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Investigation of the Voltammetric Characteristics of Poly(1,4-diaminobenzene) Film as a Dopamine-Selective Polymer Electrode

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Abstract: Electrochemical polymerization of 1,4-diaminobenzene in the KCl aqueous electrolyte at a potential of 0.600 V versus Ag/AgCl produces adherent poly(1,4-diaminobenzene) film on a gold electrode. The electrochemical behavior of dopamine and ascorbic acid at the polymer electrode prepared in this manner was examined by cyclic and differential pulse voltammetry. Voltammetry studies showed that polymeric film with a thickness corresponding to a 7-mC charge exhibited selective permeation for dopamine while retaining ascorbic acid. All the polymerization parameters affecting the permselective characteristics were systematically investigated and the optimum values were determined. The results showed that a polymeric membrane, owing to its permselective character, could be used as a dopamine-selective membrane.

Key Words: Poly(1,4-diaminobenzene), dopamine, ascorbic acid

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