



BDG SYNTHESIS

Certificate of Analysis

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

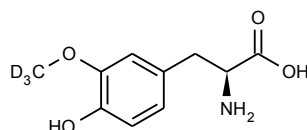
Neil Beare

Neil Beare, PhD, Director
23 May 2016

Name: 3-(Methoxy-d₃)-tyrosine

CAS Number: 586954-09-8

Structure:



Molecular Weight: C₁₀H₁₀D₃NO₄ = 214.23

Lot Number: BDG 6751.7

Appearance: Off-white, crystalline solid

Corrected Purity: 99.5 % (HPLC) - 0.6 % (methanol) - 8.5 % (water) = 90.4 %

Isotopic Purity: Under 0.5 % d₀

Re-test Date: 23 May 2021

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. .

Isotopic Labelling: signals at the site of deuteration are absent, compared with what would be expected for unlabelled material, indicating clean deuteration.

Residual Solvents: a small amount of methanol (0.6 % w/w) is 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. .

Isotopic Labelling: signals at the site of deuteration have collapsed to small multiplets compared with what would be expected for unlabelled material, indicating clean deuteration.

High-resolution Mass Spectrum (ESI+)

Found m/z 215.1113. $C_{10}H_{11}D_3NO_4$ $[M+H]^+$ requires m/z 215.1106. The deviation of 3.5 ppm is within normally accepted limits for the establishment of identity by HRMS. No signal for d_0 material was seen (detection limit about 0.5 %).

HPLC

A sharp, symmetrical peak is observed (99.5 %). 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 51.25, H 5.43, D 2.67, N 6.00 %
$C_{10}H_{10}D_3NO_4 \cdot 1.1H_2O$	Requires:	C 51.32, H 5.25, D 2.58, N 5.98 %, H_2O 8.47 %
$C_{10}H_{10}D_3NO_4$	Requires:	C 56.06, H 4.70, D 2.82, N 6.54 %

The elemental analyses fall substantially 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. In the absence of a Karl-Fischer water analysis, we recommend that the “best-fit” water content be used when determining corrected purity.

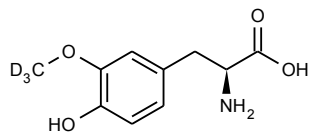
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

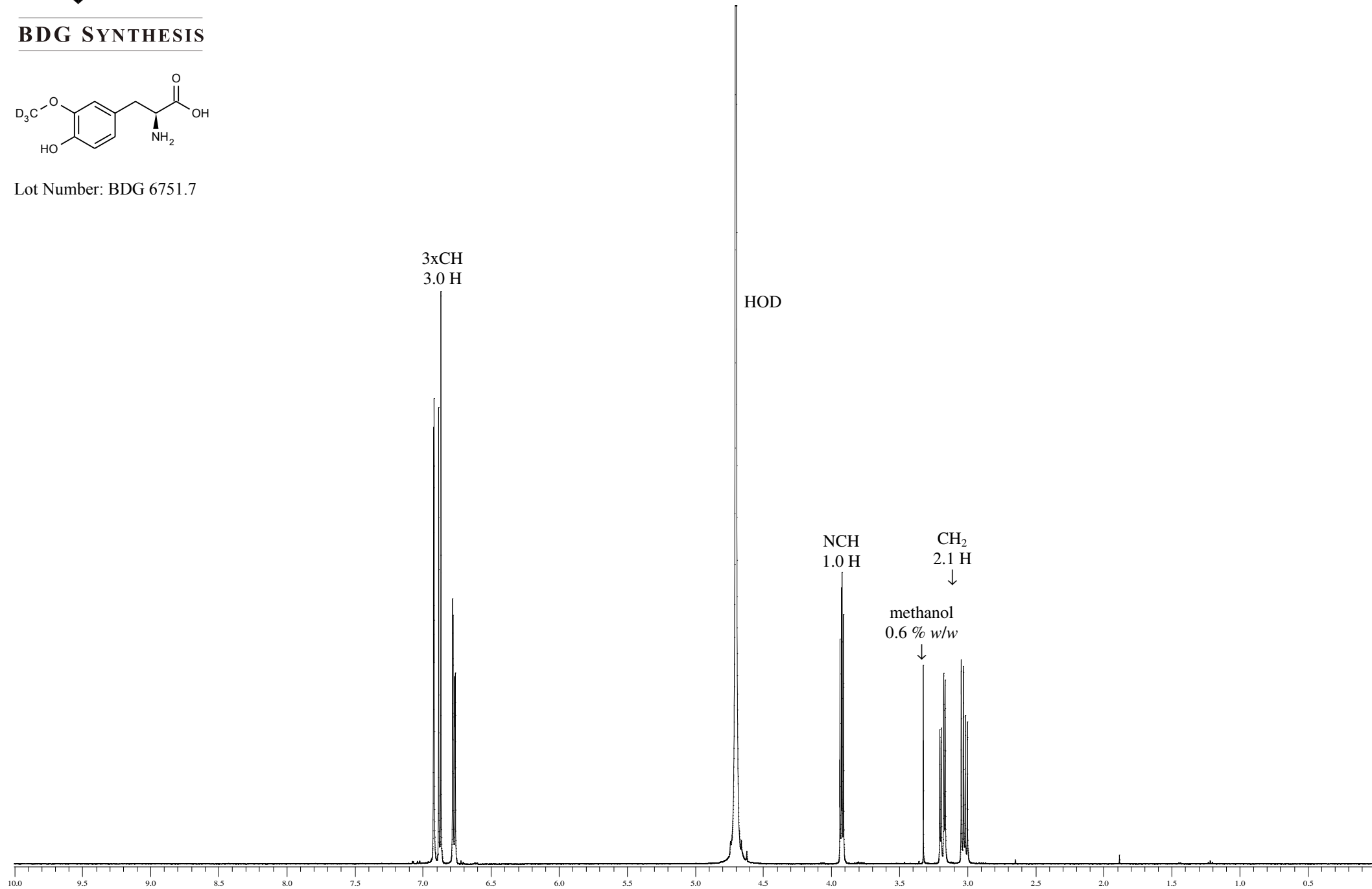


Proton NMR Spectrum of 3-(Methoxy-d₃)-tyrosine in D₂O

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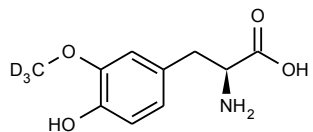
Lot Number: BDG 6751.7



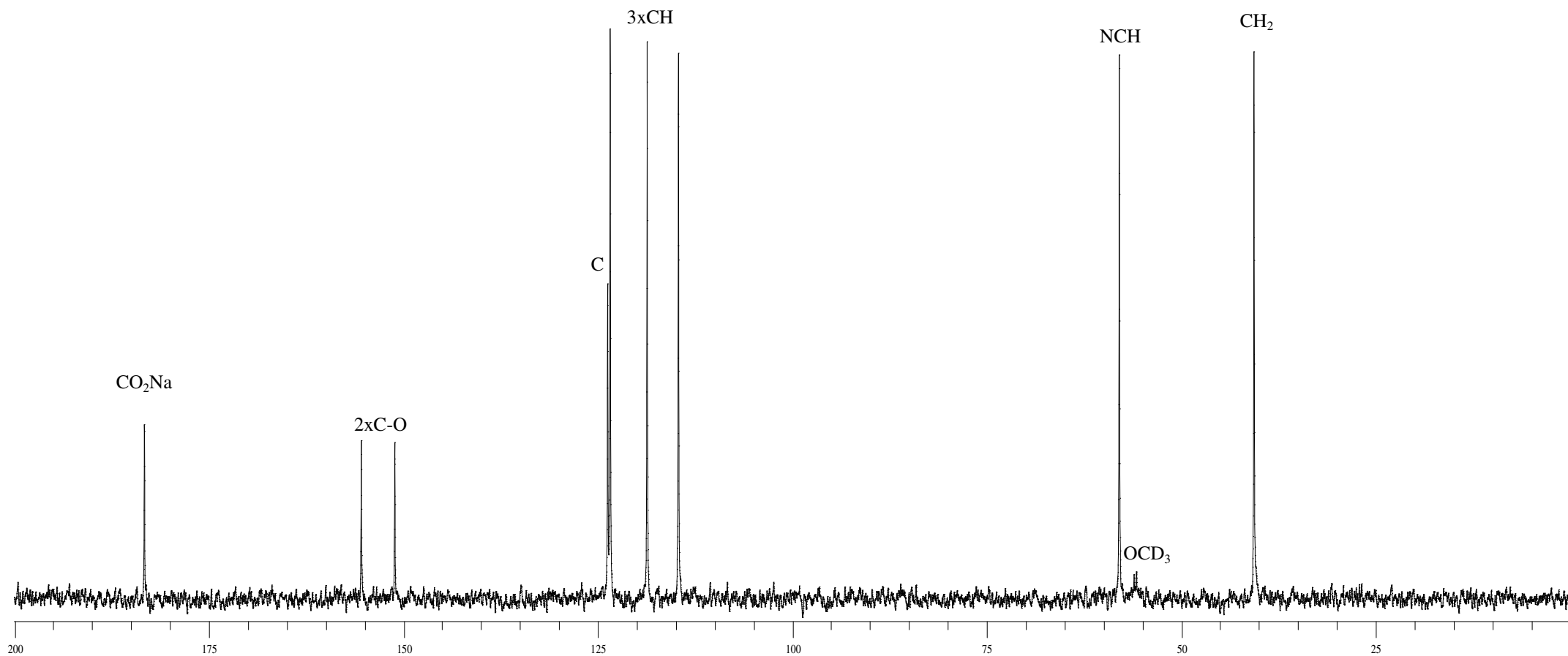


Carbon-13 NMR Spectrum of 3-(Methoxy-d₃)-tyrosine in D₂O + NaOD

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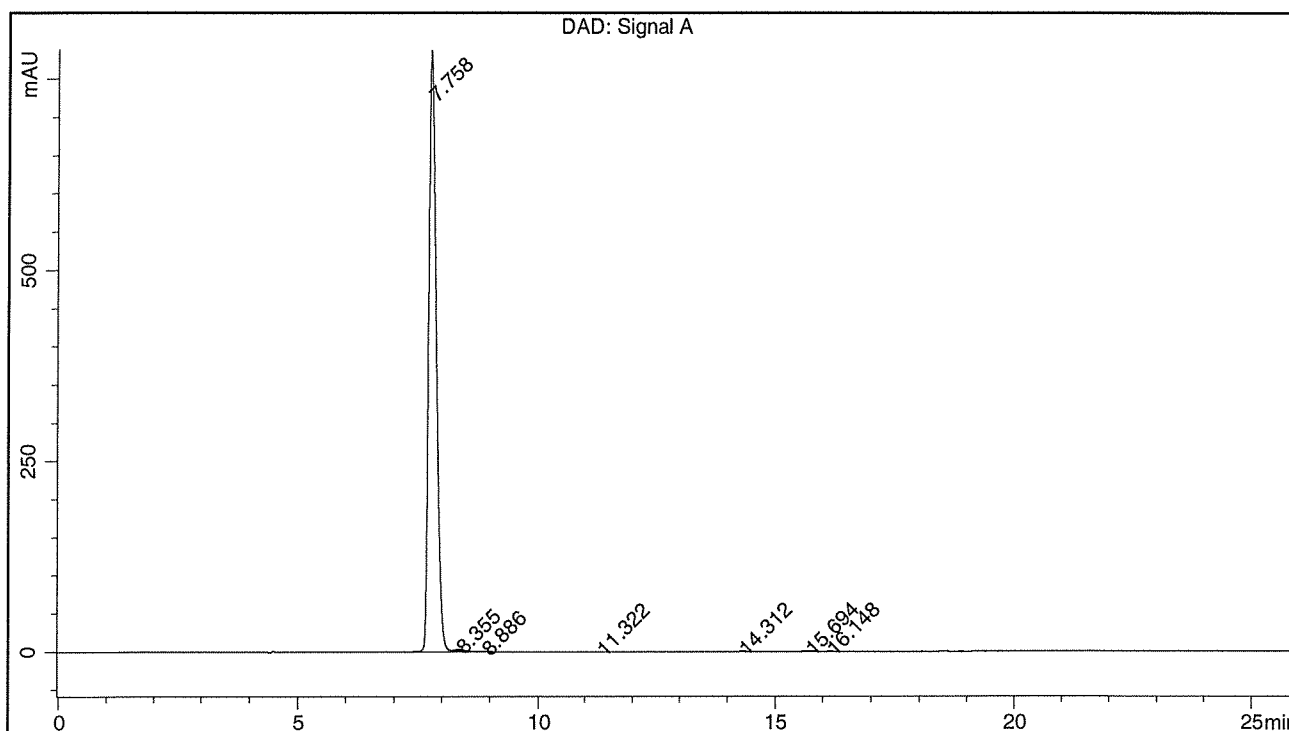
Lot Number: BDG 6751.7



BDG - Analysis of 3-(Methoxy-d3)-Tyrosine

Column : Phenomenex Luna C18(2) 5 um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase A : Water : Acetonitrile : Trifluoroacetic Acid
 Mobile Phase B : Water : Acetonitrile : Trifluoroacetic Acid
 Gradient : T0=100:0, T20=0:100, T22=100:0, T26=100:0
 Flow Rate : 1.0 mL/min
 Sample Solvent : Mobile Phase B
 Column Temperature : 20 C
 Injection Volume : 10 uL
 Detection : UV at 280 nm

Sample Name	BDG 6751.7	Instrument	AnalyticalLC01
Acquisition	23/05/2016, 14:08:04	Method (rev.)	LC10147a (20)
Sequence	BDG_23May2016a - Reprocessed	Vial Position	3
Operator	solvation010\cerityadmin	Injection	1 of 1



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	7.76 min	790.9209	9045.9824	0.1794 min	99.461 %
2	8.35 min	2.2401	24.9379	0.1739 min	0.274 %
3	8.89 min	0.6610	6.5565	0.1557 min	0.072 %
4	11.32 min	0.2499	3.1298	0.1781 min	0.034 %
5	14.31 min	0.3322	3.7247	0.1648 min	0.041 %
6	15.69 min	0.6748	8.5563	0.1999 min	0.094 %
7	16.15 min	0.1807	2.0970	0.1674 min	0.023 %