



BDG SYNTHESIS

Certificate of Analysis

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

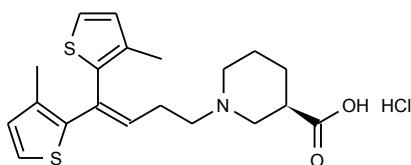
Barry Dent

Barry R. Dent, PhD, Director
7 November 2009

Name: Tiagabine HCl

CAS Number: 145821-59-6

Structure:



Molecular Weight: $C_{20}H_{25}NO_2S_2 \cdot HCl = 412.01$

Lot Number: BDG 2889

Appearance: White, powder

Purity By HPLC: 98.8 %

Re-test Date: 7 November 2010

Storage and Handling:

Temperature:	ambient laboratory temperature; may be refrigerated.
Humidity:	not believed to be hygroscopic; may be handled in normal laboratory atmosphere.
Light:	protect from strong sunlight.
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: 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. Some signals are broadened as a result of heteroatom attachment or restricted rotation affecting nuclear-spin relaxation.

High-resolution Mass Spectrum (ESI+)

Found m/z 376.1406. $C_{20}H_{26}NO_2S_2$ $[M+H]^+$ requires m/z 376.1400. The deviation of 0.7 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A sharp, symmetrical peak is observed (98.8 %). 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 58.40, H 6.49, N 3.41 %
$C_{20}H_{25}NO_2S_2 \cdot HCl$	Requires:	C 58.30, H 6.36, N 3.40 %

The elemental analyses fall within generally accepted limits for establishing the molecular formula given. The results may also be taken to imply the absence of significant quantities of water or inorganic salts (which have not been elsewhere tested for because of sample size limitations).

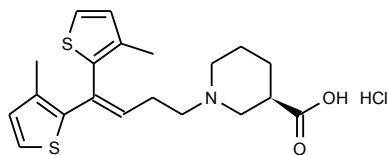
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

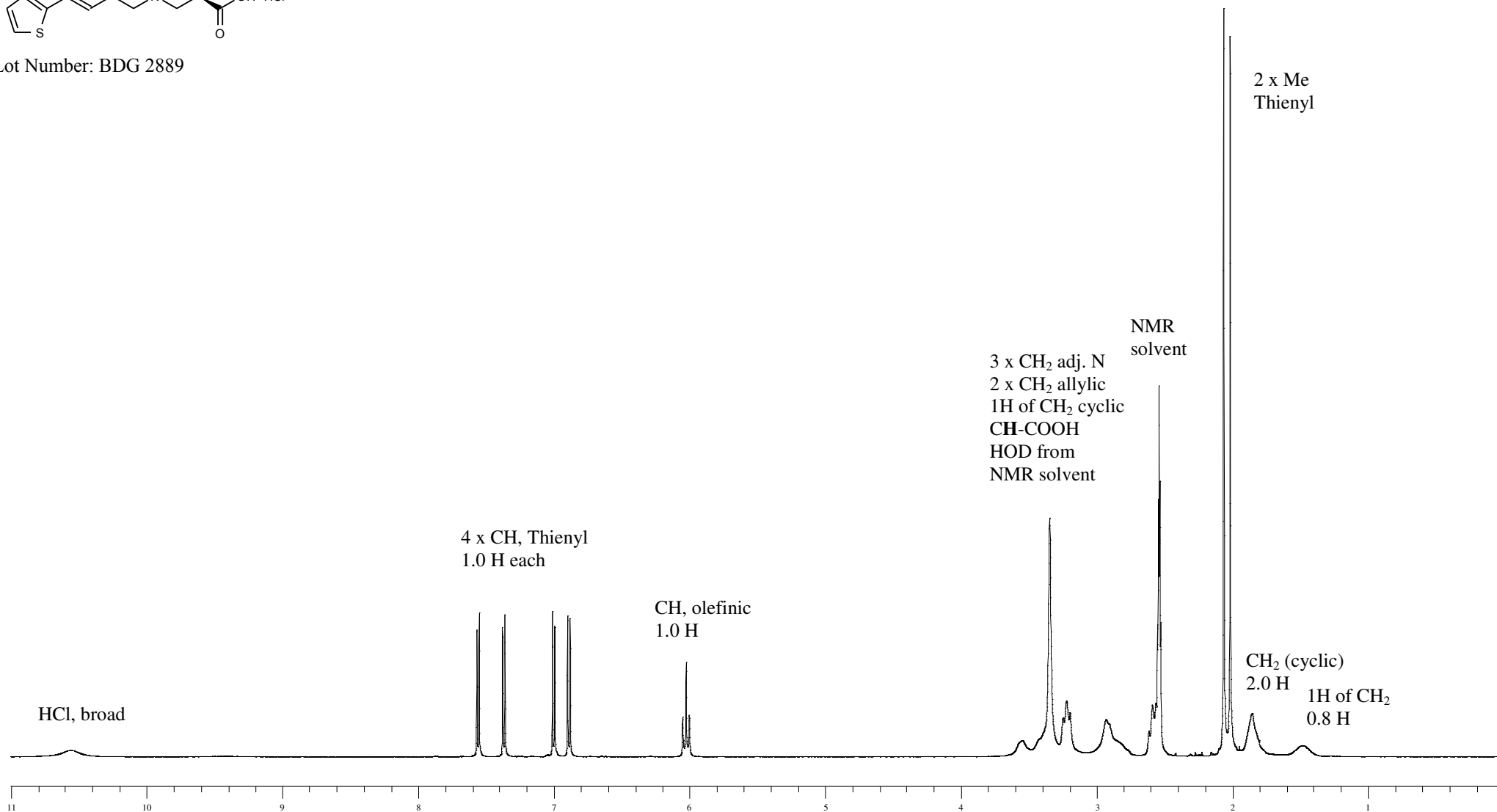


Proton NMR Spectrum of Tiagabine HCl in DMSO-d₆

BDG SYNTHESIS



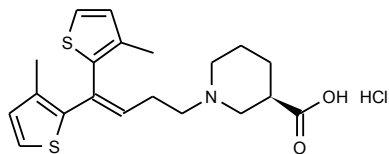
Lot Number: BDG 2889



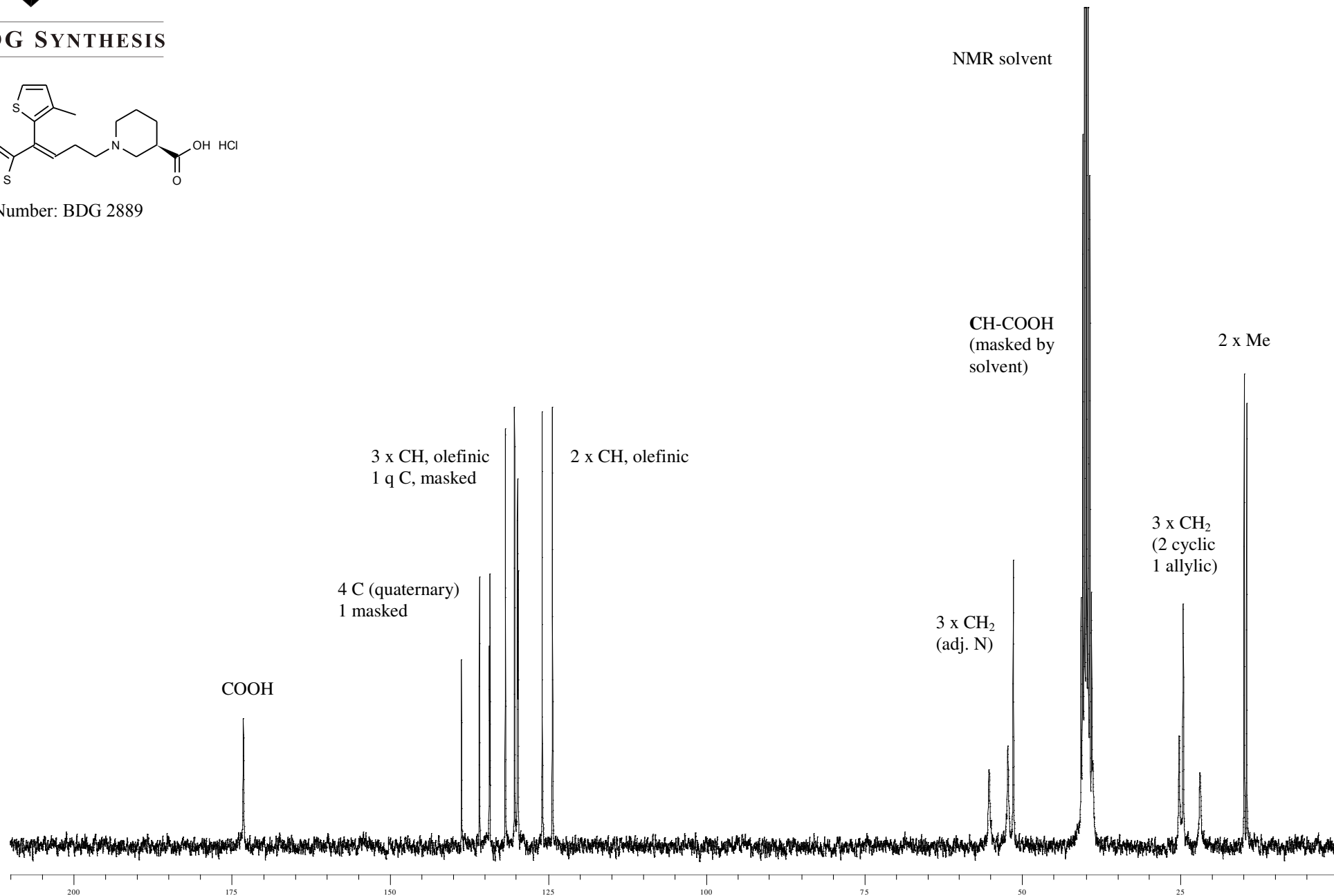


Carbon-13 NMR Spectrum of Tiagabine HCl in DMSO-d₆

BDG SYNTHESIS



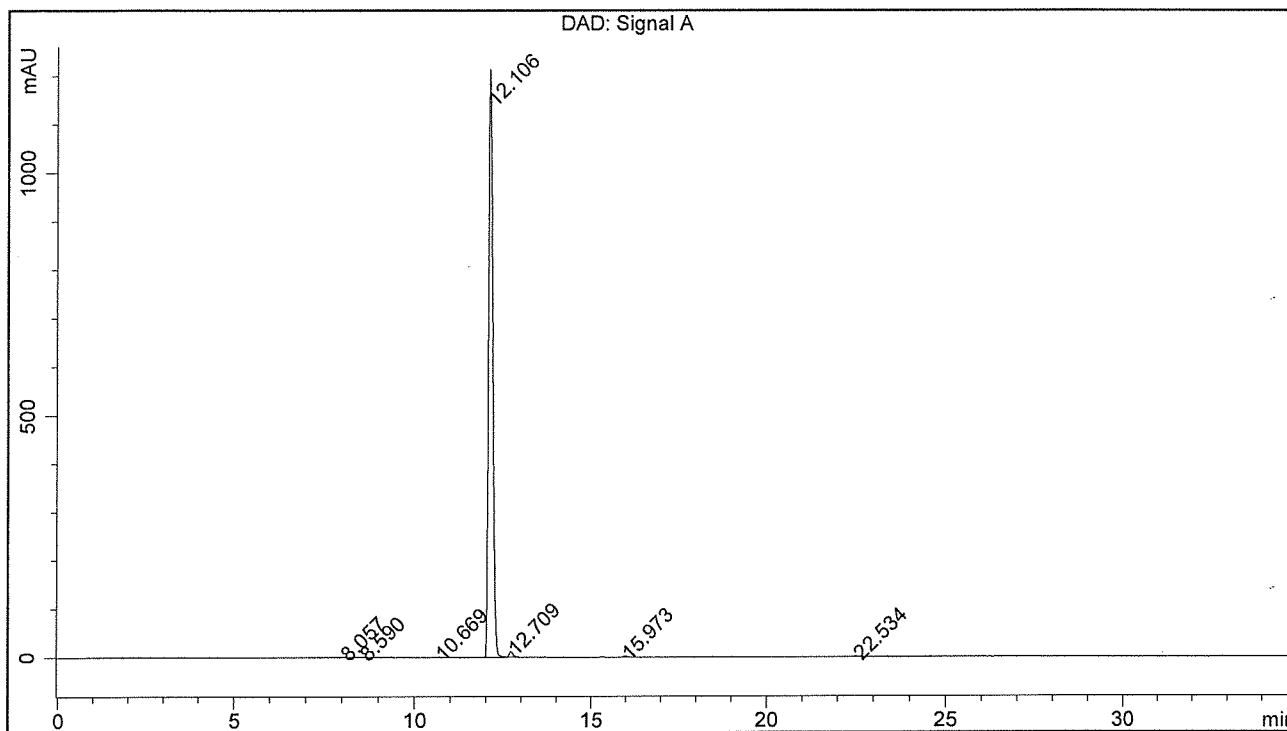
Lot Number: BDG 2889



BDG - Analysis of Tiagabine Hydrochloride

Column : Phenomenex Luna C18(2) 5um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase A : 25 mM Potassium diHydrogen Phosphate + 10 mM Sodium Heptanesulphonate pH=3.0 (H3PO4)
 Mobile Phase B : Acetonitrile
 Gradient (A:B) : T0=70:30; T20=30:70, T25=30:70, T30=70:30, T35=70:30
 Flow Rate : 1.0 mL/min
 Sample Solvent : Mobile Phase
 Column Temperature : 20C
 Injection Volume : 10 uL
 Detection : UV at 270 nm

Sample Name	BDG 2889	Instrument	AnalyticalLC01
Acquisition	07/11/2009, 15:02:18	Method (rev.)	LC10273a (2)
Sequence	BDG_07Nov2009c - Reprocessed	Vial Position	1
Operator	solvation010\cerityadmin	Injection	2 of 2



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	8.06 min	0.4472	3.0314	0.1011 min	0.029 %
2	8.59 min	0.2823	2.9251	0.1429 min	0.028 %
3	10.67 min	0.3675	2.8861	0.1176 min	0.028 %
4	12.11 min	1214.3881	10171.1492	0.1297 min	98.795 %
5	12.71 min	11.6363	89.5165	0.1137 min	0.869 %
6	15.97 min	2.1231	15.6610	0.1121 min	0.152 %
7	22.53 min	1.0599	10.0630	0.1448 min	0.098 %