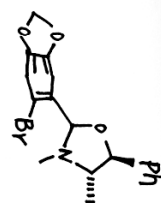
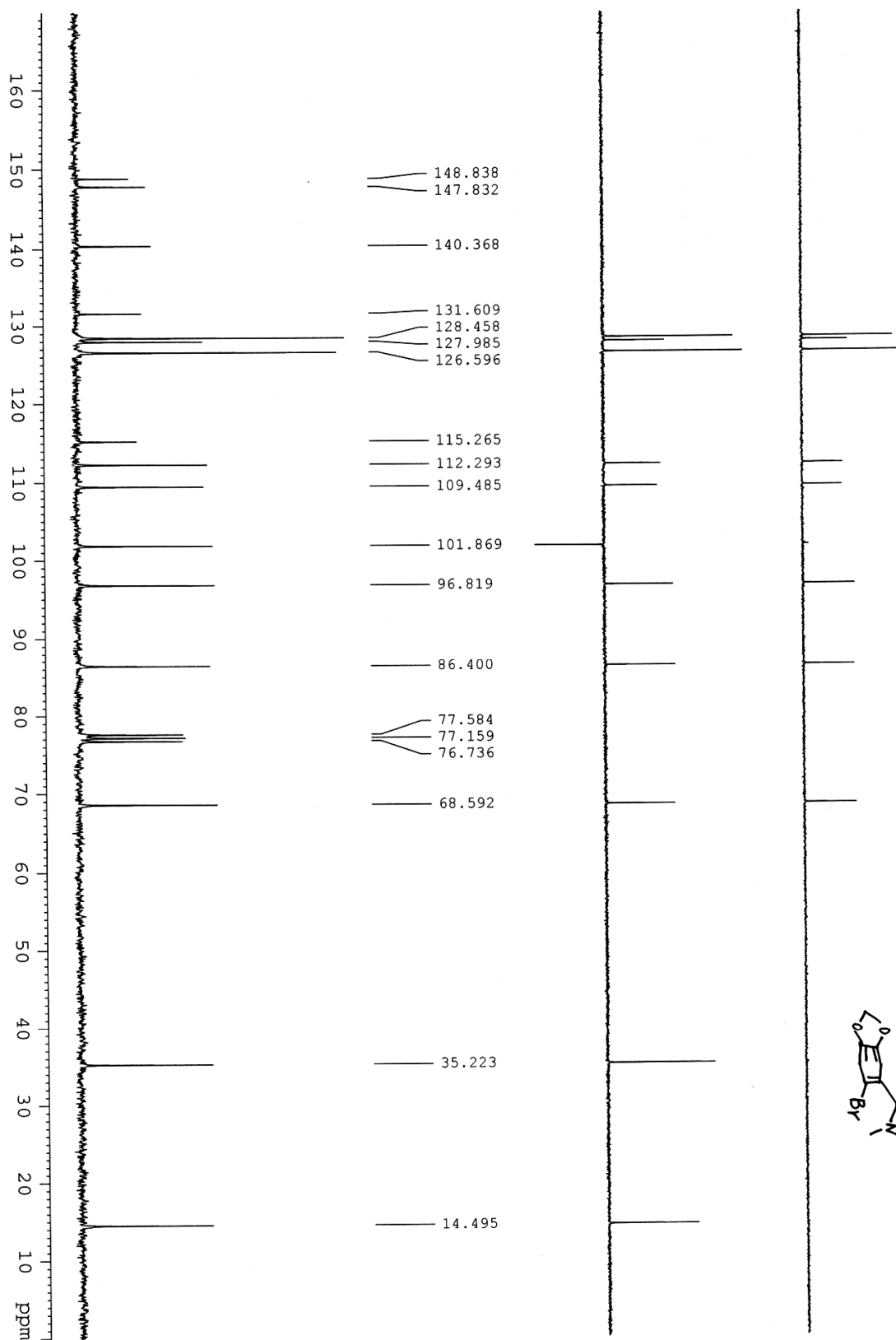


**Spectrum for  
Enantioselective Sequential Conjugate Addition-Allylation reactions: A Concise  
Total Synthesis of (+)-Podophyllotoxin**

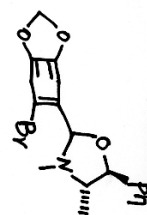
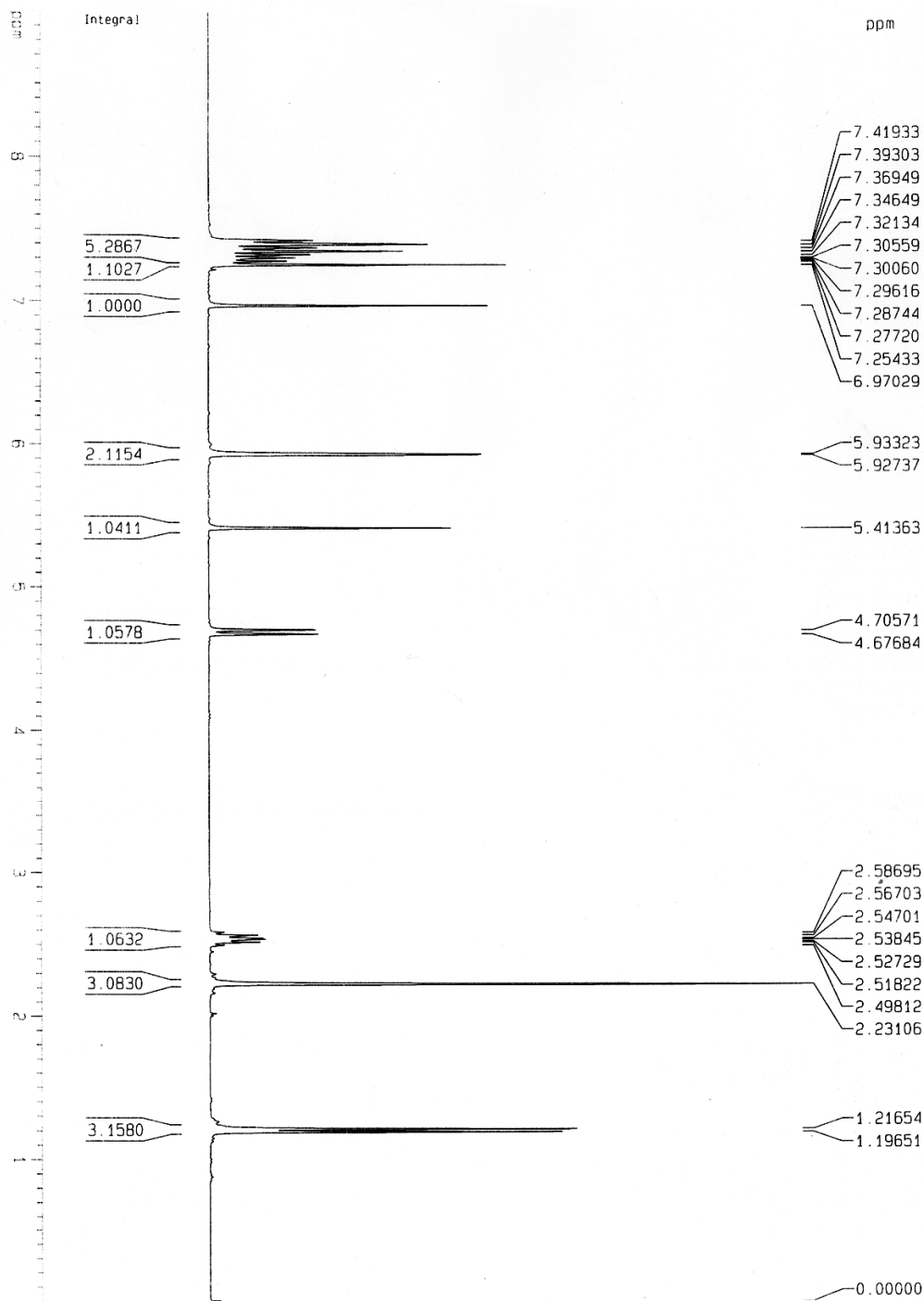
Yingming Wu, Jingfeng Zhao, Jingbo Chen, Chengxue Pan, Liang Li, and Hongbin Zhang\*

Key Laboratory of Medicinal Chemistry for Natural Resource, Ministry of Education, School of Chemical Science and Technology,  
Yunnan University, Kunming, Yunnan 650091, P. R. China Fax: 86-871-5035538. E-mail: [zhanghb@ynu.edu.cn](mailto:zhanghb@ynu.edu.cn) or  
[zhang\\_hongbin@hotmail.com](mailto:zhang_hongbin@hotmail.com)

Compound 8



# Compound 8



Current Data Parameters

NAME	EXPNO	PROCNO	PROCPS
wym1	92	1	

F2 - Acquisition Parameters

Date_	Time	INSTRUM	PROBHD
20071221	14.23	av300	5 mm QNP 1H/13

F2 - Processing parameters

SI	SF	WDW	SSB
32768	300.130189 MHz	EM	0

10 NMR plot parameters

CX	CY	F1P	F2P
23.00 cm	12.50 cm	9.000 ppm	2701.17 Hz

1H NMR

CH1	CH2	CH3	CH4
1H	8.60 usec	-2.00 dB	300.1318534 MHz

===== CHANNEL f1 =====

NUC1	NUC2	TE	WCREST
1H	13C	295.6 K	0.00000000 sec

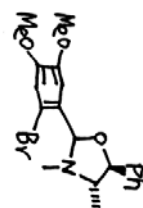
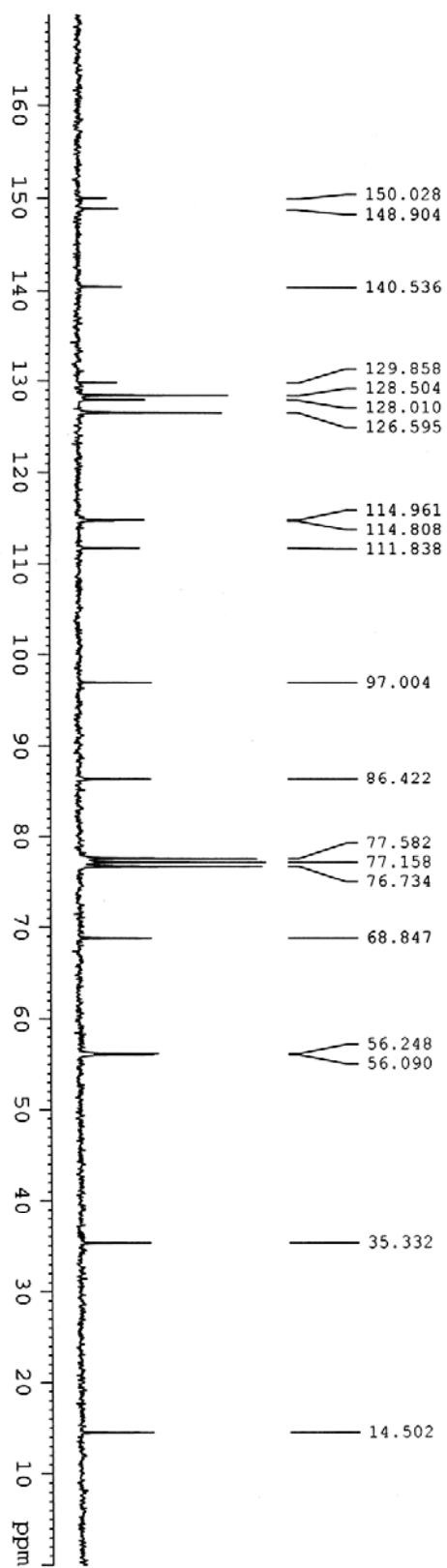
===== CHANNEL f2 =====

NUC1	NUC2	TE	WCREST
1H	13C	295.6 K	0.00000000 sec

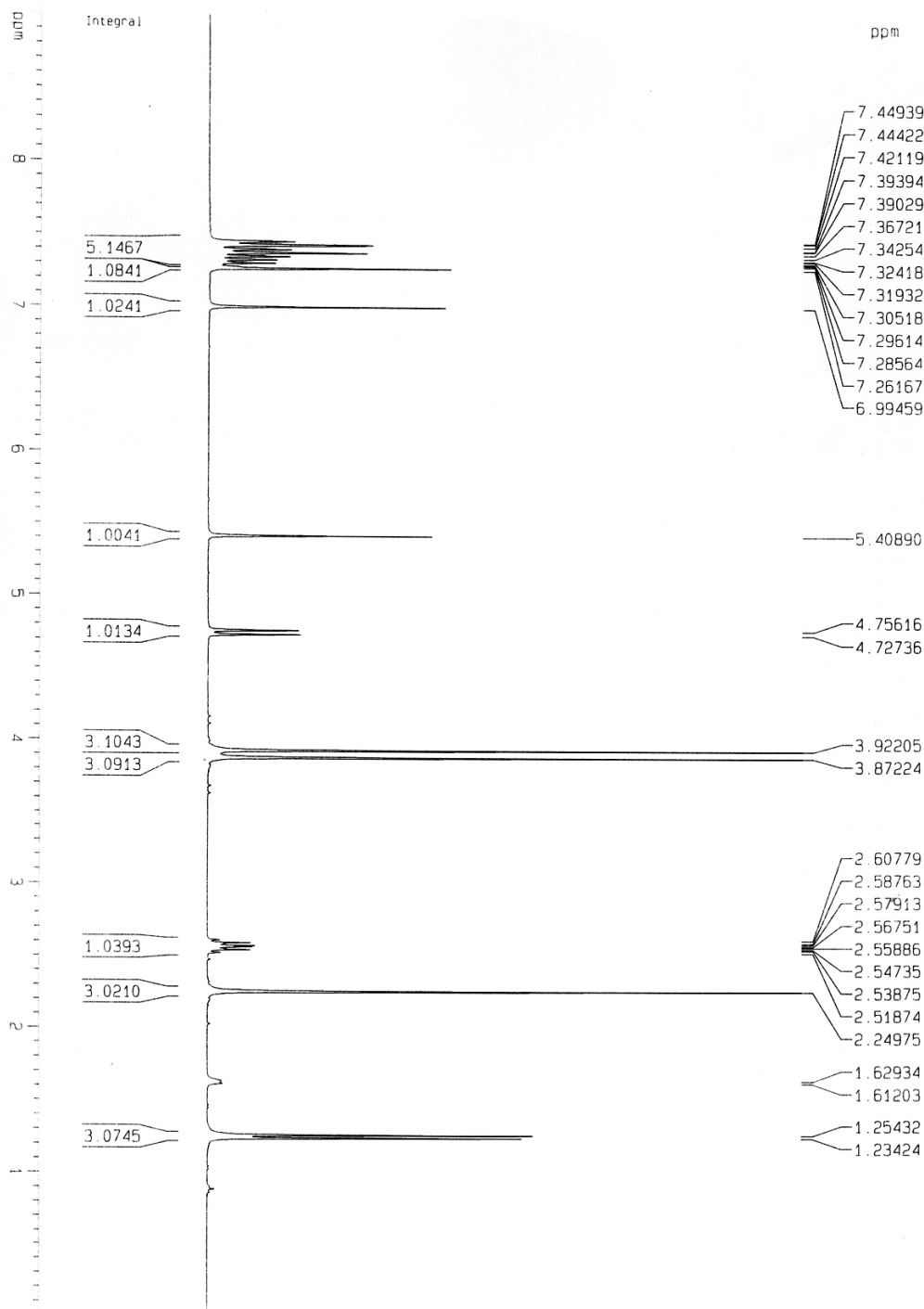
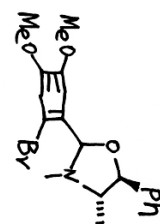
===== CHANNEL f3 =====

NUC1	NUC2	TE	WCREST
1H	13C	295.6 K	0.00000000 sec

Compound 8a

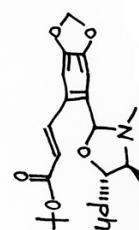
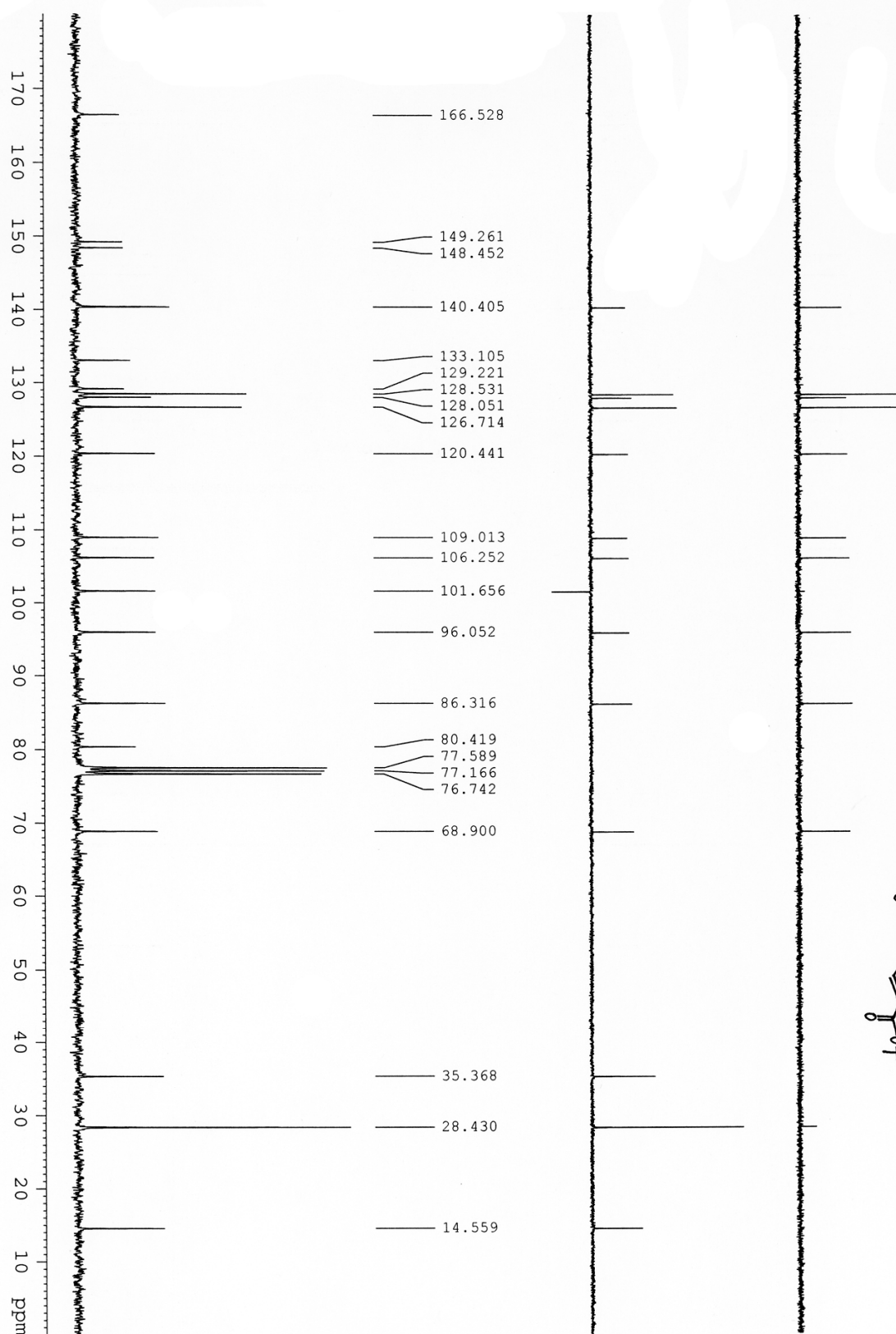


# Compound 8a

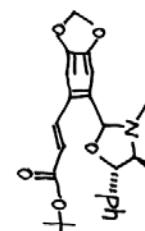
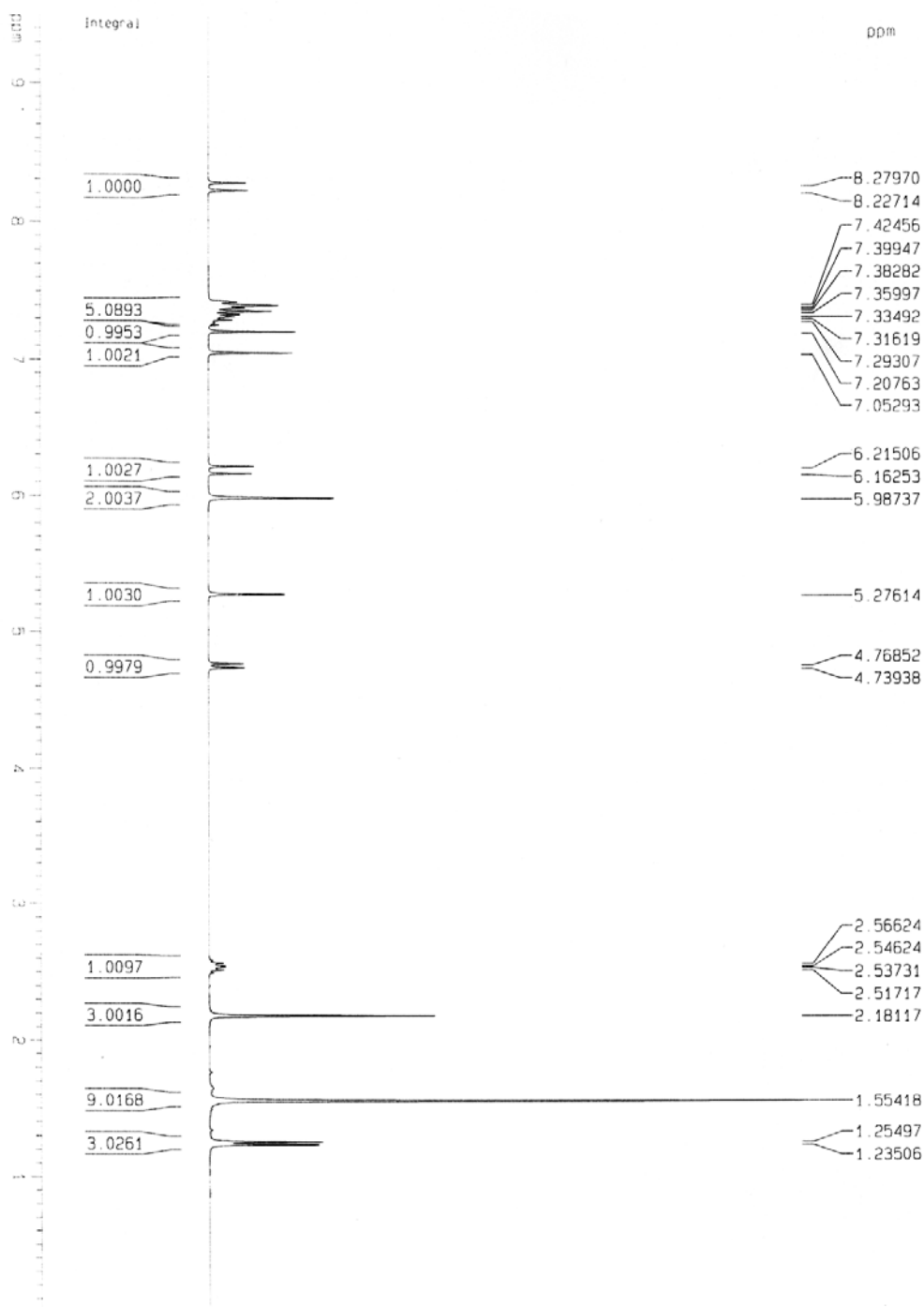


Current Data Parameters  
 NAME: 8a  
 EXPNO: 298  
 PROCNO: 1  
 F2 - Acquisition Parameters  
 Date\_: 20080804  
 Time: 21.30  
 INSTRUM: av300  
 PULPROG: zgpg30  
 TD: 65536  
 SOLVENT: CDCl3  
 NS: 16  
 DS: 2  
 SWH: 4789.272 Hz  
 FIDRES: 0.073078 Hz  
 AQ: 6.8420086 sec  
 RG: 203.2  
 DW: 104.400 usec  
 DE: 6.00 usec  
 TE: 298.2 K  
 J1: 1.00000000 sec  
 WDCREST: 0.00000000 sec  
 WCMR: 0.01500000 sec  
 F2 - Processing parameters  
 SI: 32768  
 SF: 300.130073 MHz  
 WD: EM  
 SSB: 0  
 LB: 0.30 Hz  
 GB: 0  
 PC: 1.00  
 1D NMR plot parameters  
 CX: 23.00 cm  
 CY: 12.50 cm  
 Z1P: 9.000 ppm  
 F1: 2701.17 Hz  
 F2P: 0.000 ppm  
 F2: 0.00 Hz  
 JPCMC: 0.39130 ppm/cm  
 HZCM: 117.44218 Hz/cm

Compound 4



# Compound 4



Current Data Parameters

NAME	VALUE
EXPNO	106
PROCNO	1

F2 - Acquisition Parameters

Date_	Time
20071225	16.44
INSTRUM	av300
PROBHD	5 mm QNP 1H/13
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	16
DS	2
SWH	6172.839 Hz
FIDRES	0.094150 Hz
AQ	5.3084650 sec
RG	101.6
DM	81.000 usec
DE	6.00 usec
TE	295.4 K
D1	1.00000000 sec
WCRES1	0.00000000 sec
WCRES2	0.01500000 sec

===== CHANNEL f1 =====

NUC1	NUC2	PC1	PC2
1H	1H	8.60 usec	-2.00 dB
13C	13C	300.138534 MHz	

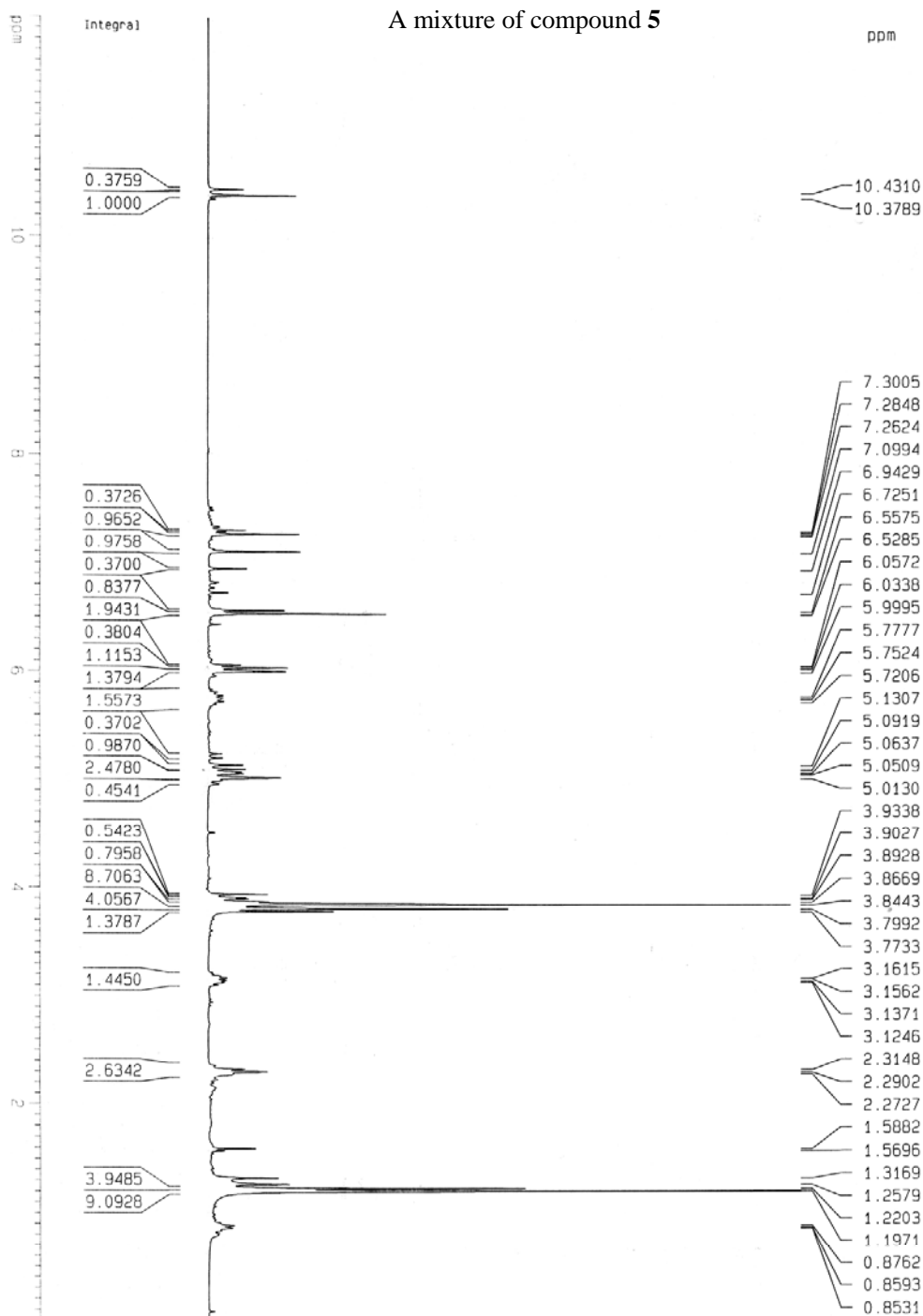
F2 - Processing parameters

SI	SF	WDW	SSB	LB	GB	PC
32768	300.1300080 MHz	EM	0	0.30 Hz	0	1.00

1D NMR plot parameters

CX	CY	F1P	F1	F2P	F2	APCKM	HZCM
23.00 cm	12.50 cm	9.500 ppm	2851.24 Hz	0.000 ppm	0.00 Hz	0.41304 ppm/cm	123.96574 Hz/cm

# A mixture of compound 5



Current Data Parameters  
NAME w/1  
EXPNO 87  
PROCNO 1

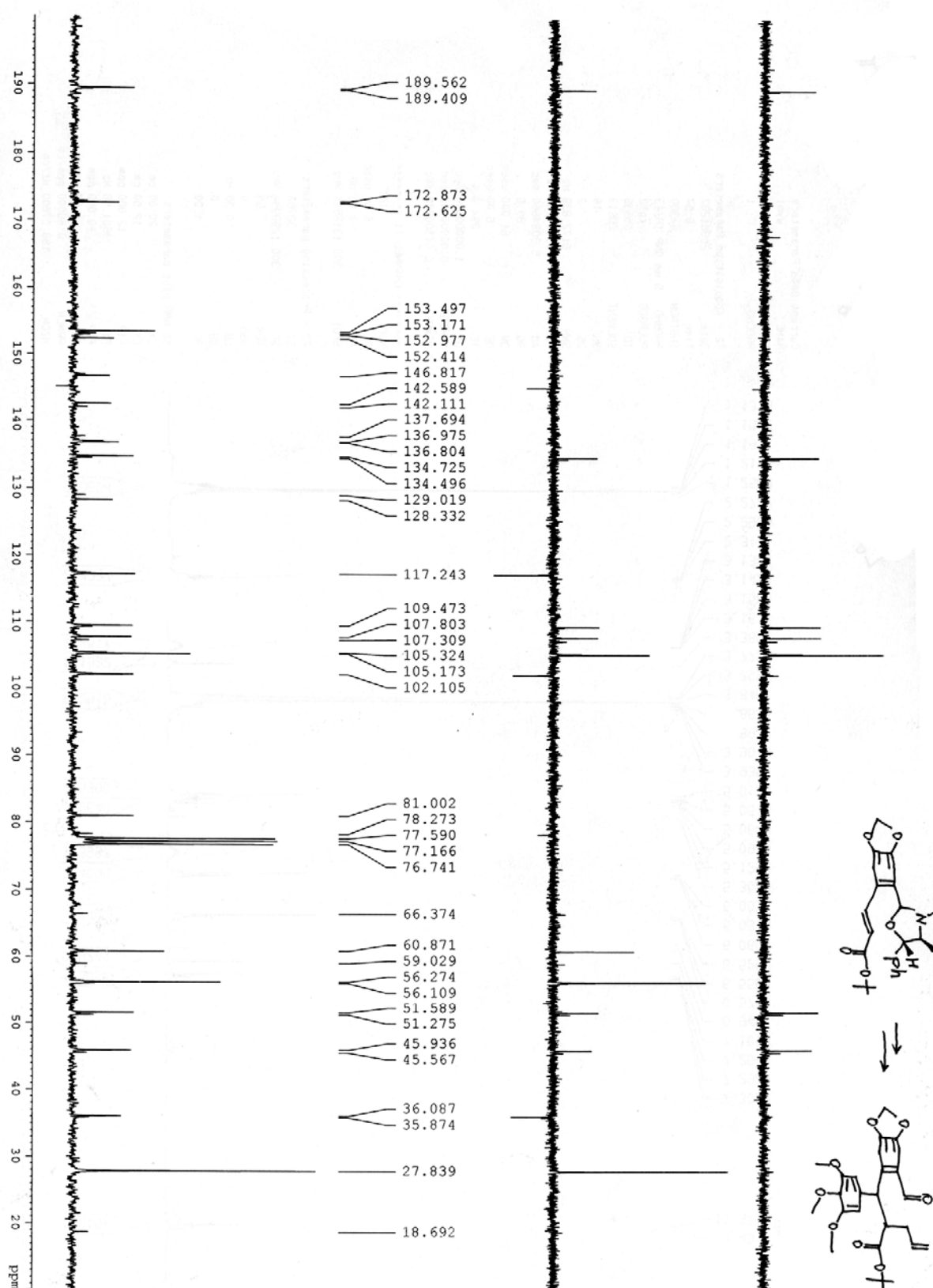
F2 - Acquisition Parameters  
Date\_ 20071217  
Time 17.19  
INSTRUM av300  
PROBHD 5 mm QNP 1H/13  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 12  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084650 sec  
RG 71.8  
DM 81.000 usec  
DE 6.00 usec  
TE 295.3 K  
D1 1.00000000 sec  
MCREST 0.00000000 sec  
MCNMRK 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*  
NUC1 1H  
P1 8.60 usec  
PL1 -2.00 dB  
SFO1 300.1315534 MHz

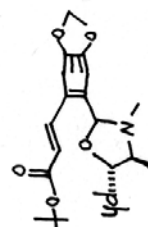
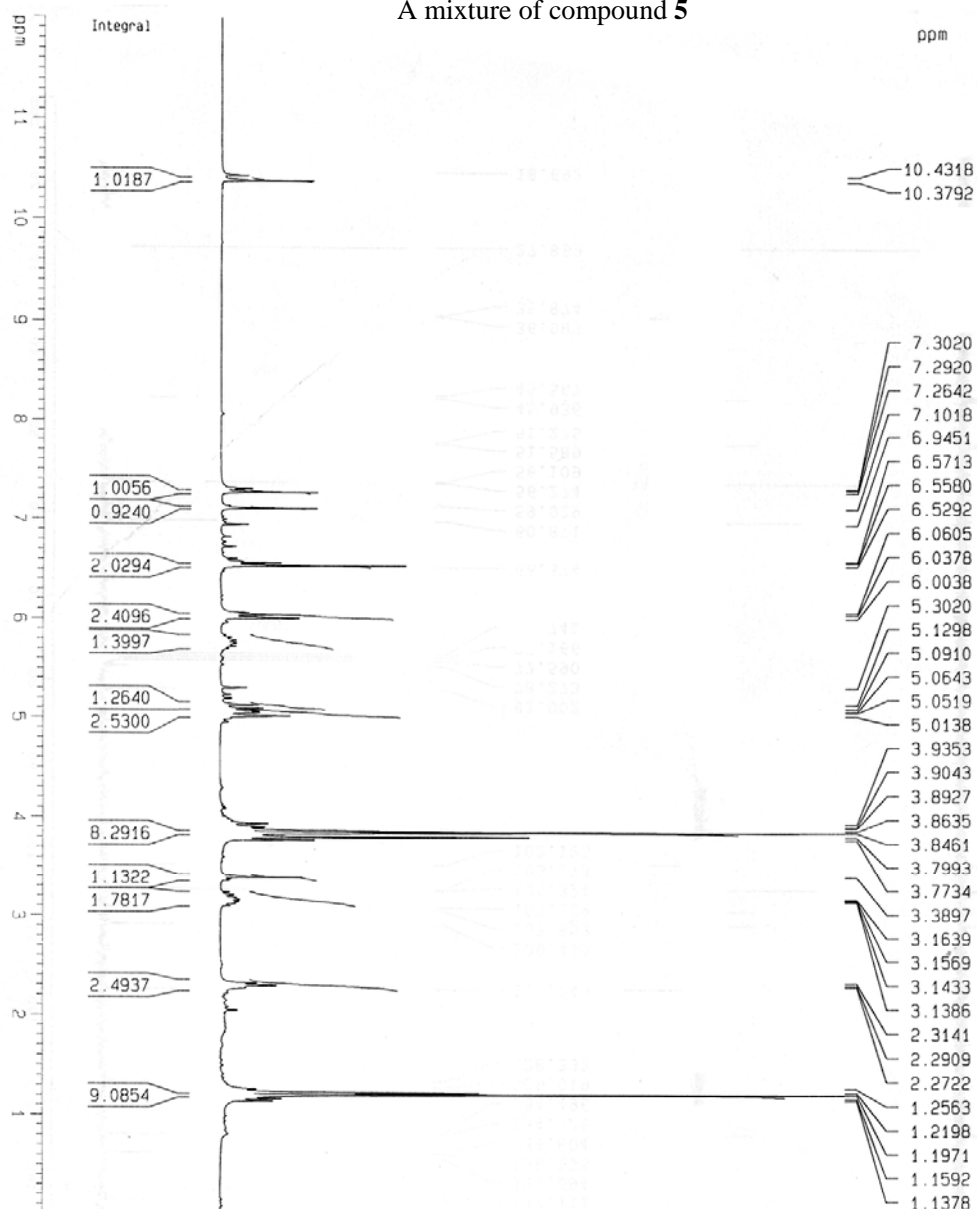
F2 - Processing parameters  
SI 32768  
SF 300.1293986 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

1D NMR plot parameters  
CX 23.00 cm  
CY 12.50 cm  
FLP 12.000 ppm  
F1 3601.56 Hz  
F2 -0.000 ppm  
F2 -0.00 Hz  
PPMCM 0.52174 ppm/cm  
HZCM 155.58957 Hz/cm

A mixture of compound 5

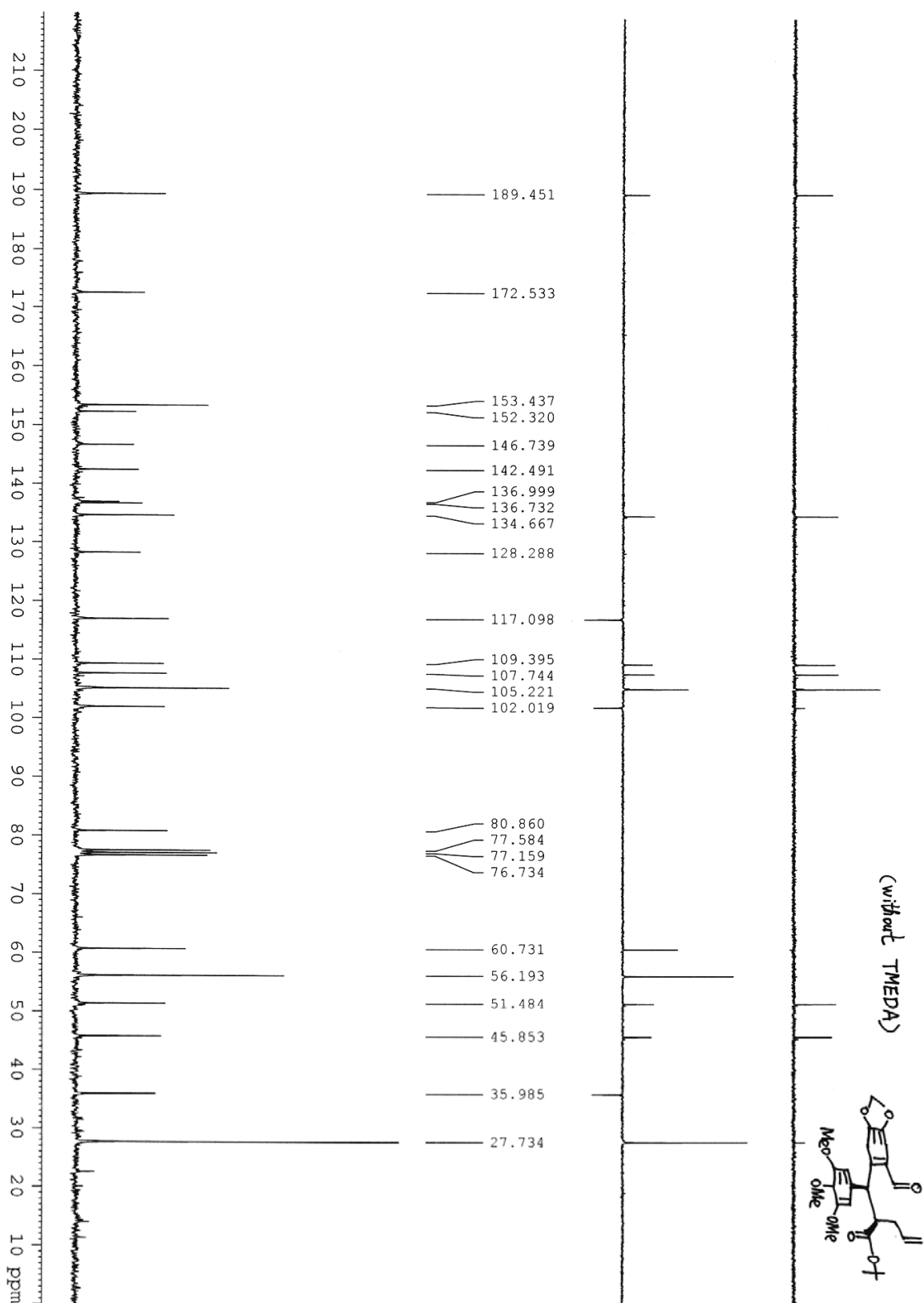


# A mixture of compound 5



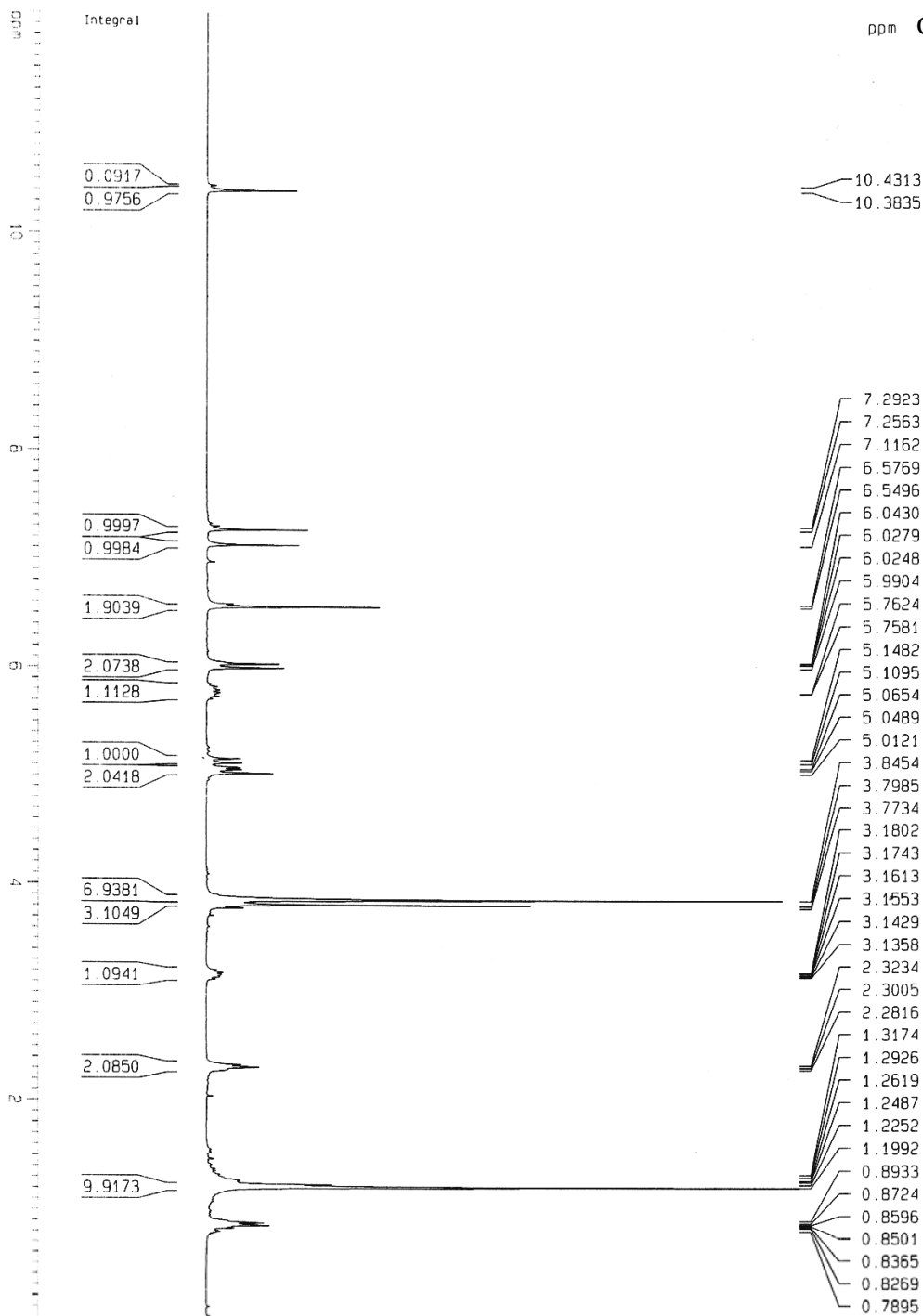
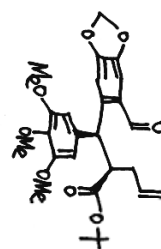
Current Data Parameters  
 NAME: kym1  
 EXPNO: 182  
 PROCNO: 1  
 F2 - Acquisition Parameters  
 Date\_: 20061207  
 Time: 8.57  
 INSTRUM: av300  
 PROCNO: 5 mm QNP 1H/13  
 PULPROG: zg30  
 TO: 65536  
 SOLVENT: CDCl<sub>3</sub>  
 NS: 16  
 DS: 2  
 SWH: 6172.839 Hz  
 FIDRES: 0.094190 Hz  
 AQ: 5.3084660 sec  
 RG: 80.6  
 DM: 81.000 usec  
 DE: 6.00 usec  
 TE: 294.4 K  
 D1: 1.00000000 sec  
 MCREST: 0.00000000 sec  
 MCNRK: 0.01500000 sec  
 ===== CHANNEL f1 =====  
 NUC1: 1H  
 P1: 8.60 usec  
 PL1: -2.00 dB  
 SF01: 300.1318534 MHz  
 F2 - Processing parameters  
 SI: 32768  
 SF: 300.1299954 MHz  
 MDK: EM  
 SSB: 0  
 LB: 0.30 Hz  
 GB: 0  
 PC: 1.00  
 1D NMR plot parameters  
 CX: 20.00 cm  
 CY: 12.50 cm  
 F1P: 12.000 ppm  
 F1: 3601.36 Hz  
 F2P: -0.000 ppm  
 F2: -0.00 Hz  
 PPM/CW: 0.60000 ppm/cm  
 HZCM: 180.07800 Hz/cm

Compound 5



ppm Compound 5

(without TMEDA)



Current Data Parameters  
 NAME WYMI  
 EXPNO 4  
 PROCNO 1

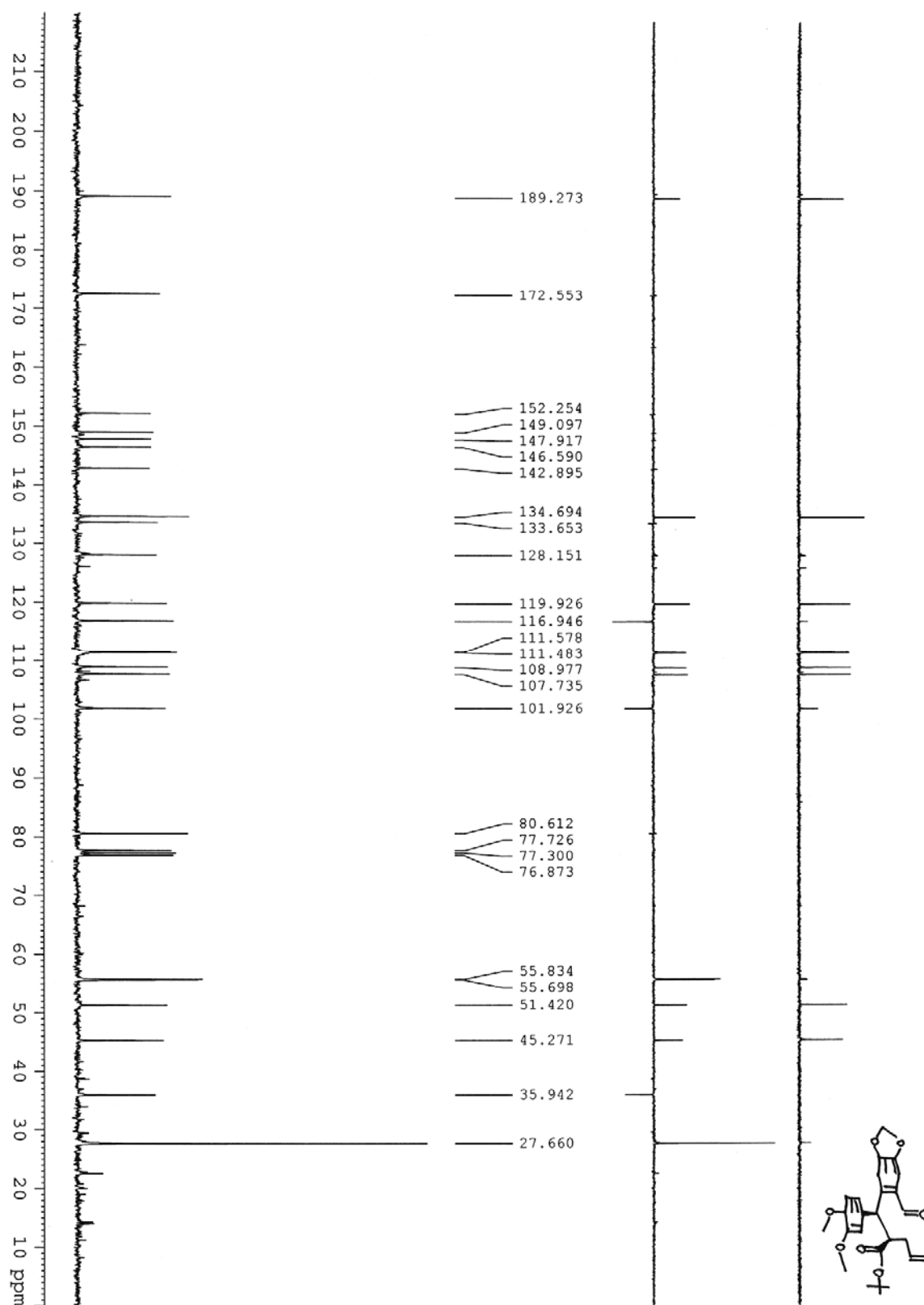
F2 - Acquisition Parameters  
 Date\_ 20071010  
 Time 9.24  
 INSTRUM av300  
 PROBHD 5 mm QNP 1H/13  
 PULPROG zgpg30  
 TO 65536  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 6172.839 Hz  
 FIDRES 0.094150 Hz  
 AQ 5.3084660 sec  
 RG 45.3  
 DM 81.000 usec  
 DE 6.00 usec  
 TE 298.2 K  
 D1 1.00000000 sec  
 ACQRES 0.00000000 sec  
 WCNMR 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*  
 NUC1 1H  
 P1 8.60 usec  
 PL1 -2.00 dB  
 SFO1 300.1315534 MHz

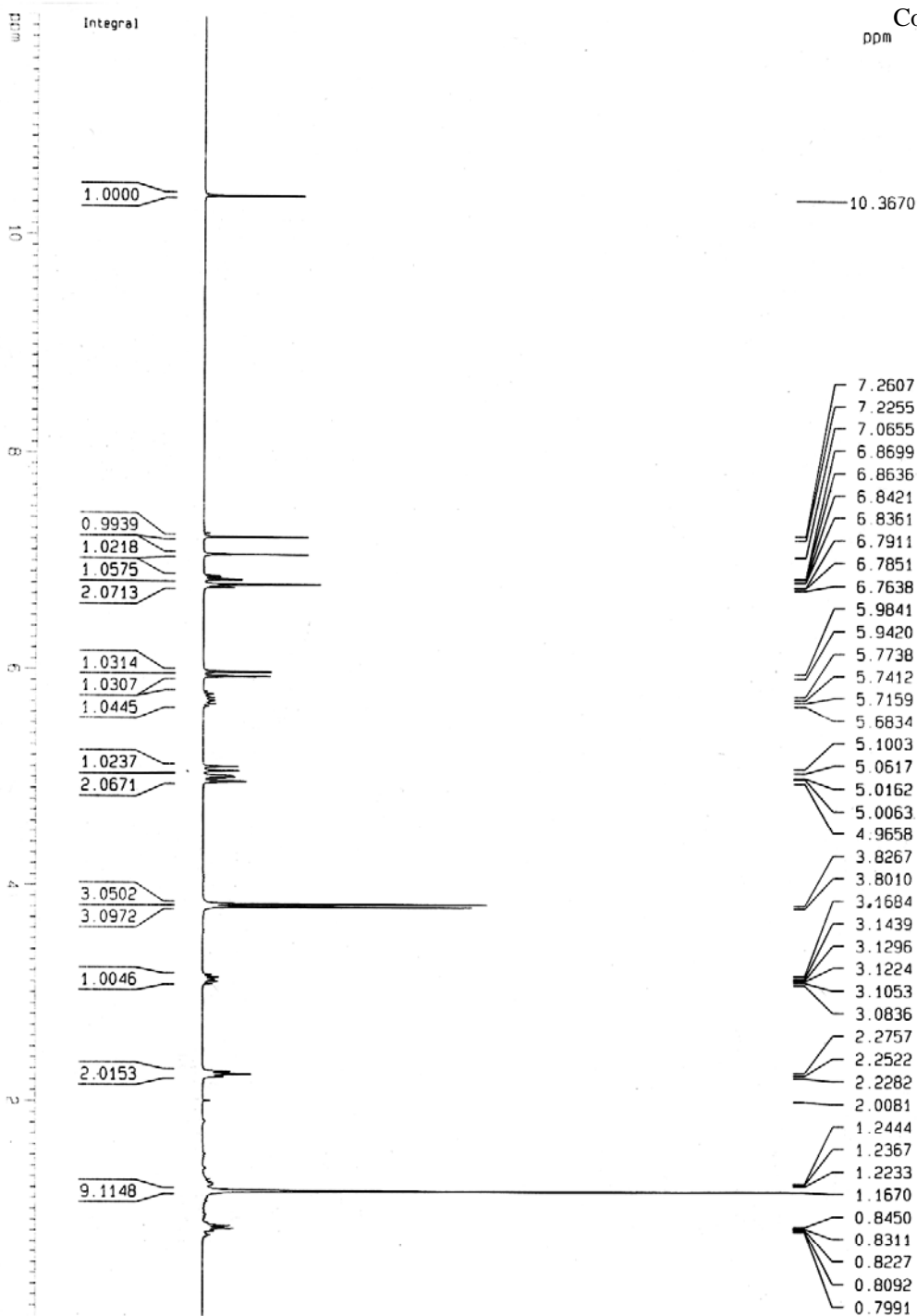
F2 - Processing parameters  
 SI 32768  
 SF 300.1299882 MHz  
 RM EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

1D NMR plot parameters  
 CX 23.00 cm  
 CY 12.50 cm  
 Z1 12.000 ppm  
 F1 3501.56 Hz  
 Z2 -0.000 ppm  
 F2 -0.00 Hz  
 ZPC 0.52174 ppm/cm  
 ZCM 156.58555 Hz/cm

Compound 10



Compound 10  
ppm



Current Data Parameters

NAME	VALUE
EXPNO	548
PROCNO	1

F2 - Acquisition Parameters

NAME	VALUE
Date_	20080417
Time	17.56
INSTRUM	av300
PROBHD	5 mm QNP 1H/13
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
NS	3
DS	2
SWH	6172.839 Hz
FIDRES	0.094190 Hz
AQ	5.3084660 sec
RG	71.8
DW	81.000 usec
DE	6.00 usec
TE	298.3 K
D1	1.00000000 sec
MCOREST	0.00000000 sec
MCORR	0.01500000 sec

===== CHANNEL f1 =====

NAME	VALUE
NUC1	1H
Q1	8.60 usec
PL1	-2.00 dB
SFO1	300.1315534 MHz

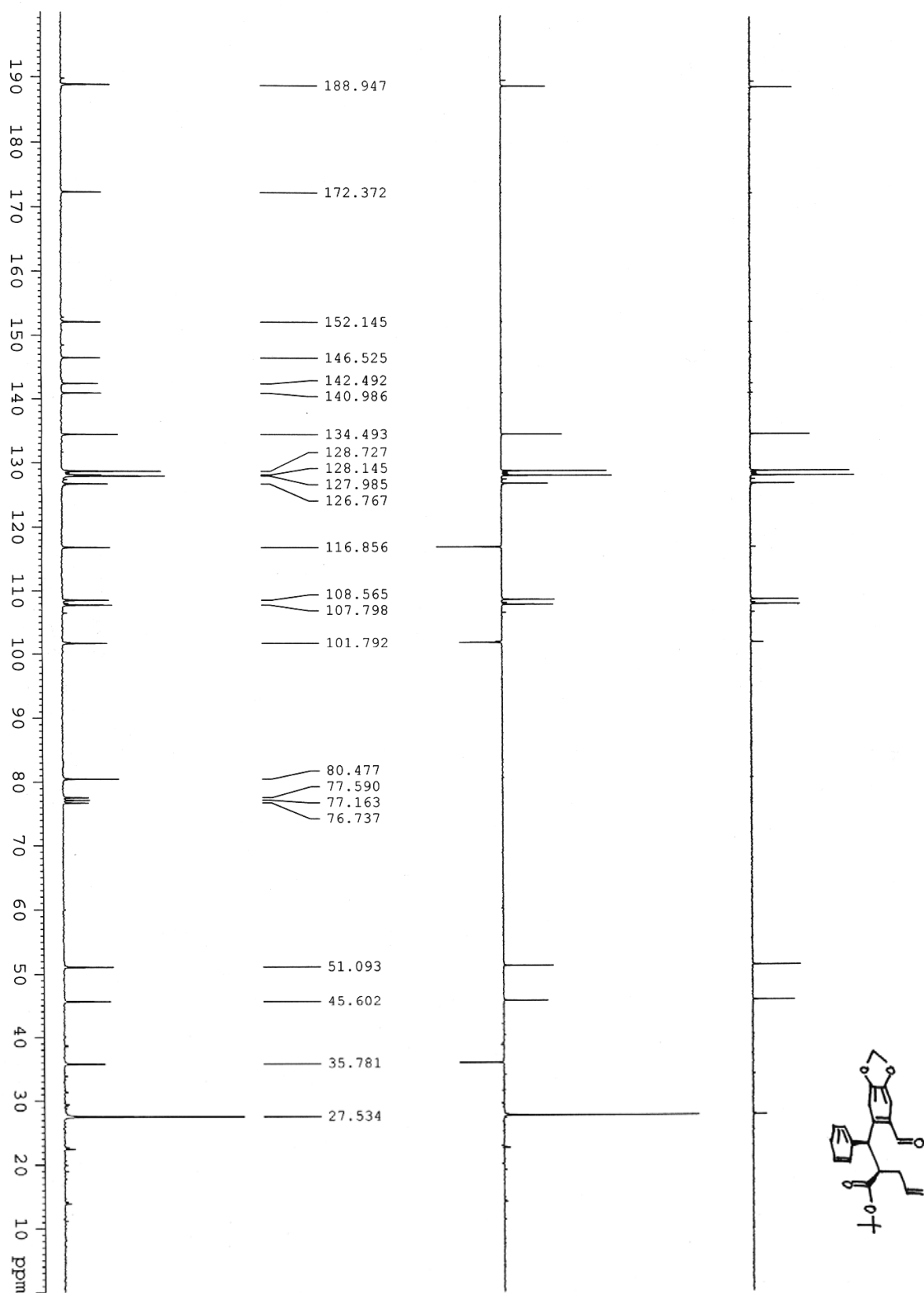
F2 - Processing parameters

NAME	VALUE
SI	32768
SF	300.1300657 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

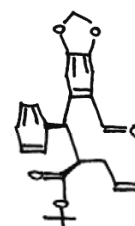
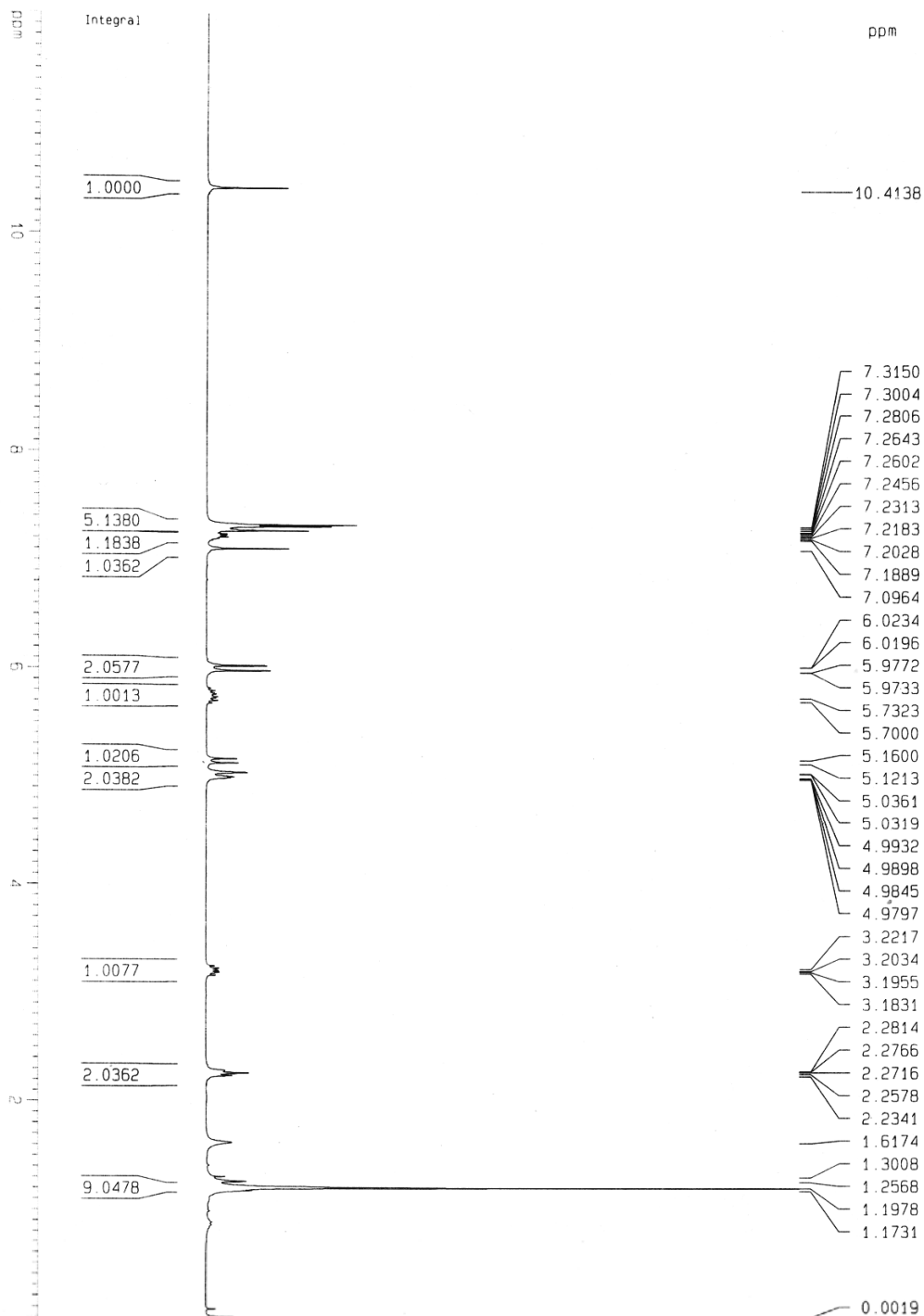
10 NMR Plot Parameters

NAME	VALUE
CX	23.00 cm
CV	12.50 cm
F1P	12.000 ppm
F1	3601.56 Hz
F2P	-0.000 ppm
F2	-0.00 Hz
CPDPRM	0.52174 ppm/cm
HZCM	156.58957 Hz/cm

### Compound 9



## Compound 9



Current Data Parameters

NAME	VALUE
EXPNO	191
PROCNO	1

2 - Acquisition Parameters

Date_	Time
20080506	15.09

INSTRUM av300

PROBHD 5 mm QNP 1H/13

PULPROG zg30

TD 65536

SOLVENT CDCl3

NS 12

DS 2

SWH 6172.835 Hz

FIDRES 0.094190 Hz

AQ 5.3084660 sec

RG 256

DE 81.000 usec

TE 294.9 K

PC 1.00000000 sec

WPREST 0.00000000 sec

WDMK 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*

NUC1 1H

NUC2 13C

NUC3 13C

SFO1 300.1318534 MHz

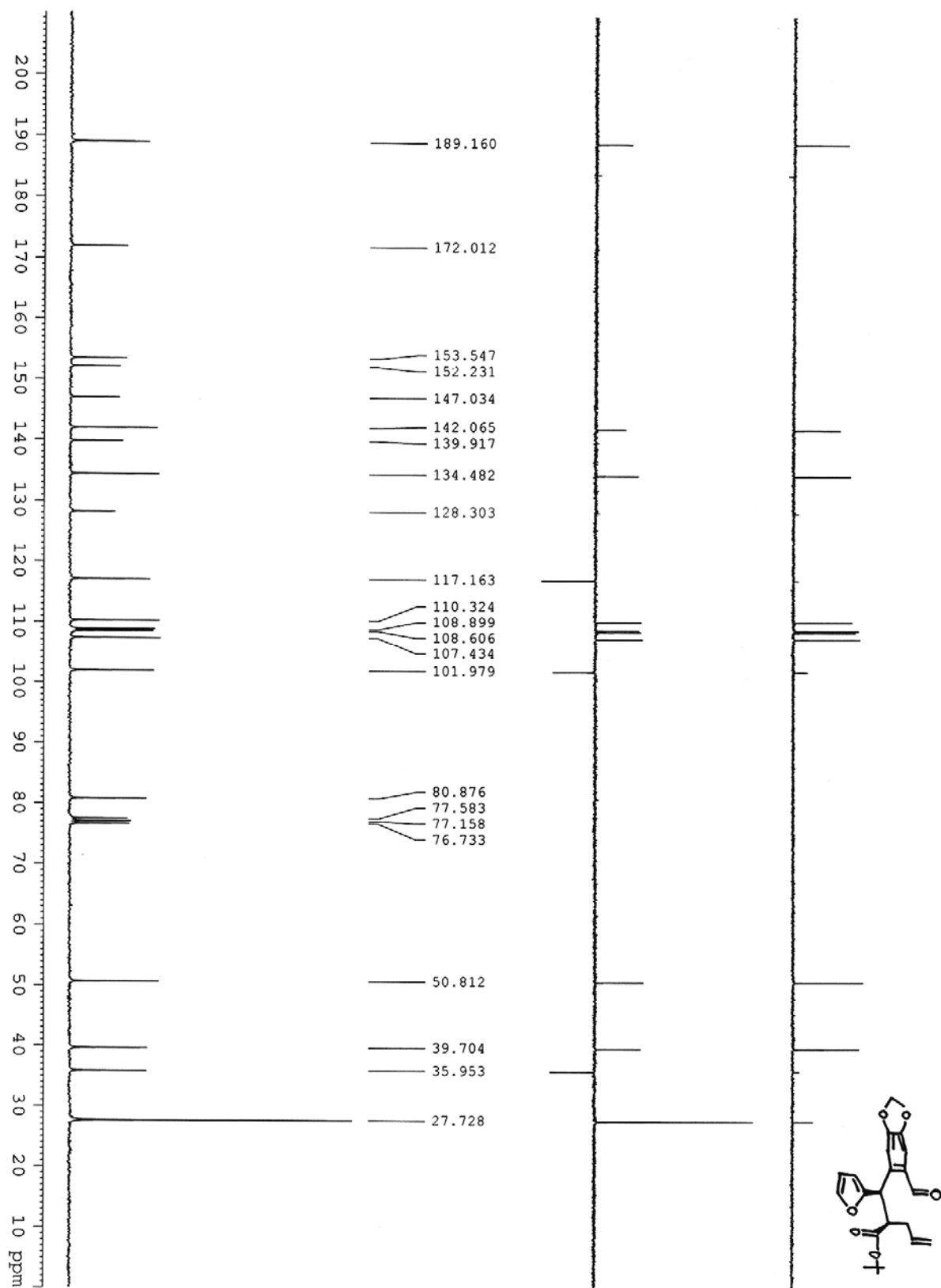
2 - Processing parameters

SI	32768
SF	300.1300447 MHz
WDW	EM
SSB	0
B	0.30 Hz
GB	0
PC	1.00

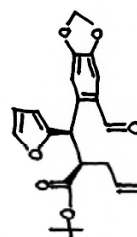
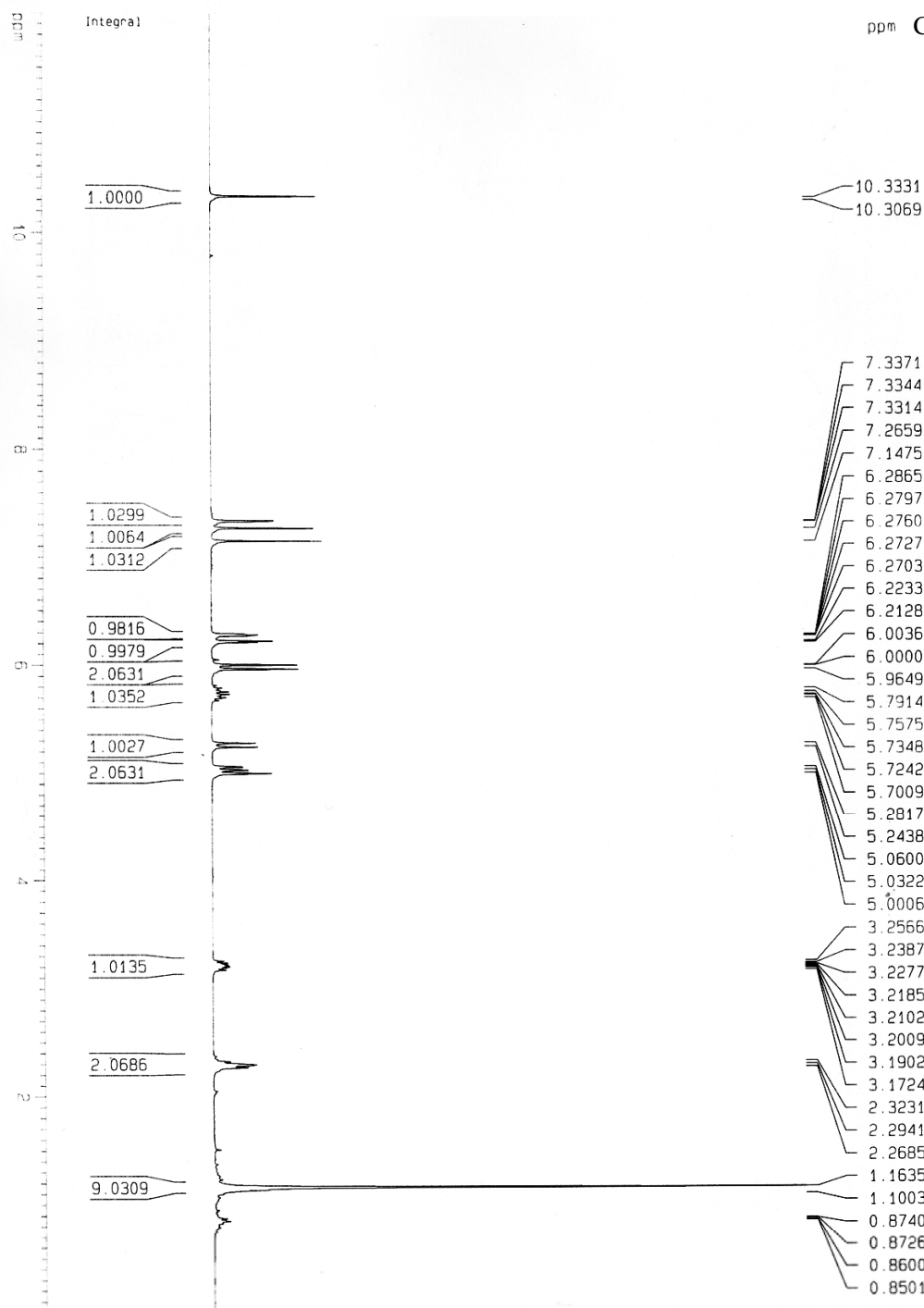
10 NMR plot parameters

CX	23.00 cm
CY <td>12.50 cm</td>	12.50 cm
PI	12.000 ppm
F1	3601.56 Hz
F2	-0.000 ppm
F3	-0.00 Hz
SPR	0.52174 ppm/cm
WID	156.58955 Hz/cm

Compound 12



ppm Compound 12



Current Data Parameters  
NAME wmt  
EXPNO 201  
PROCNO 1

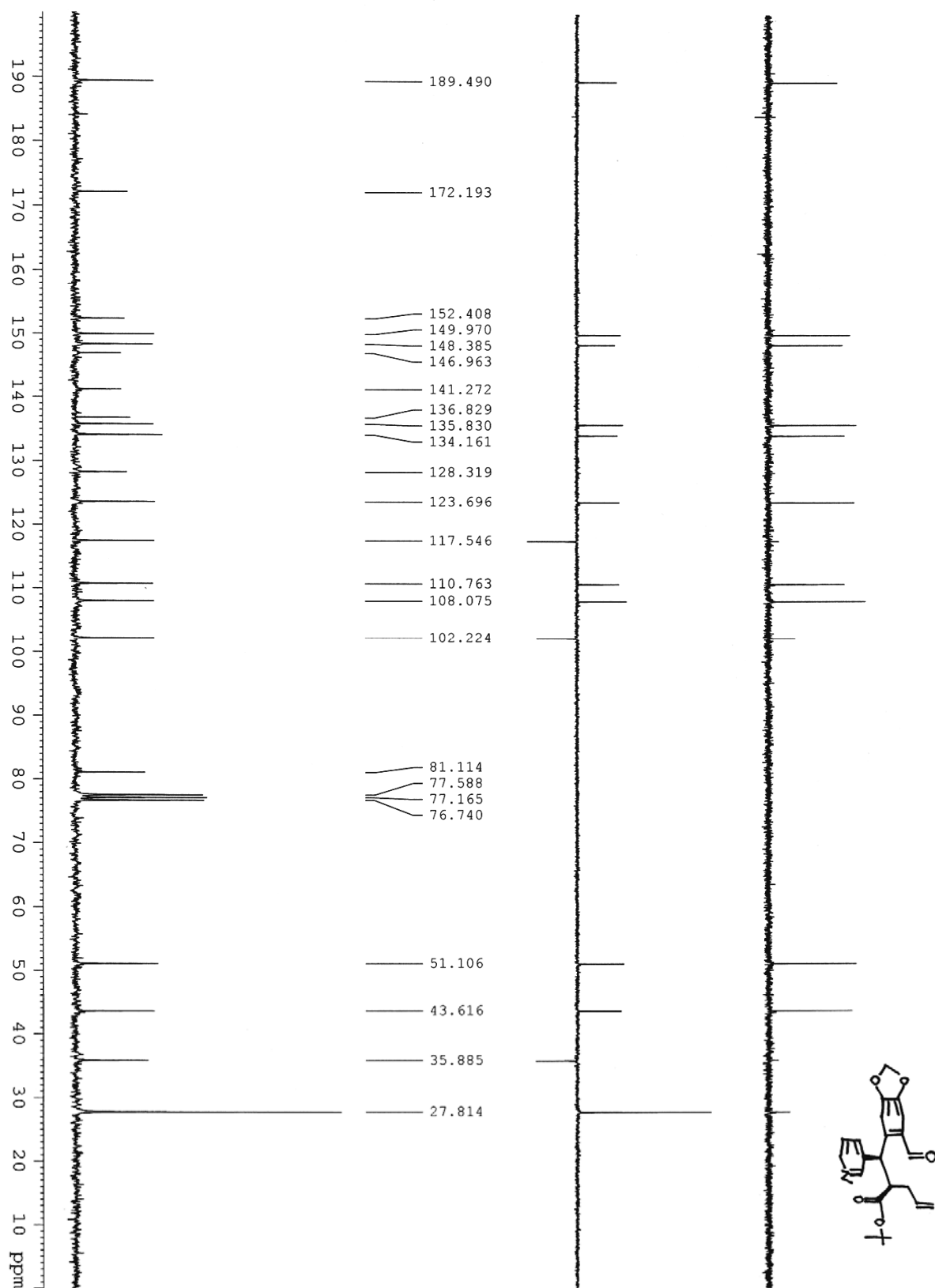
F2 - Acquisition Parameters  
Date\_ 20080512  
Time 11.08  
INSTRUM mv300  
PROBHD 5 mm QNP 1H/13  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 14  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084560 sec  
RG 40.3  
DM 81.000 usec  
DE 6.00 usec  
TE 295.4 K  
D1 1.00000000 sec  
WPCRES 0.00000000 sec  
WCMR 0.01500000 sec

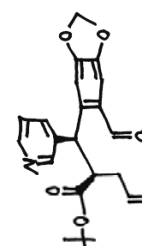
===== CHANNEL f1 =====  
NUC1 1H  
P1 8.60 usec  
PL1 -2.00 dB  
SF01 300.1318534 MHz

F2 - Processing Parameters  
SI 32768  
SF 300.1299940 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

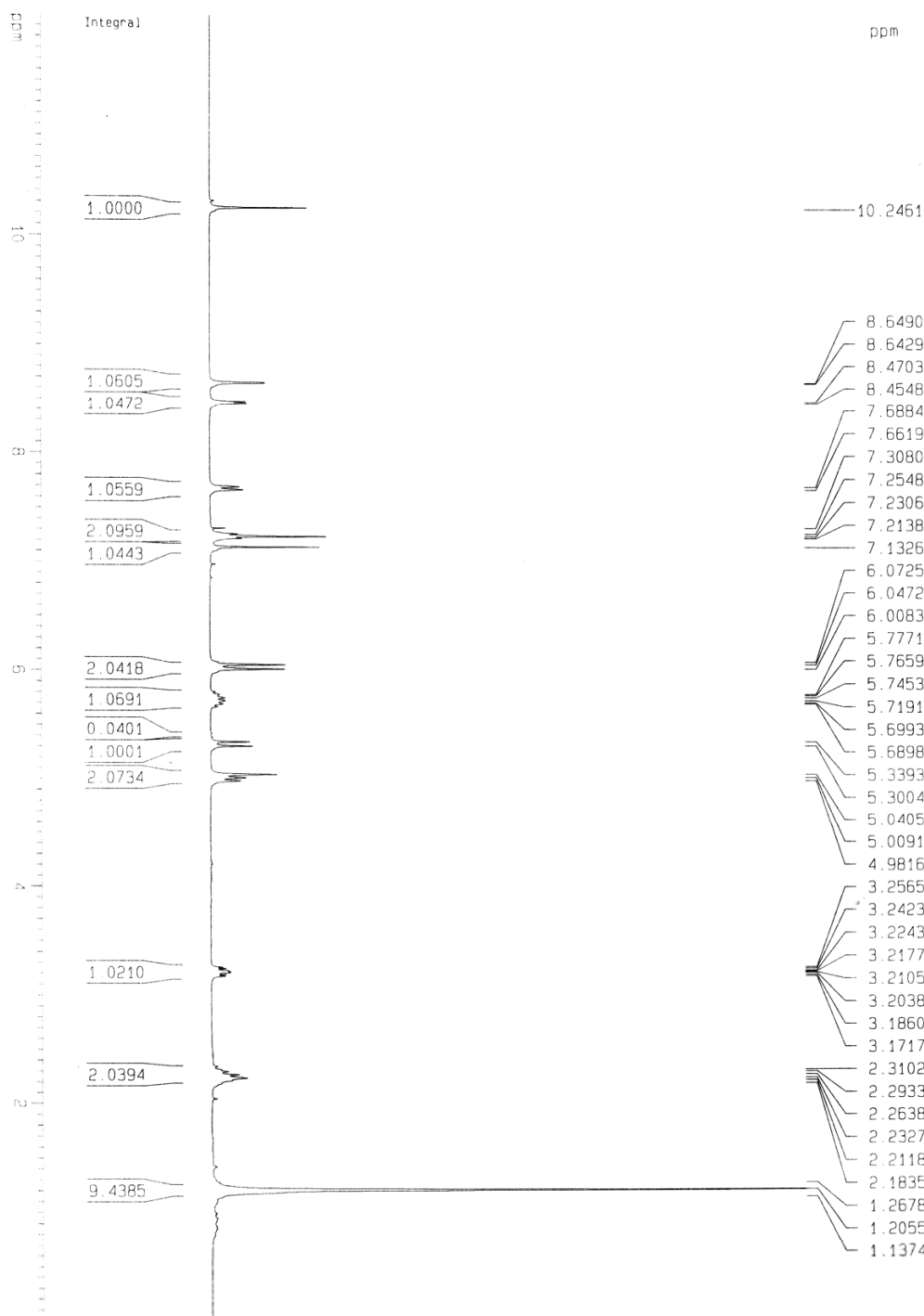
1D NMR plot parameters  
CX 23.00 cm  
CY 12.50 cm  
F1 12.000 ppm  
F1 3601.56 Hz  
F2 0.000 ppm  
F2 -0.00 Hz  
PPMCH 0.52174 ppm/cm  
HZCM 156.58957 Hz/cm

Compound **11**





# Compound 11



Current Data Parameters  
NAME wyl1  
EXPNO 246  
PROCNO 1

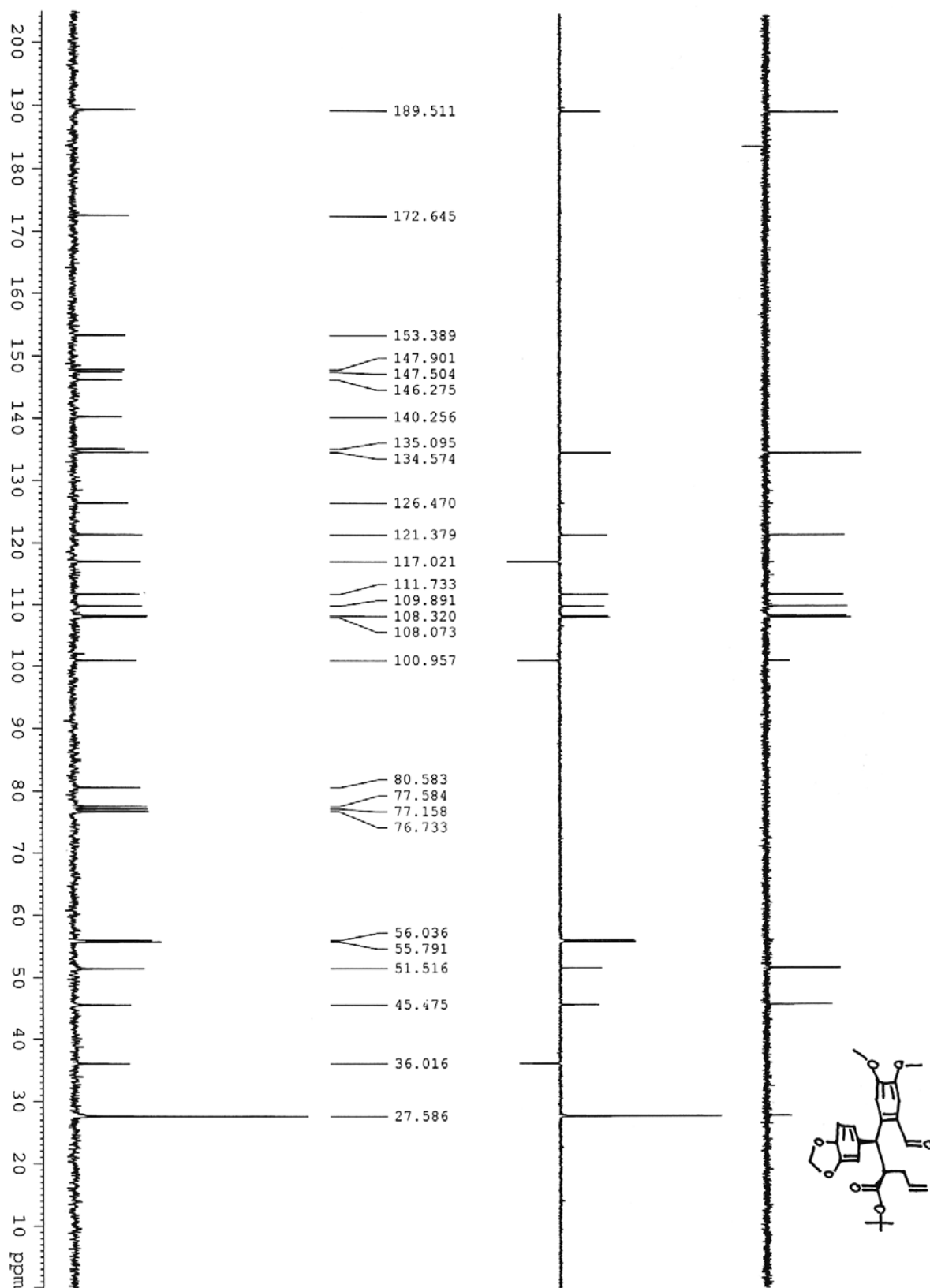
F2 - Acquisition Parameters  
Date\_ 20080529  
Time 17.03  
INSTRUM mv300  
PROBHD 5 mm QNP 1H/13  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084650 sec  
RG 57  
CW 81.000 usec  
CF 6.00 usec  
TE 298.9 K  
D1 1.00000000 sec  
d1 0.00000000 sec  
WDEFT 0.01500000 sec  
WDECK 0.01500000 sec

===== CHANNEL f1 =====  
NUC1 1H  
P1 8.60 usec  
PL1 -2.00 dB  
SFO1 300.1315534 MHz

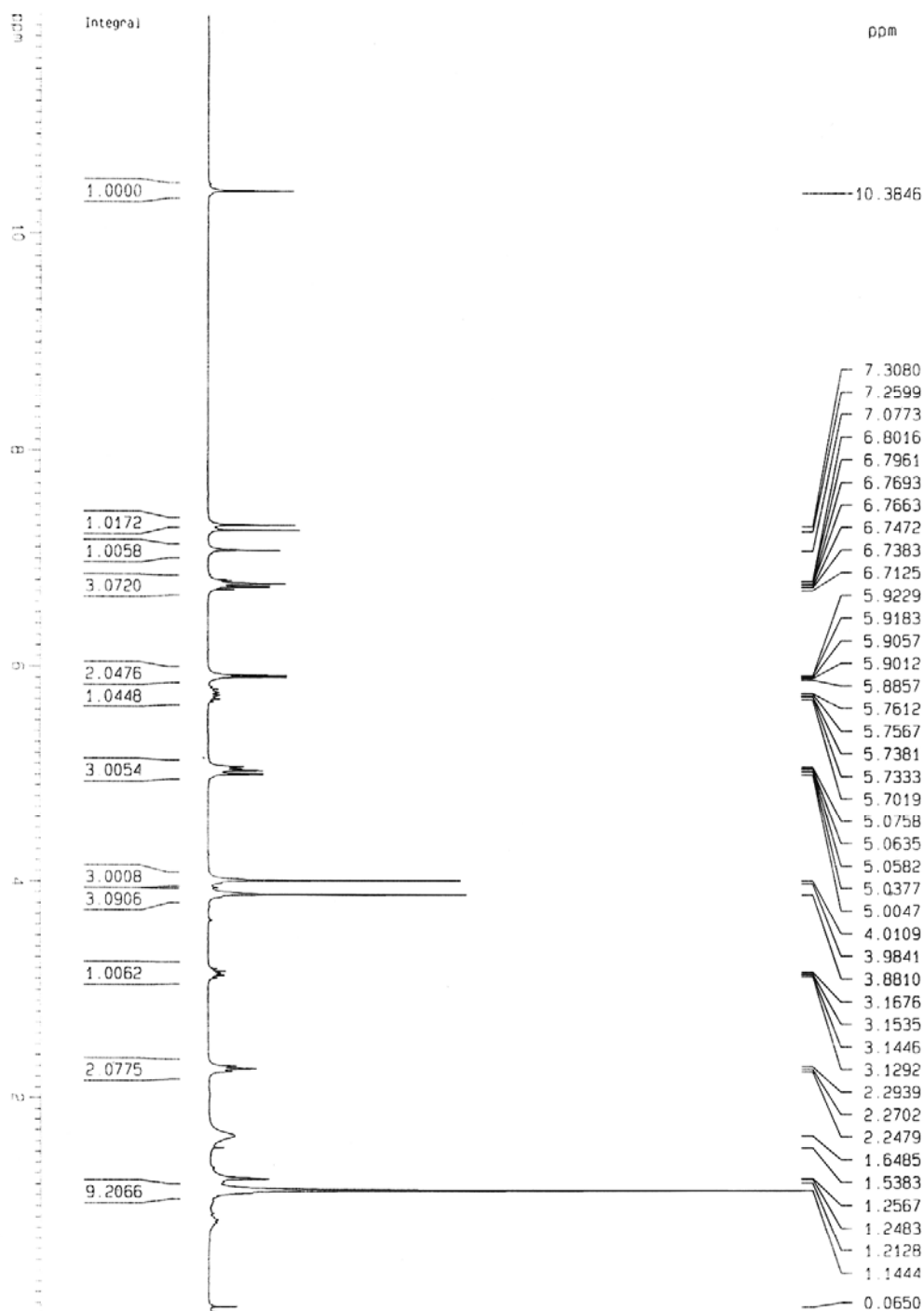
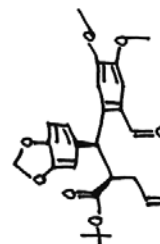
F2 - Processing parameters  
SI 32768  
SF 300.1299115 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

10 NMR plot parameters  
CX 23.00 cm  
CY 12.50 cm  
F1 12.000 ppm  
F2 3601.56 Hz  
F2P -0.000 ppm  
F2 -0.00 Hz  
PPMCM 0.52174 ppm/cm  
HZCM 156.58957 Hz/cm

Compound **15**



# Compound 15



Current Data Parameters

NAME	WIND
EXPNO	220
PROCNO	1

F2 - Acquisition Parameters

Date_	Time
20080318	14 07
INSTRUM	av300
PROBHD	5 mm QNP 1H/13
PULPROG	zg30
TD	65536
SOLVENT	CDCl3
VS	16
DS	2
SMH	6172.839 Hz
FIDRES	0.094190 Hz
AQ	5.3084660 sec
RG	256
DM	81.000 usec
DE	6.00 usec
TE	293.4 K
D1	1.00000000 sec
WDETECT	0.00000000 sec
MDNAK	0.01500000 sec

===== CHANNEL f1 =====

MUCL	1H
P1	8.60 usec
PL1	-2.00 dB
SFO1	300.1318534 MHz

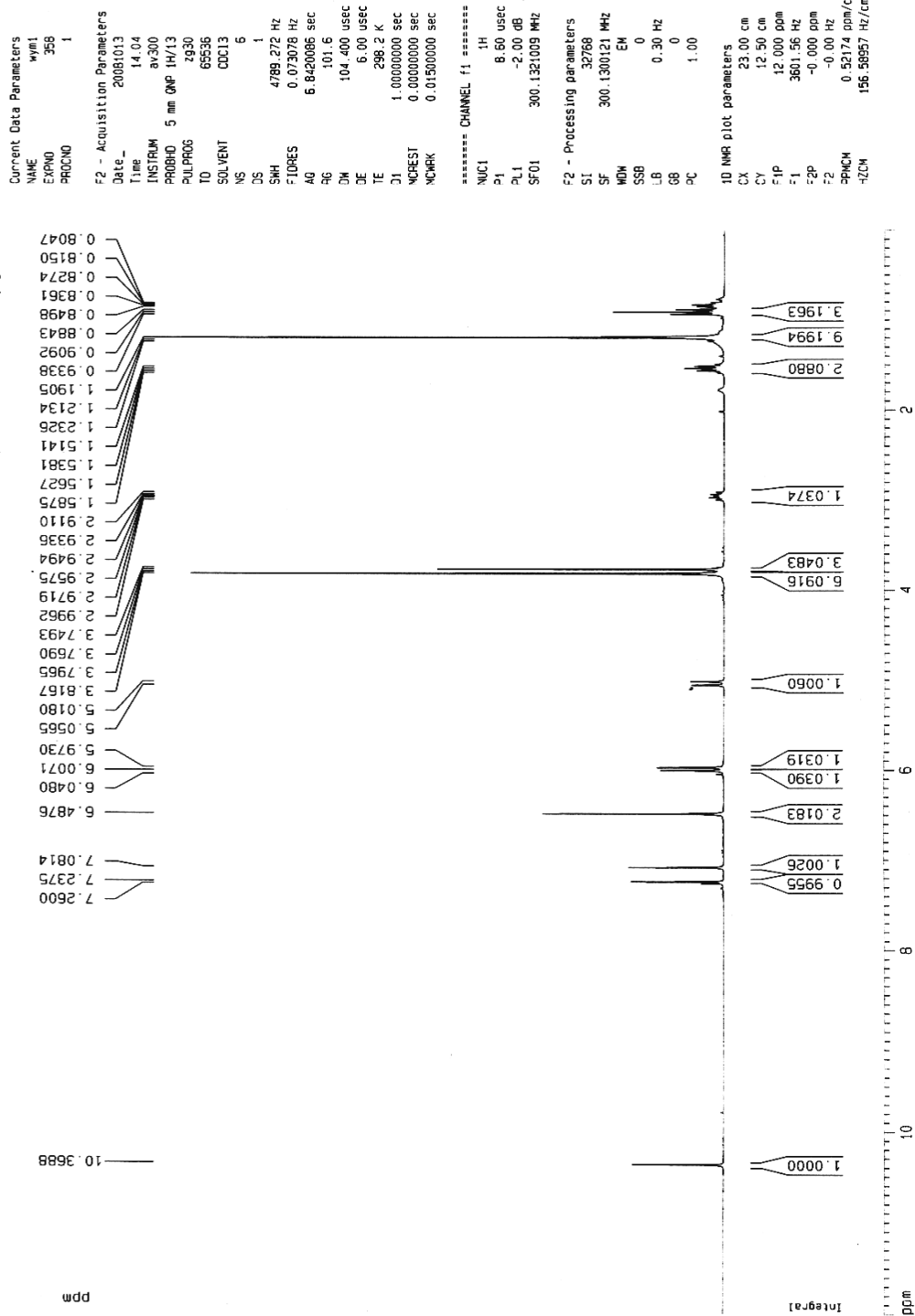
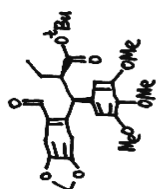
F2 - Processing parameters

SI	32768
SF	300.130062 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

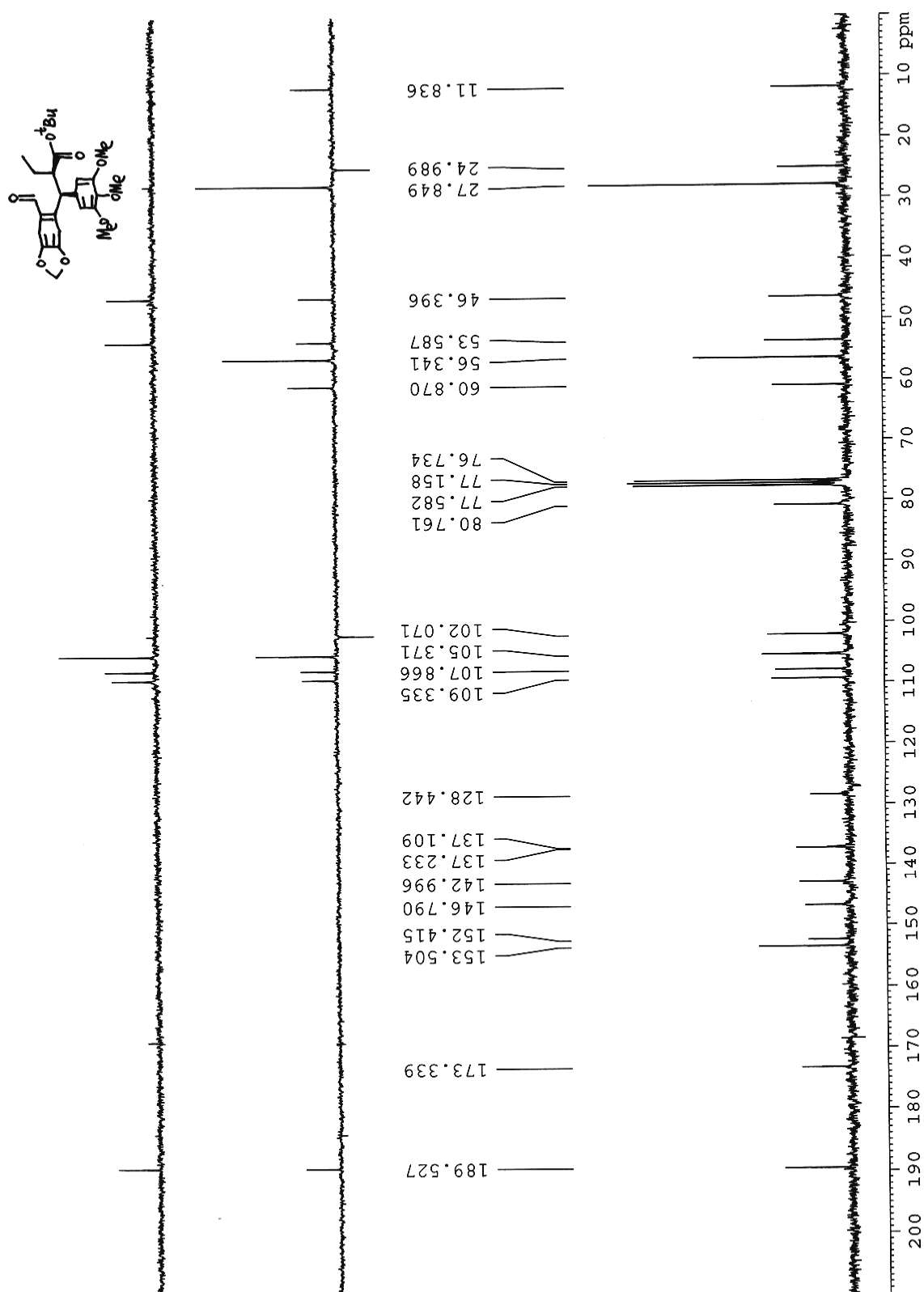
1D NMR plot parameters

CX	23.00 cm
CY <th>12.50 cm</th>	12.50 cm
F1P <th>12.000 ppm</th>	12.000 ppm
F1 <th>3601.56 Hz</th>	3601.56 Hz
F2P <th>-0.000 ppm</th>	-0.000 ppm
F2 <th>-0.00 Hz</th>	-0.00 Hz
SPHCK <th>0.52174 ppm/cm</th>	0.52174 ppm/cm
HZCM <th>156.58957 Hz/cm</th>	156.58957 Hz/cm

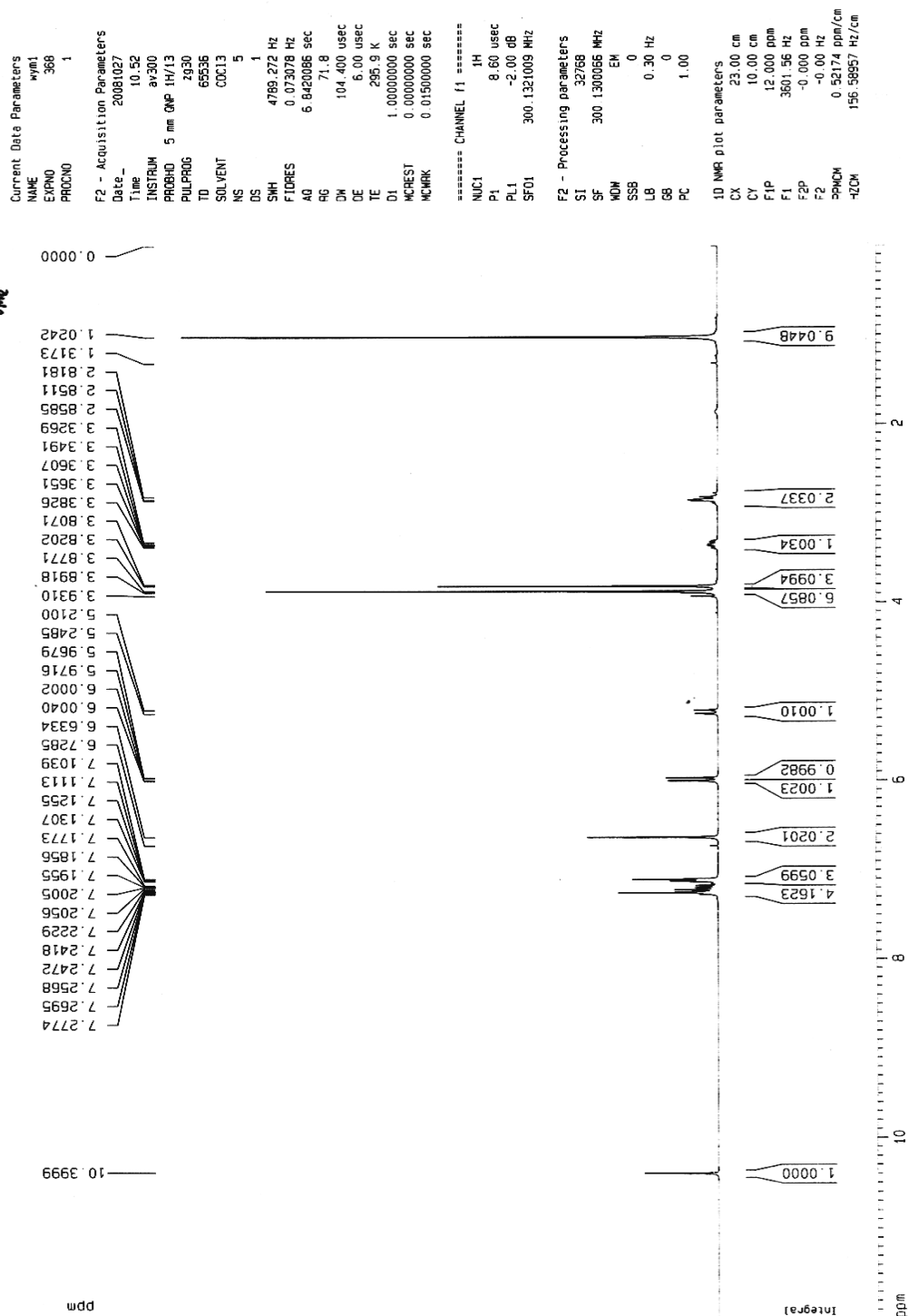
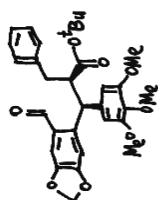
# Compound 13



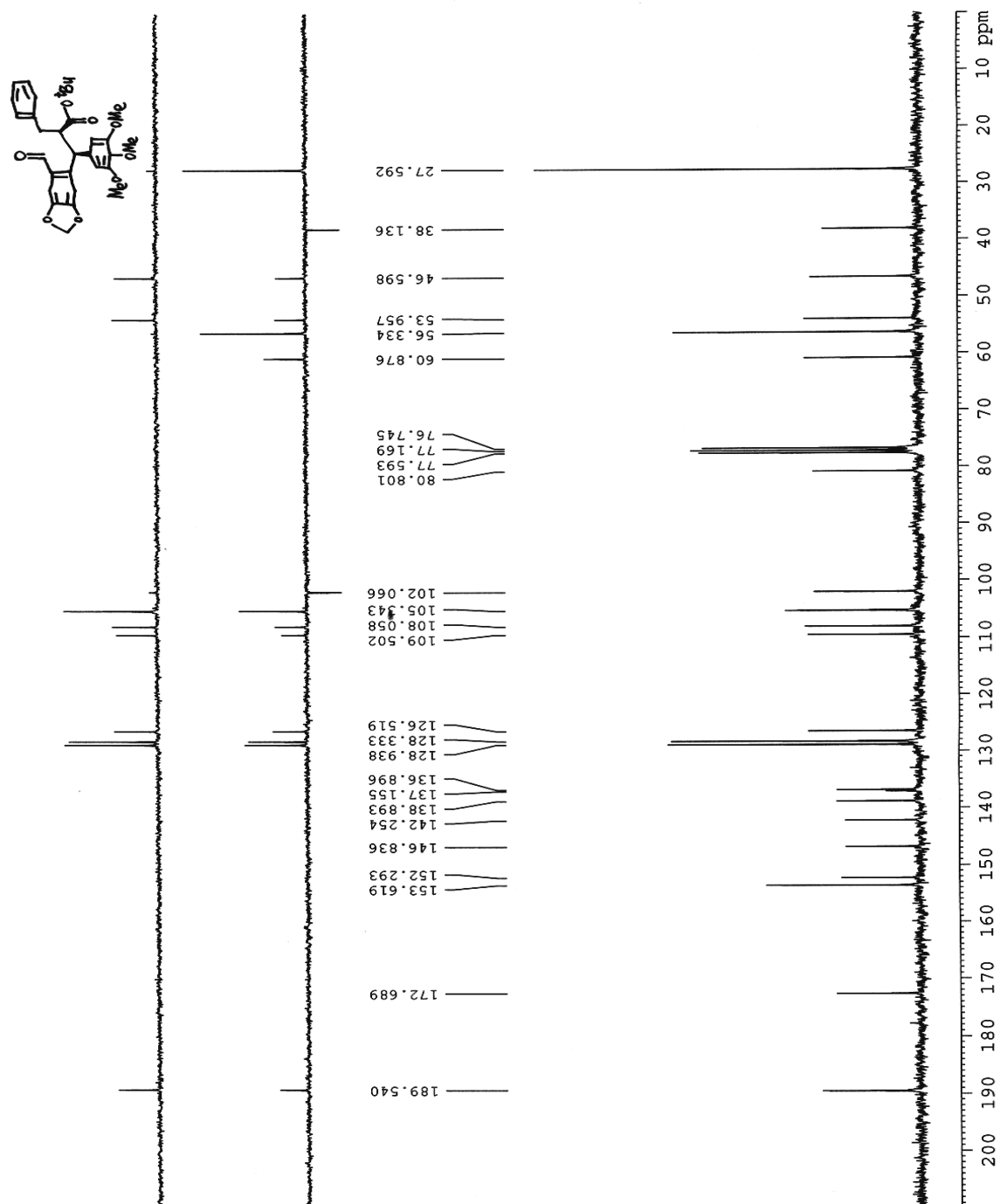
Compound 13



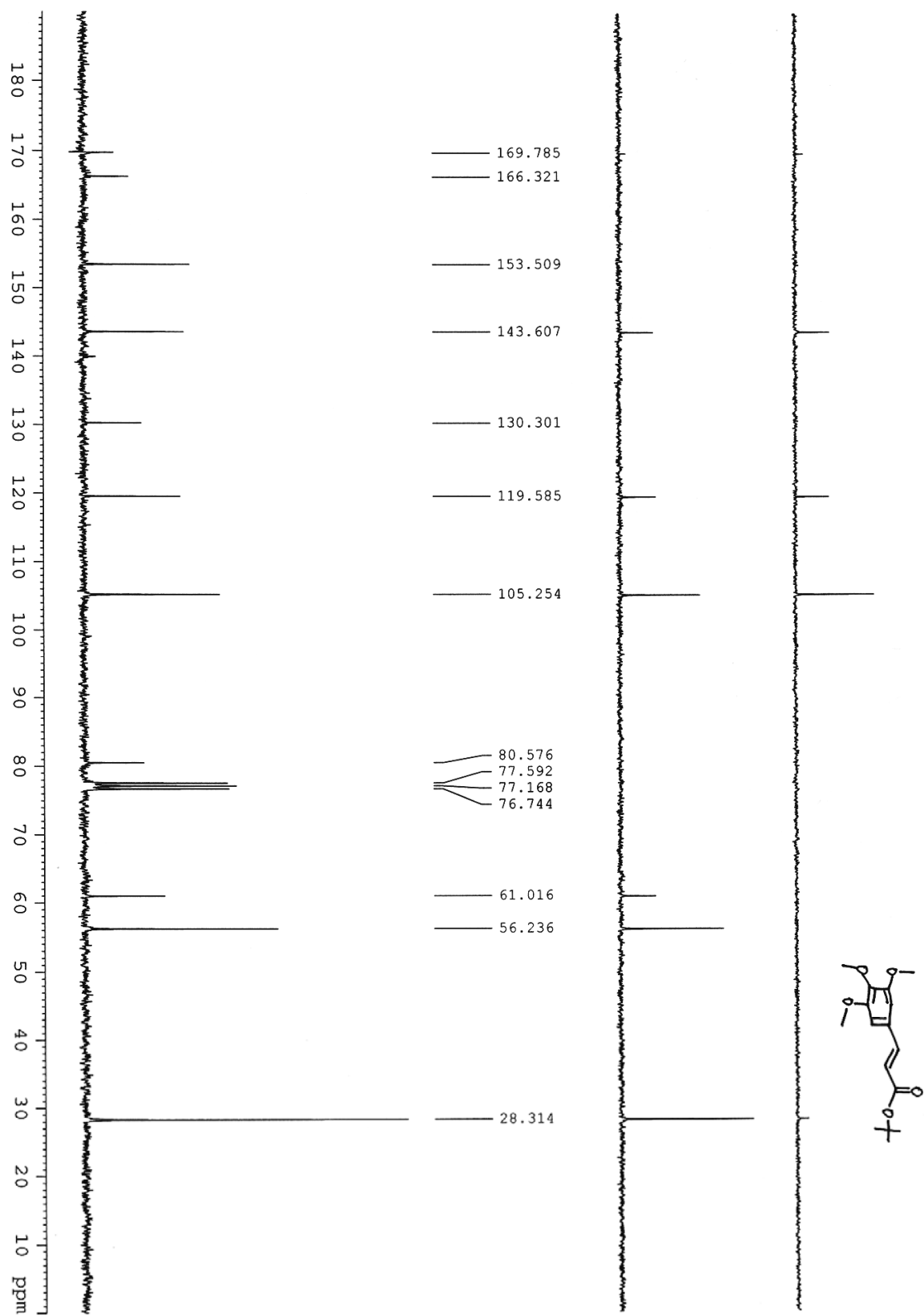
# Compound 14



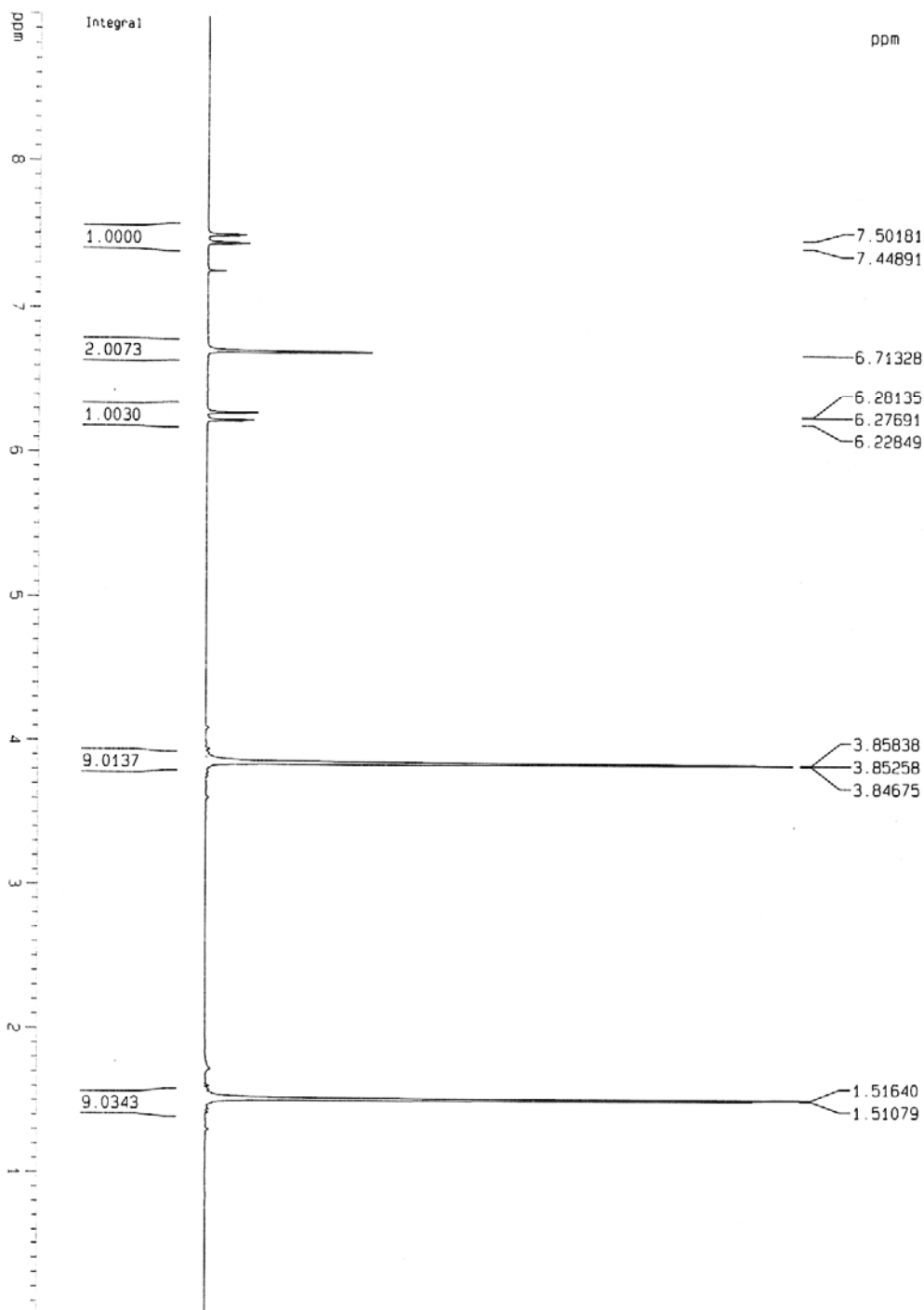
# Compound 14



Compound 7



# Compound 7



Current Data Parameters

NAME	WY/1
EXPNO	295
PROCNO	1

F2 - Acquisition Parameters

Date_	Time
20080804	21.03

INSTRUM 5 mm QNP 1H/13

PROBHD 5 mm QNP 1H/13

PULPROG zg30

TD 65536

SOLVENT CDCl3

NS 7

DS 2

SWH 4789.272 Hz

FIDRES 0.073078 Hz

AQ 5.842086 sec

RG 101.6

DW 104.400 usec

DE 5.00 usec

TE 298.3 K

Q1 1.00000000 sec

MCREST 0.00000000 sec

MCPRK 0.01500000 sec

===== CHANNEL f1 =====

NUC1 1H

Q1 8.60 usec

PL1 -2.00 dB

SFO1 300.1321009 MHz

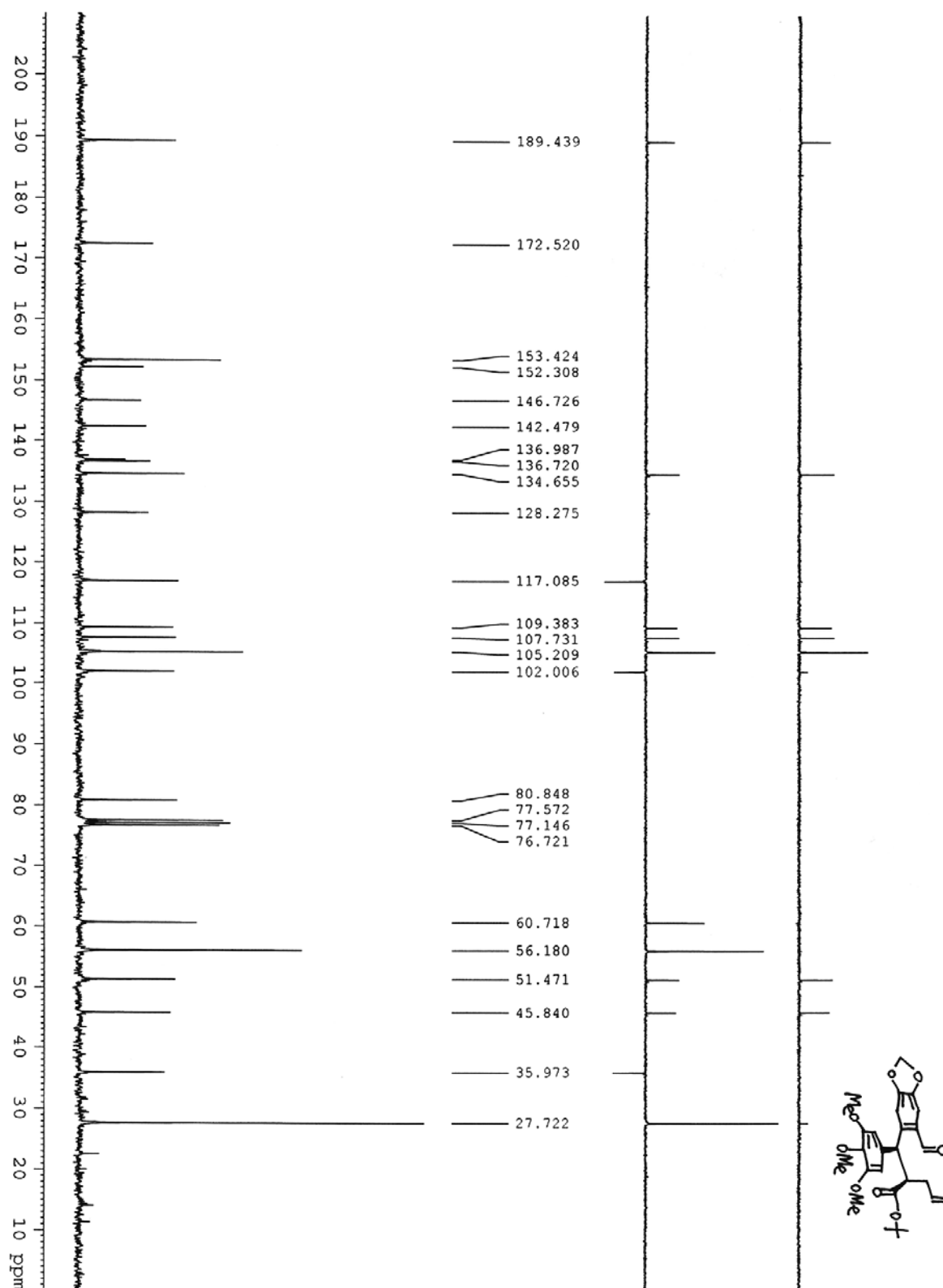
F2 - Processing parameters

SI	32768
SF	300.130062 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

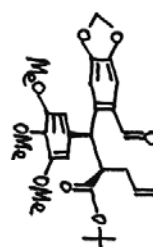
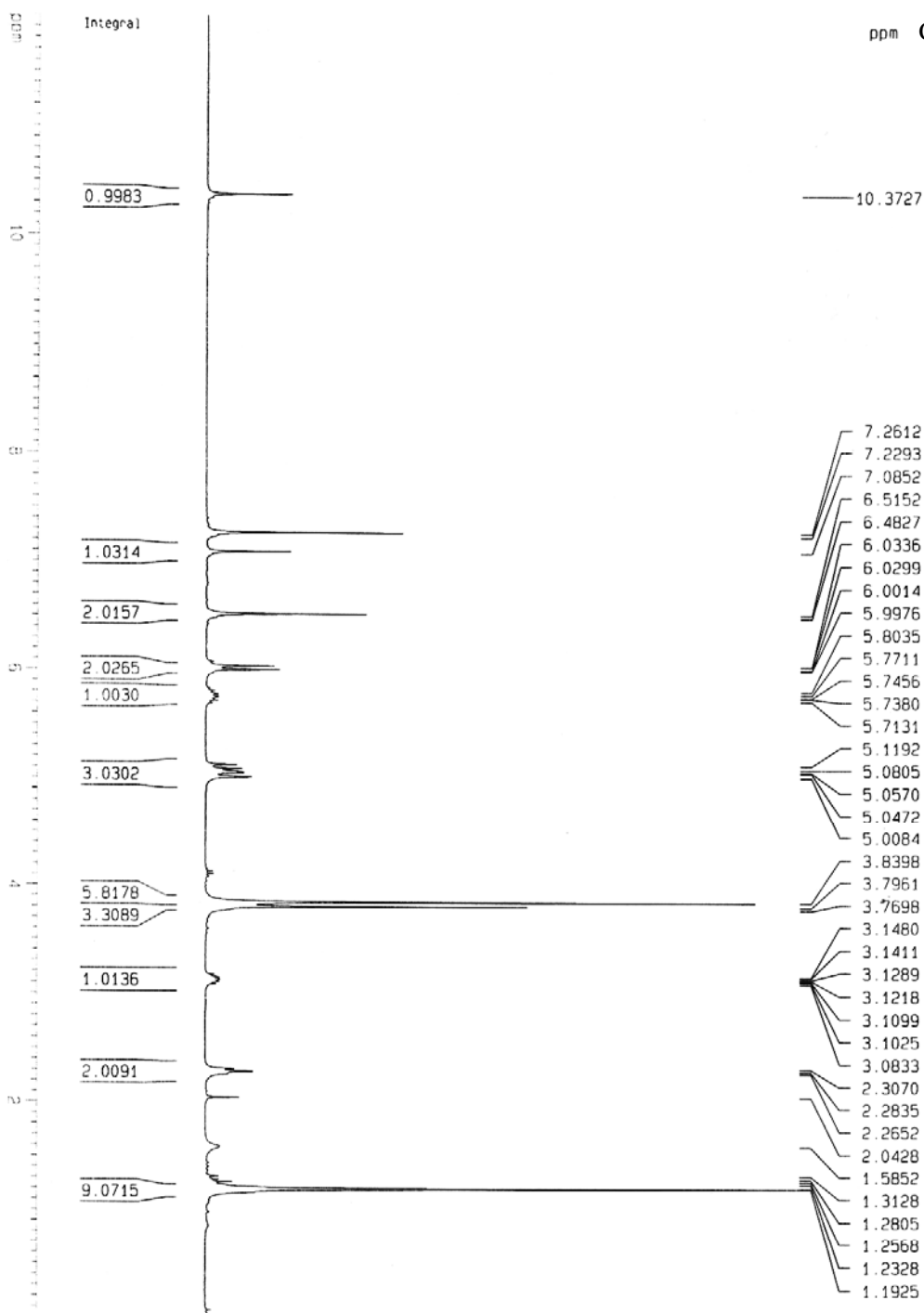
1D NMR plot parameters

CX	23.00 cm
CY <td>12.50 cm</td>	12.50 cm
CP <td>9.000 ppm</td>	9.000 ppm
F1 <td>2701.17 Hz</td>	2701.17 Hz
F2P <td>0.000 ppm</td>	0.000 ppm
F2 <td>0.00 Hz</td>	0.00 Hz
PPMCH <td>0.39136 ppm/cm</td>	0.39136 ppm/cm
HZCM <td>117.44218 Hz/cm</td>	117.44218 Hz/cm

Compound 5



ppm Compound 5



Current Data Parameters  
NAME wmt  
EXPNO 265  
PROCNO 1

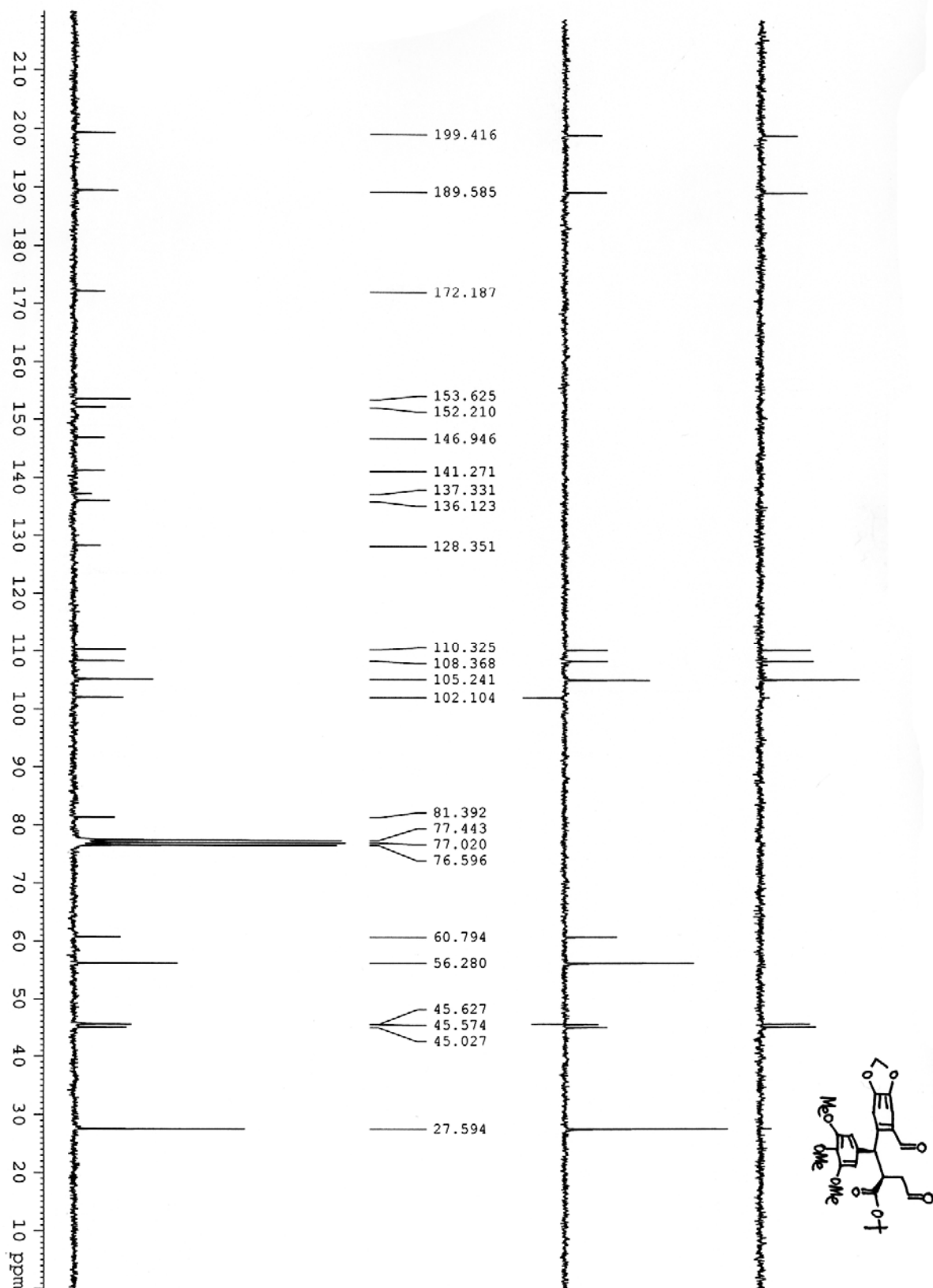
F2 - Acquisition Parameters  
Date\_ 20080604  
Time 10.08  
INSTRUM av300  
PROBHD 5 mm QNP 1H/13  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
NS 16  
DS 2  
SWH 6172.839 Hz  
FIDRES 0.094190 Hz  
AQ 5.3084660 sec  
RG 405.4  
DM 81.000 usec  
DE 6.00 usec  
TE 296.9 K  
D1 1.00000000 sec  
WDEXT 0.00000000 sec  
WDEXT 0.01500000 sec

\*\*\*\*\* CHANNEL f1 \*\*\*\*\*  
NUC1 1H  
P1 8.60 usec  
PL1 -2.00 dB  
SF01 300.1318534 MHz

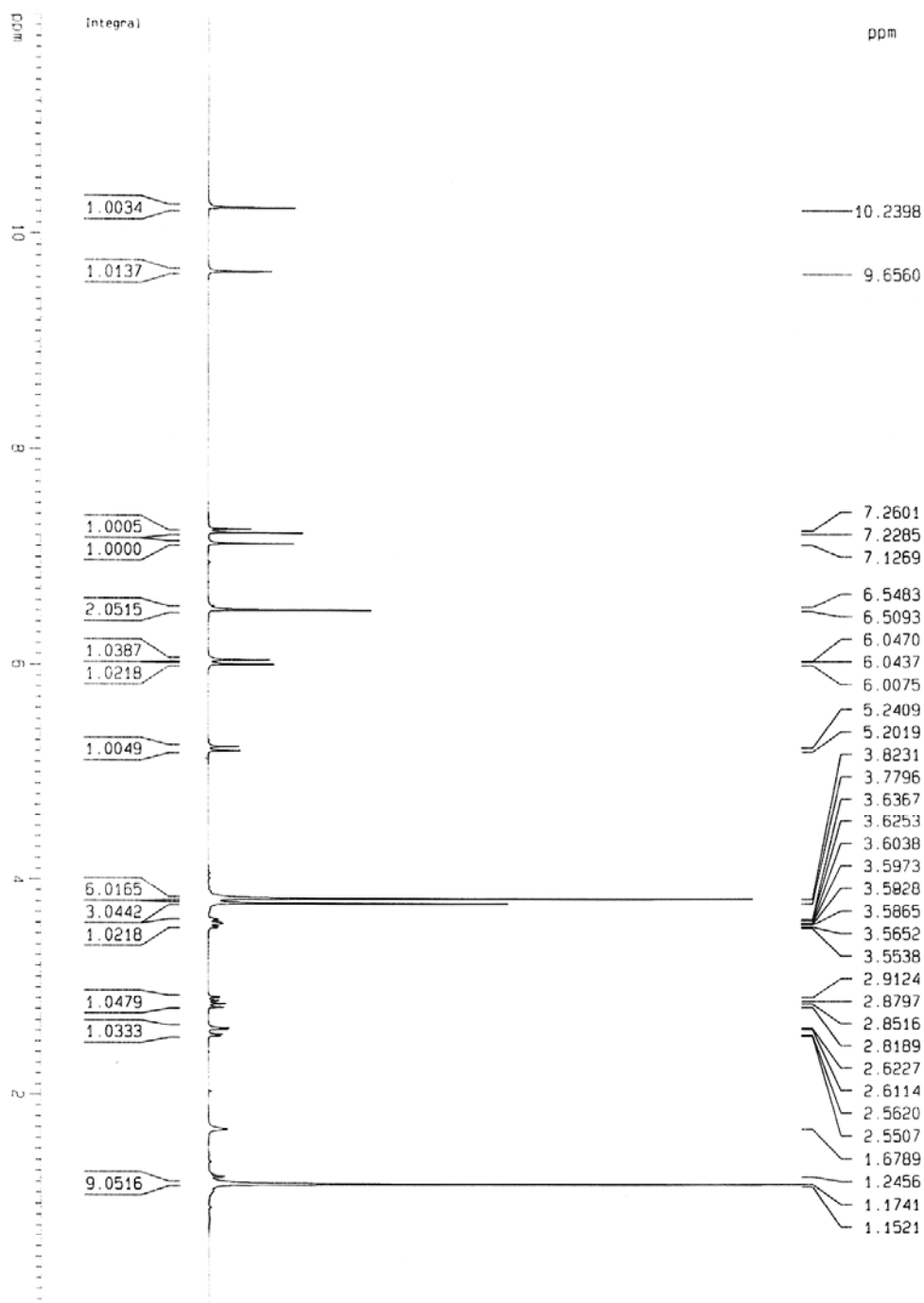
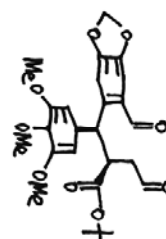
F2 - Processing parameters  
SI 32768  
SF 300.130057 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

10 NMR plot parameters  
CX 23.00 cm  
CY 12.50 cm  
FIP 12.000 ppm  
F1 3601.56 Hz  
F2P -0.000 ppm  
Z 0.00 Hz  
APMC 0.52174 ppm/cm  
HZCM 156.58957 Hz/cm

Compound **16**



# Compound 16



Current Data Parameters

NAME	VALUE
EXPNO	306
PROCNO	1

F2 - Acquisition Parameters

Date_	Time
20080807	13:10

INSTRUM av300  
PROBHD 5 mm QNP 1H/13  
PULPROG zg30  
TD 65536  
SOLVENT CDCl3  
VS 16  
DS 2  
SWH 4789.272 Hz  
FIDRES 0.073078 Hz  
AQ 6.842086 sec  
RG 203.2  
DM 104.400 usec  
DE 6.00 usec  
TE 297.1 K  
D1 1.00000000 sec  
WPREST 0.00000000 sec  
WCMR 0.01500000 sec

===== CHANNEL f1 =====

NUC1	IN
13C	8.60 usec
13C	-2.00 dB
SFO1	300.1321009 MHz

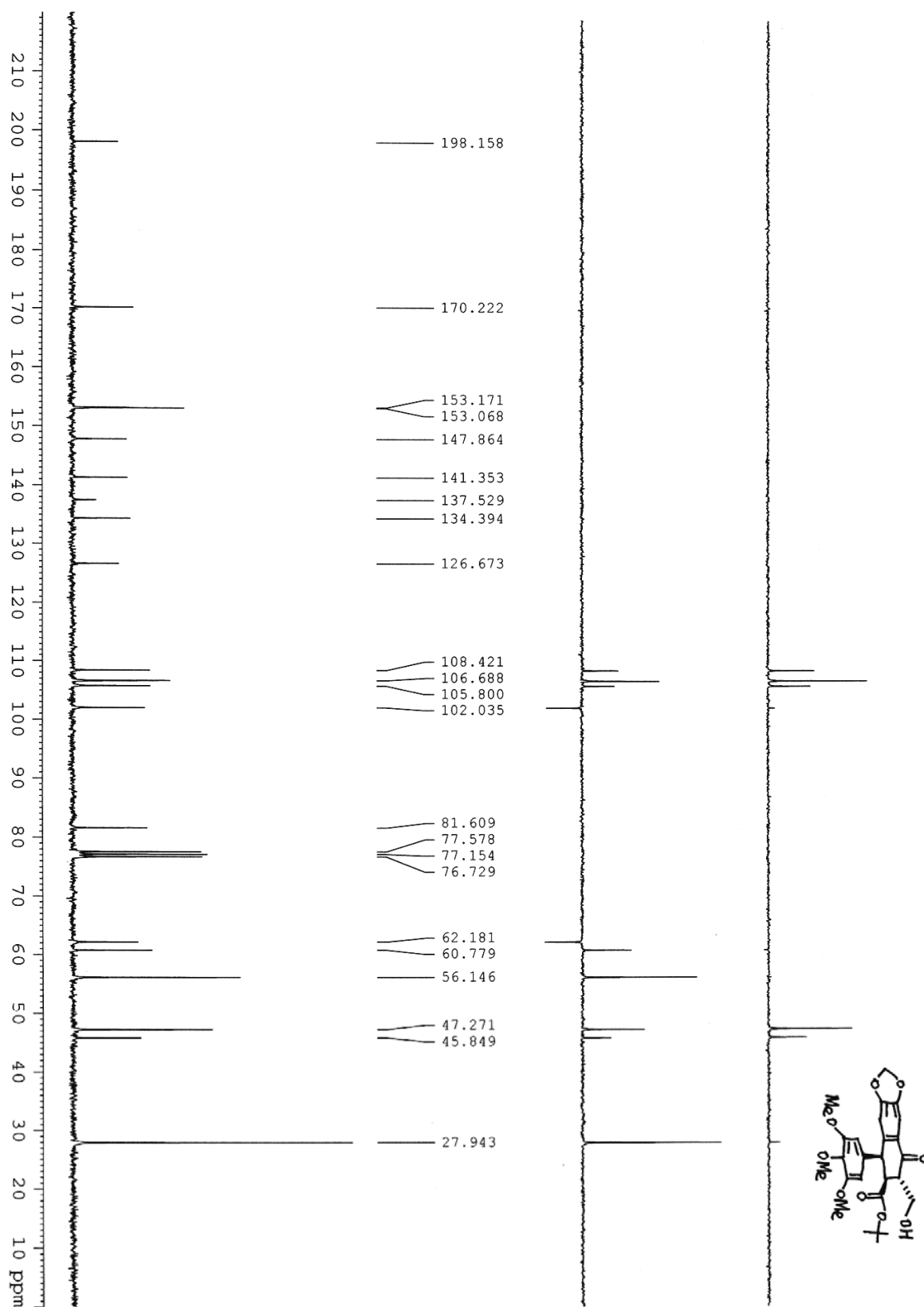
F2 - Processing parameters

SI	32768
SF	300.130060 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

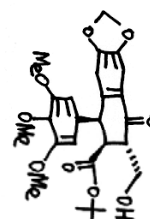
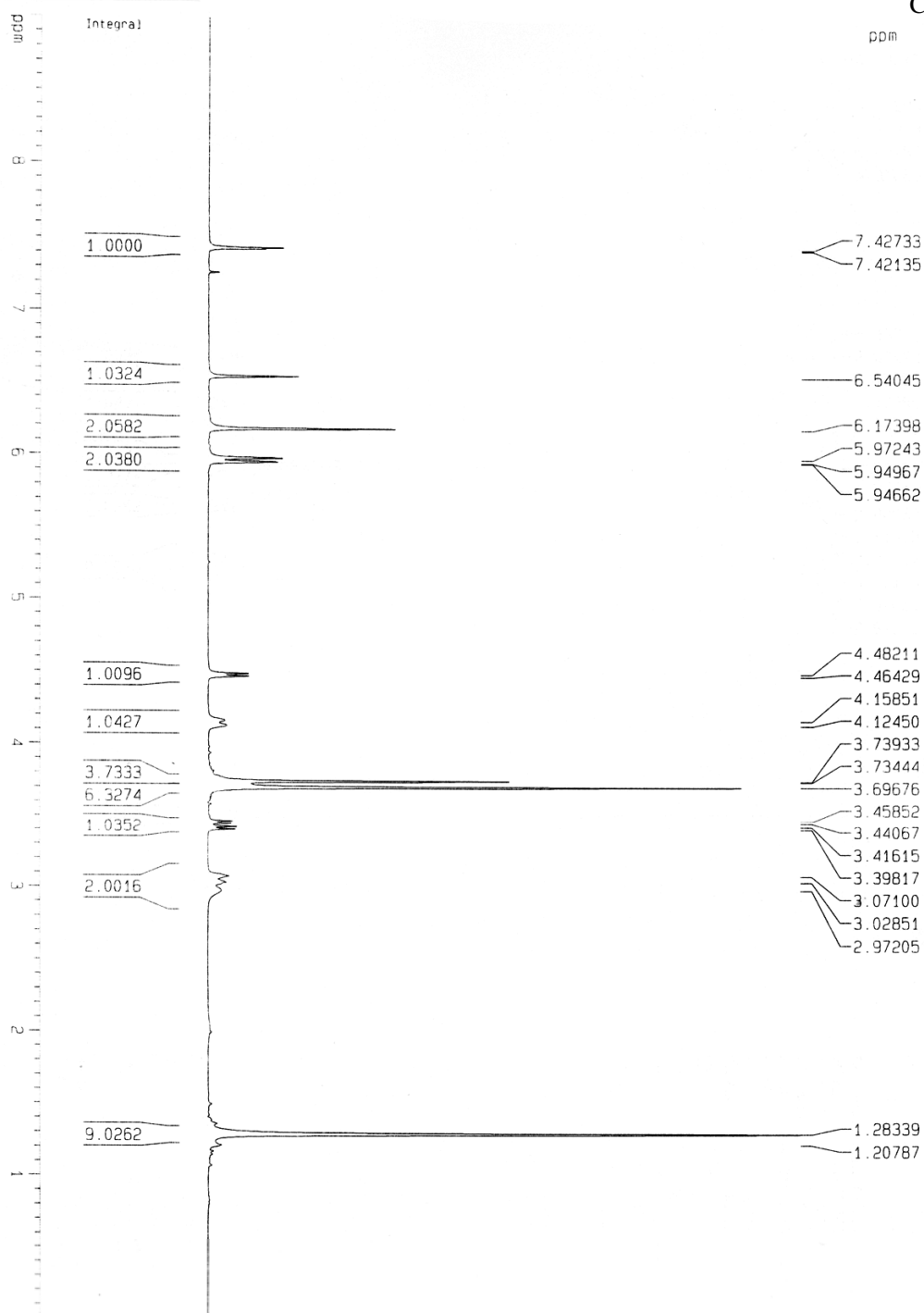
1D NMR plot parameters

CX	23.00 cm
CY <th>12.50 cm</th>	12.50 cm
F1P <th>12.000 ppm</th>	12.000 ppm
F1 <th>3601.56 Hz</th>	3601.56 Hz
F2P <th>-0.000 ppm</th>	-0.000 ppm
F2 <th>-0.00 Hz</th>	-0.00 Hz
SPMCM <th>0.52174 ppm/cm</th>	0.52174 ppm/cm
HZCM <th>156.58957 Hz/cm</th>	156.58957 Hz/cm

Compound 18



# Compound 18



Current Data Parameters

NAME	EXPNO	PROCNO	F2 - Acquisition Parameters
NAME	282	1	Date_ 20080723
EXPNO	282	1	Time 11.26
PROCNO	1	1	INSTRUM aw300
			PROBHD 5 mm QNP 1H/13
			PULPROG zg30
			TD 65536
			SOLVENT CDCl3
			VS 6
			JS 2
			SMH 4789.272 Hz
			FIDRES 0.073078 Hz
			AQ 6.842086 sec
			RG 64
			DM 104.400 usec
			DE 6.00 usec
			TE 298.4 K
			DT 1.00000000 sec
			ACQRES 0.00000000 sec
			MCNMR 0.01500000 sec

===== CHANNEL f1 =====

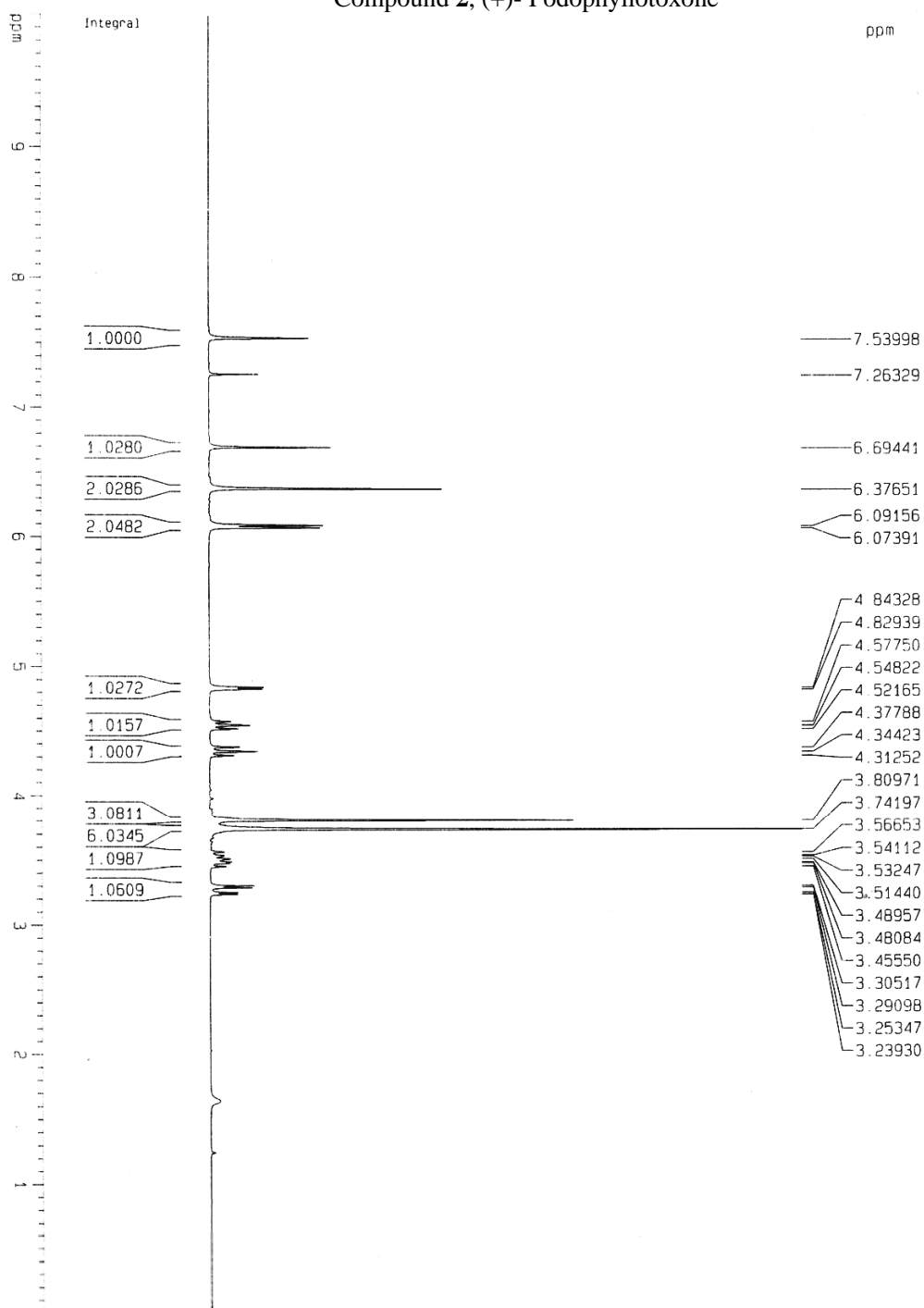
NAME	UNIT
NUC1	1H
PC1	8.60 usec
PL1	-2.00 dB
SFO1	300.1321009 MHz

F2 - Processing parameters

NAME	UNIT
SI	32768
SF	300.1300056 MHz
WDW	EM
SSB	0
B	0.30 Hz
GB	0
PC	1.00

1D NMR plot parameters

NAME	UNIT
CX	23.00 cm
CV	12.50 cm
F1P	9.000 ppm
F1	2701.17 Hz
F2P	0.000 ppm
F2	0.00 Hz
SPHGM	-0.39130 ppm/cm
HZCM	117.44218 Hz/cm



```

Current Data Parameters
NAME          wwt
EXPNO         286
PROCNO        1

F2 - Acquisition Parameters
Date_         20080724
Time          15.38
INSTRUM       spect
PROBHD        5 mm QNP 1H/13
PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
COC13         1
COC1H         2
NS            16
DS            2
SWH           4789.272 Hz
FIDRES        0.073078 Hz
AQ            6.8420066 sec
RG            287.4
DM            104.400 usec
DE            6.00 usec
TE            298.1 K
D1            1.00000000 sec
MCREST        0.00000000 sec
MCNMR         0.01500000 sec

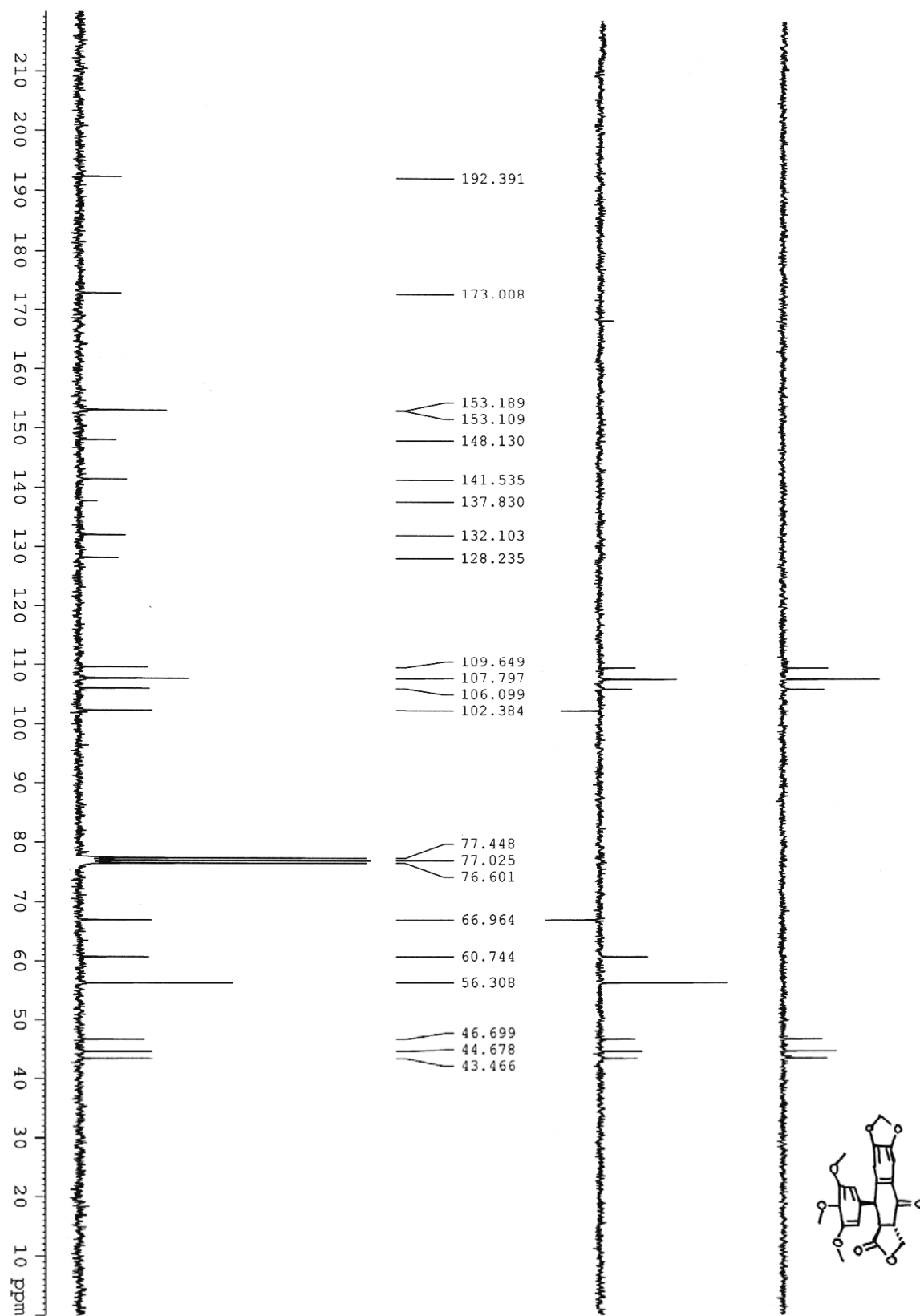
===== CHANNEL f1 =====
NUC1          1H
P1            8.60 usec
PL1           -2.00 dB
SF01          300.1321009 MHz

F2 - Processing parameters
SI            32768
SF            300.1300053 MHz
WDW           EM
SSB            0
LB            0.30 Hz
GB            0
PC            1.00

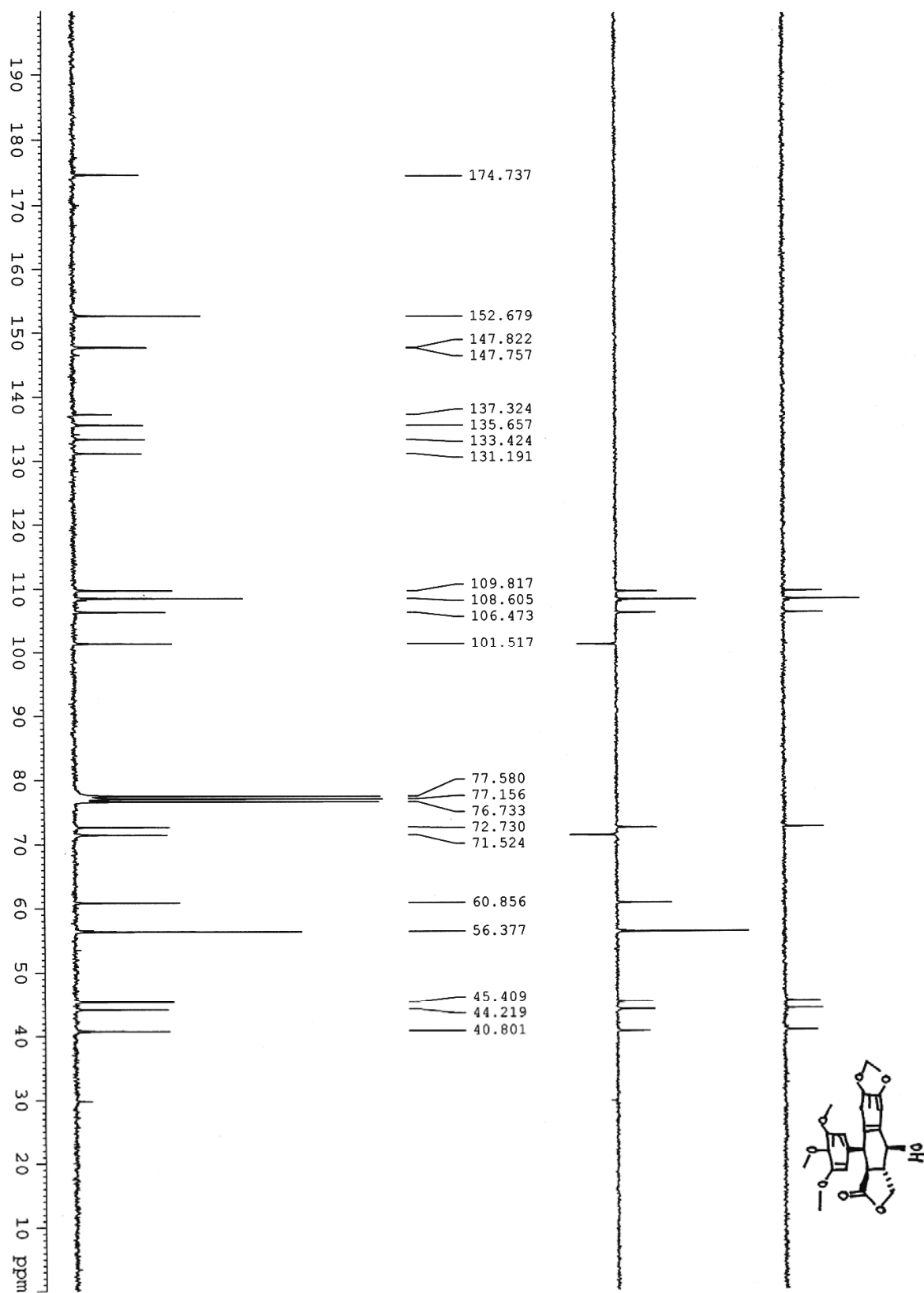
10 NMR plot Parameters
CX            23.00 cm
CY            12.50 cm
ZP            10.000 ppm
F1            3001.30 Hz
ZFP           -0.000 ppm
F2            -0.00 Hz
ZPCM          0.43478 ppm/cm
ZDCM          130.49130 Hz/cm

```

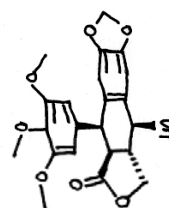
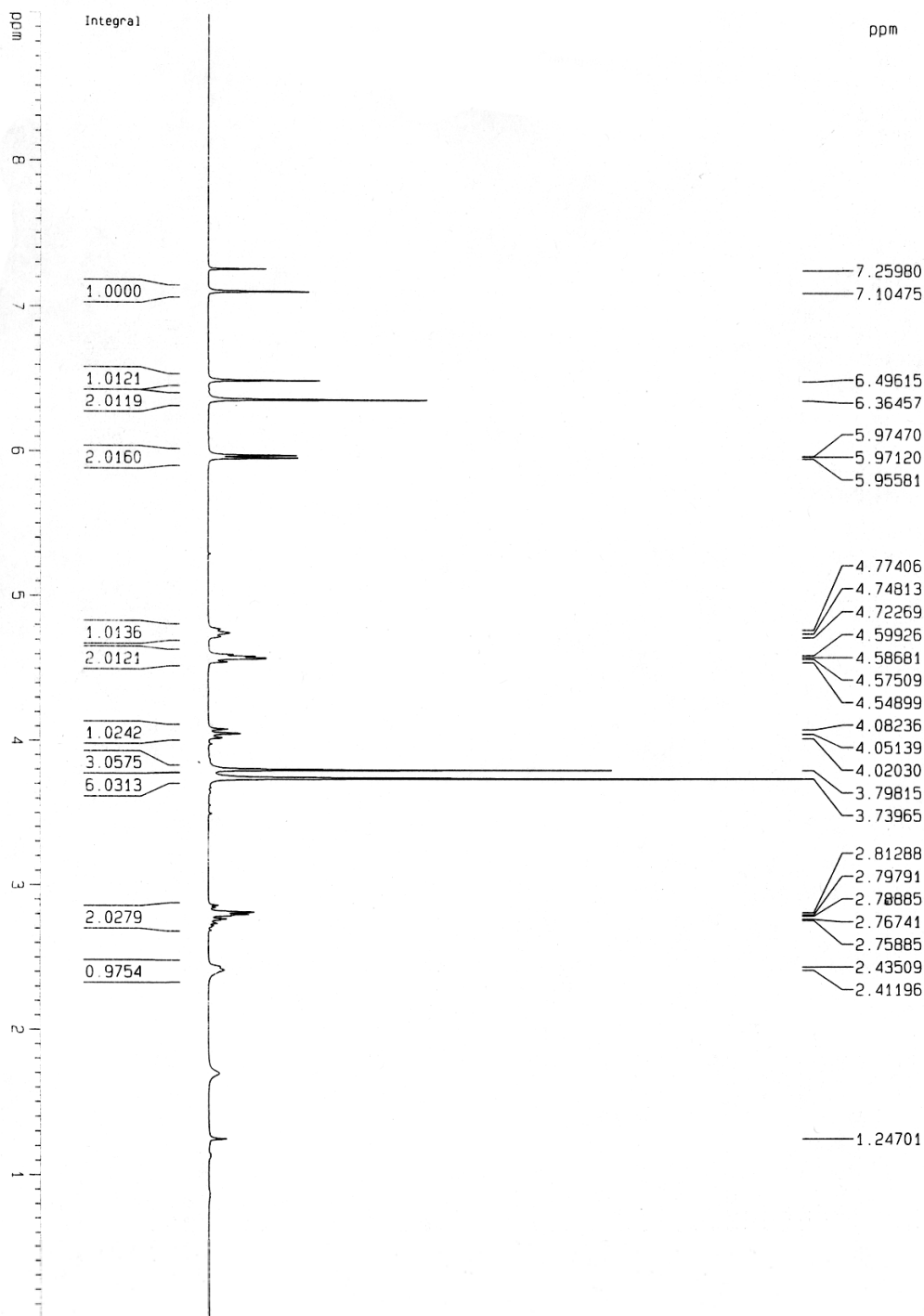
Compound **2**, (+)- Podophyllotoxone



Compound **1**, (+)- Podophyllotoxin



Compound **1**, (+)- Podophyllotoxin



*ent*-Podophyllotoxin

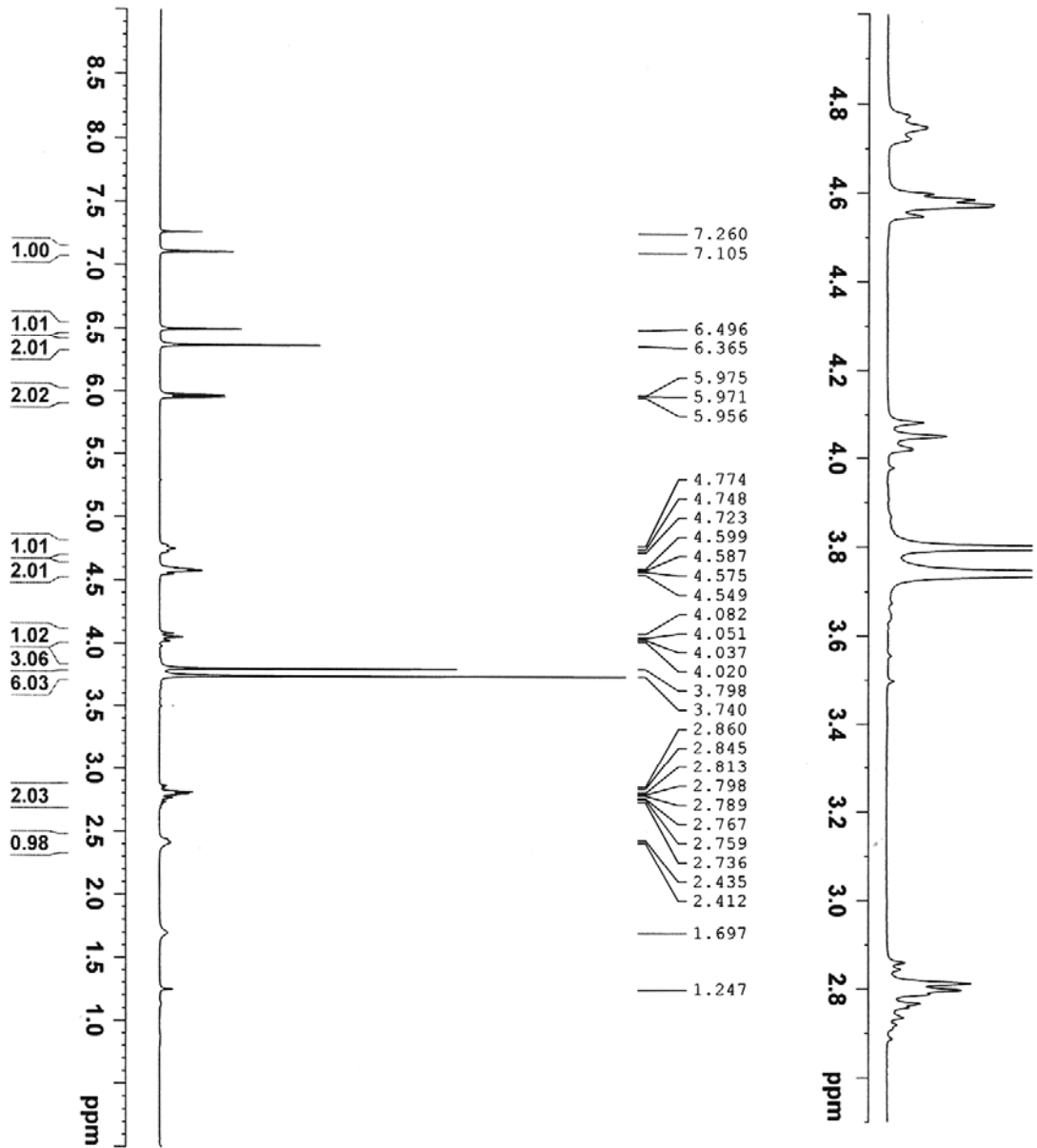
Current Data Parameters  
 NAME: WYMI  
 EXPNO: 322  
 PROCNO: 1

F2 - Acquisition Parameters  
 Date\_: 20080819  
 Time: 10.13  
 INSTRUM: av300  
 PROBHD: 5 mm QNP 1H/13  
 PULPROG: zgpg30  
 TD: 65536  
 SOLVENT: CDCl3  
 NS: 9  
 DS: 2  
 SWH: 4789.272 Hz  
 FIDRES: 0.073078 Hz  
 AQ: 6.842086 sec  
 RG: 322.5  
 CW: 114.401 usec  
 DE: 6.00 usec  
 TE: 297.4 K  
 D1: 1.00000000 sec  
 NUC1: 1H  
 NUC2: 13C  
 P1: 8.60 usec  
 PL1: -2.00 dB  
 SFO1: 300.1321009 MHz

F2 - Processing parameters  
 SI: 32768  
 SF: 300.130063 MHz  
 WDW: EM  
 SSB: 0  
 LB: 0.30 Hz  
 GB: 0  
 PC: 1.00

10 NMR plot parameters  
 CX: 23.00 cm  
 CY: 12.50 cm  
 F1P: 9.000 ppm  
 F1: 2701.17 Hz  
 F2P: 0.000 ppm  
 F2: 0.00 Hz  
 PPM0: 0.39130 ppm/cm  
 MZCM: 117.44218 Hz/cm

Compound **1**, (+)- Podophyllotoxin



ent-(-)-Podophyllotoxin



Current Data Parameters  
NAME: ent-1  
EXPNO: 1  
PROCNO: 1  
F2 - Acquisition Parameters  
Date\_ : 20080819  
Time : 10.13  
INSTRUM : av300  
PROBHD : 5 mm QNP 1H/13  
PULPROG : zgpg30  
TD : 65536  
SOLVENT : CDCl3  
NS : 9  
DS : 2  
SWH : 4789.272 Hz  
FIDRES : 0.073078 Hz  
AQ : 6.8420086 sec  
RG : 322.5  
DM : 104.400 usec  
DE : 6.00 usec  
TE : 297.4 K  
D1 : 1.00000000 sec  
MCREST : 0.00000000 sec  
MCWRR : 0.01500000 sec  
===== CHANNEL f1 =====  
NUC1 : 1H  
P1 : 8.60 usec  
PL1 : -2.00 dB  
SFO1 : 300.1321009 MHz  
F2 - Processing parameters  
SI : 32768  
SF : 300.130063 MHz  
WDW : EM  
SSB : 0  
LB : 0.30 Hz  
GB : 0  
PC : 1.00  
ID NMR plot parameters  
CX : 23.00 cm  
CY : 12.50 cm  
F1P : 9.000 ppm  
F2P : 2701.17 Hz  
F2 : 0.000 ppm  
FPMCM : 0.39130 ppm/cm  
HZCM : 117.44218 Hz/cm

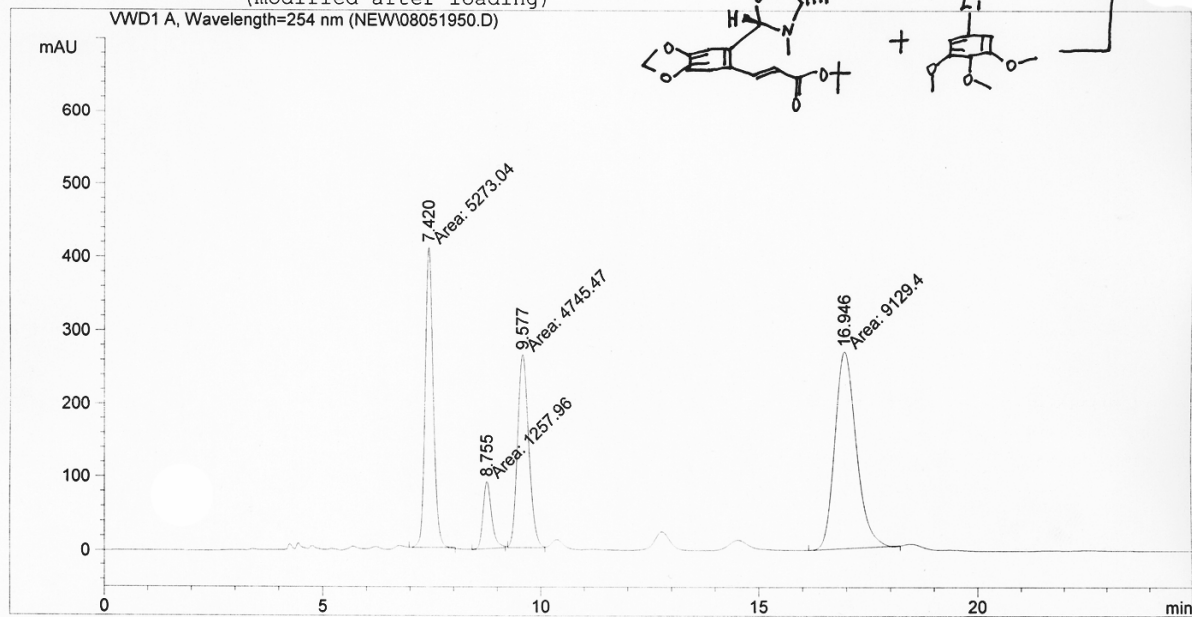
# Compound 5

Data File C:\HPCHEM\4\DATA\NEW\08051950.D

=====

Injection Date	: 6/1/2008 8:02:00 PM	Location	: Vial 1
Sample Name	:	Inj Volume	: 5 µl
Acq. Operator	:		
Acq. Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 6/1/2008 6:32:58 PM		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/12/2008 4:22:55 PM		
	(modified after loading)		

=====



## Area Percent Report

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.420	MM	0.2148	5273.04346	409.10760	25.8408
2	8.755	MM	0.2308	1257.96118	90.84045	6.1647
3	9.577	MM	0.3005	4745.46729	263.19427	23.2554
4	16.946	MM	0.5671	9129.39941	268.30502	44.7391

Totals : 2.04059e4 1031.44736

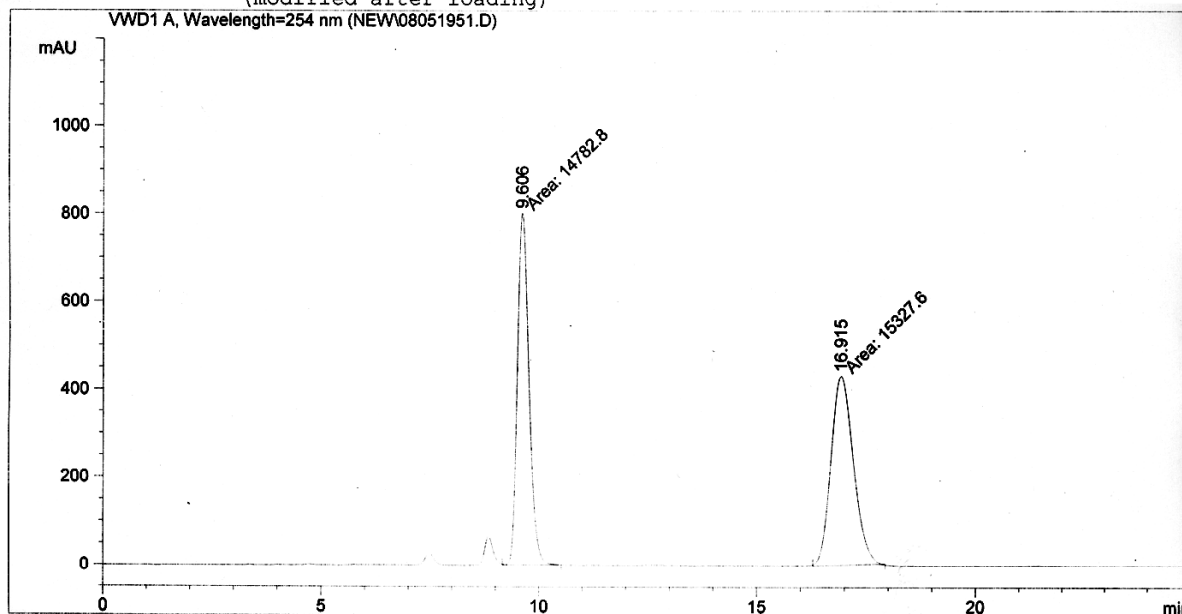
Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

=====

Injection Date	: 6/2/2008 10:47:10 AM	Location	: Vial 1
Sample Name	:		
Acq. Operator	:	Inj Volume	: 5 µl
Acq. Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 6/2/2008 10:42:19 AM		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/7/2008 5:01:09 PM		
	(modified after loading)		

VWD1 A, Wavelength=254 nm (NEW08051951.D)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

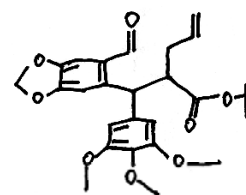
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	9.606	MM	0.3079	1.47828e4	800.25165	49.0953
2	16.915	MM	0.5939	1.53276e4	430.10709	50.9047

Totals : 3.01105e4 1230.35873

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic Sample

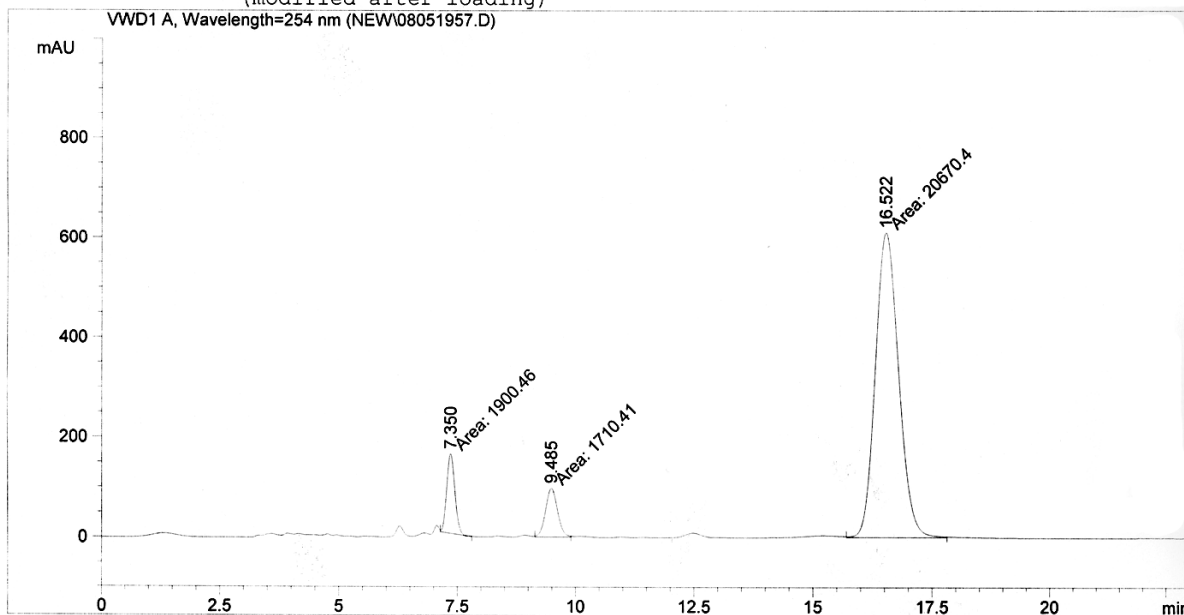


# Compound 5, without addition of TMEDA

Data File C:\HPCHEM\4\DATA\NEW\08051957.D

```
=====
Injection Date   : 6/4/2008 10:57:30 AM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 6/4/2008 9:36:33 AM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/18/2008 12:53:00 PM
                  (modified after loading)
=====
```



## Area Percent Report

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

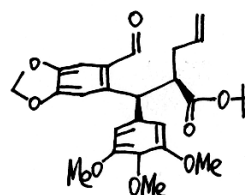
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	7.350	MM	0.1996	1900.45959	158.66891	7.8269
2	9.485	MM	0.2944	1710.41443	96.84412	7.0442
3	16.522	MM	0.5658	2.06704e4	608.87732	85.1290

Totals : 2.42813e4 864.39036

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*



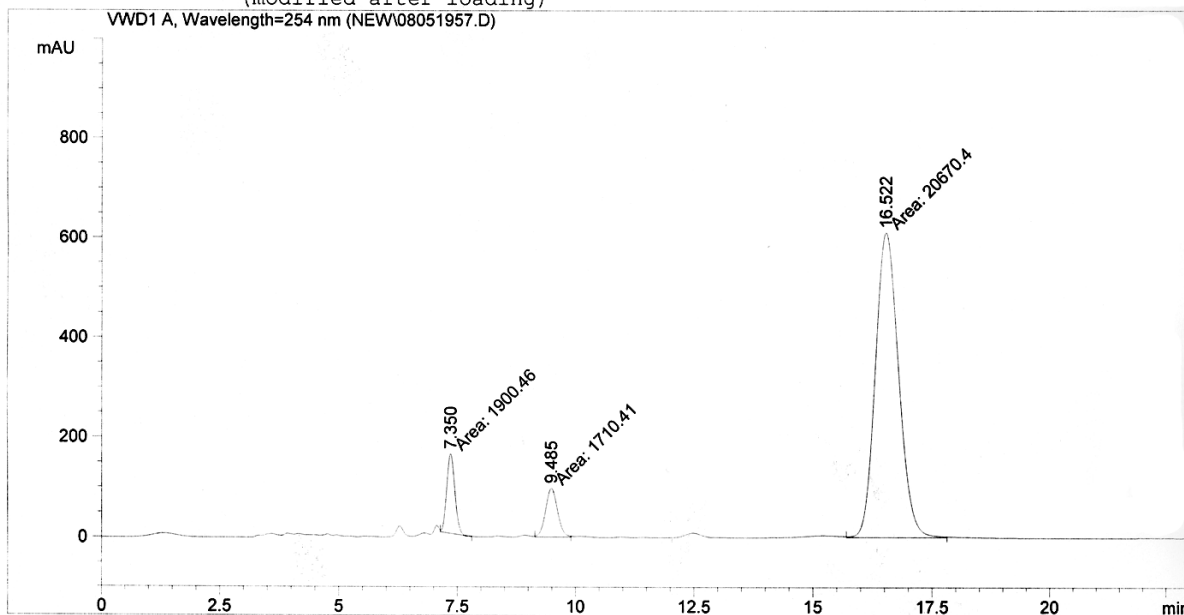
(without TMEDA)

# Compound 5, without addition of TMEDA

Data File C:\HPCHEM\4\DATA\NEW\08051957.D

```
=====
Injection Date   : 6/4/2008 10:57:30 AM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 6/4/2008 9:36:33 AM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/18/2008 12:53:00 PM
                  (modified after loading)
=====
```



## Area Percent Report

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

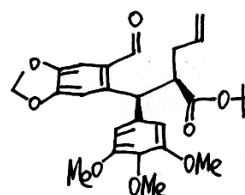
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	7.350	MM	0.1996	1900.45959	158.66891	7.8269
2	9.485	MM	0.2944	1710.41443	96.84412	7.0442
3	16.522	MM	0.5658	2.06704e4	608.87732	85.1290

Totals : 2.42813e4 864.39036

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*



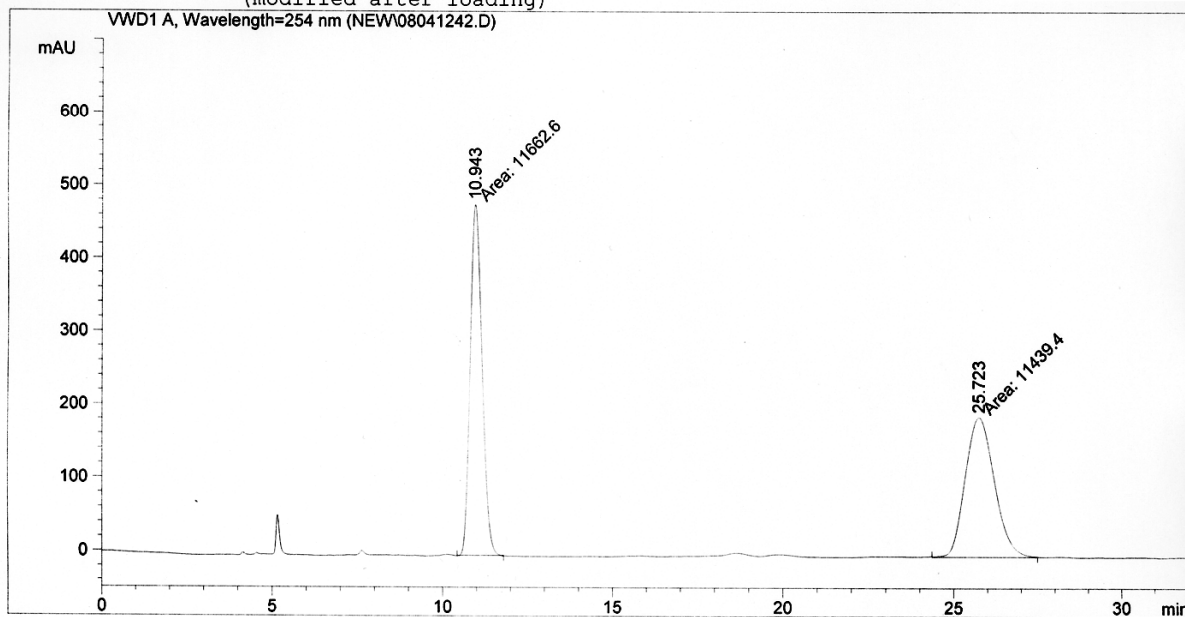
(without TMEDA)

# Racemic sample of compound 10

Data File C:\HPCHEM\4\DATA\NEW\08041242.D

```
=====
Injection Date   : 5/7/2008 8:51:53 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 5/7/2008 6:38:51 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/7/2008 5:27:23 PM
                  (modified after loading)
=====
```



## Area Percent Report

```
=====
Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000
=====
```

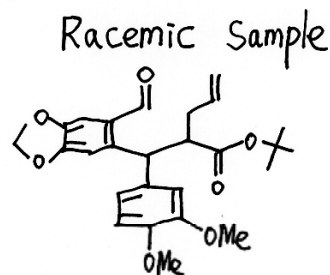
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.943	MM	0.4053	1.16626e4	479.63235	50.4831
2	25.723	MM	1.0005	1.14394e4	190.55522	49.5169

Totals : 2.31020e4 670.18758

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

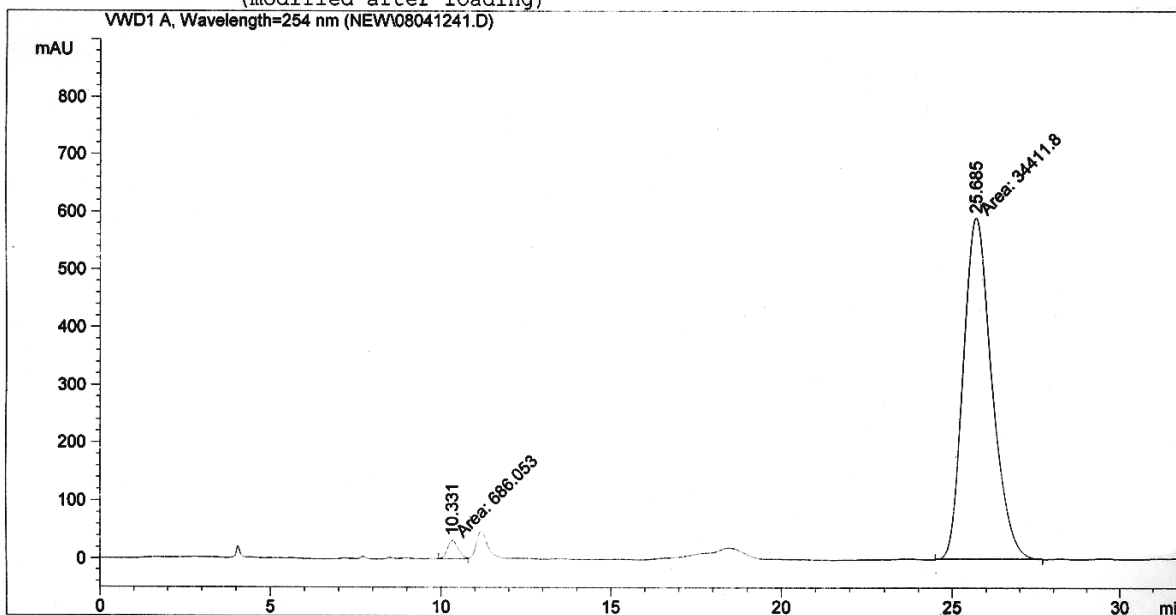


Data File C:\HPCHEM\4\DATA\NEW\08041241.D

=====

Injection Date : 5/7/2008 8:16:28 PM  
Sample Name : Location : Vial 1  
Acq. Operator : Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 5/7/2008 6:38:51 PM  
(modified after loading)  
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/7/2008 5:18:59 PM  
(modified after loading)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

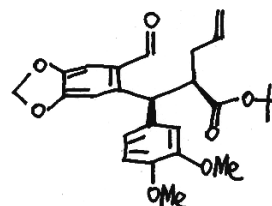
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.331	MM	0.3596	686.05255	31.79389	1.9547
2	25.685	MM	0.9736	3.44118e4	589.06763	98.0453

Totals : 3.50979e4 620.86151

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*



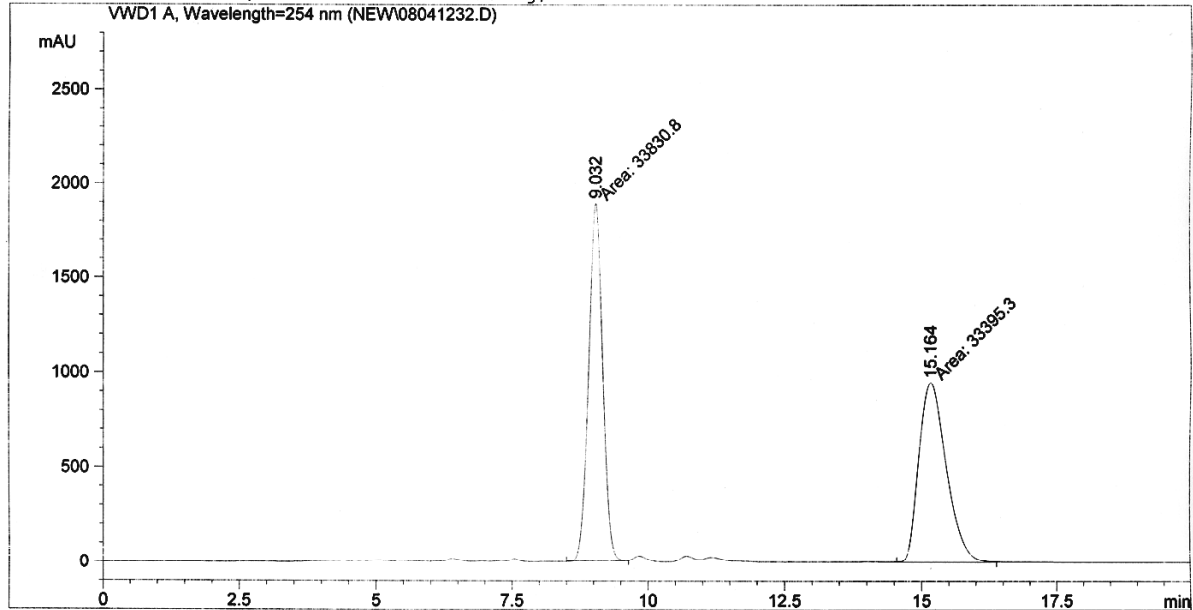
# Racemic sample of compound 9

Data File C:\HPCHEM\4\DATA\NEW\08041232.D

```

=====
Injection Date   : 5/6/2008 9:41:45 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 5/6/2008 8:43:46 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/7/2008 5:41:13 PM
                  (modified after loading)
=====
  
```



## Area Percent Report

```

=====
Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000
  
```

Signal 1: VWD1 A, Wavelength=254 nm

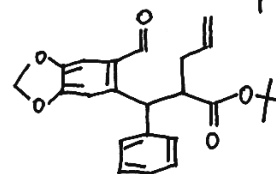
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	9.032	MM	0.2985	3.38308e4	1889.15540	50.3239
2	15.164	MM	0.5849	3.33953e4	951.56677	49.6761

Totals : 6.72261e4 2840.72217

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic Sample

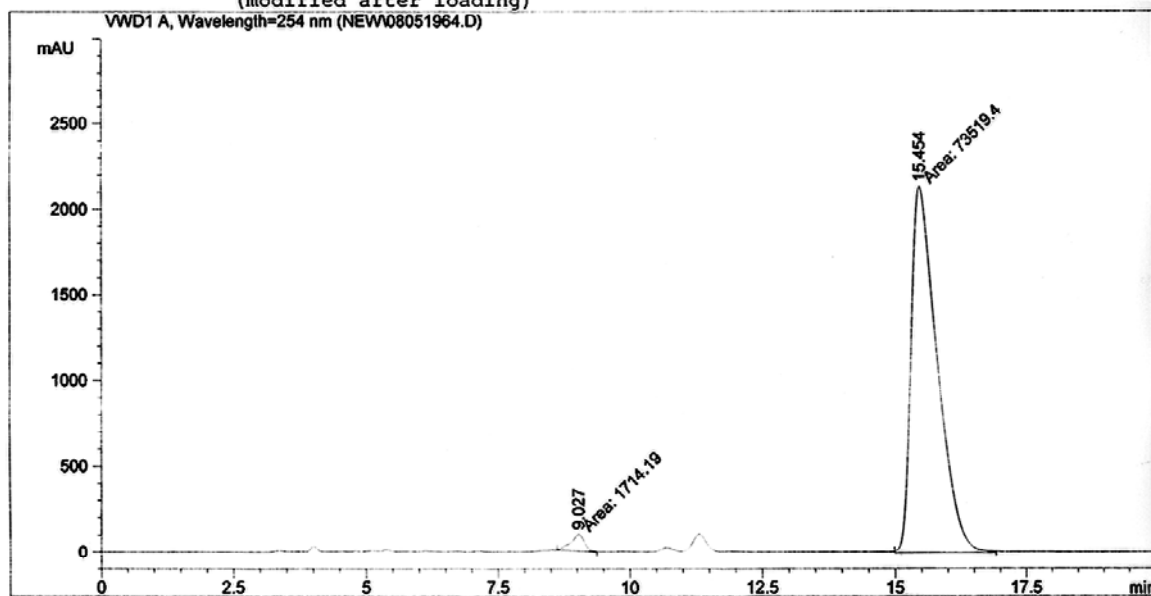


Data File C:\HPCHEM\4\DATA\NEW\08051964.D

=====

Injection Date : 6/5/2008 11:39:20 AM  
Sample Name : Location : Vial 1  
Acq. Operator : Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 6/5/2008 10:34:35 AM  
(modified after loading)  
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/7/2008 4:52:04 PM  
(modified after loading)



=====

Area Percent Report

=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

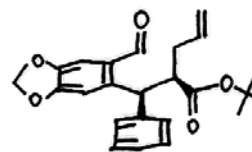
Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	9.027	MM	0.2917	1714.19006	97.92775	2.2785
2	15.454	MM	0.5737	7.35194e4	2135.93945	97.7215

Totals : 7.52336e4 2233.86720

Results obtained with enhanced integrator!

=====

\*\*\* End of Report \*\*\*

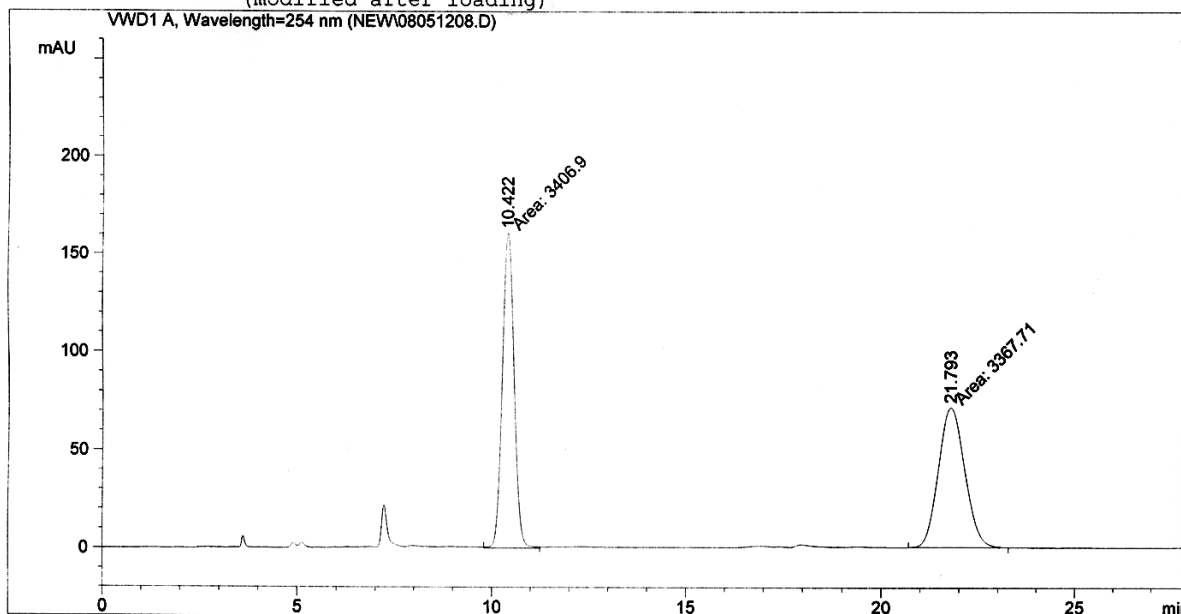


# Racemic sample of compound 12

Data File C:\HPCHEM\4\DATA\NEW\08051208.D

```
=====
Injection Date   : 5/12/2008 10:43:57 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 5/12/2008 10:37:26 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/7/2008 5:38:41 PM
                  (modified after loading)
=====
```



## Area Percent Report

```
=====
Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000
=====
```

Signal 1: VWD1 A, Wavelength=254 nm

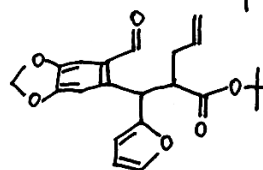
Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	10.422	MM	0.3532	3406.90210	160.76888	50.2893
2	21.793	MM	0.7868	3367.70752	71.33863	49.7107

Totals : 6774.60962 232.10751

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic Sample

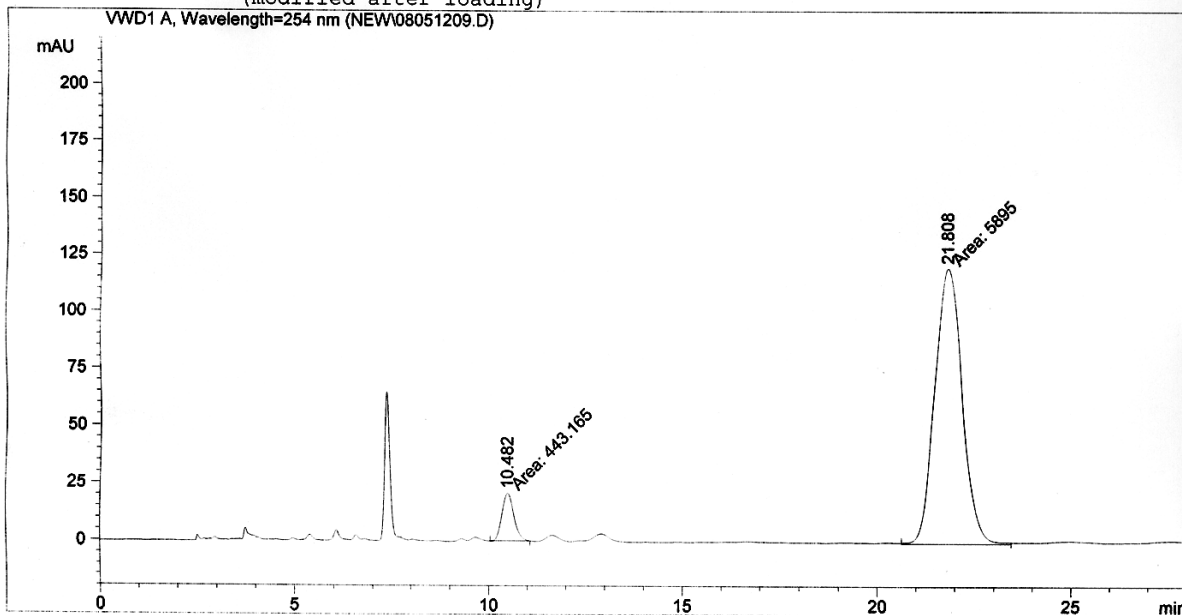


=====

Injection Date : 5/12/2008 11:13:25 PM  
Sample Name : Location : Vial 1  
Acq. Operator : Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 5/12/2008 10:37:26 PM  
(modified after loading)

Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/7/2008 5:35:51 PM  
(modified after loading)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

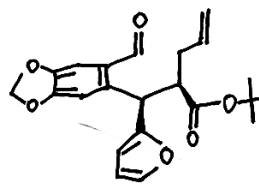
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.482	MM	0.3572	443.16467	20.67850	6.9920
2	21.808	MM	0.8173	5894.99805	120.21584	93.0080

Totals : 6338.16272 140.89434

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*



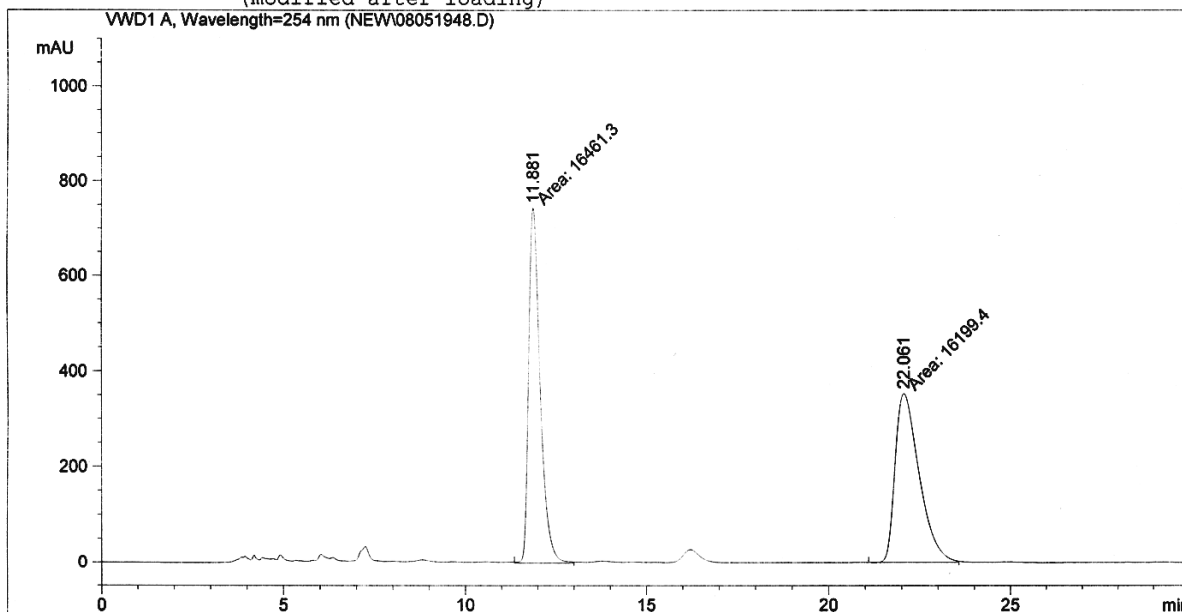
# Racemic sample of compound 11

Data File C:\HPCHEM\4\DATA\NEW\08051948.D

```

=====
Injection Date   : 5/31/2008 3:15:26 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 5/31/2008 2:19:59 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/7/2008 5:32:09 PM
                  (modified after loading)
=====
  
```



## Area Percent Report

```

=====
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
  
```

Signal 1: VWD1 A, Wavelength=254 nm

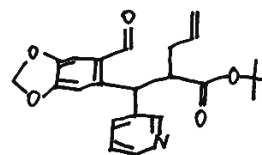
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	11.881	MM	0.3683	1.64613e4	744.99487	50.4010
2	22.061	MM	0.7653	1.61994e4	352.77026	49.5990

Totals : 3.26607e4 1097.76514

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic sample

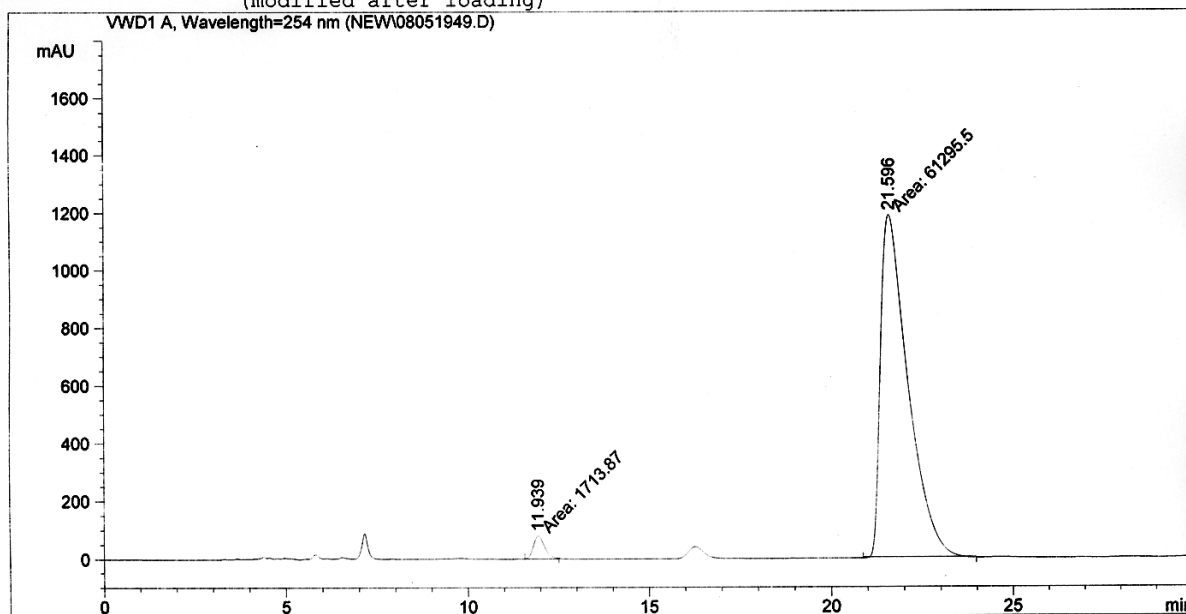


Data File C:\HPCHEM\4\DATA\NEW\08051949.D

=====

Injection Date : 5/31/2008 3:55:46 PM  
Sample Name : Location : Vial 1  
Acq. Operator : Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 5/31/2008 2:19:59 PM  
(modified after loading)  
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/7/2008 5:30:02 PM  
(modified after loading)



=====

Area Percent Report

=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

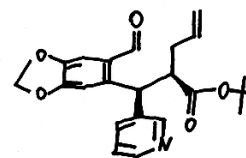
Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	11.939	MM	0.3609	1713.86597	79.14449	2.7200
2	21.596	MM	0.8629	6.12955e4	1183.88733	97.2800

Totals : 6.30094e4 1263.03182

Results obtained with enhanced integrator!

=====

\*\*\* End of Report \*\*\*

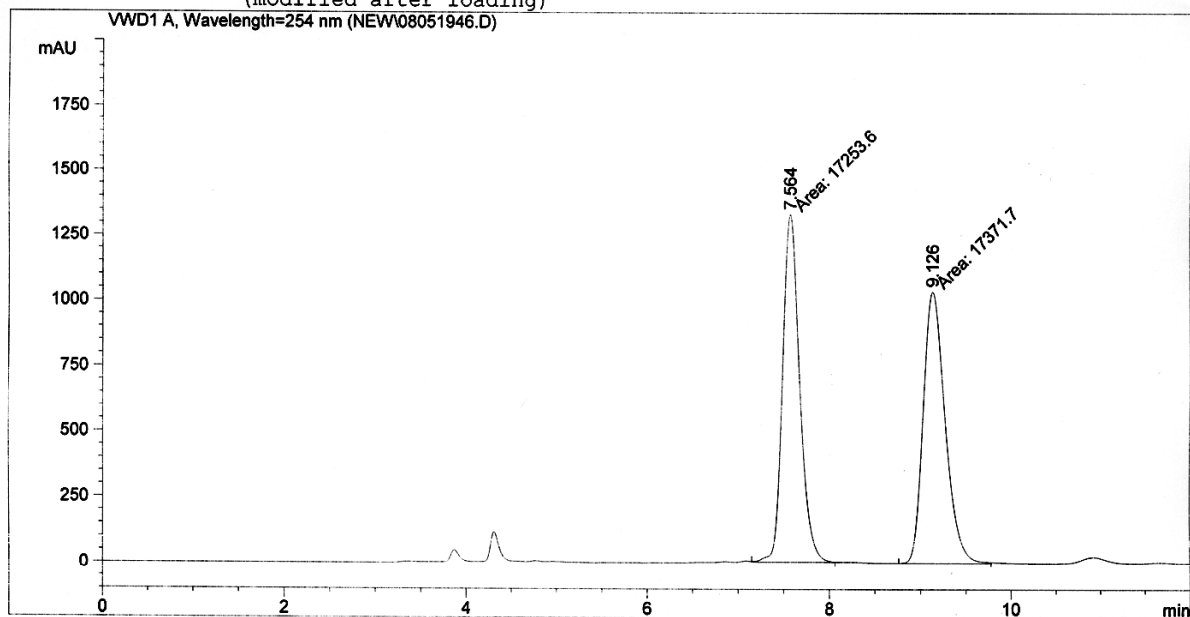


# Racemic sample of compound 15

Data File C:\HPCHEM\4\DATA\NEW\08051946.D

```
=====
Injection Date   : 5/31/2008 2:00:55 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 5/31/2008 12:16:26 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/7/2008 5:42:51 PM
                  (modified after loading)
=====
```



## Area Percent Report

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=254 nm

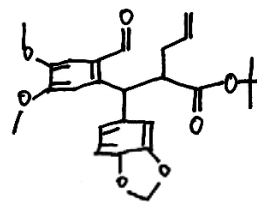
Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	7.564	MM	0.2165	1.72536e4	1327.99866	49.8294
2	9.126	MM	0.2796	1.73717e4	1035.63782	50.1706

Totals : 3.46253e4 2363.63647

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic sample



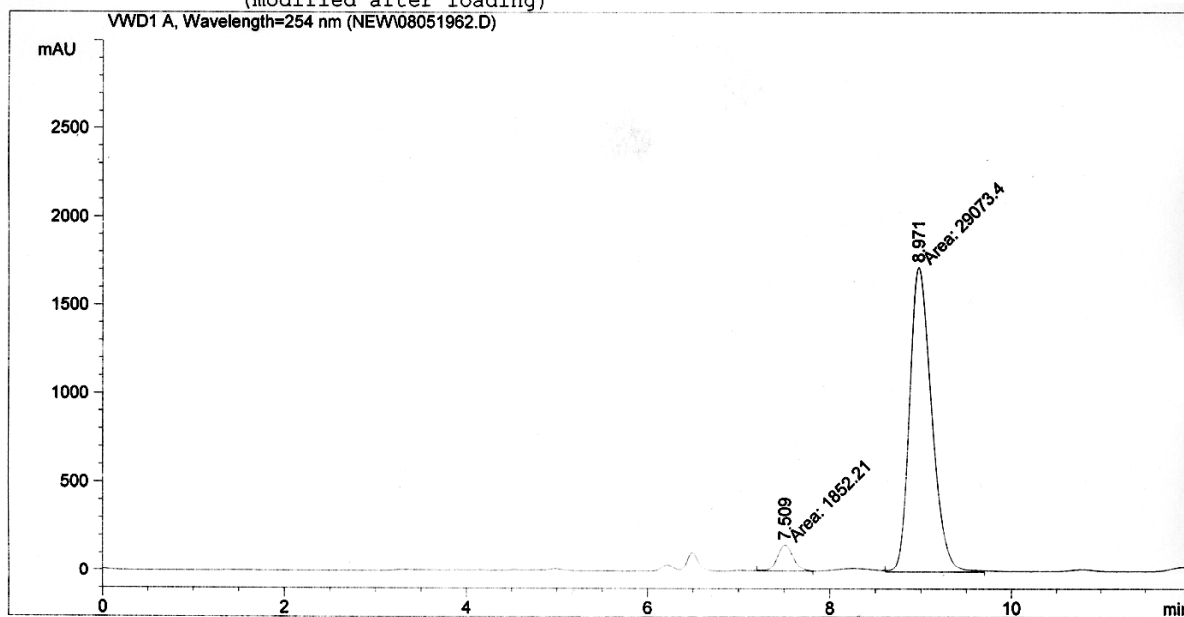
Data File C:\HPCHEM\4\DATA\NEW\08051962.D

```

=====
Injection Date   : 6/4/2008 4:14:06 PM
Sample Name     :
Acq. Operator   :
Location        : Vial 1
Inj Volume      : 5 µl

Acq. Method     : C:\HPCHEM\4\METHODS\YXD1.M
Last changed    : 6/4/2008 2:57:01 PM
                  (modified after loading)
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M
Last changed    : 8/7/2008 5:21:16 PM
                  (modified after loading)
=====

```



```

=====
Area Percent Report
=====

```

```

Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000

```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.509	MM	0.2028	1852.20935	152.23366	5.9892
2	8.971	MM	0.2814	2.90734e4	1722.21594	94.0108

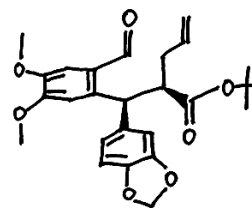
Totals : 3.09256e4 1874.44960

Results obtained with enhanced integrator!

```

=====
*** End of Report ***

```



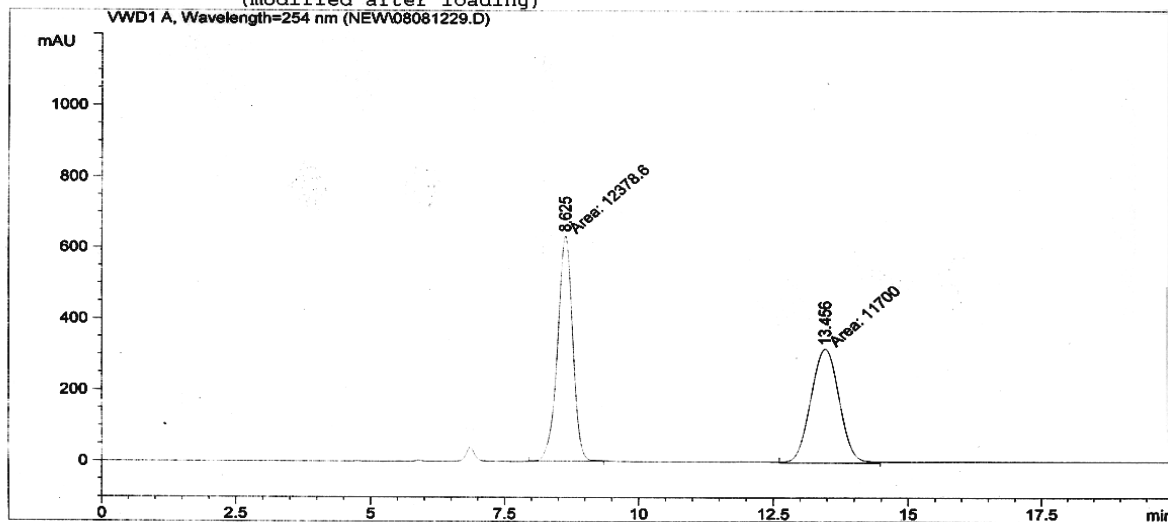
# Racemic sample of compound 13

Data File C:\HPCHEM\4\DATA\NEW\08081229.D

=====

Injection Date	: 10/13/2008 3:27:30 PM	Location	: Vial 1
Sample Name	:		
Acq. Operator	:	Inj Volume	: 5 µl
Acq. Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 10/13/2008 2:25:53 PM		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 10/27/2008 10:04:20 AM		
	(modified after loading)		

=====



## Area Percent Report

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

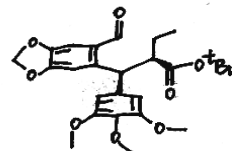
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	8.625	MM	0.3268	1.23786e4	631.32495	51.4092
2	13.456	MM	0.6105	1.17000e4	319.42953	48.5908

Totals : 2.40786e4 950.75449

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic Sample



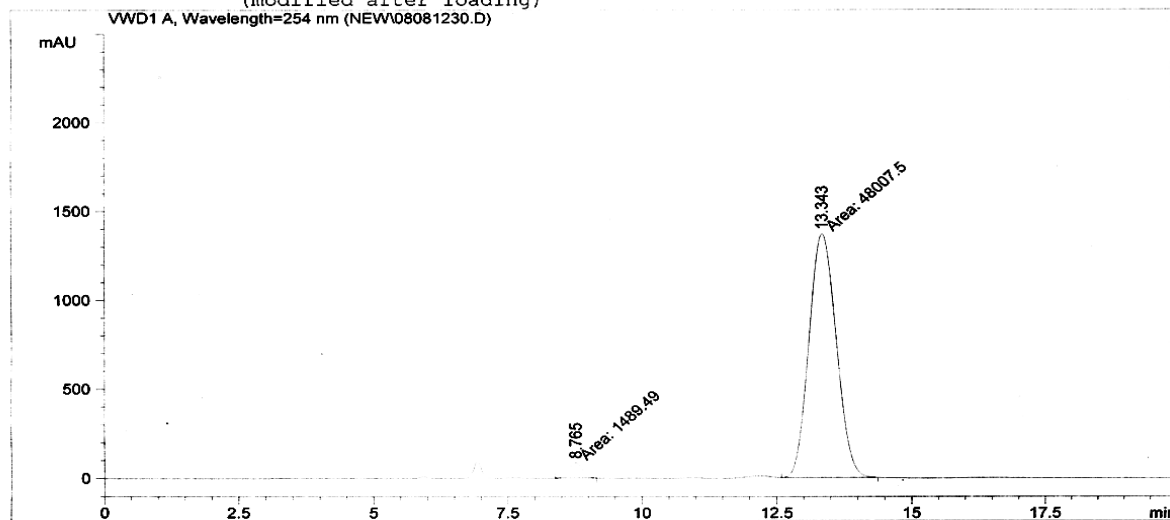
Data File C:\HPCHEM\4\DATA\NEW\08081230.D

```

=====
Injection Date   : 10/13/2008 3:51:56 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 10/13/2008 2:25:53 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 10/27/2008 9:31:37 AM
                  (modified after loading)
=====

```



```

=====
Area Percent Report
=====

```

```

Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000

```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	8.765	MM	0.2900	1489.49194	85.61259	3.0093
2	13.343	MM	0.5850	4.80075e4	1367.63184	96.9907

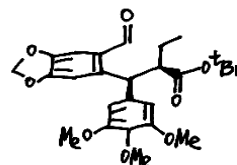
Totals : 4.94970e4 1453.24443

Results obtained with enhanced integrator!

```

=====
*** End of Report ***
=====

```

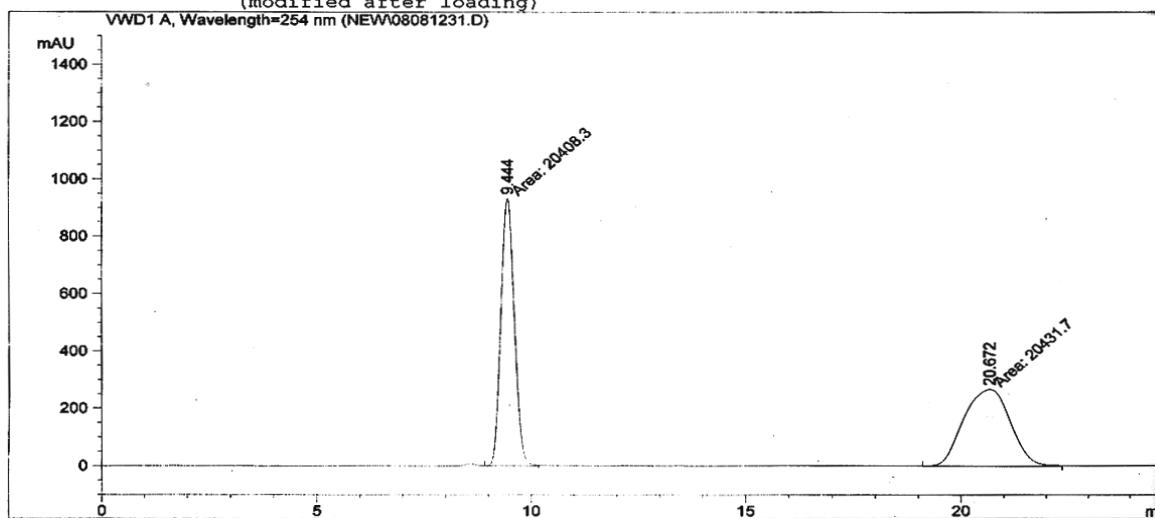


# Racemic sample of compound 14

Data File C:\HPCHEM\4\DATA\NEW\08081231.D

```
=====
Injection Date : 10/20/2008 2:41:32 PM
Sample Name   :                               Location : Vial 1
Acq. Operator :                               Inj Volume : 5 µl

Acq. Method   : C:\HPCHEM\4\METHODS\YXD1.M
Last changed  : 10/20/2008 1:58:04 PM
               (modified after loading)
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M
Last changed  : 10/20/2008 4:12:56 PM
               (modified after loading)
=====
```



## Area Percent Report

```
=====
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
=====
```

Signal 1: VWD1 A, Wavelength=254 nm

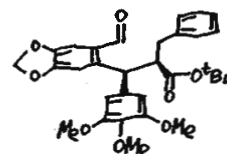
Peak #	RetTime [min]	Type	Width [min]	Area mAU*s	Height [mAU]	Area %
1	9.444	MM	0.3647	2.04083e4	932.62012	49.9713
2	20.672	MM	1.2744	2.04317e4	267.19873	50.0287

Totals : 4.08400e4 1199.81885

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Racemic Sample



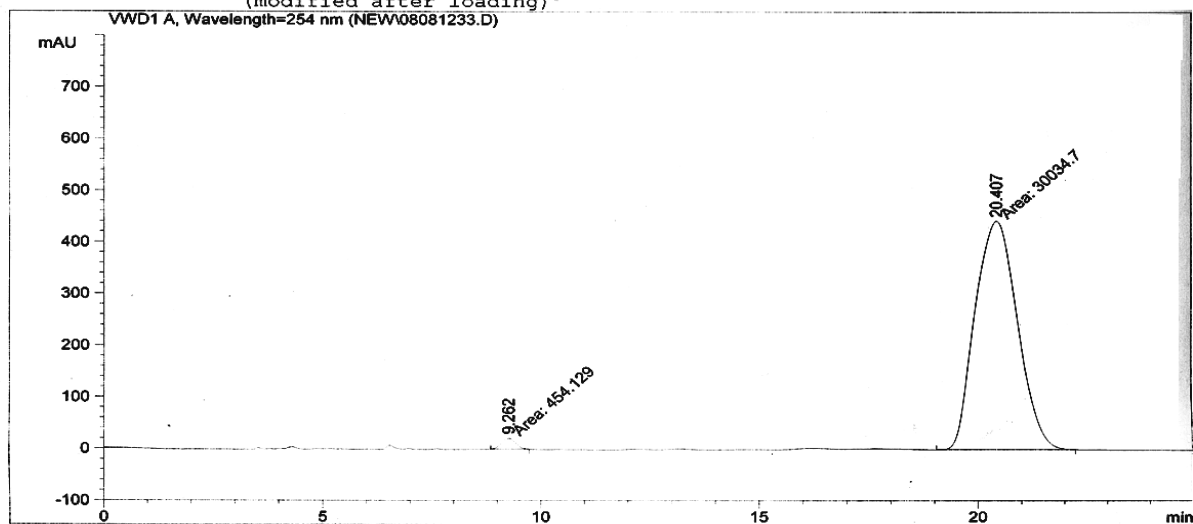
Data File C:\HPCHEM\4\DATA\NEW\08081233.D

```

=====
Injection Date   : 10/20/2008 3:43:54 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 10/20/2008 1:58:04 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 10/20/2008 4:16:40 PM
                  (modified after loading)
=====

```



=====  
Area Percent Report  
=====

```

Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000

```

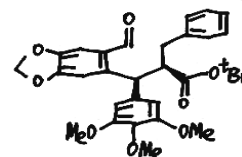
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	9.262	MM	0.3719	454.12857	20.34921	1.4895
2	20.407	MM	1.1320	3.00347e4	442.21295	98.5105

Totals : 3.04889e4 462.56217

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*



# Natural (-)-Podophyllotoxin

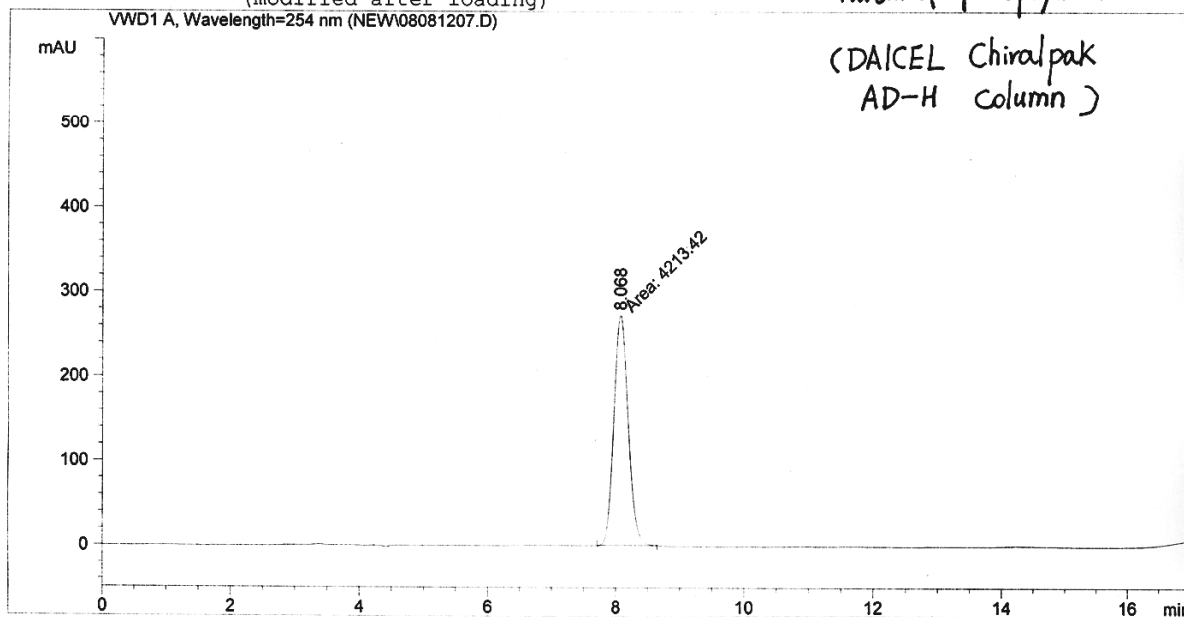
Data File C:\HPCHEM\4\DATA\NEW\08081207.D

```

=====
Injection Date   : 8/14/2008 3:53:52 PM
Sample Name      :
Acq. Operator    :
Location         : Vial 1
Inj Volume       : 5 µl

Acq. Method      : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/14/2008 1:39:26 PM
                  (modified after loading)
Analysis Method  : C:\HPCHEM\4\METHODS\YXD1.M
Last changed     : 8/14/2008 4:53:38 PM
                  (modified after loading)
    
```

Natural podophyllotoxin  
(DAICEL Chiralpak  
AD-H column)



## Area Percent Report

```

=====
Sorted By       : Signal
Multiplier      : 1.0000
Dilution        : 1.0000
    
```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	8.068	MM	0.2584	4213.41895	271.78336	100.0000

Totals : 4213.41895 271.78336

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

Sample of (±)-Podophyllotoxin

Data File C:\HPCHEM\4\DATA\NEW\08081204.D

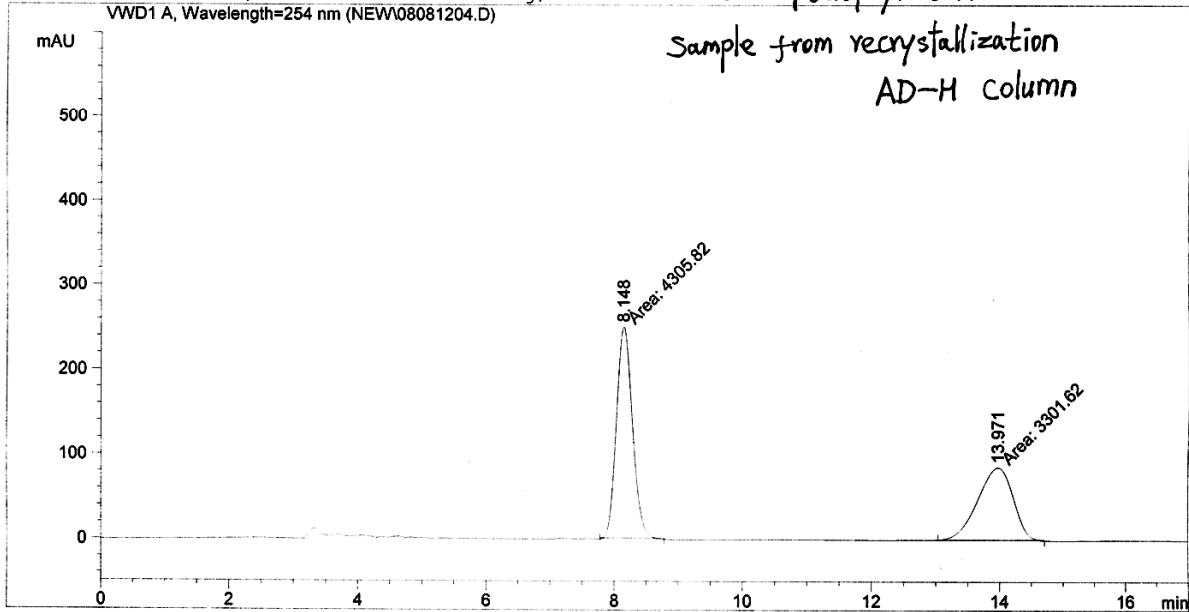
Injection Date : 8/14/2008 2:57:52 PM  
 Sample Name :  
 Acq. Operator : Location : Vial 1

Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
 Last changed : 8/14/2008 1:39:26 PM  
 (modified after loading)  
 Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
 Last changed : 8/14/2008 4:53:38 PM  
 (modified after loading)

Racemic synthesis  
 (±)-Podophyllotoxin

Sample from recrystallization  
 AD-H column



Area Percent Report

Sorted By : Signal  
 Multiplier : 1.0000  
 Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	8.148	MM	0.2881	4305.82178	249.07962	56.6001
2	13.971	MM	0.6469	3301.61816	85.05922	43.3999

Totals : 7607.43994 334.13884

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

(+)-Podophyllotoxin

Data File C:\HPCHEM\4\DATA\NEW\08081208.D

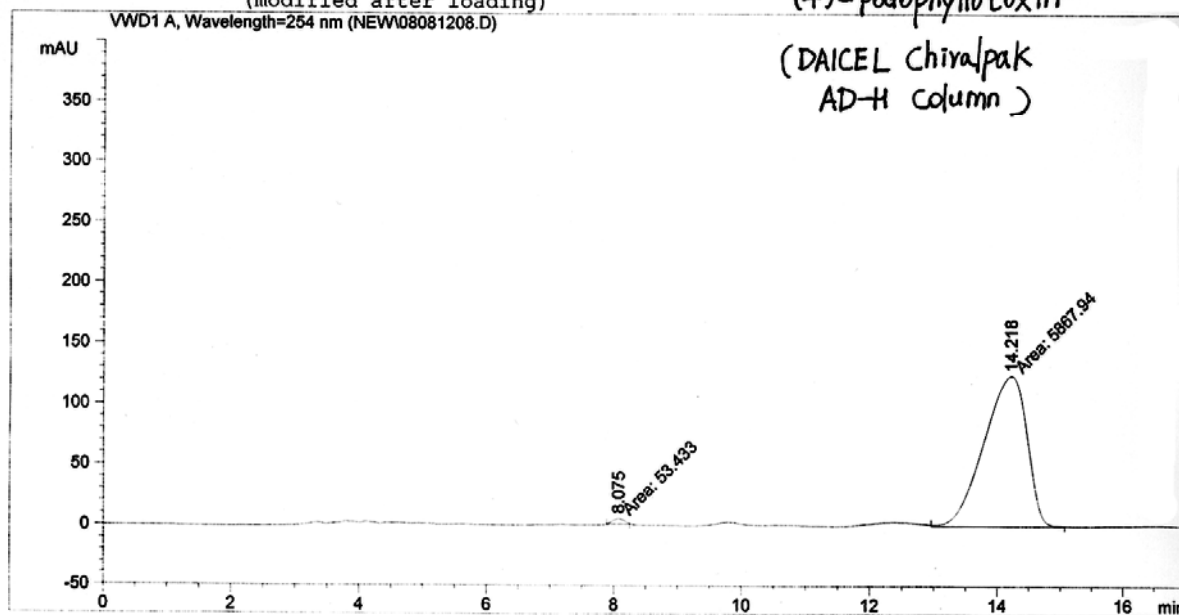
=====

Injection Date	: 8/14/2008 4:32:33 PM	Location	: Vial 1
Sample Name	:		
Acq. Operator	:		
		Inj Volume	: 5 µl
Acq. Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/14/2008 1:39:26 PM		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/14/2008 4:56:22 PM		
	(modified after loading)		

=====

Asymmetric synthesis  
(+)-Podophyllotoxin

(DAICEL Chiralpak  
AD-H column)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	8.075	MM	0.2057	53.43298	4.32974	0.9024
2	14.218	MM	0.7885	5867.94434	124.03889	99.0976

Totals : 5921.37732 128.36864

Results obtained with enhanced integrator!

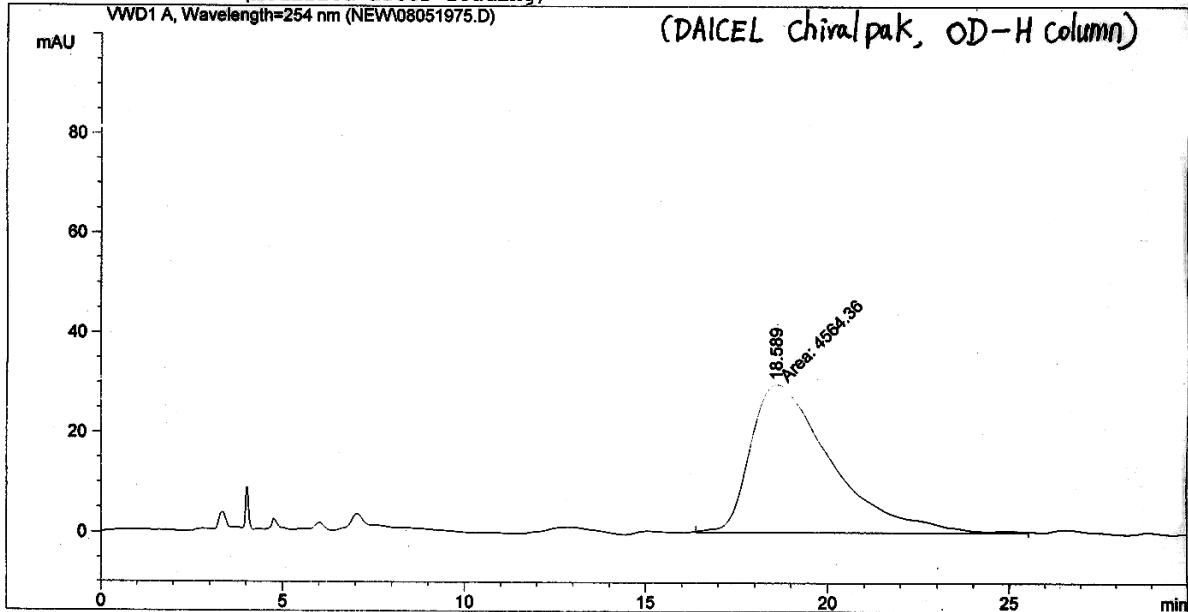
=====  
\*\*\* End of Report \*\*\*

Natural (-)-Podophyllotoxin

Data File C:\HPCHEM\4\DATA\NEW\08051975.D

=====  
Injection Date : 8/10/2008 7:51:12 PM  
Sample Name : Location : Vial 1  
Acq. Operator : Inj Volume : 5 µl  
Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/10/2008 5:09:32 PM  
(modified after loading)  
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/10/2008 7:56:13 PM  
(modified after loading)

Natural podophyllotoxin  
(DAICEL Chiralpak, OD-H column)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	18.589	MM	2.5672	4564.36230	29.63243	100.0000

Totals : 4564.36230 29.63243

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*

Sample of (±)-Podophyllotoxin

Data File C:\HPCHEM\4\DATA\NEW\08051980.D

Injection Date : 8/11/2008 2:39:16 PM  
Sample Name :  
Acq. Operator :

Location : Vial 1

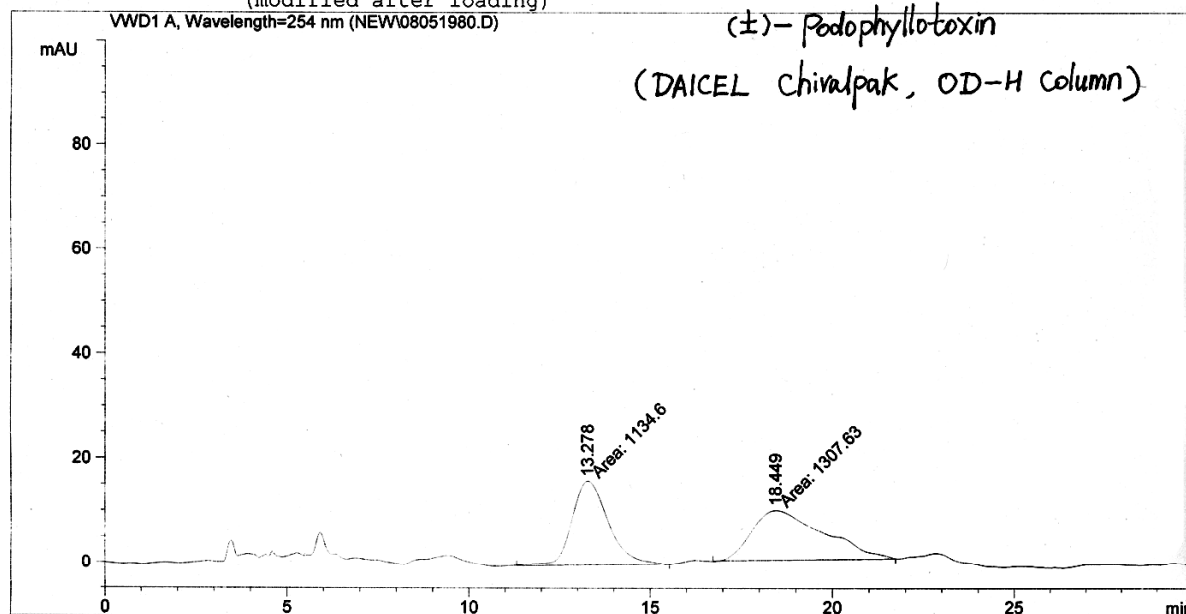
Inj Volume : 5 µl

Acq. Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/11/2008 11:37:06 AM  
(modified after loading)  
Analysis Method : C:\HPCHEM\4\METHODS\YXD1.M  
Last changed : 8/11/2008 3:10:11 PM  
(modified after loading)

Sample from Racemic synthesis

(±)-Podophyllotoxin

(DAICEL Chiralpak, OD-H column)



Area Percent Report

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	13.278	MM	1.1715	1134.59558	16.14113	46.4574
2	18.449	MM	2.2870	1307.63159	9.52949	53.5426

Totals : 2442.22717 25.67062

Results obtained with enhanced integrator!

\*\*\* End of Report \*\*\*

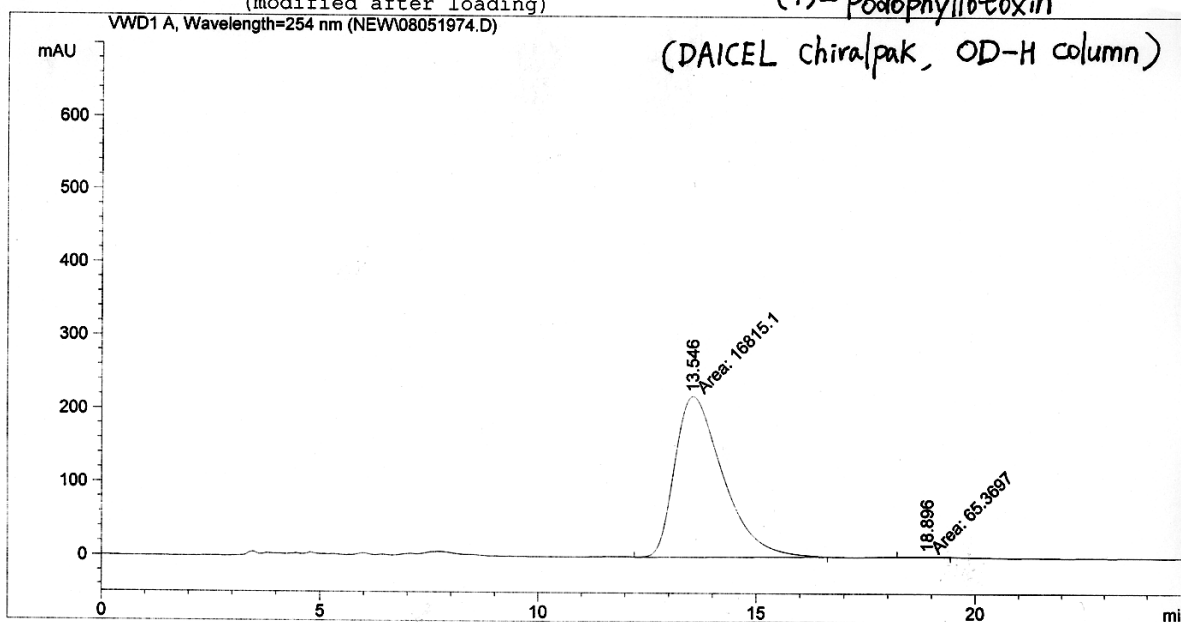
=====

Injection Date	: 8/10/2008 7:16:21 PM	Location	: Vial 1
Sample Name	:		
Acq. Operator	:	Inj Volume	: 5 µl
Acq. Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/10/2008 5:09:32 PM		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\4\METHODS\YXD1.M		
Last changed	: 8/12/2008 4:22:55 PM		
	(modified after loading)		

=====

Sample from Asymmetric synthesis  
(+) - Podophyllotoxin

(DAICEL Chiralpak, OD-H column)



=====  
Area Percent Report  
=====

Sorted By : Signal  
Multiplier : 1.0000  
Dilution : 1.0000

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	13.546	MM	1.2788	1.68151e4	219.15643	99.6128
2	18.896	MM	1.0143	65.36973	1.07409	0.3872

Totals : 1.68805e4 220.23052

Results obtained with enhanced integrator!

=====  
\*\*\* End of Report \*\*\*