Chapter
Chapter - I

Preface

Drugs and pharmaceuticals play an important role in our daily life in the prevention and treatment of diseases. The increased use of antibiotics in human and animal medicine has attracted much attention in recent years. The use of large numbers of synthetic organic compounds as medicines resulted with side effects. Determination of drugs with suitable analytical techniques and development of sensitive procedures acquire importance in this context.

Electrochemical techniques are well suited for analytical studies devoted to the rapid, simple, sensitive, reproducible, fast, convenient, inexpensive and accurate determination of drugs in raw materials, pharmaceutical preparations or in biological media. The main advantage is that voltammetric methods provide the possibility to use them-often with out preliminary separations for analysis of complex biological materials as well as environmental matrices.
Chapter 1

Chemically modified electrodes comprise a relatively modern approach to electrode system that finds utility in basic electrochemical investigations and applications in chemical sensing. These modified electrodes offer unique well recognized advantages and has number of possible applications in electroanalysis. Compared with conventional electrodes, chemically modified electrodes offer unique well recognized advantages such as being inexpensive, simple, rapid, low residual current, high analytical sensitivity, selectivity, wider potential window and ease of renewal. For modification of electrodes, several electrode substrates may be employed. Among them, carbon paste electrode, which is a binary mixture of carbon powder and organic liquid of non-electrolyte character and glassy carbon electrode, is used exponentially. In the present study β-cyclodextrin, clay and nafion have been employed to modify the electrode surface.

The thesis consists of the results of the following studies: i) azomethine group containing drugs and pharmaceuticals studied at mercury electrode by employing the electro analytical techniques, cyclic voltammetry, differential pulse polarography, millicoulometry and controlled potential electrolysis ii) carbonyl group containing drugs studied at β-cyclodextrin modified carbon paste electrode, nitro group containing drugs studied at clay modified carbon paste electrode and amine group containing drugs studied at nafion modified glassy carbon electrode by using cyclic voltammetry, differential pulse voltammetry, adsorptive stripping voltammetry and anodic stripping voltammetry.
The thesis has been divided into nine chapters on the basis of reviewed literature, experimental and the results obtained from the electrochemical techniques employed in the present study.

Chapter – I deals with the preface of the present investigation.

Chapter – II deals with the general introduction of the drugs and literature survey of the different methods available for the analysis of drugs in various matrices.

Chapter – III describes the electrochemical techniques employed in the present study and experimental procedures followed to study the electrochemical behaviour and analysis of drugs at dropping mercury electrode, hanging mercury drop electrode, β-cyclodextrin, clay and nafion modified electrodes.

Chapter – IV describes the results of electrode kinetics, mechanism and analytical studies of azomethine group containing drugs at mercury electrode.

The behaviour and analytical results obtained for carbonyl, nito and amine group containing drugs at β-cyclodextrin, clay and nafion modified electrodes are presented in fifth, sixth and seventh chapters.

The analytical aspects of chemically modified electrodes and summary of the results are discussed in eight and ninth chapters.

References are given at the end. The papers published and communicated are given as appendix.