



Scientific Study

**B4512, Durabase Advanced Cream
(Pentoxifylline Study)**

Not appropriate for regulatory submission.
Please visit www.SpectrumRx.com or
contact Tech Services for the most up-to-
date information contained in this
information package.

Spectrum Pharmacy Products

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Pentoxifylline:

3.10g Pentoxifylline raw drug powder from MP Chemical (part number 156107, Lot # 7591K) was added to 100.00g Spectrum Chemical Mfg. Corp. Durabase Advanced and levigated with an electronic mortar and pestle, resulting in a final concentration of 3.0% w/w. This emulsion was then stored at room temperature in the same Unguator container.

Similar steps were used in preparing the following combination compounds:

Compound 1 (2% Baclofen + 10% Flurbiprofen + 5% Lidocaine HCl + 3% Pentoxifylline) Compound 2 (5% Diclofenac Na + 3% Ibuprofen + 3% Pentoxifylline + 10% Verapamil HCl) Compound 3 (2% Baclofen + 1 % Bupivacaine HCl + 2% Cyclobenzaprine HCl + 5% Diclofenac Na + 6% Gabapentin + 3% Ibuprofen + 10% Ketamine HCl + 3% Pentoxifylline)

Samples were prepared every 14 days by a 5.00 g accurately weighed sample being transferred to a 50.0 ml volumetric flask. The contents of the flask were diluted to volume with matrix matched mobile phase for HPLC determination.

Results were compared and samples were analyzed each 14 day interval. The limits of acceptance of results were to be < 90% theoretical concentration of initial prepared sample. The results were tabulated for each 14 day interval and examples of chromatography are attached which show standard preparations, initial interval, and latest products.

90-Day Summary:

Compounded at 3.0% w/w in Compound 1 (2% Baclofen + 10% Flurbiprofen + 5% Lidocaine HCl + 3% Pentoxifylline), stability-indicating HPLC analysis found less than 3% Pentoxifylline loss in Spectrum Chemical Mfg. Corp. Durabase Advanced at 90 days.

Compounded at 3.0% w/w in Compound 2 (5% Diclofenac Na + 3% Ibuprofen + 3% Pentoxifylline + 10% Verapamil HCl), stability-indicating HPLC analysis found negligible Pentoxifylline loss in Spectrum Chemical Mfg. Corp. Durabase Advanced at 90 days. Compounded at 3.0% w/w in Compound 3 (2% Baclofen + 1 % Bupivacaine HCl + 2% Cyclobenzaprine HCl + 5% Diclofenac Na + 6% Gabapentin + 3% Ibuprofen + 10% Ketamine HCl + 3% Pentoxifylline), stability-indicating HPLC analysis found negligible Pentoxifylline loss in Spectrum Chemical Mfg. Corp. Durabase Advanced at 90 days.

Attached are 6 chromatographs of Spectrum Chemical Mfg. Corp. Durabase Advanced showing 90-Day Standard, and 90-Day Sample of all 3 combination compounds.

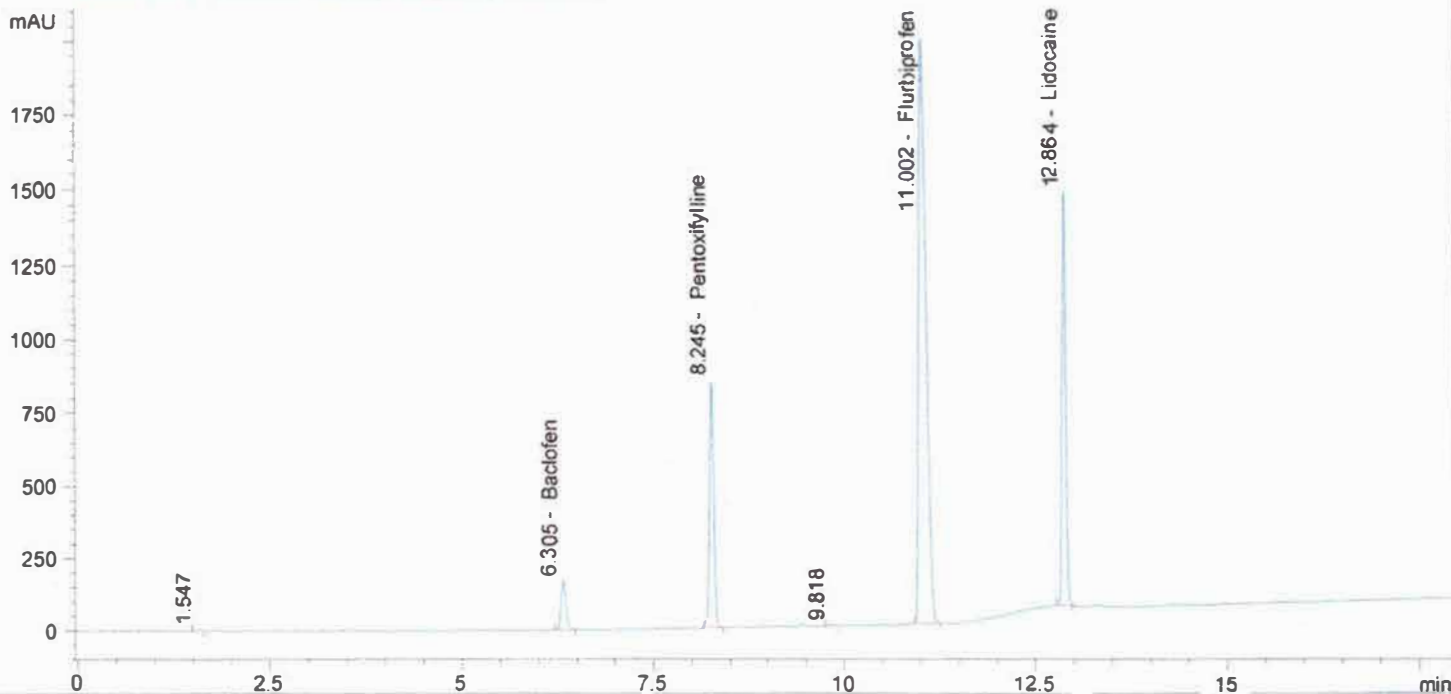
flur, bac, lido, pent in MeOH and H2O 9:1
 XbridgeC18150x4.6x3.5,1ml/min,30C Buf5mMNa2B4O7,ACN,MEO
 H, 80Buf20MEOH HOLD TO2MIN,58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min,46Buf14ACN40MEOH@10MIN,5 buff
 47.5ACN/MEOH@16min TILL18 min

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 Method Inj vol 5ul
 Actual inj vol 5ul

Injection date and Time 8/27/2013 11:18:27 PM

Vial 51 Inj # 1

DAD1 B. Sig=210,5 Ref=360,100 (130801\BUD00092.D)



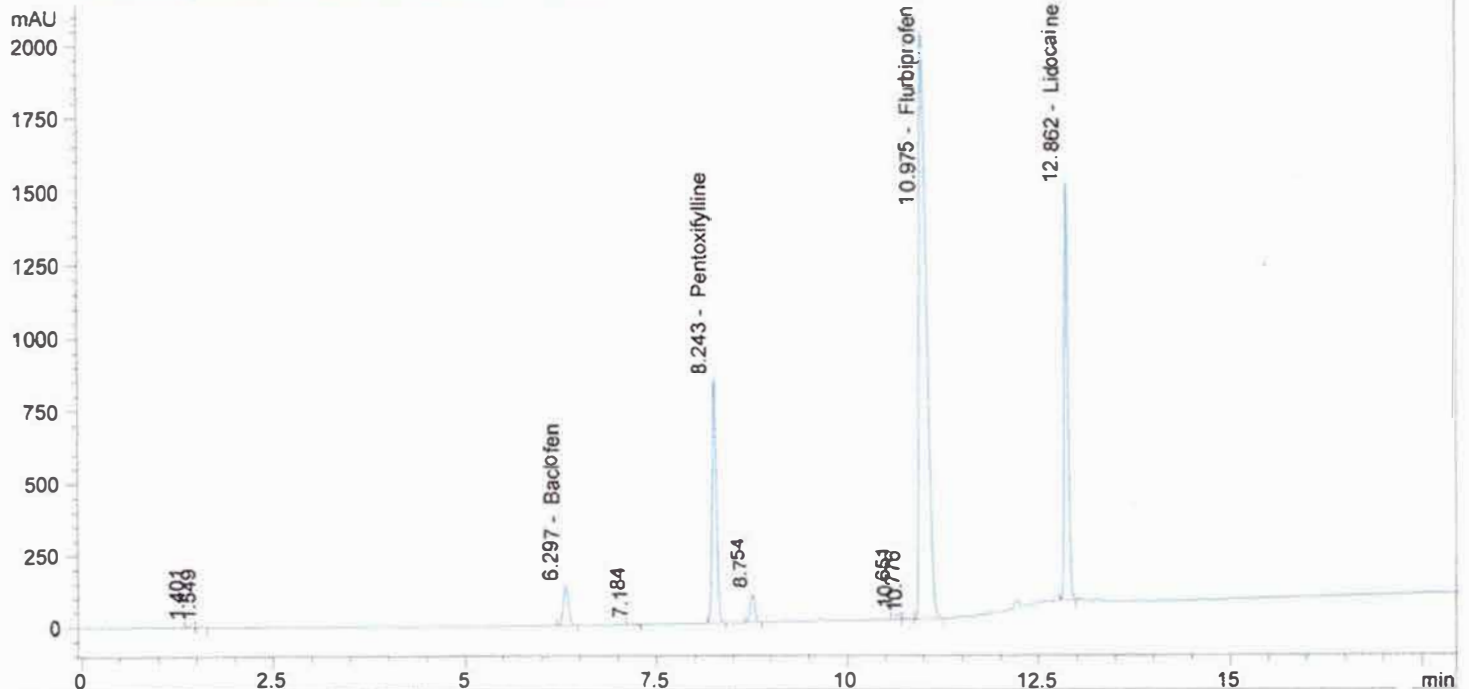
#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %
1.0		1.547	0.055	3	0.555	0.00000	0.00000	11	0.05
2.0	Gabapentin	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
3.0	Baclofen	6.305	0.072	169	0.768	1.00876e-4	0.07938	787	3.59
4.0	Pentoxifylline	8.245	0.059	845	0.893	3.96374e-5	0.12400	3128	14.28
5.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
6.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
7.0		9.818	0.055	3	0.980	0.00000	0.00000	11	0.05
8.0	Gabapentin RC	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
9.0	Flurbiprofen	11.002	0.106	1986	0.460	3.13387e-5	0.41552	13259	60.51
10.0	Ibuprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
11.0	Diclofenac	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
12.0	Ketamine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
13.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
14.0	Lidocaine	12.864	0.055	1418	0.913	4.57033e-5	0.21549	4715	21.52
15.0	Verapamil	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
16.0	Bupivacaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
17.0	Cyclobenzaprine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
18.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
total							0.83438	21911	100.00

03192013@139 216.0mg/50ml MeOH
 XbridgeC18150x4.6x3.5, 1ml/min, 30C Buf5mMNa2B4O7, ACN, MEO
 H, 80Buf20MEOH HOLD TO2MIN, 58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min, 46Buf14ACN40MEOH@10MIN, 5 buff
 47.5ACN/MEOH@16min TILL18 min

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 Method Inj vol Sul
 Actual inj vol 5ul

Injection date and Time 8/27/2013 12:05:06 AM Vial 52 Inj # 1

DAD1 B. Sig=210.5 Ref=360,100 (130801\BUD00094.D)



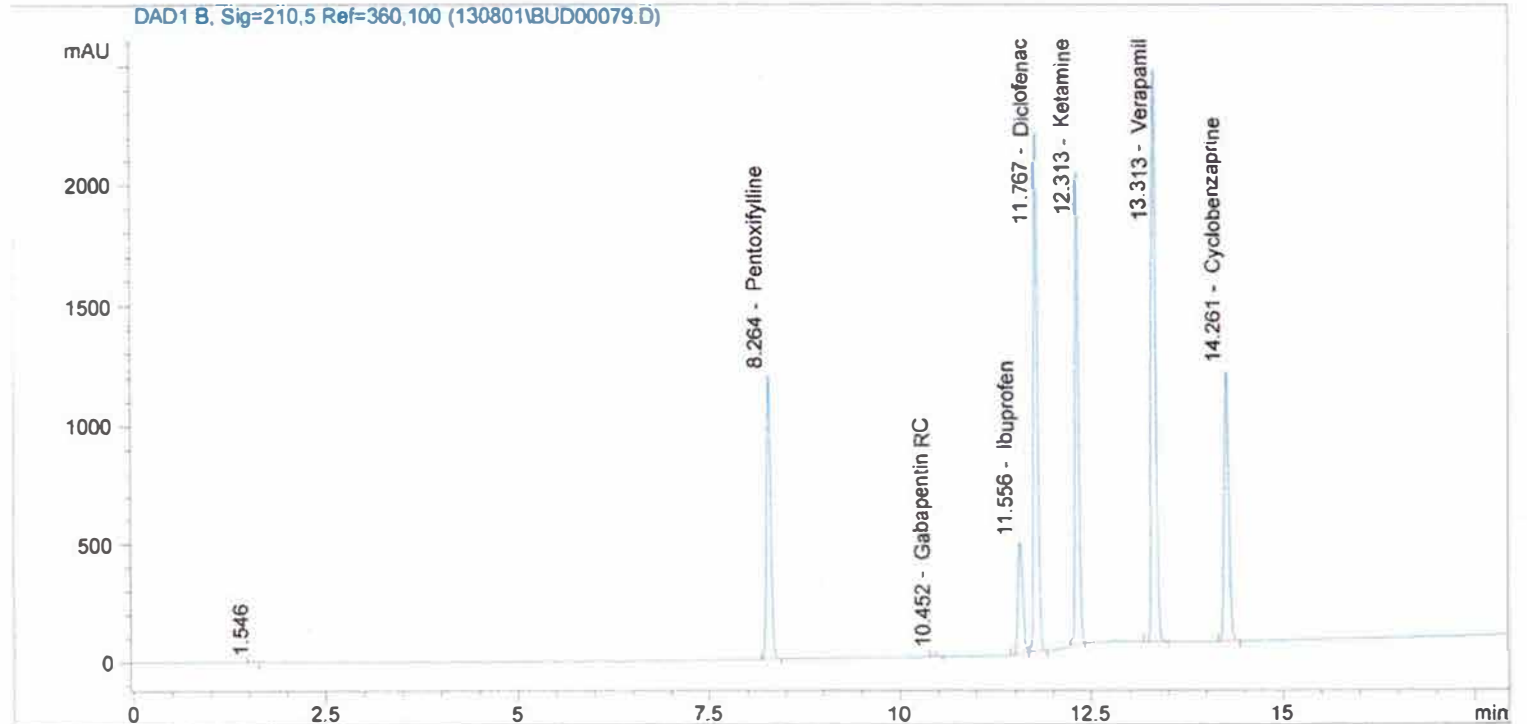
#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %	
1.0		1.401	0.049	6	0.912	0.00000	0.00000	20	0.09	
2.0		1.549	0.059	3	0.563	0.00000	0.00000	12	0.05	
3.0	Gabapentin	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
4.0	Baclofen	6.297	0.076	138	0.835	1.00479e-5	1.59691	687	2.99	
5.0		7.184	0.061	2	0.976	0.00000	0.00000	8	0.03	
6.0	Pentoxifylline	8.243	0.060	844	0.902	3.94534e-5	7.91892	3196	13.90	
7.0		8.754	0.066	98	0.885	0.00000	0.00000	423	1.84	
8.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
9.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
10.0	Gabapentin RC	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
11.0		10.651	0.059	18	0.901	0.00000	0.00000	71	0.31	
12.0		10.776	0.071	5	0.859	0.00000	0.00000	25	0.11	
13.0	Flurbiprofen	10.975	0.107	2015	0.447	3.12331e-5	9.90680	13703	59.59	
14.0	Ibuprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
15.0	Diclofenac	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
16.0	Ketamine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
17.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
18.0	Lidocaine	12.862	0.056	1449	0.904	4.55329e-5	9.90680	4850	21.09	
19.0	Verapamil	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
20.0	Bupivacaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
21.0	Cyclobenzaprine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
22.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00	
total								19.53620	22995	100.00

PENT, DICL, KET, VER, CYC, IBU STD IN MEOH
 XbridgeC18150x4.6x3.5,1ml/min,30C Buf5mMNa2B4O7,ACN,MEO
 H, 80Buf20MEOH HOLD TO2MIN,58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min,46Buf14ACN40MEOH@10MIN,5 buff
 47.5ACN/MEOH@16min TILL18 min

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 Method Inj vol 5ul
 Actual inj vol 5ul

Injection date and Time 8/27/2013 6:16:06 PM

Vial 43 Inj # 2

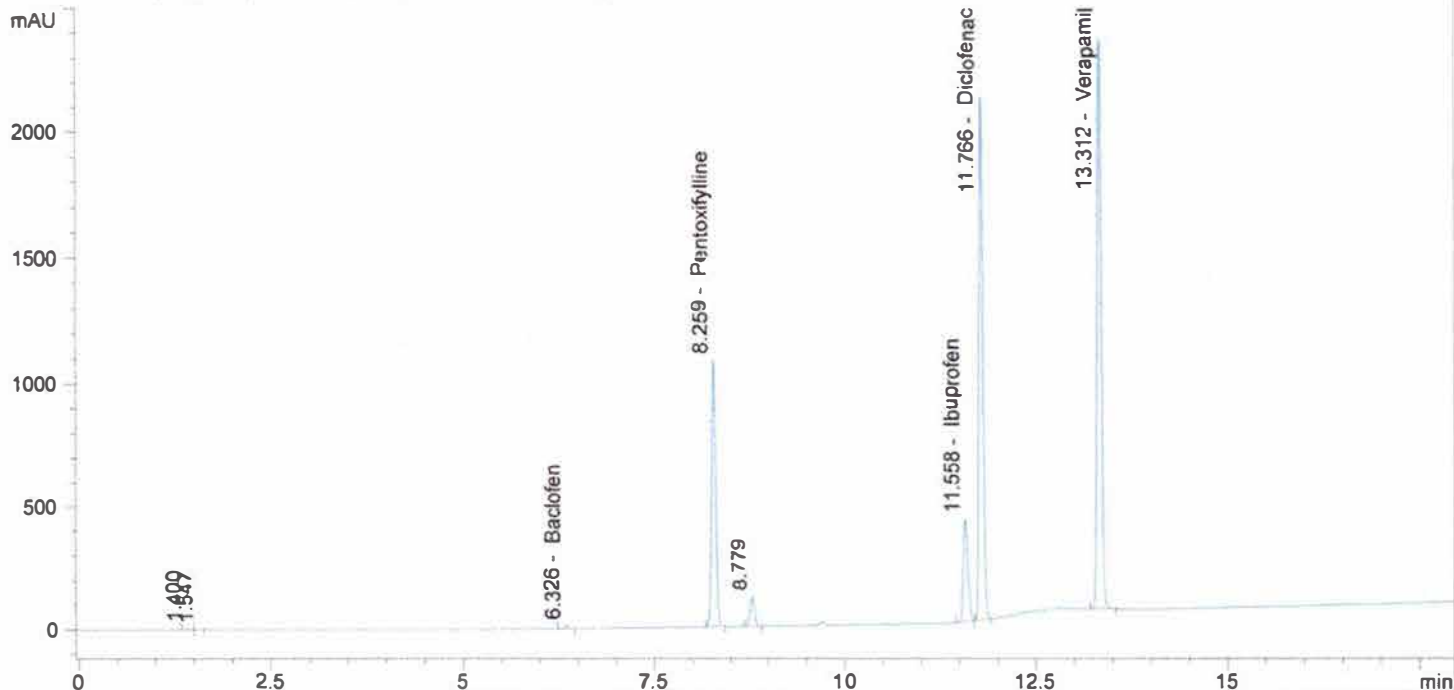


#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %
1.0		1.546	0.049	3	0.652	0.00000	0.00000	10	0.03
2.0	Gabapentin	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
3.0	Baclofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
4.0	Pentoxifylline	8.264	0.057	1202	0.910	4.05347e-5	0.17934	4424	12.70
5.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
6.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
7.0	Gabapentin RC	10.452	0.064	15	0.913	0.00000	0.00000	64	0.18
8.0	Flurbiprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
9.0	Ibuprofen	11.556	0.070	474	0.665	8.61798e-5	0.18351	2129	6.11
10.0	Diclofenac	11.767	0.057	2201	0.804	3.31767e-5	0.25831	7786	22.34
11.0	Ketamine	12.313	0.054	2014	0.909	7.39912e-5	0.47976	6484	18.61
12.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
13.0	Lidocaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
14.0	Verapamil	13.313	0.061	2417	0.890	5.53591e-5	0.51370	9279	26.63
15.0	Bupivacaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
16.0	Cyclobenzaprine	14.261	0.063	1150	0.897	3.87244e-5	0.18093	4672	13.41
17.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
total							1.79556	34849	100.00

03192013@143 265.1MG/50ML MEOH
 XbridgeC18150x4.6x3.5, 1ml/min, 30C Buf5mMNa2B407, ACN, MEO
 H, 80Buf20MEOH HOLD TO2MIN, 58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min, 46Buf14ACN40MEOH@10MIN, 5 buff
 47.5ACN/MEOH@16min TILL18 min

Injection date and Time 8/27/2013 7:25:53 PM Vial 55 Inj # 1
 Method Inj vol 5ul
 Actual inj vol 5ul

DAD1 B, Sig=210,5 Ref=360,100 (130801\BUD00082.D)



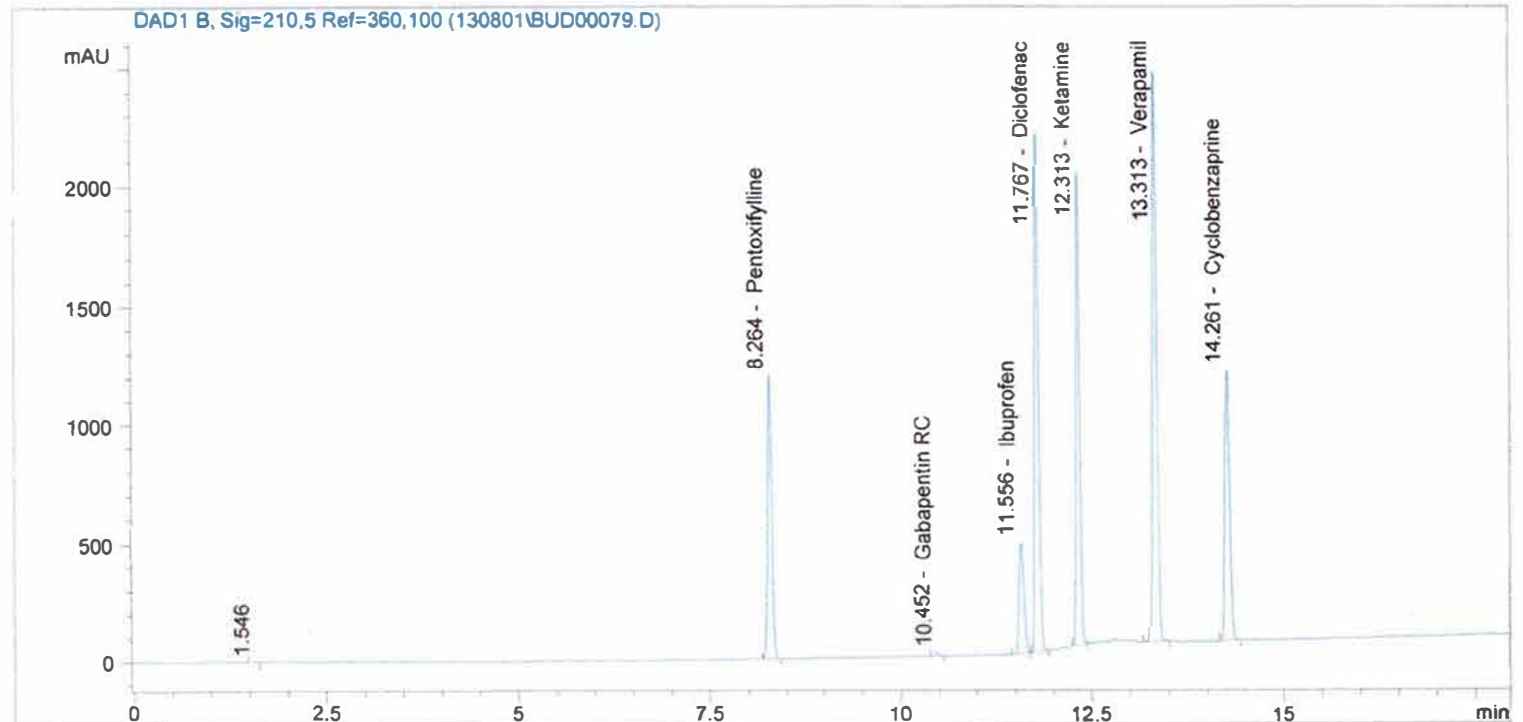
#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %
1.0		1.400	0.055	7	1.042	0.00000	0.00000	25	0.11
2.0		1.547	0.054	3	0.566	0.00000	0.00000	13	0.06
3.0	Gabapentin	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
4.0	Baclofen	6.326	0.071	13	0.916	0.00000	0.00000	59	0.26
5.0	Pentoxifylline	8.259	0.057	1084	0.915	4.05347e-5	3.06163	4006	17.71
6.0		8.779	0.065	121	0.904	0.00000	0.00000	513	2.27
7.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
8.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
9.0	Gabapentin RC	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
10.0	Flurbiprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
11.0	Ibuprofen	11.558	0.068	418	0.695	8.61798e-5	2.93374	1806	7.98
12.0	Diclofenac	11.766	0.058	2119	0.831	3.31767e-5	4.64431	7425	32.82
13.0	Ketamine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
14.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
15.0	Lidocaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
16.0	Verapamil	13.312	0.061	2296	0.889	5.53591e-5	9.15748	8774	38.79
17.0	Bupivacaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
18.0	Cyclobenzaprine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
19.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
total							19.79716	22620	100.00

PENT, DICL, KET, VER, CYC, IBU STD IN MEOH
 XbridgeC18150x4.6x3.5, 1ml/min, 30C Buf5mMNa2B4O7, ACN, MEO
 H, 80Buf20MEOH HOLD TO2MIN, 58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min, 46Buf14ACN40MEOH@10MIN, 5 buff
 47.5ACN/MEOH@16min TILL18 min

Injection date and Time 8/27/2013 6:16:06 PM

Vial 43 Inj # 2

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 Method Inj vol 5ul
 Actual inj vol 5ul



#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %
1.0		1.546	0.049	3	0.652	0.00000	0.00000	10	0.03
2.0	Gabapentin	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
3.0	Baclofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
4.0	Pentoxifylline	8.264	0.057	1202	0.910	4.05347e-5	0.17934	4424	12.70
5.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
6.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
7.0	Gabapentin RC	10.452	0.064	15	0.913	0.00000	0.00000	64	0.18
8.0	Flurbiprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
9.0	Ibuprofen	11.556	0.070	474	0.665	8.61798e-5	0.18351	2129	6.11
10.0	Diclofenac	11.767	0.057	2201	0.804	3.31767e-5	0.25831	7786	22.34
11.0	Ketamine	12.313	0.054	2014	0.909	7.39912e-5	0.47976	6484	18.61
12.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
13.0	Lidocaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
14.0	Verapamil	13.313	0.061	2417	0.890	5.53591e-5	0.51370	9279	26.63
15.0	Bupivacaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
16.0	Cyclobenzaprine	14.261	0.063	1150	0.897	3.87244e-5	0.18093	4672	13.41
17.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00

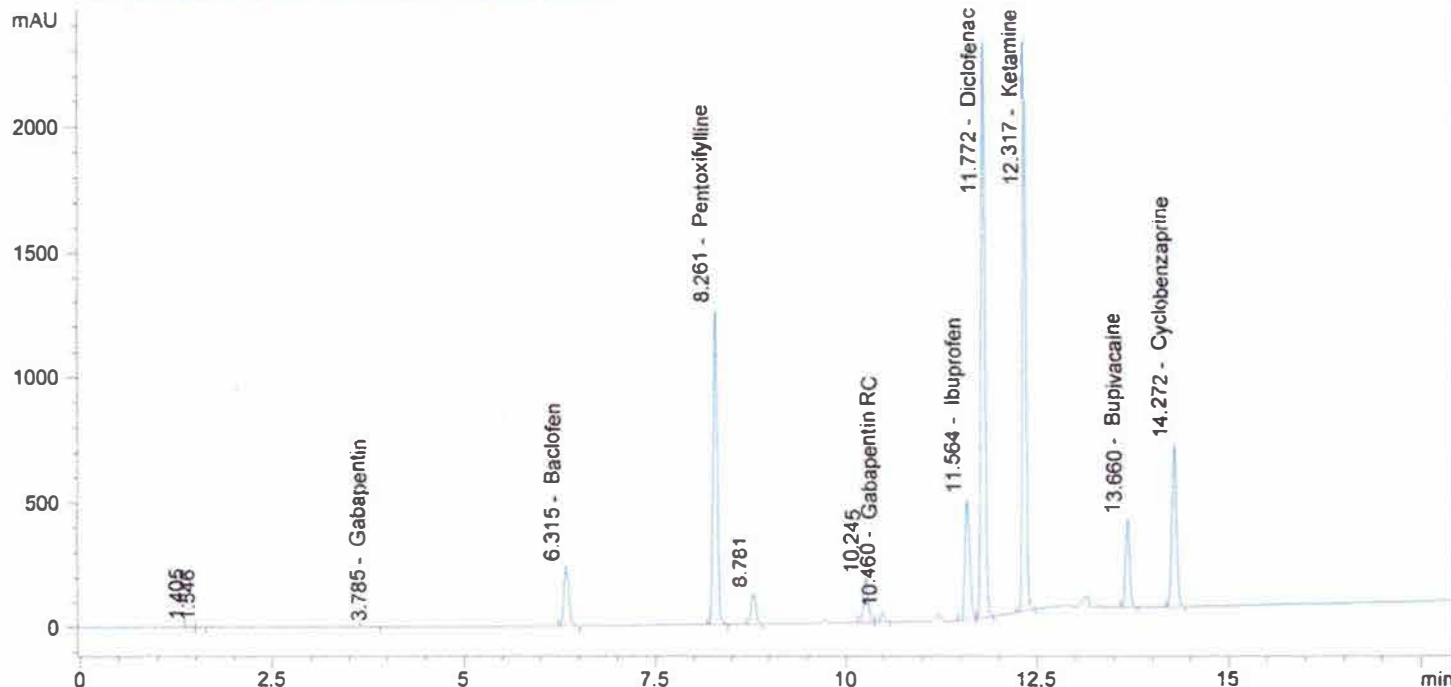
total 1.79556 34849 100.00

03192013@135 302.6MG/50ML MEOH
 XbridgeC18150x4.6x3.5, 1ml/min, 30C Buf5mMNa2B4O7, ACN, MEO
 H, 80Buf20MEOH HOLD TO2MIN, 58Buf14ACN28MeOH@5.5min to 4
 3Buf24ACN33MEOH@9min, 46Buf14ACN40MEOH@10MIN, 5 buff
 47.5ACN/MEOH@16min TILL18 min

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 Method Inj vol 5ul
 Actual inj vol 5ul

Injection date and Time 8/27/2013 6:39:17 PM Vial 54 Inj # 1

DAD1 B, Sig=210,5 Ref=360,100 (130801\BUD00080.D)



#	Compound Name	Meas. R	Width	Height	Symmetr	Response Fact	Amount	Area	Area %
1.0		1.405	0.054	7	0.836	0.00000	0.00000	23	0.08
2.0		1.546	0.054	3	0.594	0.00000	0.00000	12	0.04
3.0	Gabapentin	3.785	0.115	1	1.065	0.00000	0.00000	6	0.02
4.0	Baclofen	6.315	0.076	242	0.759	0.00000	0.00000	1155	3.98
5.0	Pentoxifylline	8.261	0.059	1263	0.905	4.05347e-5	3.11033	4644	15.99
6.0		8.781	0.065	124	0.911	0.00000	0.00000	528	1.82
7.0	Clonidine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
8.0	ketoprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
9.0		10.245	0.068	175	0.891	0.00000	0.00000	753	2.59
10.0	Gabapentin RC	10.460	0.065	40	0.930	0.00000	0.00000	166	0.57
11.0	Flurbiprofen	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
12.0	Ibuprofen	11.564	0.070	482	0.670	8.61798e-5	3.04826	2141	7.37
13.0	Diclofenac	11.772	0.055	2298	0.808	3.31767e-5	4.46159	8139	28.03
14.0	Ketamine	12.317	0.055	2295	0.910	7.39912e-5	9.21583	7538	25.96
15.0	Triclosan	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
16.0	Lidocaine	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
17.0	Verapamil	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
18.0	Bupivacaine	13.660	0.057	349	0.930	0.00000	0.00000	1298	4.47
19.0	Cyclobenzaprine	14.272	0.063	649	0.901	3.87244e-5	1.68494	2633	9.07
20.0	Amitriptyline	0.000	0.000	0	0.000	0.00000	0.00000	0	0.00
total							21.52094	29035	100.00