A High Sensitive Electrochemical Avian Influenza Virus H7 Biosensor Based on CNTs/MoS_x Aerogel

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The three-dimensional CNTs/MoS_x aerogel was successfully prepared via solvothermal method. The favourable combination of MoS₂ material and 3D conductive networks of CNTs aerogel have created a sufficient active site for fast charge transport. The electrochemical immunosensor with a sandwich-type immunoassay using CNTs/MoS_x aerogel as trace labels was constructed. Avian influenza virus H7 (AIV H7) could be quantified sensitively using the proposed immunosensor. The immunoassay was carried out on the modified surface of CNTs/MoS_x with the adsorption of H7-polyclonal antibodies (PAb-CNTs/MoS₂). The immunosensor with PAb-CNTs/MoS_x as detection antibodies have demonstrated a linear detection range of 1-25 ng/mL with the low detection limit of 0.43 ng/mL.

Keywords: CNTs aerogel; Molybdenum sulfide; Electrochemical immunosensor; Avian influenza virus H7

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