

## BDG SYNTHESIS

### Certificate of Analysis

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

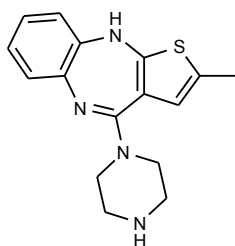
*Barry Dent*

Barry R. Dent, PhD, Director  
19 September 2010

**Name:** *N*-Desmethyloanzapine

**CAS Number:** 161696-76-0

**Structure:**



**Molecular Weight:**  $C_{16}H_{18}N_4S = 298.41$

**Lot Number:** BDG 2639.1

**Appearance:** Orange-pink, crystalline powder

**Corrected Purity:** 99.6 % (HPLC) - 0.7 % (acetonitrile) - 6.2 % (water) = 92.7 %

**Re-test Date:** 19 September 2015

**Storage and Handling:** Temperature: refrigerate for prolonged storage; may be handled and shipped at ambient temperature.

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. The DMSO-d6 spectrum is of limited value for characterising the product because of overlapping signals, but it shows the presence of acetonitrile (see below) - a solvent used during recrystallisation of the sample.

Residual Solvents: a small amount of acetonitrile (0.7 % w/w) is observed.

Impurities: no significant impurities are evident in the spectrum.

### Carbon-13 NMR Spectrum

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

### High-resolution Mass Spectrum (ESI+)

Found  $m/z$  299.1314.  $C_{16}H_{19}N_4S$   $[M+H]^+$  requires  $m/z$  299.1325. The deviation of 3.0 ppm is within normally accepted limits for the establishment of identity by HRMS.

### HPLC

A sharp, symmetrical peak is observed (99.6 %). 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 60.88, H 6.53, N 17.84 %
$C_{16}H_{18}N_4S \cdot 1.0H_2O$	Requires:	C 60.73, H 6.37, N 17.71 %
$C_{16}H_{18}N_4S$	Requires:	C 64.40, H 6.08, N 18.78 %

The elemental analyses fall somewhat 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 <sub>2</sub> O 6.2 %
$C_{16}H_{18}N_4S \cdot 1.0H_2O$	Requires:	H <sub>2</sub> O 5.7 %

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.

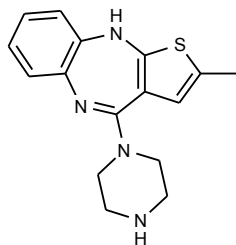
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials 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.

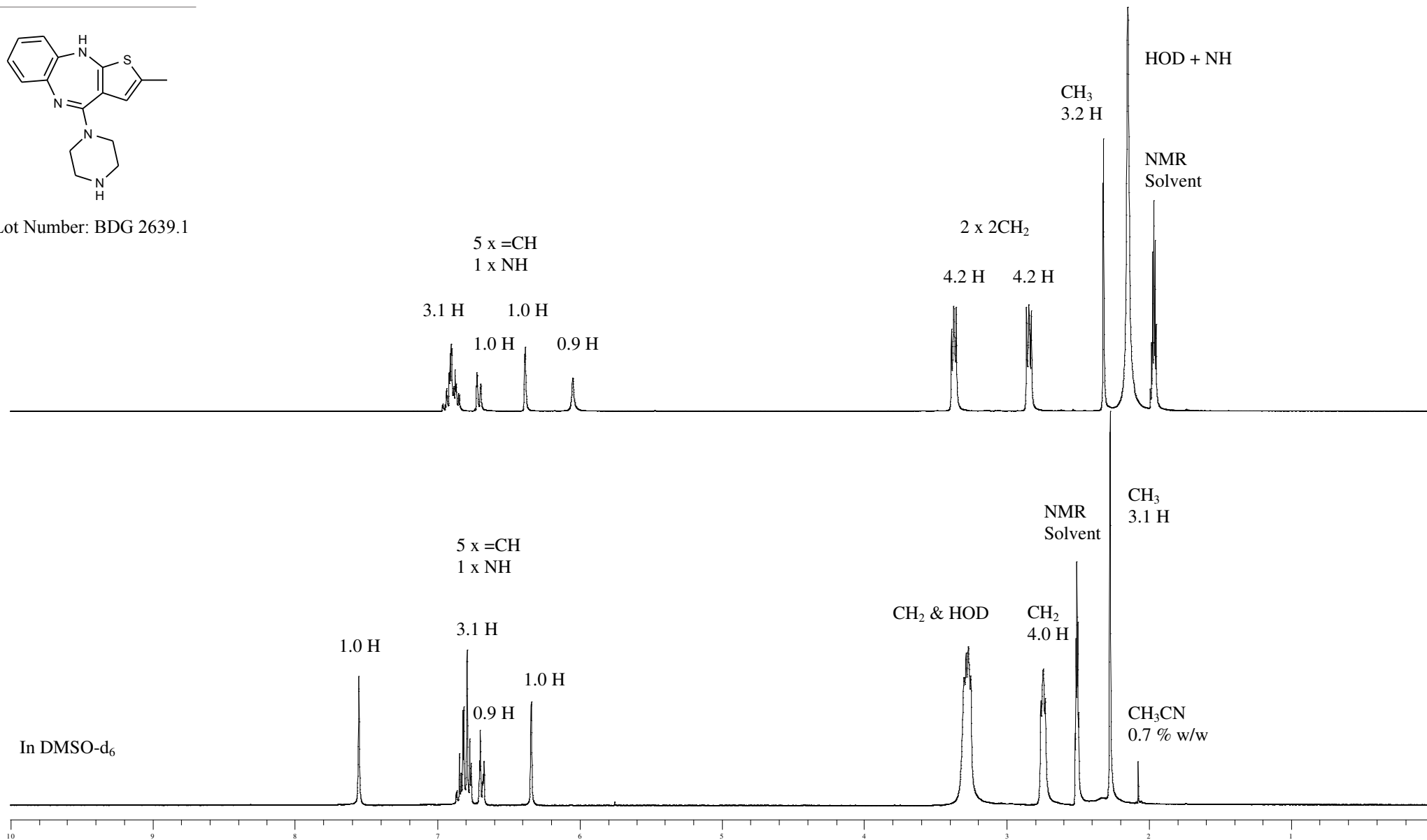


Proton NMR Spectrum of *N*-Desmethylolanzapine in Acetonitrile- $d_3$

**BDG SYNTHESIS**



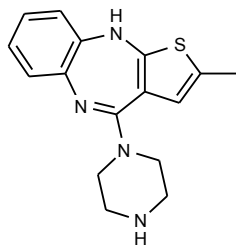
Lot Number: BDG 2639.1



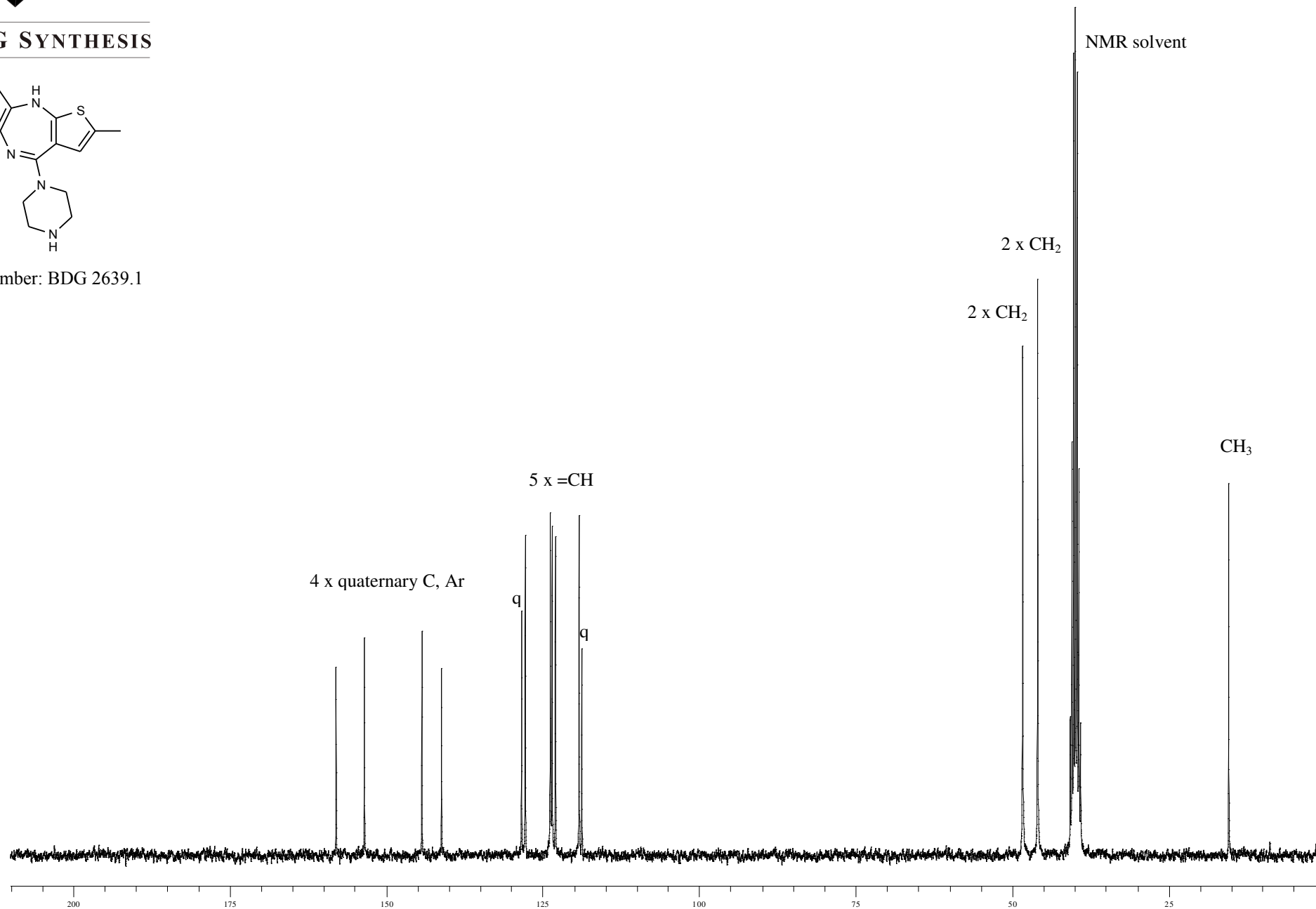


Carbon-13 NMR Spectrum of *N*-Desmethyloanzapine in DMSO-d<sub>6</sub>

**BDG SYNTHESIS**



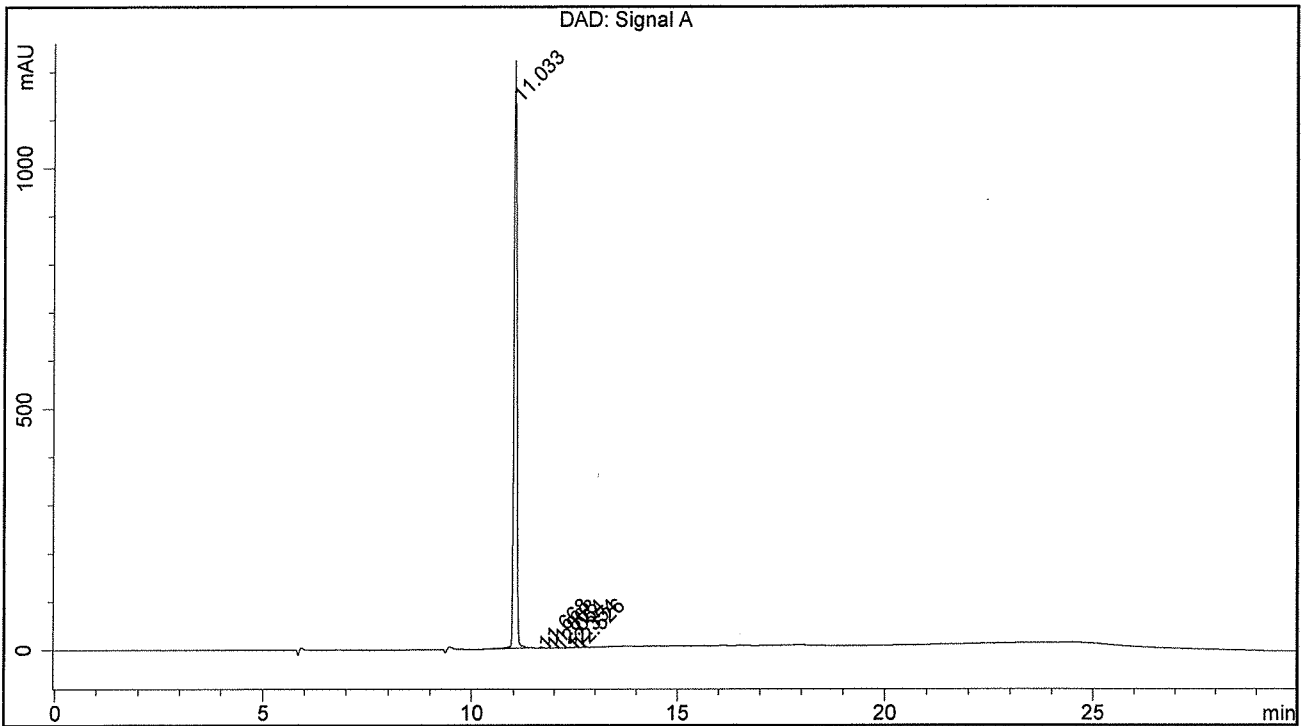
Lot Number: BDG 2639.1



BDG - Analysis of N-Desmethyloanzapine

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 : T0=97.5:2.5, T20=10:90, T25=97.5:2.5, T30=97.5:2.5  
 Flow Rate : 1.0 mL/min  
 Sample Solvent : Acetonitrile  
 Column Temperature : 20C  
 Injection Volume : 10 uL  
 Detection : UV at 254 nm

Sample Name	BDG 2639.1	Instrument	AnalyticalLC01
Acquisition	19/09/2010, 13:34:44	Method (rev.)	LC10134c ( 8)
Sequence	BDG_19Sep2010a - Reprocessed	Vial Position	1
Operator	solvation010\cerityadmin	Injection	1 of 1



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	11.03 min	1221.3591	6340.8418	0.0846 min	99.568 %
2	11.67 min	2.3514	12.8756	0.0839 min	0.202 %
3	11.87 min	0.7299	3.4820	0.0717 min	0.055 %
4	12.05 min	0.7251	3.4526	0.0735 min	0.054 %
5	12.35 min	0.9089	4.3296	0.0736 min	0.068 %
6	12.53 min	0.6751	3.3758	0.0803 min	0.053 %