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Full Papers

二茂铁衍生物电子传递剂键合的溶胶-凝胶葡萄糖生物传感器

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摘要 溶胶-凝胶膜用 N-(3-三甲氧基硅烷丙基)-二茂铁甲基胺(简称FcSi)修饰，生物传感器的结构为sol-gel/FcSi+GOx/GC,

二茂铁电子传递剂用化学键固定在硅烷的网状结构，GOx捕获在其中，
因此防止电子传递剂的流失又能维持酶的活性。本文还调查了电解质pH, 温度，
可能存在的干扰组分的影响。采用电流法对葡萄糖进行定量分析，结果线性范围为2.00 ×10^{-4}

~1.57 ×10^{-3} mol.L^{-1}, 检测限为2.0 ×10^{-4} mol.L^{-1},

灵敏度为5.06 ×10^{5} nA.mol^{-1}.L。

关键词 生物传感器, 溶胶-凝胶膜, 二茂铁衍生物, 葡萄糖
分类号

Ferrocene Derivative Mediator Bonded Sol-gel Membrane Glucose Biosensor

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Abstract The sol-gel derived glucose biosensor was developed, and the sol-gel membrane was organically modified by *N*-(3-triethoxysilylpropyl)-ferrocenylmethylamine (FcSi) as sol-gel precursor to make electrochemical biosensor. The structure of biosensor was sol-gel/FcSi－GOx/GC type (glucose oxidase, GOx). The ferrocene mediator was chemically immobilized to the silane network, and GOx was entrapped to the sol-gel glass network. Therefore, these structures prevented mediator leakage and retained the enzyme activity. Additionally, pH of electrolyte, temperature effects, and interference of positive substances with biosensor were investigated. And the electrochemical performance of biosensor was studied by amperometry. The results indicated that the linear range, detection limit, and response slope of biosensor was 2.00×10^{-4}—1.57×10^{-3} mol•L^{-1}, 2.0×10^{-4} mol•L^{-1} and 5.06×10^{5} nA•mol^{-1}•L, respectively.

Key words biosensor sol-gel glass ferrocene derivative glucose

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