



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: P-004

Product Name: **PIPERLONGUMINE**
(Piplartine)

CAS Number: [20069-09-4]

Lot No.: 1809129

Molecular Formula: C₁₇H₁₉NO₅

Molecular Weight: 317.34

Melting Point: 100-120°C

Appearance: Dark cream powder

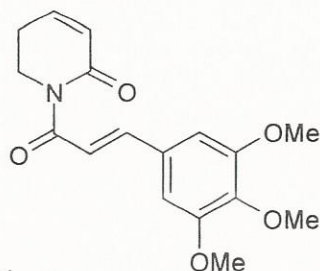
Solubility: Soluble in Chloroform

TLC: Hexane:Ethyl acetate (7:3)

NMR Spectrum: Enclosed (conforms to the structure)

Water content(KF): 0.44%

Purity(HPLC): 77.56%



Prepared by:
Ramesh Mandadi
Ramesh Mandadi
Director of Operations

Reviewed and approved by:
Sujata Moton
S. Moton
VP



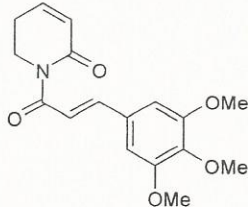
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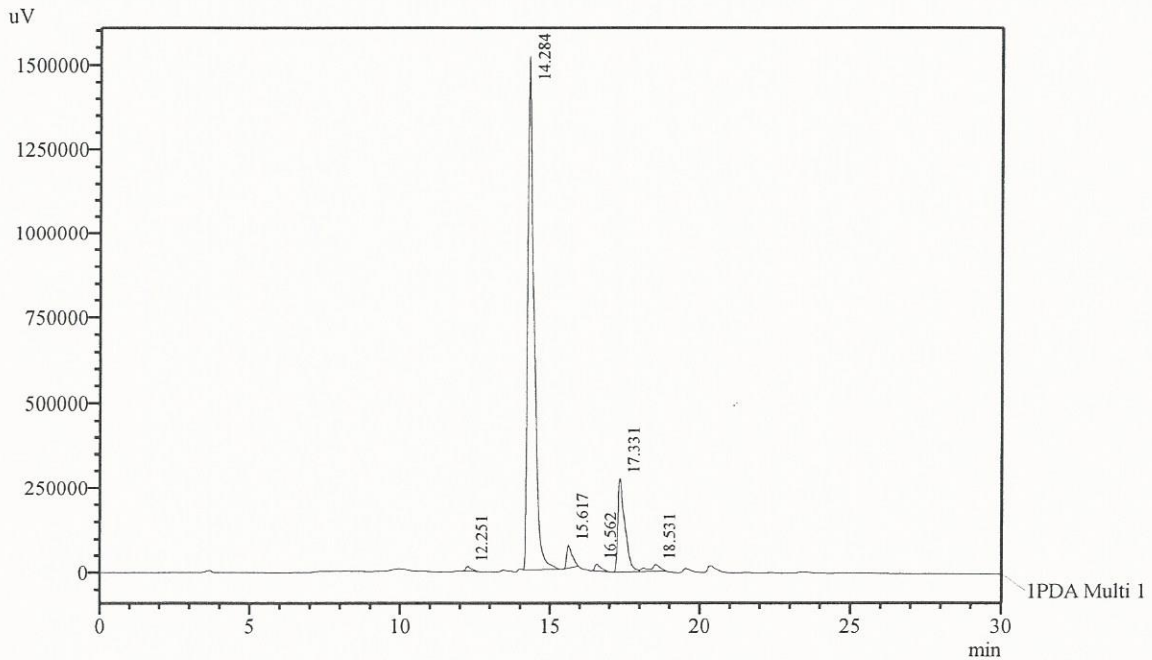
HPLC ANALYSIS

Acquired by : Admin
Sample Name : Piperlongumine
Sample ID : 1.0 Kg LOT
Injection Volume : 20 uL
Data Filename : 180818E.lcd
Method Filename : Linear Gradient-G.M.lcm
Report Filename : Default.lcr

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Chromatogram



1 PDA Multi 1 / 254nm 4nm

PeakTable

PDA Ch1 254nm 4nm

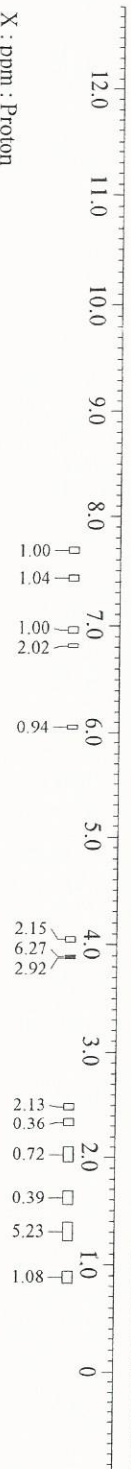
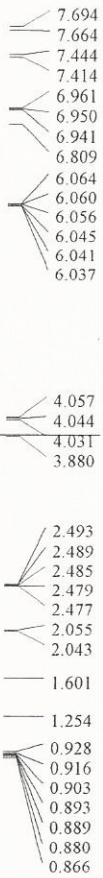
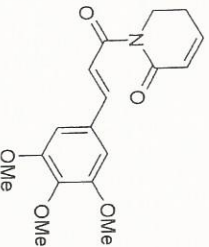
Peak#	Name	Ret. Time	Height	Area %	Relative Retention Time
1	RT:12.251	12.251	15228	0.70	1.00
2	Piperlongumine	14.284	1513188	77.56	1.17
3	Piperine	15.617	69002	3.09	1.27
4	RT:16.562	16.562	22129	1.14	1.35
5	RT:17.331	17.331	277691	15.71	1.41
6	RT:18.531	18.531	21277	1.80	1.51
Total			1918515	100.00	

Prepared by:
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Ramesh Mandadi
Director of Operations

Reviewed and Approved by:
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Sujata Moton
VP



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---- PROCESSING PARAMETERS ----
 sexp (0.2[H₂], 0.0[s])
 trapezoid (0[%], 0[%], 80[%], 100[%])
 zerofill (1)
 fft (1, TRUE, TRUE)
 machinephase
 ppm
 reference (-0.02396 [ppm], 0 [ppm])

Filename = PPRG-1.0.kg
 Instrument = NMR-500MHz (JEOL)
 Instrument id = NMR-02
 Author = Kishore1378
 Reviewed by = Ramesh Yadav
 Solvent = CHLOROFORM-D
 Spectrometer = JNM-ECZ500R/SI
 Experiment = proton.jxp

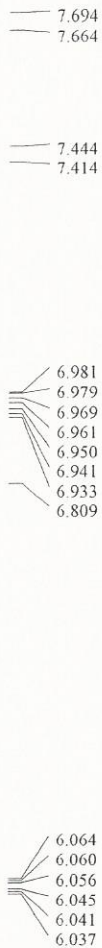
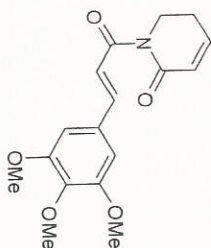
Acquisition Parameter
 X Domain = 1H
 X Offset = 7.0 [ppm]
 X_Sweep = 11.2815845 [kHz]
 Scans = 16
 Relaxation_Delay = 2 [s]

Catalog No.: P-004
 Product Name: Piperlongumine
 Lot No.: 1809129

QAS INTERNATIONAL
 ISO 9001:2015
 REGISTERED COMPANY
 Certificate No. 043456



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```

----- PROCESSING PARAMETERS -----
sexp( 0.2[Hz], 0.0[ s ] )
trapzoid( 0[ % ], 0[ % ], 80[ % ], 100[ % ] )
zerofill( 1 )
fft( 1, TRUE, TRUE )
machinphase
ppm
reference( -0.02396[ppm], 0[ppm] )
  
```

```

Filename           = PPRG-1.0kg
Instrument          = NMR-500MHz (JEO)
Instrument id      = NMR-02
Author            = Kishore1378
Reviewed by       = Ramesh Yadav
Solvent           = CHLOROFORM-D
Spectrometer      = JNM-ECZ500R/s1
Experiment        = proton.jxp
  
```

```

Acquisition Parameter
X_Domain          = 1H
X_Offset         = 7.0[ppm]
X_Sweep          = 11.28158845 [kHz]
Scans            = 16
Relaxation_Delay = 2[ s ]
  
```

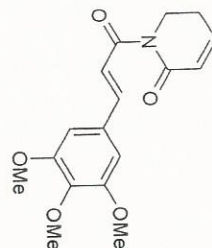


Catalog No.: P-004
 Product Name: Piperlongumine
 Lot No.: 1809129

GAS INTERNATIONAL
 REGISTERED COMPANY
 Certificate No. US4534



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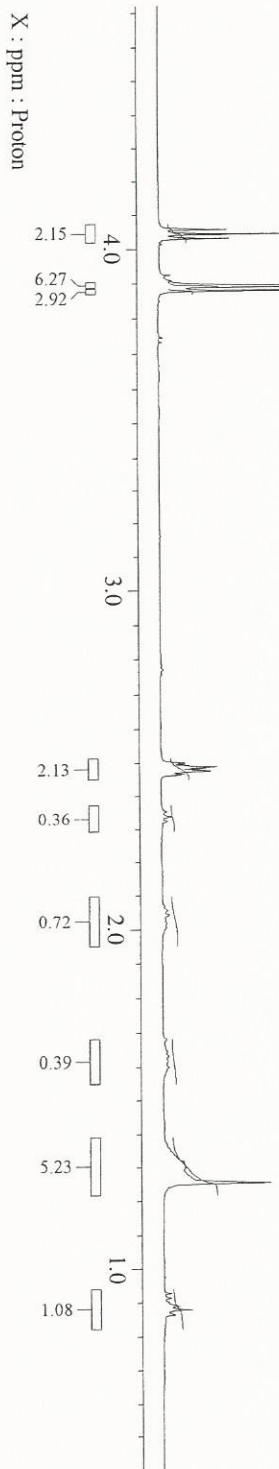
4.057
4.044
4.031
3.880

2.501
2.497
2.493
2.489
2.485
2.479
2.477
2.471
2.467
2.463
2.340
2.069
2.055
2.043
2.029
2.018
2.006
1.631
1.601
1.316
1.306
1.301
1.294
1.273
1.254
0.928
0.916
0.903
0.893
0.889
0.880
0.866

----- PROCESSING PARAMETERS -----
 secp(0.2[Hz], 0.0[s]) 80[°], 100[°])
 trapzoid(0[°], 0[°], 80[°], 100[°])
 zerofill(1)
 fft(1, TRUE, TRUE)
 machinephase
 ppm
 reference(-0.02396[ppm], 0[ppm])

Filename = PPRG-1.0kg
 Instrument = NMR-500kHz (JEOL)
 Instrument id = NMR-02
 Author = Kishore1378
 Reviewed by = Ramash Yadav
 Solvent = CHLOROFORM-D
 Spectrometer = JNM-ECZ500R/51
 Experiment = proton.jsp

Acquisition Parameter
 X_Domain = 1H
 X_Offset = 7.0[ppm]
 X_Sweep = 11.28158845[kHz]
 Scans = 16
 Relaxation_Delay = 2[is]



Catalog No.: P-004
 Product Name: Pipelongumine
 Lot No.: 1809129

QAS INTERNATIONAL
 REGISTERED COMPANY
 CERTIFICATION NO. 100454