Pentostatin

Cat. No.: HY-A0006
CAS No.: 53910-25-1
Molecular Formula: C₁₁H₁₆N₄O₄
Molecular Weight: 268.27
Target: Adenosine Deaminase
Pathway: Metabolic Enzyme/Protease
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 : ≥ 50 mg/mL (186.38 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 mM</td>
<td>5 mM</td>
<td>10 mM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 mM</td>
<td>3.7276 mL</td>
<td>18.6379 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mM</td>
<td>0.7455 mL</td>
<td>3.7276 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mM</td>
<td>0.3728 mL</td>
<td>1.8638 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% corn oil
Solubility: ≥ 2.5 mg/mL (9.32 mM); Clear solution

2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (9.32 mM); Clear solution

3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (9.32 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Pentostatin is an irreversible inhibitor of adenosine deaminase with Kᵢ of 2.5 pM.

IC₅₀ & Target
Ki: 2.5 pM (adenosine deaminase)

In Vivo
In ECP and Pentostatin (4 mg/m², i.v.) treatment, all dogs develop granulocytopenia with <500 granulocytes/μL from
day 4. Thrombocytopenia (<20,000 platelets/μL) occurs from day 7 after HCT with nadirs of 3000 to 14000 platelets/μL[1]. Pentostatin (2 mg/kg) in combination with cordycepin (2 mg/kg) is 100% effective in the T. evansi-infected mice. There is an increase in levels of some biochemical parameters, especially on liver enzymes, which are accompanied by histological lesions in the liver and kidneys. Pentostatin individually has no curative effect on infected groups[2].

**PROTOCOL**

**Animal Administration** [1]

All recipient dogs are conditioned for transplantation by 920 cGy TBI at 7 cGy/minute using a linear accelerator. Dogs in group A1 receive ECP administered on days −2 and −1 with TBI on day 0 and dogs in group A2 receive ECP on days −6 and −5, intravenous (IV) infusion of pentostatin at a dose of 4 mg/m² on days −4 and −3, and TBI on day 0. Donor marrow cells from DLA-nonidentical donors are aspirated under general anesthesia through needles inserted into humeri and femora and stored in heparinized tissue culture medium at 4°C for no more than 6 hours. Within 4 hours of TBI, harvested marrow cells are infused IV into recipients at a median dose of 2.9 (range, 1.9 to 6.1) ×10⁸ total nucleated cells (TNC)/kg. The day of marrow grafting is designated as day 0. In addition to marrow graft, recipients are given IV infusions of peripheral blood buffy coat cells obtained by leukapheresis from the marrow donor on days 1 and 2, at a median dose of 2.3 (range, 1.2 to 6.9) ×10⁸ TNC/kg to ensure consistent hematopoietic engraftment. MTX, at a dose of 0.4 mg/kg intravenously is used as postgrafting immunosuppression and administered on days +1, +3, +6 and +11, then weekly thereafter until day 102.

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

**REFERENCES**

[1]. Bethge WA, et al. Extracorporeal photopheresis combined with pentostatin in the conditioning regimen for canine hematopoietic cell transplantation does not prevent GVHD. Bone Marrow Transplant. 2014 Sep;49(9):1198-204.