Fabrication of an electrochemical sensor based on a graphene/Au composite for the determination of clenbuterol in beef samples

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doi: 10.20964/2017.07.19

Received: 23 March 2017 / *Accepted:* 19 April 2017 / *Published:* 12 June 2017

To achieve fast clenbuterol determination, a super-sensitive amperometric biosensor was fabricated on the basis of Au nanoparticle-modified graphene oxide nanosheets (GR/Au). Antigen determination was achieved by Au measurement via positive differential pulse voltammetry (DPV) in KCl solution, and the GR/Au–clenbuterol nanocomposite capture occurred on the immunosensor via competitive immunoreactions. The results displayed a linear response (0.01–15.0 ng/mL) with a detection limit (DL) as low as 7.6 pg/mL. Furthermore, clenbuterol detection in real beef specimens could be desirably addressed by the remarkably stable and specific electrochemical immunoassay proposed herein.

Keywords: Clenbuterol; Electrochemical sensor; Graphene; Gold nanoparticles; Glassy carbon electrode; Beef

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