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23th Young Investigators' Seminar on Analytical Chemistry

June 28th – July 1st, 2016, Novi Sad, Serbia

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Voltammetric determination of piperidine type drugs at boron-doped diamond electrode

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Abstract

A simple and selective procedure is described for electrochemical determination of thioridazine (TDZ), a piperidine type of antipsychotic agent belonging to the phenothiazine drug group. This method is based on the electrochemical oxidation of TDZ in Britton-Robinson buffer solution at pH 6 at a boron-doped diamond electrode. Cyclic voltammetry provided a two well defined oxidation peaks on +0.6 and +1.1 V (vs. Ag/AgCl/3 M KCl electrode). For quantification of TDZ was used oxidation peak on higher potential and differential pulse voltammetry was applied as a very sensitive analytical technique for the trace determination of TDZ. Under optimized conditions, the analytical curve obtained was linear in the wide TDZ concentration range of 0.2 to 40 μmol L^{-1}, with a detection limit of 0.12 μmol L^{-1}. The effect of interfering agents (common urinary compounds) was appeared to be negligible confirming a favorable selectivity of the method. The method can be also selective over other phenothiazine derivates (chloropromazine and trifluoperazine) due to high potential determination of nitrogen atom in different phenothiazine side chain.

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