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Voltametricand Electrical Properties of the Layered Cytochrome c Modified Conducting Polymer

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The direct electron transfer of cytochrome *c* (cyt *c*) on the conducting polymer (poly-TTCA) and phospholipids modified electrodes were utilized for the fabrication of bio-devices. CVs recorded for cyt *c*covalently attached on poly-TTCA mono- and multi-layers showed a pair of well-defined and reversible peaks at about 212/201 mV and 228/168 mV (E_{pa}/E_{pc}) vs Ag/AgCl (sat'd KCl) electrode in a 0.2 M phosphate buffer solution (pH 7.0). When cyt *c*was electrostatically adsorbed on the phospholipids (palmitoyl-oleoyl phosphatidic acid:POPA) coated electrode, CVs revealed a quasi-reversible peaks at E_{pa}/E_{pc} of about 118/26 mV vs Ag/AgCl (sat'd KCl) electrode in a 0.2 M phosphate buffer solution (pH 7.0) containing 1.0 x 10^{-4} M cyt c. The voltammetric properties of cyt *c* on the polymer and lipid layers were studied with QCM, SEM, AFM, in different experimental conditions. Heterogeneous electron transfer rate constant (k_s) of cyt *c* on the poly-TTCA monolayer and multi-layers were determined to be 0.874 sec^{-1} and 0.598 sec^{-1} . The current-voltage (I-V) characteristics of Au/poly-TTCA/cyt c/poly-TTCA/Au and Au/POPA/cyt c/POPA/Au devices have been studied for the applications to bioelectronics and biosensors