SHORT COMMUNICATIONS

Spectrophotometric Determination of Lamotrigine

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A new simple, sensitive spectrophotometric method in ultraviolet region has been developed for the
determination of lamotrigine in bulk and in dosage form. Lamotrigine shows maximum absorbance at
305 nm. Beer's law was obeyed in the concentration range of 2-50 mcg/ml. Results of the analysis were
validated statistically and by recovery studies.

Lamotrigine is one of newer antiepileptic drugs, with
less side effects which is marketed in UK since 1992
and introduced in India recently. Chemically it is 6 (2, 3-
dichlorophenyl)-1, 2, 4-triazine-3, 5 - diamine or 3, 5-
diamino, -6 (2, 3-dichlorophenyl)-1, 2, 4-triazine. It is of-
official in Martindale Extra Pharmacopoeia. A survey
of the literature revealed a HPLC method and radioimmu-
noassay for its analysis. In the present investigation an
attempt has been made to develop a simple spectropho-
tometric method for the analysis of this drug from tablet
formulations.

A Shimadzu model 2501 UV/Vis spectrophotometer
with 1 cm matched quartz cells was used. Methanol of
analytical grade was obtained from Ranbaxy Chemicals
Ltd., S.A.S. Nagar. Lamotrigine in bulk and in tablet
formulation was obtained as a gift sample from Cipla (Protec)
Ltd. Mumbai. Lamotrigine (10 mg) was accurately weighed
and dissolved in 10 ml methanol to give stock solution of
concentration 1000 mcg/ml. Aliquots of 100 mcg/ml so-
lution were transferred into six 10 ml volumetric flasks
and volume was adjusted with methanol to give final con-
centrations of 5, 10, 20, 30, 40 and 50 mcg/ml. The solu-
tions were scanned in the UV range. The absorbance
was measured at 305 nm against methanol as a blank.

For analysis of lamotrigine from formulation, 20 tab-
lets were weighed and triturated. The tablet powder equiva-
lent to 25 mg of lamotrigine was transferred into a stop-
pered conical flask. It was extracted with 15 ml methanol
three times and the filtrate was transferred in a 50 ml
volumetric flask and final volume was made with metha-
nol. This solution was further diluted to give final concen-
tration of about 10 mcg/ml and absorbance was meas-
ured at 305 nm against methanol as a blank. The assay
was carried out for six samples from different batches.

Recovery studies were carried out by adding 10, 15
and 20 mg of pure drug to different samples of tablet
powder containing the equivalent of 25 mg of drug. From
the amount drug found, percentage recovery was calcu-

dated. The proposed method of determination of
lamotrigine shows molar absorptivity - 8.317 x 10³ litre
mole⁻¹ cm⁻¹ and Sandell's sensitivity - 0.03078 mcg/cm²
0.001 absorbance unit. Linear regression of absorbance
on concentration gave the equation - Y = 0.0319 x -0.042
with a correlation coefficient of r - 0.998.

Relative standard deviation of 0.097 was observed
for analysis of six replicate samples. Lamotrigine exhib-
its maximum absorption at 305 nm and obeyed Beer's
law in the concentration range of 2-50 mcg/ml. The re-
results of analysis and recovery studies are presented in
Table 1. The percentage recovery value 99.17% indicates
that there is no interference of the excipients present in
the formulation.

The developed method was found to be sensitive, ac-
curate, precise and reproducible and can be used for
the routine determination of lamotrigine in bulk and in
dosage forms.

*For correspondence
TABLE 1: RESULTS OF ASSAY AND RECOVERY EXPERIMENTS

<table>
<thead>
<tr>
<th>Pharmaceutical formulation</th>
<th>Labelled amount</th>
<th>Amount found (mg)</th>
<th>%</th>
<th>% Recovery</th>
</tr>
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<tr>
<td>A</td>
<td>25</td>
<td>25.180</td>
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<td>99.50</td>
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<tr>
<td>B</td>
<td>25</td>
<td>24.997</td>
<td>99.91</td>
<td>99.25</td>
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<td>C</td>
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<td>24.930</td>
<td>99.72</td>
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<tr>
<td>D</td>
<td>25</td>
<td>24.680</td>
<td>99.44</td>
<td>99.48</td>
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<tr>
<td>E</td>
<td>25</td>
<td>25.075</td>
<td>100.30</td>
<td>99.30</td>
</tr>
<tr>
<td>Mean</td>
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<td>24.97</td>
<td>100.018</td>
<td>99.17</td>
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<tr>
<td>±S.D.</td>
<td>±0.134</td>
<td>±0.490</td>
<td></td>
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</tr>
</tbody>
</table>

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REFERENCES