Fabimycin

Cat. No.: HY-151102
CAS No.: 2651965-71-6
Molecular Formula: \( \text{C}_{23}\text{H}_{25}\text{ClN}_4\text{O}_3 \)
Molecular Weight: 440.92
Target: Antibiotic; Bacterial
Pathway: Anti-infection
Storage: Please store the product under the recommended conditions in the Certificate of Analysis.

BIOLOGICAL ACTIVITY

Description

Fabimycin is a FabI inhibitor with potent antibacterial activity against gram-negative bacteria. Fabimycin is effective against drug-resistant gram-negative infections in vivo\(^1\).

In Vitro

Fabimycin shows outstanding activity against \( \text{S. aureus} \) (MIC: 4 ng/mL), \( \text{E. coli} \) MG1655 (MIC: 2 μg/mL)\(^1\).
Fabimycin (4 μg/mL) inhibits 90% of the strains against a panel of 100 \( \text{K. pneumoniae} \) clinical isolates\(^1\).
Fabimycin enhances the stability of the enzyme-inhibitor complex significantly more than the less active enantiomer in both \( \text{E. coli} \) and \( \text{A. baumannii} \) versions of FabI\(^1\).

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Fabimycin (Intramuscular injection, 5 mg/kg, 2 and 7 h postinfection) shows significant great reduction of bacterial burden in Neutropenic mouse thigh infection initiated in CD-1 mice with \( \text{S. aureus} \)\(^1\).
Fabimycin (intraperitoneal injection) is tolerated in mice with an MTD of >200 mg/kg\(^1\).

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

<table>
<thead>
<tr>
<th>Animal Model</th>
<th>Dosage: 50 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection Model</td>
<td>Acute pneumonia murine or neutropenic mouse thigh infection model, initiated in CD-1 mice with ( \text{A. baumannii} )(^1)</td>
</tr>
<tr>
<td>Administration</td>
<td>Intramuscular injection, 4, 23, and 41 h postinfection (pneumonia model), or 2, 6, and 11 h postinfection (thigh infection)</td>
</tr>
<tr>
<td>Result</td>
<td>Achieved a &gt;30-fold decrease in log(CFU/lung) and &gt;2-fold decrease log(CFU/thigh) relative to the vehicle.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Animal Model</th>
<th>Dosage: 33.3 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Urinary tract infections (UTIs) model (C3H/HeJ mice)(^1)</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous injection, three times a day,</td>
</tr>
<tr>
<td>Result</td>
<td>Achieved 3.0, 2.8, 2.9, and 1.9 log(_{10}) reductions in bacterial load relative to the vehicle in the spleen, bladder, liver, and kidney tissues, respectively.</td>
</tr>
</tbody>
</table>
### Animal Model
Neutropenic female BALB/c mice infected with drug-resistant A. baumannii (pharmacokinetic assay)[1]

### Dosage
20, 50, 75, 100 mg/kg

### Administration
Intravenous injection, for a single dose

### Result
Pharmacokinetic profile of Fabimycin.

<table>
<thead>
<tr>
<th>Dosage (mg/kg)</th>
<th>AUC_{last} (h•μg/mL)</th>
<th>T_{1/2} (h)</th>
<th>CL (mL/min/kg)</th>
<th>C_{max} (μg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mg/kg</td>
<td>69.8</td>
<td>1.4</td>
<td>23.5</td>
<td>47.3</td>
</tr>
<tr>
<td>75 mg/kg</td>
<td>45.4</td>
<td>1.4</td>
<td>26.9</td>
<td>34.6</td>
</tr>
</tbody>
</table>

### REFERENCES

[1]. Erica N. Parker, et al. An Iterative Approach Guides Discovery of the FabI Inhibitor Fabimycin, a Late-Stage Antibiotic Candidate with In Vivo Efficacy against Drug-Resistant Gram-Negative Infections. DOI: 10.1021/acscentsci.2c00598.

**Caution:** Product has not been fully validated for medical applications. For research use only.

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