



INDOFINE Chemical Company, Inc.

121 Stryker Lane, Bldg. 30, Suite 1 • Hillsborough, NJ 08844 • U.S.A.

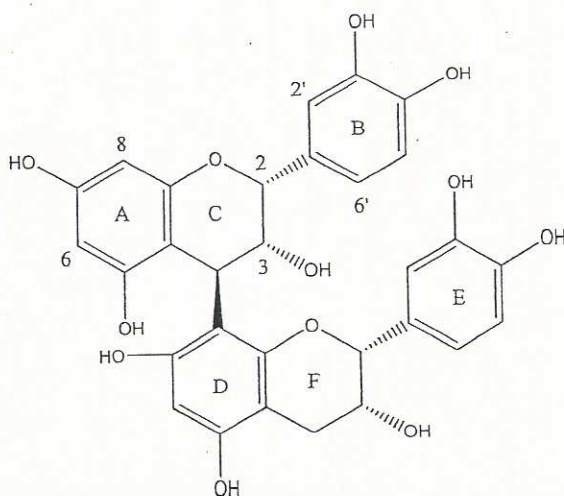
Phone: (908) 359-6778 • FAX: (908) 359-1179

website: www.indofinechemical.com

e-mail: chemical@indofinechemical.com

CERTIFICATE OF ANALYSIS

<u>Catalog Number:</u>	020984
<u>Product Name:</u>	PROCYANIDIN B2 (Epicatechin(4b-8)epicatechin)
<u>Cas Number:</u>	[29106-49-8]
<u>Lot Number:</u>	1310394
<u>Chemical Formula:</u>	$C_{30}H_{28}O_{12}$
<u>Molecular Weight:</u>	578.53
<u>Appearance:</u>	Beige Powder
<u>NMR Spectrum:</u>	Enclosed
<u>Storage:</u>	2-8°C
<u>Purity(HPLC):</u>	98.57%





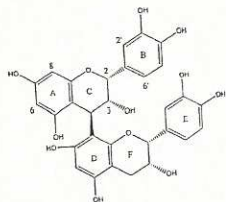
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HPLC ANALYSIS

Catalog No.: 020984

Product Name: Procyanidin B2

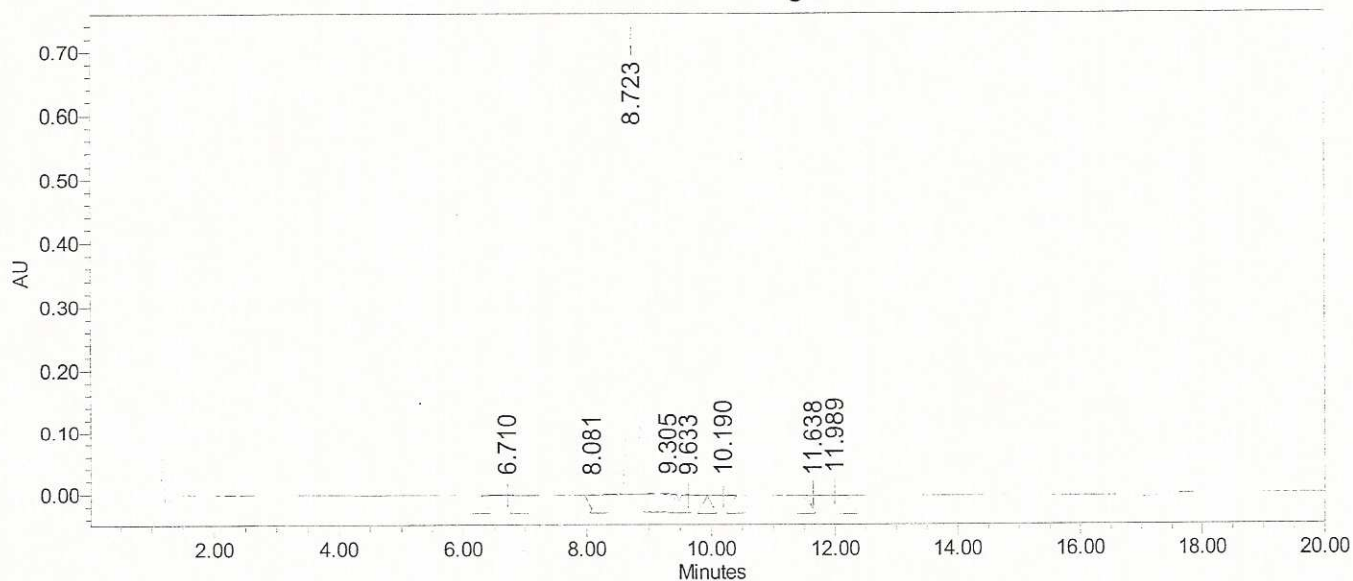
Lot No.: 1310394

SAMPLE INFORMATION

Sample Name: Procyanidin B2
Sample Type: Unknown
Vial: 1:E,6
Injection #: 1
Injection Volume: 10.00 ul
Run Time: 20.0 Minutes

Sample Set Name:
Acq. Method Set: Procyanidin B2
Processing Method: Samples
Channel Name: 280.0nm
Proc. Chnl. Descr.: PDA 280.0 nm

Auto-Scaled Chromatogram



Peak Results

	Name	RT	Area	% Area	USP Plate Count	USP Resolution
1		6.710	18174	0.30	8772.12	
2		8.081	2624	0.04	17162.99	4.76
3		8.723	6022800	98.57	24255.39	2.49
4		9.305	9745	0.16	17861.18	2.27
5		9.633	5651	0.09	12627.33	0.95
6		10.190	7666	0.13	59773.71	1.96
7		11.638	3830	0.06	37739.24	7.09
8		11.989	39412	0.65	52828.60	1.53



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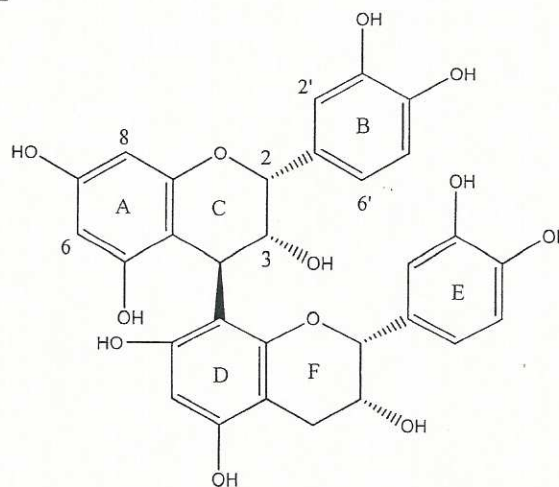
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Procyanidin B2

The compound was identified as Procyanidin B2 in comparison to literature (L. Tarascou et al., *Magn. Reson. Chem.* 2006.44:868-880.)

	δ_H	δ_C		δ_H	δ_C
2C	5.42	78.1	3F	4.02	68.4
3C	4.06	74.6	4F	2.86	31.1
4C	4.47	38.7	4'F	2.71	–
4aA	–	105.9	4aD	–	103.0
5A	–	156.1	5D	–	156.9
6A	5.82	97.7	6D	6.24	98.6
7A	–	156.5	7D	–	158.0
8A	5.67	97.8	8D	–	110.6
8aA	–	157.7	8aD	–	157.0
1'B	–	133.5	1'E	–	134.2
2'B	7.08	117.4	2'E	6.72	118.0
3'B	–	146.5	3'E	–	145.8
4'B	–	146.7	4'E	–	146.0
5'B	6.92	118.7	5'E	6.92	118.7
6'B	6.93	122.1	6'E	6.52	122.2
2F	4.32	81.3			

^1H - and ^{13}C -nmr data (D_2O) of Procyanidin B2



NMR parameters:

Spectrometer: Bruker Avance 300

^1H -NMR: 300 MHz

^{13}C -NMR: 150 MHz

Procyanidin B2

concentration, ^1H / ^{13}C -nmr: 10.00 mg / acetone- d_6

temperature: 300 Kelvin

calibration: solvent signal (D_2O) at δ_H 4.74 (^1H -nmr)

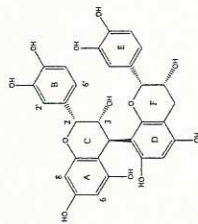
acetic acid residues (CH_3COOH) at δ_H 1.95 (^1H -nmr) / δ_C 179.21, 21.96 (^{13}C -nmr)

dimethylformamide residues ($\text{C}_3\text{H}_7\text{NO}$) at δ_H 2.79, 2.94, 7.85 (^1H -nmr)

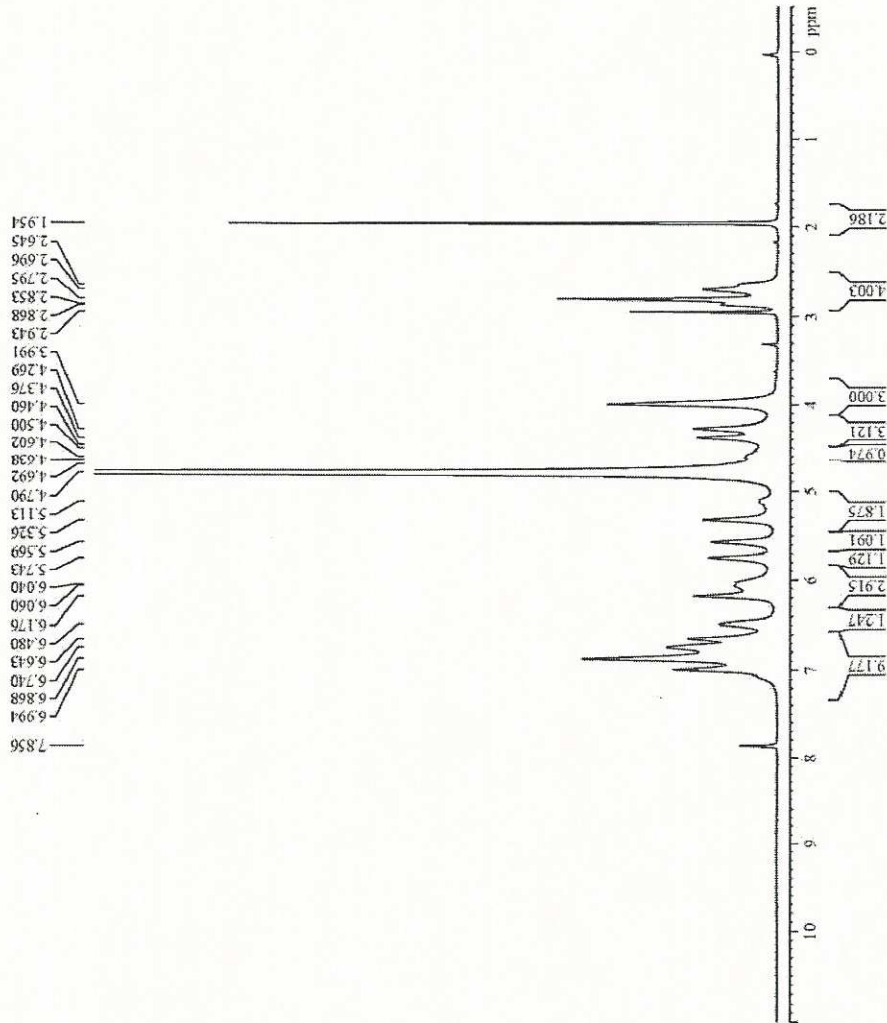


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BLDG. 30, SUITE 1
HILLSBOROUGH, NJ 08844

Catalog No.: 020984
Product Name: Procyanidin B2
Lot No.: 1310394



Procyanidin B2, in D₂O: ¹H-NMR (300 MHz)



Current Data Parameters
NAME z11-2010-10
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20101201
Time 18:23
INSTRUM av360
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 32768
SOLVENT D2O
NS 64
DS 0
SWH 5995.234 Hz
FIDRES 0.132959 Hz
AQ 2.732911 sec
RG 128
LW 83.400 usec
DE 6.00 usec
TE 293.2 K
DL 1.0000000 sec
MCREST 0.0000000 sec
MCMK 0.0150000 sec

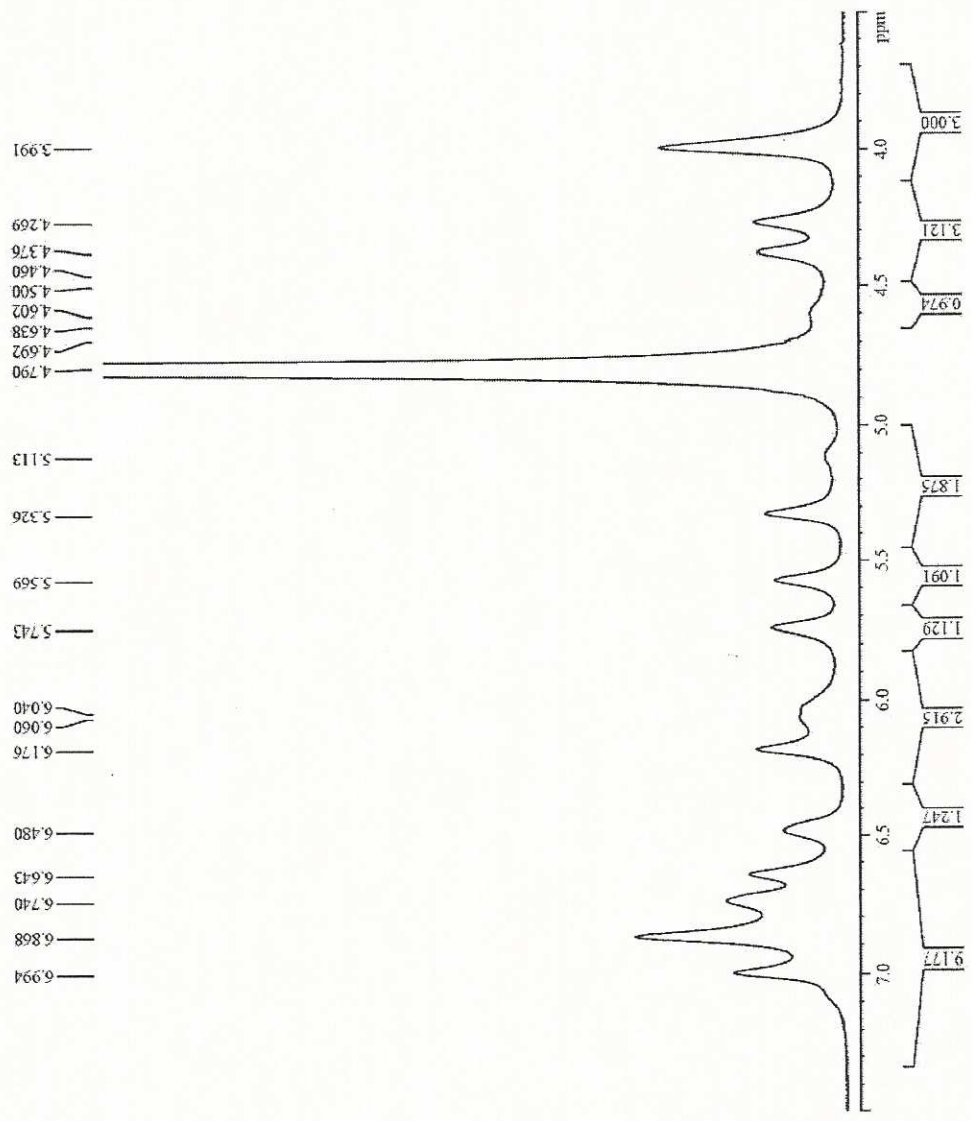
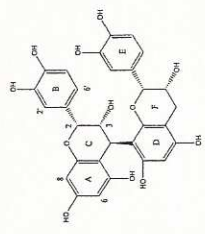
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NUC1 1H
P1 10.50 usec
PL1 0.10 dB
SFO1 300.1318534 MHz

F2 - Processing parameters
SI 32768
SF 300.1299883 MHz
WDW EM
SSA 0
LB 0.10 Hz
GB 0
PC 1.00



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Lot No.: 1310394



Current Data Parameters
NAME zil-2010-10
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20101201
Time 18.23
INSTRUM av300
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 32768
SOLVENT D2O
NS 64
DS 0
SWH 5995.204 Hz
FIDRES 0.182559 Hz
AQ 2.7329011 sec
RG 128
DE 83.400 usec
TE 293.2 K
D1 1.00000000 sec
MCREST 0.00000000 sec
MCWRR 0.01500000 sec

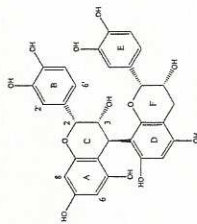
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NUC1 1H
P1 10.50 usec
PL1 0.10 dB
SFO1 300.1318534 MHz

F2 - Processing Parameters
SI 32768
SF 300.1295983 MHz
WDW EM
SSB 0
LB 0.10 Hz
GB 0
PC 1.00



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Lot No.: 1310394

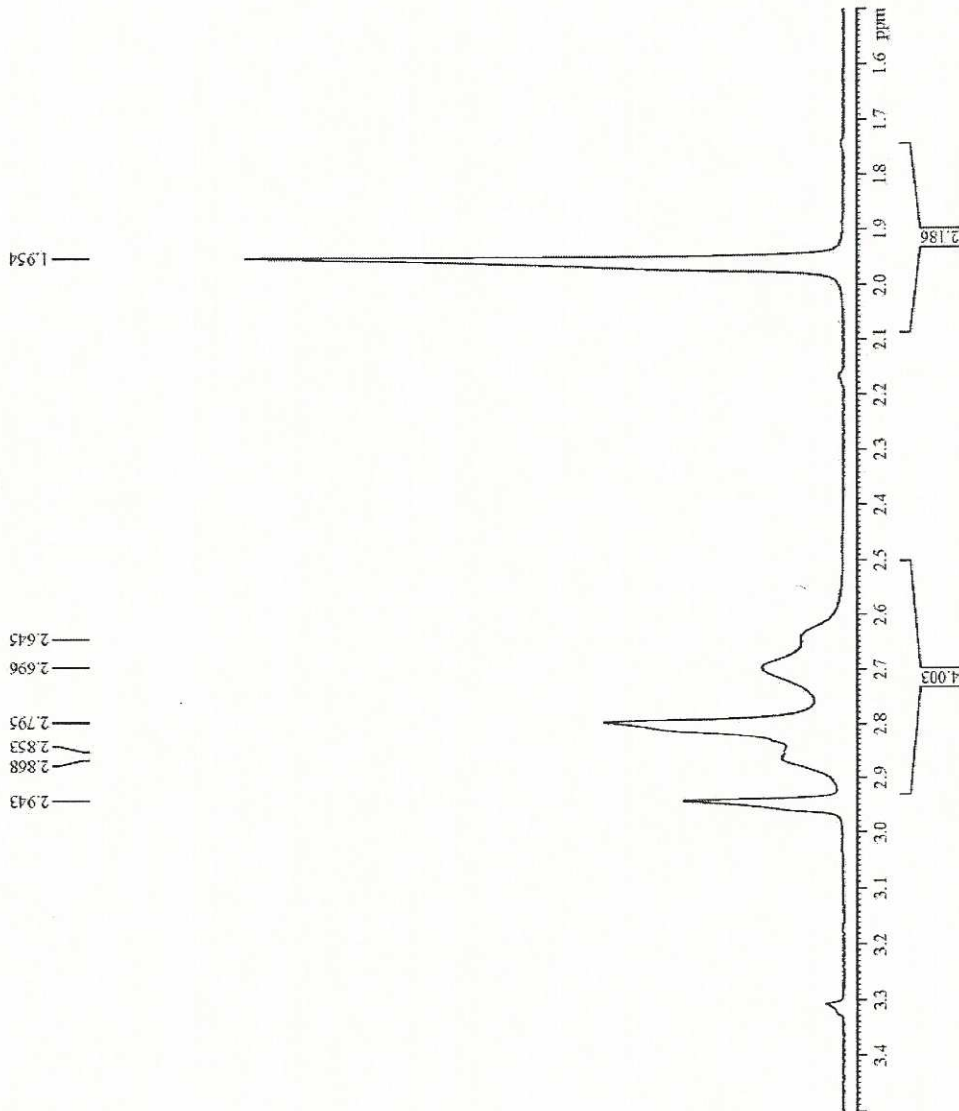


Current Data Parameters
NAME all-2010-10
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20101201
Time 18.23
INSTRUM AV300
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 32768
SOLVENT D2O
NS 64
DS 0
SWH 8995.204 Hz
FIDRES 0.182554 Hz
AQ 2.7329011 sec
RG 128
DE 83.400 usec
TE 293.2 K
D1 1.00000000 sec
MCREST 0.00000000 sec
MCWEN 0.01500000 sec

===== CHANNEL f1 =====
NUC1 1H
P1 10.50 usec
PL1 0.10 dB
SFO1 300.1318534 MHz

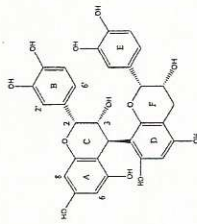
F2 - Processing parameters
SI 32768
SF 300.1289983 MHz
WDW EM
SSB 0
LB 0.10 Hz
GB 0
PC 1.00



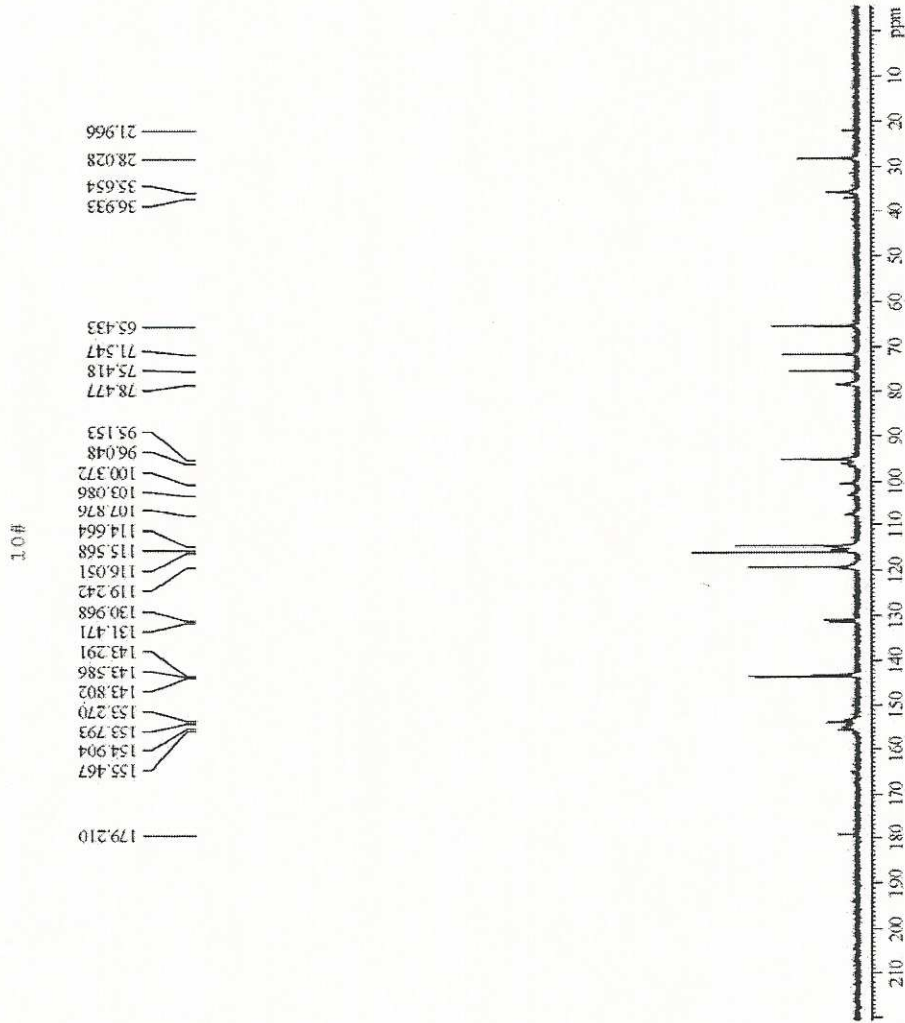


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Catalog No.: 020984
Product Name: Procyanidin B2
Lot No.: 1310394



Procyanidin B2, in D₂O: ¹³C-NMR (150 MHz)



Current Data Parameters
NAME z11-2010-10
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20101202
Time 9:27
INSTRUM av300
PROBHD 5 mm QNP 1H/13
PULPROG zgpg
TD 65536
SOLVENT D2O
NS 14336
DS 4
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.4451188 sec
RG 8192
DM 22.050 usec
DE 6.00 usec
TE 298.3 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.89999998 sec
MCREST 0.00000000 sec
MCRRX 0.01500000 sec

===== CHANNEL f1 =====
NUC1 13C
P1 10.50 usec
PL1 -2.00 dB
SFO1 75.475558 MHz

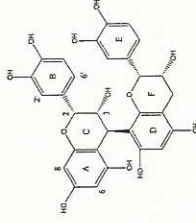
===== CHANNEL f2 =====
CHRG2 1H
NUC2 1H
PCH2 80.00 usec
PL2 0.10 dB
PL12 17.74 dB
PL13 17.74 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
SI 65536
SF 75.4677555 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
EC 1.40



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Catalog No.: 020984
Product Name: Procyanidin B2
Lot No.: 1310394



Current Data Parameters
NAME zil-2910-10
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20101202
Time_ 8.27
INSTRUM av300
PROBHD 5 mm QNP 1H/13
PULPROG zgpg
TD 65536
SOLVENT D2O
NS 14336
DS 4
SWH 22675.736 Hz
FIDRES 0.346004 Hz
AQ 1.445188 sec
RG 8192
DW 22.030 usec
DE 6.00 usec
TE 298.3 K
D1 2.00000000 sec
d11 0.03000000 sec
DELTA 1.8999998 sec
NCREST 0.06000000 sec
NCMRK 0.01500000 sec
CHANNEL f1 13C
NUC1 13C
P1 10.50 usec
PL1 -0.81 dB
SFO1 75.4775598 MHz
CHANNEL f2 waltz16
CPDPRG2 waltz16
NUC2 1H
P2 80.00 usec
PL2 0.10 dB
PL12 17.74 dB
PL13 17.74 dB
SFO2 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677555 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

