Simultaneous Determination of Acetaminophen and Tyrosine Using Screen-printed Electrochemical Sensor Based on MWCNTs-doped Poly(glycine)/Poly(acrylic acid) Conducting Polymers

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A sensitive electrochemical sensor for the simultaneous determination of acetaminophen (ACOP) and tyrosine (Tyr) was proposed based on MWCNTs-doped poly (glycine) (p-gly)/ poly (acrylic acid) (PAA) conducting polymers modified screen-printed electrode (SPE). The incorporation of MWCNTs and p-gly/ PAA composite conductive polymers brought about enhanced electro-catalytic activity and additional binding sites for ACOP and Tyr. Cyclic voltammetry (CV) and linear sweep voltammetry (LSV) were performed to investigate the electrochemical behaviors of ACOP and Tyr. Under the optimal experimental conditions, the oxidation peak currents of ACOP and Tyr increased linearly with two concentration intervals over the range of 0.25-120 μM and 0.4-150 μM , respectively. The detection limits (S/N = 3) were 0.08 μM for ACOP and 0.13 μM for Tyr. Moreover, the sensor has been successfully applied for the determination of ACOP and Tyr in human serum samples, showing its great application prospects in pharmaceutical analysis.

Keywords: Screen-printed Electrode, Poly (glycine), Poly (acrylic acid), Acetaminophen, Tyrosine

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