Supporting Information

J. Chem. Metrol. **17:2 (2023) 128-138**

Simultaneous determiantion of aripiprazole and escitalopram oxalate by HPLC

Divya Solanki[1], Sagar Patel [1], Jasmina Surati [2], Ashok Akbari Surati [2] and Ketan Shah [2]

[1]*Shree Naranjibhai Lalbhai Patel College of Pharmacy, Umrakh, Gujarat, India*

[2] *LabCorp Drug Development Inc, 6 Moore Dr, Durham, North Carolina, NC 27709 USA*

Table of Contents **Page**

Figure S1: Blank chromatogram of mobile phase 2
Figure S2: Chromatogram of ARI and ESC in ratio of 40:100 μg/mL. 2
Figure S3: Spectra taken in UV-spectrophotometer in acetonitrile 3
Figure S4: Overlain chromatogram for six concentration of ARI (20-120μg/mL) and ESC (60-360μg/mL) 4
Figure S5: Calibration curve for aripiprazole 5
Figure S6: Calibration curve for escitalopram oxalate 6
Figure S7: IR spectrum of aripiprazole 7
Figure S8: IR spectrum of escitalopram oxalate 8
Table S1 : Accuracy data of ARI and ESC* (*n*=3) 9
Table S2 : Precision data of ARI and ESC *(*n*=3) 10
Table S3 : Repeatability data of ARI and ESC *(*n*=3) 11
Table S4 : LOD and LOQ data of ARI and ESC 11
Table S5 : Robustness and ruggedness data of ARI and ESC 12
TableS6 : Summary of validation parameters 14

© 2023 ACG Publications. All rights reserved.

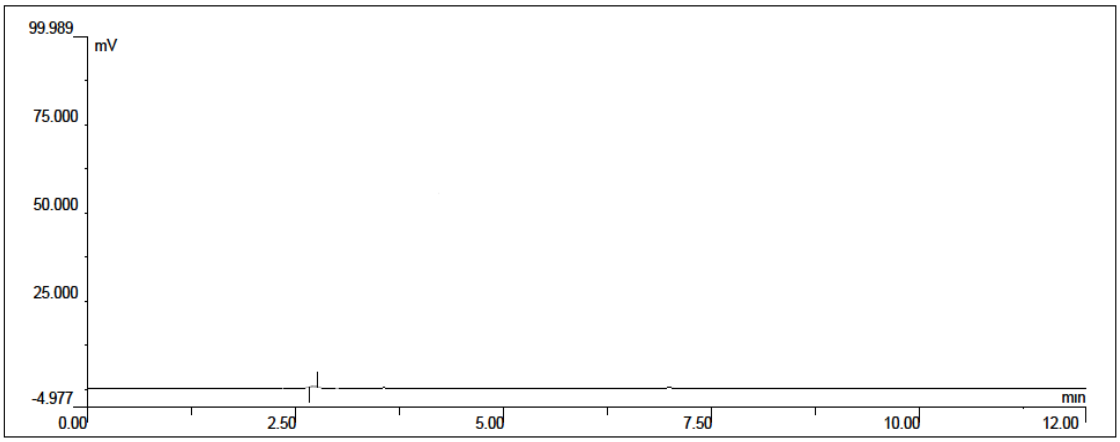

Figure S1: Chromatogram of ARI and ESC in ratio of 40:100 µg/mL

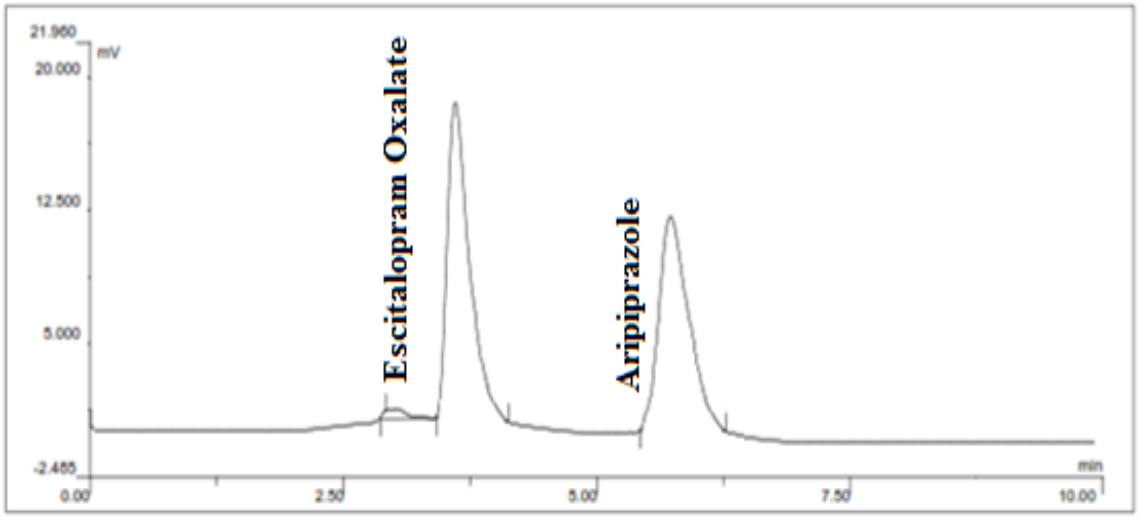

Figure S2: Chromatogram of ARI and ESC in ratio of 40:100 µg/mL

© 2023 ACG Publications. All rights reserved.

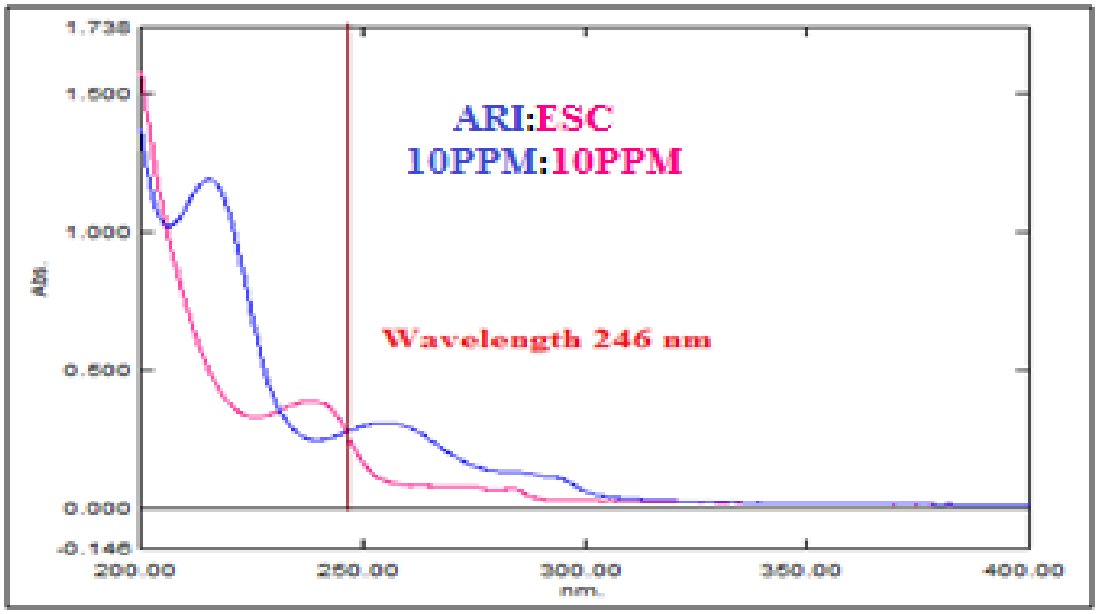

Figure S3: Spectra taken in UV- spectrophotometer in acetonitrile

© 2023 ACG Publications. All rights reserved.

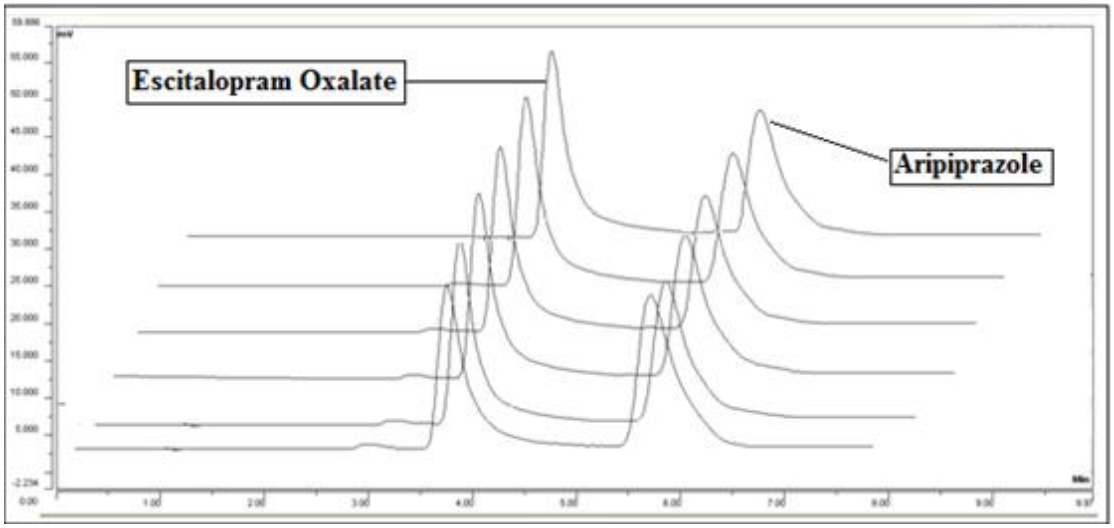

Figure S4: Overlain chromatogram for six concentration of ARI (20-120µg/mL) and ESC (60-360µg/mL)

© 2023 ACG Publications. All rights reserved.

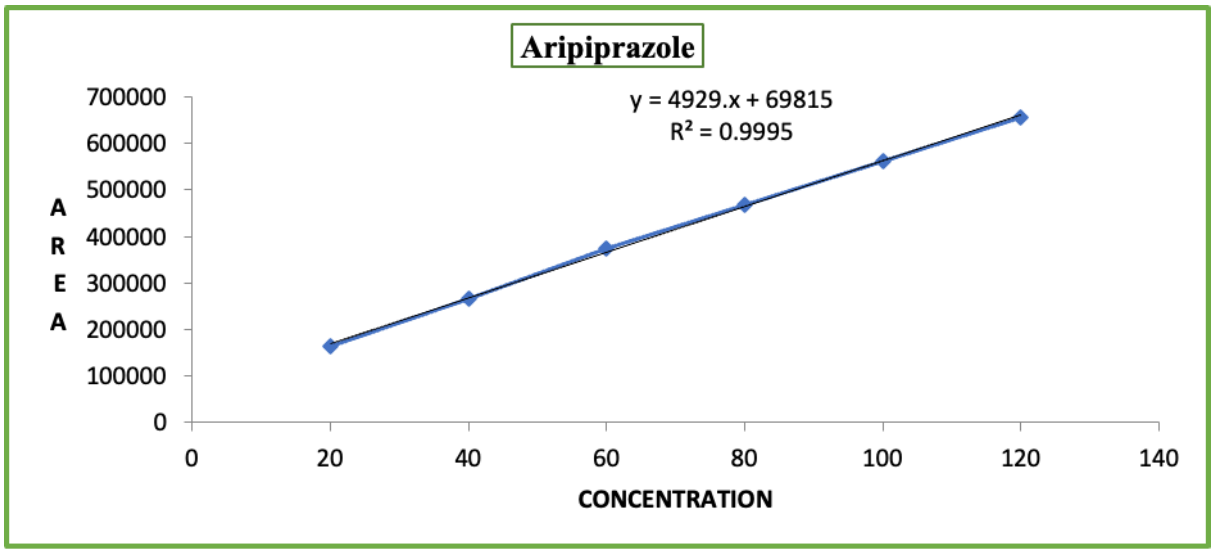

Figure S5: Calibration curve for aripiprazole

© 2023 ACG Publications. All rights reserved.

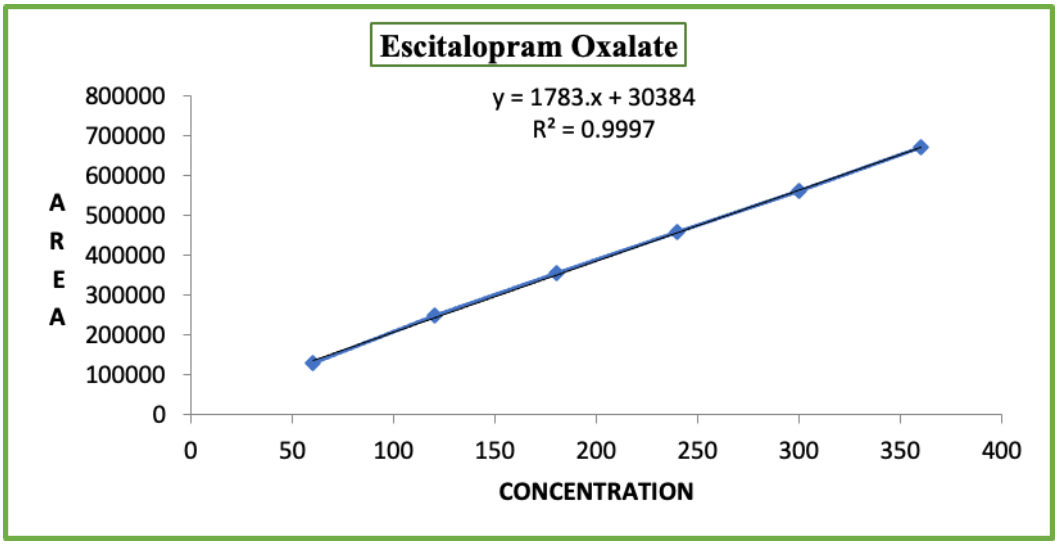

Figure S6: Calibration curve of escitalopram oxalate

© 2023 ACG Publications. All rights reserved.

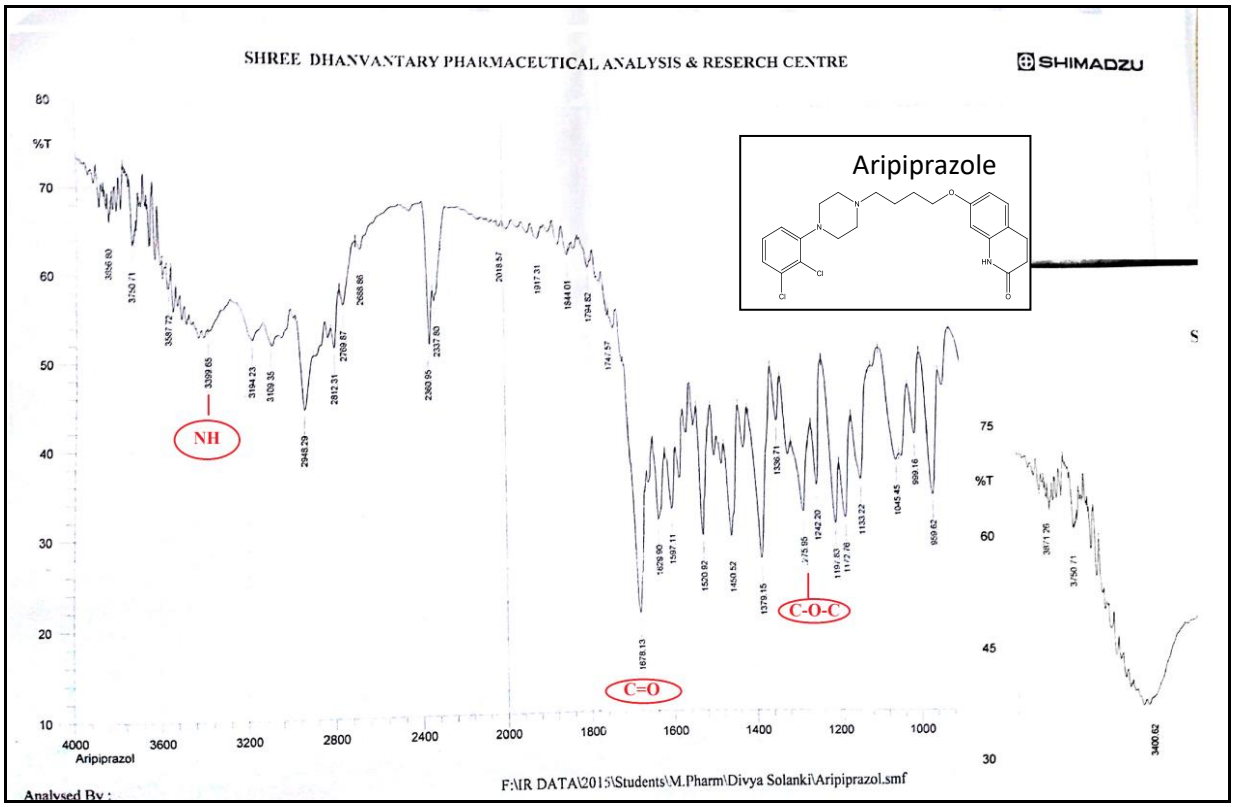

Figure S7: IR spectrum of aripiprazole

© 2023 ACG Publications. All rights reserved.

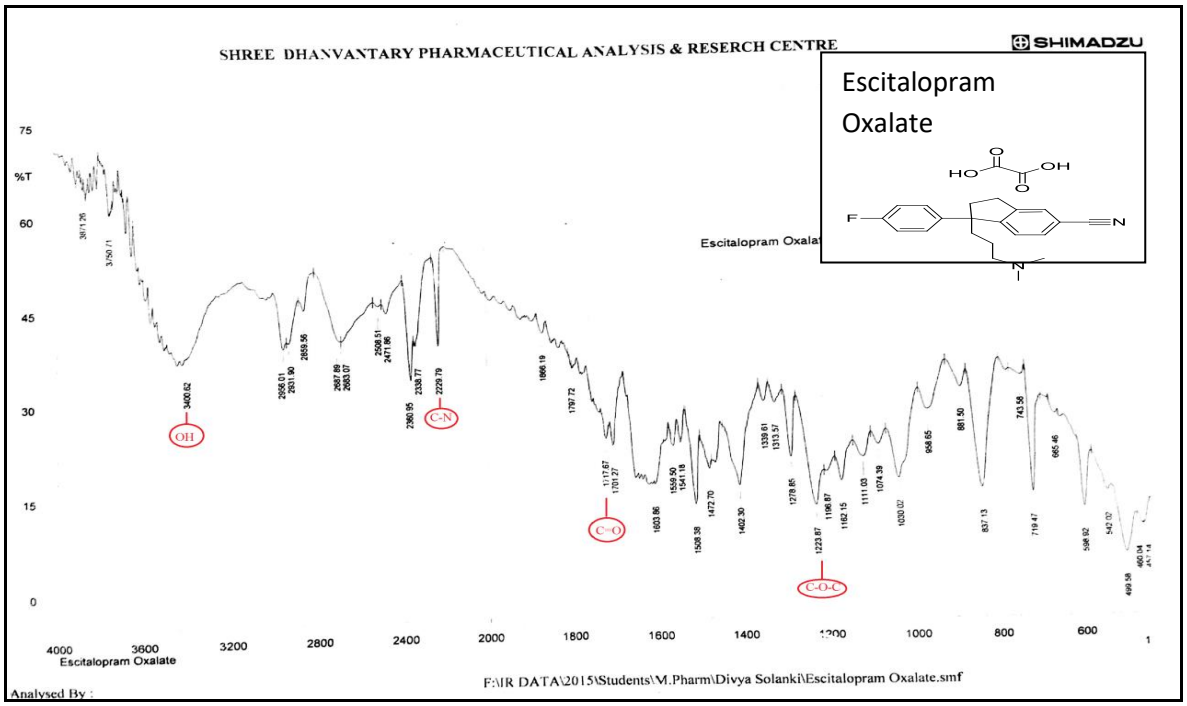

Figure S8: IR spectra of escitalopram oxalate

© 2023 ACG Publications. All rights reserved.

Table S1: Accuracy data of ARI and ESC* (*n*=3)

Sr no.	Tablet content Taken eq. to (µg/mL)		Standard Added (µg/mL)		Total Concentration (µg/mL)		Total Concentration found to be		% Recovery (Mean ± SD)	
	ARI	ESC	ARI	ESC	ARI	ESC	ARI	ESC	ARI	ESC
Blank	20	60	-	-	20	60	20.04 ±0.075	60.09 ± 0.151	100.20 ±0.437	100.15 ± 0.252
80%	20	60	16	48	36	108	35.95 ±0.070	108.03 ± 0.122	99.50% ± 0.684	100.05 ± 0.257
100%	20	60	20	60	40	120	40.17 ±0.117	119.84 ± 0.194	100.79 ±0.270	99.70 ± 0.316
120%	20	60	24	72	44	132	43.94±0.065	132.05 ± 0.064	99.77 ±0.376	100.07 ±0.087

© 2023 ACG Publications. All rights reserved.

Table S2 : Precision Data of ARI and ESC *(n=3)

Intraday precision data for estimation of ARI and ESC *(n=3)					
Concentration (µg/mL)		**Peak Area* ± SD ARI**	**% RSD ARI**	**Peak Area* ± SD ESC**	**% RSD ESC**
ARI	**ESC**				
20	60	162444±1009	0.621	130815±1097	0.838
60	120	372929±1904	0.510	356617±1865	0.523
100	300	562569±1157	0.205	564407±3316	0.587
Interday precision data for estimation of ARI and ESC *(n=3)					
Concentration (µg/mL)		**Peak Area* ± SD ARI**	**% RSD ARI**	**Peak Area* ± SD ESC**	**% RSD ESC**
ARI	**ESC**				
20	60	162506±1279	0.787	131127±1177	0.898
60	120	373174±2300	0.616	356186±2110	0.592
100	300	562838±2045	0.363	566217±3493	0.616

© 2023 ACG Publications. All rights reserved.

Table S3 : Repeatability data for ARI and ESC (n=7)

Drug	Concentration (µg/mL)	Mean peak area ± S.D. (n=7)	% R.S.D.
ARI	20	146755.07±942.23	0.642
ESC	60	131050.42± 965.37	0.736

Table S4 : LOD and LOQ data of ARI and ESC

Parameter	ARI	ESC
LOD (µg/mL)	0.205	0.278
LOQ (µg/mL)	0.621	0.843

© 2023 ACG Publications. All rights reserved.

Table S5: Robustness and ruggedness data of ARI and ESC

No	Factor	Level	Peak Area* ± SD	% RSD	Rt ± SD	%RSD
			ARI (40 µg/mL)			
0	**Standard Mobile Phase Composition (ACN: Methanol: Water) 80:05:15, pH=7.0**				**Standard Rt= 5.63 min**	
1	Change in Flow rate ± 0.2 mL/min	0.8	294267 ± 1470	0.499	7.810 ± 0.010	0.128
		1.2	207297 ± 1324	0.638	4.206 ± 0.015	0.363
2	Change in Wavelength (nm) ± 2 nm	244	305939±2113	0.690	5.590 ± 0.010	0.178
		248	222459±1691	0.760	5.603 ± 0.005	0.103
3	Change in Mobile Phase ratio Composition (ACN: Methanol: Water) ± 5%	76:05:11	303981 ± 2126	0.699	5.580 ± 0.005	0.179
		84:05:19	267456 ± 1888	0.706	5.583 ± 0.005	0.103
		80.5:4.5:15	302499 ± 1158	0.382	5.603 ± 0.005	0.103
		79.5:5.5:15	288630 ± 1296	0.449	5.583 ± 0.005	0.103
4	Mobile Phase pH ± 0.2	6.8	452968 ± 1446	0.319	5.390 ± 0.010	0.185
		7.2	276701 ± 2024	0.731	5.690 ± 0.015	0.268
5	Analyst Change	Analyst 1	268668 ± 1254	0.466	5.620 ± 0.010	0.177
		Analyst 2	268210 ± 2486	0.927	5.603 ± 0.005	0.103
6	Column Change	Phenomenex	268799 ± 1274	0.474	5.616± 0.011	0.205
		Luna	268886 ± 1200	0.446	5.716 ± 0.028	0.504
			ESC (120 µg/mL)			
0	**Standard Mobile Phase Composition (ACN: Methanol: Water) 80:05:15, pH=7.0**				**Standard Rt= 3.65 min**	
1	Change in Flow rate ± 0.2 mL/min	0.8	276703 ± 2169	0.783	4.913 ± 0.015	0.310
		1.2	221572 ± 1029	0.464	2.150 ± 0.010	0.465
2	Change in Wavelength (nm) ± 2 nm	244	282868 ± 1605	0.567	3.616 ± 0.005	0.159
		248	208547 ± 1642	0.787	3.613 ± 0.015	0.422

© 2023 ACG Publications. All rights reserved.

3	Change in Mobile Phase ratio Composition (ACN: Methanol: Water) ± 5%	76:05:11	245576 ± 1761	0.717	3.606 ± 0.011	0.320
		84:05:19	241712 ± 1608	0.665	3.606 ± 0.011	0.423
		80.5:4.5:15	228409 ± 1529	0.669	3.620 ± 0.010	0.276
		79.5:5.5:15	262280 ± 1200	0.457	3.613 ± 0.005	0.159
4	Mobile Phase pH ± 0.2	6.8	264227 ± 1017	0.384	3.410 ± 0.010	0.293
		7.2	266197 ± 2452	0.921	3.696 ± 0.015	0.413
5	Analyst Change	Analyst 1	246521 ± 1770	0.718	3.620 ± 0.010	0.276
		Analyst 2	247193 ± 1177	0.476	3.640 ± 0.010	0.274
6	Column Change	Phenomenex	245457 ± 1855	0.755	3.643 ± 0.005	0.158
		Luna	246089 ± 1199	0.487	4.200 ± 0.010	0.238

© 2023 ACG Publications. All rights reserved.

Table S6 : Summary of validation parameters

PARAMETERS	RP-HPLC	
	Aripiprazole	**Escitalopram oxalate**
Concentration range (µg/mL)	20-120	60-360
Regression equation	Y=4929.x + 69815	y = 1783.x + 30384
Correlation Coefficient	0.9995	0.9997
Accuracy (% Recovery) (*n*=3)	99.50-100.79	99.7-100.15
Intra-day Precision (%RSD) (*n*=3)	0.0228-0.0429	0.0115-0.0790
Inter-day precision (%RSD) (*n*=3)	0.0477-0.0597	0.0296-0.0959
LOD (µg/mL)	0.205	0.278
LOQ (µg/mL)	0.621	0.843
Ruggedness and Rubbustness	0.103-0.504	0.158-0.465
% Assay	100.20%	100.15%

© 2023 ACG Publications. All rights reserved.