



BDG SYNTHESIS

Certificate of Analysis

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

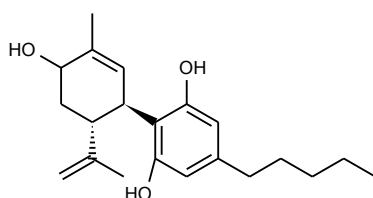
Neil Beare

Neil Beare, PhD, Director
30 September 2014

Name: 6-Hydroxycannabidiol

CAS Number: 63958-73-6

Structure:



Molecular Weight: $C_{21}H_{30}O_3 = 330.46$

Lot Number: BDG 15102.4

Appearance: Beige, amorphous solid

Corrected Purity: 98.7 % (HPLC) - 0.3 % (diethyl ether) - 0.8 % (water) = 97.6 %

Re-test Date: 30 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: 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: a small amount of diethyl ether (0.3 % 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 331.2277. $C_{21}H_{31}O_3$ $[M+H]^+$ requires m/z 331.2273. The deviation of 1.2 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A sharp, symmetrical peak is observed (98.7 %). 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 75.35, H 9.05 %
$C_{21}H_{30}O_3 \cdot 0.2H_2O$	Requires:	C 75.50, H 9.17 %
$C_{21}H_{30}O_3$	Requires:	C 76.33, H 9.15 %

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).

Karl-Fischer Analysis

	Found:	H_2O 0.8 %
$C_{21}H_{30}O_3 \cdot 0.2H_2O$	Requires:	H_2O 1.1 %

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.

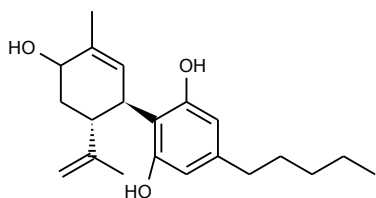
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

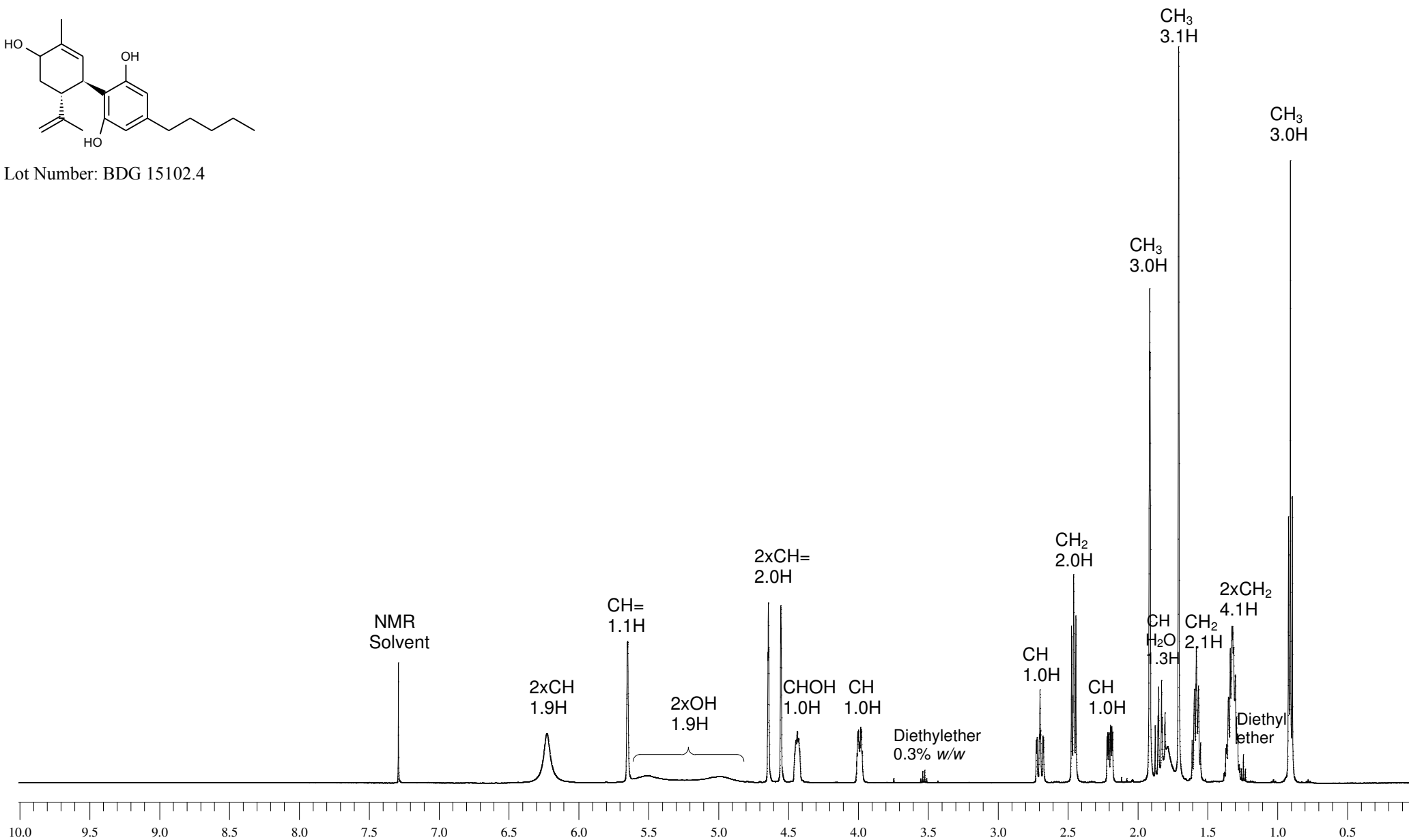


Proton NMR Spectrum of 6-Hydroxycannabidiol in CDCl₃

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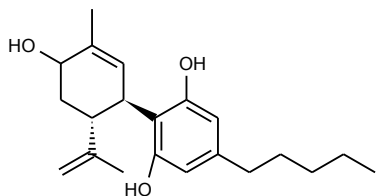
Lot Number: BDG 15102.4



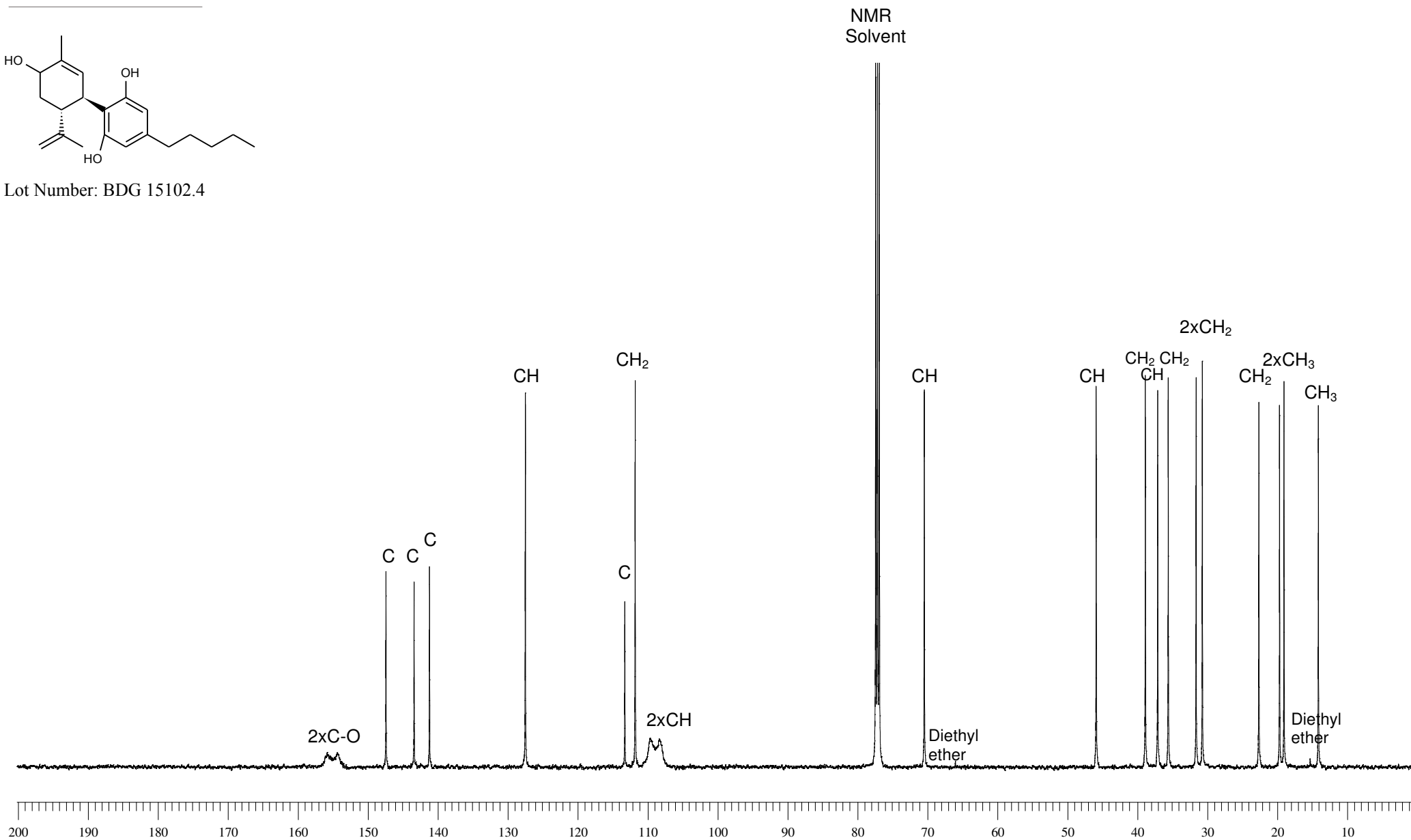


Carbon-13 NMR Spectrum of 6-Hydroxycannabidiol in CDCl₃

BDG SYNTHESIS



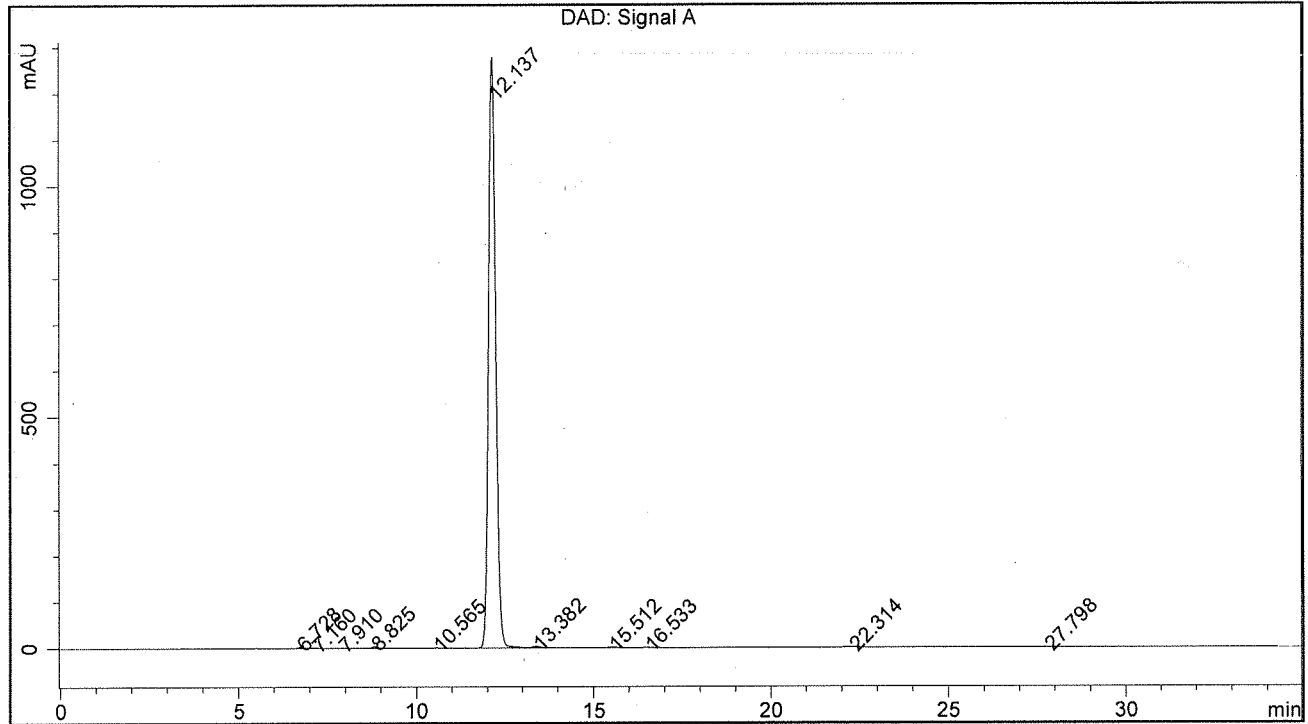
Lot Number: BDG 15102.4



BDG - Analysis of 6-Hydroxycannabidiol

Column : Phenomenex Luna C18(2) 5 um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase : 45:55 Water : Acetonitrile
 Flow Rate : 1.0 mL/min Column Temperature : 20 C Detection: UV 230 nm
 Sample Solvent : 50:50 Water : Acetonitrile Injection Volume : 10 uL

Sample Name	BDG 15102.4	Instrument	AnalyticalLC01
Acquisition	30/09/2014, 15:30:59	Method (rev.)	LC10631a (8)
Sequence	BDG_30Sep2014c	Vial Position	21
Operator	solvation010\cerityadmin	Injection	1 of 1



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	6.73 min	2.7453	30.6405	0.1582 min	0.167 %
2	7.16 min	0.8465	7.9175	0.1351 min	0.043 %
3	7.91 min	0.4118	5.7144	0.1839 min	0.031 %
4	8.83 min	3.7082	38.4286	0.1589 min	0.210 %
5	10.57 min	0.4758	7.2495	0.1938 min	0.040 %
6	12.14 min	1277.2806	18091.9169	0.2213 min	98.703 %
7	13.38 min	3.1163	62.3244	0.2913 min	0.340 %
8	15.51 min	1.5120	27.9293	0.2635 min	0.152 %
9	16.53 min	0.7912	14.8303	0.2567 min	0.081 %
10	22.31 min	0.7007	31.2472	0.5322 min	0.170 %
11	27.80 min	0.4071	11.5382	0.3407 min	0.063 %