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Pencil graphite electrode as electrochemical sensor for the voltammetric determination of Chlorpromazine

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Abstract:

In the present study, selective, simple and sensitive electrochemical sensor has been developed using pencil lead (pencil graphite electrode, PGE) for the investigation of chlorpromazine (CPZ). The cyclic voltammetry (CV) and differential pulse voltammetry (DPV) techniques were employed to study the anodic behaviour of CPZ. Bare PGE showed good electrocatalytic activity towards the determination of CPZ in comparison with alanine and glycine modified PGEs. The PGE showed well enhanced peak current compared to alanine and glycine modified PGEs for the determination of CPZ. Some of the parameters such as electroactive surface area, influence of pH, effect of scan rate, electron transfer kinetics and sensitivity have been studied. DPV has shown good linearity in the concentration range 0.01 μM to 0.08 μM with the limit of detection 0.003 μM . The proposed sensor has been successfully employed for the determination of CPZ present in pharmaceutical sample.

Keywords: Chlorpromazine, cyclic voltammetry, differential pulse voltammetry, electrochemical sensor, pencil graphite electrode.

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