

ナノ構造電極上でのシトクロム P450 153A13a の電気化学触媒反応

Electrochemically-driven CYP153a reaction at nanostructured electrode

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Cytochrome P450 enzymes (CYPs) catalyze a vast array of oxidative biotransformations that are potentially useful for industrial and pharmaceutical synthesis. Constructing an electrochemically-driven CYP system, which does not require NADPH and one or two additional redox proteins to activate the enzyme, is a promising way to develop the efficient screening system for the substrates of the enzymes. In this study, we prepared CYP153A13a and immobilized on the nanostructured gold electrode to investigate the electrocatalytic reaction of the enzyme. The direct electron transfer between the electrode and CYP was clearly detected with a relatively larger rate constant compared to the conventional methods. We also observed the electrocatalytic currents corresponding to the substrate conversion.