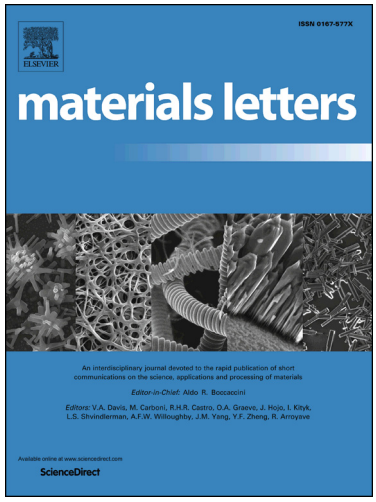

Preparation and application of selenium nanoparticles in a lateral flow immunoassay for clenbuterol detection

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Preparation and application of selenium nanoparticles in a lateral flow immunoassay for clenbuterol detection

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Abstract

Lateral flow immunoassays (LFIAs) have been applied widely in clinical diagnosis, food safety, drug abuse, environmental monitoring and other fields due to their characteristics of rapidity, sensitivity, stability and low cost. Choosing the proper labels is key to the preparation of LFIAs. An ideal probe requires a simple synthesis, has stable performance and is economical. This study aimed to establish a simple, rapid and convenient method for the preparation of selenium nanoparticles (SeNPs) that can be used as labels in LFIAs. Appropriate SeNPs were successfully prepared by reducing 2 mM H_2SeO_3 with 16 mM L-ascorbic acid (Vc), 5 mM sodium dodecyl sulfate (SDS) and 100 mM polyethylene glycol (PEG) as stabilizing agents. The spherically formed and uniformly dispersed nanoparticles were applied to the preparation of an LFIA. In this study, the preparation of the SeNPs was economical and was accomplished at room temperature. We used clenbuterol (CLE) as an analyte in an LFIA; the limit of detection (LOD) of CLE in pig urine was found to be 3 ng/mL,

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