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Electrochemical Investigation and Determination of Procaterol Hydrochloride on Poly(glutamic acid)/Carboxyl Functionalized Multiwalled Carbon Nanotubes/Polyvinyl Alcohol Modified Glassy Carbon Electrode

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Abstract

Poly(glutamic acid) (P-GLU)/carboxyl functionalized multiwalled carbon nanotubes (MWCNTs-COOH)/polyvinyl alcohol (PVA) modified glassy carbon electrode (GCE) has been successfully prepared and the electrochemical behavior of procaterol hydrochloride (ProH) was studied. The results show that the as-prepared modified electrode exhibits a good electrocatalytic property towards the oxidation of ProH in 0.2 M phosphate buffer solution (PBS) (pH 6.0) due to the enhanced oxidation peak current at $\sim +0.59$ V. Under optimal reaction conditions, the oxidation peak current of ProH is proportional to its concentration in the linear dynamic ranges of 0.060 - 8.0 μM ($R = 0.9974$), with a detection limit of 8.0×10^{-9} M. Finally, this method was efficiently used for the determination of ProH in tablets and human urine with recoveries of 88.5%~98.7% and 89.2 ~ 108.0%, respectively.

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