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Spectrophotometric Method for Analysis of Valasartan

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Abstract: ***A simple, sensitive and cost effective visible spectrophotometric method has been developed for the determination of Valsartan from bulk and tablet dosage forms. The method is based on the formation of green colored coordination complex by the drug with cobalt thiocyanate which is quantitatively extractable into nitro benzene with an absorption maximum of 605nm. The Regression analysis of Beer's Law plot showed good correlation in a general concentration range of 0.5 – 3.0 ml, 400µg/ml with correlation coefficient (r= 0.992). The proposed method is validated with respect to accuracy, precision, linearity and limit of detection. The suggested procedure is successfully applied to the determination of the drug in pharmaceutical preparation, with high percentage of recovery, good accuracy and precision. The results of analysis have been validated statistically by repeatability and recovery studies. The results are found satisfactory and reproducible. The method is applied successfully for the estimation Valsartan in tablet form without the interference of excipients.***

Keywords: Beer's Law, Cobalt thiocyanate, Extractive Spectrophotometry, Nitrobenzene, Valsartan

1. Introduction

Valsartan is an Angiotensin Receptor Blocker (ARB) that shows high affinity for theangiotensin II type 1 (AT1) receptors, has a long duration of action, and has the longest half - life of any ARB It is an angiotensin II receptor antagonist, effective in the treatment of hypertension It is also effective when used alone or in combination with other drugs for the treatment of high blood pressure.

Diovan (Valsartan) is a nonpeptide, orally active, and specific angiotensin II receptor blocker acting on the AT1 receptor subtype. Valsartan is a white to practically white fine powder. It is soluble in ethanol and methanol and slightly soluble in water. Angiotensin II Receptor type 1 antagonists have been widely used in treatment of diseases like hypertension, heart failure, myocardial infarction and diabetic nephropathy. Their beneficial effects are related to inhibition of Angiotensin II by blockade of AT1 receptor. It was first developed by Novartis and has a wide market in the developed and the developing countries Valsartan is an angiotensin II receptor blocker (ARB). It works by blocking a substance in the body that causes the blood vessels to tighten. Valsartan relaxes the blood vessels and lowers blood pressure. A lower blood pressure will increase the supply of blood and oxygen to the heart.

Valsartan is an ARB that selectively inhibits the binding of angiotensin II to AT1, which is found in many tissues such as vascular smooth muscle and the adrenal glands. This effectively inhibits the AT1 - mediated vasoconstrictive and aldosterone - secreting effects of angiotensin II and results in a decrease in vascular resistance and blood pressure.

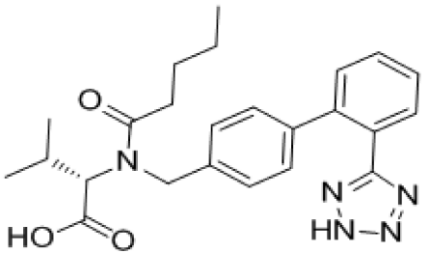

Figure 1: Showing chemical structure of VLS

2. Materials and Methods

Apparatus and chemicals

A Systronics UV - Visible double beam spectrophotometer 2203 with 1 cm matched quartz cells was used for all spectral and absorbance measurements. A Systronics digital pH meter 361 was used for pH measurements. All the chemicals used were of analytical grade Tablets were purchased from local market. CTC solution prepared by dissolving 7.25g of cobalt nitrate and 3.8gm of ammonium thiocyanate in 100ml, of distilled water, nitrobenzene used as it is. Buffer P^H 2.0 Solution Prepared by mixing 306 ml of trisodium citrate (0.1M) with 694 ml of HCl (0.1M) and the pH was adjusted to 2.0.

Standard drug solution

The stock solution of drug was prepared by dissolving 100 mg in 100 ml distilled water. A portion of this stock solution was diluted stepwise with the distilled water to obtain the working standard drug solution of concentrations of 100 µg/ml. from the stock solution, a series of standards were freshly prepared during the analysis day.

Preparation of sample solution

An accurately weighed portion of the powdered tablets equivalent to 100 mg of drug was dissolved in 20 ml of methanol (MeOH), shaken well and filtered. The filtrate was diluted to 100ml with MeOH to get 1 mg/ml solution of drug in formulations.