

Supplementary data for article:

Samiec, P.; Švorc, L.; Stanković, D. M.; Vojs, M.; Marton, M.; Navrátilová, Z. Mercury-Free and Modification-Free Electroanalytical Approach towards Bromazepam and Alprazolam Sensing: A Facile and Efficient Assay for Their Quantification in Pharmaceuticals Using Boron-Doped Diamond Electrodes. *Sensors and Actuators, B: Chemical* **2017**, *245*, 963–971.

<https://doi.org/10.1016/j.snb.2017.02.023>

SUPPLEMENTARY INFORMATION

Mercury-free and modification-free electroanalytical approach towards bromazepam and alprazolam sensing: A facile and efficient assay for their quantification in pharmaceuticals using boron-doped diamond electrodes

Petr Samiec^a, Ľubomír Švorc^{b*}, Dalibor M. Stanković^{c,d}, Marian Vojs^e, Marián Marton^e, Zuzana Navrátilová^a

^a*Department of Chemistry, Faculty of Science, University of Ostrava, 30. dubna 22, 701 03 Ostrava, Czech Republic*

^b*Institute of Analytical Chemistry, Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava, Radlinského 9, Bratislava, SK-812 37, Slovak Republic*

^c*Department of Analytical Chemistry, Innovation Center of the Faculty of Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, 11000, Serbia*

^d*Institute of Nuclear Sciences “Vinča”, University of Belgrade, P. O. Box 522, Belgrade, 11000, Serbia*

^e*Institute of Electronics and Photonics, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology in Bratislava, Ilkovičova 3, Bratislava, SK-812 19, Slovak Republic*

*Corresponding author. Tel.: +421-2-59325302; fax: +421-2-59325590
E-mail address: lubomir.svorc@stuba.sk (Assoc. Prof. Ľubomír Švorc, PhD.)

Table S1

The pH effect of BR buffer on the peak current density (J_{BZ} and J_{ALZ}) for the studied BDZs (1×10^{-4} mol/L) using DPV on BDDEs with various B/C ratio. The DPV parameters: modulation amplitude of 50 mV, modulation time of 80 ms, and scan rate of 25 mV/s.

BDDE type with B/C ratio	BZ		ALZ	
	Optimal pH of BR buffer	J_{BZ} ($\mu\text{A}/\text{mm}^2$)	Optimal pH of BR buffer	J_{ALZ} ($\mu\text{A}/\text{mm}^2$)
Commercial 1000 ppm	8	-0.064	5	-0.686
L-M 1000 ppm	11	-0.329	3	-0.271
L-M 2000 ppm	4	-0.152	-	-
L-M 4000 ppm	5	-0.253	7	-0.128
L-M 8000 ppm	11	-0.255	5	-0.165

Table S2

The optimized DPV operating parameters for the individual determination of 1×10^{-4} mol/L BZ and ALZ.

BDZ	Modulation amplitude value (mV)		Modulation time value (ms)	
	Studied range	Optimized	Studied range	Optimized
BZ	10 – 150	50	10 – 150	25
ALZ		100		50

Fig. S1

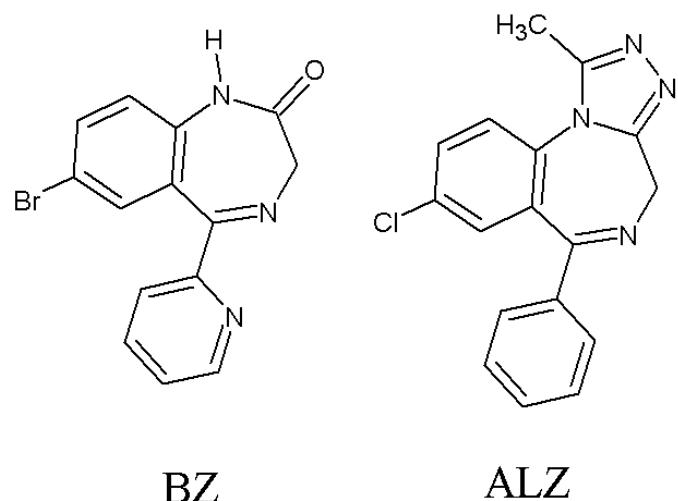


Fig. S1

Chemical structures of Bromazepam (BZ) and Alprazolam (ALZ).

Fig. S2

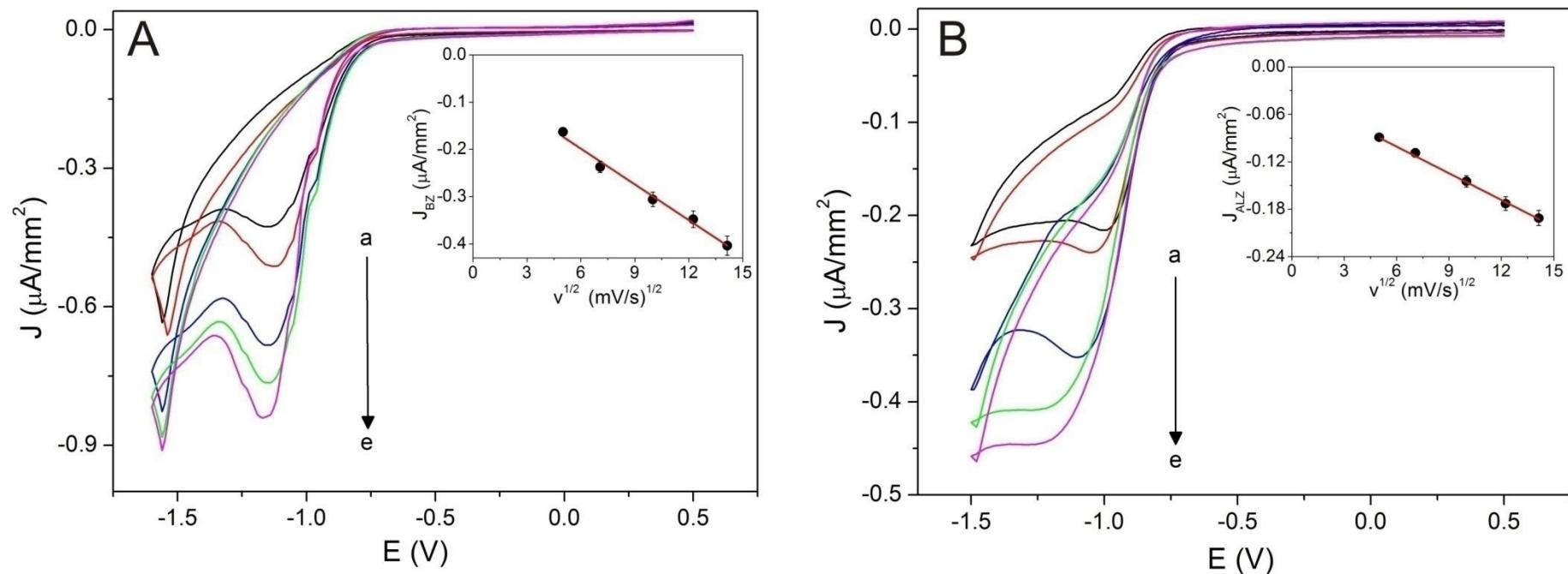


Fig. S2

(A) CV records of 1×10^{-4} mol/L BZ in BR buffer of pH 11 on L-M BDDE of 1000 ppm B/C for various scan rates: (a) 25, (b) 50, (c) 100, (d) 150 and (e) 200 mV/s. The dependence between the BZ current density (J_{BZ}) and the square root of the scan rate ($v^{1/2}$) with corresponding error bars appears in the inset.

(B) CV records of 1×10^{-4} mol/L ALZ in BR buffer of pH 5 on commercial BDDE of 1000 ppm B/C for various scan rates: (a) 25, (b) 50, (c) 100, (d) 150 and (e) 200 mV/s. The dependence between the ALZ current density (J_{ALZ}) and the square root of the scan rate ($v^{1/2}$) with corresponding error bars appears in the inset.

*Corresponding author. Tel.: +421-2-59325302; fax: +421-2-59325590
E-mail address: lubomir.svorc@stuba.sk (Assoc. Prof. Lubomír Švorc, PhD.)