

# EFFECT OF SOLVENT RATIO IN THE ESTIMATION OF TELMISARTAN BY UV SPECTROPHOTOMETRIC METHOD IN HEALTH CARE MEDICINES

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## ABSTRACT

A simple UV – spectrophotometric method have been described for the assay of Telmisartan in bulk and in pharmaceutical formulations. Many reported methods simply concentrated on only the solvent required but not the exact solvent ratio, hence wasting lot of solvent. This method is based upon the ratio of dissolution of Telmisartan in methanol and water with  $\lambda_{max}$  at 296 nm.

**Keywords:** Telmisartan, Methanol, Water, Solvent Ratio.

## INTRODUCTION

Telmisartan, 2-(4-([4-methyl-6-(1-methyl-1H-1,3-benzodiazol-2-yl)-2-propyl-1H-1,3-benzodiazol-1-yl] methyl) phenyl) Benzoic acid. Is a angiotensin 2 receptor antagonist(angiotensin receptor blocker ,ARB) used in the management of hypertension. A simple UV – spectrophotometric method have been described for the assay of Telmisartan in bulk and in pharmaceutical formulations. Many reported methods simply concentrated on only the solvent required but not the exact solvent ratio ,hence wasting lot of solvent. This method is based upon the ratio of dissolution of Telmisartan in methanol and water with  $\lambda_{max}$  at 296

## EXPERIMENTAL INSTRUMENT

A systronics UV –VIS double beam spectrophotometer (model:2201) with 1 cm matched Quartz cells was used for all spectral measurements.

## STANDARD DRUG SOLUTION

Stock solution of TEL (1mg/ml) was prepared by dissolving 100mg of TEL in 100 ml of methanol .The working standards were prepared by dilution to 100ml with methanol(100 $\mu$ g/ml) in different ratios.

## SAMPLE SOLUTION

Tablets of three brands were used for the purpose of analysis. One of each tablet of three brands were powdered and powder equivalent to 200 mg of TEL was weighed and the solution was prepared as under standard solution preparation and filtered if insoluble portion present.

The present research paper concentrated on the ratio of the solvent system (METHANOL+WATER, ) in many cases if the drug is not soluble in water ,it is simply dissolved in methanol further dilutions are made with either methanol or water without finding out the proper ratio of mixture .In this method the concentration was mainly on the ratio of solvent mixture .Finally it was concluded that solvent mixture with methanol:water ratio of 90:10 was found to be best suitable solvent mixture. Parameters were given in **Table -1**

Table 1

SAMPLE	METHANOL+WATER	$\lambda$ MAX (nm)	ABSORBANCE
1	9+1	296	0.534
2	8+2	296	0.459
3	7+3	296	0.315
4	6+4	296	0.339
5	5+5	296	0.432
6	1+9	296	0.635

## RESULTS AND DISCUSSION

The optimum conditions for each method were established by varying one parameter at a time and keeping the others fixed and observing the effect produced on the absorbance and incorporated in the procedures. The optical characteristics and figures of merit are given in table-2, together with the regression equations (obtained by linear least square treatment) for the calibration plots. The precision and accuracy were found by analyzing six replicate samples containing known amount of drug and the results were summarized in Table-2.

Commercial formulations (Tablets) Containing TEL were successfully analysed by the proposed methods. Values obtained by UV – method for formulations were compared statistically by the t- and f-tests and found not to differ significantly. As an additional check of accuracy, recovery experiments were performed by adding a fixed amount of the drug to the pre-analysed formulation. The ingredients usually present in the formulation are interfered to some extent.

Table 2

SERIAL.NO	OPTICAL CHARACTERISTICS	METHOD
1	$\lambda_{max}$	296nm
2	Beer's law limits( $\mu\text{g/ml}$ )	10-60
3	Molar absorptivity	$3.13916 \times 10^4$
4	Sandell's sensitivity	0.163 $\mu\text{g}$
5	Regression equation(y) slope(b),intercept (a)	$0.114 \times 0.0029$ $2.9 \times 10^{-3}$ , $1.14 \times 10^{-2}$
6	%RSD	0.096
7	%Range of error	$\pm 0.08$

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