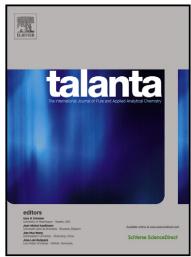
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ACCEPTED MANUSCRIPT

A new voltammetric sensor for sensitive and selective determination of Xanthine based on DNA and Polyaniline composite Langmuir-Blodgett film

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Abstract: DNA-Polyaniline (PAn) complex Langmuir-Blodgett film modified glassy carbon electrode (GCE) was used as a new voltammetric sensor (DNA/PAn-LB/GCE) for xanthine (XA) detection. The characteristic of DNA/PAn-LB film was studied by electrochemical impedance spectroscopy and scanning electron microscope. Electrochemical behaviors of XA at the sensor were studied in pH 7.0 phosphate buffer solutions by cyclic voltammetry and differential pulse anodic voltammetry. The results showed that this new modified electrode exhibited an excellent immunity from uric acid and hypoxanthine interference and a new sensitive and selective electroanalytical method for XA was proposed with wider linear range. Under the optimum conditions, the calibration curve for XA was obtained over the range of $7.0 \times 10^{-8} \sim 1.0 \times 10^{-5}$ mol L⁻¹, with the detection limit of 3.0×10^{-8} mol L⁻¹. The practicability of this method was demonstrated by determining the concentration of XA in human serum samples.

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