Product Data Sheet

Chemical Properties

Product Name: Toyocamycin
Cas No.: 606-58-6
M.Wt: 291.26
Formula: C12H13N5O4

Chemical Name: 4-amino-7-((2S,3R,4R,5S)-3,4-dihydroxy-5-(hydroxymethyl)tetrahydrofuran-2-yl)-7H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile

Canonical SMILES: O[C@H]1[C@@H](N2C3=NC=NC(N)=C3C(C#N)=C2)O[C@@H](CO)[C@@H]1O

Solubility: Soluble in DMSO
Storage: Store at -20°C

General tips: 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.

Shopping Condition: Evaluation sample solution: ship with blue ice
All other available size: ship with RT, or blue ice upon request

Biological Activity

Targets: Microbiology & Virology
Pathways: Antibiotic

Description:
Toyocamycin is an inhibitor of phosphatidylinositol kinase. It is known as an antifungal antibiotic.[1]
Phosphatidylinositol kinase is one of the important enzymes that take part in the regulation of the pathway of phosphatidylinositol turnover. Phosphatidylinositol turnover is studied to be
involved in the cellular response to mitogens and transformation.[1] Toyocamycin can suppress thapsigargin-, tunicamycin- and 2-deoxyglucose-induced XBP1 mRNA splicing in HeLa cells. This suppression doesn’t affect the activating of transcription factor 6 (ATF6) and PKR-like ER kinase (PERK)’s activation. Toyocamycin prevents IRE1a-induced XBP1 mRNA cleavage in vitro. [2] In mammalian cells, toyocamycin inhibits RNA synthesis. Toyocamycin induces apoptosis of MM cells including bortezomib-resistant cells at nanomolar levels in a dose-dependent manner. It also inhibited growth of xenografts in an in vivo model of human multiple myeloma. It is also a lead compound for developing anti-MM therapy and XBP1 as an appropriate molecular target for anti-multiple myeloma therapy.[2]

Reference:

Protocol

Cell experiment:

Cell lines three MM cell lines, RPMI8226, XG7 and U266
Preparation method The solubility of this compound in DMSO is > 10 mM. 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.
Reacting conditions Applications In RPMI8226 cells, treatment with 10 nM or higher concentrations of toyocamycin reduced the levels of spliced isoform of XBP1 protein and resulted in caspase activation. Toyocamycin also reduced the levels of spliced-XBP1 in two other MM cell lines XG7 and U266. Toyocamycin also inhibited thapsigargin-induced expression of spliced XBP1 protein.

Animal experiment [3]:

Animal models SCID mice bearing human MM RPMI8226 xenograft
Dosage form intraperitoneal injection, 0.5mg/kg twice weekly or 1.0mg/kg once weekly for 2 weeks.
Applications
In SCID mice bearing human MM RPMI8226 xenograft, Toyocamycin alone showed robust anti-tumor activity resulting in smaller tumor volumes compared with controls on day 15. The combination treatment of BTZ with toyocamycin showed a trend toward enhancing anti-tumor activity.

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:

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.