



BDG SYNTHESIS

Certificate of Analysis

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

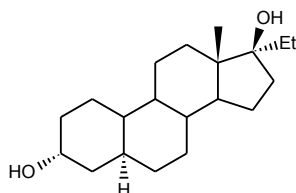
Barry Dent

Barry R. Dent, PhD, Director
16 July 2011

Name: 17 α -Ethyl-5 α -estrane-3 α ,17 β -diol

CAS Number: 6961-15-5

Structure:



Molecular Weight: C₂₀H₃₄O₂ = 306.48

Lot Number: BDG 2073.2

Appearance: White, crystalline solid

Corrected Purity: 99.6 % (HPLC) - 0.4 % (ethyl acetate) = 99.2 %

Re-test Date: 16 July 2016

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.

Residual Solvents: a small amount of ethyl acetate (0.4 % 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 (TOF MS ES+)

Found m/z 329.2455. $C_{20}H_{34}NaO_2$ $[M+Na]^+$ requires m/z 329.2457. The deviation of 0.6 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A sharp, 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

	Found:	C 78.26, H 11.43 %
$C_{20}H_{34}O_2$	Requires:	C 78.38, H 11.18 %

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).

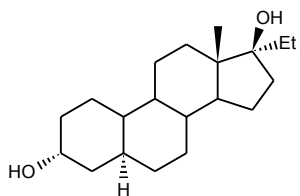
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

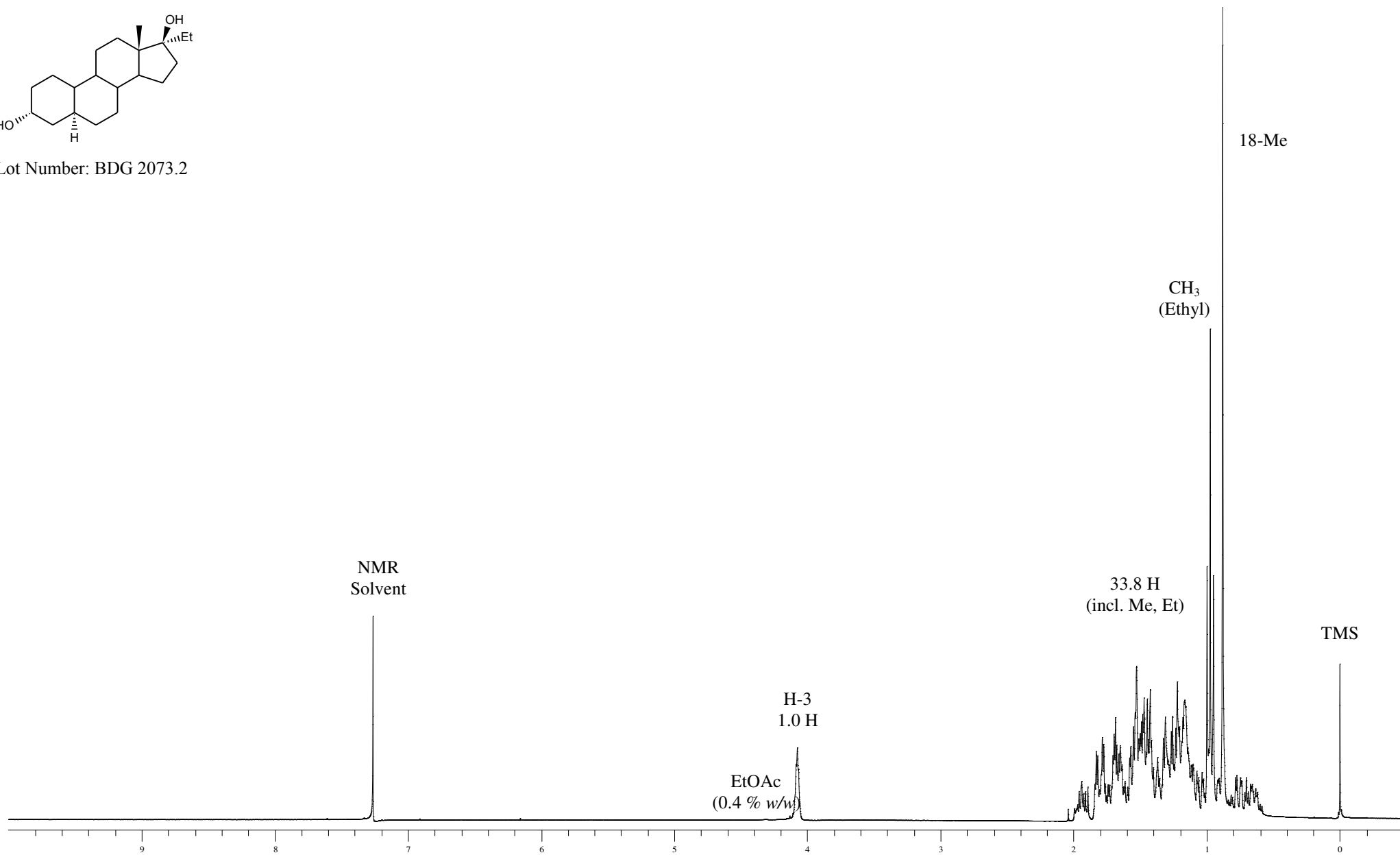


Proton NMR Spectrum of 17 α -Ethyl-5 α -estrane-3 α ,17 β -diol in CDCl₃

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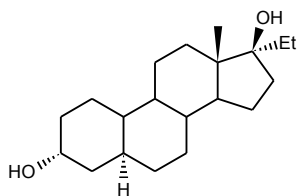
Lot Number: BDG 2073.2



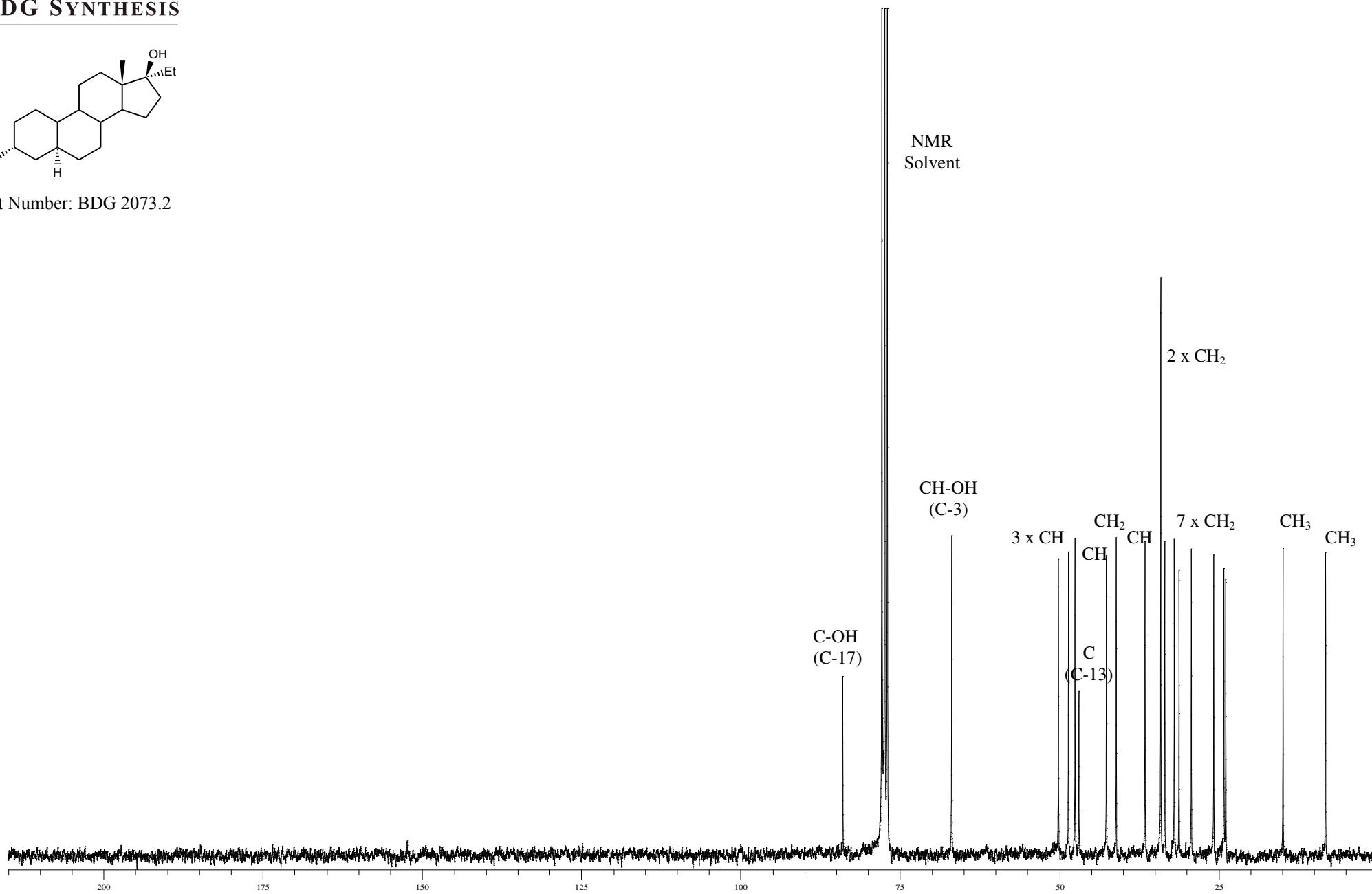


Carbon-13 NMR Spectrum of 17 α -Ethyl-5 α -estrane-3 α ,17 β -diol in CDCl₃

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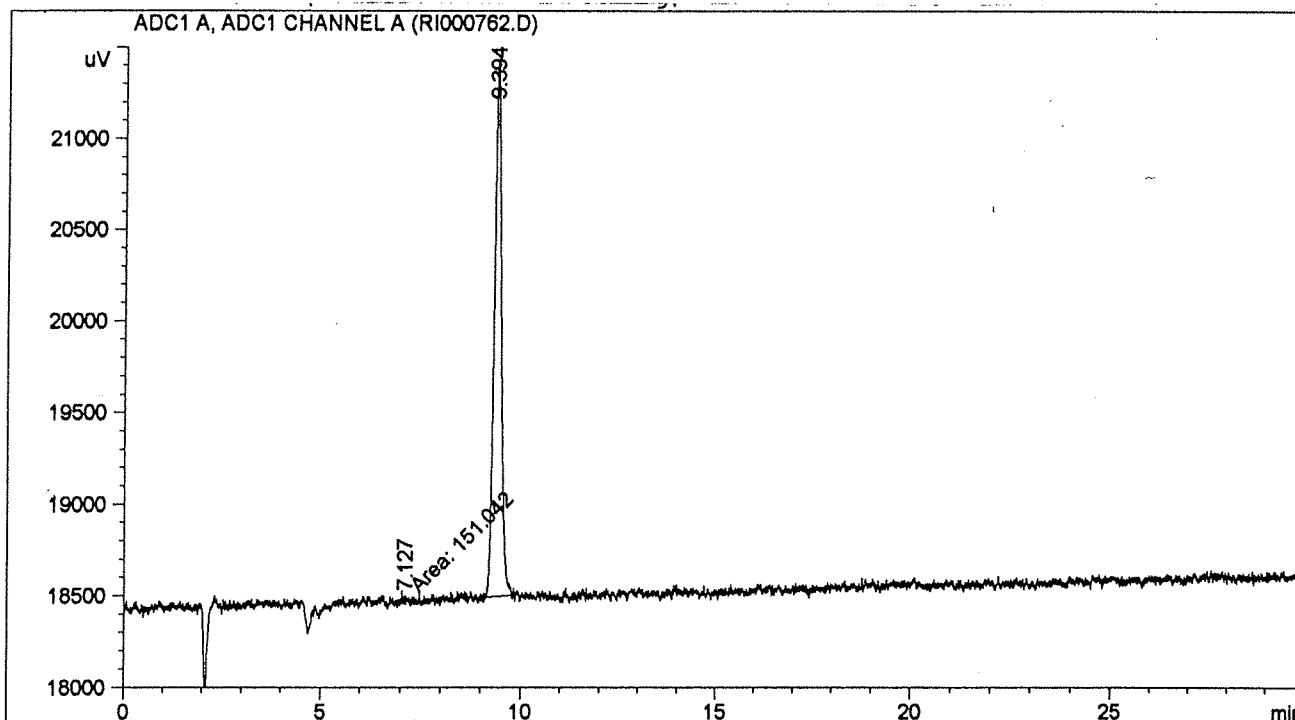
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BDG - Analysis of steroid derivatives.

Column : Phenomenex Luna C18(2) 5um 250 x 4.6 mm
 Guard : Phenomenex Security Guard C18 RP 4 x 3 mm
 Mobile Phase : 35:65 Water : Acetonitrile
 Flow Rate : 1.0 mL/min
 Sample Solvent : Mobile Phase
 Column Temperature : 20C
 Injection Volume : 50 uL
 Detection : RI

Sample Name	BDG 2073.2	Instrument	AnalyticalLC01
Acquisition	16/07/2011, 20:55:50	Method (rev.)	LC10041w (8)
Sequence	BDG_16Jul2011d	Vial Position	3
Operator	solvation010\cerityadmin	Injection	2 of 2



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 Area Percent Report
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Sorted By : Signal
 Multiplier : 1.0000
 Dilution : 1.0000

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	7.127	MM	0.0553	151.04237	36.34138	0.41499
2	9.394	BB	0.1844	3.62453e4	2927.41797	99.58501

Totals : 3.63963e4 2963.75935

Results obtained with enhanced integrator!

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 *** End of Report ***