

Accepted Manuscript

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PII: S1572-6657(17)30486-1
DOI: doi: [10.1016/j.jelechem.2017.07.001](https://doi.org/10.1016/j.jelechem.2017.07.001)
Reference: JEAC 3389

To appear in: *Journal of Electroanalytical Chemistry*

Received date: 2 March 2017

Revised date: 30 June 2017

Accepted date: 1 July 2017

Please cite this article as: Elaheh Molaakbari, Ali Mostafavi, Zeinab Tohidian, Hadi Beitollahi , Synthesis and application of conductive polymeric ionic liquid/Ni nanocomposite to construct a nanostructure based electrochemical sensor for determination of risperidone and methylphenidate, *Journal of Electroanalytical Chemistry* (2017), doi: [10.1016/j.jelechem.2017.07.001](https://doi.org/10.1016/j.jelechem.2017.07.001)

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Synthesis and application of conductive polymeric ionic liquid/Ni nanocomposite to construct a nanostructure based electrochemical sensor for determination of risperidone and methylphenidate

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ABSTRACT

In the present study, poly(MImEO₈BS)-Ni nanocomposite was synthesized and applied to modify a glassy carbon electrode along with polymeric ionic liquids (PILs). The electrochemical investigation of the modified electrode as well as its efficiency for voltammetric oxidation of risperidone is explained. The electrode was used to study the voltammetric oxidation of risperidone employing cyclic voltammetry (CV), linear sweep voltammetry (LSV), chronoamperometry and square-wave voltammetry (SWV) as diagnostic techniques. It has been observed that the oxidation of risperidone at the surface of modified electrode occurs at a potential of about 130 mV less positive than that of an unmodified glassy carbon electrode. SWV showed a linear dynamic range from 5.0×10^{-7} to 8.0×10^{-5} M and a detection limit of 7.3×10^{-8} M for risperidone. Moreover, this modified electrode was utilized for simultaneous determination of risperidone and methylphenidate. Finally, the modified electrode was employed for determination of risperidone and methylphenidate in pharmaceutical compounds.

Keywords: Risperidone, Methylphenidate, Poly(MImEO₈BS)-Ni Nanocomposite, Chemically Modified Electrode, Electrochemical Sensors, Polymeric Ionic Liquids.

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