Peptide Nanotube-Modified Electrodes for an Electrochemical Immunosensor

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Fabrication and notably improved performance of composite electrodes based on modified self-assembled peptide nanotubes is described. Peptide nanotubes extended tubular β-sheet-like structures were constructed by self-assembly of flat, ring-shaped cyclic peptides made up of alternation D- and L-amino acid residues. Fabricated nanotube structures were characterized by Fourier-transform infrared spectroscopy (FT-IR) and scanning electron microscopy (SEM). The peptide nanotubes were deposited onto the screen-printed carbon composite electrode as templates. The antibody against *E.coli* O157:H7 antibodies were attached onto the peptide nanotubes and the *E.coli* O157:H7 cells were attached onto the antibody-modified electrode using the antigen-antibody interaction. The results showed that the immobilization of antibodies and the binding of *E. coli* cells to the peptide nanotube modified electrode increased the electron-transfer resistance, which was directly measured with cyclic voltammetry (CV) in the presence of $[Fe(CN)_6]^{3-/4-}$ as a redox probe.