

Abstract

CYCLIC VOLTAMMETRIC ANALYSIS OF CHLORAMBUCIL USING DIFFERENT REFERENCE ELECTRODES AND GOLD AS WORKING ELECTRODE

By

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In this study, Chlorambucil Cyclic (4-[bis(2-chloroethyl)amino] benzene butanoil acid) which is well known as anticancer compound, was analysed using cyclic voltammetry with two different reference electrodes and gold as working electrode. Cyclic voltammograms generated were used to calculate electrochemical parameters associated with electrolysis characteristic of the sample. Voltammogram cyclic generated parameters to calculate the value of k_f i.e. anodic peak current (i_{pa}), peak current cathodic (i_{pc}), anodic peak potential (E_{pa}), cathodic peak potential (E_{pc}). The parameter value is used as a reference for determining the value of advanced chemical reaction rate constants (k_f) compound chlorambucil calculated by the method of Nicholson-Shain through comparison of i_{pc}/i_{pa} uncorrected and i_{pc}/i_{pa} corrected. Using Ag and Ag/AgCl as reference electrode, the uncorrected value of k_f was $(0,244 \pm 0,08) s^{-1}$ and $(0,214 \pm 0,08) s^{-1}$. Statistical analysis showed there was no significant difference in the values uncorrected k_f for variation reference electrode Ag and Ag/AgCl for k_f . For Ag and Ag/AgCl as reference electrode, the corrected value of k_f was $(0,0782 \pm 0,0100) s^{-1}$ and $(0,0446 \pm 0,0150) s^{-1}$. And statistical analysis showed there was no significant difference in the values corrected k_f for variation reference electrode Ag and Ag/AgCl.

Keywords: chlorambucil, cyclic voltammetry, working electrode gold, the rate of chemical reaction (k_f), reference electrode Ag and Ag /AgCl.