CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF NEW ION-SELECTIVE ELECTRODES FOR SOME ANTIHISTAMINIC DRUGS AND THEIR VOLTAMMETRIC DETERMINATION

A Thesis Presented

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بسم الله الرحمن الرحيم

الرحمن *علم القرءان* خلق الانسان* علمه البيان

صدق الله العظيم

سورة الرحمن (١-٤)

ABSTRACT

Name: Salwa Hamed Elsayed Hussein

Title of Thesis:

CONSTRUCTION AND PERFORMANCE CHARACTERIS TICS OF NEW ION-SELECTIVE ELECTRODES FOR SOME ANTIHI STAMINIC DRUGS AND THEIR VOLTAMMETRIC DETERMINATION

Degree: Ph.D.(Analytical chemistry)Faculty of Science, Cairo University ,2009.

New eleven Diphenylpyraline (Di) and chlorphenoxamine (Ch) ion selective plastic membrane electrodes of both conventional and coated graphite types based on their ion associate with sodium tetraphenylborate and phosphotungestic acid were prepared. The conventional type electrode was fully characterized in terms of membrane composition, filling solution, plasticizer, life span, pH, ionic strength, sel ectivity and temperature. They were applied to potentiometric determination of Di-HCl and Ch-HCl in pure solutions and pharmaceutical preparations under batch and flow injection conditions. The solubility products of the ion associates, the formation constants of the precipitation reactions leading to the ion associates formation and the investigated drugs were determined conductimetrically. Finally, differential pulse voltammetry was used for the determination of Di-HCl and Ch-HCl in raw material and their pharmaceutical preparation

Key words: Ion-selective electrode, Diphenylpyraline, chlorphenoxamine, sodium tetraphenylborate, phosphotungestic acid, flow injection analysis (FIA), Potentiometry, conductimetry and differential pulse voltammetry.

Prof. Dr. Mohammed Mohammed Shoukry

Chairman of Chemistry Department

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To my Mother, Brothers and Sisters

To my Father 's soul

To my Husband and sons

For their encouragement, help and infinite love which I will never forget

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The authoress

Salwa Hamed El-Sayed Hussein

The original work of this thesis is published in the following papers:

1. Differential pulse voltammetric determination of Diphenylpyraline HCl in raw material and pharmaceutical preparation. ***The Open Electrochemistry Journal,*** 2009, *1*, 1-7.

2. Differential pulse voltammetric determination of Chlorphenoxamine Hydrochloride and its pharmaceutical preparations using Platinum and Glassy Carbon electrodes. ***Journal of applied electrochemistry***, 2010, *40(3)*, 499-505.

3. Determination of diphenylpyraline hydrochloride in pure solutions and pharmaceutical preparations using ion selective electrodes under patch and FIA conditions. ***Analytical letters***, 2010, *43*, 582-602.

4. Flow injection potentiometric determination of Chlorphenoxamine Hydrochloride (under publication)

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