Streptozocin

Cat. No.: HY-13753
CAS No.: 18883-66-4
Molecular Formula: C₈H₁₅N₃O₇
Molecular Weight: 265.22
Target: DNA/RNA Synthesis; DNA Alkylator/Crosslinker; Autophagy; Bacterial
Pathway: Cell Cycle/DNA Damage; Autophagy; Anti-infection
Storage: Powder -20°C 3 years
        4°C  2 years
* The compound is unstable in solutions, freshly prepared is recommended.

SOLVENT & SOLUBILITY

| In Vitro | DMSO : 130 mg/mL (490.16 mM; Need ultrasonic) |
|         | H₂O : 113.3 mg/mL (427.19 mM; Need ultrasonic and warming) |

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mg</td>
<td>5 mg</td>
</tr>
<tr>
<td></td>
<td>1 mM</td>
<td>3.7705 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.7541 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.3770 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 >> 40% PEG300 >> 5% Tween-80 >> 45% saline |
|         | Solubility: ≥ 2.58 mg/mL (9.73 mM); Clear solution |
|         | 2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) |
|         | Solubility: ≥ 2.58 mg/mL (9.73 mM); Clear solution |
|         | 3. Add each solvent one by one: 10% DMSO >> 90% corn oil |
|         | Solubility: ≥ 2.58 mg/mL (9.73 mM); Clear solution |

BIOLOGICAL ACTIVITY

Description Streptozocin is a potent DNA-methylating antibiotic. Streptozotocin causes methylation of liver and kidney and pancreatic DNA, but no methylation in brain DNA.

IC₅₀ & Target DNA alkylator[1]

In Vitro Streptozocin (STZ) shows higher cytotoxic effect in vitro on hematological cell lines compared to Alloxan (ALX). ALX
appears not to be toxic for the studied cell lines with estimated IC\textsubscript{50} values of 2809, 3679 or over 4000 \(\mu\text{g/mL}\) for HL60, K562 and C1498 cells, respectively. Streptozocin is more toxic, especially for the human myeloid leukemia cell line, HL60. The IC\textsubscript{50} values of Streptozocin are 11.7, 904 and 1024 \(\mu\text{g/mL}\) for HL60, K562 and C1498 cells, respectively. Results also show that the murine leukemic cells are more resistant to Streptozocin and ALX cytotoxicity than human leukemic cells\[^{[2]}\].

### In Vivo

Streptozocin (STZ)-injected mice show tendency to have lower body weight than that observed in animals injected with ALX. Streptozocin -injected mice have significantly fewer splenocytes (22.2±3.2×10\(^6\); \(n=10\)) compared to mice injected with ALX (60.7±4.3×10\(^6\); \(n=15\); \(p=0.01\))\[^{[2]}\].

### PROTOCOL

#### Cell Assay \[^{[2]}\]

Human and murine cell lines are cultured in triplicate in 96-well plates at a density of 2×10\(^4\) cells/well in the absence (untreated control) or presence of various concentrations of ALX (20-3000 \(\mu\text{g/mL}\)) or STZ (1-3000 \(\mu\text{g/mL}\)) for 48 h at 37°C under a humidified atmosphere containing 5% CO\(_2\). Cells incubated in complete media including dH\(_2\)O in a final concentration of 0.1% served as control for solvent toxicity and cells incubated in complete medium are used as a control for the experiments. The effects of the tested drugs on tumor cell growth or viability are determined employing the MTT assay in accordance with the manufacturer’s instructions. The IC\textsubscript{50} values (drug concentration that induces 50% inhibition of the cell growth) are calculated using the GraphPad Prism 4 program\[^{[2]}\].

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

#### Animal Administration \[^{[2][3]}\]

**Mice\[^{[2]}\]**

Male C57BL/6 mice (10-16 weeks) are used. The age group distribution in the mouse group treated with Streptozocin and ALX as well as controls is as follows: Streptozocin xenograft (\(n=7\), median age 14 weeks), ALX xenograft (\(n=11\), median age 15 weeks), Streptozocin non-transplanted (\(n=7\), median age 14 weeks), ALX non-transplanted (\(n=15\), median age 15 weeks). Male C57BL/6 mice are under inhalation anesthesia injected via the penile vein with ALX (75 mg/mL) or Streptozocin (180 mg/kg). Control group contain male C57BL/6 mice. Blood glucose levels and body weight are measured before injection, after 6 h, then daily after drug injection.

**Rats\[^{[3]}\]**

Thirty rats underwent oophorectomy to induce menopausal status. Rats receive intraperitoneal administration of Streptozocin (50 mg/kg) to induce diabetes mellitus (DM) 1 week after the oophorectomy. Blood glucose level is checked 3 days after Streptozocin administration, and values >250 mg/dL are considered as positive for DM.

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### REFERENCES
