Dissolution Study of Marketed Metronidazole Tablets

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Abstract: Aim and objective: The aim of this research is to study the release profile of marketed Metronidazole Tablets. Materials and methods: Metronidazole tablet (Lancer Health Care) was purchased from local pharmacy shop, Greater Noida, U.P. Dissolution of this marketed tablet was done in 0.1 N HCl (pH 1.2) for a period of 150 mins. using Paddle type Dissolution Apparatus. Results revealed that in% drug release of marketed Metronidazole tablets after 150 mins. in acidic pH was found to be 99.46%.

Key words: Oral Dosage Forms • Tablet Coating • Film Formers • Metronidazole • In-Vitro Dissolution

INTRODUCTION

Among the oral dosage forms tablets are the most preferred all over the world. Tablets constitute a mixture of active substances along with the excipients in form of powder or they are pressed or compacted into a solid [1, 2]. Coating technique has been used tremendously in the last 100 years. Coating pharmaceutical solids such as tablets, capsules, pellets etc. offers benefits like masking of unpleasant taste or odour, improvement in the product stability and aesthetic qualities, ease of ingestion and swallowing, modification in the release behaviour etc [2, 7-8].

Tablet coating is the process of application of the outer layers of the coating material to the surface of a dosage form. Generally there are three methods adopted for coating: sugar coating, film coating and enteric coating [1, 2]. Coating methods includes the spraying of coating solutions onto the tablets agitated in a pan, simultaneously there is a passage of hot air. The coating solution sprayed, adheres and forms a thin film onto the tablets [2]. Film coating is dependent on variety of factors such as coating equipment, flow rate of coating solution, speed of the coating pan, spraying and drying rate etc. The film coating must be smooth, uniform and well adhered to the solid surface [8, 9]. Film formers such as Ethyl cellulose, Hydroxy propyl methyl cellulose, Polyethylene glycol, Povidone etc. are used widely these days [1].

Preparation of Calibration Curve of Metronidazole:
100 mg of Metronidazole powder was accurately weighed and transferred to 100 ml volumetric flask. 10 ml of 0.1 N HCl (pH 1.2) was added to it and shaken for few minutes. Further the volume was made upto 100 ml using 0.1 N HCl to prepare Stock solution. This stock solution was then filtered and different concentrations (2.5-25 µg/ml) were prepared from it. The absorbances of prepared solutions were measured using UV spectrophotometer [10, 11].

Dissolution: Dissolution of marketed Metronidazole tablets was carried out for a period of 2.5 hrs. in 0.1 N HCl (acidic pH 1.2). The temperature was constantly maintained at 37±0.5°C with a bath volume 900 ml and rotation speed of 100 rpm. At appropriate time intervals samples were withdrawn, filtered and were replenished with the same volume of fresh medium. The filtered samples were suitably diluted and analyzed using UV Spectrophotometer [12-14].

RESULTS AND DISCUSSION

Calibration curve of marketed Metronidazole was prepared in 0.1 N HCl (pH 1.2) as shown in figure1. The R² value was found to be 0.999.

The results of dissolution study suggest that % drug release of marketed Metronidazole tablets after 150 mins. was 99.46% in acidic pH 1.2. Figure 2 and Table 3 summarize the % drug release of Metronidazole tablets.
**Table 1: % Drug release of Metronidazole tablets**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Time (mins.)</th>
<th>% Drug release</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 N Hcl (pH 1.2)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>15</td>
<td>0.26</td>
</tr>
<tr>
<td>3.</td>
<td>30</td>
<td>0.50</td>
</tr>
<tr>
<td>4.</td>
<td>45</td>
<td>1.16</td>
</tr>
<tr>
<td>5.</td>
<td>60</td>
<td>1.75</td>
</tr>
<tr>
<td>6.</td>
<td>75</td>
<td>22.60</td>
</tr>
<tr>
<td>7.</td>
<td>90</td>
<td>35.71</td>
</tr>
<tr>
<td>8.</td>
<td>105</td>
<td>48.22</td>
</tr>
<tr>
<td>9.</td>
<td>120</td>
<td>70.57</td>
</tr>
<tr>
<td>10.</td>
<td>135</td>
<td>82.18</td>
</tr>
<tr>
<td>11.</td>
<td>150</td>
<td>99.46</td>
</tr>
</tbody>
</table>

CONCLUSION

It is concluded from the research work that the % drug release of marketed Metronidazole tablets in 0.1 N HCl pH (1.2) was found to be 99.46% after a period of 150 mins.

**Conflict of Interest:** Authors have no conflict of interest.

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**REFERENCES**

