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Analysis of quetiapine in human plasma using fluorescence spectroscopy

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Abstract

A simple and sensitive spectrofluorimetric method has been developed for the assurance of quetiapine fumarate (QTF). The proposed method was utilized for measuring the fluorescence intensity of the yellow fluorescent product at 510 nm (λ_{ex} 470 nm). The fluorescent product has resulted from the nucleophilic substitution reaction of QTF with 4-chloro-7-nitrobenzofurazane (NBD-Cl) in McIlvaine buffer (pH 7.0). The diverse variables influencing the development of the reaction product were deliberately changed and optimized. The linear concentration range of the proposed method was of 0.2-2.0 $\mu\text{g ml}^{-1}$. The limits of detection and quantitation were 0.05 and 0.17 $\mu\text{g ml}^{-1}$, respectively. The proposed method was applied for the assurance of QTF in its tablets without interference from basic excipients. In addition, the proposed method was used for in vitro analysis of the QTF in spiked human plasma, the percent mean recovery was (n=3) $98.82 \pm 1.484 \%$.

Keywords: Spectrofluorimetric; Quetiapine fumarate; NBD-Cl; Spiked plasma.

1. Introduction

Quetiapine fumarate (QTF) is artificially known as 2-[2-(4-Benzol[b][p1,5]benzothiazepin-6-yl)piperazin-1-yl]ethoxy ethanol fumaric acid (1 : 2 salt) (Figure 1). QTF is a standout amongst the latest 'atypical' antipsychotic drugs [1]. It is prescribed for the treatment of schizophrenia [2-4]. There are some scientific techniques were reported for the investigation of QTF in its tablets and biological fluids. These

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