



Frontier BioPharm

LLC

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CERTIFICATE OF ANALYSIS

4-Hydroxylicocaine HCl 0.105 mg/mL in methanol

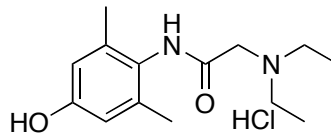
Sample Identity: H-4520
Lot No.: 10280150

Chemical Identity: 4-Hydroxylicocaine HCl
Storage Condition: Protect from light, freeze
Chemical Purity: 99.4% by LC/UV
Residual solvents (TGA) < 0.1%
Formula Weight: HCl Salt 286.80
Free Base 250.34

Elemental Analysis
Calculated (%) C: 58.63, H: 8.08, N: 9.77, Cl: 12.36
Found: C: 58.75, H: 8.11, N: 9.68, Cl: 12.23


Micro Ash Determination < 0.1% residue on ignition.

Analysis: 25 March, 2014
Re-Analysis: 25 March 2017



Purity (corrected)	Prepared Concentration*	Analyzed Concentration**
99.4% (As the free base)	0.105 mg/mL (± 0.004 mg/mL)	0.105 mg/mL (± 0.004 mg/mL)

* Masses are determined using balances calibrated with NIST traceable weights using a minimum weight following USP <41> guidelines. The prepared concentration is corrected for residual solvents, the counter ion mass, chromatographic and chemical purity.
** Concentration values are determined by independent calibration curves. It is suggested that the prepared concentration value be used.

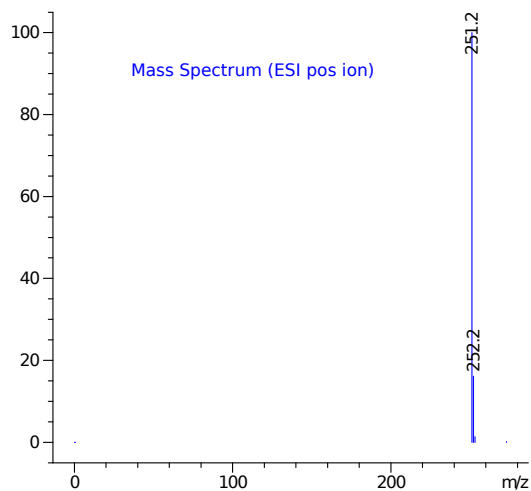
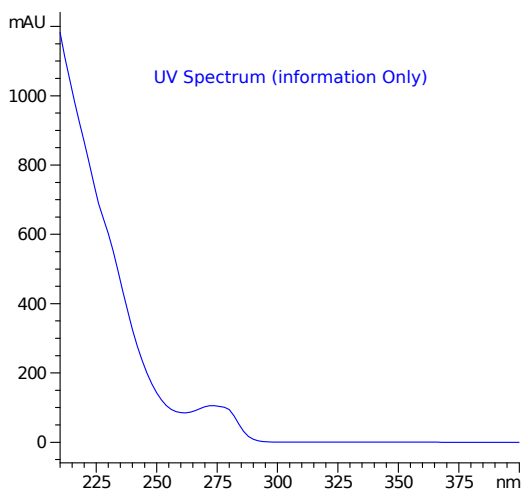
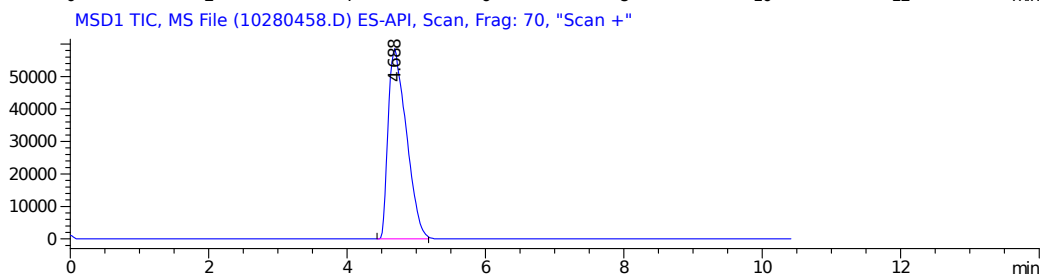
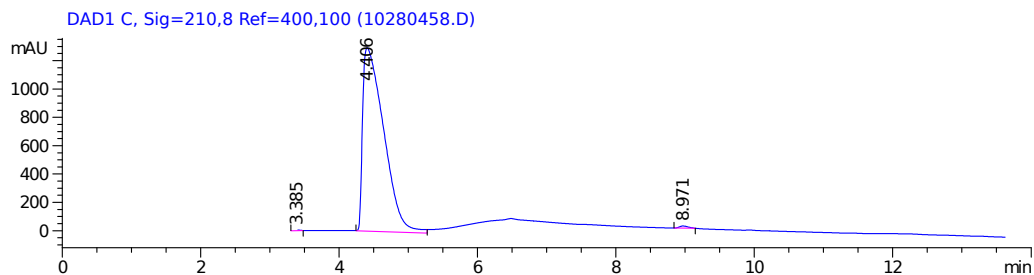
Approved: 
Rodney L. Eisenberg, Ph.D.
Director

03-25-2014
Date

Spectral and Physical Data

LC UV and MS

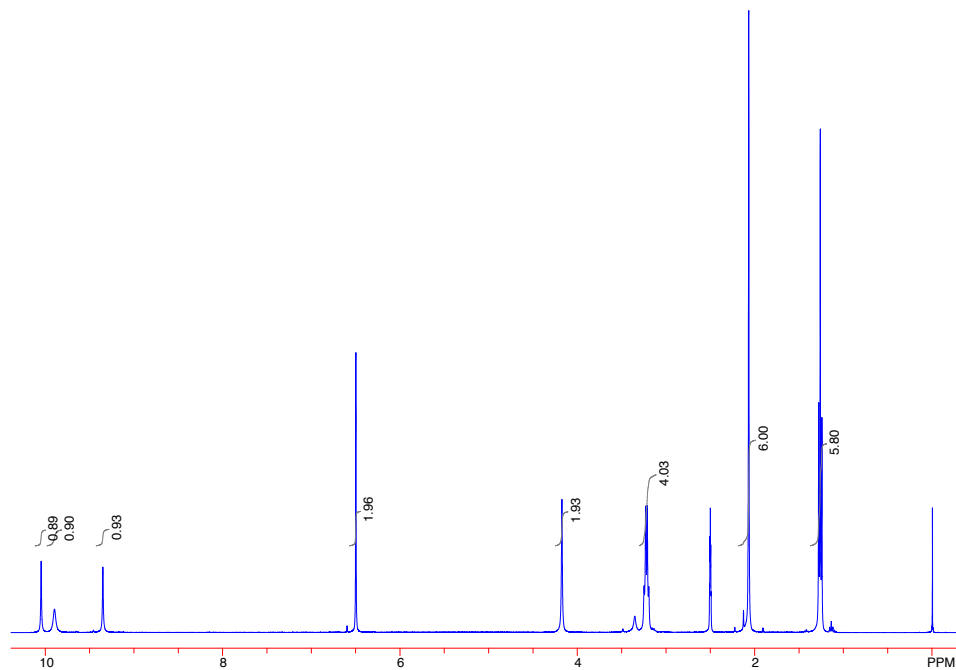
UV-210 nm and ESI MS positive ion mode



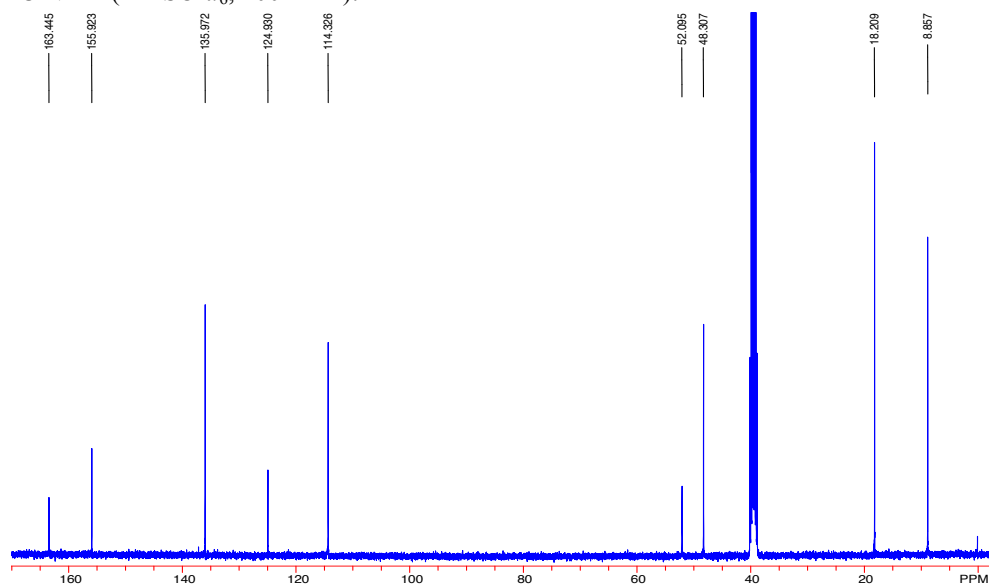
Signal 1: DAD1 C, Sig=210,8 Ref=400,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.385	MM	0.1001	30.69915	5.11161	0.1114
2	4.406	BV	0.3468	2.73941e4	1295.14526	99.4031
3	8.971	MM	0.1463	133.81070	15.24496	0.4855
Totals :				2.75586e4	1315.50183	

^1H NMR (DMSO- d_6 , 400 MHz):



^{13}C NMR (DMSO- d_6 , 100 MHz):



COA History

Original COA 25 March, 2014

Lot to lot comparison:

Lot 10250178 0.105 mg/mL

Lot 10280150 0.105 mg/mL