

Certificate of Analysis

leil Beare

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

Neil Beare, PhD, Director

7 February 2019

Structure:

Name: 7-Hydroxycannabidiol

CAS Number: 50725-17-2

20/23 1/ 2

OH OH

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

Lot Number: BDG 16215.5

Appearance: Yellow, brittle foam

• Custom synthesis of analytical reference standards, metabolites, stable isotope labelled compounds

Corrected Purity: 98.3 % (HPLC) - 0.6 % (diethyl ether) - 1.5 % (water) = 96.2 %

Re-test Date: 7 February 2021

Storage and Handling: Temperature: Freeze (-20°C) 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.

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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 (0.6 % w/w) is 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 (ESI+)

Found m/z 353.2094. $C_{21}H_{30}NaO_3$ [M+Na]⁺ requires m/z 353.2093. The deviation of 0.3 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A somewhat broadened, symmetrical peak is observed (98.3 %). 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 75.63, H 9.36 %

 $C_{21}H_{30}O_3 \cdot 0.2H_2O$ Requires: C 75.50, H 9.17 % $C_{21}H_{30}O_3$ Requires: C 76.33, H 9.15 %

The elemental analyses fall slightly 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: H₂O 1.5 %

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

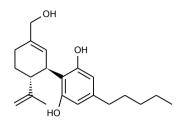
Of necessity, only a small sample could be used and only a single or duplicate analysis performed. We are unable to state what the errors in the reported water content are, but recommend that the result be used, as the best available, when determining corrected purity.

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.

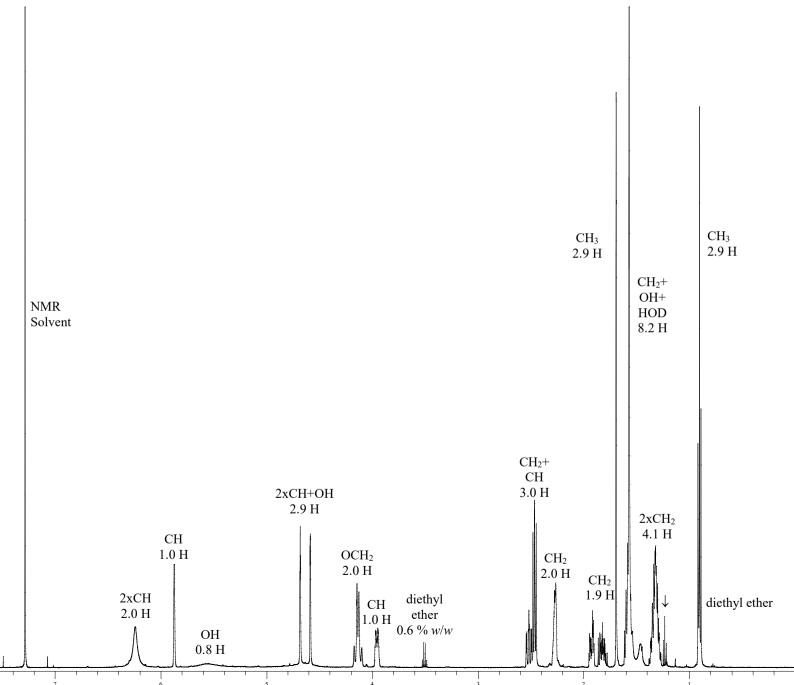
The re-test date is assigned from experience gained with the material in the laboratory and/or on storage. It is not possible to perform formal storage studies because of the small amount of material available.



BDG SYNTHESIS

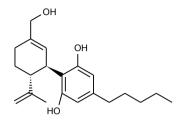


Lot Number: BDG 16215.5



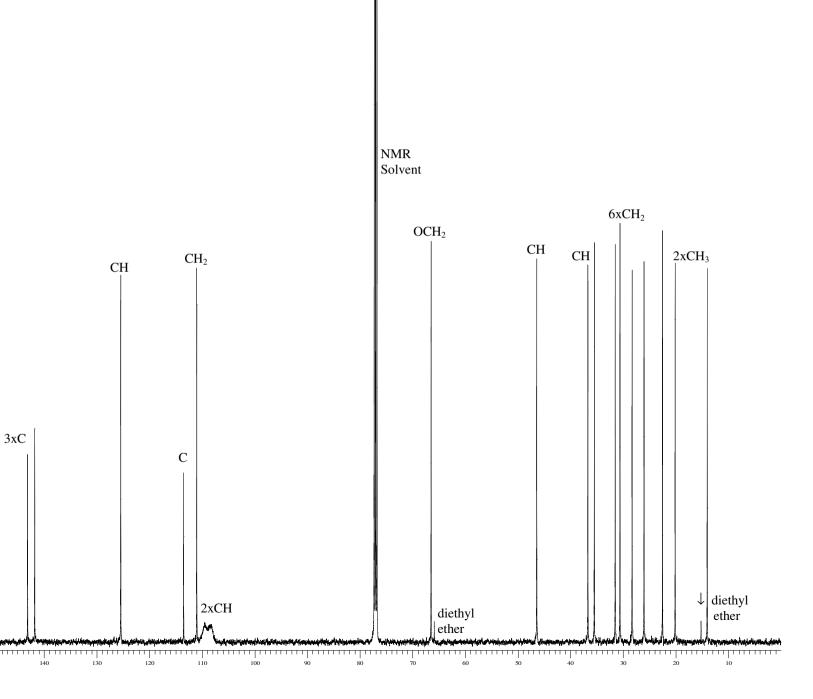


BDG SYNTHESIS



2xC-O

Lot Number: BDG 16215.5



Acq. Operator : Bruce Hamilton Seq. Line : 4
Acq. Instrument : Instrument 1 Location : Vial 2
Injection Date : 2/7/2019 4:47:05 PM Inj : 1
Inj Volume : 10 µl

Inj Volum
Acq. Method : C:\CHEM32\1\METHODS\2018\LC20060A.M
Last changed : 2/7/2019 2:36:43 PM by Bruce Hamilton
Analysis Method : C:\CHEM32\1\METHODS\2018\LC20060A.M
Last changed : 2/10/2019 12:59:53 PM by Bruce Hamilton

(modified after loading)

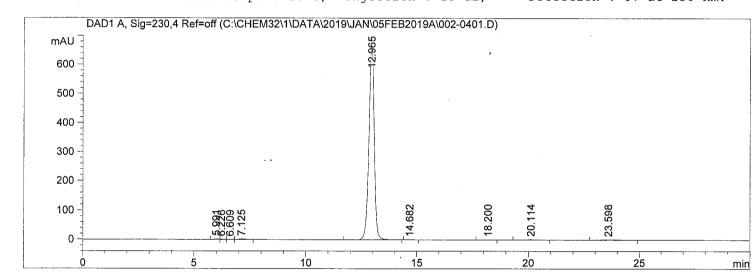
Method Info : BDG - Analysis of 7-Hydroxycannabidiol

Column : Phenomenex Luna C18(2) 5 um 250 x 4.6 mm, Guard : Phenomenex SecurityGuard C18 RP 4 x 3 mm

Mobile A : 45:55 Water : Acetonitrile

Flow: 1 ml/min., Sample Solvent: 1:1 Water: Acetonitrile

Column Temp. : 20 C, Injection : 10 ul, Detection : UV at 230 nm.



Area Percent Report

Sorted By : Signal Multiplier : 1.0000 Dilution : 1.0000

Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=230,4 Ref=off

Peak #	RetTime [min]	Туре	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.991	BV	0.1628	26.78149	2.28390	0.2284
2	6.226	VV	0.1258	10.66902	1.24690	0.0910
3	6.609	VB	0.1347	7.71537	8.59400e-1	0.0658
4	7.125	BV	0.2525	39.80509	2.14533	0.3395
5	12.965	VB R	0.2545	1.15234e4	691.05389	98.2806
6	14.682	BB	0.2656	10.71663	6.32678e-1	0.0914
7	18.200	BB	0.2992	14.49547	6.52394e-1	0.1236
8	20.114	BB	0.3925	38.88340	1.50969	0.3316
9	23.598	BB	0.6349	52.52838	1.00983	0.4480

Totals: 1.17250e4 701.39402

*** End of Report ***