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1,4-二氧六环介质中辣根过氧化物酶电极的性能研究

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摘要 用交联法制备辣根过氧化物酶(HRP)电极, 在1,4-二氧六环介质中研究其电化学行为。实验表明, 固定化的HRP在有机相中仍保持活性并可与电极进行直接电子传递, 因而能在没有其它电子传递体存在的条件下催化H~2O~2 的电化学还原反应。当亚铁氰化物与酶共修饰至电极上之后, 它起着电子传递体的作用, 使HRP电极的性能大为改善。根据不同条件下得到的动力学参数, 讨论了影响酶电极性能的因素。

关键词 二氧六环 P 酶电极 亚铁氰化物 辣根过氧化物酶 生物电催化 电子传递体

分类号 0621.16

Performance of HRP enzyme electrode in 1,4-dioxane media

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Abstract The horseradish peroxidase (HRP) electrode was made by crosslinkage method, and its electrochemical behaviour was studied in 1,4-dioxane media. It is shown that the immobilized HRP can maintain its activity in organic phase and the direct electron transfer occurs between HRP and the electrode substrate, hence the HRP electrode can catalyze the electrochemical reduction of H~2O~2 in the absence of mediators. When HRP and K~4Fe(CN)~6 are comodified on the basis electrode, the performance of HRP electrode will be improved significantly since K~4Fe(CN)~6 acts as the electron transfer mediator in the redox process of enzyme. According to the kinetic parameters obtained in different conditions, the factors influencing the performance of the HRP electrode are discussed.

Key words DIOXANE P ENZYME ELECTRODES FERROCYANIDE

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