



BDG SYNTHESIS

Certificate of Analysis

BDG Synthesis certifies that this reference material meets or exceeds the specifications stated herein.

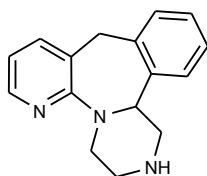
Barry Dent

Barry R. Dent, PhD, Director
8 November 2009

Name: *N*-Desmethyilmirtazapine

CAS Number: 61337-68-6

Structure:



Molecular Weight: C₁₆H₁₇N₃ = 251.33

Lot Number: BDG 4392.4

Appearance: Off-white, crystalline solid

Corrected Purity: 99.9 % (HPLC) - 12.2 % (water) = 87.7 %

Re-test Date: 8 November 2010

Storage and Handling:

Temperature:	ambient laboratory temperature; may be refrigerated.
Humidity:	may be hygroscopic; store desiccated; recommended to determine water content periodically.
Light:	store in an amber vial and protect from bright light.
Caution:	only experienced laboratory personnel should handle the material.

Identity and Purity

Proton NMR Spectrum

Identity: the signals are consistent with the proposed structure and in accord with literature where available.

Residual Solvents: no residual solvents are observed.

Impurities: traces of unidentified impurities are seen in the baseline.

Carbon-13 NMR Spectrum

Identity: the signals are consistent with the proposed structure and in accord with literature where available.

High-resolution Mass Spectrum (FAB+)

Found m/z 252.1497. $C_{16}H_{18}N_3$ $[M+H]^+$ requires m/z 252.1501. The deviation of 1.3 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A sharp, symmetrical peak is observed (99.9 %). Note: in the absence of reference materials for preparing calibration curves, it is assumed that all peaks have the same detector response. Where possible, the conditions of analysis follow a pharmacopeial or literature method, or have been adapted from same.

Elemental Analysis

	Found:	C 67.20, H 7.31, N 14.94 %
$C_{16}H_{17}N_3 \cdot 2.0H_2O$	Requires:	C 66.88, H 7.37, N 14.62 %
$C_{16}H_{17}N_3$	Requires:	C 76.46, H 6.82, N 16.72 %

The elemental analyses fall substantially outside those expected for anhydrous material; the presence of water is reasonably expected from the method of purification and/or the type of material, and the "best-fit" hydrated molecular formula is given.

Karl-Fischer Analysis

	Found:	H_2O 12.2 %
$C_{16}H_{17}N_3 \cdot 2.0H_2O$	Requires:	H_2O 12.5 %

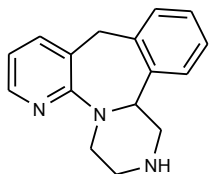
Of necessity, only a small sample could be used and only a single or duplicate analysis performed. We are unable to state what the errors in the reported water content are, but recommend that the result be used, as the best available, when determining corrected purity.

The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials often contain higher levels of residual solvents and/or water, and we urge you to use the corrected purity where needed rather than the raw HPLC purity. This compound is intended for use as an analytical reference material and it is not for human administration. Structures are shown with relative stereochemistry unless otherwise specified.

The re-test date is assigned from experience gained with the material in the laboratory and/or on storage. It is not possible to perform formal storage studies because of the small amount of material available.

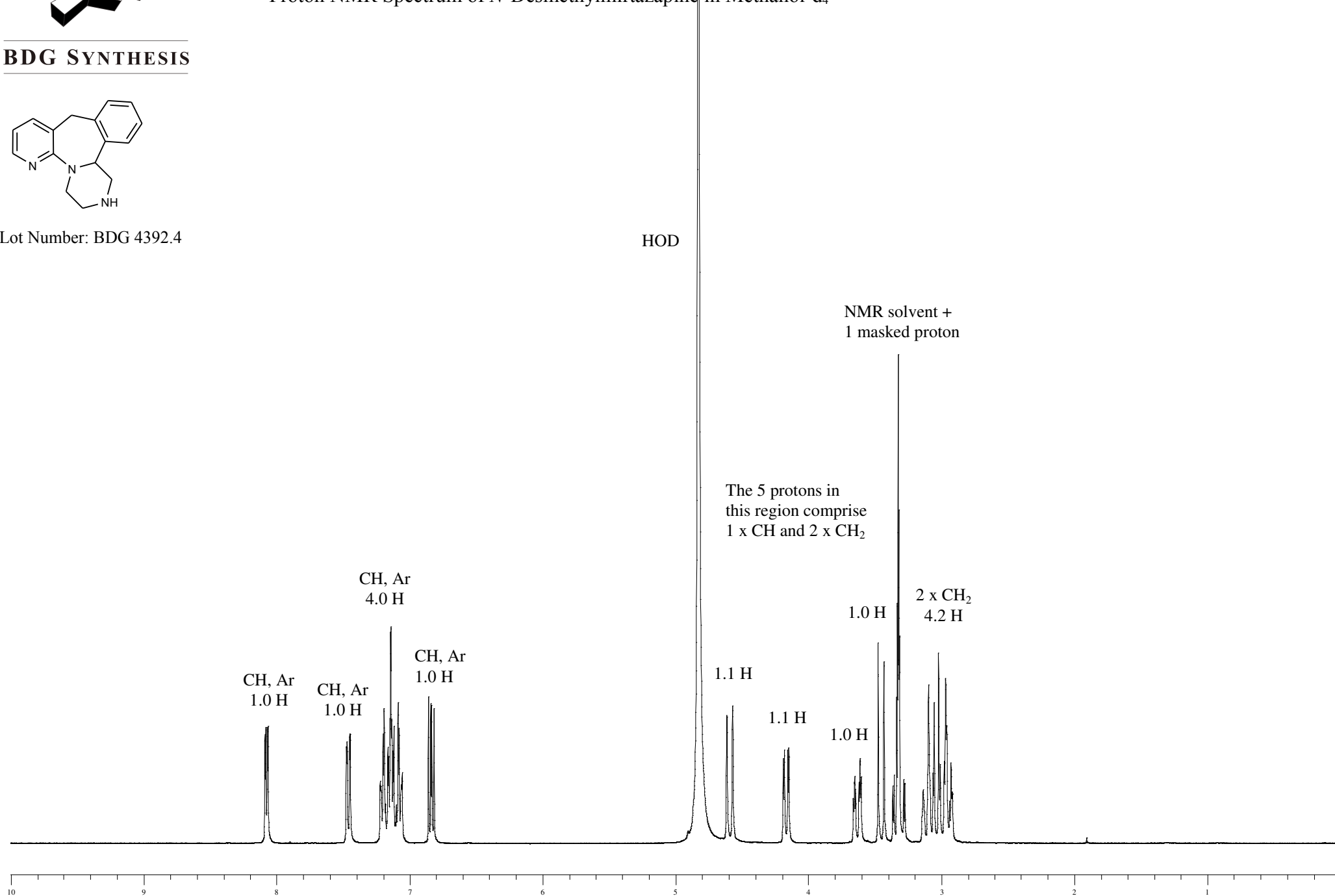


BDG SYNTHESIS



Lot Number: BDG 4392.4

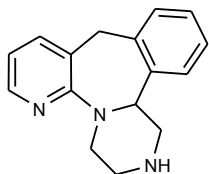
Proton NMR Spectrum of *N*-Desmethyilmirtazapine in Methanol- d_4



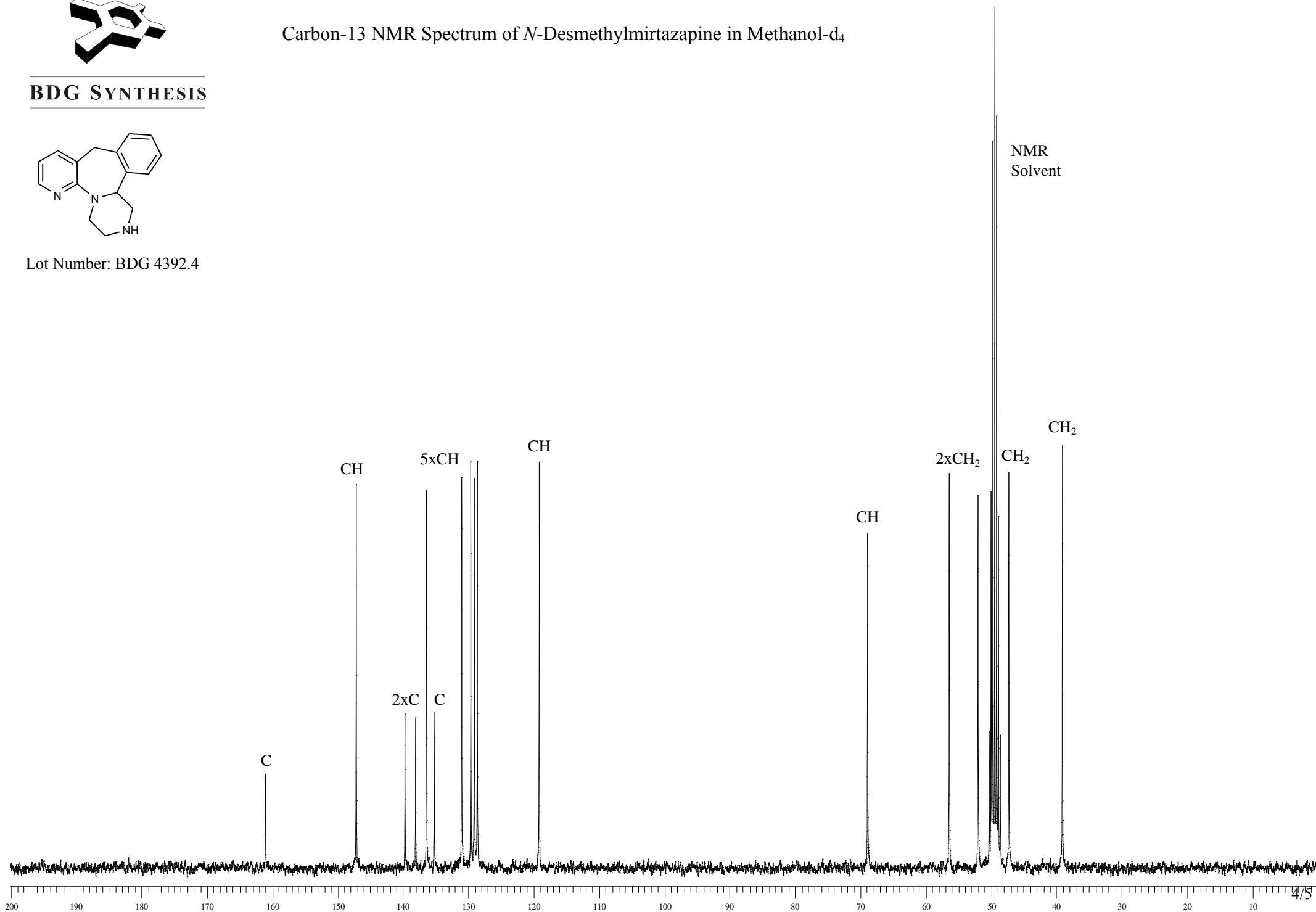


Carbon-13 NMR Spectrum of *N*-Desmethylmirtazapine in Methanol- d_4

BDG SYNTHESIS



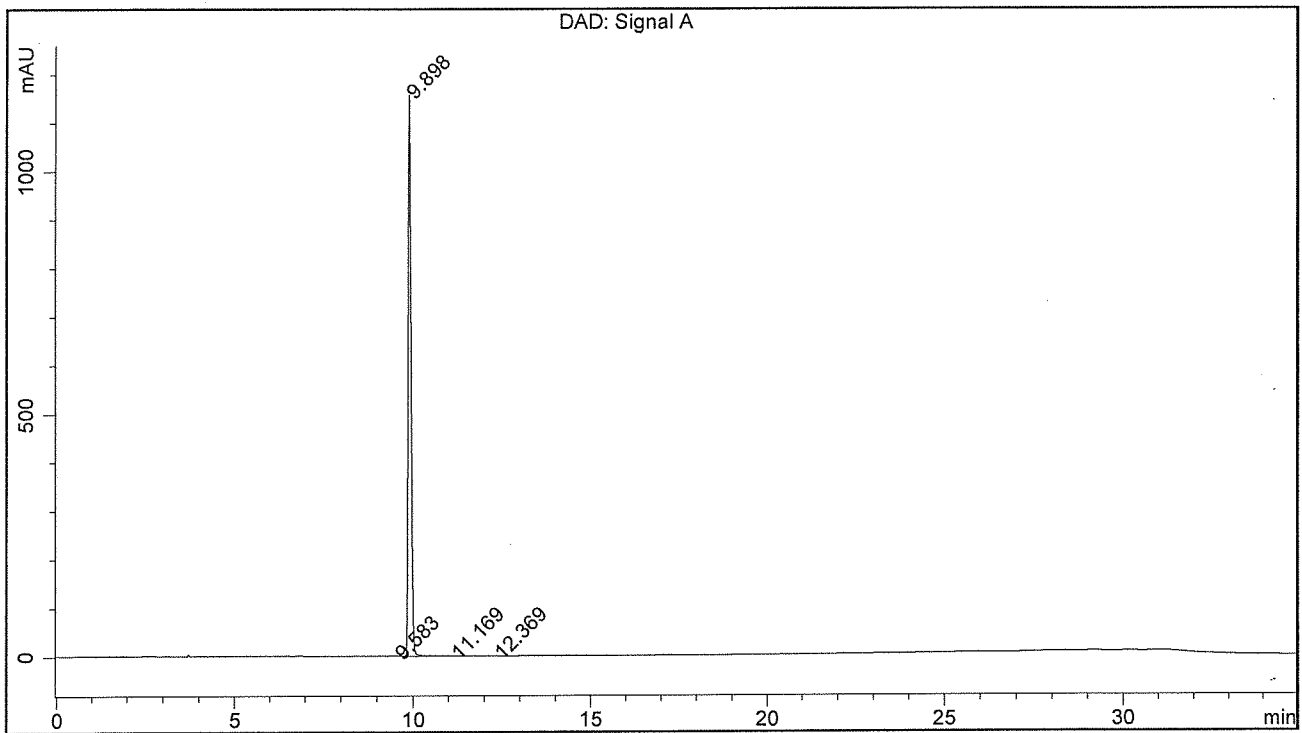
Lot Number: BDG 4392.4



BDG - Analysis of N-DesmethyImirtazapine

Column : Phenomenex Luna C18(2) 5um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase A: Water + 0.1% Trifluoroacetic Acid
 Mobile Phase B: Acetonitrile + 0.1% Trifluoroacetic Acid
 Gradient (A:B) : T0=95:5, T24=10:90, T28=10:90, T32=95:5, T35=95:5
 Flow Rate : 1.0 mL/min
 Sample Solvent : 4:1 Water : Acetonitrile
 Column Temperature : 20C
 Injection Volume : 10 uL
 Detection : UV at 254 nm

Sample Name	BDG 4392.4	Instrument	AnalyticalLC01
Acquisition	08/11/2009, 16:40:51	Method (rev.)	LC10267a (7)
Sequence	BDG_08Nov2009d - Reprocessed	Vial Position	1
Operator	solvation010\cerityadmin	Injection	2 of 2



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	9.58 min	0.2933	1.6171	0.0823 min	0.025 %
2	9.90 min	1157.2878	6437.6221	0.0849 min	99.887 %
3	11.17 min	0.2642	1.1490	0.0707 min	0.018 %
4	12.37 min	0.3438	4.5216	0.1775 min	0.070 %