Rifampicin

Cat. No.: HY-B0272
CAS No.: 13292-46-1
Molecular Formula: \( \text{C}_{43}\text{H}_{58}\text{N}_{4}\text{O}_{12} \)
Molecular Weight: 822.94
Target: Bacterial
Pathway: Anti-infection
Storage:
- Powder: \(-20^\circ\text{C}\) 3 years, \(4^\circ\text{C}\) 2 years
- In solvent: \(-80^\circ\text{C}\) 6 months, \(-20^\circ\text{C}\) 1 month

SOLVENT & SOLUBILITY

In Vitro

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSO : 50 mg/mL (60.76 mM; Need ultrasonic)</td>
<td>1 mM</td>
<td>1.2152 mL</td>
<td>6.0758 mL</td>
<td>12.1516 mL</td>
</tr>
<tr>
<td>H(_2)O : &lt; 0.1 mg/mL (insoluble)</td>
<td>5 mM</td>
<td>0.2430 mL</td>
<td>1.2152 mL</td>
<td>2.4303 mL</td>
</tr>
</tbody>
</table>

Preparing Stock Solutions

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (3.04 mM); Clear solution; Need ultrasonic

2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-\(\beta\)-CD in saline)
 Solubility: ≥ 2.5 mg/mL (3.04 mM); Clear solution

In Vivo

1. Rifampicin (100 mg/mL) can block the functional activity of P-glycoprotein. Rifampicin is not a substrate for P-glycoprotein. The mechanism of rifampicin resistance is unassociated with the functional activity of P-glycoprotein\(^3\).
2. Rifampicin (200, 400 mg/kg) can induce fatty liver at high concentration\(^1\). Rifampicin (30 mg/kg, i.p.) treatment of S464P biofilms in vivo results in a slight decline, but earlier rebinds in bioluminescence from these catheters compared with the parental signal, whereas rifampicin has no affect on bioluminescence in mice infected with mutant

BIOLOGICAL ACTIVITY

Description
Rifampicin is a potent and broad spectrum antibiotic against bacterial pathogens.

In Vitro
Rifampicin (100 mg/mL) can block the functional activity of P-glycoprotein. Rifampicin is not a substrate for P-glycoprotein. The mechanism of rifampicin resistance is unassociated with the functional activity of P-glycoprotein\(^3\).

In Vivo
Rifampicin (200, 400 mg/kg) can induce fatty liver at high concentration\(^1\). Rifampicin (30 mg/kg, i.p.) treatment of S464P biofilms in vivo results in a slight decline, but earlier rebinds in bioluminescence from these catheters compared with the parental signal, whereas rifampicin has no affect on bioluminescence in mice infected with mutant...
Briefly, 1 cm Teflon catheter (14-gauge) carrying 104 cfu S. aureus, either the parental strain Xen 29 or the RifR mutants S464P or H481Y, are implanted subcutaneously in groups of nine mice per strain. One catheter segment is inserted on each side of each animal. Six days after the implantation of the catheters, five mice from each group are treated with rifampicin at 30 mg/kg intraperitoneally in 0.1 mL saline, twice daily for four consecutive days. The remaining four mice in each group are left untreated as controls. At various time points during the infection, the mice are anaesthetized using a constant flow of 1.5% isoflurane from the IVIS® manifold, and imaged using an IVIS® Image System 100 Series. The bioluminescent signals (photons/s) emitted from the mice are analysed using LivingImage® software and plotted over the course of infection. The mice are sacrificed 20 days after infection (11 days after final rifampicin treatment). The catheters are surgically removed and the bacteria are detached by sonication for determination of bacterial burdens on the catheters.

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

REFERENCES


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