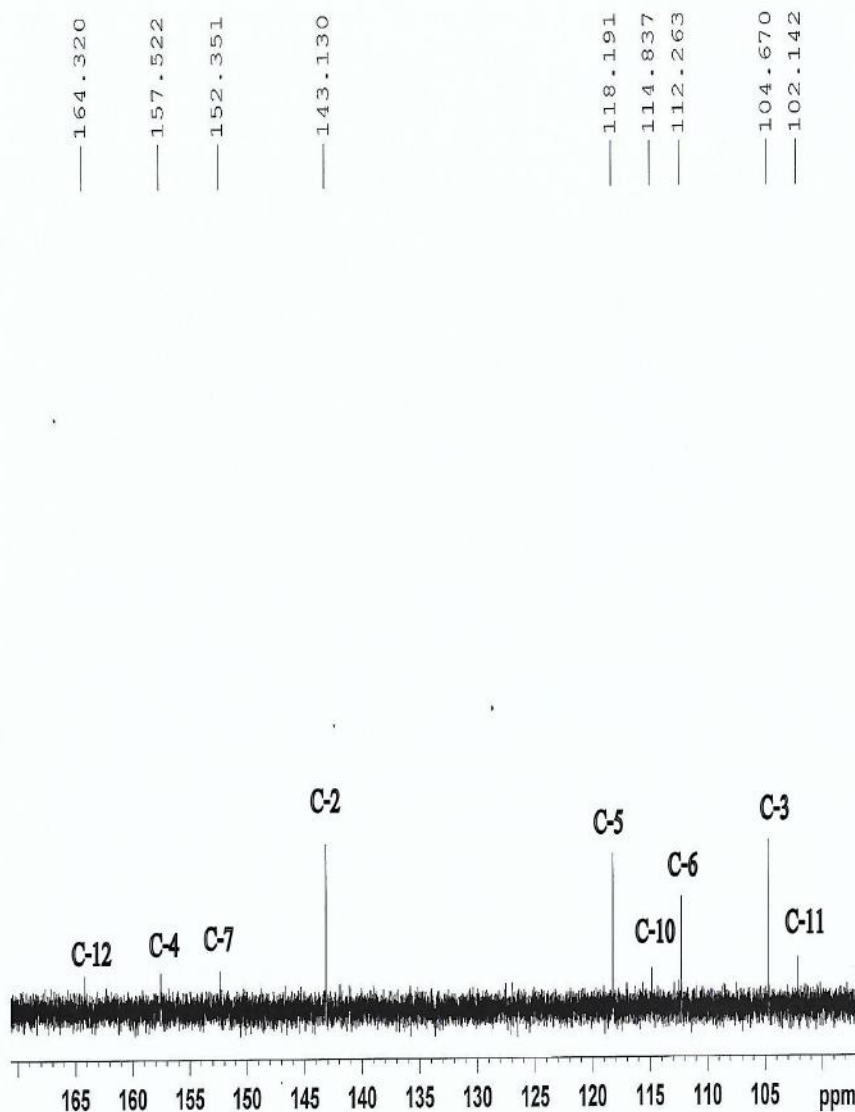
==== CHANNEL f1 =====
 SFO1 100.6479778 MH:
 NUC1 13C
 P1 10.00 usec
 PLW1 49.00000000 W

==== CHANNEL f2 =====
 SFO2 400.2320011 MH:
 NUC2 1H
 CPDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 12.00000000 W
 PLW12 0.32231000 W
 PLW13 0.26107001 W

F2 - Processing parameters
 SI 1048576
 SF 100.6379135 MH:
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.40

S32: ¹³C NMR (100 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine)

Wazed Miah Science Research Center (WMSRC)
Jahangirnagar University
Sample: DU_ZRC_20



Current Data Parameters
NAME DU_ZRC_20
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20160117
Time 19.04
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgpg
TD 524288
SOLVENT CDCl3
NS 1712
DS 0
SWH 25252.525 Hz
FIDRES 0.048165 Hz
AQ 10.3809023 s
RG 208.5
DW 19.800 us
DE 6.50 us
TE 300.6 K
D1 1.00000000 s
D11 0.03000000 s
TDC 1

===== CHANNEL f1 =====
SFO1 100.6479778 MHz
NUC1 13C
P1 10.00 us
PLW1 49.00000000 W

===== CHANNEL f2 =====
SFO2 400.2320011 MHz
NUC2 1H
CPDPRG[2] waltz16
PCPD2 90.00 us
PLW2 12.00000000 W
PLW12 0.32231000 W
PLW13 0.26107001 W

F2 - Processing parameters
SI 1048576
SF 100.6379135 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.40

S33: Partially expanded ^{13}C NMR (100 MHz, CDCl_3) spectrum of Compound 4 (Skimmianine).

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 Jahangirnagar University
 Sample: DU_ZRC_20, dept-135



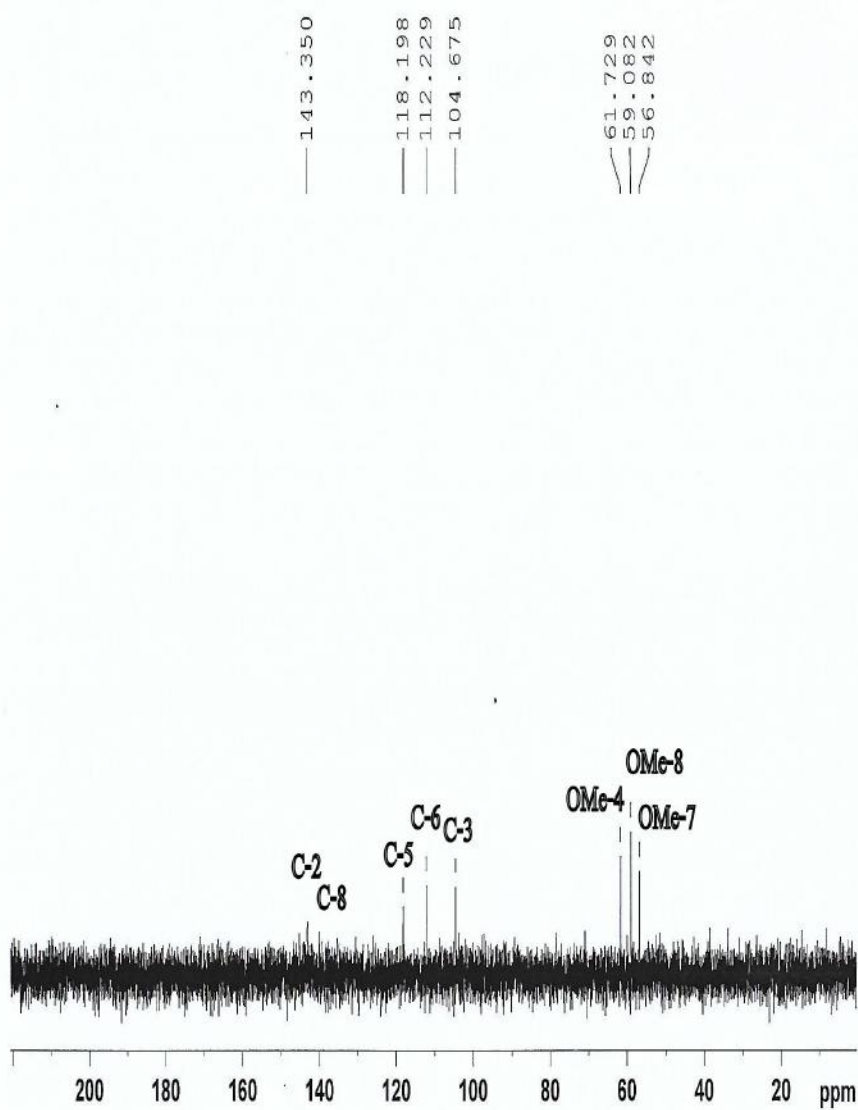
```
Current Data Parameters
NAME      DU_ZRC_20
EXPNO     3
PROCNO    1

F2 - Acquisition Parameters
Date_     20160117
Time      19.09
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   deptspl35
TD        65536
SOLVENT   CDCl3
NS        512
DS        4
SWH       25252.525 Hz
FIDRES    0.385323 Hz
AQ        1.2976128 sec
RG        208.5
LW        19.800 usec
DE        6.50 usec
TE        299.9 K
CNST2     145.000000
D1        1.0000000 sec
D2        0.00344828 sec
D12       0.00002000 sec
TD0       1
```

```
===== CHANNEL f1 =====
SFO1     100.6479773 MHz
NUC1      13C
P1       10.00 usec
P13      2000.00 usec
PLW0     0 W
PLW1     49.00000000 W
SPNAM[5] Crp60ccmp.4
SFOALS5  0.500
SFOF55   0 Hz
SFO5     7.48659992 W
```

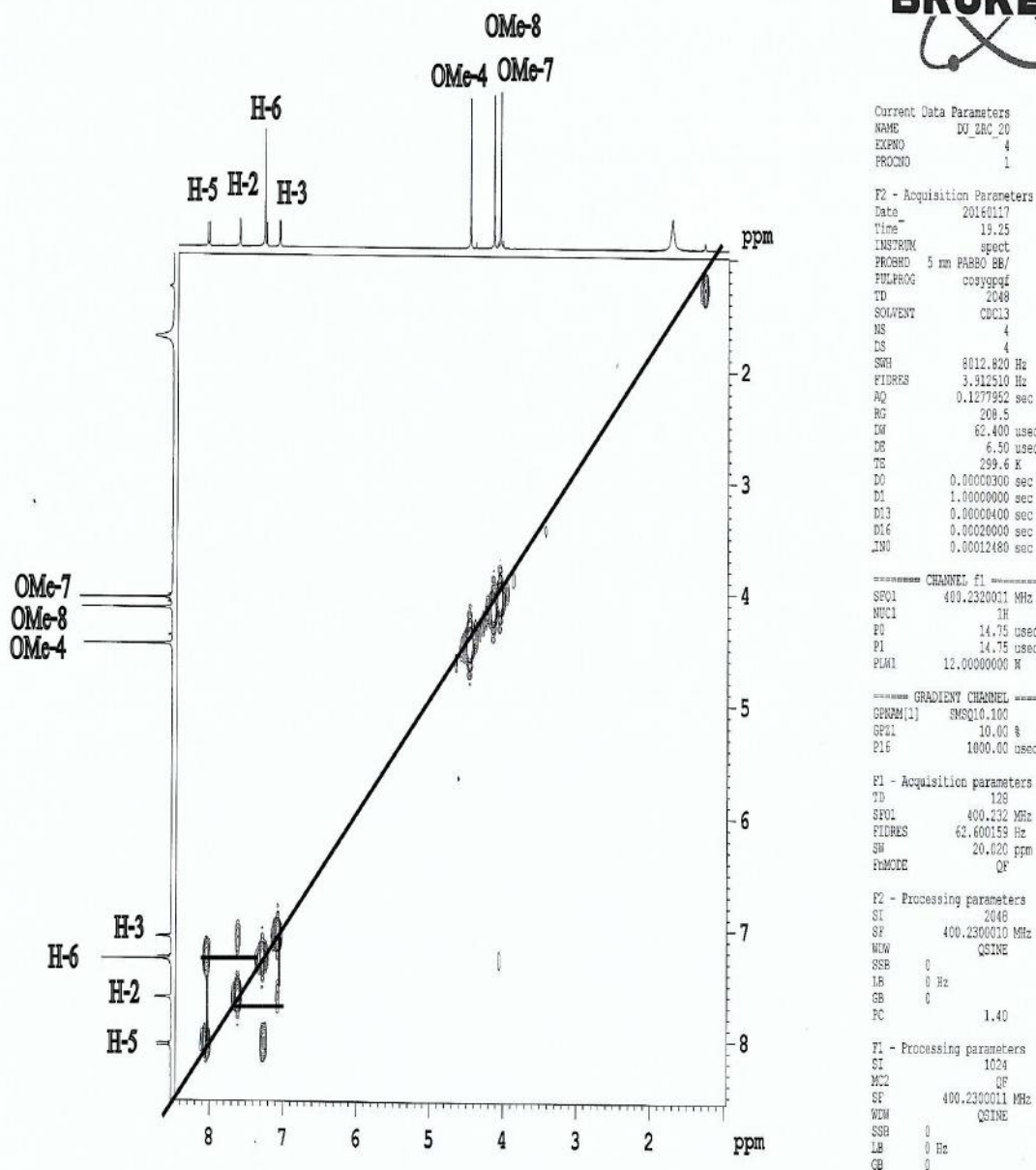
```
===== CHANNEL f2 =====
SFO2     400.2320011 MHz
NUC2      1H
CPDPRG[2] waltz16
P3       14.75 usec
P4       29.50 usec
PCPD2    90.00 usec
PLW2     12.00000000 W
PLW12    0.32231000 W
```

```
F2 - Processing parameters
SI       32768
SF       100.6379135 MHz
WDW      EM
SSB      0
LB       1.00 Hz
GB       0
PC       1.40
```



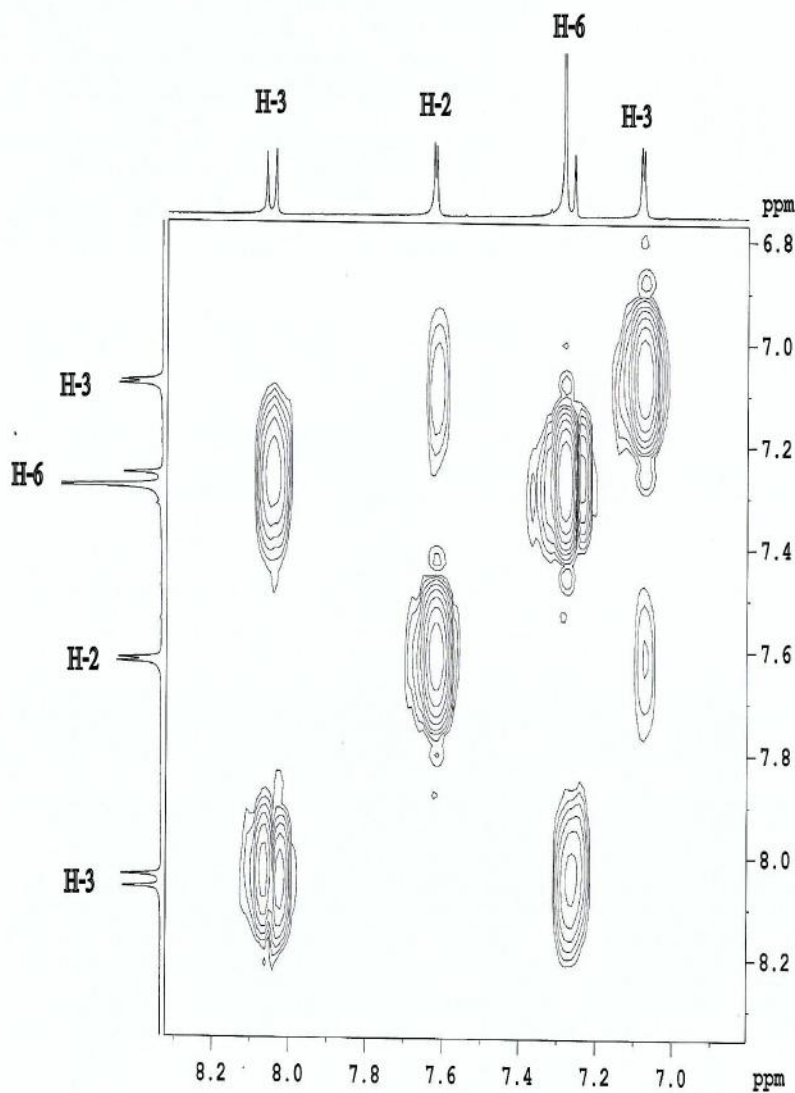
S34 : DEPT-135 NMR (100 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine).

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 Sample: DU_ZRC_20, cosy



S35 : COSY-NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmiarine).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_20, cosy



```

Current Data Parameters
NAME      DU_ZRC_20
EXPNO     4
PROCNO    1

F2 - Acquisition Parameters
Date_     20160117
Time      19.25
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   cosygpcrf
TD         2048
SOLVENT   CDCl3
MS         4
DS         4
SFO1      400.230011 MHz
FIDRES    3.912510 Hz
AQ         0.1277952 sec
RG         208.5
EM         62.400 usec
EE         6.50 usec
TE         299.6 K
D0         0.00000000 sec
D1         1.00000000 sec
D13        0.0000400 sec
D16        0.0002000 sec
RG         0.00012480 sec

===== CHANNEL f1 =====
SFO1      400.230011 MHz
NUC1       1H
P0         14.75 usec
P1         14.75 usec
PLM1       12.00000000 W

===== GRADIENT CHANNEL =====
GPMEM[1]  SMSQ10.100
GP21      10.00 %
FL6        1000.00 usec

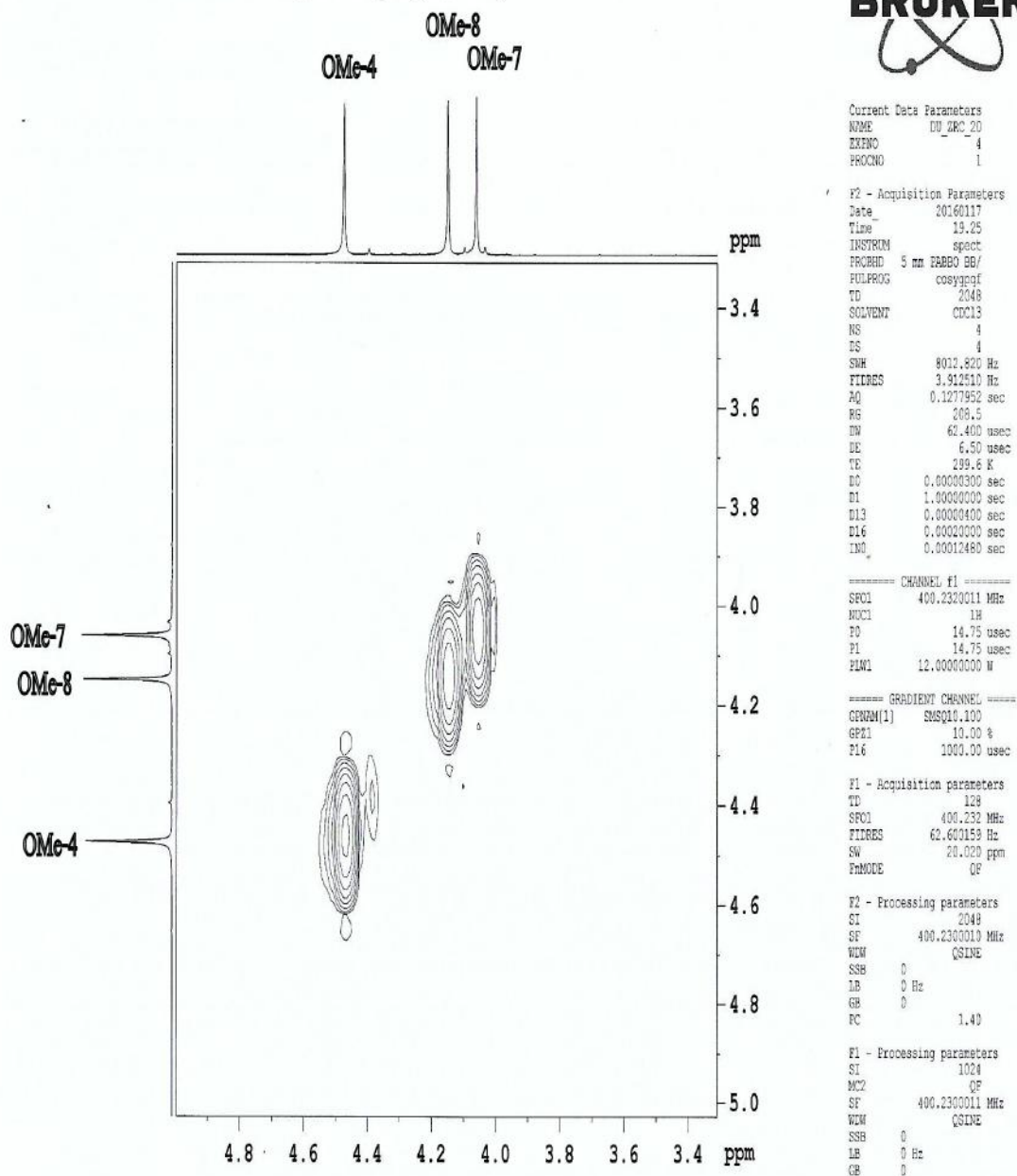
F1 - Acquisition parameters
TD         128
SFO1      400.230 MHz
FIDRES    62.600159 Hz
SQ         20.020 ppm
PASCODE   QF

F2 - Processing parameters
SI         2048
SF         400.2300010 MHz
WDW        QSTINE
SSB        0
LB         0 Hz
GB         0
PC         1.40

F1 - Processing parameters
SI         1024
MC2        QF
SF         400.2300011 MHz
WDW        QSTINE
SSB        0
LB         0 Hz
GB         0
  
```

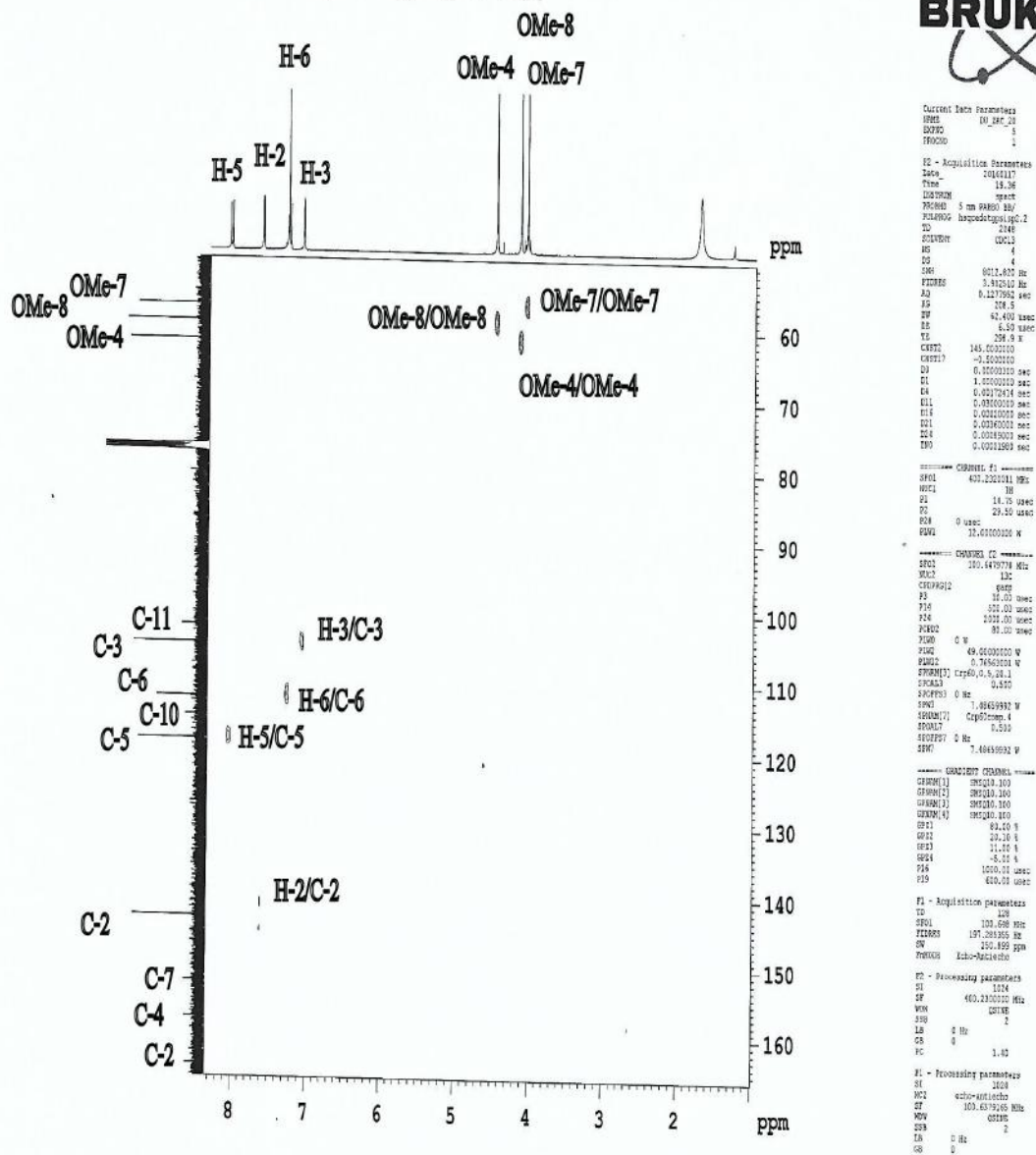
S36 : Partially expanded COSY-NMR (400 MHz, CDCl₃) spectrum of Compound **4** (Skimmianine).

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 Jahangirnagar University
 Sample: DU_ZRC_20, cosy



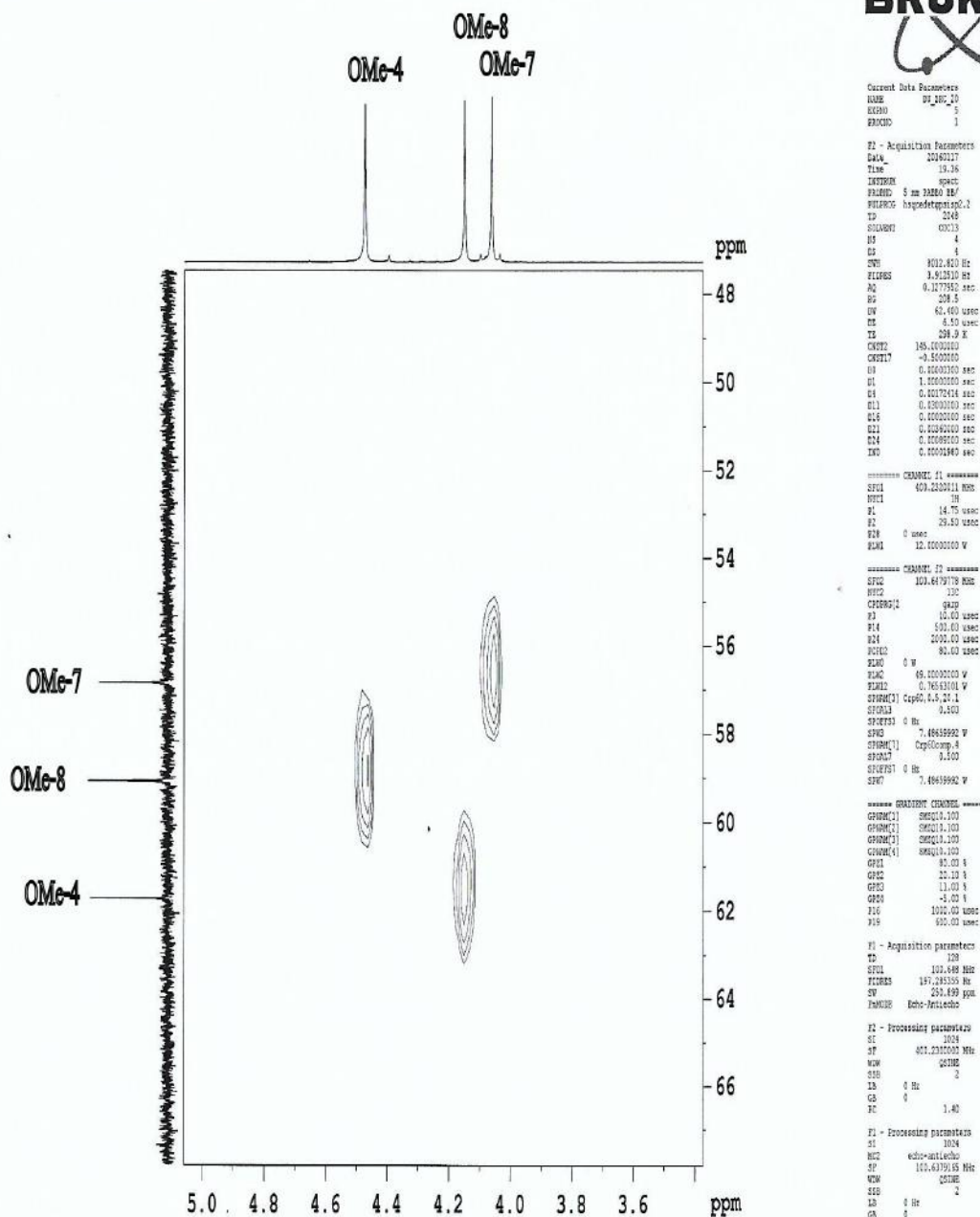
S37 : Partially expanded COSY-NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine)

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 Jahangirnagar University
 Sample: DU_ZRC_20, hsqc



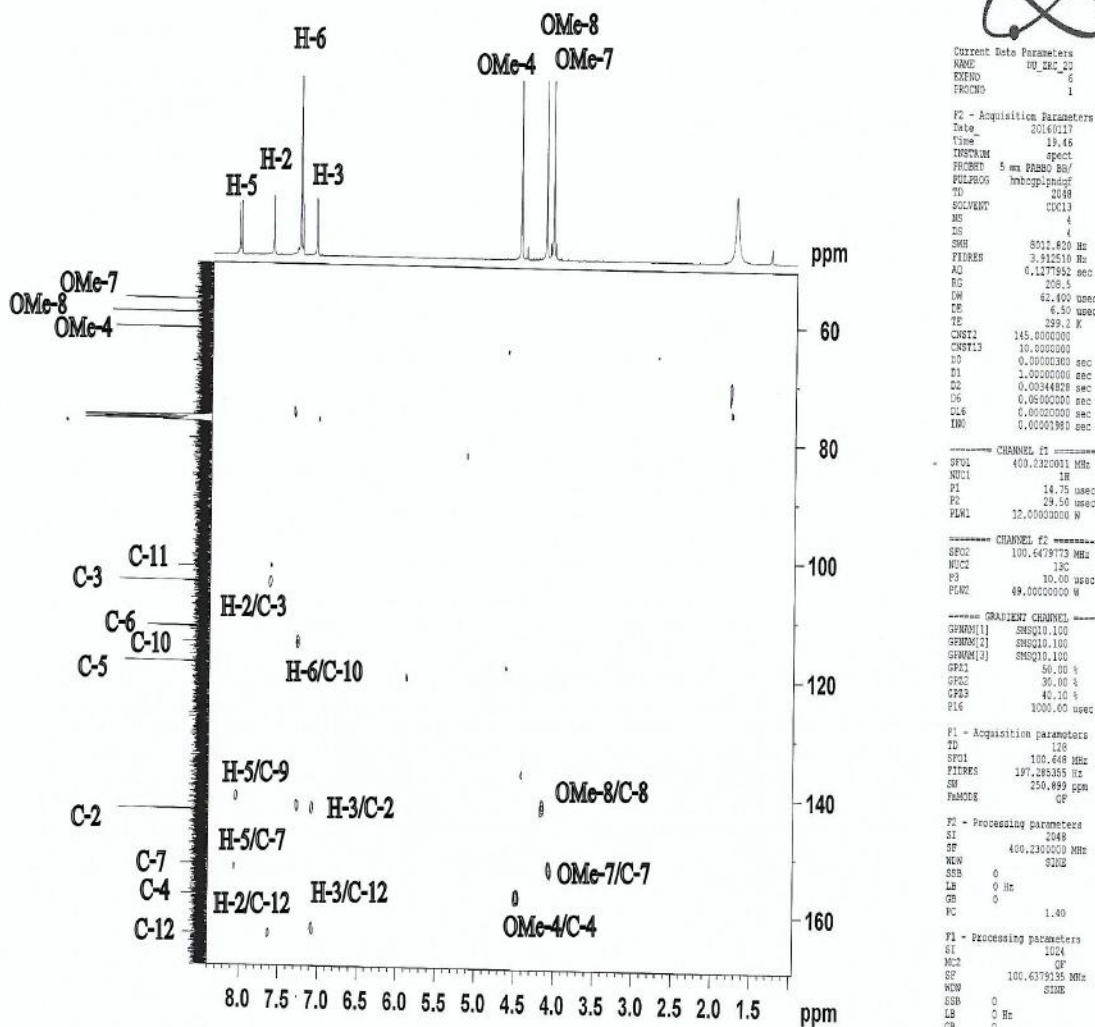
S38: HSQC-NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine).

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 Jahangirnagar University
 Sample: DU_ZRC_20, hsqc



S40: Partially expanded HSQC-NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmiaine)

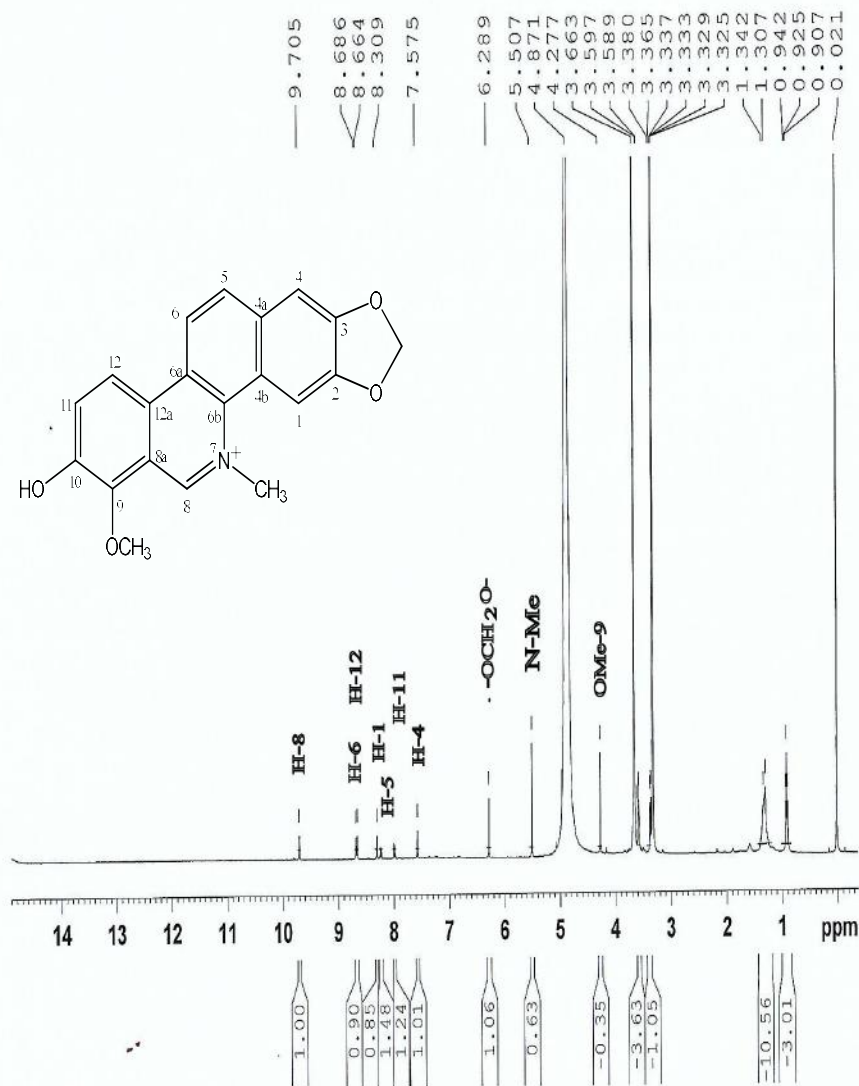
Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_20, hmhc



S41: HMBC-NMR (400 MHz, CDCl₃) spectrum of Compound 4 (Skimmianine)

Skimmianine (**4**): colourless crystals; ¹H-NMR (500 MHz, CDCl₃): δ 8.05 (1H, d, *J* = 9.2 Hz, H-5), 7.62 (1H, d, *J* = 2.8 Hz, H-2), 7.27 (1H, d, *J* = 9.2 Hz, H-6), 7.08 (1H, d, *J* = 2.8 Hz, H-3), 4.47 (3H, s, OMe-4), 4.15 (3H, s, OMe-8), 4.06 (3H, s, OMe-7). ¹³C-NMR (125 MHz, CDCl₃): δ 164.3 (C-12), 157.5 (C-4), 152.4 (C-7), 143.1 (C-2), 142.0 (C-8), 141.5 (C-9), 118.2 (C-5), 114.8 (C-10), 112.3 (C-6), 104.7 (C-3), 102.1 (C-11), 61.7 (OMe-8), 59.1 (OMe-4), 56.9 (OMe-7).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_7



Current Data Parameters
 NAME DU_ZRC_7
 EXPNO 1
 PROCNO 1

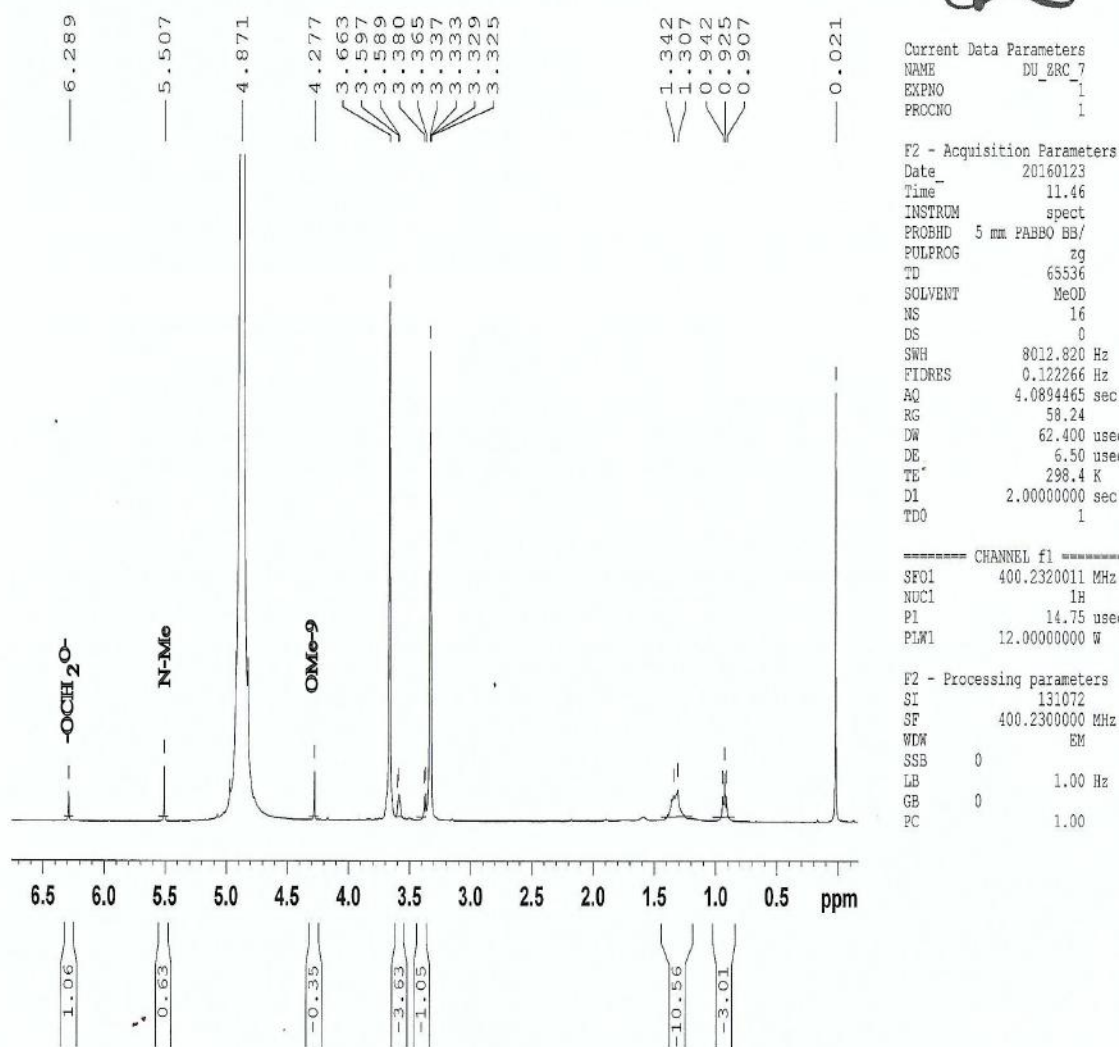
F2 - Acquisition Parameters
 Date 20160123
 Time 11.46
 INSTRUM spect
 PROBEHD 5 mm PABBO BB/
 PULPROG zg
 TD 65536
 SOLVENT MeOD
 NS 16
 DS 0
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894465 sec
 RG 58.24
 DW 62.400 use
 DE 6.50 use
 TE 298.4 K
 D1 2.00000000 sec
 TDO 1

==== CHANNEL f1 =====
 SFO1 400.2320011 MHz
 NUCL 1H
 P1 14.75 use
 PLW1 12.00000000 W

F2 - Processing parameters
 SI 131072
 SF 400.2300000 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.00

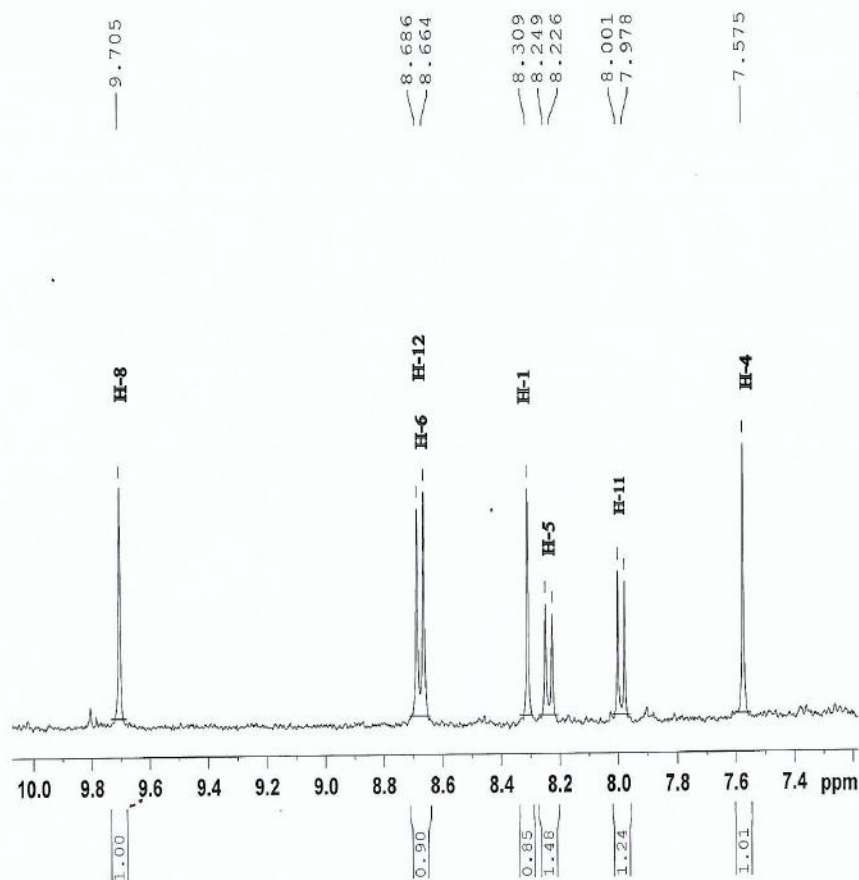
S42 : ¹H-NMR spectrum (400 MHz, CDCl₃+CD₃OD) of Compound 5 (Fagaridine).

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 Jahangirnagar University
 Sample: DU_ZRC_7



S43 : Expansion of ¹H-NMR spectrum (400 MHz, CDCl₃+CD₃OD) of Compound 5 (Fagaridine).

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 Jahangirnagar University
 Sample: DU_ZRC_7



```
Current Data Parameters
NAME      DU_ZRC_7
EXPNO    1
PROCNO   1

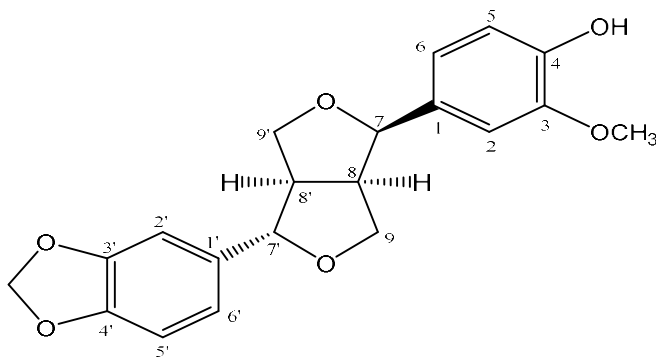
F2 - Acquisition Parameters
Date_    20160123
Time     11.46
INSTRUM  spect
PROBHD   5 mm PABBO BB/
PULPROG  zg
TD       65536
SOLVENT  MeOD
NS       16
DS       0
SWH      8012.820 Hz
FIDRES   0.122266 Hz
AQ       4.0894465 sec
RG       58.24
DW       62.400 usec
DE       6.50 usec
TE       298.4 K
D1       2.00000000 sec
TD0      1

===== CHANNEL f1 =====
SF01    400.2320011 MHz
NUC1     1H
P1      14.75 usec
PLW1    12.00000000 W

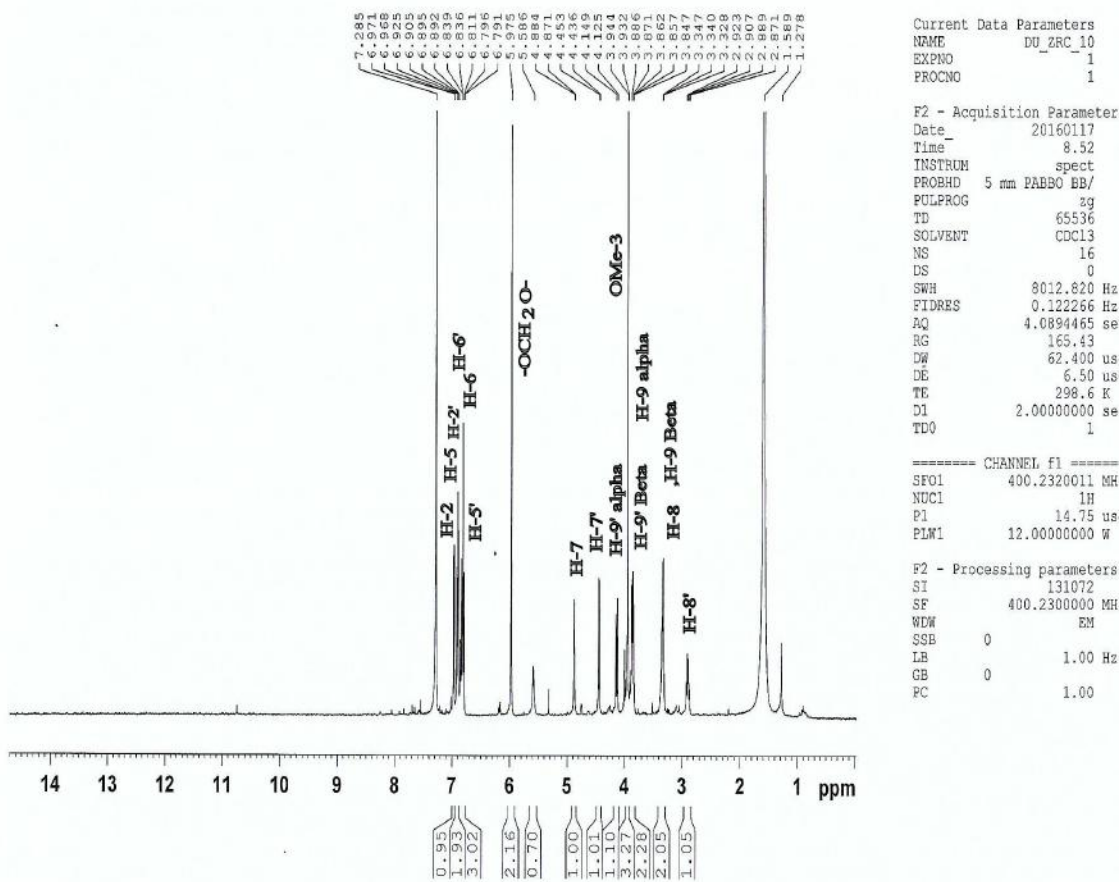
F2 - Processing parameters
SI      131072
SF      400.2300000 MHz
WDW     EM
SSB     0
LB      1.00 Hz
GB      0
PC      1.00
```

S44 : Expansion of $^1\text{H-NMR}$ spectrum (400 MHz, $\text{CDCl}_3+\text{CD}_3\text{OD}$) of Compound **5** (Fagaridine).

Fagaridine (5): light yellow powder; $^1\text{H-NMR}$ (500 MHz, CDCl_3): δ 9.71 (1H, s, H-8), 8.67 (1H, d, $J=8.8$ Hz, H-12), 8.31 (1H, s, H-1), 8.24 (1H, d, $J=9.2$ Hz, H-5), 7.99 (1H, d, $J=9.2$ Hz, H-11), 7.57 (1H, s, H-4), 7.54 (1H, d, $J=8.8$ Hz, H-6), 6.23 (2H, s, OCH_2O), 5.50 (3H, s, N-Me), 4.28 (3H, s, OMe-9).

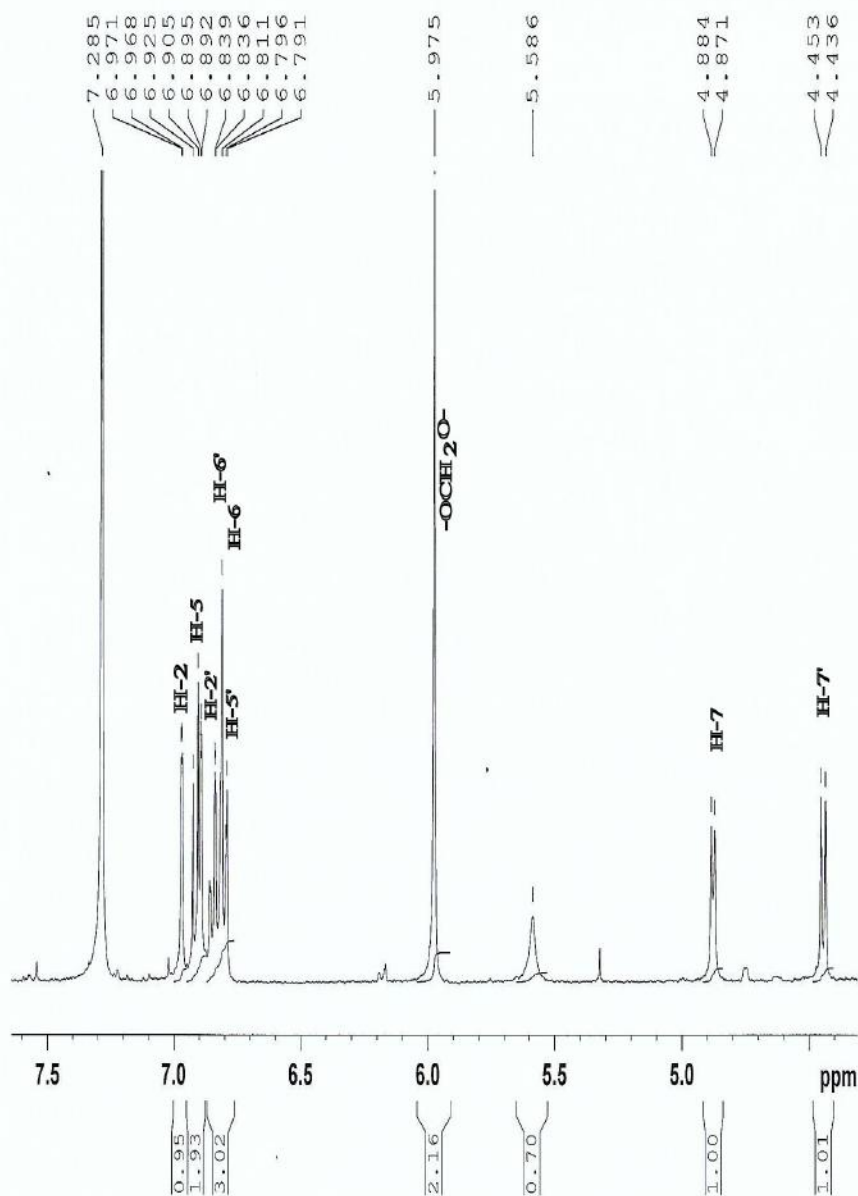


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 Jahangirnagar University
 Sample: DU_ZRC_10



S45: ¹H-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_10



Current Data Parameters
 NAME DU_ZRC_10
 EXPNO 1
 PROCNO 1

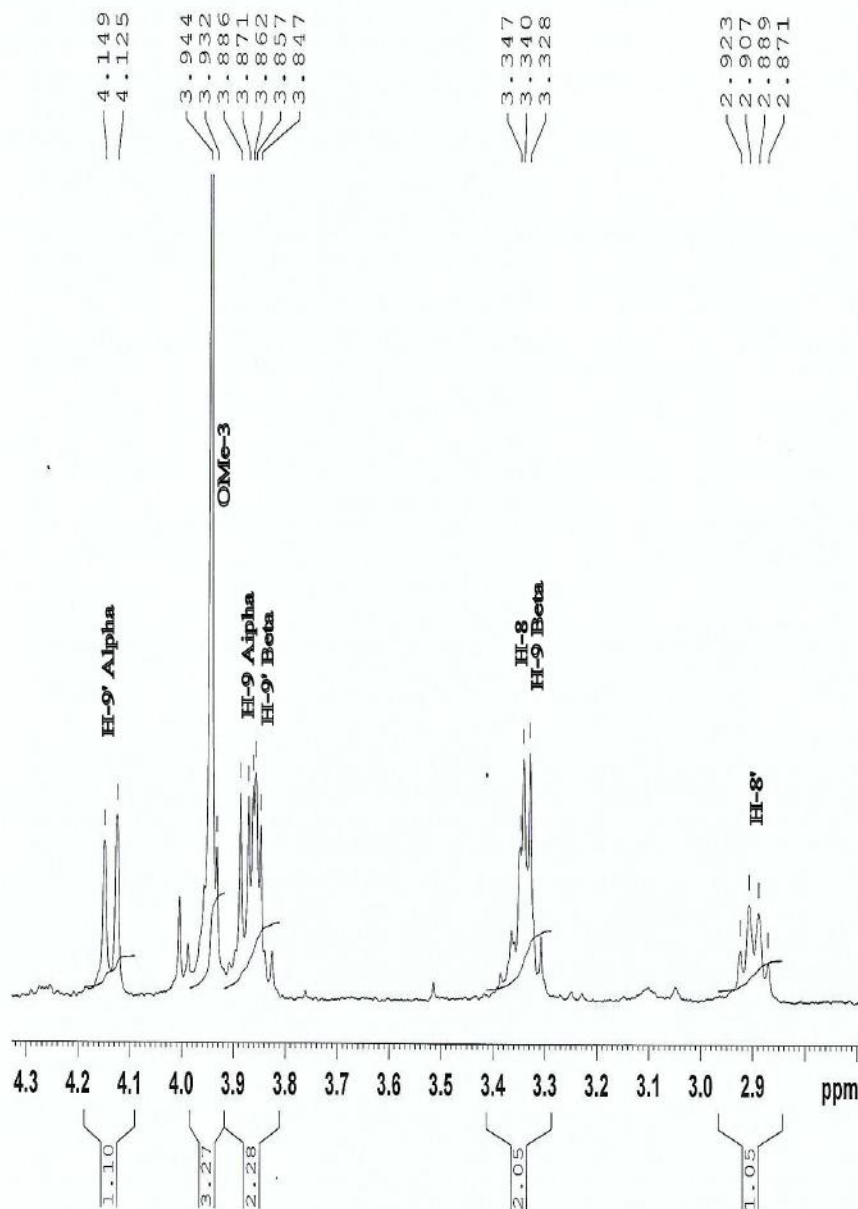
F2 - Acquisition Parameter
 Date_ 20160117
 Time_ 8.52
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zg
 TD 65536
 SOLVENT CDCl₃
 NS 16
 DS 0
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894465 se
 RG 165.43
 DW 62.400 us
 DE 6.50 us
 TE 298.6 K
 D1 2.00000000 se
 TDO 1

==== CHANNEL f1 =====
 SF01 400.2320011 MH
 NUCL 1H
 P1 14.75 us
 PLW1 12.00000000 W

F2 - Processing parameters
 SI 131072
 SF 400.2300000 MH
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.00

S46 : Partially expanded ¹H-NMR spectrum(400 MHz, CDCl₃) of Compound 6 (Pluviatilol)

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_10



Current Data Parameters
 NAME DU_ZRC_10
 EXPNO 1
 PROCNO 1

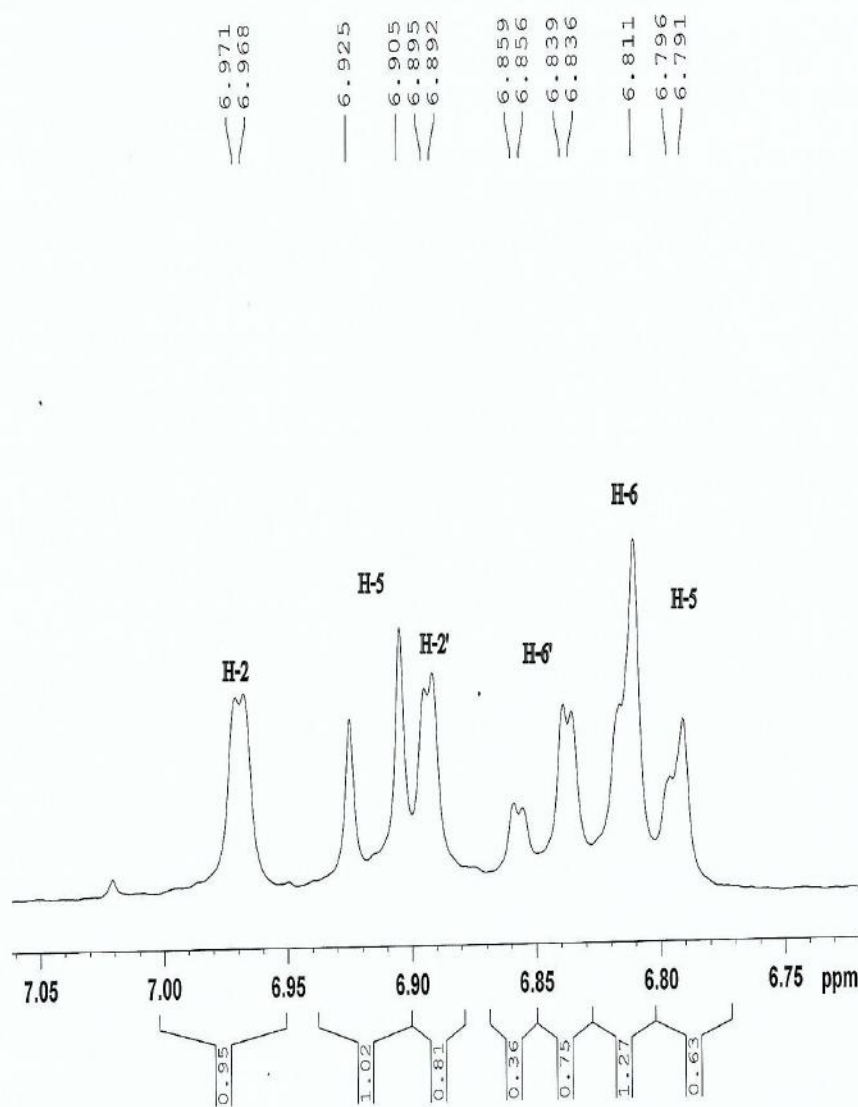
F2 - Acquisition Parameter
 Date 20160117
 Time 8.52
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zg
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894465 se
 RG 165.43
 DW 62.400 us
 DF 6.50 us
 TE 298.6 K
 D1 2.00000000 se
 TDO 1

===== CHANNEL f1 =====
 SFO1 400.2320011 MH
 NUCL 1H
 P1 14.75 us
 PLW1 12.00000000 W

F2 - Processing parameters
 SI 131072
 SF 400.2300000 MH
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.00

S47: Partially expanded ¹H-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol).

Wazed Miah Science Research Center (WMSRC)
 Jahangirnagar University
 Sample: DU_ZRC_10



Current Data Parameters
 NAME DU_ZRC_10
 EXPNO 1
 PROCNO 1

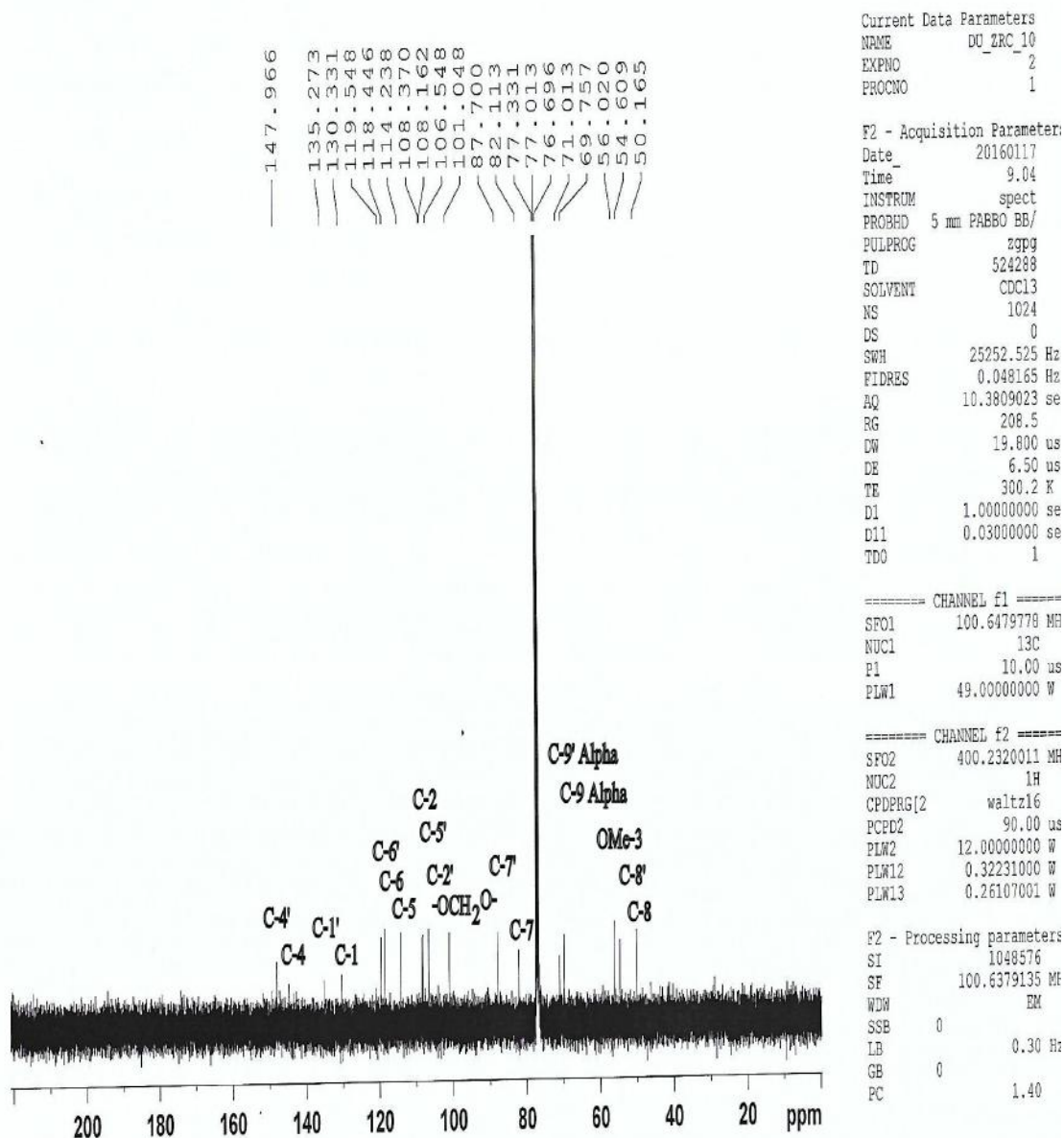
F2 - Acquisition Parameters:
 Date 20160117
 Time 8.52
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zg
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894465 se
 RG 165.43
 JW 62.400 us
 DE 6.50 us
 TE 298.6 K
 D1 2.00000000 se
 TDO 1

==== CHANNEL f1 =====
 SF01 400.2320011 MH
 NUC1 1H
 P1 14.75 us
 PLW1 12.00000000 W

F2 - Processing parameters
 SI 131072
 SF 400.2300000 MH
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.00

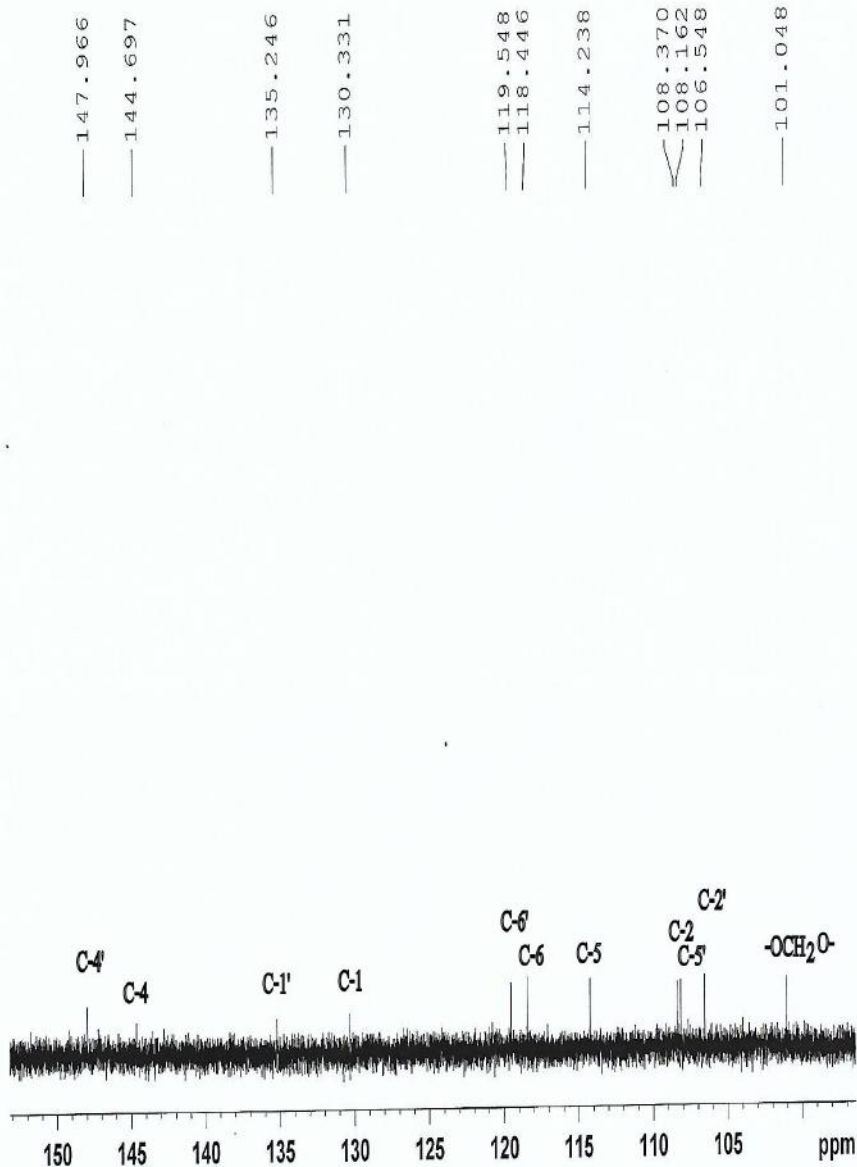
S48: Partially expanded ¹H-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol).

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 Sample: DU_ZRC_10



S49 : ¹³C NMR spectrum (100 MHz, CDCl₃) of Compound 6 (Pluviatilol).

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 Jahangirnagar University
 Sample: DU_ZRC_10



Current Data Parameters
 NAME DU_ZRC_
 EXPNO
 PROCNO

F2 - Acquisition Parameters
 Date_ 201601
 Time_ 9.
 INSTRUM spe
 PROBHD 5 mm PABBO B
 PULPROG zg
 TD 5242
 SOLVENT CDC
 NS 10
 DS
 SWH 25252.5
 FIDRES 0.0481
 AQ 10.38090
 RG 208
 DW 19.8
 DE 6.
 TE 300
 D1 1.000000
 D11 0.030000
 TDO

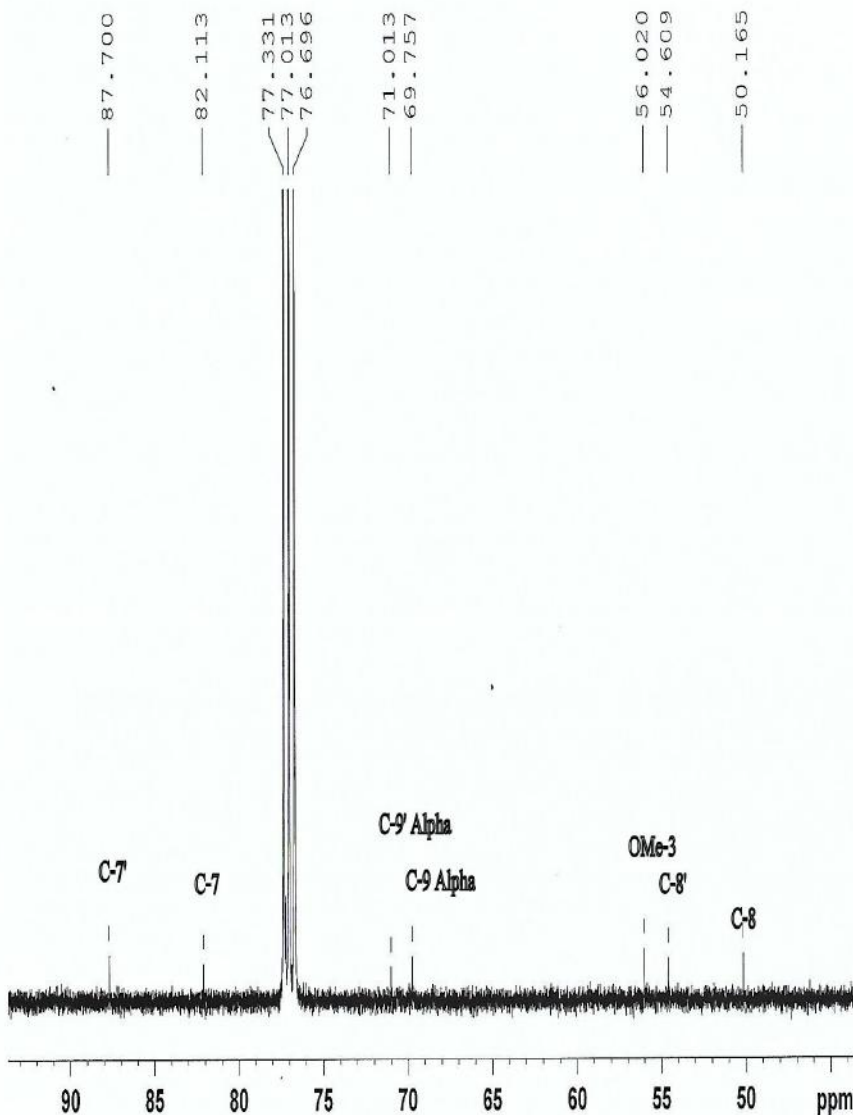
===== CHANNEL f1 =
 SFO1 100.64797
 NUC1 1
 P1 10.
 PLW1 49.000000

===== CHANNEL f2 =
 SFO2 400.23200
 NUC2
 CPDPRG[2] waltz
 PCPD2 90.
 PLW2 12.000000
 PLW12 0.322310
 PLW13 0.261070

F2 - Processing parameters
 SI 1048
 SF 100.63797
 WDW
 SSB 0
 LB 0
 GB 0
 PC 1

S50: Partially expanded ¹³C-NMR spectrum (100 MHz, CDCl₃) of Compound 6 (Pluviatilol)

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 Jahangirnagar University
 Sample: DU_ZRC_10



Current Data Parameters
 NAME DU_ZRC_10
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date 20160117
 Time 9.04
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zgpg
 TD 524288
 SOLVENT CDCl3
 NS 1024
 DS 0
 SWH 25252.525 Hz
 FIDRES 0.048165 Hz
 AQ 10.3809023 sec
 RG 208.5
 DW 19.800 usec
 DE 6.50 usec
 TE 300.2 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

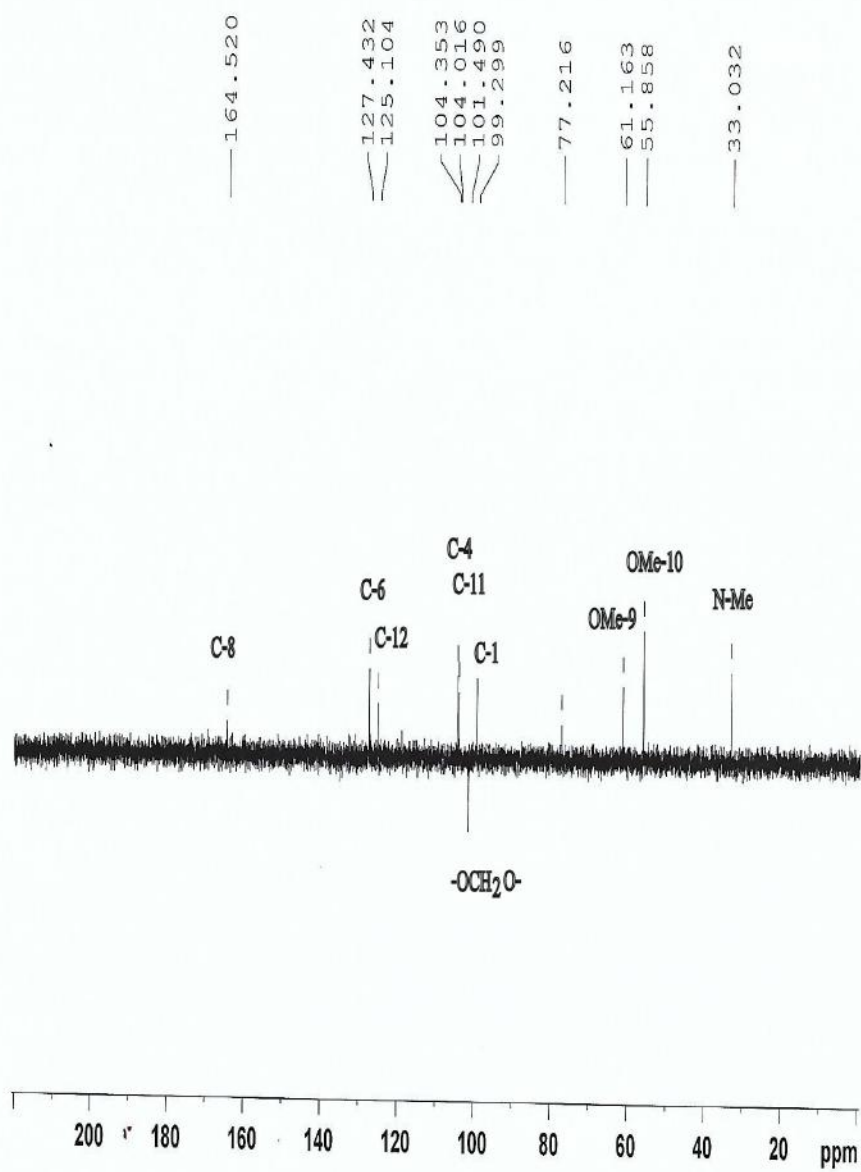
===== CHANNEL f1 =====
 SFO1 100.6479778 MHz
 NUC1 13C
 P1 10.00 usec
 PLW1 49.00000000 W

===== CHANNEL f2 =====
 SFO2 400.2320011 MHz
 NUC2 1H
 CEDPRG2 waltz16
 PCPD2 90.00 usec
 PLW2 12.00000000 W
 PLW12 0.32231000 W
 PLW13 0.26107001 W

F2 - Processing parameters
 SI 1048576
 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.40

S51: Partially expanded ¹³C-NMR spectrum (100 MHz, CDCl₃) of Compound 6 (Pluviatilol)

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 Sample: DU_ZRP_20, dept-135



Current Data Parameters
 NAME DU_ZRP_20
 EXPNO 3
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20160116
 Time 16.57
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG deptspi35
 TD 65536
 SOLVENT CDCl3
 NS 1536
 DS 4
 SNR 25252.525 Hz
 FIDRES 0.385323 Hz
 AQ 1.2976128 sec
 RG 208.5
 LW 19.800 usec
 DE 6.50 usec
 TE 300.1 K
 CNST2 145.0000000
 D1 1.0000000 sec
 D2 0.00344828 sec
 D1.2 0.00002000 sec
 TDO 1

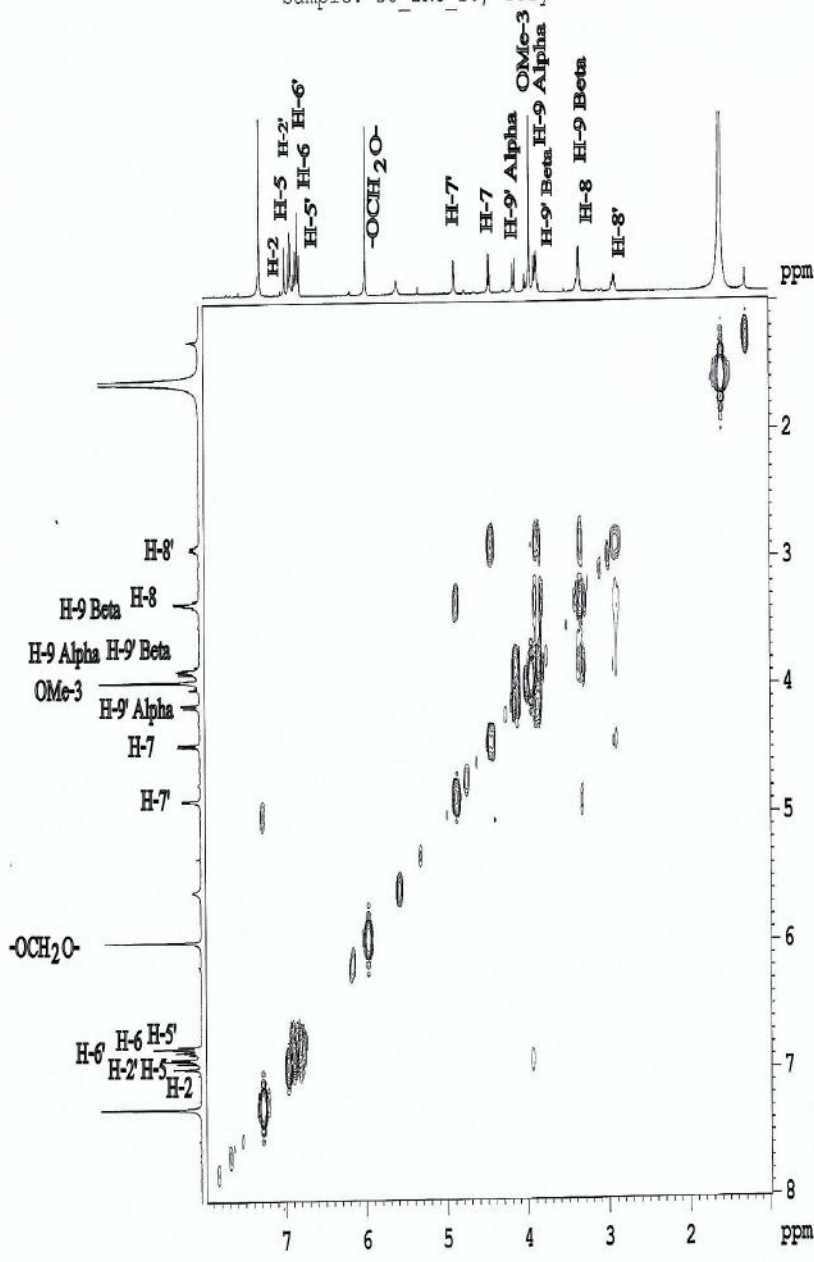
==== CHANNEL F1 =====
 SFO1 100.6479773 MHz
 NUC1 13C
 P1 10.00 usec
 P13 2000.00 usec
 PLW0 0 W
 PLW1 49.00000000 W
 SPMAM[5] Crp60comp.4
 SPOALS 0.500
 SPOFFS5 0 Hz
 SPW5 7.46659992 W

==== CHANNEL F2 =====
 SFO2 400.2320011 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 P3 14.75 usec
 P4 29.50 usec
 PCD2 90.00 usec
 PLW2 12.00000000 W
 PLW12 0.32231000 W

F2 - Processing parameters
 SI 32768
 SF 100.6379135 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

S52: DEPT-135 NMR spectrum (100 MHz, CDCl₃) of Compound 6 (Pluviatilol).

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 Sample: DU_ZRC_10, cosy



```

Current Data Parameters
NAME      DU_ZRC_10
EXPNO    4
PROCNO   1

F2 - Acquisition Parameters
Date_    20160117
Time     12.52
INSTRUM  spect
PROBHD   5 mm PABBO BB/
PULPROG  cosyppgf
TD       2048
SOLVENT  CDCl3
NS       4
DS       4
SWH      8012.820 Hz
FIDRES   3.912510 Hz
AQ       0.1277952 sec
RG       208.5
LW       62.400 usec
DE       6.50 usec
TE       299.2 K
DC       0.0000300 sec
DI       1.0000000 sec
DI3      0.00003400 sec
-DI6     0.00020000 sec
LNC      0.00012480 sec

----- CHANNEL f1 -----
SF01     400.232011 MHz
NUC1      1H
P0       14.75 usec
P1       14.75 usec
PLM1     12.0000000 W

===== GRADIENT CHANNEL =====
GPRM(1)  SMSQ10.100
GP21     10.00 %
PL6      1000.00 usec

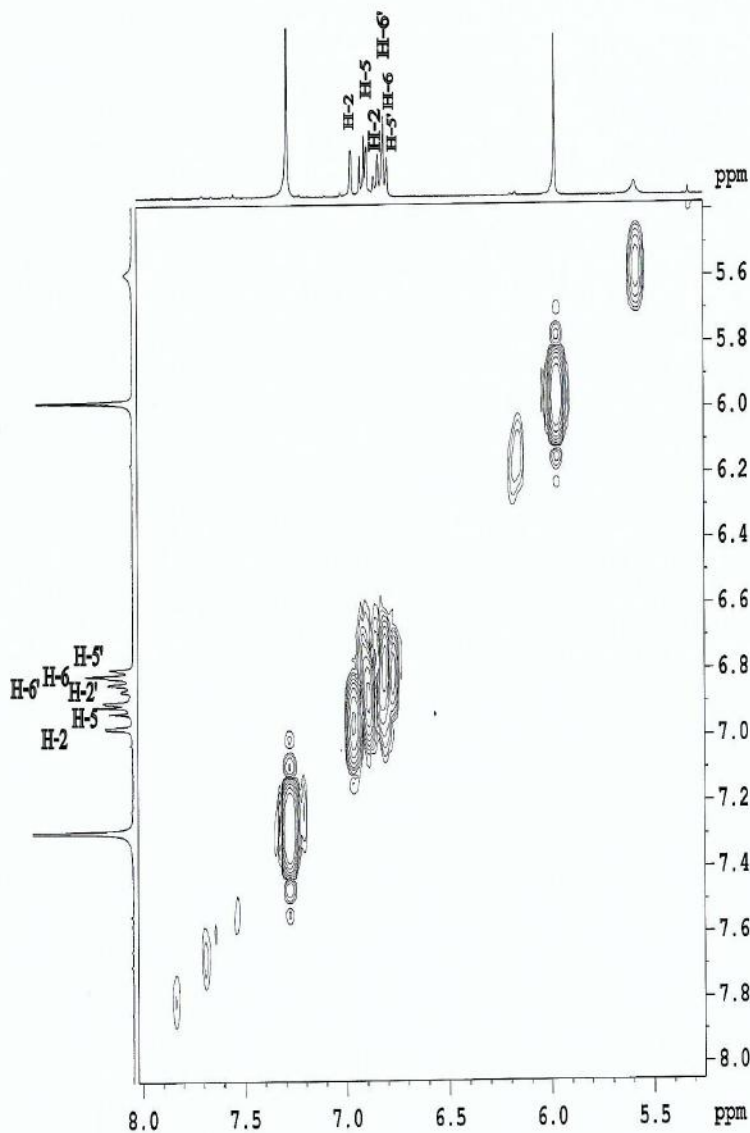
F1 - Acquisition parameters
TD       128
SF01     400.232 MHz
FIDRES   62.600159 Hz
SW       20.020 ppm
PRMODE   QF

F2 - Processing parameters
SI       2048
SF       400.2300010 MHz
WVM      QSINE
SSB      0
LB       0 Hz
GB       0
FC       1.40

F1 - Processing parameters
SI       1024
MC2      QF
SF       400.2300011 MHz
WVM      QSINE
SSB      0
LB       0 Hz
GB       0
  
```

S53: COSY-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol).

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 Sample: DU_ZRC_10, cosy



Current Data Parameters
 NAME DU_ZRC_10
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date 20160117
 Time 12.52
 INSTRUM spect
 PROCNO 5 nm PABBO BB/
 FUGPROG cosyppqf
 TD 2048
 SOLVENT CDCl3
 NS 4
 DS 4
 SHU 8012.820 Hz
 FIDRES 3.912510 Hz
 AQ 0.1277952 sec
 RG 208.5
 LW 62.400 usec
 DE 6.50 usec
 TE 299.2 K
 D0 0.0000300 sec
 D1 1.0000000 sec
 D13 0.0000040 sec
 D16 0.0002000 sec
 IN0 0.00012480 sec

===== CHANNEL f1 =====
 SFO1 400.2320011 MHz
 NUC1 1H
 P0 14.75 usec
 F1 14.75 usec
 PLW1 12.0000000 W

===== GRADIENT CHANNEL =====
 GPNAM[1] SWSQ10.100
 GP1 10.00 %
 P16 1000.00 usec

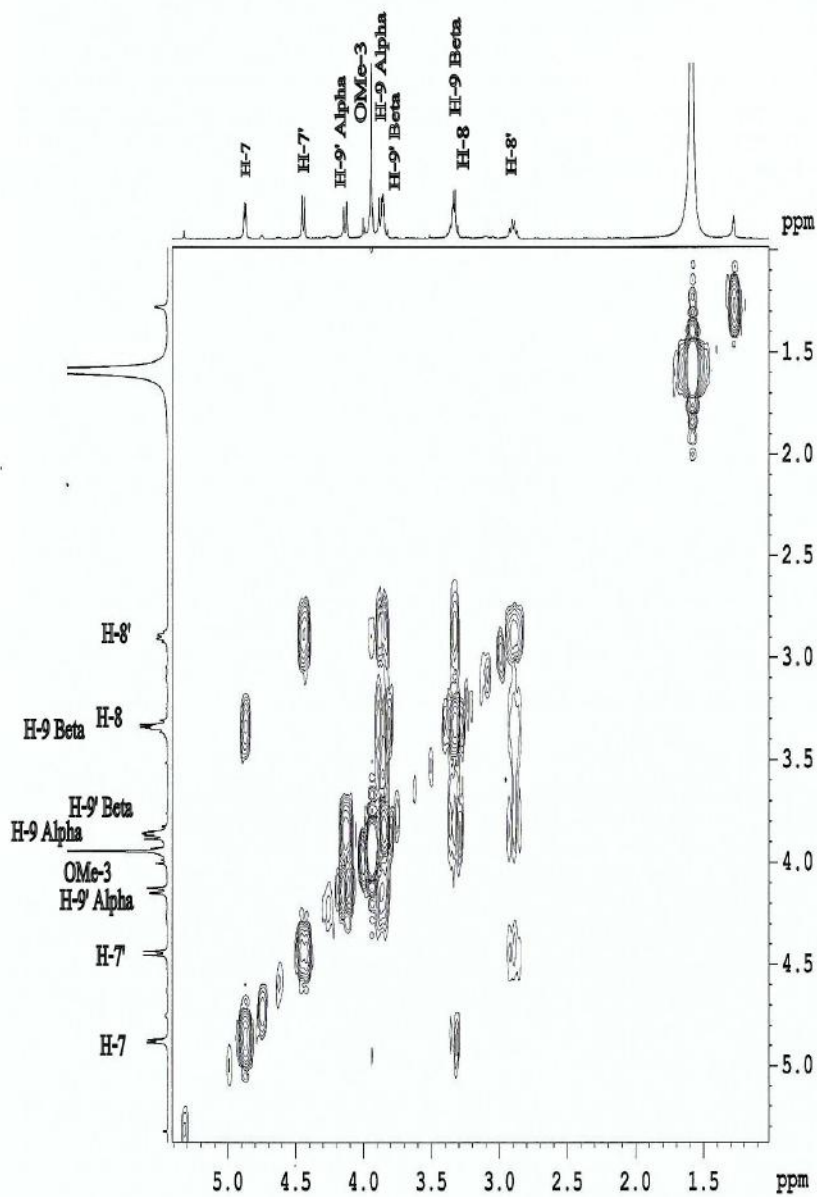
F1 - Acquisition parameters
 TD 128
 SFO1 400.232 MHz
 FIDRES 62.600159 Hz
 SW 20.620 ppm
 FMODE QF

F2 - Processing parameters
 SI 2048
 SF 400.2300010 MHz
 WDW QSINE
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.40

F1 - Processing parameters
 SI 1024
 MC2 QF
 SF 400.2300011 MHz
 WDW QSINE
 SSB 0
 LB 0 Hz
 GB 0

S54 : Partially expanded COSY-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol)

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 Sample: DU_ZRC_10, cosy



Current Data Parameters
 NAME DU_ZRC_10
 EKEYNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20160117
 Time 12.52
 INSTRUM spect
 PROBRD 5 mm PABBO BB/
 PULPROG cosygpgf
 TD 2048
 SOLVENT CDCl3
 NS 4
 DS 4
 SWH 8012.820 Hz
 FIDRES 3.912510 Hz
 AQ 0.1277952 sec
 RG 208.5
 DW 62.400 usec
 DE 6.50 usec
 VE 299.2 K
 D0 0.00000300 sec
 D1 1.00000000 sec
 D13 0.00000400 sec
 D16 0.00020000 sec
 INO 0.00012480 sec

===== CHANNEL f1 =====
 SFO1 400.2320011 MHz
 NUCl 1H
 P0 14.75 usec
 P1 14.75 usec
 PLW1 12.00000000 W

===== GRADIENT CHANNEL =====
 GENAM(1) SMSQ10.100
 GP11 10.00 n
 P16 1000.00 usec

F1 - Acquisition parameters
 TD 128
 SFO1 400.232 MHz
 FIDRES 62.600159 Hz
 SW 20.020 ppm
 FMODE QF

F2 - Processing parameters
 SI 2048
 SF 400.2300010 MHz
 WDW QSINE
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.40

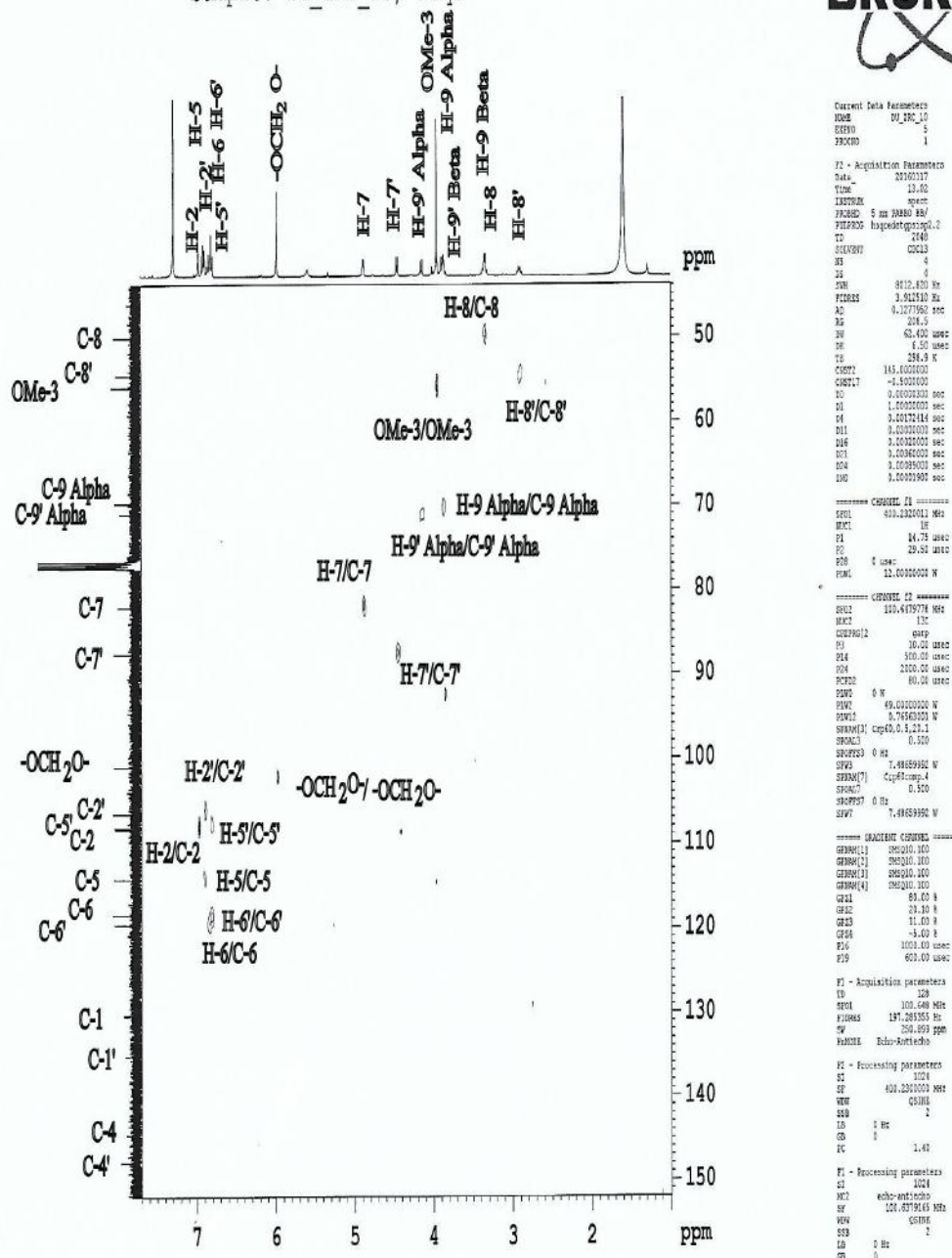
F1 - Processing parameters
 SI 1024
 MD2 QF
 SF 400.2300011 MHz
 WDW QSINE
 SSB 0
 LB 0 Hz
 GB 0

S55 : Partially expanded COSY-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol)

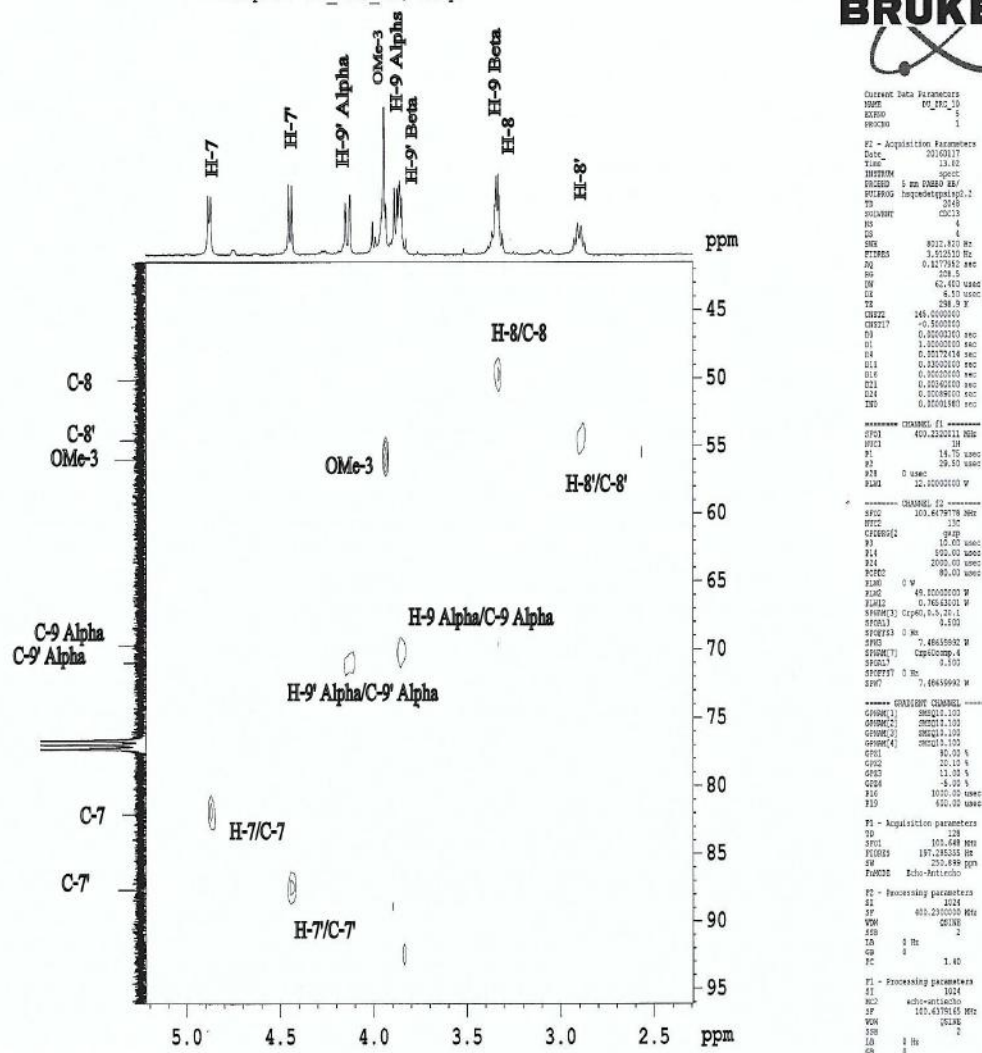
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Sample: DU_ZRC_10, hsqc



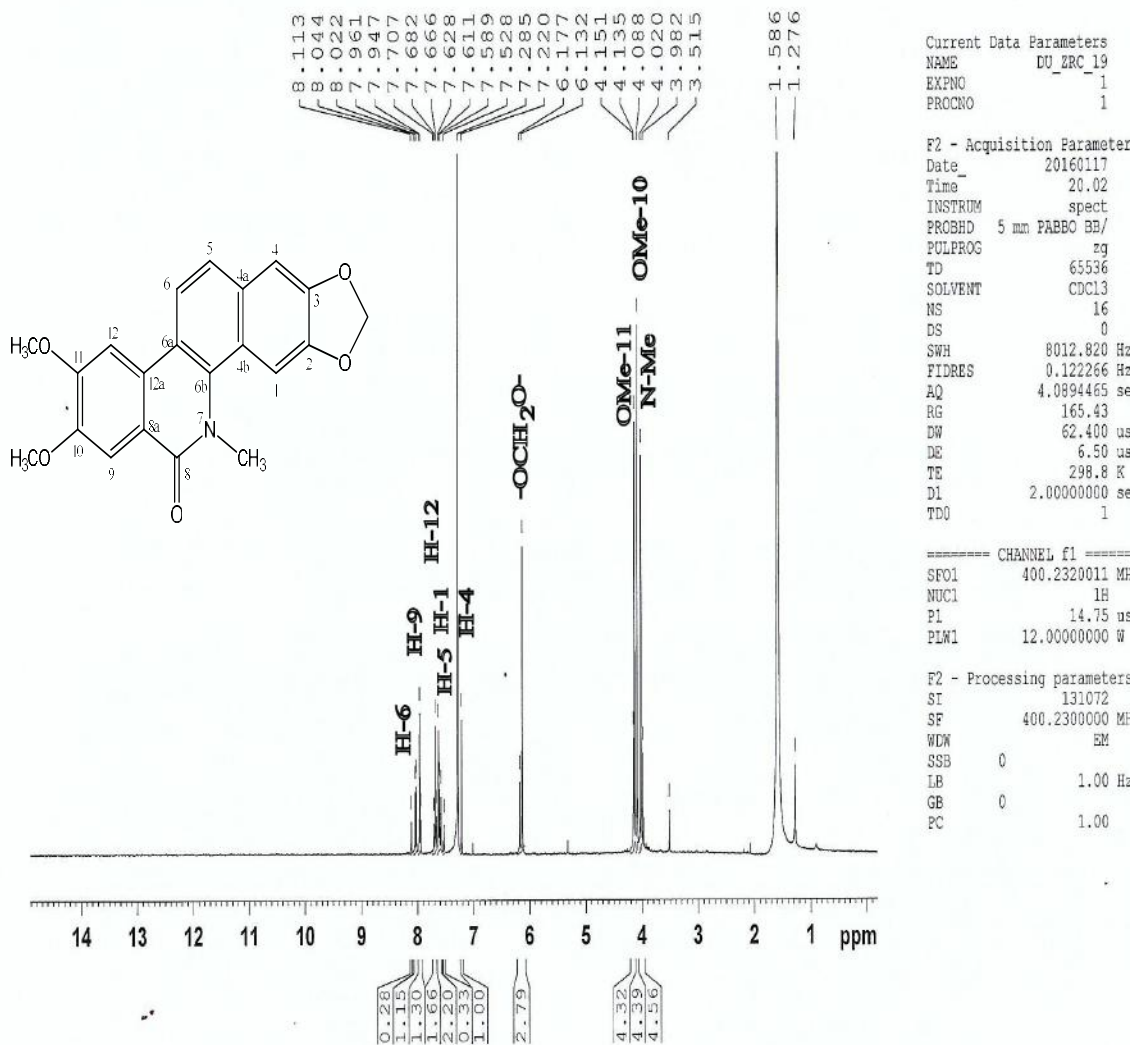
S56: HSQC-NMR spectrum (400 MHz, CDCl₃) of Compound 6 (Pluviatilol).



S57: Partially expanded HSQC-NMR spectrum (400 MHz, CDCl₃) of Compound **6** (Pluviatilol)

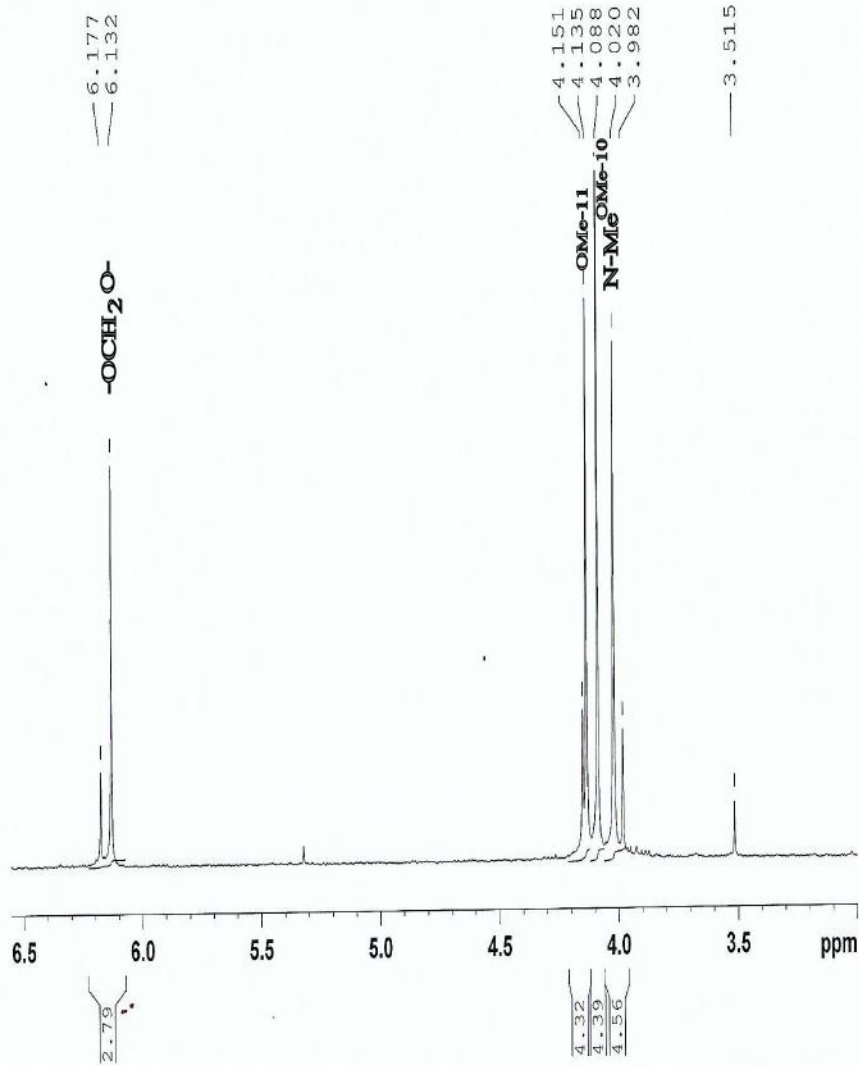
Pluviatilol (**6**): white crystals; ¹H-NMR (500 MHz, CDCl₃): δ 6.97 (1H, d, *J* = 1.2 Hz, H-2), 6.92 (1H, d, *J* = 8.0 Hz, H-5), 6.89 (1H, d, *J* = 1.2 Hz, H-2'), 6.85 (1H, dd, *J* = 8.0, 1.2 Hz, H-6'), 6.81 (1H, dd, *J* = 8.0, 2.0 Hz, H-6), 6.80 (1H, d, *J* = 8.0 Hz, H-5'), 5.98 (2H, s, OCH₂O), 4.87 (1H, d, *J* = 5.2 Hz, H-7), 4.44 (1H, d, *J* = 6.8 Hz, H-7'), 4.13 (1H, d, *J* = 9.6 Hz, H-9'α), 3.93 (3H, s, OMe-3), 3.87 (1H, dd, *J* = 9.6, 6.0 Hz, H-9α), 3.86 (1H, m, H-9'β), 3.34 (1H, m, H-8), 3.34 (1H, m, H-9β), 2.89 (1H, dd, *J* = 7.2, 6.4 Hz, H-8'). ¹³C-NMR (125 MHz, CDCl₃): δ 148.0* (C-4'), 147.2* (C-3'), 145.9* (C-3), 144.7* (C-4), 130.3 (C-1), 119.5 (C-6'), 118.4 (C-6), 114.2 (C-5), 108.4 (C-2), 108.2 (C-5'), 106.5 (C-2'), 101.0 (OCH₂O), 87.7 (C-7'), 82.1 (C-7), 71.0 (C-9'), 69.8 (C-9), 56.0 (OMe-3), 54.6 (C-8'), 50.2 (C-8).

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 Sample: DU_ZRC_19



S58: ¹H NMR (400 MHz, CDCl₃) spectrum of Compound 7 (Oxynitidine).

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Jahangirnagar University
Sample: DU_ZRC_19



Current Data Parameters
NAME DU_ZRC_19
EXPNO 1
PROCNO 1

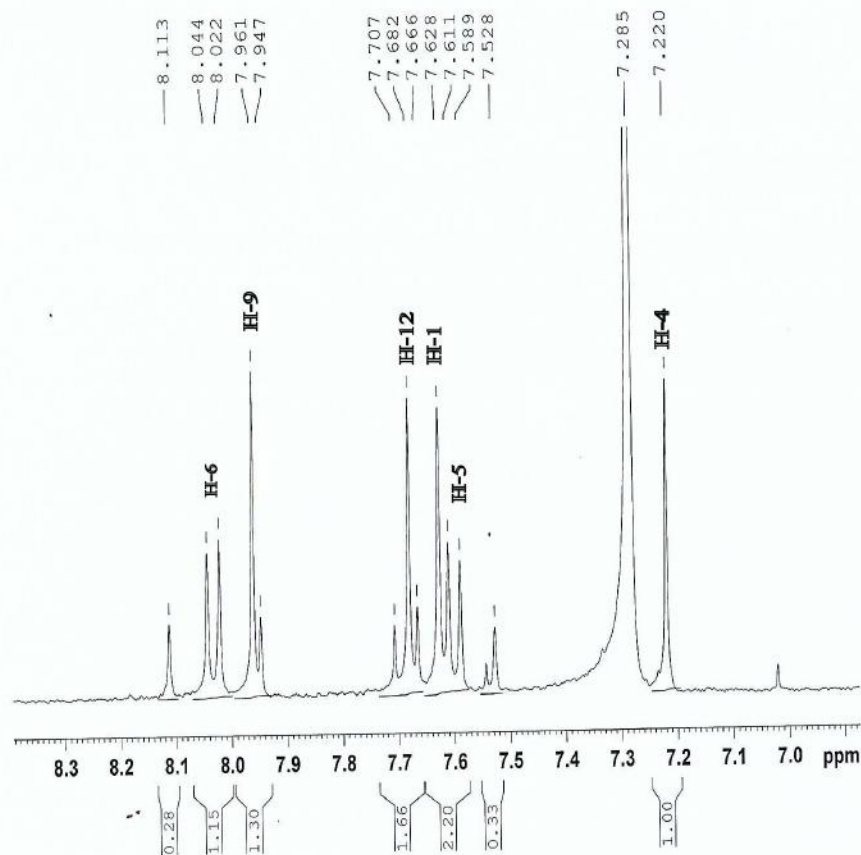
F2 - Acquisition Parameters
Date_ 20160117
Time 20.02
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zg
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894465 sec
RG 165.43
DW 62.400 usec
DE 6.50 usec
TE 298.8 K
D1 2.00000000 sec
TDO 1

===== CHANNEL f1 =====
SF01 400.2320011 MHz
NUC1 1H
P1 14.75 usec
PLW1 12.00000000 W

F2 - Processing parameters
SI 131072
SF 400.2300000 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

S59: Expansion of ¹H NMR (400 MHz, CDCl₃) spectrum of Compound 7 (Oxynitidine).

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 Sample: DU_ZRC_19



```

Current Data Parameters
NAME      DU_ZRC_19
EXPNO     1
PROCNO    1

F2 - Acquisition Parameters
Date_     20160117
Time      20.02
INSTRUM   spect
PROBHD    5 mm PABBO BB/
PULPROG   zg
TD         65536
SOLVENT   CDCl3
NS         16
DS         0
SNH        8012.820 Hz
FIDRES     0.122266 Hz
AQ         4.0894465 sec
RG         165.43
DW         62.400 usec
DE         6.50 usec
TE         298.8 K
D1         2.00000000 sec
TDO        1

===== CHANNEL f1 =====
SF01      400.2320011 MHz
NUC1       1H
P1         14.75 usec
PLW1       12.00000000 W

F2 - Processing parameters
SI         131072
SF         400.2300000 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.00
  
```

S60: Expansion of ^1H NMR (400 MHz, CDCl_3) spectrum of Compound **7** (Oxynitidine).

Oxynitidine (**7**): white amorphous; ^1H -NMR (500 MHz, CDCl_3): δ 8.02 (1H, d, $J = 8.8$ Hz, H-6), 7.96 (1H, s, H-9), 7.68 (1H, s, H-12), 7.63 (1H, s, H-1), 7.60 (1H, d, $J = 8.8$ Hz, H-5), 7.22 (1H, s, H-4), 6.13 (2H, s, OCH_2O), 4.14 (3H, s, OMe-11), 4.08 (3H, s, OMe-11), 4.02 (3H, s, N-Me).

