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Author Jiun-Hsien Tsai
Author's Email Address No Public.
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Abstract
A study was conducted to use the Chromium Hexacyanoferrate(II) [KCrHCF(II)] to modify the carbon paste electrode (CPE). The responding current for detecting H2O2 or glucose at the reductive potential was measured to determine the concentrations H2O2 or glucose. The results showed that the carbon paste electrode modified by KCrHCF(II) possessed a good linearity for detection of H2O2 (the linear range was 0.0125 ~ 15 mM, R2 = 0.9997) and that the sensitivity for reduction of H2O2 was about 151.55 μA/cm2-mM H2O2. The sensitivity (2.01 mA/cm2-mM H2O2) for reduction of H2O2 for the CPE modified by the nanosized KCrHCF(II) could be elevated to about 13 times of that of CPE modified by the unnanosized KCrHCF(II). The linear range was 0.005 ~ 17 mM and the R2 was 0.9995 for reduction of H2O2 for the CPE modified by the nanosized KCrHCF(II). The results showed that the KCrHCF(II) could increase the ability of reduction of H2O2 and if the KCrHCF(II) was nanosized, it could increase the ability of reduction of H2O2 significantly and consequently increase the responding current.

If the mixed method was used to immobilize the Glucose Oxidase onto the CPE modified by the KCrHCF(II), the linear range for the detection of glucose was about 0.05 ~ 1.95 mM (R2 = 0.9965) and the sensitivity was about 1.28 μA/cm2-mM C6H12O6. If the entrapping method was used to immobilize the Glucose Oxidase, the linear range for the detection of glucose could be elevated to about 0.025 ~ 1.625 mM (R2 = 0.9993), and also the sensitivity could be elevated to about 23.11 μA/cm2-mM C6H12O6.

Furthermore, we had accomplished in the preparation of the amperometric sensing strips for the detection of glucose by using the entrapping method and the screen-printing technique. Through the detection of glucose by the screen-printed electrodes (SPEs), the sensitivity was about 24.76 μA/cm2-mM C6H12O6 and the linear range was about 0.025 ~ 1.875 mM (R2 = 0.9968).

The results were not quite satisfactory but since the KCrHCF(II) possesses the pretty good characteristic of catalytic ability for reduction of H2O2. If the method of immobilization of enzyme can be further modified, the sensitivity and linear range for detection of glucose will be elevated and this will be the goal of our further study.
Advisory Committee Chin-Hou Li - advisor

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