Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary Information

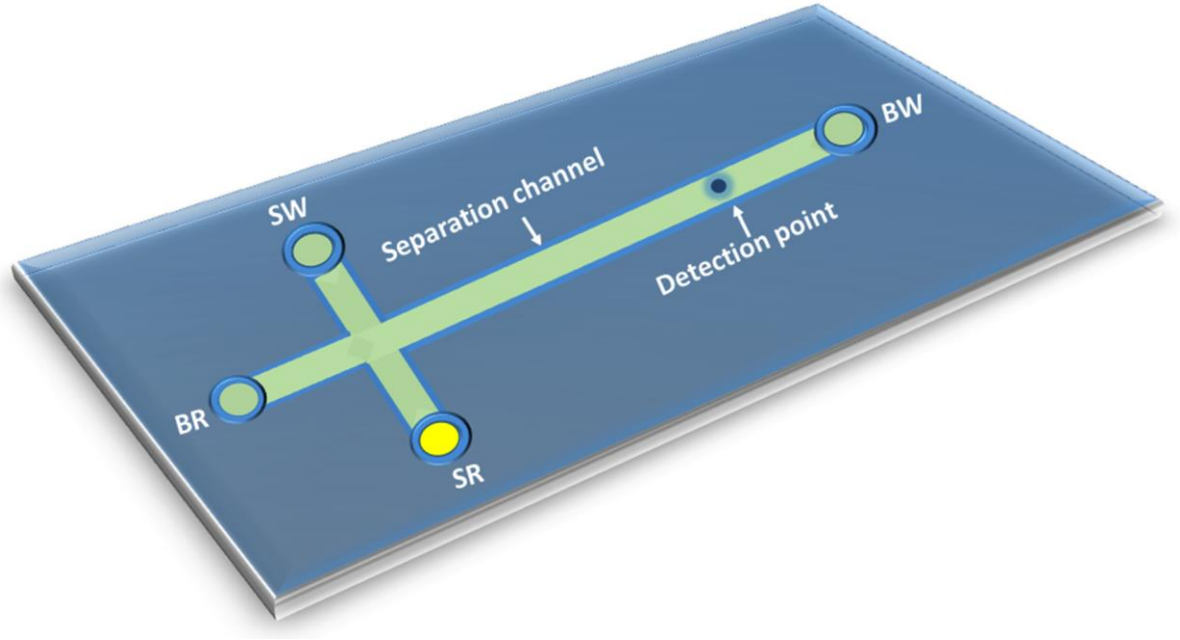

Figure S1 Schematic of PMMA microchip with T-shaped microfluidic channels, where; BR: buffer reservoir, BW: buffer waste reservoir, SR: sample reservoir, SW: sample waste reservoir.

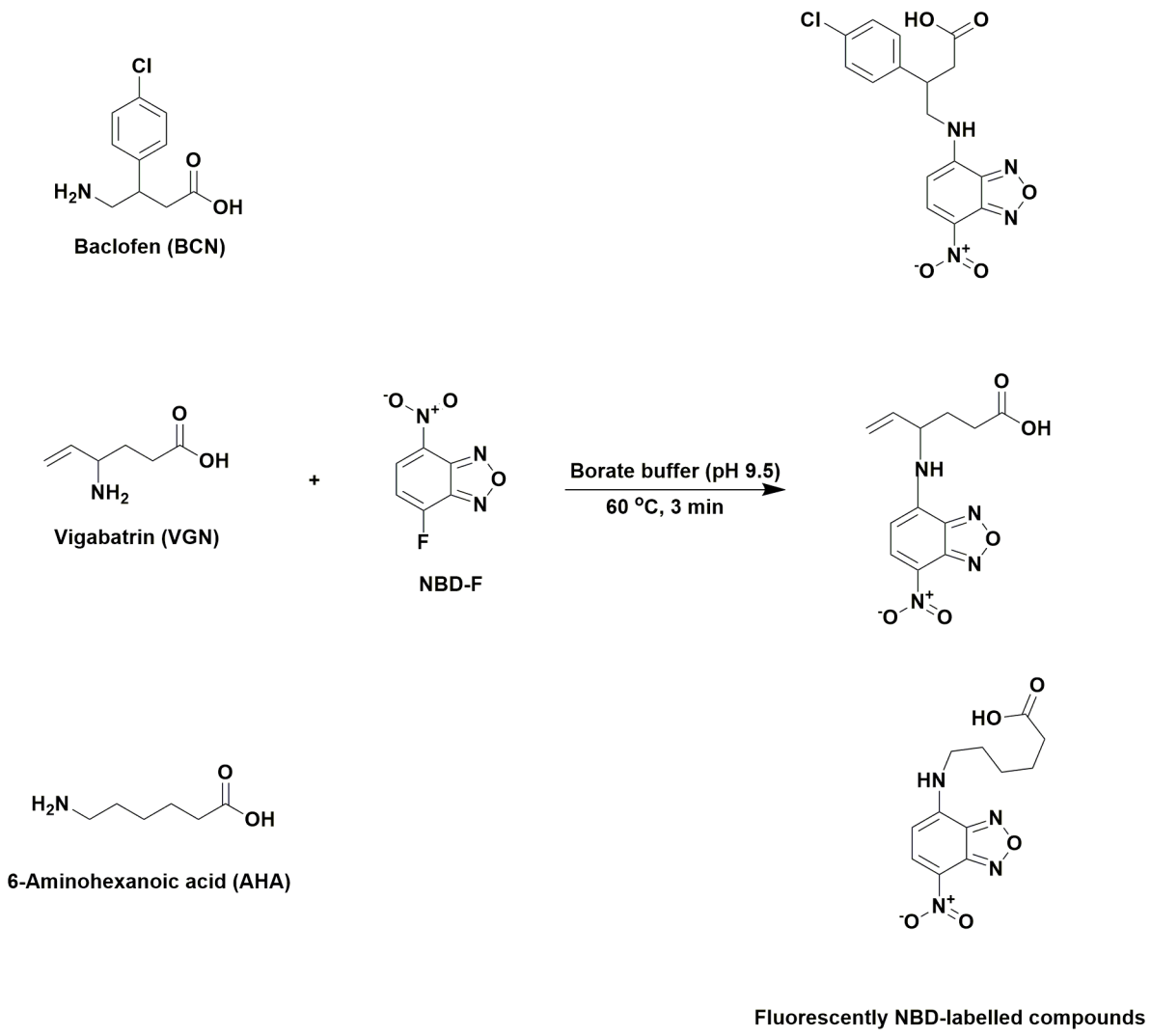

Figure S2 Reaction pathways of NBD-F with baclofen (BCN), vigabatrin (VGN) and 6-aminohexanoic acid (AHA) internal standard.

Table S1 Electrophoretic loading and separation potentials.

Reservoir	SR	SW	BR	BW
Loading potential	0.0 V	300.0 V	0.0 V	0.0 V
Separation potential	130.0 V	130.0 V	0.0 V	750.0 V

- SR: Sample reservoir. – SW: Sample waste reservoir. – BR: Buffer reservoir. – BW: Buffer waste reservoir.

Table S2 Precision data of the proposed method for the determination of the studied drugs in raw materials.

Concentration added (ng mL^{-1})	% Found[a]			% RSD			% Error		
VGN									
Intraday (20, 40, 80)	102.18,	99.07,	100.36	0.31,	2.11,	3.53	0.18,	1.23,	2.03
Intraday (20, 40, 80)	100.24,	99.95,	99.07	3.14,	2.85,	2.36	1.81,	1.64,	1.36
BCN									
Intraday (20, 40, 80)	100.34,	98.99,	101.85	2.04,	3.13,	1.62	1.18,	1.81,	0.93
Intraday (20, 40, 80)	101.24,	101.18,	98.35	1.35,	0.91,	2.38	0.78,	0.53,	1.37

[a]Each result is the mean of % of three determinations of three different preparations of the same concentration in three replicate determinations for each preparation.

Table S3 Application of the proposed MCE method to the determination of the studied drugs in their pharmaceutical tablets.

Pharmaceutical Preparation	Drug concentration (ng mL^{-1})	% Recovery[a]
Sabril® 500 Tablets	25.0	103.34
	50.0	101.16
	75.0	102.6
Mean ± SD		102.37 ± 1.11
% RSD		1.08
% Error		0.63
Baclofen® 25 Capsules	25.0	97.83
	50.0	103.61
	75.0	98.49
Mean ± SD		99.85 ± 2.95
% RSD		2.96
% Error		1.71

[a]Each result is the average of three separate determinations.

Table S4 Results of the standard addition technique for the determination of VGN and BCN in their pharmaceutical tablets by MCE.

Pharmaceutical Preparation	Concentration Added[a]	Concentration (ng mL^{-1})	% Recovery
		VGN	**VGN**
Sabril® 500 Tablets	0.0, 5.0, 10.0, 15.0, 20.0 ng mL^{-1}	20.0	99.18
		40.0	103.72
		60.0	103.34
Mean ± SD			102.08 ± 2.52
% RSD			2.47
% Error			1.43
		BCN	**BCN**
Baclofen® 25 tablets	0.0, 5.0, 10.0, 15.0, 20.0 ng mL^{-1}	20.0	101.94
		40.0	104.17
		60.0	103.26
Mean ± SD			103.12 ± 1.12
% RSD			1.09
% Error			0.63

[a]Concentrations of each pure standard drug added to the three specific concentrations (20.0, 40.0 and 60.0 ng mL^{-1}) of each pharmaceutical formulation extract.

Table S5 Validation data for the determination of baclofen (BCN) in spiked human plasma and urine samples by the proposed MCE method.

Drug	Matrix	Spiked Conc. (ng mL^{-1})	Final Conc. (ng mL^{-1})	Accuracy %[a]	Precision (% RSD) Intraday[b]	Interday[c]
BCN	Human plasma	100.0	1.0	97.36	5.71	6.41
		200.0	2.0	99.52	3.67	3.48
		500.0	5.0	102.90	4.59	5.74
BCN	Human urine	100.0	1.0	95.04	2.41	4.23
		200.0	2.0	98.17	6.05	5.23
		500.0	5.0	95.34	4.29	5.98

[a] % Accuracy was calculated as the mean % recovered where n=5. [b] Intraday precision was measured as %RSD where n=5 on one day. [c] Interday precision was measured as %RSD where n=5 on five different days.

Table S6 Application of the developed MCE method for the simultaneous estimation of VGN and BCN in their laboratory-prepared mixtures.

Item	Concentration taken (ng mL^{-1})		% Found[a]	
	VGN	**BCN**	**VGN**	**BCN**
VGN and BCN binary mixture (1:1)	10.0	10.0	99.37	100.83
	20.0	20.0	97.61	101.17
	40.0	40.0	102.01	97.24
	60.0	60.0	98.72	103.81
	80.0	80.0	102.54	103.15
Mean ± SD			100.05 ± 2.14	101.24 ± 2.57
% RSD			2.13	2.54
% Error			0.95	1.14
VGN and BCN binary mixture (20:1)	20.0	1.0	102.38	96.18
	40.0	2.0	100.51	98.62
	60.0	3.0	99.86	97.91
	80.0	4.0	101.77	101.74
	100.0	5.0	100.2	98.37
Mean ± SD			100.94 ± 1.08	98.56 ± 2.02
% RSD			1.07	2.04
% Error			0.48	0.91

[a]Each result is the average of three separate determinations.