Title: Quantitative analysis of clonidine and ephedrine by a microfluidic system: On-chip electromembrane extraction followed by high performance liquid chromatography

Authors: Mahroo Baharfar, Yadollah Yamini, Shahram Seidi, Monireh Karami

PII: S1570-0232(17)31157-1
DOI: https://doi.org/10.1016/j.jchromb.2017.10.062
Reference: CHROMB 20892

To appear in: *Journal of Chromatography B*

Received date: 4-7-2017
Revised date: 20-10-2017
Accepted date: 31-10-2017

Please cite this article as: Mahroo Baharfar, Yadollah Yamini, Shahram Seidi, Monireh Karami, Quantitative analysis of clonidine and ephedrine by a microfluidic system: On-chip electromembrane extraction followed by high performance liquid chromatography, Journal of Chromatography B https://doi.org/10.1016/j.jchromb.2017.10.062

Quantitative analysis of clonidine and ephedrine by a microfluidic system: On-chip electromembrane extraction followed by high performance liquid chromatography

Mahroo Baharfar[a], Yadollah Yamini[a,*], Shahram Seidi[b], Monireh Karami[a]

[a] *Department of Chemistry, Faculty of Sciences, Tarbiat Modares University, P.O. Box: 14115-175, Tehran, Iran*

[b] *Department of Analytical Chemistry, Faculty of Chemistry, K.N. Toosi University of Technology, Tehran, Iran*

Highlights

- A microfluidic device was developed for on-chip electromembrane extraction.
- It was applied for extraction ephedrine and clonidine from urine and plasma samples.
- The separation and determination of the analytes were performed by HPLC-UV.
- The limits of detection were less than 7.0 and 11 μg L^{-1} in urine and plasma samples.
- Smaller distance between electrodes makes it possible to apply low applied voltages.

Abbreviations:

CLO: clonidine; DEHP: di-(2-ethylhexyl) phosphate; EME: electromembrane extraction; EPH: ephedrine; ER: extraction recovery; CCD: central composite design; HF-LPME: hollow fiber liquid phase microextraction; HPLC: high performance liquid chromatography; LDR: linear dynamic range; LLE: liquid-liquid extraction; LOD: limit of detection; NPOE: 2-nitrophenyl octyl ether; PF: preconcentration factor; PPMA: polymethyl methacrylate; RR: relative