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RESEARCH ARTICLE

DEVELOPMENT OF NEW VISIBLE SPECTROPHOTOMETRIC METHODS FOR THE DETERMINATION OF QUETIAPINE IN PHARMACEUTICAL DOSAGE FORMS

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Three simple and sensitive spectrophotometric methods have been developed for the determination of quetiapine in pure and pharmaceutical dosage forms. Method A was based on the formation of Ion-association complex of the drug with solochrome Black T (λ_{max}: 520 nm). Method B was based on oxidative coupling of the drug with 3-methyl-2-benzothiazolinone hydrazone (λ_{max}: 620 nm). Method C was based on oxidation followed by complex formation with 1,10-phenanthroline (PTL) in the presence of ferric chloride to form a colored chromogen (λ_{max}: 510 nm). These methods were statistically evaluated and found to be precise and accurate.

Key words: Quetiapine, Spectrophotometry, Chromogen, Pharmaceutical dosage form.

INTRODUCTION

Quetiapine (QTP) is chemically 2-(2-(4-dibenzo [*b,f*][1,4]thiazepine-11-yl-1-piperazinyl) ethoxy) ethanol with selective clinical activity against schizophrenia as well as for the treatment of acute manic episodes associated with bipolar I disorder (Ramington, 2000; O'Neil *et al* 2001). The literature survey revealed that there are reports regarding analytical method developments including spectrophotometric (Pucci *et al* 2003; Hiraman *et al* 2009; Bagade *et al* 2009; Patil *et al* 2011; Shukla *et al* 2011; Shah *et al* 2011) and HPLC (Saracino *et al* 2006; Prasanthi *et al* 2011) methods for the estimation of different drugs in bulk and pharmaceutical formulations, but only a few methods are available for QTP. In the present investigation, three simple and sensitive spectrophotometric methods have been developed for the determination of QTP. Method A is based the formation of Ion-association complex of the drug with solochrome Black T (SBT). Method B is based on oxidative coupling of the drug with 3-methyl-2-benzothiazolinone hydrazone (MBTH). Method C is based on oxidation followed by complex formation with 1, 10-phenanthroline (PTL) (Collins *et al* 1959; Tsen, 1961) in the presence of ferric chloride to form a colored chromogen. Beer's law was obeyed and results of analysis for the three methods were validated statistically and by recovery studies.

MATERIALS AND METHODS

Materials

A UV-Vis spectrophotometer (Systronics, Model 2201) was used for all the measurements. All the chemicals used were of analytical grade. solochrome Black T (0.5%), HCl (5 N), MBTH (0.2% *w/v*), 1,10-phenanthroline (0.198% *w/v*), and ceric ammonium sulphate (1% *w/v*) were prepared.

Methods

Preparation of standard drug solution

The stock solution (1 mg/ml) of quetiapine was prepared by dissolving 100 mg of drug in 100 ml of distilled water. A portion of stock solution was diluted to get the working standard solution.