Application of Single-Walled Carbon Nanohorn Modified Electrode for the Direct Electrochemistry of Myoglobin

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An electrochemical biosensor was fabricated with myoglobin (Mb), single-walled carbon nanohorns (SWCNHs) and carbon ionic liquid electrode (CILE). By applying chitosan (CTS) film on the electrode surface, the modified electrode was constructed and demonstrated as CTS/Mb/SWCNHs/CILE. Spectroscopic data proved that Mb remained the secondary structure within mixture. Cyclic voltammogram of CTS/Mb/SWCNHs/CILE exhibited a pair of well-defined redox peaks, showing that direct electron transfer of Mb with CILE was realized due to the acceleration effect of SWCNHs. The bioelectrode displayed excellent electrocatalytic behaviors to the reduction of trichloroacetic acid and NaNO_2 .

Keywords: Direct electrochemistry. electrocatalysis. single-walled carbon nanohorns. myoglobin. carbon ionic liquid electrode

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