Electrocatalytic performance of Au@Cu Nanoparticle Chains as Sensor for Determination of Piroxicam

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A chemical reduction technique at low temperature was employed to synthesize Au and Cu nanoparticle chains (Au@Cu NCs) with sodium citrate as the growth reducing agent, stabilizer and structure directing agent, chloroauric acid (HAuCl₄) and copper chloride (CuCl₂) as metal precursors. Then, the Au@Cu NCs were dropped on glassy carbon electrode (GCE) to prepare an electrochemical sensor (Au@Cu NCs/GCE) for sensing piroxicam. The electrochemical behaviors on Au@Cu NCs/GCE of piroxicam were investigated in detail. The electrochemical sensor for piroxicam exhibited a linear range of 0.04-1.00 mM at desired conditions. In particular, Au@Cu NCs/GCE was successfully applied for determination of piroxicam liniments samples with satisfactory recovery range (92.86-101.22 %) and relative standard deviation (RSD, 2.95-4.69 %), indicating its reasonability and feasibility for piroxicam determination.

Keywords: Nanoparticle chains; Au@Cu NCs; Piroxicam; Electrochemical sensor

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