



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

Hydroxyethylpromazine Sulfoxide Maleate Salt

HEPS Maleate

0.104 mg/mL (free base concentration)

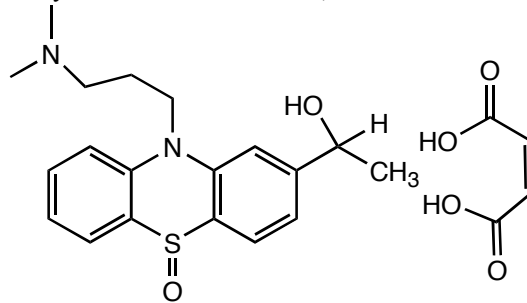
Product Number: H-1001
Lot No.: 10220120

Chemical Identity: Chemical Name: 2-(1-Hydroxyethyl)promazine sulfoxide Maleate Salt (Mixture of Diastereomers)
Molecular weight Maleate Salt: 460.45
Free Base 344.16

Solvent: Methanol
Volume per Ampule 1 mL
Storage Condition: Protect from light, refrigerate or freeze
Chemical Purity: 99.5%

Elemental Analysis Calc. $C_{23}H_{28}N_2O_6S$ C% 59.98, H% 6.13, N% 6.08, S% 6.96
Found C% 60.08, H% 6.15, N% 5.94, S% 6.92

Loss on Drying (TGA) <0.1%
Micro Ash <0.1% residue on ignition
Isotopic Purity: N/A
Date of Analysis (solution): December 10, 2012
Expiration/Re-Analysis Date: December 10, 2014

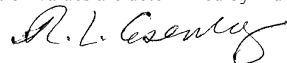


Purity (corrected)	Prepared Concentration*	Analyzed Concentration**
99.5%	0.104 mg/mL (± 0.003 mg/mL)	0.105 mg/mL (± 0.003 mg/mL)

Concentrations are reported as the free base. (Maleate salt concentration 0.139 mg/mL)

* Masses are determined using balances calibrated with NIST traceable weights. The prepared concentration is corrected for residual solvents, chromatographic purity, and the salt counterion mass, and is expressed as the free base concentration.

** Concentration values are determined by independent calibration curves. It is suggested that the prepared concentration value be used.

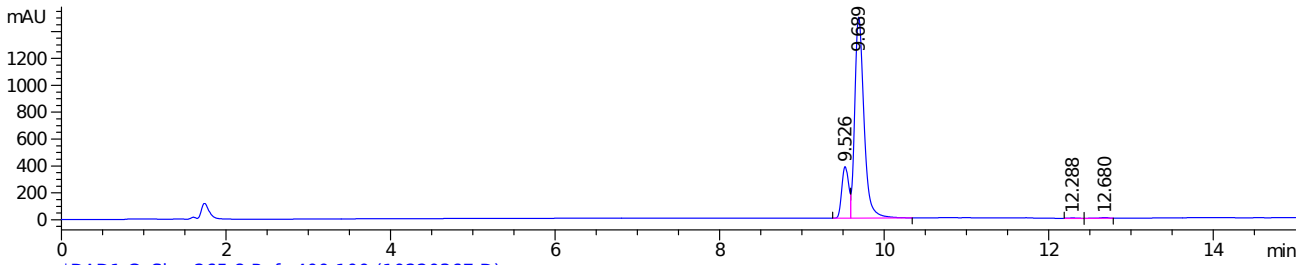
Approved: 
Rodney L. Eisenberg, Ph.D.
Director

12-10-2012
Date

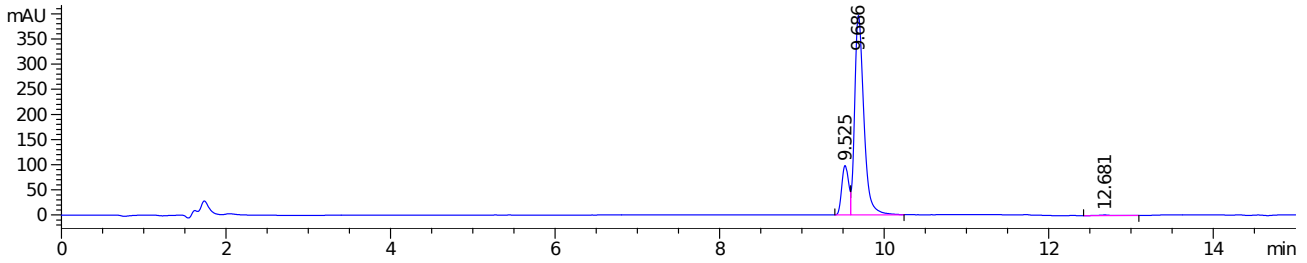
Spectral and Physical Data

LC/UV and MS Data (Compound consists of two diastereomers)

*DAD1 B, Sig=237,8 Ref=400,100 (10220367.D)



*DAD1 C, Sig=265,8 Ref=400,100 (10220367.D)

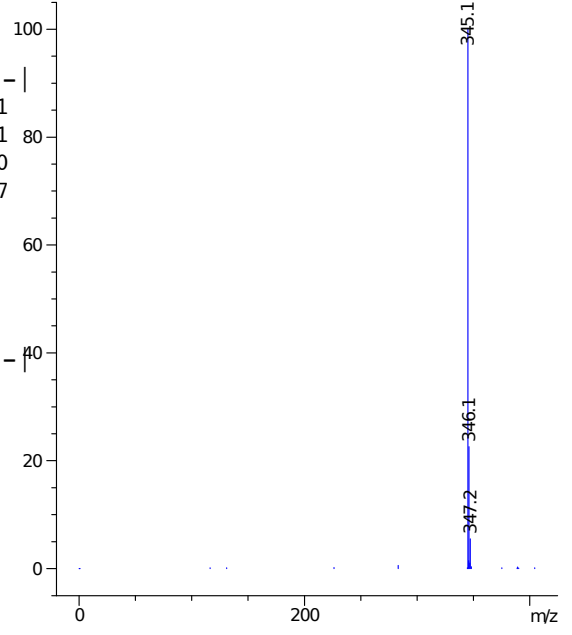


Signal 2: DAD1 B, Sig=237,8 Ref=400,100

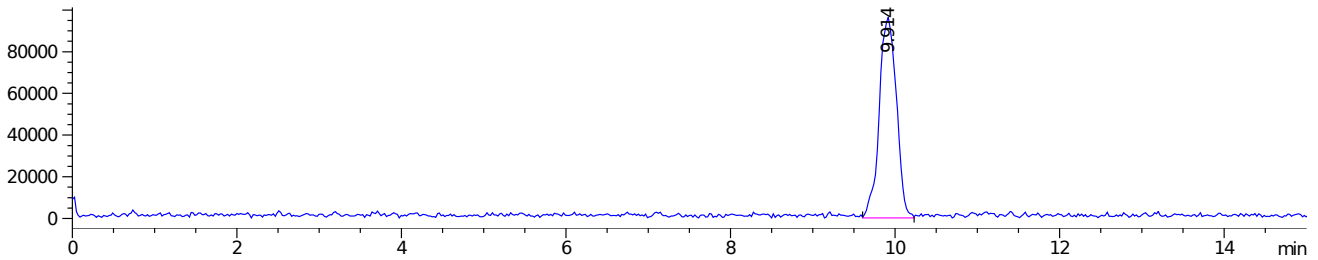
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.526	BV	0.0901	2171.28101	383.07852	15.5631
2	9.689	VB	0.1193	1.17142e4	496.28162	83.9641
3	12.288	BV	0.1017	19.81667	2.90039	0.1420
4	12.680	VV	0.1140	46.14137	5.97842	0.3307
Totals :				1.39515e4	1888.23895	

Signal 3: DAD1 C, Sig=265,8 Ref=400,100

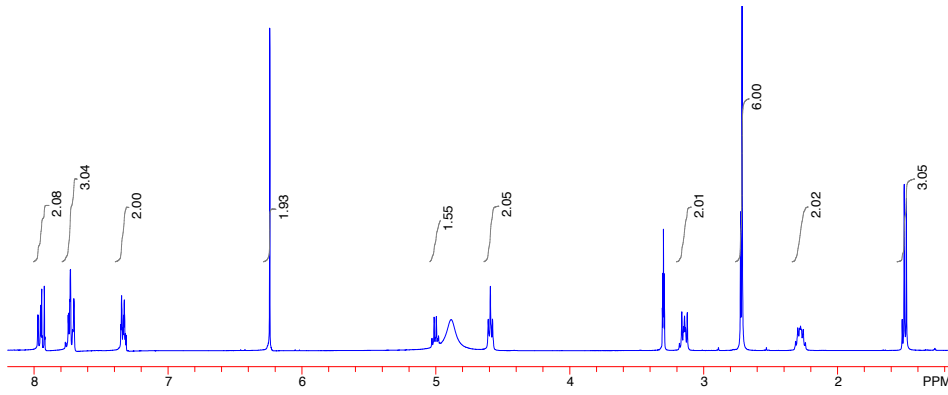
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.525	BV	0.0903	557.24811	98.12253	15.1961
2	9.686	VB	0.1209	3090.58618	396.55832	84.2802
3	12.681	VB	0.1952	19.20110	1.32366	0.5236
Totals :				3667.03539	496.00451	



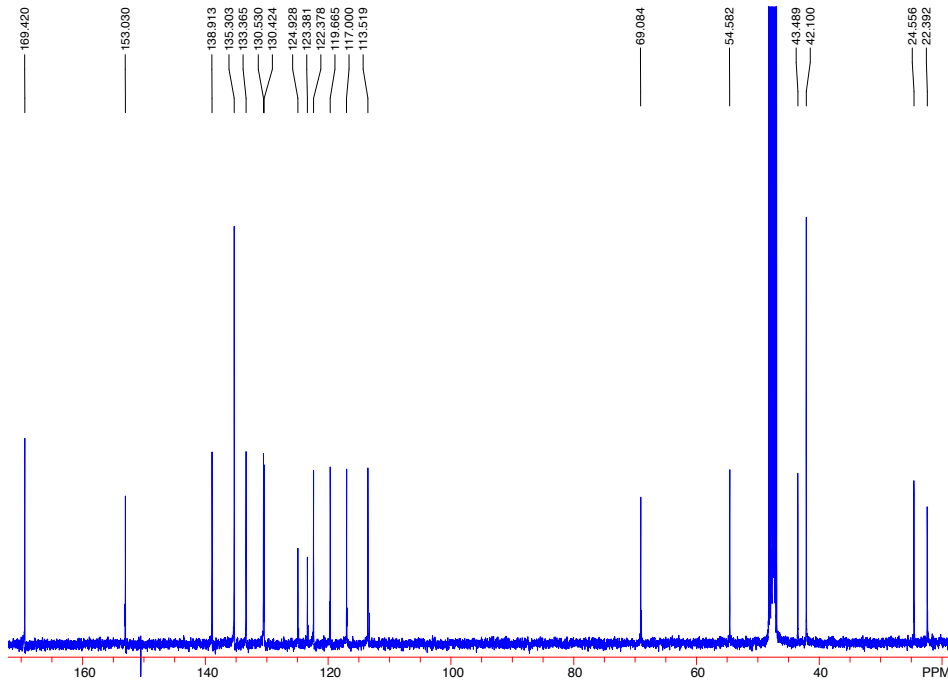
MSD1 TIC, MS File (10220367.D) ES-API, Scan, Frag: 70, "Scan +"



¹H-NMR (CD₃OD, 400 MHz)



¹³C-NMR (CD₃OD, 100 MHz)



Lot to lot concentration comparison

Lot no.	Conc. (mg/mL)
10150158	0.104
10210066	0.105
10220120	0.104