RESEARCH ARTICLE

METHOD DEVELOPMENT AND VALIDATION OF LATANOPROST BY USING RP-HPLC IN PHARMACEUTICAL FORMULATIONS

K. Srinivas*1, D. Narendra2, P. V. V. Varaprasad3, G. Jaya durga madhuri3, K. Eswari3, N. Shanti priya3

*Professor & Dean, ‡Professor & Principal, §VJ’s College of Pharmacy, Rajamahendravaram, Andhra Pradesh, India.

ABSTRACT

Chromatography was performed with a mobile phase containing a methanol of assay (99.8%) with flow rate of 1 ml/min. Quantitation was accomplished with an internal standard method. The procedure was validated for linearity (correlation coefficient = 0.990), accuracy and Limit of detection (LOD) intraday precision. To test validation of the Latanoprost three factors were considered as linearity, precision, LOD where mobile phase, flowrate and pressure are respectively selected as methanol, 1 ml/min, 1600 pascals.

INTRODUCTION

Drug Name: Latanoprost
Brand Name: XALATAN

Figure: 1 Structure of Etoricoxib

MATERIALS AND METHODS

Preparation of solutions
Preparation of standard stock solution
Accurately weigh and transfer 1 ml standard drug of Latanoprost into volumetric flask and add 9 ml of methanol and dissolve by sonication process for 3 minutes and label it as standard stock solution of 1000 μg/ml.

Preparation of stock solution
To detect the latanoprost tablet concentration take any branded tablet like XALATAN of latanoprost drug of powered dosage 10 mg of equivalent weight and dissolve it in 10 ml of methanol of equivalent weight and sonicate it for 5 minutes, label it as sample solution.

Preparation of standard dilutions
Mobile phase (methanol) is used as a diluent. From the stock solution of concentration 100 μg/ml pipette out the required volumes of concentration as 10 μg/ml, 20 μg/ml, 30 μg/ml, 40 μg/ml, 50 μg/ml and 60 μg/ml

HPLC Optimized Conditions

Mobile phase: Methanol and Acetonitrile (20:80)
Diluents: Hplc grade Methanol
Column: C18 (5 μm pore size)
Column Temp: Ambient
Wavelength: 205 nm
Injection Volume: 20 μl
RESULT AND DISCUSSION

Linearity
From the prepared stock solution, a series of calibration standards were prepared at concentrations of 10, 20, 30, 40, and 50μg/ml using mobile phase as solvent. The calibration curve for Latanoprost was constructed by plotting the mean peak area against the drug concentration. Regression equation was found to be \( y = 142.4x + 1529.4 \) (\( r^2 = 0.9963 \)). Linearity results were given in table 3 and linear graph is given in Figure 2.

<table>
<thead>
<tr>
<th>Level</th>
<th>Concentration</th>
<th>peak area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level – 1</td>
<td>10μg/ml</td>
<td>2838</td>
</tr>
<tr>
<td>Level – 2</td>
<td>20μg/ml</td>
<td>4358</td>
</tr>
<tr>
<td>Level – 3</td>
<td>30μg/ml</td>
<td>5900</td>
</tr>
<tr>
<td>Level – 4</td>
<td>40μg/ml</td>
<td>7303</td>
</tr>
<tr>
<td>Level – 5</td>
<td>50μg/ml</td>
<td>8854</td>
</tr>
</tbody>
</table>

Formulation
The sample solution prepared at a concentration of 100μg/ml was analyzed in the developed method conditions. The method can successfully separate and identify the Latanoprost. Hence the method was found to be suitable for routine analysis of Latanoprost and formulations.

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Dosage</th>
<th>% Assay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4167</td>
<td>50mcg</td>
<td>93.38%</td>
</tr>
</tbody>
</table>

CONCLUSION
The estimation of Latanoprost was done by RP-HPLC. The assay of Latanoprost was performed with tablets and the % assay was found to be 91.1% which shows that the method is useful for routine analysis. The acceptance criteria of intermediate precision is RSD should be not more than 2.0% and the method show precision Latanoprost which shows that the method is repeatable when performed in different days also.

The total recovery was found to be 91.1% for Latanoprost. The LOD and LOQ for Latanoprost was found to be 3.02 and 9.98.

REFERENCES


Cite this article as:

https://doi.org/10.47070/ijraps.v7i4.142

*Address for correspondence
Dr. K. Srinivas
Professor & Dean
VJ’s college of Pharmacy,
Rajamahendravaram,
Andhra Pradesh, India.
Email: kush.samireddi@gmail.com
Cell: 9441874449

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAPS is solely owned by Mahadev Publications - A non-profit publications, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAPS cannot accept any responsibility or liability for the articles content which are published. The views expressed in articles by our contributing authors are not necessarily those of IJRAPS editor or editorial board members.