



BDG SYNTHESIS

Certificate of Analysis

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

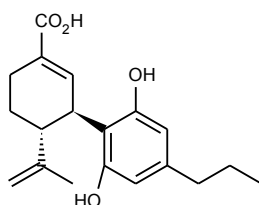
Neil Beare

Neil Beare, PhD, Director
12 August 2015

Name: 7-Nor-7-carboxycannabidivarin

CAS Number: none

Structure:



Molecular Weight: C₁₉H₂₄O₄ = 316.39

Lot Number: BDG 16503.2

Appearance: White, crystalline solid

Purity By HPLC: 100.0 %

Re-test Date: 12 August 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: no residual solvents are 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.

High-resolution Mass Spectrum (ESI+)

Found m/z 339.1573. $C_{19}H_{24}NaO_4$ $[M+Na]^+$ requires m/z 339.1572. The deviation of 0.3 ppm is within normally accepted limits for the establishment of identity by HRMS.

HPLC

A sharp, symmetrical peak is observed (100.0 %). 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 71.90, H 7.68 %
$C_{19}H_{24}O_4$	Requires:	C 72.13, H 7.65 %

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).

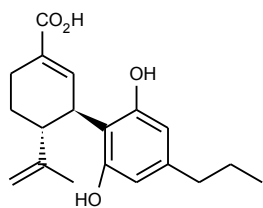
The available quantity of custom-synthesised material is always small, and this limits the extent and type of analytical data which can be obtained. This Certificate is presented in descriptive format for use by analytical chemists who are trained in the use of custom-synthesised materials. Custom materials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

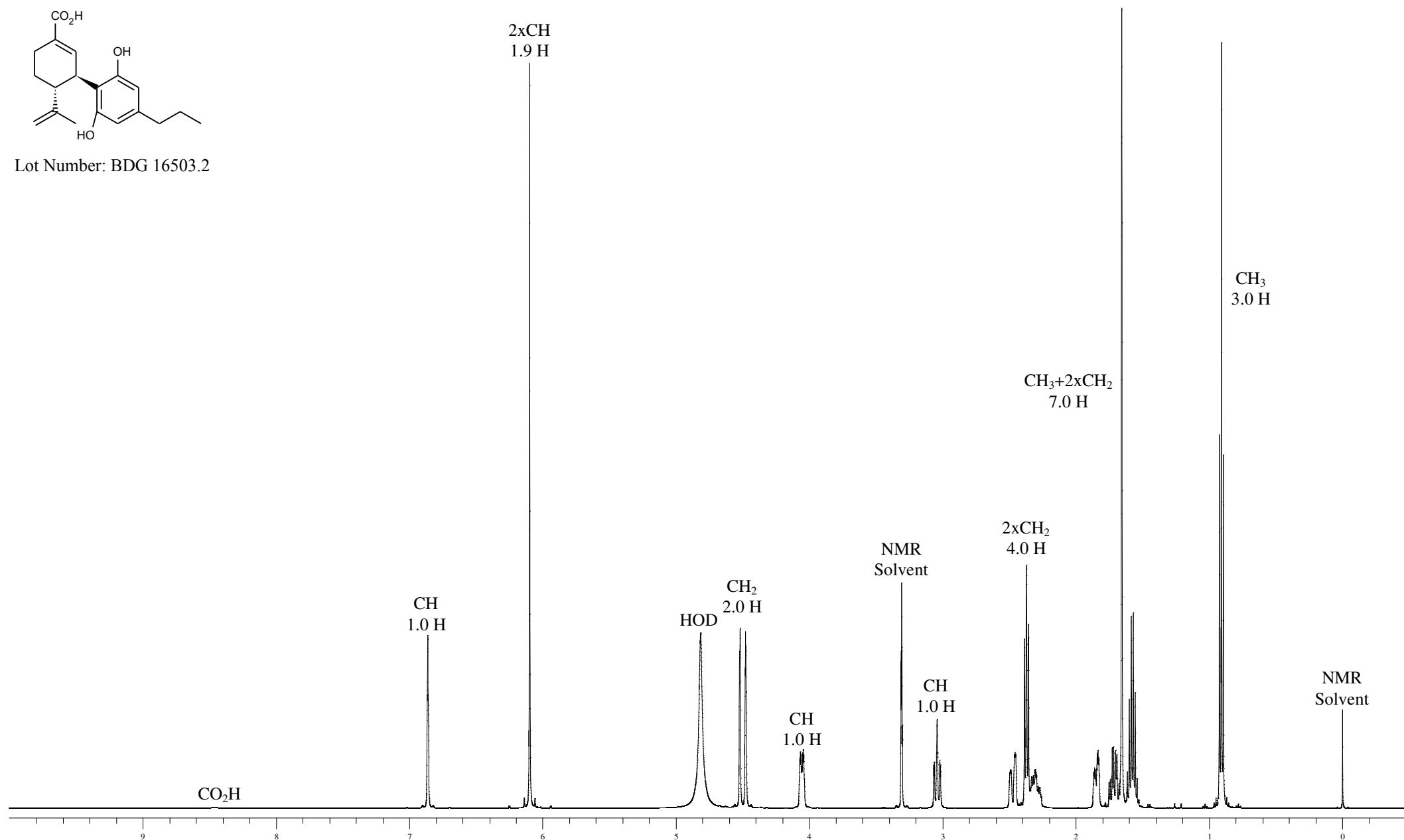


Proton NMR Spectrum of 7-Nor-7-carboxycannabidivarin in Methanol-d₄

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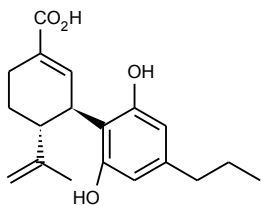
Lot Number: BDG 16503.2



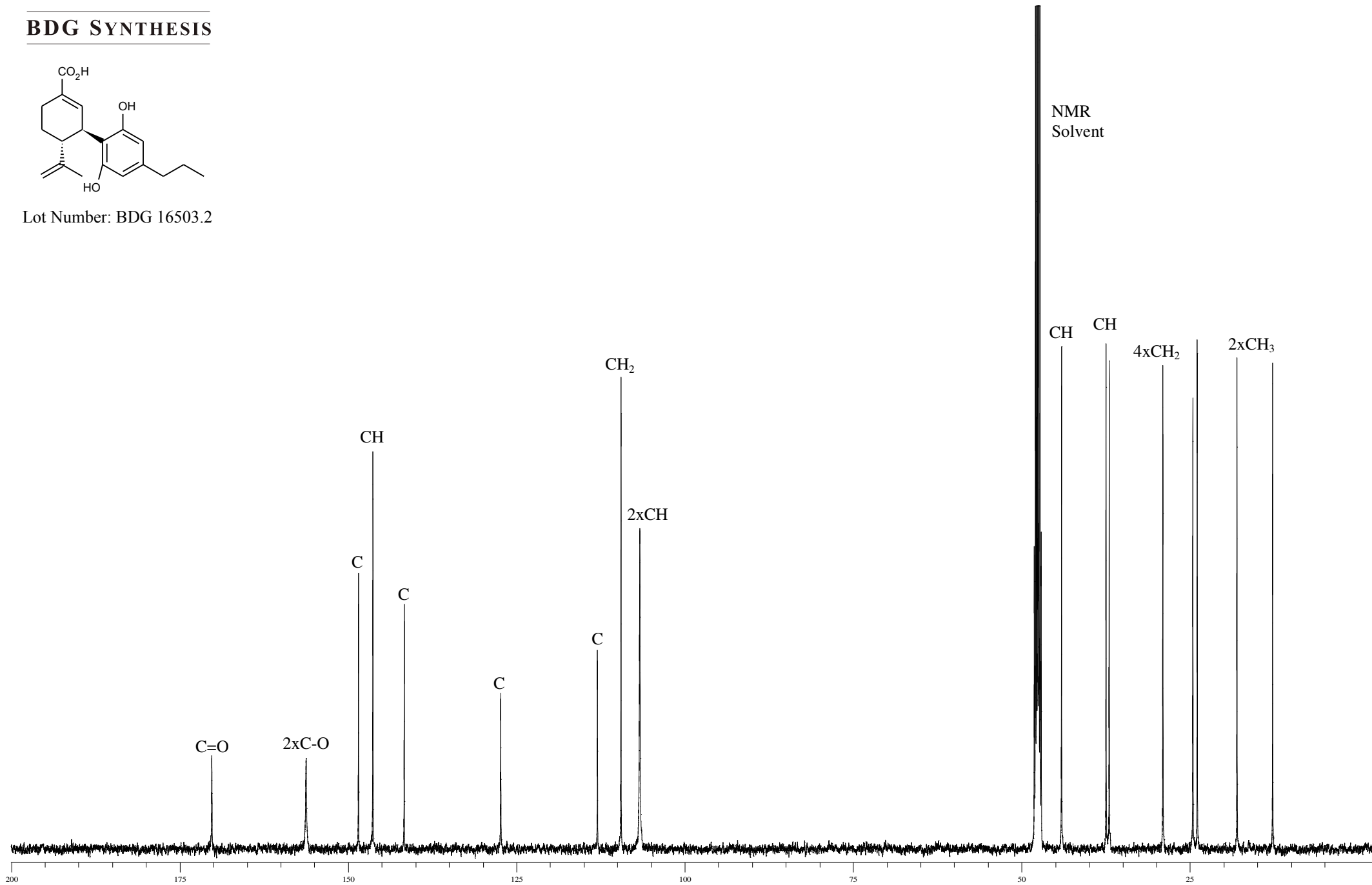


Carbon-13 NMR Spectrum of 7-Nor-7-carboxycannabidivarin in Methanol-d₄

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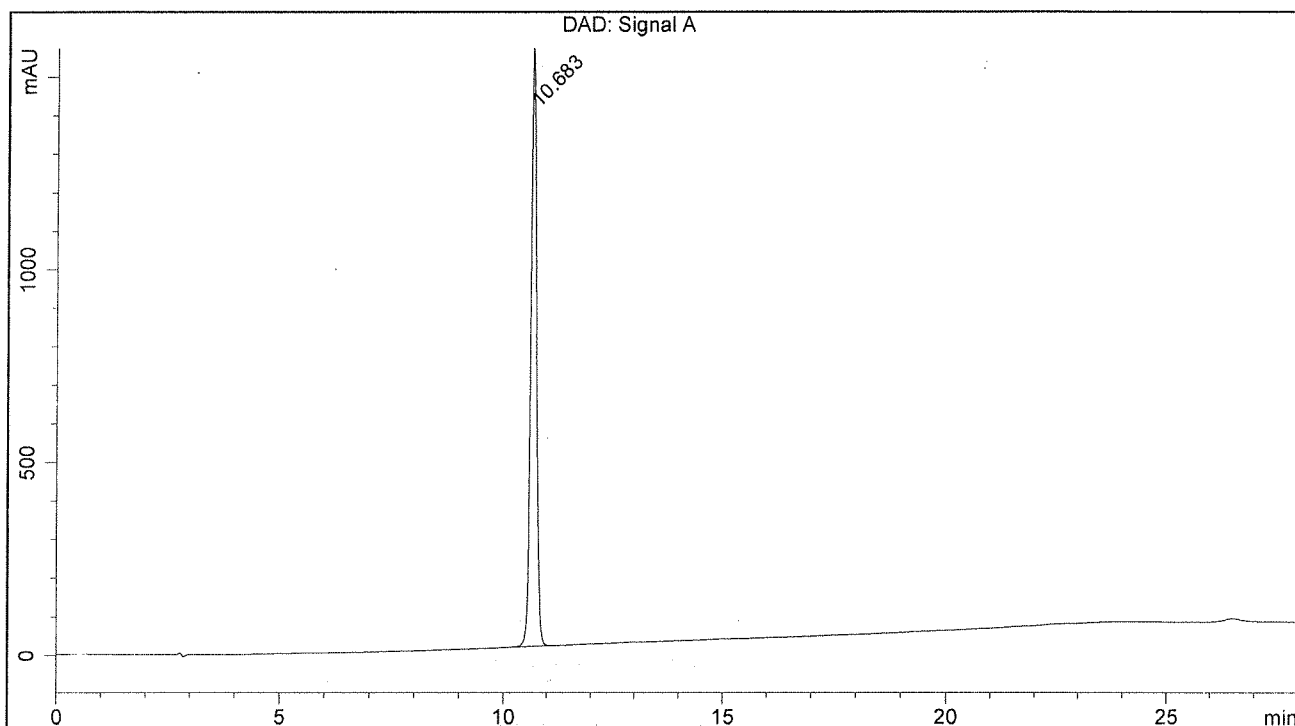
Lot Number: BDG 16503.2



BDG - Analysis of 7-Nor-7-carboxycannabidivarin

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 : 60:40:0.05 Water : Methanol : Trifluoroacetic Acid
 Mobile Phase B : 10:90:0.05 Water : Methanol : Trifluoroacetic Acid
 Gradient : T0=100:0, T20=0:100, T25=0:100, T26=100:0, T30=100:0
 Flow Rate : 1.0 mL/min Column Temperature : 35 C Detection: UV 230 nm
 Sample Solvent : 0.5 mg / ml 30:70 Water : Methanol Injection Volume : 10 uL

Sample Name	BDG 16503.2	Instrument	AnalyticalLC01
Acquisition	12/08/2015, 12:51:38	Method (rev.)	LC10635m (7)
Sequence	BDG_12Aug2015b - Reprocessed	Vial Position	64
Operator	solvation010\cerityadmin	Injection	1 of 1



Area Percent Report

Peak#	RT	Peak Height	Peak Area	Width	Area %
1	10.68 min	1562.8479	14531.2303	0.1425 min	100.000 %