

ICG **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

Catalog Number: 020976S

Product Name: **(+)-CATECHIN**
(Catechin; Cianidanol; Dexcyanidanol; Cianidol; Catergen;
Drenoliver; Biocatechin, Tanningenic acid; Cyanidol)

CAS Number: [154-23-4]

Lot Number: 1903230

Chemical Formula: C₁₅H₁₄O₆

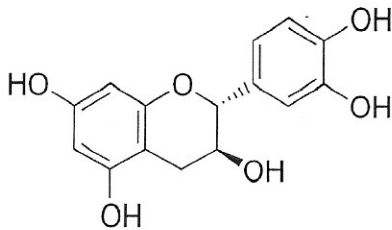
Molecular Weight: 290.27

Appearance: Light brown powder

Loss on Drying: 1.49%

Storage: Store at 2-8°C. Protect from light.

Purity(HPLC): 99.50%



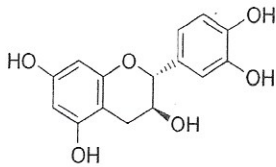
Prepared by:
Ramesh Mandadi
Ramesh Mandadi
Director of Operations

Reviewed and approved by:
Sujata Moton
S. Moton
VP



INDOFINE Chemical Company, Inc.

121 Stryker Lane, Bldg. 30
Hillsborough, NJ 08844 USA
Phone: (908) 359-6778; Fax: (908) 359-1179



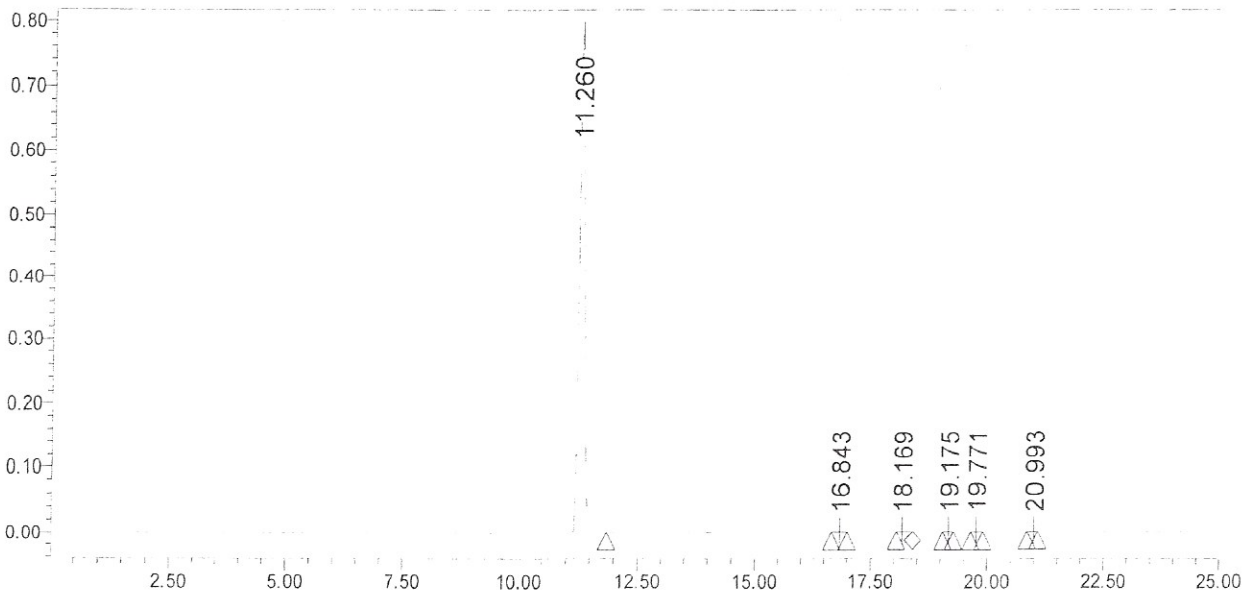
HPLC ANALYSIS

Catalog No.: 020976S
Product Name: (+)-Catechin
Lot No.: 1903230

SAMPLE INFORMATION

Sample Name:	Catechin	Acquired By:	CXY01
Sample Type:		Sample Set Name:	
Vial:	3	Acq. Method Set:	Catechin
Injection #:	1	Processing Method:	LC PQ
Injection Volume:	10.00 ul	Channel Name:	278.0
Run Time:	25.0 Minutes	Proc. Chnl. Descr.:	PDA 278.0

Auto-Scaled Chromatogram



Peak Results

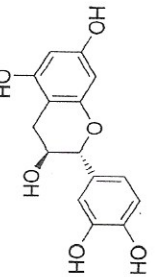
	RT	Area	% Area	USP Plate Count	USP Resolution
1	11.260	6326206	99.50	40956.52	
2	16.843	9573	0.15	11833.55	23.08
3	18.169	5466	0.09	138073.41	5.40
4	19.175	4721	0.07	365444.83	5.07
5	19.771	7727	0.12	410443.31	4.10
6	20.993	4240	0.07	476488.08	9.68

Prepared by:
Ramesh Mandadi
Ramesh Mandadi
Director of Operations

Reviewed and Approved by:
Sujata Moton
Sujata Moton
VP

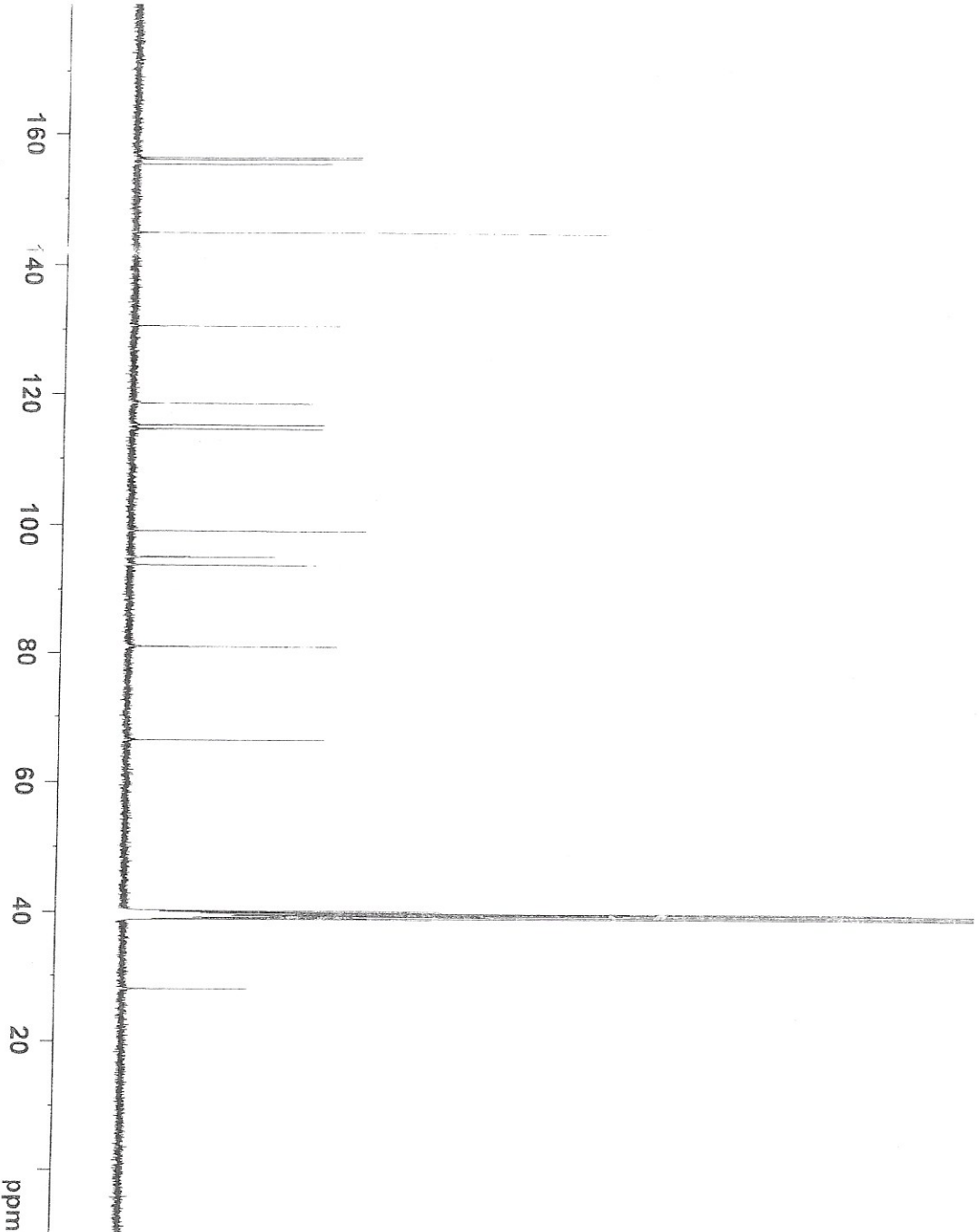


INDOFINE Chemical Company, Inc
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

- 156.44
- 156.16
- 155.34
- 144.83
- 130.58
- 118.42
- 115.06
- 114.50
- 99.04
- 95.09
- 93.83
- 80.98
- 66.30
- 27.85



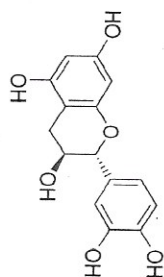
Current Data Parameters
 NAME: 14250-2019-1009590-13C NMR DMSO
 EXTNO: 1
 PROCNO: 1

F2 - Acquisition Parameters
 Date_ Time: 201-0331 9:40 h
 INSTRUM: spect
 PROBHD: 5mmQNP30
 PULPROG: zgpg30
 TD: 65536
 SOLVENT: DMSO
 NS: 1024
 DS: 4
 SM: 24038.461 Hz
 FIDRES: 0.733596 Hz
 AQ: 1.3651488 sec
 RG: 703.3
 DW: 20.806 usec
 DE: 6.50 usec
 TE: 300.2 K
 D1: 2.0000000 sec
 D11: 0.0300000 sec
 TDD: 1
 SFO1: 100.627298 MHz
 NUCL1: 13C
 P1: 10.00 usec
 PLW1: 81.0000000 W
 SFO2: 400.131602 MHz
 NUC2: 1H
 CPDPRG12: zgpg30
 PCPD2: 0.00 usec
 PLW2: 19.0000000 W
 PLM12: 0.2084098 W
 PLM13: 0.1042049 W

F2 - Processing parameters
 SI: 26214
 SF: 100.6178160 MHz
 WDW: EM
 SSB: 0
 LB: 1.00 Hz
 GB: 0
 PC: 1.30



INDOFINE Chemical Company, Inc.
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

156.44
 156.16
 155.34

144.83

130.58

118.42

115.06

114.50



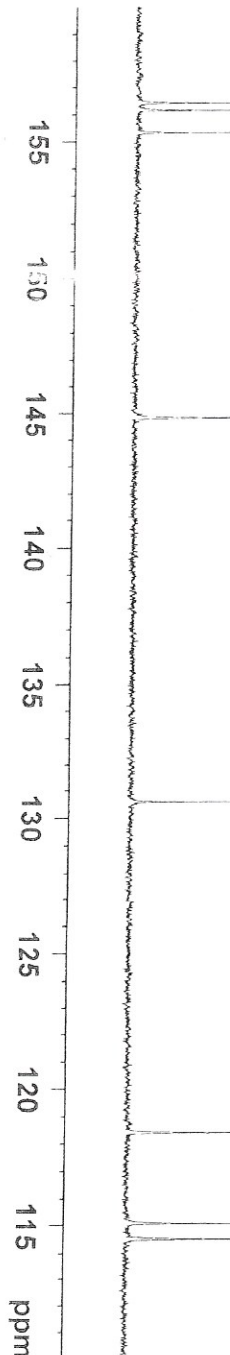
Current Data Parameters
 NAME: Mar30-2019-10039503-115.DMF.DMSO
 EXPRN: 1
 PROCNO: 1

F2 - Acquisition Parameters

Date: 20190331
 Time: 8.40 h
 INSTRUM: spect
 PROBHD: Z116098.0047 f
 PULPROG: zgpg30
 TD: 65536
 SOLVENT: DMSO
 NS: 1024
 DS: 4
 SWH: 24038.461 Hz
 FIDRES: 0.733596 Hz
 AQ: 1.5651488 sec
 RG: 302.3
 DE: 20.800 usec
 TE: 8.50 usec
 TT: 798.1 K
 D1: 2.00000000 sec
 D11: 0.03000000 sec
 T10: 1
 SF01: 100.628298 MHz
 NUC1: 13C
 E1: 10.00 usec
 P1M1: 81.3620027 W
 SF02: 400.1316005 MHz
 NUC2: 1H
 CPDPRG2: waltz16
 PCPD2: 40.00 usec
 P1M2: 19.00000000 W
 P1M12: 0.20810998 W
 P1M13: 0.10453000 W

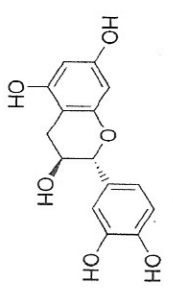
F2 - Processing parameters

SI: 26.144
 SF: 100.619160 MHz
 WDW: EM
 SSB: 0
 LB: 1.00 Hz
 GB: 0
 PC: 1.40





INDOFINE Chemical Company, Inc.
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



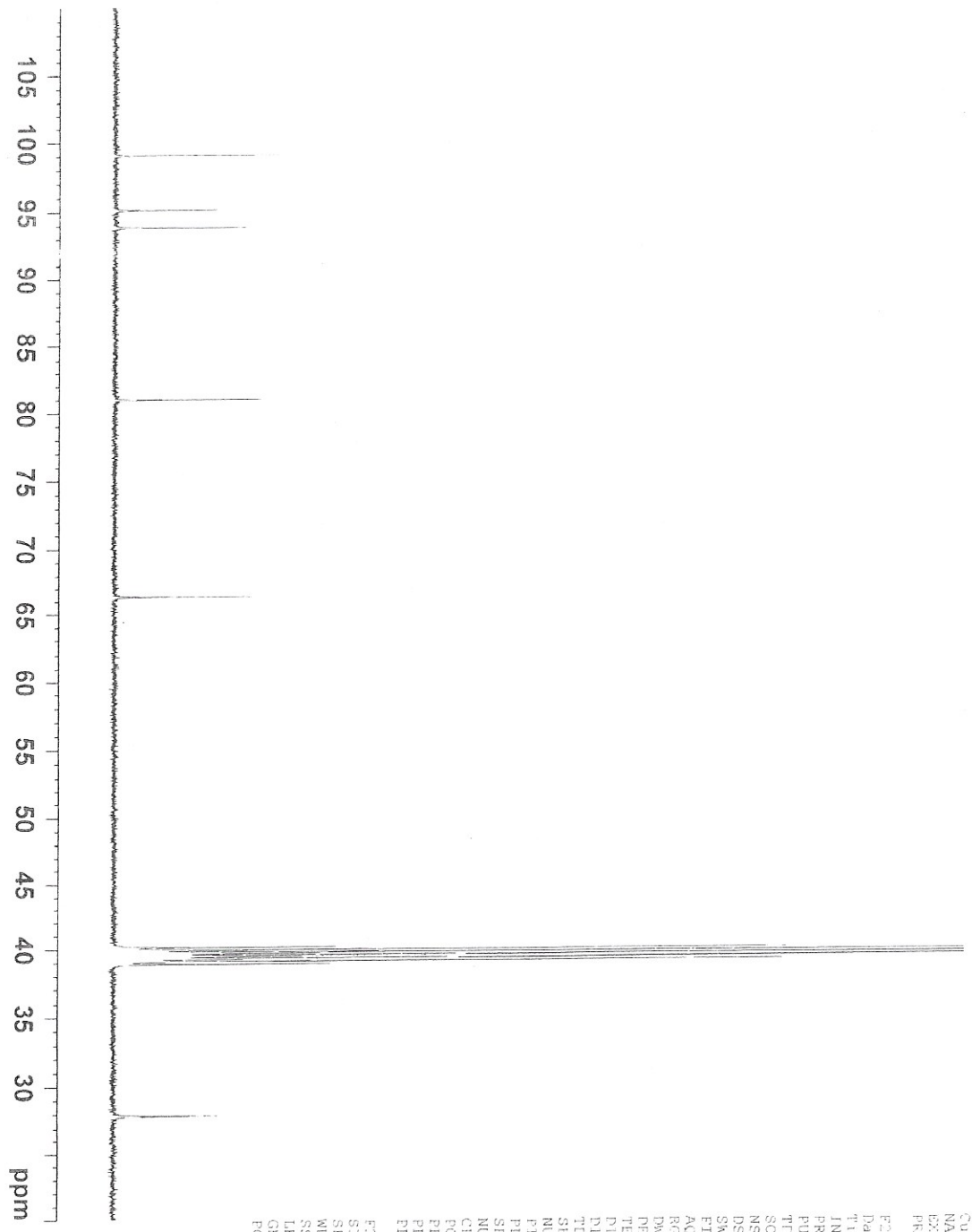
Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

99.04
 95.09
 93.83

80.98

66.30

27.85



Current Data Parameters
 NAME: Pat20-2019-1003230-13C NMR INR80
 EXPR0: 1
 PROCNO: 1

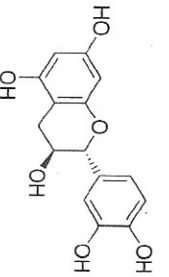
F2 - Acquisition Parameters
 Date_: 20190223
 Time: 2:40 P

INSTR01 spect
 PROBD 2116098 0600 E
 PULPROG zgpg30
 TD 45536
 SOLVENT H2O
 NS 1024
 DS 4
 SWH 34038.461 Hz
 FIDRES 0.733596 Hz
 AQ 1.2631488 sec
 RG 204.3
 DW 20.306 usec
 DE 6.50 usec
 TE 300.1 K
 D1 2.00000000 sec
 D11 0.02000000 sec
 TD0 1
 SEV0 100.622976 MHz
 NU01 13C
 F1 10.00 usec
 PLM1 S1.72000927 W
 SEF02 400.131005 MHz
 NU02 1H
 CPDPRG12 waltz16
 FCFD1 90.00 usec
 FLW1 19.00000000 W
 PLW2 0.20840999 W
 ELM12 0.10483000 W
 ELM13

F2 - Processing parameters
 SI 26144
 SF 300.6128160 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

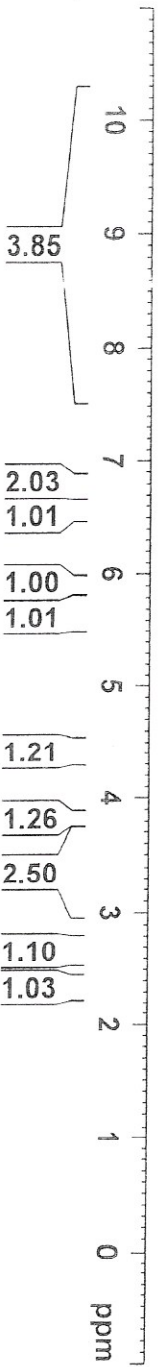


INDOFINE Chemical Company, Inc.
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

- 9.173
- 8.931
- 6.726
- 6.721
- 6.698
- 6.678
- 6.608
- 6.604
- 6.588
- 6.583
- 5.893
- 5.887
- 5.693
- 5.688
- 4.491
- 4.472
- 3.844
- 3.825
- 3.811
- 3.792
- 3.483
- 2.684
- 2.671
- 2.644
- 2.631
- 2.383
- 2.363
- 2.343
- 2.323



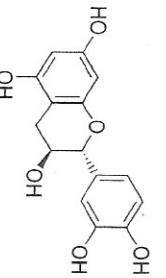
Current Data Parameters
 NAME: Mar30-2019-19032303-1H NMR TMSO
 EX: 10
 PROCNO: 1

F2 - Acquisition Parameters
 Date_ Time: 20190331 7:41 H
 INSTRUM: spect
 PROBD: 2116098.0697 I
 PULPROG: zg30
 TD: 65536
 SOLVENT: TMSO
 NS: 16
 DS: 2
 SWH: 8012.820 Hz
 FIDRES: 0.224532 Hz
 AQ: 4.0894465 sec
 RG: 111.56
 DW: 62.406 usec
 DE: 4.56 usec
 TE: 299.1 K
 D1: 1.00000000 sec
 TDP0: 1
 SFO1: 400.1371708 MHz
 NUC1: 1H
 P1: 9.43 usec
 PL1: 19.00000000 W

F2 - Processing parameters
 SI: 65536
 SF: 400.1300024 MHz
 WDW: EM
 SSB: 0
 LB: 0.30 Hz
 GB: 0
 PC: 1.00



INDOFINE Chemical Company, Inc.
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

6.726
 6.721
 6.698
 6.678
 6.608
 6.604
 6.588
 6.583

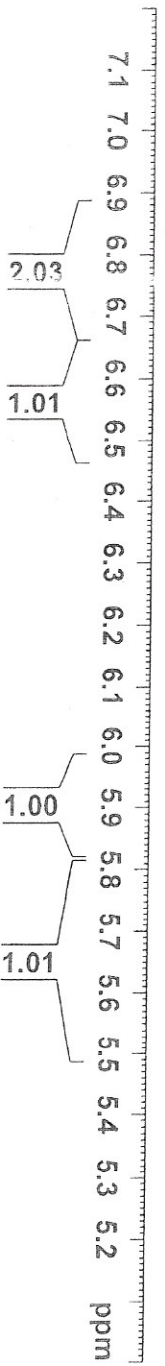
5.893
 5.887

5.693
 5.688



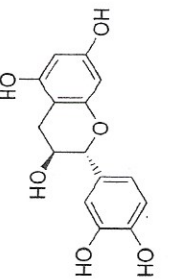
Current Data Parameters
 NAME: Mar30-2019-10332503-11.NMR.DMSO
 EXPNO: 1
 PROCNO: 1

F2 - Acquisition Parameters
 Date_: 20190331
 Time: 7:41:0
 INSTRUM: spect
 PROBL: 2116048 06971
 PULPROG: zgpg30
 TE: 655.36
 SOLVENT: DMSO
 NS: 16
 DS: 16
 SSB: 8012.870 Hz
 FIDRES: 0.234527 Hz
 AQ: 4.0894469 sec
 RG: 114.50
 DR: 62.400 usec
 DE: 6.50 usec
 TE: 298.1 K
 D1: 1.00000000 sec
 T20: 1
 SFO1: 400.1324708 MHz
 NUCL1: 1H
 P1: 9.48 usec
 PL1: 19.00000000 W
 F2 - Processing parameters
 SI: 655.36
 SF: 400.1300071 MHz
 WDW: EM
 SSB: 0
 LB: 0.30 Hz
 GB: 0
 PC: 1.00





INDOFINE Chemical Company, Inc
 121 STRYKER LANE
 BLDG. 30, SUITE 1
 HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
 Product Name: (+)-Catechin
 Lot No.: 1903230

4.491
 4.472

3.844
 3.825
 3.811
 3.792

3.483

2.684
 2.671
 2.644
 2.631

2.383
 2.363
 2.343
 2.323



Current Data Parameters
 NAME Mar 90-2010-10032303-1F NMR DMSO
 EXPNO 1
 PROCNO 1

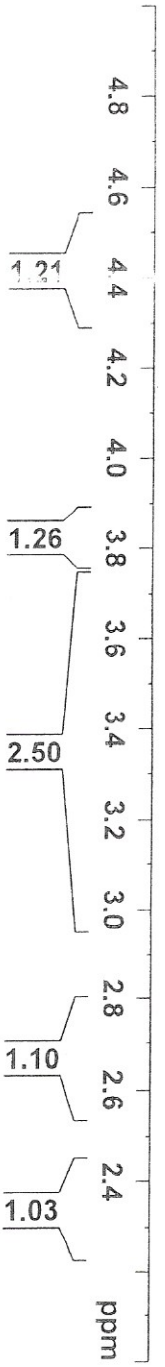
F2 - Acquisition Parameters
 Date 20100331
 Time 7.41 h

INSTRUM spect
 PROBD 2116098 0657 /
 PULPROG zg30
 TD 65536
 SOLVENT DMSO
 NS 16

DS /
 SMH 801.820 Hz
 FIDRES 0.214532 Hz
 AQ 4.0874465 sec
 RG 14.56
 DW 67.400 usec
 DE 5.50 usec
 TE 300.2 K
 D1 1.00000000 sec
 TRO 1

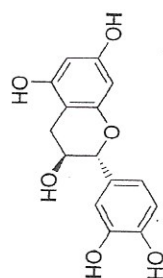
RF01 408.1274708 MHz
 NU01 1H
 PI 9.43 usec
 PLM1 15.00000000 W

F2 - Processing parameters
 SI 65536
 SF 100.1300024 MHz
 MDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



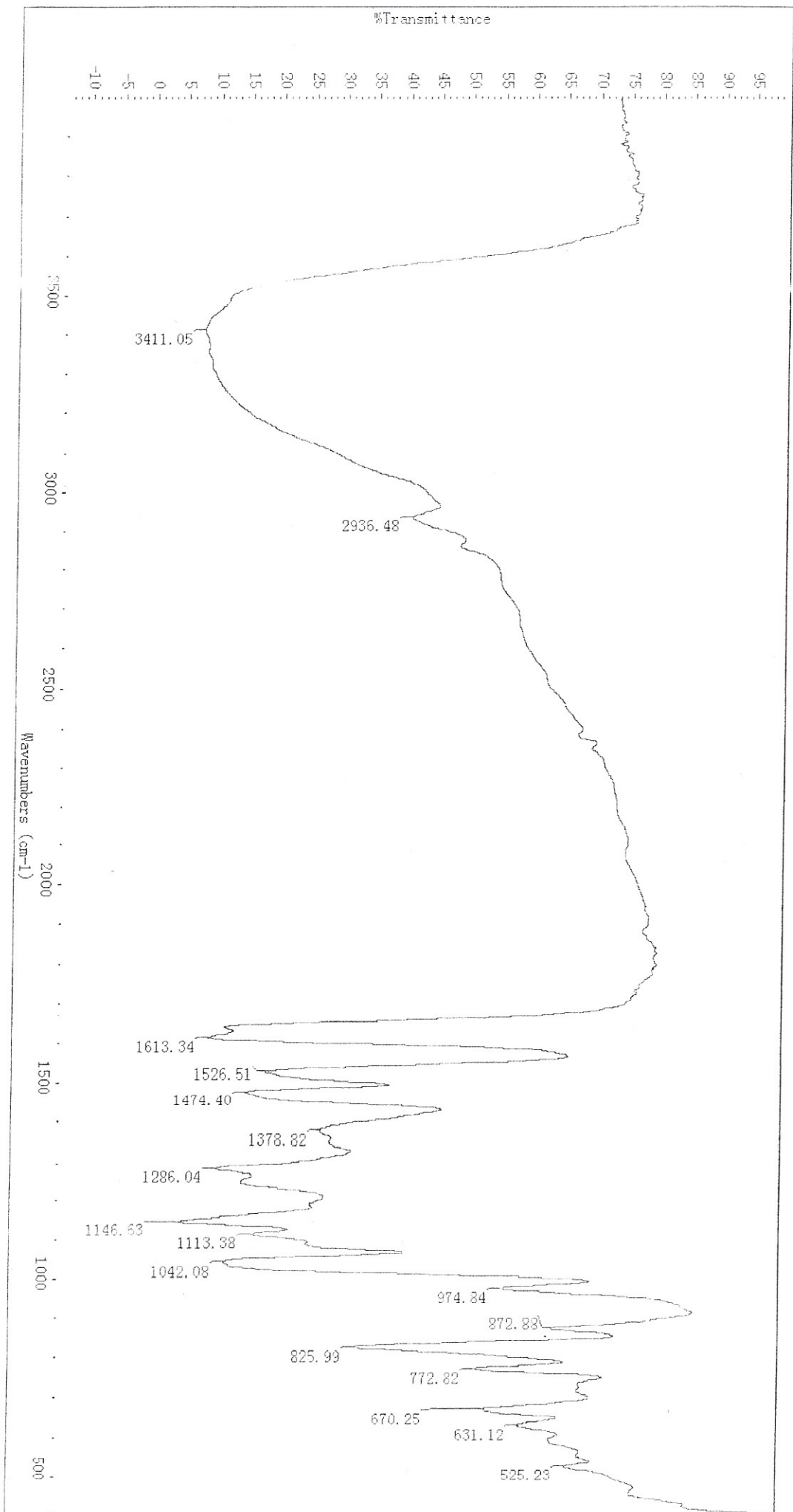


INDOFINE Chemical Company, Inc.
121 STRYKER LANE
BLDG. 30, SUITE 1
HILLSBOROUGH, NJ 08844



Catalog No.: 020976S
Product Name: (+)-Catechin
Lot No.: 1903230

IR SPECTRUM

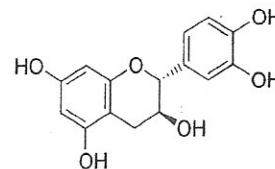




INDOFINE Chemical Company, Inc.

121 Stryker Lane, Bldg. 30
Hillsborough, NJ 08844 USA

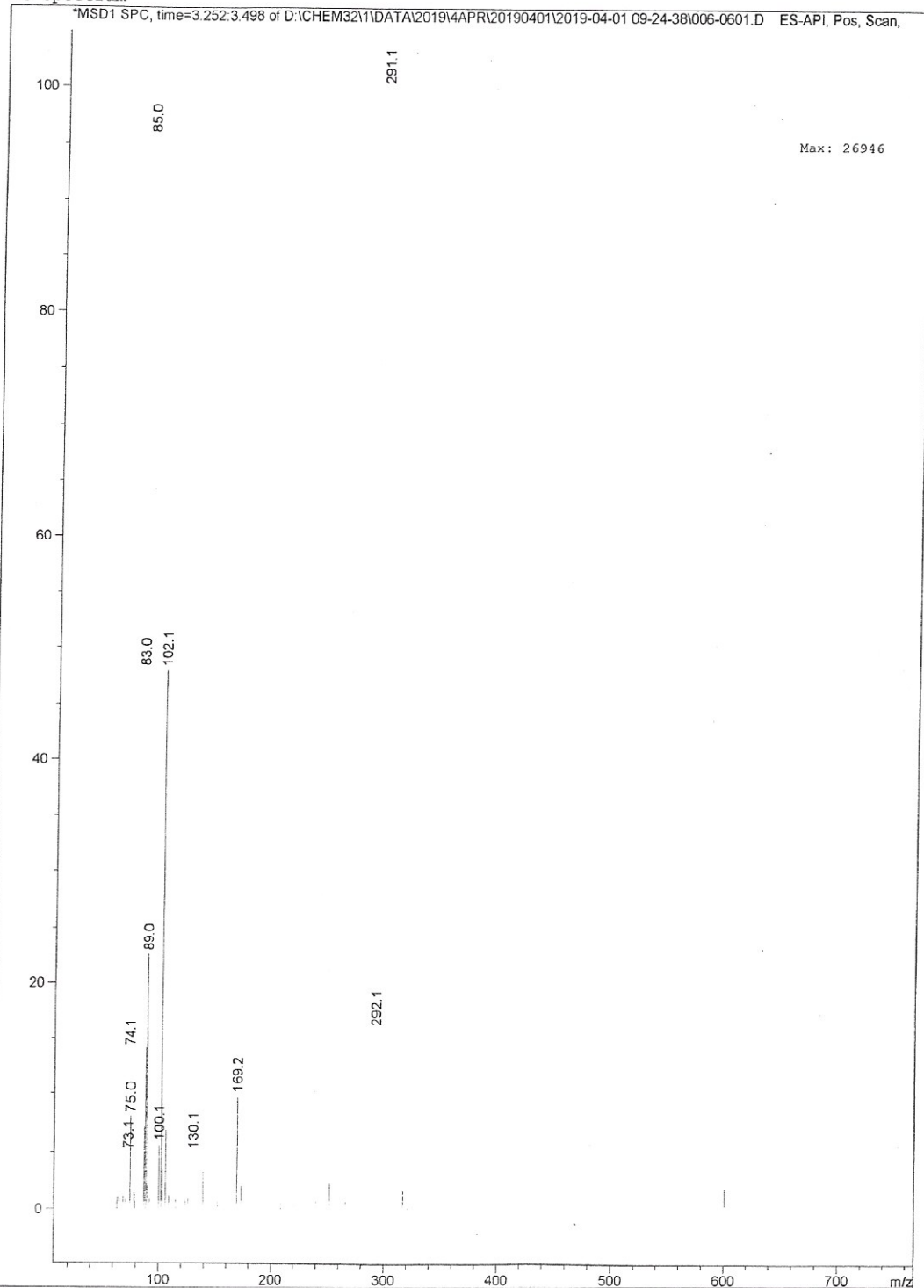
Phone: (908) 359-6778; Fax: (908) 359-1179



Catalog No.: 020976S
Product Name: (+)-Catechin
Lot No.: 1903230

MS SPECTRUM

MS Spectrum



Instrument 1 4/1/2019 2:19:42 PM LL

Page 1 of 1

Prepared by:

Ramesh Mandadi

Ramesh Mandadi
Director of Operations

Reviewed and Approved by:

Sujata Moton

Sujata Moton
VP