Simultaneous Determination of Clenbuterol and Salbutamol with a Graphene-Nafion Nanocomposite Modified Electrode

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A highly sensitive electrochemical sensor for the simultaneous determination of clenbuterol (CLB) and salbutamol (SAL) was fabricated by the modification of graphene-Nafion (GN-Nafion) composite film on a glassy carbon electrode (GCE). Both CLB and SAL caused a pair of redox peaks at the GN-Nafion/GCE in 0.04 M Britton-Robinson buffer solution. Obvious anodic peak currents for the oxidation of both CLB and SAL were observed under the optimal condition. The difference of oxidation peak potentials for CLB and SAL was about 200 mV, which made it possible for simultaneous determination of these compounds using the GN-Nafion/GCE. The detection limit for CLB and SAL was 0.13 μ M and 0.11 μ M (S/N=3), respectively. The proposed method was applied to simultaneously detect CLB and SAL in pork meat with satisfactory results. Otherwise, the excellent reproducibility, stability and selectivity were obtained at the proposed electrode.

Keywords: clenbuterol; salbutamol; graphene; Nafion; nanocomposites; electrochemical sensor

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