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RESEARCH ARTICLE

NEWER RP-HPLC METHOD FOR THE DETERMINATION OF DOXAZOSIN IN HUMAN PLASMA AND FORMULATION

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A new sensitive, specific, precise and accurate RP-HPLC method has been developed and validated for rapid assay of doxazosin in human plasma and pharmaceutical formulations. Isocratic elution at a flow rate of 1.5 ml/min was employed on Chromosil C18 (250 mm × 4.6 mm, 5 μm) column at ambient temperature. The mobile phase consisted of methanol:water:acetonitrile (25:25:50 *v/v*), was filtered through 0.45 μ membrane filter and sonicated. The detection was carried out at 280 nm. The injection volume was 20 μl and the total run time was 8 min. The percentage RSD for precision and accuracy of the method was found to be 0.051. The method developed was validated as per the ICH guidelines. The method can be successfully utilized for routine analysis of doxazosin in the rapid and reliable determination of doxazosin in human plasma and pharmaceutical formulations.

Key words: Doxazosin, RP-HPLC, UV detection, Methanol, Acetonitrile.

INTRODUCTION

Doxazosin, an antihypertensive agent, is chemically known as 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-[(2,3-dihydro-1,4-benzodioxin-2-yl)carbonyl]piperazine (**Figure 1**) and is official in Indian Pharmacopoeia.

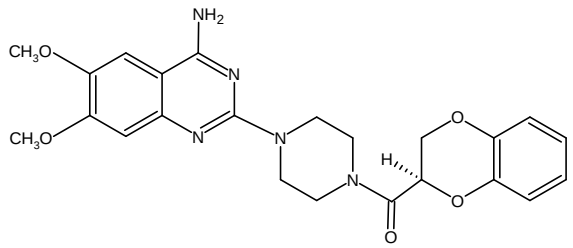

Fig. 1. Structure of doxazosin

Its molecular formula is $C_{23}H_{25}N_5O_5$ and the molecular weight is 451.47 g/mol (Chien, 1983; 1989; Berner and Dinh, 1992). Literature survey indicated that there are several methods reported for the determination of doxazosin in human plasma and in pharmaceutical formulations (Chien, 1988; Swarbrick and Boylan, 1988; Scott and Hollenbeck, 1991; Mandal and Womack, 1999; Bai *et al* 2002; Bachy *et al* 2004). There are RP-HPLC methods for determination of drugs in literature (Prasanthi *et al* 2011; Bhimavarapu *et al* 2011) but yet no method is reported for the estimation of doxazosin in formulations. So, an attempt was made to develop and validate a simple, precise, accurate and economical RP-HPLC method as per ICH guidelines for the estimation of doxazosin in pure pharmaceutical dosage form and to apply the developed method to determine the forced degradation compounds.

EXPERIMENTAL

Preparation of mobile phase solution

The mobile phase was prepared by mixing methanol, water and acetonitrile (25:25:50 *v/v*) followed by sonication for 30 min.