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RESEARCH ARTICLE

DEVELOPMENT OF NEWER CONDUCTOMETRIC METHOD FOR ESTIMATION OF TELMISARTAN IN PURE AND FORMULATION

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ABSTRACT

Objective of the present study is to develop simple, easily accessible, economic, newer conductometric method of estimation for Telmisartan. Telmisartan is weak acid due to presence of acidic functional group which can be estimated by conductometric method in alcoholic media. The developed method was validated according to ICH guidelines for parameters like accuracy, precision, specificity, ruggedness, robustness and percentage recovery.
Results: The Relative Standard Deviation was 0.701677; recovery was 98-100%. Tablet formulations were used as sample for estimation and the results are found to be well within the specified limit.
Conclusion: Therefore developed method can used for estimation of Telmisatan in pure or in formulations.
Key words: Conductometry, Telmisartan, Estimation, Weak acid.

INTRODUCTION:

Telmisartan is Angiotensin II receptor antagonist widely used as antihypertensive agent which is chemically (4-((2-n-propyl-4-methyl-6-(1-methylbenzimidazol-2-yl)-benzimidazol-1-yl)methyl) biphenyl- 2-carboxylic acid) (Fig.1). The drug was estimated by various methods[1-3] such as colorimetric[4], spectrophotometric[5-6], spectrofluorimetric[7], chromatographic method in single or in combination with other drugs were reported methods of estimation[8-9]. The use of fluorimetric method was reported for estimation of Telmisartan[10].

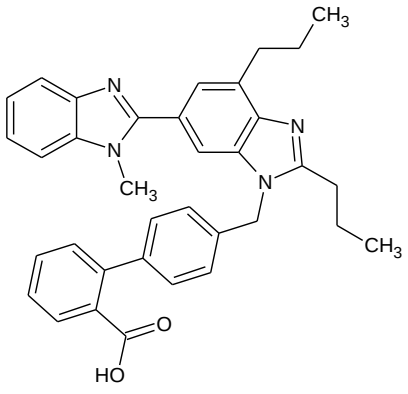

Figure 1: Structure of Telmisartan

The literature survey reveals that there is no conductometric method available for estimation of Telmisartan.

OBJECTIVES:

Therefore it is necessary to have simple, rapid, economic, easily accessible method of estimation for Telmisartan. The aim of present study is to develop new conductometric method of determination for Telmisartan in pure or in pharmaceutical formulations.

Telmisartan is having acidic functional group cannot be titrated directly with alkali. Therefore the instrumental method such as conductometric is sensitive and gives sharp end point in alcohol against Sodium hydroxide. Under the present study conductometric method of estimation was developed for Telmisartan in alcohol using standard Telmisartan drug and tablet dosage forms as sample (Figure-2, 3 and Table 1).

EXPERIMENTAL WORK:

Materials and Methods:

Conductometric determination was carried out using Conductometer Model 215R, at sensitivity 20mMhos/cm, maintaining cell constant at 0.932. The instrument was calibrated prior to measurements and conductivity for test and reference solutions were recorded.

Standard drug, marketed formulations and reagents used:

Telmisartan standard drug was procured from Glochem Industries Ltd. The reagents and solvents used were of Analytical Grade. Commercial brands of Telmisartan tablets Telmisartan were used as samples for estimation.

Procedure for estimation: Telmisartan standard drug of 100 mg is weighed accurately and transferred to 100 ml volumetric flask, 50 ml of alcohol was added, shaken well to dissolve then volume was made with alcohol.

This mixture was titrated against 0.1N Sodium hydroxide solution adding each ml and readings were recorded. The end point of the titration was determined by graphical method. The concentration of Telmisartan was determined by $N_1V_1=N_2V_2$ formula. Bulks of the readings were taken to ensure validity of the method. The validation parameters were calculated statistically. Telmisartan standard was used to get linearity curve. Sample readings were recorded using commercial brands of Telmisartan. Standard dilutions in the range of 10-100 µg/ml prepared for linearity measurement.

Estimation of Commercial Tablets: 20 tablets are weighed and ground to fine powder. The tablet powder equivalent to 100 mg of Telmisartan was weighed and transferred to 100 ml volumetric flask; 50 ml of alcohol was added, shaken well to dissolve then volume was made with alcohol. This mixture was titrated against 0.1N Sodium hydroxide solution adding each ml and readings were recorded. The end point of the titration was determined by graphical method. The concentration of Telmisartan was determined by $N_1V_1=N_2V_2$ formula. Bulks of the readings were taken to ensure validity of the method. The validation parameters were calculated statistically. Telmisartan standard was used to get linearity curve. Sample readings were recorded using commercial brands of Telmisartan. Standard dilutions in the range of 10-100 µg/ml prepared for linearity measurement.

RESULTS AND DISCUSSION:

The various validation parameters like accuracy, precision specificity, ruggedness, robustness were tested for developed method and which are expressed statistically. All the parameters were found to be within specified limit (Table 1). The linearity curve and titration curve was plotted to get end point graphically (Figure 2 and 3). Therefore developed method was applicable for estimation for Telmisartan in pure and dosage forms.

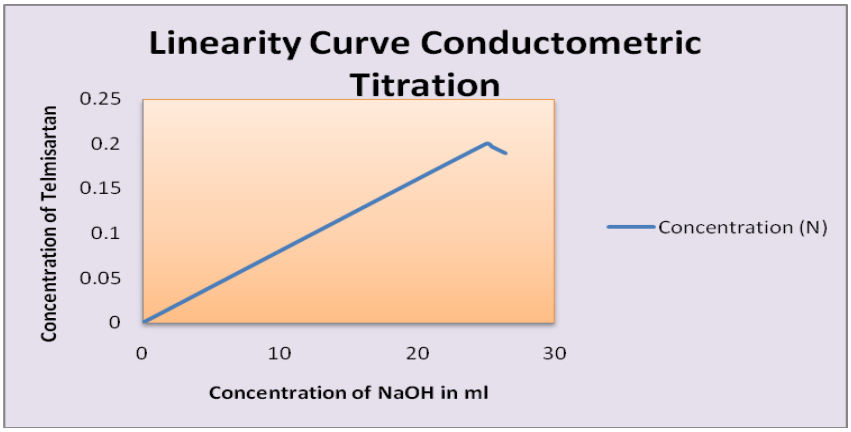

Fig 2: Linearity cuve for the Conductometric esimation of Telmisartan

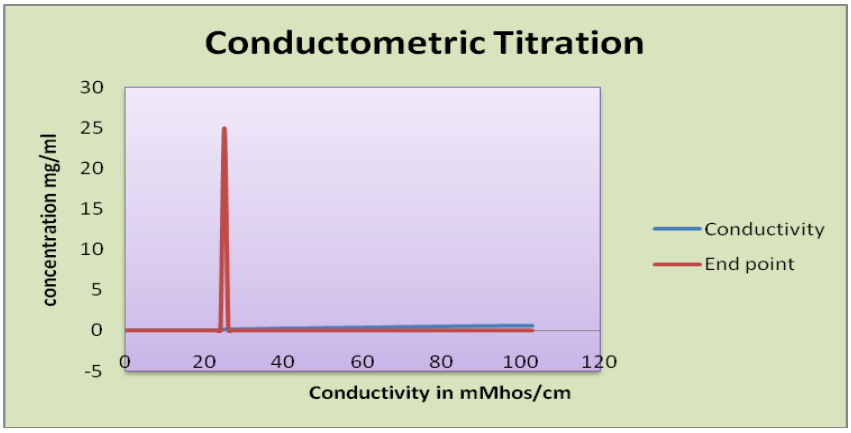

Fig 3: End point determination of conductometric titration for Telmisartan

Table 1. Statisical calculation various validation parameters

Validation Parameter	Value
Correlation Coefficient	0.9828
Std Deviation	13.51
Relative std deviation	0.5233
Slope	- 131.97
Intercept	51.38
Percentage of Recovery	98-100%

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CONCLUSION:

Fluorimetric determination with formulation of Telmisartan by present method shows that developed method is simple, accurate which can be used for characterization and estimation as one of the chemical evaluation techniques.

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