Product Data Sheet

Chemical Properties

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>SCR7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cas No.:</td>
<td>1533426-72-0</td>
</tr>
<tr>
<td>M.Wt:</td>
<td>334.39</td>
</tr>
<tr>
<td>Formula:</td>
<td>C18H14N4OS</td>
</tr>
<tr>
<td>Chemical Name:</td>
<td>5,6-bis((E)-benzylideneamino)-2-thioxo-2,3-dihydropyrimidin-4(1H)-one</td>
</tr>
<tr>
<td>Canonical SMILES:</td>
<td>S=C(NC(/N=C/C1=CC=CC=C1)=C2/N=C/C3=CC=CC=C3)NC2=O</td>
</tr>
<tr>
<td>Solubility:</td>
<td>&gt;16.7mg/mL in DMSO</td>
</tr>
<tr>
<td>Storage:</td>
<td>Store at -20°C</td>
</tr>
<tr>
<td>General tips:</td>
<td>For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.</td>
</tr>
<tr>
<td>Shopping Condition:</td>
<td>Evaluation sample solution: ship with blue ice</td>
</tr>
<tr>
<td></td>
<td>All other available size: ship with RT, or blue ice upon request</td>
</tr>
</tbody>
</table>

Biological Activity

<table>
<thead>
<tr>
<th>Targets:</th>
<th>DNA Ligases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathways:</td>
<td>DNA Damage/DNA Repair &gt;&gt; DNA Ligases</td>
</tr>
<tr>
<td>Description:</td>
<td>Scr7 is a DNA ligase IV inhibitor, initially identified as an anti-cancer agent [1]. Scr7 targets the DNA binding domain of DNA ligase IV, reducing its affinity for double strand breaks (DSBs) and inhibiting its function. Scr7 also inhibits DNA ligase III (but not DNA ligase I), albeit less efficiently. Cells were treated with doxycycline to induce Cas9 expression, with various concentrations of Scr7 for 24 h. Scr7 maintained cells capable of entering S/G2 phase, which is necessary for HDR. [1] Treatment of mice with Scr7 affects lymphocyte development, as DNA ligase IV plays a key role in the joining of coding ends during V(D)J recombination by means of C-NHEJ16. The defects in lymphocyte development upon Scr7 treatment are transient and</td>
</tr>
</tbody>
</table>
reversible, due to the noncovalent mode of binding of Scr7. Scr7 enhanced the frequency of HDR by transiently blocking NHEJ (with the exception of DNA ligase I–dependent alt-NHEJ), resulting in precise genome editing by CRISPR-Cas9 in both cultured cells and in mice. [2]

Reference:

Protocol

Cell experiment:

Cell lines
Epithelial (A549) and melanoma (MelJuSo) cell line derivatives

Preparation method
Soluble in DMSO > 10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20 °C for several months.

Reacting conditions
24 hours at 37°C

Applications
Scr7 increases the efficiency of insertional mutagenesis in cell lines. In A549 cells, 0.01 μM Scr7 improves the efficiency of insertion at the target site about threefold relative to the untreated control. In Scr7-treated MelJuSo cells, the insertion efficiency is also enhanced in a dose-dependent manner up to 19-fold.

Animal experiment [3]:

Animal models
Kell-LPETG mice

Dosage form
CRISPR components mixture (Cas9 mRNA, sgRNA and targeting template) and 10 mM of Scr7 NHEJ inhibitor (to 1 mM final) were injected into the cytoplasm at the pronuclear stage. The injected zygotes were transferred at the 2-cell stage into the pseudo-pregnant females.

Applications
Co-injection of Scr7 increases the efficiency of precise genome editing in mouse embryos. The insertion efficiency with Scr7 co-injection is significantly higher (P = 0.0012) compared to blastocysts not injected with Scr7. The insertion efficiency in Scr7-co-injected E10 embryos is also significantly enhanced
compared to E10 embryos not injected with Scr7 (P = 0.003).

Other notes
Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.

Reference:

Product Citations

Product Validation
The effect of chemical treatment or fluorescent enrichment on NHEJ-directed indel generation and HDR-directed targeted integration in CHO cells. Analysis of genome editing events upon chemical treatment. Cells were treated with five different concentrations (0.1, 1, 5, 10 and 20 μM) of Scr7 immediately after transfection (denoted by 1), both before and after transfection (denoted by 2), or before transfection only (denoted by 3). Biotechnol Bioeng. 2016 May 9.

Caution
FOR RESEARCH PURPOSES ONLY.
NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage
recommendations on the product data sheet.