



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: H-005

Product Name: **HARMINE**

CAS Number: [442-51-3]

Lot No.: 1703783

Molecular Formula: C₁₃H₁₂N₂O

Molecular Weight: 212.25

Appearance: Off-white crystalline powder

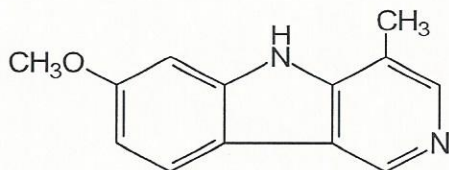
Melting Point: 265-268°C

Moisture (KF): 0.32%

TLC: Chloroform:Methanol (9:1)

NMR Spectrum: Enclosed (Conforms to the structure)

Purity (HPLC): 99.50%





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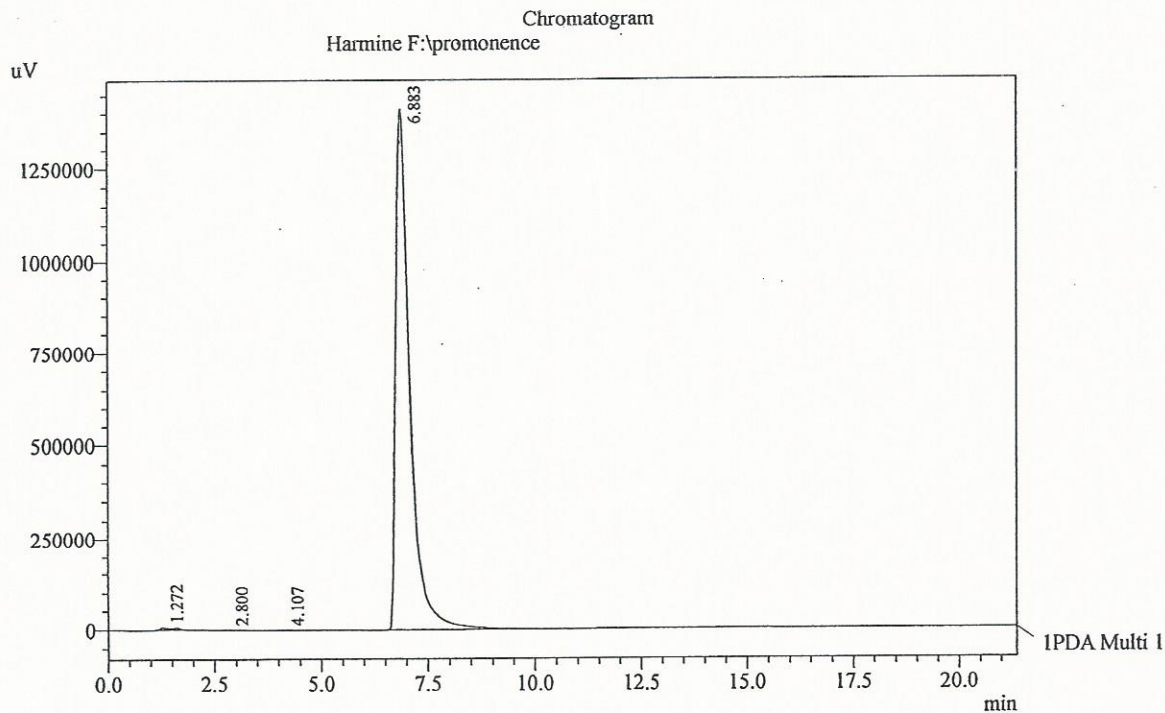
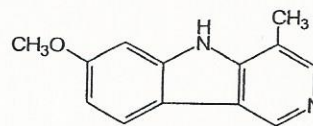
e-mail: chemical@indofinechemical.com

HPLC ANALYSIS

Acquired by : Admin
Sample Name : Harmine
Sample ID : 1.0 kg lot
Injection Volume : 20 uL
Data Filename : 200317G.lcd
Method Filename : Isocratic Method.lcm
Report Filename : Default.lcr

Catalog No.: H-005
Product Name: Harmine
Lot No.: 1703783

Column : Inertsil ODS, (250mm x4.6mm 5.0μ)
Flow : 1.500 mL/min.
Mobile Phase : Phosphate buffer: Acetonitrile (550:450)



1 PDA Multi 1 / 210nm 4nm

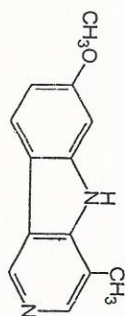
PeakTable

PDA Ch1 210nm 4nm

Peak#	Name	Ret. Time	Height	Area %	Relative Retention Time
1	RT:1.272	1.272	7390	0.40	0.18
2	RT:2.800	2.800	1244	0.04	0.41
3	RT:4.107	4.107	1166	0.06	0.60
4	Harmine	6.883	1411878	99.50	1.00
Total			1421678	100.00	



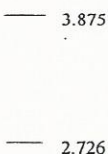
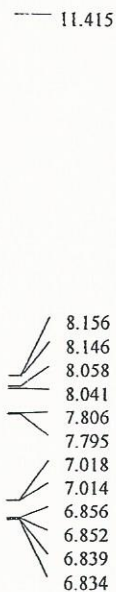
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HILLSBOROUGH, NJ 08844



Catalog No.: H-005
Product Name: Harmine
Lot No.: 1703783

HAR-1kg lot
014531/17

_proton-1-2.jdf

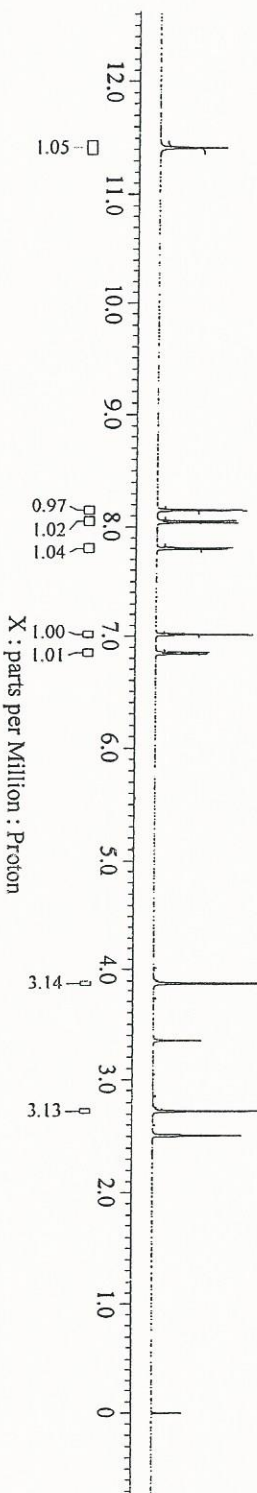


----- PROCESSING PARAMETERS -----
sexp (0.3 [Hz], 0.0 [s])
trapazoid (0 [%], 0 [%], 80 [%], 100 [%])
zerofill (4)
fft (1, TRUE, TRUE)
machinephase
ppm
phase (0, 0.19272, 45.96017 [%])
auto_reference (5 [%], TRUE)

Derived from: HAR-1kg lot

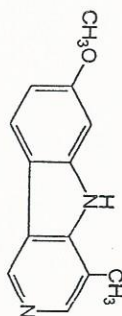
Filename = HAR-1kg lot
Instrument = NMR-500MHz (JEOL)
Instrument id = NMR-02
Author = gyl243
Reviewed by = Nandini
Solvent = DMSO-D6
Spectrometer = JNM-ECZ500R/S1
Experiment = proton.jxp

Acquisition Parameter
X Domain = 1H
X_Offset = 7.0 [ppm]
X_Sweep = 11.28158945 [kHz]
Scans = 16
Relaxation_Delay = 2 [s]





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Catalog No.: H-005
Product Name: Harmine
Lot No.: 1703783

HAR-1kg lot
014531/17

_proton-1-2.jdf

8.156
8.146
8.058
8.041
7.806
7.795

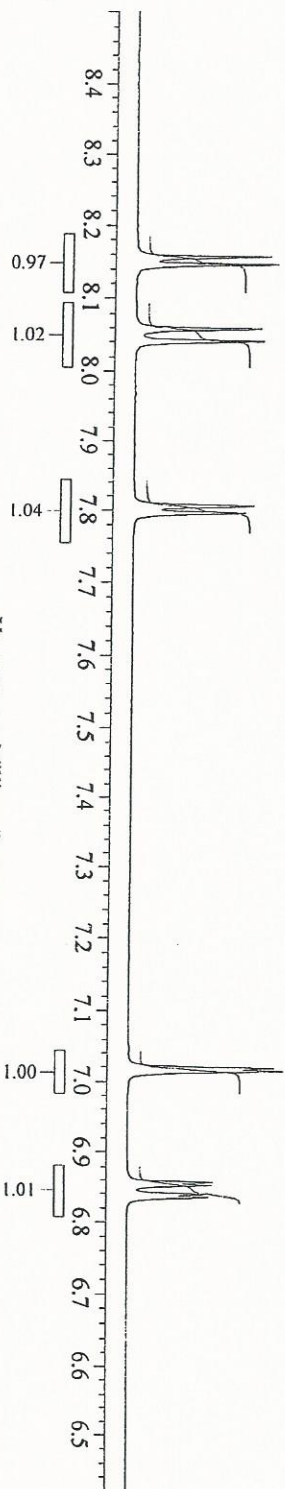
7.018
7.014

6.856
6.852
6.839
6.834

---- PROCESSING PARAMETERS ----
sepp (0.3[Hz], 0.0[s])
taperoid(0[%], 0[%], 80[%], 100[%])
zerofill(4)
ftc(1, TRUE, TRUE)
machinphase
ppm
phase(0, 0.19272, 45.96017[%])
auto_reference(5[%], TRUE)
Derived from: HAR-1kg lot

Filename = HAR-1kg lot
Instrument = NMR-500MHz (JEOL)
Instrument id = NMR-02
Author = gxy1243
Reviewed by = Nandini
Solvent = DMSO-D6
Spectrometer = JNM-ECZ500K/SI
Experiment = proton.jxp

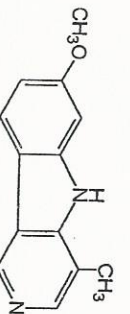
Acquisition Parameter
X_Domain = 1H
X_Offset = 7.0[ppm]
X_Sweep = 11.28158645[kHz]
Scans = 16
Relaxation_Delay = 2[s]



X : parts per Million : Proton



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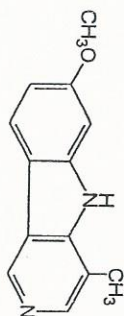
Catalog No.: H-005
Product Name: Harmine
Lot No.: 1703783

J-Coupling Analysis Report

Position	Integral	Pattern	J
11.41 [ppm]	1	s	
8.15 [ppm]	1	d	J1 = 5.2 [Hz]
8.05 [ppm]	1	d	J1 = 8.8 [Hz]
7.80 [ppm]	1	d	J1 = 5.3 [Hz]
7.02 [ppm]	1	d	J1 = 2.1 [Hz]
6.85 [ppm]	1	dd	J1 = 8.6 [Hz], J2 = 2.2 [Hz]
3.88 [ppm]	3	s	
2.73 [ppm]	3	s	

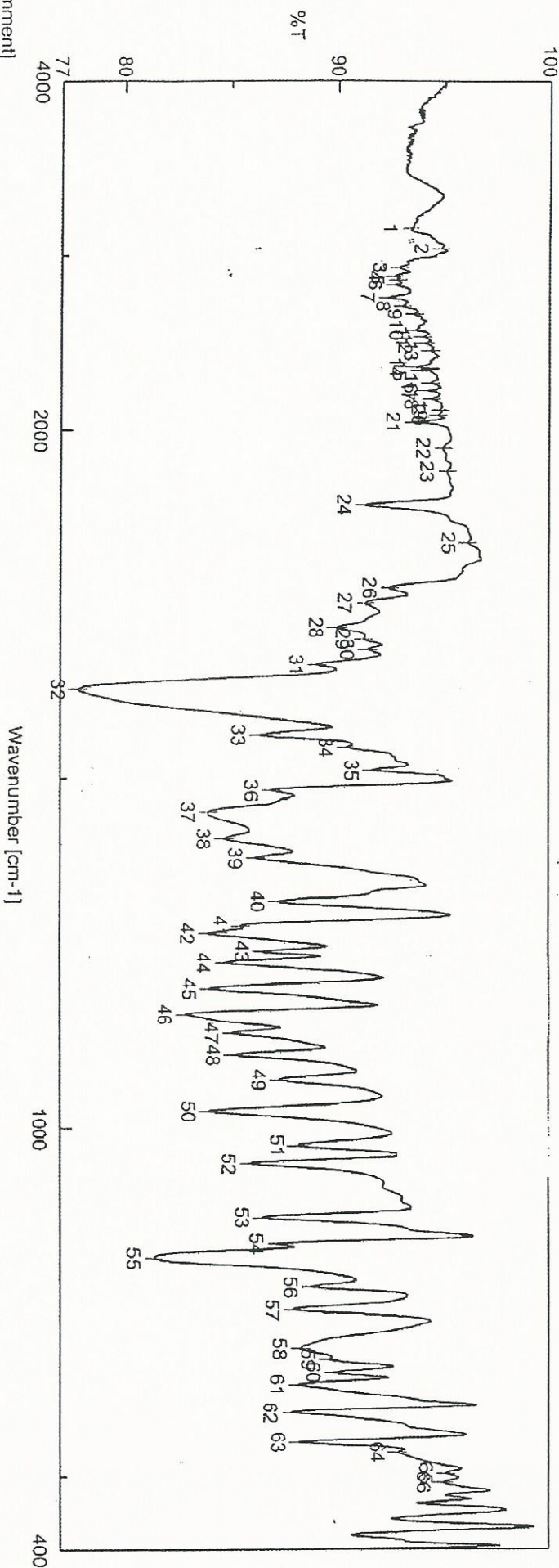


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Catalog No.: H-005
Product Name: Harmine
Lot No.: 1703783

HAR-1.0Kg



[Comment]
Sample Name HAR-1.0Kg
Comment KBr Pellet
User SRIKANTH
Division QC

[Data Information]

Data array type Linear data array
Horizontal Wavenumber [cm-1]
Vertical %T
Start 349.053 cm-1
End 7800.65 cm-1
Data pitch 0.964233 cm-1
Data points 7729

Peak Picking			
No.	Position	Intensity	
1	3159.8	93.376	
6	2833.9	92.661	
11	2541.7	93.969	
16	2274.6	94.370	
21	2041.3	93.562	
26	1775.2	92.437	
31	1664.3	89.057	
36	1483.0	86.961	
41	1290.1	85.492	
46	1162.9	82.891	
51	973.9	88.203	
56	774.3	88.807	
61	636.4	88.173	
66	491.8	95.027	
2	3039.3	94.841	
7	2762.5	92.314	
12	2503.2	94.096	
17	2227.4	94.238	
22	1972.8	94.972	
27	1753.9	91.282	
32	1629.6	77.828	
37	1453.1	83.963	
42	1279.5	83.938	
47	1134.9	85.093	
52	947.8	85.918	
57	742.5	87.957	
62	595.9	87.852	
3	2931.3	92.869	
8	2713.4	93.038	
13	2459.8	94.365	
18	2177.2	94.367	
23	1940.0	95.167	
28	1719.2	89.960	
33	1563.0	86.335	
38	1415.5	84.703	
43	1253.5	86.511	
48	1104.0	85.162	
53	871.7	86.510	
58	687.5	88.278	
63	550.6	88.225	
4	2884.0	92.632	
9	2669.0	93.602	
14	2364.3	93.668	
19	2114.6	94.814	
24	1892.8	91.257	
29	1701.9	91.192	
34	1544.7	90.430	
39	1387.5	86.204	
44	1237.1	84.708	
49	1068.4	87.314	
54	833.1	87.197	
59	673.0	89.615	
64	534.2	92.839	
5	2862.8	92.760	
10	2581.3	93.662	
15	2344.1	93.838	
20	2083.7	94.720	
25	1839.8	96.199	
30	1686.4	91.401	
35	1511.0	91.623	
40	1325.8	87.255	
45	1199.5	84.035	
50	1024.0	84.009	
55	814.8	81.416	
60	653.8	89.848	
65	504.3	95.131	