Supporting information

Evaluation of in-tube solid-phase microextraction method for co-extraction of acidic, basic, and neutral drugs

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1. Preparation of polymer-coated capillary tubes.

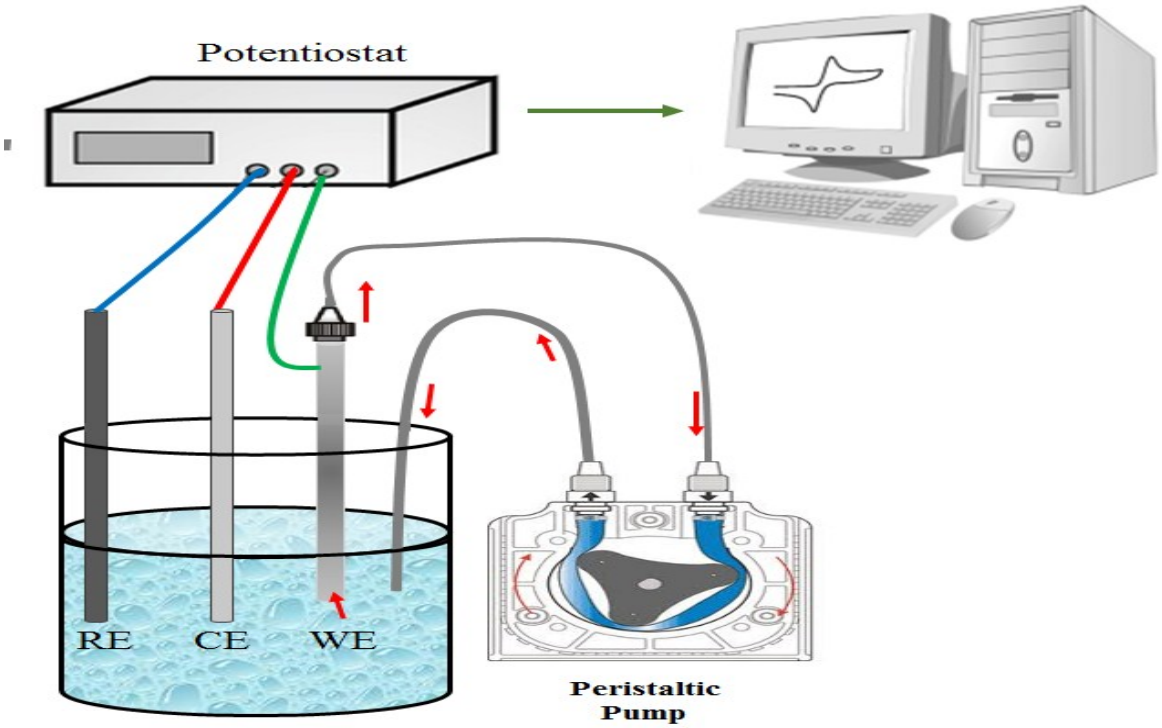

Figure S-1. Schematic representation of the electropolymerization of PPy-co-PIca into the tube.

2. Method evaluation

Table S-1. Comparison of the proposed method with other microextraction techniques for determination of drugs in different samples.

Table S1
Comparison of the proposed method with other microextraction techniques for determination of drugs in different samples.

Extraction technique[a]	Analytes	Sample	Linear range (ng mL^{-1})	r^2	LOD (ng mL^{-1})	RSD%	Extraction time (min) [b]	Ref.
OLBE-FASI-CE-UV	TEB	Water	80.0-10000	0.9999	10.0	<5.77	5	[1]
SPME-LC-MS/MS	OXA LOR	Blood	4.0-500	-	0.8	17.0 14.0	100	[2]
LPME-chip-HPLC-UV	TEB	Urine	50-5000	0.9969	1.0	8.0	15	[3]
LLME-HPLC-MS	IND	Water Urine Plasma	4.2-1000 10.2-800 12.8-800	0.9923 0.9921 0.9931	1.2 3.5 3.8	1.34 2.92 5.13	102	[4]
DM-SPE-HPLC-UV	NAP	Saliva Urine	113-2000 366-2000	-	34.1 110	<26.3 <7.7	-	[5]
DT-EC-IT-SPME-HPLC-DAD	TEB, OXA LOR, NAP IND	Water Urine Plasma	0.15-500 0.7-1.2 1.1-1.9	>0.9966 >0.9975 >9964	<0.2 <1.2 <1.9	<4.9 <5.5 <6.0	15	This work

[a] On-line back-extraction field-amplified sample injection (OLBE-FASI), capillary electrophoresis (CE), solid phase microextraction (SPME), liquid phase microextraction (LPME), liquid–liquid microextraction (LLME), dispersive micro solid phase extraction (DM-SPE).

-The formula for calculation of some quantitative parameters such as extraction recovery (ER%), matrix effect (ME%), and RR%.

RR%: The RR% was acquired from the equation below:

$$RR\% = \left[\frac{C_{found} - C_{initial}}{C_{added}}\right] \times 100$$

wherein $C_{initial}$, C_{found}, and C_{added} are the concentrations of analyte in the real sample, the concentration of analyte after addition of a known amount of the standard into the real sample, and the concentration of a known amount of the standard spiked into the real sample, respectively.

Extraction recovery: The ER% was calculated according to the following equation:

$$ER(\%) = \frac{n_{elu}}{n_0} \times 100 = \frac{C_{elu}\ V_{elu}}{C_0\ V_{aq}} \times 100 = \frac{V_{elu}}{V_{aq}} \times PF \times 100$$

n_{elu} and n_0 are the mole numbers of analyte in the eluent phase and the initial mole numbers of analyte in the sample solution, respectively. C_{elu} and C_0 are the concentration of analyte in the eluent phase and the initial concentration of analyte in the sample solution, respectively. PF is the preconcentration factor and V_{elu} and V_{aq} are the volumes of the receiving and the source phases, respectively.

Matrix effect: By the FDA definition, a matrix effect is the direct or indirect alteration or interference in response due to the presence of unintended analytes or other interfering substances in the sample. There are many sources of matrix effects in bio-analysis, including

endogenous substances from the sample matrix, components in the mobile phase, as well as molecules deriving from contaminations during sample preparation.[6] Of the endogenous substances, the phospholipids are the greatest source for matrix effect. Matuszewski *et al*. described a procedure for evaluation of matrix effects.[7] The matrix effect was calculated by comparing the absolute peak areas in the neat solutions with those obtained for the standards spiked (10, 50, and 100 μg L^{-1}).

References

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