PREFACE

This thesis is concerned with the analysis of some antipsychiatric drugs namely, mianserin, risperidone, imipramine and zolpidem.

Mianserin and risperidone were determined colorimetrically using charge transfer and acid dye techniques. As for imipramine and zolpidem, stability-indicating methods were developed for the determination of the drugs in presence of their degradation products.

Abstract

The thesis consists of four parts:

Part I: General Introduction

In this part, a brief idea about antipsychiatric drugs, their classifications, mechanisms of action and uses have been presented.

Part II: Colorimetric determination of mianserin and risperidone using charge transfer and acid dye complexation methods.

This part includes literature review for the analysis of mianserin and risperidone in addition to two sections:

Section A: Includes colorimetric methods for the determination of mianserin and risperidoner (n-donors) using DDQ and p-CA as π-acceptors.

The effect of several variables affecting color development was studied and the molar ratio of the reactants has been established in each case.

The proposed methods were applied to the analysis of the drugs in pure form and in pharmaceutical dosage forms.

Section B: Includes reaction of basic drugs, mianserin and resperidone with a chloroformic solution of an acidic dye (B.P.B., B.T.B. and B.C.G.). The absorbance of the formed complexes was measured at the corresponding λ_{max}.

The effect of several variables affecting color development was studied and the molar ratio of the reactants has been established in each case.

The proposed methods were applied to the analysis of the drugs in pure form and in pharmaceutical dosage forms.

Part III: Determination of imipramine in presence of iminiodibenzyl by first derivative of ratio spectra and charge transfer complexation methods.

This part includes literature review for the analysis of imipramine, in addition to two sections:

Section A: This section includes a stability indicating method for the determination of imipramine. Spectrophotometric first derivative ratio spectra was described for the determination of imipramine using 3 $\mu g.mL^{-1}$ of iminodibenzyl as a divisor; the signals were measured at 240.5 nm.

Section B: includes a charge transfer complexation method of imipramine with p-CA. The colored product was measured at 520.5 nm.

In both sections A and B the suggestyed procedures were applied for the analysis of imipramine in pure form, dosage forms and laboratory prepared mixtures containing imipramine togethewr with different concentrations of iminodibenzyl. The results obtained were statistically compared with those obtained by the official method.

Part IV:Determination of zolpidem hemitartarate in presence of its degradation product by quantitative thin layer chromatographic densitometry and HPLC.

This part includes literature review for the analysis of zolpidem in addition to two sections:

Section A: HPLC method has been described for the determination of zolpidem in presence of its degradation products. The chromatographic technique was performed on a Bondapak C18 column using a mobile phase composed of acetonitrile-0.01 M KH_2PO_4 (40:60, v/v) and detection was done at 245 nm.

Section B: Includes a TLC- UV densitometric method for the determination of zolpidem. The mobile phase used for developing the TLC plates consisted of methanol:water (20:80; v/v). The R_f of zolpidem was found to be 0.29± 0.01 and its degradation product was 0.59 ± 0.01.

In both sections A and B the suggested procedures were applied for the analysis of zolpidem in pure form, dosage forms and laboratory prepared mixtures containing zolpidem with different concentrations of its degradation product. The results obtained were statistically compared with those obtained by the company method.