

# Preparation Of Polycurcumin By Electropolymerisation On Graphite Electrodes And Its Application As A Simultaneous Electrochemical Sensor Of Heavy Metals

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## ABSTRACT

The graphite electrode was changed by applying cyclic voltammetry to electropolymerized curcumin. The polycurcumin-graphite modified electrode (GECU) was then used for the determination of  $\text{Cd}^{2+}$  and  $\text{Pb}^{2+}$  individually and simultaneously. The performance of this modification has shown excellent electrocatalytic activity toward  $\text{Cd}^{2+}$  and  $\text{Pb}^{2+}$  than bare graphite electrodes. Additionally, the impact of the scan rates shows that the electrochemical process controlling the redox behavior of  $\text{Cd}^{2+}$  and  $\text{Pb}^{2+}$  on GECU is a diffusion-controlled electrochemical process. Under experimental, at the linear regression equation of  $I_p = 89.78C + 635.96$  (A,  $R^2 = 0.9932$ ), the oxidation peak current ( $I_p$ ) increases linearly with the concentration (C) of  $\text{Cd}^{2+}$  ranging from 0.43 - 11.08 ppm under experimental conditions. On the other hand, the oxidation peak current of  $I_p = 27.18C + 1185.00$  (mA,  $R^2 = 0.9923$ ). The LOD and LOQ were measured at lower concentrations of  $\text{Cd}^{2+}$ , 0.76 ppm, and 2.51 ppm, respectively. On the other hand, a simultaneous analysis gives the result of the LOD and LOQ 0.86 ppm, and 2.84 ppm. The reproducibility was 1.44% for  $\text{Pb}^{2+}$  and 1.01% for  $\text{Cd}^{2+}$ . The electrode application was carried out for measuring  $\text{Cd}^{2+}$  metal ions in laboratory waste, the results obtained show a recovery of 101.03% And 99.80% for  $\text{Pb}^{2+}$ .

Kata Kunci:  $\text{Cd}^{2+}$  -  $\text{Pb}^{2+}$ , curcumin, electropolymerization, voltammetry