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Appendix

in vitro data

Calibration data for VPA analysis

Peak area	Conc. (mol/l)	Averaged peak area	SD
738518	1.06092E-05	775093.50	51725.57
811669	1.06092E-05		
1562806	2.12185E-05	1514149.00	68811.39
1465492	2.12185E-05		
3120527	4.24369E-05	2988267.50	187043.18
2856008	4.24369E-05		
6088016	8.48739E-05	5643058.00	629265.64
5198100	8.48739E-05		

Regression Statistics

Multiple R	0.99881257
R Square	0.997626551
Adjusted R Square	0.664293218
Standard Error	104687.3921
Observations	4

Analysis of Variance

	<i>df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>P-value</i>
Regression	1	1.38197E+13	1.38197E+13	1260.98331	0.00079209
Residual	3	32878350198	10959450066		
Total	4	1.38526E+13			

Regression coefficients

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Statistic</i>	<i>P-value</i>
Intercept	0.00E+00			
X	6.75E+10	1.07E+09	6.31E+01	3.78E-07

Observed area = (6.75E+10) x (Estimated Conc.)

Brain homogenate data from RAT#1(Valproic acid analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1395514	2.07E-05	2.17E-05	1.51E-06	6.75E-07
VPP (0 min.)	1539679	2.28E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1624976	2.41E-05	2.30E-05	1.55E-06	6.93E-07
VPP (15 min.)	1476929	2.19E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1873325	2.77E-05	2.70E-05	1.08E-06	4.84E-07
VPP (30 min.)	1769867	2.62E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	1775530	2.63E-05	2.53E-05	1.35E-06	6.05E-07
VPP (60 min.)	1646426	2.44E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	1612431	2.39E-05	2.46E-05	1.06E-06	4.76E-07
VPP (120 min.)	1714067	2.54E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	1716173	2.54E-05	2.57E-05	4.20E-07	1.88E-07
VPP (240 min.)	1756318	2.60E-05			

Brain homogenate data from RAT#2 (Valproic acid analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1360716	2.01E-05	2.04E-05	3.92E-07	1.75E-07
VPP (0 min.)	1398178	2.07E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1472164	2.18E-05	2.20E-05	3.44E-07	1.54E-07
VPP (15 min.)	1505022	2.23E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1601717	2.37E-05	2.41E-05	5.34E-07	2.39E-07
VPP (30 min.)	1652751	2.45E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	1769499	2.62E-05	2.55E-05	1.05E-06	4.70E-07
VPP (60 min.)	1669170	2.47E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	1346232	1.99E-05	2.20E-05	2.95E-06	1.32E-06
VPP (120 min.)	1627836	2.41E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	1764691	2.61E-05	2.61E-05	2.19E-08	9.81E-09
VPP (240 min.)	1762596	2.61E-05			

Brain homogenate data from RAT#3 (Valproic acid analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1696718	2.51E-05	2.58E-05	9.90E-07	4.43E-07
VPP (0 min.)	1791287	2.65E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1551372	2.30E-05	2.38E-05	1.17E-06	5.23E-07
VPP (15 min.)	1662999	2.46E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	2064012	3.06E-05	2.98E-05	1.02E-06	4.58E-07
VPP (30 min.)	1966196	2.91E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	1774804	2.63E-05	2.65E-05	3.72E-07	1.66E-07
VPP (60 min.)	1810357	2.68E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	1665576	2.47E-05	2.40E-05	9.81E-07	4.39E-07
VPP (120 min.)	1571889	2.33E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	1661937	2.46E-05	2.48E-05	2.11E-07	9.44E-08
VPP (240 min.)	1682102	2.49E-05			

Brain homogenate data from RAT#4 (Valproic acid analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1674736	2.48E-05	2.67E-05	2.75E-06	1.23E-06
VPP (0 min.)	1937457	2.87E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1852498	2.74E-05	2.86E-05	1.72E-06	7.70E-07
VPP (15 min.)	2016942	2.99E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1916941	2.84E-05	2.89E-05	7.22E-07	3.23E-07
VPP (30 min.)	1985932	2.94E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	2032277	3.01E-05	2.93E-05	1.09E-06	4.87E-07
VPP (60 min.)	1928360	2.86E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	2320527	3.44E-05	3.46E-05	3.74E-07	1.67E-07
VPP (120 min.)	2356252	3.49E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	2111138	3.13E-05	3.01E-05	1.6779E-06	7.50E-07
VPP (240 min.)	1950886	2.89E-05			

Brain homogenate data from RAT#5 (Valproic acid analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1612393	2.39E-05	2.39E-05	1.43E-08	6.38E-09
VPP (0 min.)	1613755	2.39E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1332584	1.97E-05	1.99E-05	2.30E-07	1.03E-07
VPP (15 min.)	1354535	2.01E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1513043	2.24E-05	2.27E-05	3.68E-07	1.65E-07
VPP (30 min.)	1548188	2.29E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	1504773	2.23E-05	2.17E-05	8.26E-07	3.69E-07
VPP (60 min.)	1425924	2.11E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	1557420	2.31E-05	2.34E-05	4.86E-07	2.17E-07
VPP (120 min.)	1603822	2.37E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	1572994	2.33E-05	2.27E-05	7.82E-07	3.50E-07
VPP (240 min.)	1498275	2.22E-05			

Liver homogenate data from Rat #1 (Valproic acid Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1942959	2.88E-05	2.75E-05	1.86E-06	8.31E-07
VPP (0 min.)	1765405	2.61E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1818902	2.69E-05	2.73E-05	5.03E-07	2.25E-07
VPP (15 min.)	1866953	2.76E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1948644	2.89E-05	3.05E-05	2.30E-06	1.03E-06
VPP (30 min.)	2167906	3.21E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	2222301	3.29E-05	3.36E-05	9.49E-07	4.24E-07
VPP (60 min.)	2312955	3.42E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	2659021	3.94E-05	4.01E-05	1.08E-06	4.83E-07
VPP (120 min.)	2762232	4.09E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	3661177	5.42E-05	5.49E-05	9.66E-07	4.32E-07
VPP (240 min.)	3753469	5.56E-05			

Liver homogenate data from Rat #2 (Valproic acid Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1630301	2.41E-05	2.54E-05	1.73E-06	7.73E-07
VPP (0 min.)	1795473	2.66E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	2137918	3.17E-05	3.09E-05	1.05E-06	4.68E-07
VPP (15 min.)	2038004	3.02E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	2199080	3.26E-05	3.48E-05	3.11E-06	1.39E-06
VPP (30 min.)	2495891	3.70E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	2527088	3.74E-05	3.74E-05	4.02E-08	1.80E-08
VPP (60 min.)	2523246	3.74E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	3020640	4.47E-05	4.57E-05	1.32E-06	5.91E-07
VPP (120 min.)	3146826	4.66E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	4399970	6.52E-05	6.24E-05	3.96E-06	1.77E-06
VPP (240 min.)	4021740	5.96E-05			

Liver homogenate data from Rat #3 (Valproic acid Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	2215490	3.28E-05	2.84E-05	6.20E-06	2.77E-06
VPP (0 min.)	1623253	2.40E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	2341841	3.47E-05	3.13E-05	4.74E-06	2.12E-06
VPP (15 min.)	1889092	2.80E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	2429082	3.60E-05	3.51E-05	1.22E-06	5.45E-07
VPP (30 min.)	2312605	3.42E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	2332628	3.45E-05	3.59E-05	1.99E-06	8.90E-07
VPP (60 min.)	2522718	3.74E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	2790299	4.13E-05	4.21E-05	1.08E-06	4.83E-07
VPP (120 min.)	2893368	4.28E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	3899166	5.77E-05	5.84E-05	9.0527E-07	4.05E-07
VPP (240 min.)	3985626	5.90E-05			

Liver homogenate data from Rat #4 (Valproic acid Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1297679	1.92E-05	2.00E-05	1.14E-06	5.11E-07
VPP (0 min.)	1406722	2.08E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1499625	2.22E-05	2.38E-05	2.19E-06	9.81E-07
VPP (15 min.)	1709058	2.53E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1536814	2.28E-05	2.19E-05	1.27E-06	5.67E-07
VPP (30 min.)	1415642	2.10E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	2010782	2.98E-05	3.02E-05	5.79E-07	2.59E-07
VPP (60 min.)	2066068	3.06E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	2525168	3.74E-05	3.87E-05	1.91E-06	8.53E-07
VPP (120 min.)	2707320	4.01E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	3233932	4.79E-05	4.94E-05	2.12E-06	9.50E-07
VPP (240 min.)	3436806	5.09E-05			

Liver homogenate data from Rat #5 (Valproic acid Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (0 min.)	0	0.00E+00			
VPP (0 min.)	1456311	2.16E-05	2.08E-05	1.11E-06	4.94E-07
VPP (0 min.)	1350769	2.00E-05			
Control (15 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (15 min.)	0	0.00E+00			
VPP (15 min.)	1564959	2.32E-05	2.35E-05	5.23E-07	2.34E-07
VPP (15 min.)	1614879	2.39E-05			
Control (30 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (30 min.)	0	0.00E+00			
VPP (30 min.)	1771145	2.62E-05	2.69E-05	8.95E-07	4.00E-07
VPP (30 min.)	1856652	2.75E-05			
Control (60 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (60 min.)	0	0.00E+00			
VPP (60 min.)	1918846	2.84E-05	2.97E-05	1.79E-06	7.99E-07
VPP (60 min.)	2089417	3.09E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	2513293	3.72E-05	3.57E-05	2.10E-06	9.39E-07
VPP (120 min.)	2312862	3.42E-05			
Control (240 min.)	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	2777236	4.11E-05	4.38E-05	3.79E-06	1.69E-06
VPP (240 min.)	3138993	4.65E-05			



Calculated VPA concentration in Rats' liver homogenate

Time (min.)		N1	N2	N3	N4	N5	Mean	SD	SEM
0	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
15	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
120	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
240	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	VPP	2.75E-05	2.54E-05	2.84E-05	2.00E-05	2.08E-05	2.44E-05	3.83E-06	1.71E-06
15	VPP	2.73E-05	3.09E-05	3.13E-05	2.38E-05	2.35E-05	2.74E-05	3.74E-06	1.67E-06
30	VPP	3.05E-05	3.48E-05	3.51E-05	2.19E-05	2.69E-05	2.98E-05	5.59E-06	2.50E-06
60	VPP	3.36E-05	3.74E-05	3.59E-05	3.02E-05	2.97E-05	3.34E-05	3.42E-06	1.53E-06
120	VPP	4.01E-05	4.57E-05	4.21E-05	3.87E-05	3.57E-05	4.05E-05	3.71E-06	1.66E-06
240	VPP	5.49E-05	6.24E-05	5.84E-05	4.94E-05	4.38E-05	5.38E-05	7.33E-06	3.28E-06

Calculated VPA concentration in Rats' brain homogenate

Time (min.)		N1	N2	N3	N4	N5	Mean	SD	SEM
0	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
15	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
120	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
240	Control	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	VPP	2.17E-05	2.04E-05	2.58E-05	2.58E-05	2.39E-05	2.35E-05	2.42E-06	1.08E-06
15	VPP	2.30E-05	2.20E-05	2.38E-05	2.38E-05	1.99E-05	2.25E-05	1.63E-06	7.28E-07
30	VPP	2.70E-05	2.41E-05	2.98E-05	2.98E-05	2.27E-05	2.67E-05	3.27E-06	1.46E-06
60	VPP	2.53E-05	2.55E-05	2.65E-05	2.65E-05	2.17E-05	2.51E-05	2.00E-06	8.92E-07
120	VPP	2.46E-05	2.20E-05	2.40E-05	2.40E-05	2.34E-05	2.36E-05	9.83E-07	4.40E-07
240	VPP	2.57E-05	2.61E-05	2.48E-05	2.48E-05	2.27E-05	2.48E-05	1.30E-06	5.83E-07

Statistic for VPA conc. in Rats' liver homogenate

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(15 min)
Mean	2.44091E-05	2.73659E-05
Variance	1.46696E-11	1.39844E-11
Observations	5	5
Pearson Correlation	0.850650477	
Pooled Variance	1.21838E-11	
Hypothesized Mean Difference	0	
df	4	
t	-3.19349173	
P(T<=t) one-tail	0.016552843	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.033105687	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(30 min)
Mean	2.44091E-05	2.98124E-05
Variance	1.46696E-11	3.12306E-11
Observations	5	5
Pearson Correlation	0.859439214	
Pooled Variance	1.83956E-11	
Hypothesized Mean Difference	0	
df	4	
t	-4.00327378	
P(T<=t) one-tail	0.00804312	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.016086239	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(60 min)
Mean	2.44091E-05	3.33552E-05
Variance	1.46696E-11	1.16633E-11
Observations	5	5
Pearson Correlation	0.806223701	
Pooled Variance	1.05457E-11	
Hypothesized Mean Difference	0	
df	4	
t	-8.73764634	
P(T<=t) one-tail	0.000472651	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.000945303	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(120 min)
Mean	2.35382E-05	4.04702E-05
Variance	5.88056E-12	1.37772E-11
Observations	5	5
Pearson Correlation	-0.485429898	
Pooled Variance	-4.36935E-12	
Hypothesized Mean Difference	0	
df	4	
t	-7.104928455	
P(T<=t) one-tail	0.001036569	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.002073138	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(240 min)
Mean	2.44091E-05	5.37629E-05
Variance	1.46696E-11	5.36745E-11
Observations	5	5
Pearson Correlation	0.761473114	
Pooled Variance	2.13672E-11	
Hypothesized Mean Difference	0	
df	4	
t	-12.97022979	
P(T<=t) one-tail	0.000101933	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.000203865	
t Critical two-tail	2.776450856	

Statistic for VPA conc. in Rats' brain homogenate

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(15 min)
Mean	2.35382E-05	2.24998E-05
Variance	5.88056E-12	2.6463E-12
Observations	5	5
Pearson Correlation	0.355798363	
Pooled Variance	1.40357E-12	
Hypothesized Mean Difference	0	
df	4	
t	0.970903168	
P(T<=t) one-tail	0.193287694	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.386575387	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(30 min)
Mean	2.35382E-05	2.66819E-05
Variance	5.88056E-12	1.0711E-11
Observations	5	5
Pearson Correlation	0.647673164	
Pooled Variance	5.1402E-12	
Hypothesized Mean Difference	0	
df	4	
t	-2.79815862	
P(T<=t) one-tail	0.024451634	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.048903267	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(60 min)
Mean	2.35382E-05	2.51158E-05
Variance	5.88056E-12	3.98089E-12
Observations	5	5
Pearson Correlation	0.20028884	
Pooled Variance	9.69073E-13	
Hypothesized Mean Difference	0	
df	4	
t	-1.25320774	
P(T<=t) one-tail	0.139193293	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.278386586	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(120 min)
Mean	2.35382E-05	2.35982E-05
Variance	5.88056E-12	9.66879E-13
Observations	5	5
Pearson Correlation	0.490889879	
Pooled Variance	1.17052E-12	
Hypothesized Mean Difference	0	
df	4	
t	-0.06315815	
P(T<=t) one-tail	0.476335356	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.952670711	
t Critical two-tail	2.776450856	

t-Test: Paired Two-Sample for Means

	VPP(0 min)	VPP(240 min)
Mean	2.35382E-05	2.48159E-05
Variance	5.88056E-12	1.70173E-12
Observations	5	5
Pearson Correlation	-0.52490853	
Pooled Variance	-1.6605E-12	
Hypothesized Mean Difference	0	
df	4	
t	-0.86523856	
P(T<=t) one-tail	0.217857555	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.435715109	
t Critical two-tail	2.776450856	

Calibration data for GABA analysis

Conc.	Area	Average peak area	SD
5.00E-05	2959587	2534770.00	600781.9629
5.00E-05	2109953		
1.00E-04	6596019	7093349.50	703331.5381
1.00E-04	7590680		
2.00E-04	12780667	12529895.00	354645.1635
2.00E-04	12279123		

Regression Statistics

Multiple R	0.99006556
R Square	0.980229813
Adjusted R Square	0.480229813
Standard Error	703592.8076
Observations	3

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Significance F
Regression	1	4.90896E+13	4.90896E+13	99.162422	0.063716663
Residual	2	9.90086E+11	4.95043E+11		
Total	3	5.00797E+13			

Regression coefficients

	Coefficients	Standard Error	t Statistic	P-value
Intercept	0	#N/A	#N/A	#N/A
x1	63658141905	3070730761	20.73061654	0.00024548

Observed area = (6.3658E+10) x (Estimated Conc.)

Brain homogenate data from Rat #1 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	9025523	1.42E-04	1.44E-04	3.6189E-06	1.61843E-06
Control (0 min.)	9351320	1.47E-04			
VPP (0 min.)	7754932	1.22E-04	1.33E-04	1.5961E-05	7.13797E-06
VPP (0 min.)	9191839	1.44E-04			
Control (15 min.)	5410622	8.50E-05	8.48E-05	3.2312E-07	1.44502E-07
Control (15 min.)	5381533	8.45E-05			
VPP (15 min.)	5227698	8.21E-05	8.49E-05	3.9495E-06	1.76628E-06
VPP (15 min.)	5583258	8.77E-05			
Control (30 min.)	6738782	1.06E-04	1.04E-04	2.8823E-06	1.28899E-06
Control (30 min.)	6479303	1.02E-04			
VPP (30 min.)	6752744	1.06E-04	1.03E-04	4.608E-06	2.06075E-06
VPP (30 min.)	6337905	9.96E-05			
Control (60 min.)	7399656	1.16E-04	1.17E-04	1.5084E-06	6.74594E-07
Control (60 min.)	7535455	1.18E-04			
VPP (60 min.)	9409553	1.48E-04	1.55E-04	1.0642E-05	4.75909E-06
VPP (60 min.)	10367581	1.63E-04			
Control (120 min.)	9382167	1.47E-04	1.47E-04	2.8762E-07	1.28626E-07
Control (120 min.)	9356274	1.47E-04			
VPP (120 min.)	9772527	1.54E-04	1.76E-04	3.1267E-05	1.3983E-05
VPP (120 min.)	12587375	1.98E-04			
Control (240 min.)	11953465	1.88E-04	1.92E-04	6.1303E-06	2.74157E-06
Control (240 min.)	12505355	1.96E-04			
VPP (240 min.)	12947076	2.03E-04	2.18E-04	2.113E-05	9.44982E-06
VPP (240 min.)	14849370	2.33E-04			

Brain homogenate data from Rat #2 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	3921685	6.16E-05	6.50E-05	4.7984E-06	2.14591E-06
Control (0 min.)	4353667	6.84E-05			
VPP (0 min.)	4395683	6.91E-05	6.75E-05	2.1373E-06	9.5582E-07
VPP (0 min.)	4203272	6.60E-05			
Control (15 min.)	4323995	6.79E-05	6.62E-05	2.482E-06	1.10998E-06
Control (15 min.)	4100550	6.44E-05			
VPP (15 min.)	4340562	6.82E-05	6.46E-05	5.0818E-06	2.27266E-06
VPP (15 min.)	3883064	6.10E-05			
Control (30 min.)	5898511	9.27E-05	9.40E-05	1.9623E-06	8.7755E-07
Control (30 min.)	6075166	9.54E-05			
VPP (30 min.)	5957170	9.36E-05	9.39E-05	4.6289E-07	2.0701E-07
VPP (30 min.)	5998842	9.42E-05			
Control (60 min.)	7245361	1.14E-04	1.17E-04	4.2021E-06	1.87924E-06
Control (60 min.)	7623660	1.20E-04			
VPP (60 min.)	7921708	1.24E-04	1.32E-04	1.0497E-05	4.69434E-06
VPP (60 min.)	8866701	1.39E-04			
Control (120 min.)	9260242	1.45E-04	1.53E-04	1.0462E-05	4.67863E-06
Control (120 min.)	10202072	1.60E-04			
VPP (120 min.)	9570281	1.50E-04	1.47E-04	4.9939E-06	2.23334E-06
VPP (120 min.)	9120699	1.43E-04			
Control (240 min.)	10326657	1.62E-04	1.61E-04	2.3538E-06	1.05265E-06
Control (240 min.)	10114754	1.59E-04			
VPP (240 min.)	11696178	1.84E-04	1.86E-04	3.3197E-06	1.48461E-06
VPP (240 min.)	11995038	1.88E-04			

Brain homogenate data from Rat #3 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	3236508	5.08E-05	5.19E-05	1.429E-06	6.39061E-07
Control (0 min.)	3365154	5.29E-05			
VPP (0 min.)	3348813	5.26E-05	5.93E-05	9.461E-06	4.23107E-06
VPP (0 min.)	4200548	6.60E-05			
Control (15 min.)	4580808	7.20E-05	7.09E-05	1.5584E-06	6.96933E-07
Control (15 min.)	4440512	6.98E-05			
VPP (15 min.)	4498288	7.07E-05	6.99E-05	1.0635E-06	4.75597E-07
VPP (15 min.)	4402548	6.92E-05			
Control (30 min.)	6139882	9.65E-05	9.16E-05	6.8593E-06	3.06758E-06
Control (30 min.)	5522364	8.68E-05			
VPP (30 min.)	6134668	9.64E-05	9.85E-05	3.0526E-06	1.36515E-06
VPP (30 min.)	6409480	1.01E-04			
Control (60 min.)	6201272	9.74E-05	1.04E-04	9.3322E-06	4.17348E-06
Control (60 min.)	7041414	1.11E-04			
VPP (60 min.)	7221683	1.13E-04	1.14E-04	7.9925E-07	3.57433E-07
VPP (60 min.)	7293636	1.15E-04			
Control (120 min.)	9357264	1.47E-04	1.42E-04	7.4181E-06	3.31746E-06
Control (120 min.)	8689444	1.37E-04			
VPP (120 min.)	8229666	1.29E-04	1.36E-04	9.4571E-06	4.22933E-06
VPP (120 min.)	9081051	1.43E-04			
Control (240 min.)	9610931	1.51E-04	1.53E-04	2.2176E-06	9.91725E-07
Control (240 min.)	9810570	1.54E-04			
VPP (240 min.)	10028570	1.58E-04	1.53E-04	6.2077E-06	2.77617E-06
VPP (240 min.)	9469714	1.49E-04			

Brain homogenate data from Rat #4 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	5505773	8.65E-05	7.73E-05	1.301E-05	5.81825E-06
Control (0 min.)	4334531	6.81E-05			
VPP (0 min.)	4058330	6.38E-05	5.97E-05	5.6841E-06	2.542E-06
VPP (0 min.)	3546614	5.57E-05			
Control (15 min.)	5596701	8.79E-05	8.41E-05	5.4472E-06	2.43604E-06
Control (15 min.)	5106314	8.02E-05			
VPP (15 min.)	6456012	1.01E-04	9.72E-05	6.0207E-06	2.69253E-06
VPP (15 min.)	5913992	9.29E-05			
Control (30 min.)	6400715	1.01E-04	1.02E-04	2.4597E-06	1.10003E-06
Control (30 min.)	6622156	1.04E-04			
VPP (30 min.)	7705196	1.21E-04	1.04E-04	2.3945E-05	1.07084E-05
VPP (30 min.)	5549551	8.72E-05			
Control (60 min.)	8658433	1.36E-04	1.41E-04	6.7335E-06	3.0113E-06
Control (60 min.)	9264622	1.46E-04			
VPP (60 min.)	8198048	1.29E-04	1.25E-04	5.2008E-06	2.32585E-06
VPP (60 min.)	7729843	1.21E-04			
Control (120 min.)	9220012	1.45E-04	1.47E-04	3.0752E-06	1.37527E-06
Control (120 min.)	9496861	1.49E-04			
VPP (120 min.)	12916373	2.03E-04	2.00E-04	3.5803E-06	1.60117E-06
VPP (120 min.)	12594049	1.98E-04			
Control (240 min.)	12226456	1.92E-04	1.95E-04	4.5346E-06	2.02796E-06
Control (240 min.)	12634693	1.98E-04			
VPP (240 min.)	12303520	1.93E-04	1.93E-04	1.0121E-06	4.52642E-07
VPP (240 min.)	12212401	1.92E-04			

Brain homogenate data from Rat #5 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	7380718	1.16E-04	1.17E-04	2.0703E-06	9.2588E-07
Control (0 min.)	7567102	1.19E-04			
VPP (0 min.)	9923709	1.56E-04	1.49E-04	9.4535E-06	4.22773E-06
VPP (0 min.)	9072648	1.43E-04			
Control (15 min.)	6718448	1.06E-04	1.01E-04	7.0053E-06	3.13287E-06
Control (15 min.)	6087787	9.56E-05			
VPP (15 min.)	8591264	1.35E-04	1.38E-04	4.8288E-06	2.15952E-06
VPP (15 min.)	9025985	1.42E-04			
Control (30 min.)	8226834	1.29E-04	1.39E-04	1.4348E-05	6.41642E-06
Control (30 min.)	9518490	1.50E-04			
VPP (30 min.)	11240153	1.77E-04	1.71E-04	8.2419E-06	3.68588E-06
VPP (30 min.)	10498167	1.65E-04			
Control (60 min.)	11054021	1.74E-04	1.80E-04	9.5977E-06	4.29224E-06
Control (60 min.)	11918069	1.87E-04			
VPP (60 min.)	12427045	1.95E-04	1.87E-04	1.1838E-05	5.29425E-06
VPP (60 min.)	11361288	1.78E-04			
Control (120 min.)	9617475	1.51E-04	1.47E-04	5.4902E-06	2.45531E-06
Control (120 min.)	9123210	1.43E-04			
VPP (120 min.)	11294883	1.77E-04	1.75E-04	3.3746E-06	1.50917E-06
VPP (120 min.)	10991079	1.73E-04			
Control (240 min.)	11394573	1.79E-04	1.81E-04	3.5325E-06	1.57977E-06
Control (240 min.)	11712588	1.84E-04			
VPP (240 min.)	11049899	1.74E-04	1.87E-04	1.9006E-05	8.4998E-06
VPP (240 min.)	12760948	2.00E-04			

Liver homogenate data from Rat #1 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	2771690	4.35E-05	4.31E-05	6.876E-07	3.08E-07
Control (0 min.)	2709784	4.26E-05			
VPP (0 min.)	3418337	5.37E-05	5.28E-05	1.243E-06	5.56E-07
VPP (0 min.)	3306396	5.19E-05			
Control (15 min.)	2393603	3.76E-05	2.59E-05	1.657E-05	7.41E-06
Control (15 min.)	901794	1.42E-05			
VPP (15 min.)	748856	1.18E-05	1.22E-05	5.905E-07	2.64E-07
VPP (15 min.)	802018	1.26E-05			
Control (30 min.)	712658	1.12E-05	1.11E-05	1.438E-07	6.43E-08
Control (30 min.)	699712	1.10E-05			
VPP (30 min.)	503753	7.91E-06	8.59E-06	9.506E-07	4.25E-07
VPP (30 min.)	589331	9.26E-06			
Control (60 min.)	70889	1.11E-06	2.16E-06	1.479E-06	6.61E-07
Control (60 min.)	204047	3.21E-06			
VPP (60 min.)	499786	7.85E-06	9.62E-06	2.501E-06	1.12E-06
VPP (60 min.)	724975	1.14E-05			
Control (120 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	75052	1.18E-06	5.89E-07	8.337E-07	3.73E-07
VPP (120 min.)	0	0.00E+00			
Control (240 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	97032	1.52E-06	1.31E-06	3.075E-07	1.38E-07
VPP (240 min.)	69352	1.09E-06			

Liver homogenate data from Rat #2 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	1843640	2.90E-05	2.83E-05	9.728E-07	4.35E-07
Control (0 min.)	1756059	2.76E-05			
VPP (0 min.)	2003934	3.15E-05	2.94E-05	2.999E-06	1.34E-06
VPP (0 min.)	1733950	2.72E-05			
Control (15 min.)	911013	1.43E-05	2.65E-05	1.731E-05	7.74E-06
Control (15 min.)	2469178	3.88E-05			
VPP (15 min.)	1033183	1.62E-05	1.64E-05	1.809E-07	8.09E-08
VPP (15 min.)	1049473	1.65E-05			
Control (30 min.)	395577	6.21E-06	7.06E-06	1.2E-06	5.37E-07
Control (30 min.)	503578	7.91E-06			
VPP (30 min.)	679358	1.07E-05	8.91E-06	2.489E-06	1.11E-06
VPP (30 min.)	455322	7.15E-06			
Control (60 min.)	21196	3.33E-07	7.39E-07	5.744E-07	2.57E-07
Control (60 min.)	72908	1.15E-06			
VPP (60 min.)	271732	4.27E-06	2.81E-06	2.068E-06	9.25E-07
VPP (60 min.)	85582	1.34E-06			
Control (120 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
VPP (120 min.)	0	0.00E+00			
Control (240 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
VPP (240 min.)	0	0.00E+00			

Liver homogenate data from Rat #3 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	2114579	3.32E-05	3.24E-05	1.093E-06	4.89E-07
Control (0 min.)	2016189	3.17E-05			
VPP (0 min.)	2120786	3.33E-05	3.05E-05	3.984E-06	1.78E-06
VPP (0 min.)	1762116	2.77E-05			
Control (15 min.)	1387343	2.18E-05	1.99E-05	2.617E-06	1.17E-06
Control (15 min.)	1151711	1.81E-05			
VPP (15 min.)	1824301	2.87E-05	2.69E-05	2.45E-06	1.10E-06
VPP (15 min.)	1603712	2.52E-05			
Control (30 min.)	696457	1.09E-05	1.00E-05	1.274E-06	5.70E-07
Control (30 min.)	581772	9.14E-06			
VPP (30 min.)	850591	1.34E-05	1.26E-05	1.01E-06	4.52E-07
VPP (30 min.)	759657	1.19E-05			
Control (60 min.)	1116870	1.75E-05	1.76E-05	7.135E-08	3.19E-08
Control (60 min.)	1123293	1.76E-05			
VPP (60 min.)	2021696	3.18E-05	2.84E-05	4.721E-06	2.11E-06
VPP (60 min.)	1596674	2.51E-05			
Control (120 min.)	428849	6.74E-06	3.37E-06	4.764E-06	2.13E-06
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	99069	1.56E-06	7.78E-07	1.1E-06	4.92E-07
VPP (120 min.)	0	0.00E+00			
Control (240 min.)	0	0.00E+00	1.85E-06	2.619E-06	1.17E-06
Control (240 min.)	235817	3.70E-06			
VPP (240 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
VPP (240 min.)	0	0.00E+00			

Liver homogenate data from Rat #4 (GABA)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	2372962	3.73E-05	3.15E-05	8.142E-06	3.64E-06
Control (0 min.)	1639967	2.58E-05			
VPP (0 min.)	1285992	2.02E-05	2.15E-05	1.862E-06	8.33E-07
VPP (0 min.)	1453649	2.28E-05			
Control (15 min.)	3072949	4.83E-05	3.74E-05	1.538E-05	6.88E-06
Control (15 min.)	1688293	2.65E-05			
VPP (15 min.)	1186870	1.86E-05	9.71E-06	1.264E-05	5.65E-06
VPP (15 min.)	49078	7.71E-07			
Control (30 min.)	1180609	1.85E-05	1.37E-05	6.827E-06	3.05E-06
Control (30 min.)	565966	8.89E-06			
VPP (30 min.)	518546	8.15E-06	8.04E-06	1.562E-07	6.98E-08
VPP (30 min.)	504485	7.92E-06			
Control (60 min.)	376787	5.92E-06	5.87E-06	6.426E-08	2.87E-08
Control (60 min.)	371002	5.83E-06			
VPP (60 min.)	272251	4.28E-06	4.97E-06	9.821E-07	4.39E-07
VPP (60 min.)	360669	5.67E-06			
Control (120 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (120 min.)	0	0.00E+00			
VPP (120 min.)	108083	1.70E-06	8.49E-07	1.201E-06	5.37E-07
VPP (120 min.)	0	0.00E+00			
Control (240 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
Control (240 min.)	0	0.00E+00			
VPP (240 min.)	0	0.00E+00	1.37E-06	1.937E-06	8.66E-07
VPP (240 min.)	174413	2.74E-06			

Liver homogenate data from Rat #5 (GABA Analysis)

Sample ID	Observed area	Estimated Conc.	Average Conc.	SD	SEM
Control (0 min.)	2502875	3.93E-05	3.29E-05	9.08E-06	4.06E-06
Control (0 min.)	1685458	2.65E-05			
VPP (0 min.)	1403860	2.21E-05	3.37E-05	1.645E-05	7.36E-06
VPP (0 min.)	2884802	4.53E-05			
Control (15 min.)	2779034	4.37E-05	3.00E-05	1.935E-05	8.65E-06
Control (15 min.)	1037406	1.63E-05			
VPP (15 min.)	1060568	1.67E-05	1.94E-05	3.877E-06	1.73E-06
VPP (15 min.)	1409607	2.21E-05			
Control (30 min.)	553111	8.69E-06	7.95E-06	1.047E-06	4.68E-07
Control (30 min.)	458853	7.21E-06			
VPP (30 min.)	820771	1.29E-05	1.27E-05	3.039E-07	1.36E-07
VPP (30 min.)	793408	1.25E-05			
Control (60 min.)	272433	4.28E-06	3.40E-06	1.251E-06	5.59E-07
Control (60 min.)	159851	2.51E-06			
VPP (60 min.)	347089	5.45E-06	5.48E-06	3.622E-08	1.62E-08
VPP (60 min.)	350350	5.50E-06			
Control (120 min.)	0	0.00E+00	8.63E-07	1.221E-06	5.46E-07
Control (120 min.)	109933	1.73E-06			
VPP (120 min.)	0	0.00E+00	0.00E+00	0	0.00E+00
VPP (120 min.)	0	0.00E+00			
Control (240 min.)	0	0.00E+00	1.40E-06	1.975E-06	8.83E-07
Control (240 min.)	177785	2.79E-06			
VPP (240 min.)	192545	3.02E-06	1.51E-06	2.139E-06	9.56E-07
VPP (240 min.)	0	0.00E+00			

Calculated GABA concentration in Rats' Liver Homogenate

Time (min.)	N1	N2	N3	N4	N5	Mean	SD	SEM
0	4.31E-05	2.83E-05	3.24E-05	3.15E-05	3.29E-05	3.36E-05	5.57E-06	2.49E-06
15	2.59E-05	2.65E-05	1.99E-05	3.74E-05	3.00E-05	2.79E-05	6.40E-06	2.86E-06
30	1.11E-05	7.06E-06	1.00E-05	1.37E-05	7.95E-06	9.97E-06	2.64E-06	1.18E-06
60	2.16E-06	7.39E-07	1.76E-05	5.87E-06	3.40E-06	5.95E-06	6.78E-06	3.03E-06
120	0.00E+00	0.00E+00	3.37E-06	0.00E+00	8.63E-07	8.46E-07	1.46E-06	6.52E-07
240	0.00E+00	0.00E+00	1.85E-06	0.00E+00	1.40E-06	6.50E-07	9.04E-07	4.04E-07
0	5.28E-05	2.94E-05	3.05E-05	2.15E-05	3.37E-05	3.36E-05	1.17E-05	5.21E-06
15	1.22E-05	1.64E-05	2.69E-05	9.71E-06	1.94E-05	1.69E-05	6.73E-06	3.01E-06
30	8.59E-06	8.91E-06	1.26E-05	8.04E-06	1.27E-05	1.02E-05	2.30E-06	1.03E-06
60	9.62E-06	2.81E-06	2.84E-05	4.97E-06	5.48E-06	1.03E-05	1.04E-05	4.67E-06
120	5.89E-07	0.00E+00	7.78E-07	8.49E-07	0.00E+00	4.43E-07	4.16E-07	1.86E-07
240	1.31E-06	0.00E+00	0.00E+00	1.37E-06	1.51E-06	8.38E-07	7.68E-07	3.44E-07

Calculated GABA concentration in Rats' Brain Homogenate

Time (min.)	N1	N2	N3	N4	N5	Mean	SD	SEM
0	1.44E-04	6.50E-05	5.19E-05	7.73E-05	1.17E-04	9.12E-05	3.85E-05	1.72E-05
15	8.48E-05	6.62E-05	7.09E-05	8.41E-05	1.01E-04	8.13E-05	1.35E-05	6.04E-06
30	1.04E-04	9.40E-05	9.16E-05	1.02E-04	1.39E-04	1.06E-04	1.93E-05	8.61E-06
60	1.17E-04	1.17E-04	1.04E-04	1.41E-04	1.80E-04	1.32E-04	3.02E-05	1.35E-05
120	1.47E-04	1.53E-04	1.42E-04	1.47E-04	1.47E-04	1.47E-04	3.93E-06	1.76E-06
240	1.92E-04	1.61E-04	1.53E-04	1.95E-04	1.81E-04	1.76E-04	1.90E-05	8.51E-06
0	1.33E-04	6.75E-05	5.93E-05	5.97E-05	1.49E-04	9.38E-05	4.37E-05	1.96E-05
15	8.49E-05	6.46E-05	6.99E-05	9.72E-05	1.38E-04	9.10E-05	2.94E-05	1.32E-05
30	1.03E-04	9.39E-05	9.85E-05	1.04E-04	1.71E-04	1.14E-04	3.20E-05	1.43E-05
60	1.55E-04	1.32E-04	1.14E-04	1.25E-04	1.87E-04	1.43E-04	2.90E-05	1.30E-05
120	1.76E-04	1.47E-04	1.36E-04	2.00E-04	1.75E-04	1.67E-04	2.56E-05	1.15E-05
240	2.18E-04	1.86E-04	1.53E-04	1.93E-04	1.87E-04	1.87E-04	2.32E-05	1.04E-05

Statistic for GABA conc. in Rats' liver homogenate

t-Test: Two-Sample Assuming Unequal Variances

	Control (0 min)	VPP (0 min)
Mean	3.36378E-05	3.35759E-05
Variance	3.09745E-11	1.35738E-10
Observations	5	5
Pearson Correlation	0.898156923	
Pooled Variance	3.5	
df	5.735190274	
t	0.010713562	
P(T<=t) one-tail	0.495933154	
t Critical one-tail	2.015049176	
P(T<=t) two-tail	0.991866307	
t Critical two-tail	2.570577635	

t-Test: Two-Sample Assuming Unequal Variances

	Control (15 min)	VPP(15 min)
Mean	2.79498E-05	1.69148E-05
Variance	4.09238E-11	4.52629E-11
Observations	5	5
Pearson Correlation	-0.770464629	
Pooled Variance	3.5	
df	7.979774215	
t	2.657883865	
P(T<=t) one-tail	0.016283478	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.032566956	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	Control (30 min)	VPP(30 min)
Mean	9.97248E-06	1.01719E-05
Variance	6.9646E-12	5.27002E-12
Observations	5	5
Pearson Correlation	-0.45485649	
Pooled Variance	3.5	
df	7.849416156	
t	-0.127466696	
P(T<=t) one-tail	0.451077758	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.902155516	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	Control (60 min)	VPP(60 min)
Mean	0.000131864	1.02592E-05
Variance	9.13299E-10	1.0915E-10
Observations	5	5
Pearson Correlation	-0.525340274	
Pooled Variance	3.5	
df	4.942631079	
t	8.503814441	
P(T<=t) one-tail	0.000524388	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.001048777	
t Critical two-tail	2.776450856	

t-Test: Two-Sample Assuming Unequal Variances

	Control (120 min)	VPP(120 min)
Mean	8.46368E-07	4.43312E-07
Variance	2.12746E-12	1.72763E-13
Observations	5	5
Pearson Correlation	0.30722161	
Pooled Variance	3.5	
df	4.645395891	
t	0.594245265	
P(T<=t) one-tail	0.292163783	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.584327565	
t Critical two-tail	2.776450856	

t-Test: Two-Sample Assuming Unequal Variances

	Control (240 min)	VPP(240 min)
Mean	6.49724E-07	8.37822E-07
Variance	8.17484E-13	5.90495E-13
Observations	5	5
Pearson Correlation	-0.219469124	
Pooled Variance	3.5	
df	7.797341623	
t	-0.354464008	
P(T<=t) one-tail	0.366714596	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.733429193	
t Critical two-tail	2.36462256	

Statistic for GABA conc. in Rats' brain homogenate

t-Test: Two-Sample Assuming Unequal Variances

	Control (0 min)	VPP (0 min)
Mean	3.36378E-05	3.35759E-05
Variance	3.09745E-11	1.35738E-10
Observations	5	5
Pearson Correlation	0.898156923	
Pooled Variance	3.5	
df	5.735190274	
t	0.010713562	
P(T<=t) one-tail	0.495933154	
t Critical one-tail	2.015049176	
P(T<=t) two-tail	0.991866307	
t Critical two-tail	2.570577635	

t-Test: Two-Sample Assuming Unequal Variances

	Control (15 min)	VPP(15 min)
Mean	8.12893E-05	9.09902E-05
Variance	1.82393E-10	8.65344E-10
Observations	5	5
Pearson Correlation	0.962388977	
Pooled Variance	3.5	
df	5.614478862	
t	-0.670146752	
P(T<=t) one-tail	0.266232694	
t Critical one-tail	2.015049176	
P(T<=t) two-tail	0.532465387	
t Critical two-tail	2.570577635	

t-Test: Two-Sample Assuming Unequal Variances

	Control (30 min)	VPP(30 min)
Mean	0.000106227	0.000114021
Variance	3.70678E-10	1.02141E-09
Observations	5	5
Pearson Correlation	0.982454228	
Pooled Variance	3.5	
df	6.565392759	
t	-0.46711692	
P(T<=t) one-tail	0.328448824	
t Critical one-tail	1.943180905	
P(T<=t) two-tail	0.656897648	
t Critical two-tail	2.446913641	

t-Test: Two-Sample Assuming Unequal Variances

	Control (60 min)	VPP(60 min)
Mean	0.000131864	0.000142632
Variance	9.13299E-10	8.39642E-10
Observations	5	5
Pearson Correlation	0.789559694	
Pooled Variance	3.5	
df	7.98590025	
t	-0.575125449	
P(T<=t) one-tail	0.291605718	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.583211436	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	Control (120 min)	VPP(120 min)
Mean	0.0001472	0.000166763
Variance	1.54682E-11	6.55808E-10
Observations	5	5
Pearson Correlation	0.119932065	
Pooled Variance	3.5	
df	4.188586945	
t	-1.68831297	
P(T<=t) one-tail	0.083311099	
t Critical one-tail	2.131846486	
P(T<=t) two-tail	0.166622197	
t Critical two-tail	2.776450856	

t-Test: Two-Sample Assuming Unequal Variances

	Control (240 min)	VPP(240 min)
Mean	0.000176395	0.000187427
Variance	3.62239E-10	5.3952E-10
Observations	5	5
Pearson Correlation	0.802595157	
Pooled Variance	3.5	
df	7.702309983	
t	-0.82146312	
P(T<=t) one-tail	0.219230557	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.438461114	
t Critical two-tail	2.36462256	

in vivo data

Calibration Data for GABA analysis

Peak area	mol/l	Average peak area	SD
167410	7.76E-07	175152.50	10949.55
182895	7.76E-07		
289060	1.16E-06	290950.50	2673.57
292841	1.16E-06		
310687	1.55E-06	319955.00	13106.93
329223	1.55E-06		
364305	1.94E-06	374309.00	14147.79
384313	1.94E-06		

Regression Statistics

Multiple R	0.9565743
R Square	0.9150344
Adjusted R Square	0.9008735
Standard Error	24645.081
Observations	8

Analysis of Variance

	<i>df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance F</i>
Regression	1	39246967268	3.925E+10	64.616824	0.0001981
Residual	6	3644280086	607380014		
Total	7	42891247354			

Regression coefficients

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Statistic</i>	<i>P-value</i>
Intercept	70825.85	28634.99641	2.4734017	0.04262
x1	1.615E+11	20087640283	8.038459	8.84E-05

Observe area = (1.615E+11) x (Estimated Conc.)

Cortical GABA concentration in VPA treated rat N#1

Sample ID	Peak area	Conc.	%
Control 1	254220	1.14E-06	111.27
Control 2	239498	1.04E-06	102.34
Control 3	213213	8.82E-07	86.39
Avg. Control		1.02E-06	100.00
VPA 1	200114	8.01E-07	78.44
VPA 2	194660	7.67E-07	75.13
VPA 3	185821	7.12E-07	69.77

Cortical GABA concentration in VPA treated rat N#2

Sample ID	Peak area	Conc.	%
Control 1	255689	1.14E-06	129.69
Control 2	189135	7.33E-07	83.00
Control 3	195291	7.71E-07	87.32
Avg. Control		8.83E-07	100.00
VPA 1	219923	9.23E-07	104.60
VPA 2	209873	8.61E-07	97.55
VPA 3	197718	7.86E-07	89.02

Cortical GABA concentration in VPA treated rat N#3

Sample ID	Peak area	Conc.	%
Control 1	468591	2.46E-06	106.96
Control 2	442534	2.30E-06	99.95
Control 3	417042	2.14E-06	93.09
Avg. Control		2.30E-06	100.00
VPA 1	436898	2.27E-06	98.43
VPA 2	389713	1.97E-06	85.75
VPA 3	449605	2.35E-06	101.85

Cortical GABA concentration in VPA treated rat N#4

Sample ID	Peak area	Conc.	%
Control 1	293574	1.38E-06	103.67
Control 2	283238	1.32E-06	98.86
Control 3	280224	1.30E-06	97.46
Avg. Control		1.33E-06	100.00
VPA 1	281730	1.31E-06	98.16
VPA 2	280747	1.30E-06	97.70
VPA 3	230087	9.86E-07	74.13

Cortical GABA concentration in VPA treated rat N#5

Sample ID	Peak area	Conc.	%
Control 1	281510	1.30E-06	103.73
Control 2	271599	1.24E-06	98.85
Control 3	268708	1.23E-06	97.42
Avg. Control		1.26E-06	100.00
VPA 1	250153	1.11E-06	88.29
VPA 2	269210	1.23E-06	97.67
VPA 3	220632	9.28E-07	73.76

Cortical GABA concentration in VPP treated rat N#1

Sample ID	Peak area	Conc.	%
Control 1	257905	1.16E-06	111.20
Control 2	242969	1.07E-06	102.32
Control 3	216304	9.01E-07	86.47
Avg. Control		1.04E-06	100.00
VPP 1	213490	8.84E-07	84.80
VPP 2	187337	7.22E-07	69.26
VPP 3	188515	7.29E-07	69.96

Cortical GABA concentration in VPP treated rat N#2

Sample ID	Peak area	Conc.	%
Control 1	264506	1.20E-06	129.20
Control 2	195657	7.73E-07	83.27
Control 3	202026	8.13E-07	87.52
Avg. Control		9.28E-07	100.00
VPP 1	207507	8.46E-07	91.18
VPP 2	217110	9.06E-07	97.59
VPP 3	204536	8.28E-07	89.20

Cortical GABA concentration in VPP treated rat N#3

Sample ID	Peak area	Conc.	%
Control 1	475383	2.51E-06	106.94
Control 2	448948	2.34E-06	99.95
Control 3	423087	2.18E-06	93.11
Avg. Control		2.34E-06	100.00
VPP 1	564969	3.06E-06	130.62
VPP 2	395362	2.01E-06	85.78
VPP 3	456122	2.39E-06	101.85

Cortical GABA concentration in VPP treated rat N#4

Sample ID	Peak area	Conc.	%
Control 1	414960	2.13E-06	89.88
Control 2	523475	2.80E-06	118.22
Control 3	422698	2.18E-06	91.90
Avg. Control		2.37E-06	100.00
VPP 1	489117	2.59E-06	109.25
VPP 2	431106	2.23E-06	94.10
VPP 3	459725	2.41E-06	101.57

Cortical GABA concentration in VPP treated rat N#5

Sample ID	Peak area	Conc.	%
Control 1	312789	1.50E-06	103.60
Control 2	301777	1.43E-06	98.89
Control 3	298565	1.41E-06	97.51
Avg. Control		1.45E-06	100.00
VPP 1	300171	1.42E-06	98.20
VPP 2	299123	1.41E-06	97.75
VPP 3	315422	1.51E-06	104.73

% GABA concentration of VPA treated rats

Sample ID	N#1	N#2	N#3	N#4	N#5	Mean	SEM
Control 1	111.27	129.69	106.96	103.67	103.73	111.06	4.86
Control 2	102.34	83.00	99.95	98.86	98.85	96.60	3.46
Control 3	86.39	87.32	93.09	97.46	97.42	92.34	2.38
Avg. Control	100.00	100.00	100.00	100.00	100.00	100.00	0.00
VPA (10 min)	78.44	104.60	98.43	98.16	88.29	93.58	4.60
VPA (20 min)	75.13	97.55	85.75	97.70	97.67	90.76	4.54
VPA (30min)	69.77	89.02	101.85	74.13	73.76	81.70	6.01

% GABA concentration of VPP treated rats

Sample ID	N#1	N#2	N#3	N#4	N#5	Mean	SEM
Control 1	111.20	129.20	106.94	89.88	103.60	108.16	6.36
Control 2	102.32	83.27	99.95	118.22	98.89	100.53	5.55
Control 3	86.47	87.52	93.11	91.90	97.51	91.30	2.00
Avg. Control	100.00	100.00	100.00	100.00	100.00	100.00	0.00
VPP (10 min)	84.80	91.18	130.62	109.25	98.20	102.81	8.05
VPP (20 min)	69.26	97.59	85.78	94.10	97.75	88.89	5.37
VPP (30min)	69.96	89.20	101.85	101.57	104.73	93.46	6.46

Statistic in Microdialysis Experiments

t-Test: Two-Sample Assuming Unequal Variances

	VPA(-30 min.)	VPP(-30 min.)
Mean	111.0631557	108.164609
Variance	118.0386412	202.1300444
Observations	5	5
Pearson Correlation	0.91615977	
Pooled Variance	3.5	
df	7.483744775	
t	0.362222881	
P(T<=t) one-tail	0.363936993	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.727873986	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	VPA(-20 min.)	VPP(-20 min.)
Mean	96.59942825	91.30441053
Variance	59.84052303	19.94717294
Observations	5	5
Pearson Correlation	0.326205583	
Pooled Variance	3.5	
df	6.40003195	
t	1.325514425	
P(T<=t) one-tail	0.116617014	
t Critical one-tail	1.943180905	
P(T<=t) two-tail	0.233234029	
t Critical two-tail	2.446913641	

t-Test: Two-Sample Assuming Unequal Variances

	VPA(-10 min.)	VPP(-10 min.)
Mean	92.337416	91.30441053
Variance	28.3215288	19.94717294
Observations	5	5
Pearson Correlation	0.880517632	
Pooled Variance	3.5	
df	7.766233627	
t	0.3324718	
P(T<=t) one-tail	0.374633758	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.749267517	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	VPA(10 min.)	VPP(10 min.)
Mean	93.58486759	102.8088322
Variance	105.7564313	323.8840599
Observations	5	5
Pearson Correlation	0.450273188	
Pooled Variance	-1.6605E-12	
df	6.360527665	
t	-0.995061737	
P(T<=t) one-tail	0.179063499	
t Critical one-tail	1.943180905	
P(T<=t) two-tail	0.358126999	
t Critical two-tail	2.446913641	

t-Test: Two-Sample Assuming Unequal Variances

	VPA(20 min)	VPP(20 min)
Mean	90.76042542	88.8944946
Variance	102.838861	144.0922541
Observations	5	5
Pearson Correlation	0.983267023	
Pooled Variance	-1.6605E-12	
df	7.782778705	
t	0.265517183	
P(T<=t) one-tail	0.399130393	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.798260786	
t Critical two-tail	2.36462256	

t-Test: Two-Sample Assuming Unequal Variances

	VPA(30 min)	VPP(30 min)
Mean	81.70419678	93.45974715
Variance	180.6007501	208.428524
Observations	5	5
Pearson Correlation	0.344294642	
Pooled Variance	-1.6605E-12	
df	7.959274554	
t	-1.332713594	
P(T<=t) one-tail	0.112184247	
t Critical one-tail	1.894577508	
P(T<=t) two-tail	0.224368494	
t Critical two-tail	2.36462256	



Curriculum vitae

Mr. Chatchai Powthongchin was born on 5th May, 1962, in Bangkok, Thailand. He had graduated with Bachelor Degree in Pharmacy in 1985 from Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand. After graduation, he experienced in medical representation for several years before continuing the Master's Degree programme in Pharmaceutical Sciences at Chulalongkorn University in 1989. At present, he joins in the active academic staffs belonging to Faculty of Pharmacy, Silpakorn University.