ELECTROCHEMICAL BEHAVIOR OF MOCLOBEMIDE AT MERCURY AND GLASSY CARBON ELECTRODES AND VOLTAMMETRIC METHODS FOR ITS DETERMINATION

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Electrochemical oxidation and reduction properties of Moclobemide (MCB) were investigated at glassy carbon electrode (GCE) and hanging mercury drop electrode (HMDE). Diffusion-adsorption behavior and some extra electrochemical parameters such as diffusion coefficient, number of transferred electrons and proton participated to its electrode mechanisms on both electrode and surface coverage coefficient were calculated from the results of cyclic voltammetry and square-wave voltammetry. Reversible catalytic hydrogen wave mechanism was proposed at HMDE and single two-electron/two-proton irreversible oxidation mechanism controlled by adsorption with some diffusion contribution at GCE was proposed. Experimental parameters were optimized to develop new, accurate, rapid, selective and simple voltammetric methods for direct determination of MCB in pharmaceutical dosage forms and spiked human serum samples without time-consuming steps prior to drug assay. In these methods, the lowest limit of detection (LLOD) was found to be 0.0235 μM. Methods were successfully applied to determine the MCB content of commercial pharmaceutical preparations and spiked human urine. The methods were found to be highly accurate and precise.

Keywords: Cyclic voltammetry; Electrochemistry; Electron transfer; Stripping voltammetry; Moclobemide.

Moclobemide (MCB) chemically known as [*p*-chloro-*N*-(2-morpholinoethyl)-benzamide] shown in Fig. 1 is a new type of reversible and selective inhibitor of the enzyme monoamine oxidase subtype A (MAO-A). MCB is widely used and prescribed for the treatment of depression as a first benzamide antidepressant. Its inhibition of MAO leads to increased concentrations of the

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