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Label-free detection of Potassium ion using PEDOT:PSS

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Abstract

Potassium ion is an important biomarker that plays an important role in heart. Normal potassium levels are between 3.5 and 5.0 mmol/L Currently, there are method of attaching guanine-rich DNA to the electrode surface or using potentiometry to detect potassium. However, this method of using DNA has disadvantage of being unstable due to DNA. Disadvantage of the potentiometry is a that a chamber must be made for the reference electrode. Therefore, we propose detection mechanism for measuring potassium using PEDOT:PSS property[1]. RGO-PEDOT:PSS was spin-coated at 1200 rpm for 60s on ITO glass. ITO spin-coated, Ag/AgCl electrode , Pt electrode used. The reaction was confirmed by cyclic voltammetry according to the concentration of KCl (0.1mM-10mM KCl). As it shows in Fig. 1, in the *C-V* curve of D.DI water does not occur a peak that indicates redox reaction. On the other hand, the *C-V* curves of KCl occur peak voltage about 0.35V. Their currents increase with higher concentration as shown in Fig. 1..

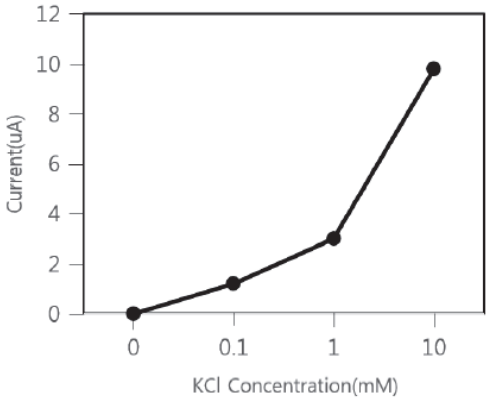

Fig. 1. Current of KCl using RGO-PEDOT:PSS

Key words: *KCl, RGO-PEDOT:PSS , Electrochemical sensor, Cyclic voltammetry*

References

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