Mesopores Cellular Foam-Based Electrochemical Sensor for Sensitive Determination of Ractopamine

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A mesopores cellular foam (MCF) modified carbon paste electrode (MCF/CPE) was designed for sensitive determination of ractopamine. The as-prepared MCF was characterized by scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), nitrogen adsorption-desorption isotherms and pore size distribution plots. Cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) were employed to demonstrate the large electrode surface and the fast electron transfer in the MCF/CPE which showed much better performance for the electrochemical oxidation of ractopamine when compared with the bare carbon paste electrode (CPE). Under optimized conditions, the oxidation peak current was proportional to the ractopamine concentration which was varied between 0.050 and 3.0 μM , with a detection limit (defined by a signal-to-noise ratio of three) of 0.010 μM . The proposed sensor was applied to determine the ractopamine content in pork samples with satisfactory results.

Keywords: Mesopores cellular foam, Modified electrode, Ractopamine, Linear sweep voltammetry

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