ABSTRACT

Background: Unlike other fluoroquinolones (FQs), potency of WCK 771 A is not adversely affected at acidic pH 5.5. Methods: WCK 771 A, ciprofloxacin (Cipro) and levofloxacin (Levo) MICs were determined against 37 Gram +ve and 50 Gram -ve urinary tract (UT) pathogens in Mueller Hinton Agar (MHA) in pH 5.5 and 7.0. MICs were measured in brain heart infusion broth in a microdilution reader. Results: WCK 771 A was significantly more potent than Cipro at all pHs studied. Conclusions: This material is copyrighted to Wockhardt.

INTRODUCTION

The MICs of some quinolones have been shown to be influenced by the media pH. At pH levels below 6.0, the inhibitory activity of quinolones is antagonized, raising MICs several-fold higher. Since human urine pH is less than 5.5, reflection of the observation is seen in elevated MICs of quinolones compared to those in conventional laboratory media. WCK 771 A is a potent anti-microbial, and this investigation was performed to determine its efficacy in a media pH that mimics human urine. The purpose of this study was to understand the implications of WCK 771 A potency enhancement at acidic pH and compare with Cipro in treating urinary tract infections.

MATERIALS & METHODS

Bacterial Strains:
- The strains used in the study were obtained from various hospitals and labs in India.
- Antibacterial agents:
  - Antibacterial agents were either synthesized in-house or isolated from their respective commercial preparations.
- MIC determination:
  - MICs of 81 Gram +ve and Gram -ve clinical isolates involved in urinary tract infection were determined for WCK 771 A, Cipro and Levo by NCCLS agar dilution method using MHA in pH 7.0 and another set of MHA at pH 5.5 adjusted with 0.1 N HCl after autoclaving. Incubation of 10^5 cells/ml was done by Dey’s broth for 18 hours.

RESULTS & DISCUSSION

Table 1: WCK 771 A, Ciprofloxacin, and Levofloxacin Effect on MICs at Different pH

<table>
<thead>
<tr>
<th>Organisms</th>
<th>WCK 771 A</th>
<th>Ciprofloxacin</th>
<th>Levofloxacin</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH 7.0</td>
<td>7.0</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>pH 5.5</td>
<td>5.5</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Effect of pH on MICs:
- At pH 5.5, WCK 771 A is more potent than Ciprofloxacin and Levofloxacin.
- At pH 7.0, Ciprofloxacin is the most potent.

Effect of pH on Effectiveness:
- At pH 5.5, WCK 771 A is more effective than Ciprofloxacin and Levofloxacin.
- At pH 7.0, Ciprofloxacin is the most effective.

CONCLUSIONS

- WCK 771 A appears to have potential in treating urinary tract infections caused by Gram +ve and Gram -ve bacteria.
- Despite of relatively lower potency and higher protein binding compared to ciprofloxacin and levofloxacin, the property of enhancement of potency under acidic conditions and in urine may prove beneficial for application in UTI infections.

REFERENCES