Vecabrutinib

Cat. No.: HY-109078
CAS No.: 1510829-06-7
Molecular Formula: C₂₂H₂₄ClF₄N₇O₂
Molecular Weight: 529.92
Target: Btk; Itk
Pathway: Protein Tyrosine Kinase/RTK
Storage:
- Powder: -20°C 3 years, 4°C 2 years
- In solvent: -80°C 6 months, -20°C 1 month

Solvent & Solubility

In Vitro
DMSO : 125 mg/mL (235.88 mM; Need ultrasonic)

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>1.8871 mL</td>
<td>9.4354 mL</td>
<td>18.8708 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.3774 mL</td>
<td>1.8871 mL</td>
<td>3.7742 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.1887 mL</td>
<td>0.9435 mL</td>
<td>1.8871 mL</td>
</tr>
</tbody>
</table>

Please refer to the solubility information to select the appropriate solvent.

In Vivo
1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (3.93 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (3.93 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (3.93 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Vecabrutinib is a potent, noncovalent BTK and ITK inhibitor, with K_d of 0.3 nM and 2.2 nM, respectively; Vecabrutinib shows an IC₅₀ of 24 nM for ITK.

IC₅₀ & Target
IC₅₀: 24 nM (ITK)²
K_d: 0.3 nM (BTK), 2.2 nM (ITK)¹
### In Vitro
Vecabrutinib inhibits pBTK in human whole blood with an average IC$_{50}$ of 50 nM. Vecabrutinib inhibits WT and C481S BTK with similar IC$_{50}$s (pBTK IC$_{50}$s: WT BTK 2.9 nM, C481S BTK 4.4 nM)$^{[1]}$. In a recombinant kinase assay, IC$_{50}$s of Vecabrutinib against WT BTK and C481S BTK are 4.6 nM and 1.1 nM. Vecabrutinib retains activity against the mutated BTK variant. Vecabrutinib is six times more potent than ibrutinib and greater than 640 times more potent than acalabrutinib against C481S BTK. Vecabrutinib demonstrates dose-dependent inhibition of BTK in primary patient CLL cells comparable to ibrutinib via immunoblot for BTK phosphorylation. Vecabrutinib decreases viability of primary CLL cells in the presence of HS5 stromal protection by 5.5%$^{[2]}$.

### In Vivo
Vecabrutinib has good oral bioavailability in rat and dog (%F ≥ 40%) and a terminal half-life of 5 to 6 hours. Vecabrutinib is well tolerated with continuous drug levels and at exposures much greater than those achieved for ibrutinib$^{[1]}$.

### REFERENCES


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