



Frontier BioPharm LLC

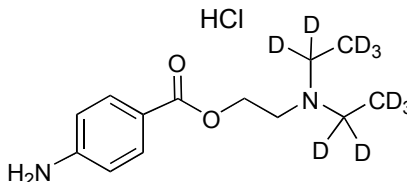
6013 Atwood Drive, Suite 300 • Richmond, KY 40475 • phone 859.623.0409 | fax 888.315.8599 • www.frontierbiopharm.com
mailing/billing address | P.O.Box 614 • Richmond, Ky 40476-0614

CERTIFICATE OF ANALYSIS

Procaine-*d*₁₀ HCl Salt

Sample Product Number:	PD-8210
Lot Number:	10260121
Chemical Name:	Procaine- <i>d</i> ₁₀ HCl
Storage Condition:	2-8°C
Identity:	¹ H-NMR, LCMS
Empirical Formula:	C ₁₃ H ₁₀ D ₁₀ N ₂ O ₂
Formula weight:	282.83 (246.22 free base)
Chemical Purity:	99.1% by LCMS
Residual solvents:	Ethanol 0.15% (NMR)
Isotopic purity:	>98 atom% D (LCMS)
Date of Analysis:	November 18, 2012

Structure



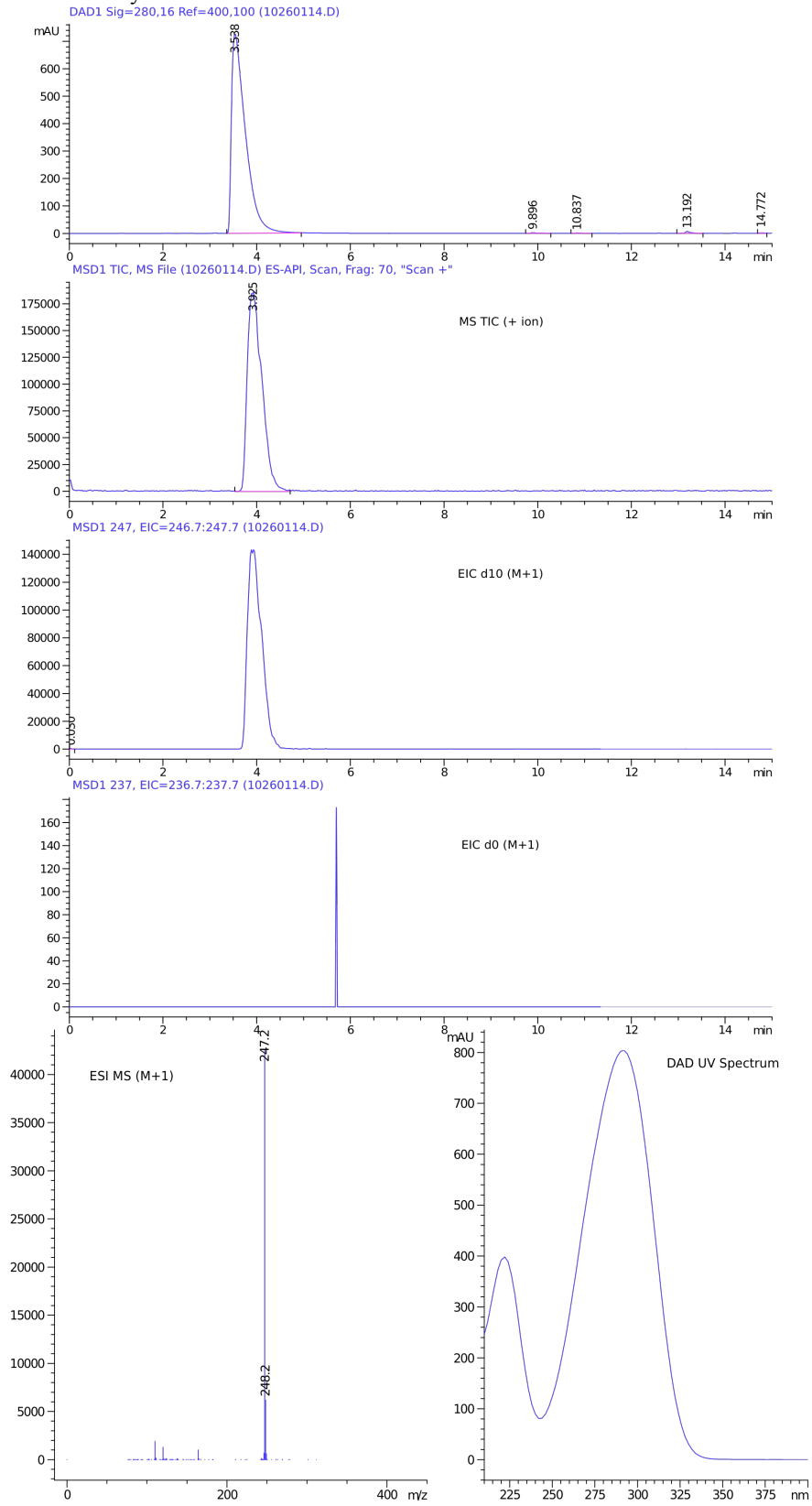
Approved:

Rodney L. Eisenberg, Ph.D.
Director

11-18-2012

Date

LCMS Analysis



Purity report (UV 280)

Signal 1: DAD1 Sig=280,16 Ref=400,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.538	BB	0.3069	1.51137e4	725.78082	99.2897
2	9.896	MM	0.1555	21.68637	2.32469	0.1425
3	10.837	MM	0.1449	11.25278	1.29453	0.0739
4	13.192	MM	0.1335	55.84567	6.97353	0.3669
5	14.772	MM	0.0970	19.33699	3.32145	0.1270
Totals :				1.52219e4	739.69503	

Deuterium Incorporation:

Mass (M+1)	%
237 (d ₀)	0
246 (d ₉)	1.36
247 (d ₁₀)	98.64

¹H-NMR (CD₃OD) 400 MHz

