

Abstract

CYCLIC VOLTAMMETRIC ANALYSIS OF CHLORAMBUCIL USING DIFFERENCE REFERENCE ELECTRODES AND GLASSY CARBON AS WORKING ELECTRODE

By

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The analysis cyclic voltammogram done of chlorambucil or leukeran (acid 4-[p-(bis[2-chloroethyl]amino)phenyl]butyrate) has been conducted to difference reference electrodes and glassy carbon as working electrode. Chlorambucil alkylating compounds are substances, nitrogen mustard derivative which is used to treat cancer. Chemistry reactivity of carbocation is closely related to the chemical reaction rate constants (k_f) that can be studied through electrolysis at cyclic voltammetry.

Electrochemical parameters used to count k_f from cyclic voltammogram i.e. anodic peak current (i_{pa}), peak current cathodic (i_{pc}), anodic peak potential (E_{pa}), cathodic peak potential (E_{pc}). Parameters obtained are used as a reference for determining the value of advanced chemical reaction rate constants (k_f). The value of k_f of the compound chlorambucil calculated by the method of Nicholson-Shain value i_{pc}/i_{pa} incorreced and corrected.

The results showed for reference electrode Ag and Ag/AgCl the value of k_f incorreced (4.634 ± 0.730) s^{-1} and (4.700 ± 0.433) s^{-1} . While the value of k_f corrected that (2.137 ± 0.765) s^{-1} , and (2.044 ± 0.985) s^{-1} . Statistical analysis showed that there was no significant difference in the value k_f in within variation reference electrode Ag and Ag/AgCl with value i_{pc}/i_{pa} incorreced or corrected.

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