**Product Data Sheet**

### Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name:</strong></td>
<td>Tubacin</td>
</tr>
<tr>
<td><strong>Cas No.:</strong></td>
<td>537049-40-4</td>
</tr>
<tr>
<td><strong>M.Wt:</strong></td>
<td>721.86</td>
</tr>
<tr>
<td><strong>Formula:</strong></td>
<td>C41H43N3O7S</td>
</tr>
<tr>
<td><strong>Synonyms:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Chemical Name:</strong></td>
<td>N-[4-[(2R,4R,6S)-4-[(4,5-diphenyl-1,3-oxazol-2-yl)sulfanylmethyl]-6-[4-(hydroxymethyl)phenyl]-1,3-dioxan-2-yl]phenyl]-N'-hydroxyoctane diamide</td>
</tr>
<tr>
<td><strong>Canonical SMILES:</strong></td>
<td>C1C(OC(OC1C2=CC=C(C=C2)CO)C3=CC=C(C=C3)NC(=O)CCCCCCC(=O)NO)CSC4=NC(=C(O4)C5=CC=CC=C5)C6=CC=CC=C6</td>
</tr>
<tr>
<td><strong>Solubility:</strong></td>
<td>≥7.19mg/mL in DMSO</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>Store at -20°C</td>
</tr>
<tr>
<td><strong>General tips:</strong></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><strong>Shopping Condition:</strong></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

**Targets:** DNA Damage/DNA Repair

**Pathways:** HDAC

**Description:**
Tubacin is a potent, selective, reversible, and cell-permeable inhibitor of HDAC6 with an IC50 value of 4 nM.[1]
Histone deacetylases (HDACs) can be divided into 4 classes, among whom Class I, II, and IV is nuclear zinc-dependent enzymes and Class III is nicotinamide adenine dinucleotide (NAD+).
dependent. HDACs catalyze deacetylation of N-acetyl-lysine residues and play an important role in a number of biological reactions including gene expression and cell cycle. By inhibiting α-tubulindeacetylation in mammalian cells, tubacin can suppress the expression of certain genes and therefore result in an antitumor effect without the level of histone acetylation. As selective inhibitors of HDAC6 are used in the treatment of protein degradation disorders, tubacin may have therapeutic applications as antimetastatic and antiangiogenic agent.[1,2]

Tubacin exhibited potent inhibition on HDAC6, with an IC50 value of 4 nM and approximately 350-fold selectivity over HDAC1. In cultured A549 cells, 10 μM tubacin induced up to a 3-fold increase in the relative α-tubulin- acetylation level, with an EC 50 of 2.5 μM. Acute lymphoblastic leukemia (ALL) and normal cells were treated with different concentrations of tubacin ranging from 0.5 to 2.5 mM or controls. The results indicated that tubacin inhibited the growth of ALL cells dose-dependently, with IC50 ranging from 1.2 to 2 mM. Moreover, ALL cells have a greater sensitivity to tubacin compared to other normal cells.[1,2,3]

Tuacin also showed suppressing activity in the growth of ALL cells in vivo. By treating pre-B ALL cells injected mice, the mice in experimental group survival were prolonged comparing with the control. Besides, tubacin treated HEK cells transfected with tau significantly attenuate tau phosphorylation at T231, which also revealed it may play an important role in the pathology of Alzheimer's Disease(AD). [3,4]

Reference:

Protocol

Cell experiment:

Cell lines Human A549 lung carcinoma cells, Mouse NIH 3T3 wild-type (Neo), HDAC6, HDAC6 double-mutant, and HDAC6-overexpressing cells, Acute lymphoblastic leukemia (ALL) cells

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

In cultured cells, tubacin (10 μM) induced up to a 3-fold increase in the relative α-tubulin-acetylation level, with a half-maximum effective concentration (EC50) of 2.5 μM. Tubacin (2 μM) inhibited the migration of both wild-type and HDAC6-overexpressing cells. Tubacin treatment increased the colocalization of HDAC6 along acetylated microtubules in interphase cells. Treatment with tubacin led to the induction of apoptotic pathways in both pre-B and T cell ALL cells.

Reference:


Product Citations


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. Short-term 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.