



BDG SYNTHESIS

Certificate of Analysis

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

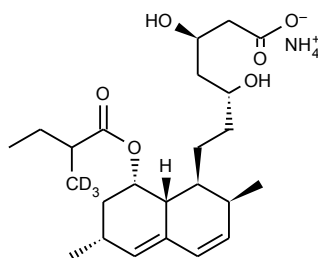
Barry Dent

Barry R. Dent, PhD, Director
17 February 2010

Name: Lovastatin Acid-d₃ Ammonium Salt

CAS Number: 77550-67-5 (unlabelled)

Structure:



Molecular Weight: C₂₄H₃₄D₃O₆·NH₄ = 442.60

Lot Number: BDG 5906

Appearance: White, crystalline solid

Corrected Purity: 99.1 % (HPLC) - 1.2 % (diethyl ether) = 97.9 %

Isotopic Purity: Under 0.5 % d₀

Re-test Date: 17 February 2015

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.

Isotopic Labelling: signals at the site of deuteration are greatly diminished, compared with the spectrum of unlabelled material, indicating clean deuteration.

Residual Solvents: a small amount of diethyl ether (1.2 % 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. Some of the peaks are duplicated indicating that the product is a mixture of two diastereoisomers which is expected and is a consequence of the synthetic route used to generate the product. The relative intensities of these duplicated peaks are close to that seen for the two main peaks in the HPLC trace.

Isotopic Labelling: signals at the site of deuteration have collapsed to small multiplets compared with the spectrum of unlabelled material, indicating clean deuteration.

High-resolution Mass Spectrum (ESI+)

Found m/z 448.2730. $C_{24}H_{35}D_3NaO_6$ $[M+Na]^+$ requires m/z 448.2749. The deviation of 4.1 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

Two sharp, overlapping peaks are observed (total integration = 99.1 area %). 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 65.15, H 8.91, D 1.41, N 3.02 %
$C_{24}H_{34}D_3O_6 \cdot NH_4$	Requires:	C 65.13, H 8.65, D 1.37, N 3.16 %

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).

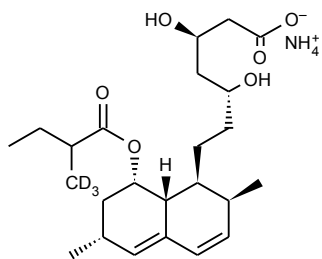
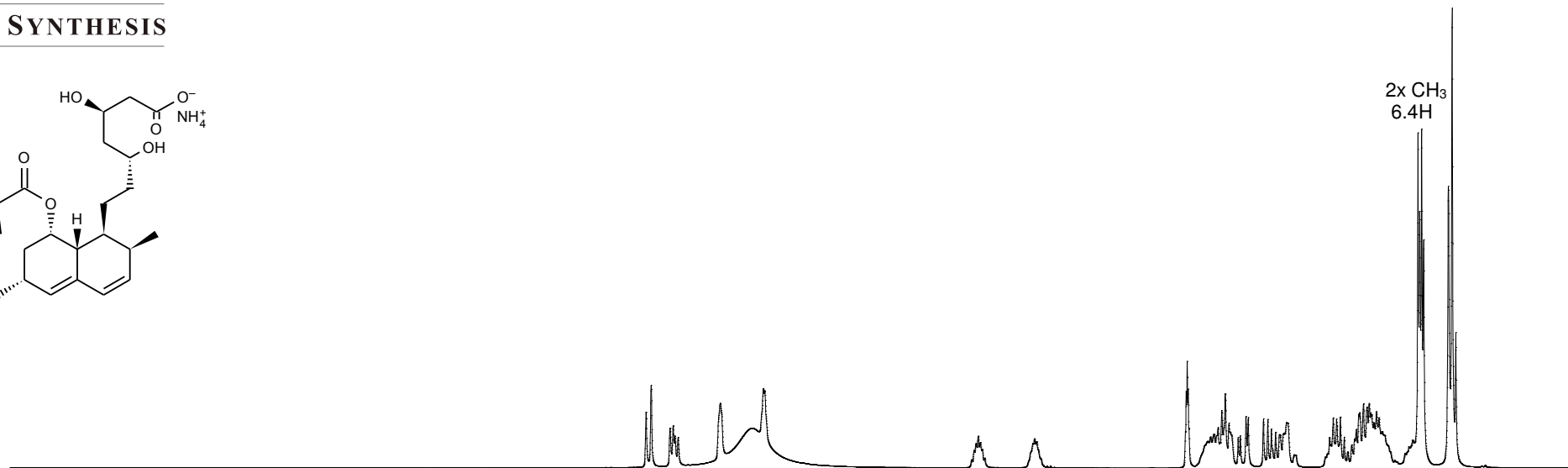
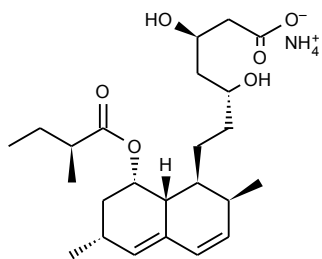
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

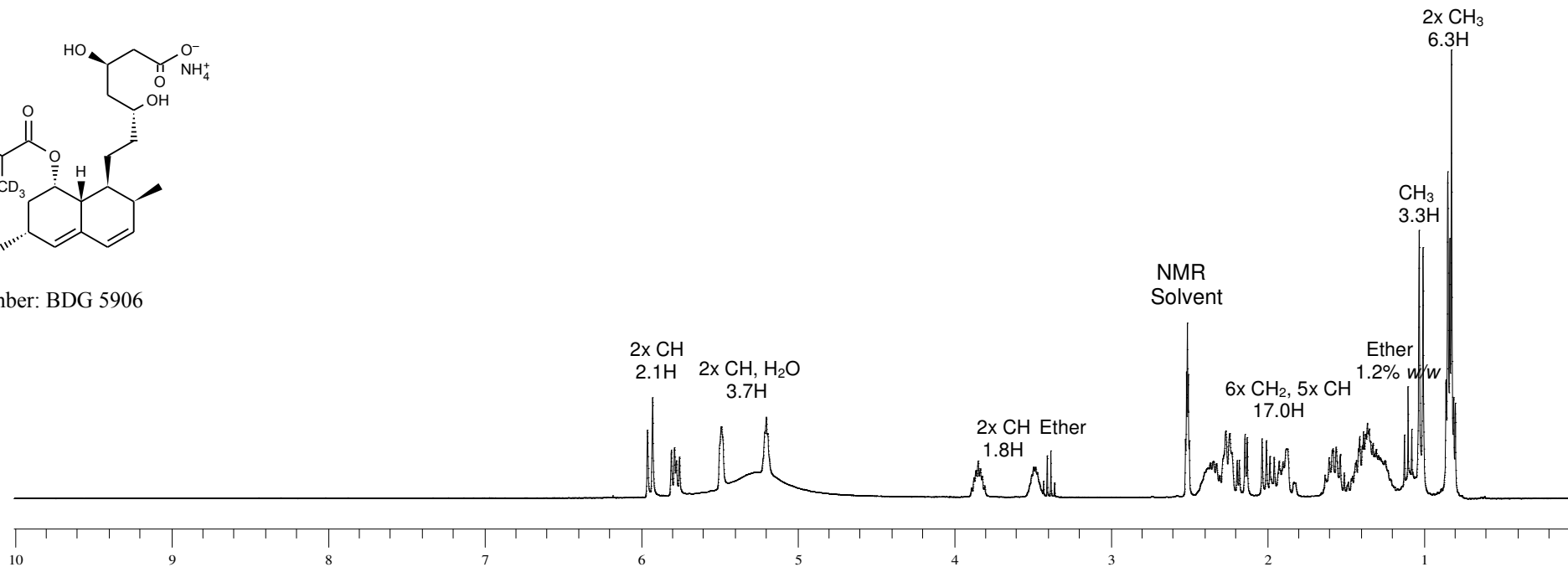


Proton NMR Spectrum of Lovastatin Acid Ammonium Salt (top) and Lovastatin Acid-d₃ Ammonium Salt (bottom) in DMSO-d₆

BDG SYNTHESIS



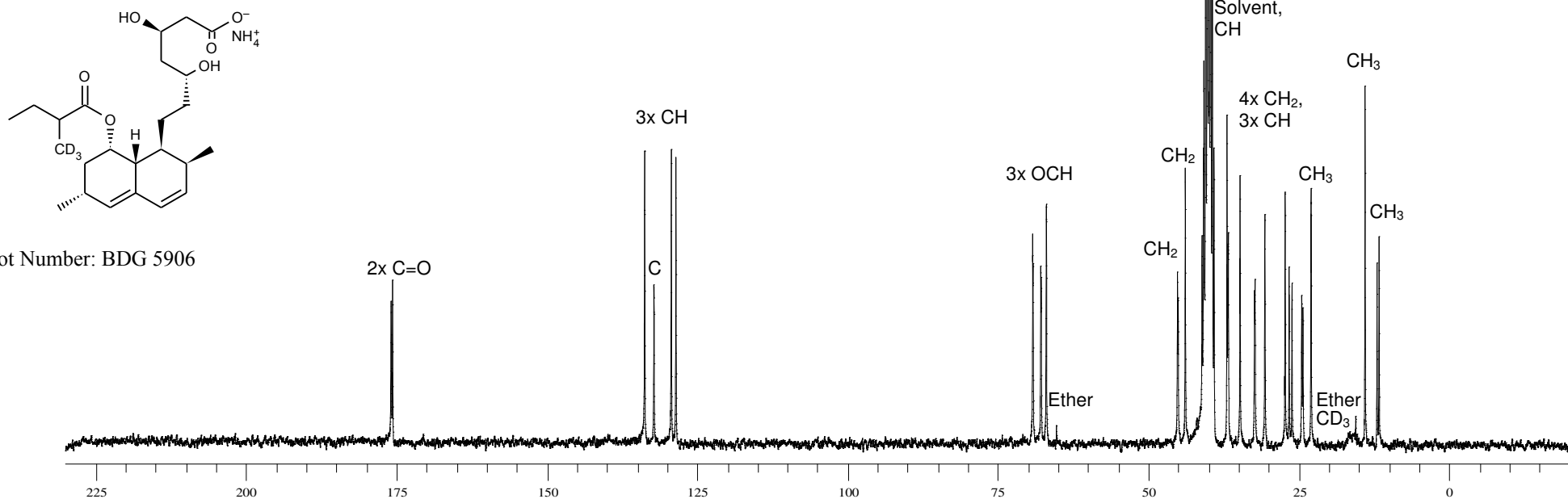
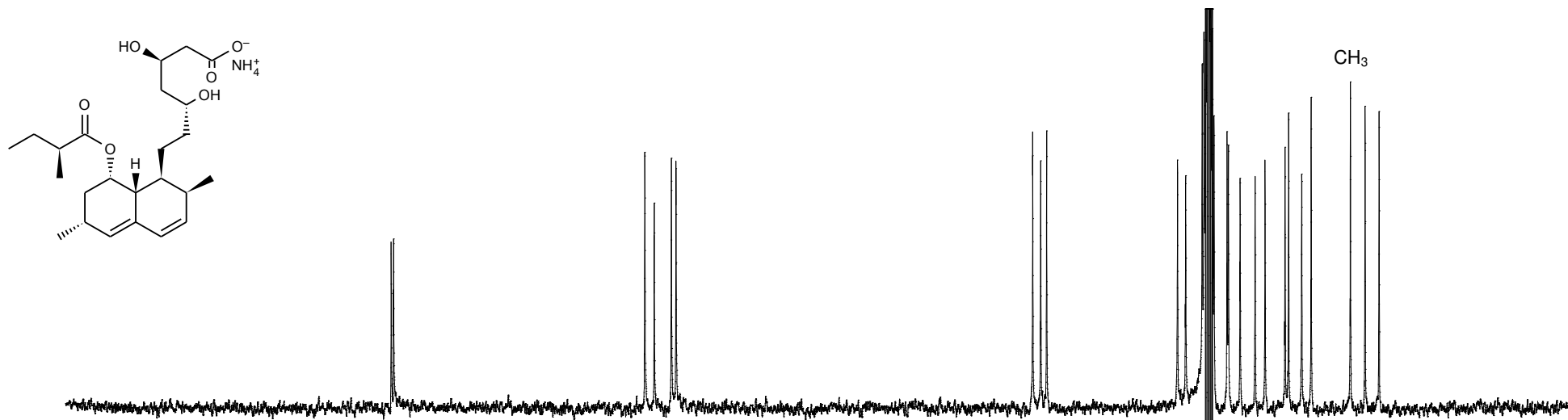
Lot Number: BDG 5906





Carbon-13 NMR Spectrum of Lovastatin Acid Ammonium Salt (top) and Lovastatin Acid-d₃ Ammonium Salt (bottom) in DMSO-d₆

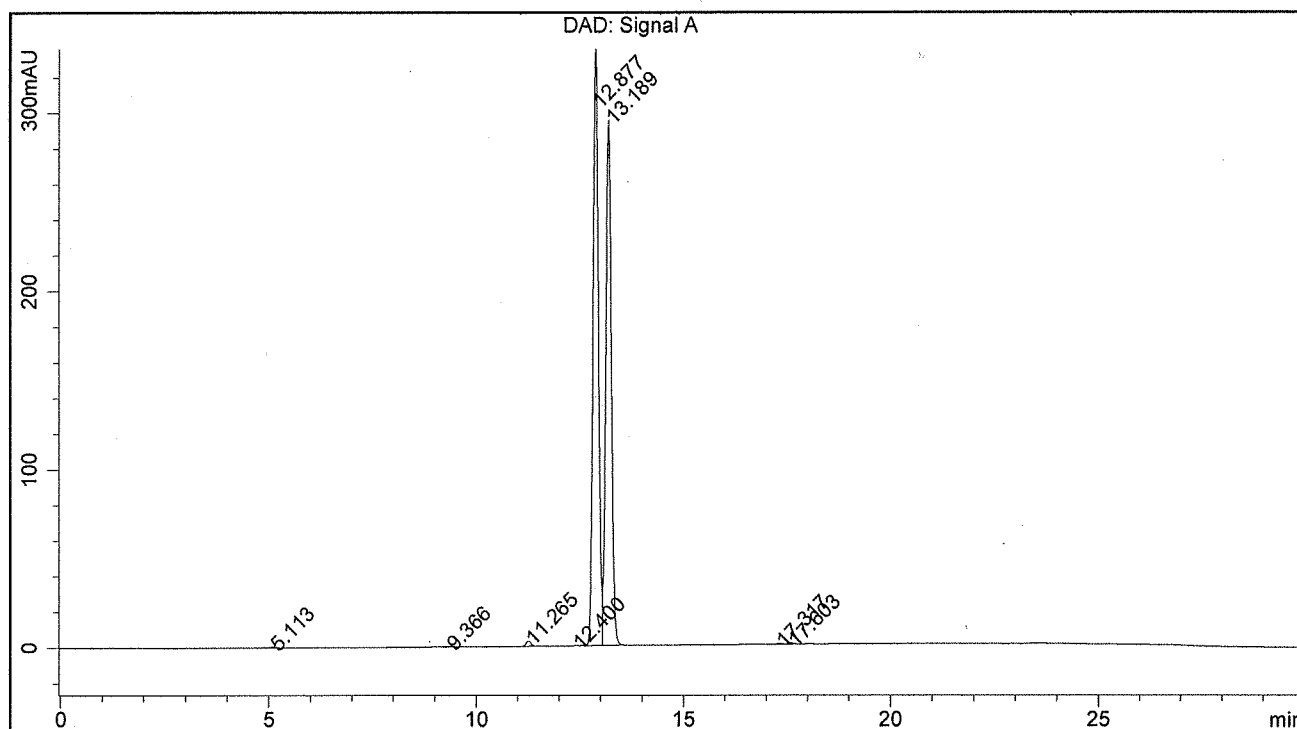
BDG SYNTHESIS



BDG - Analysis of Lovastatin Acid-d3 Ammonium Salt

Column : Phenomenex Luna C18 5um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase A : 1:1 Water + 0.1% Phosphoric Acid : Acetonitrile
 Mobile Phase B : Acetonitrile + 0.1% Phosphoric Acid
 Gradient : T0=100:0, T15=50:50, T20=50:50, T25=100:0, T30=100:0
 Flow Rate : 1.0 mL/min Column Temperature : 20C
 Sample Solvent : 40:60 10 mM KH2PO4 pH=4.0 : Acetonitrile
 Detection UV 238nm

Sample Name	BDG 5906	Instrument	AnalyticalLC01
Acquisition	17/02/2010, 14:28:43	Method (rev.)	LC10120a (20)
Sequence	BDG_17Feb2010a - Reprocessed	Vial Position	1
Operator	solvation010\cerityadmin	Injection	2 of 2



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	5.11 min	0.5715	6.7612	0.1780 min	0.116 %
2	9.37 min	0.3142	3.7566	0.1695 min	0.064 %
3	11.27 min	2.9723	25.9450	0.1338 min	0.444 %
4	12.40 min	0.2313	2.2243	0.1402 min	0.038 %
5	12.88 min	335.6302	3049.7292	0.1420 min	52.242 %
6	13.19 min	294.7706	2736.8681	0.1423 min	46.882 %
7	17.32 min	0.4821	5.5256	0.1677 min	0.095 %
8	17.60 min	0.6572	6.9138	0.1607 min	0.118 %