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Identification of Certain Pharmaceutical Compounds Using Different Spectroscopic and Chromatographic Techniques

A Thesis

Presented to the Graduate School
Faculty of pharmacy, Alexandria University
in Partial Fulfillment of the Requirements for the Degree

OF

Master of Pharmaceutical Sciences

In

Pharmaceutical Analytical Chemistry

By

Ehab Hassan Ali Emam

B.Pharm.Sci., University of Alexandria, 1988
Alexandria Co. for Pharmaceutical and Chemical Industries
(Q.C department)

2007

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6/5/19

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Acknowledgment

I would like to express my profound gratitude and sincere thanks to **Prof. Dr. Abdel Aziz E. M. Wahbi, C. Chem., FRSC.** Emeritus Professor of pharmaceutical analytical chemistry for his kind supervision, valuable suggestion, continuous guidance, encouragement, advice and support during the course of this work.

I would like to express my profound gratitude and sincere thanks to **Prof. Dr. Farid Gabra Soliman,** Emeritus Professor of pharmaceutical analytical chemistry for his kind supervision, continuous encouragement and support throughout the course of this work.

I would like to express my profound gratitude, everlasting and sincere thanks to **Dr. Ismail Ibrahim Isamil Hewala** for his valuable supervision, constructive suggestion, willing assistance, continuous guidance, endless support and advice during the course of this work and preparation of the thesis.

I would like to express my sincere thanks to **Dr. Suzy Sabri Nessim,** assistant professor of pharmaceutical analytical chemistry for her endless support, advice and revising the final manuscript without any delay.

I would like to thank **Dr. Adel Elkhairy** chairman of Alexandria company for pharmaceutical and chemical industries for supporting and encouraging me.

I would like to thank **Dr. Ashraf Saad El-Din,** general Q.C manger and all the members of Q.C department, Alexandria company for pharmaceutical and chemical industries for their moral support.

I am greatly indebted to my brother **Ahmed** and my sister **Laila** for unlimited help and support.

Above all thanks **Allah.**

Ehab Hassan Ali Emam

Preface

The thesis deals with the identification and determination of some pharmaceutical compounds, their degradation products, preservatives and sweetening agents using hyphenated high performance liquid chromatography with photodiode array detector and spectrophotometric methods.

The HPLC identification and purity testing include the description of a new concept for identification and purity testing for each component in a multi-component mixture without extraction. The concept for identification is based on recording the UV-spectra under each peak at different time intervals throughout the elution time of the peak. The identification was performed using wavelengths of UV-absorption and derivative optima as well as the absorption and derivative ratios. The purity was performed using absorption and derivative ratios, plot of log A versus wavelengths as well as Waters Millennium software method. The proposed concept was applied for identification and testing the HPLC peak purity prior to determination of the following multi-component mixtures

- a) A mixture containing trimebutine maleate, trimethoxybenzoic acid and substituted phenylethyl alcohol using ethylparaben as internal standard.
- b) A mixture containing mepivacaine hydrochloride, methylparaben, 2,6-dimethylaniline and parahydroxybenzoic acid using sodium benzoate as internal standard.
- c) A mixture containing lidocaine hydrochloride, methylparaben, 2,6-dimethylaniline and parahydroxybenzoic acid using sodium benzoate as internal standard.
- d) A mixture containing lidocaine hydrochloride, sodium benzoate, saccharine sodium and 2,6-dimethylaniline using methylparaben as internal standard.
- e) A mixture containing bupivacaine hydrochloride and 2,6-dimethylaniline using sodium benzoate as internal standard.
- f) A mixture containing mebendazole, methylparaben, propylparaben, mebendazole degradation and parahydroxybenzoic acid using benzoic acid as internal standard.
- g) A mixture containing flubendazole, methylparaben, propylparaben, flubendazole degradation and parahydroxybenzoic acid using benzocaine as internal standard.

The spectrophotometric identification methods are performed by allocation of the optima obtained from the 0D , 1D , 2D , 3D and 4D and calculating their ratios

The spectrophotometric quantitative work includes development of the methods based on the use of derivative and/or difference techniques for proposing method for either routine quality control, stability-indicating and selective determination of the forementioned drugs in their pharmaceutical preparations.

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