

## BDG SYNTHESIS

### Certificate of Analysis

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

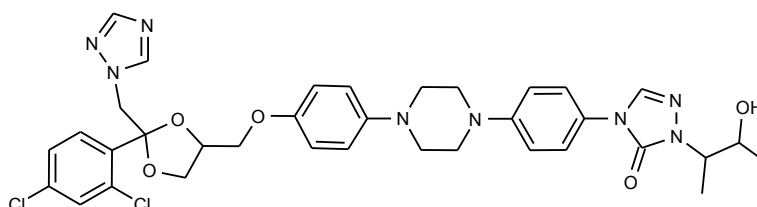
*Neil Beare*

Neil Beare, PhD, Director  
21 July 2016

**Name:** Hydroxyitraconazole

**CAS Number:** 112559-91-8

**Structure:**



**Molecular Weight:**  $C_{35}H_{38}Cl_2N_8O_5 = 721.63$

**Lot Number:** BDG 17281.2

**Appearance:** White, crystalline solid

**Purity By HPLC:** 99.6 %

**Re-test Date:** 21 July 2017

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

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. The complexity of the spectrum indicates the presence of more than one conformer in solution.

Residual Solvents: no residual solvents are observed.

Impurities: a trace of an unidentified impurity is seen in the baseline.

### Carbon-13 NMR Spectrum

Identity: the signals are consistent with the proposed structure and in accord with literature where available. The complexity of the spectrum indicates the presence of more than one conformer in solution.

### High-resolution Mass Spectrum (TOF MS ES+)

Found  $m/z$  721.2419.  $C_{35}H_{39}Cl_2N_8O_5$   $[M+H]^+$  requires  $m/z$  721.2420. The deviation of 0.1 ppm is within normally accepted limits for the establishment of identity by HRMS.

### HPLC

A somewhat broadened, 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

$C_{35}H_{38}Cl_2N_8O_5$	Found:	C 58.45, H 5.41, N 15.60 %
	Requires:	C 58.25, H 5.31, N 15.53 %

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).

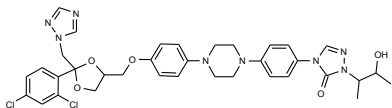
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

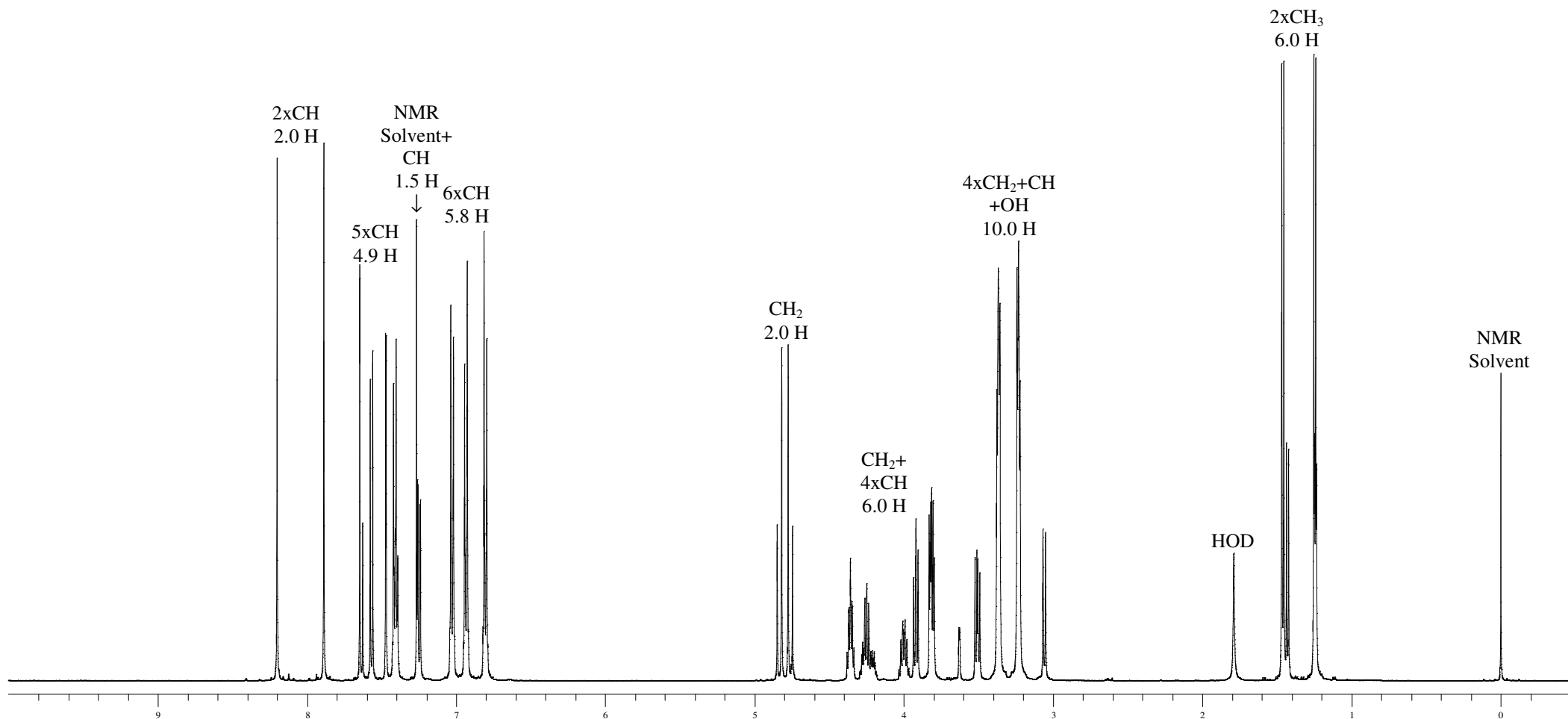


Proton NMR Spectrum of Hydroxyitraconazole in CDCl<sub>3</sub>

**BDG SYNTHESIS**



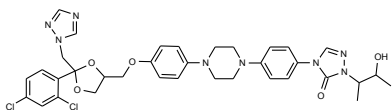
Lot Number: BDG 17281.2



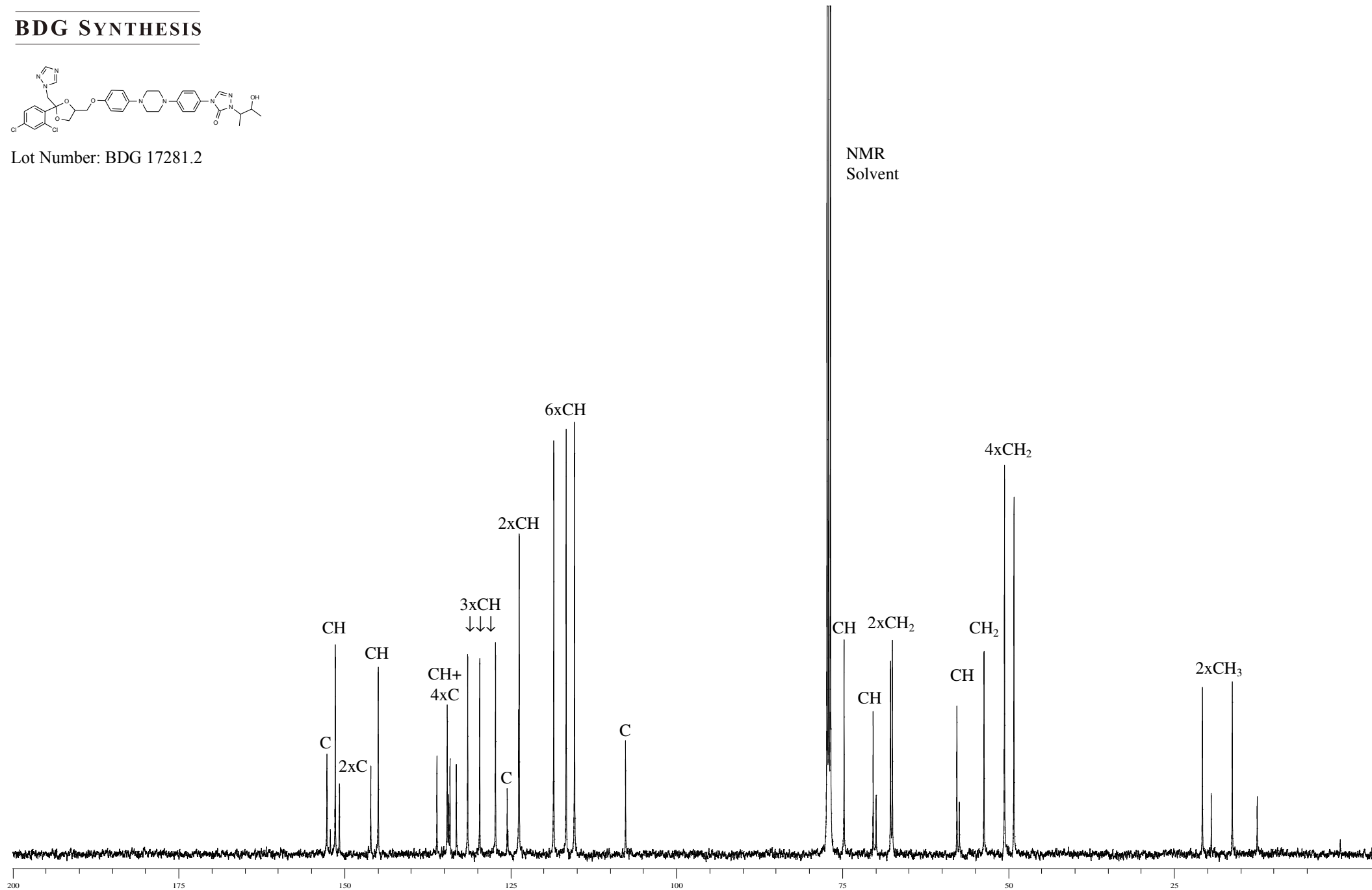


# Carbon-13 NMR Spectrum of Hydroxyitraconazole in CDCl<sub>3</sub>

**BDG SYNTHESIS**



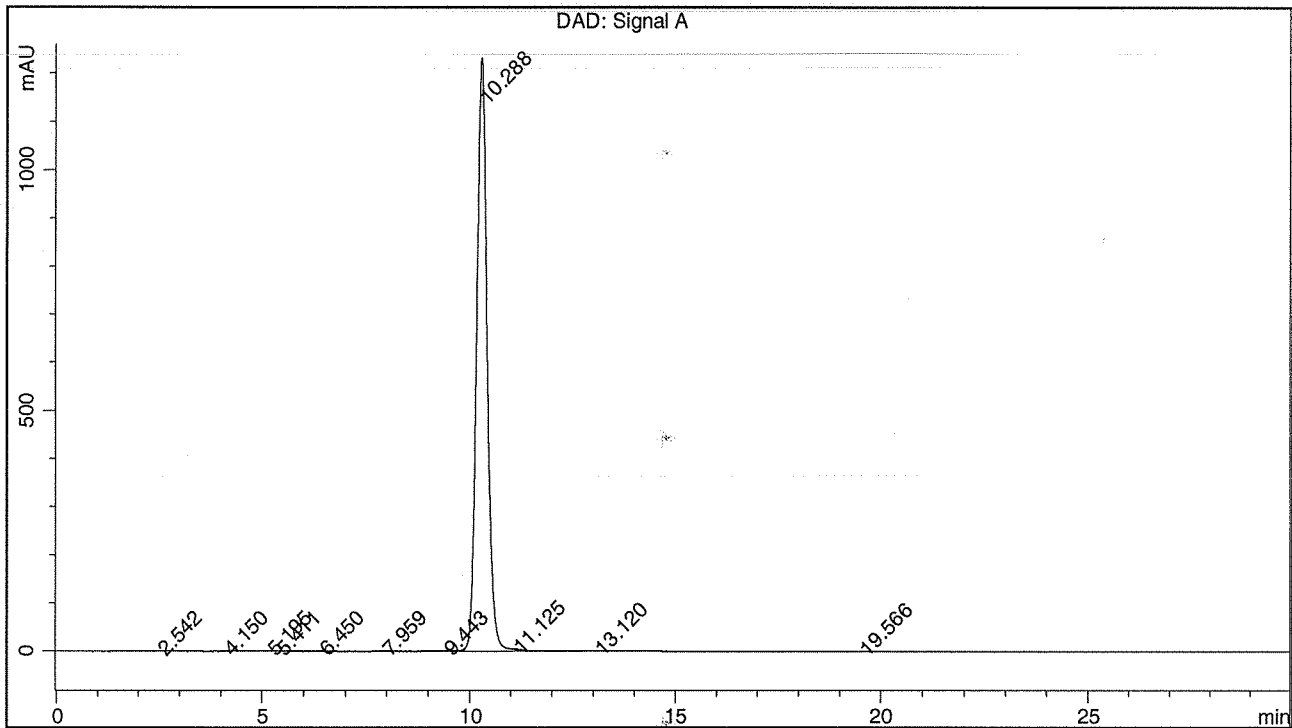
Lot Number: BDG 17281.2



BDG - Analysis of Hydroxyitraconazole

Column : Phenomenex Luna C18(2) 5um 250 x 4.6 mm  
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm  
 Mobile Phase : 45:55 20 mM Potassium Dihydrogen Phosphate pH=3.0 : Acetonitrile  
 Flow Rate : 1.0 mL/min . . . . . Column Temperature : 20 C . . . . . Detection : UV at 260 nm  
 Sample Solvent : Mobile Phase . . . . . Injection Volume : 10 uL

<b>Sample Name</b>	BDG 17281.2	<b>Instrument</b>	AnalyticalLC01
<b>Acquisition</b>	21/07/2016, 11:59:03	<b>Method (rev.)</b>	LC10168a ( 15)
<b>Sequence</b>	BDG_21Jul2016a - Reprocessed	<b>Vial Position</b>	44
<b>Operator</b>	solvation010\cerityadmin	<b>Injection</b>	1 of 1



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	2.54 min	0.2162	2.3616	0.1514 min	0.011 %
2	4.15 min	0.2396	1.9504	0.1230 min	0.009 %
3	5.20 min	0.7942	7.5365	0.1467 min	0.034 %
4	5.41 min	0.7787	9.8104	0.1910 min	0.044 %
5	6.45 min	0.3552	8.4001	0.3199 min	0.038 %
6	7.96 min	0.9208	16.8745	0.2578 min	0.076 %
7	9.44 min	0.3187	4.2113	0.1982 min	0.019 %
8	10.29 min	1231.9284	22001.8263	0.2764 min	99.600 %
9	11.12 min	0.5333	4.2725	0.1495 min	0.019 %
10	13.12 min	0.7832	19.6279	0.3204 min	0.089 %
11	19.57 min	0.2503	13.2742	0.6386 min	0.060 %