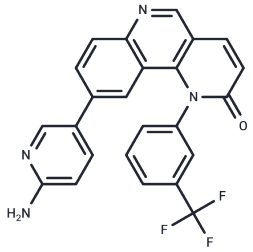
Data Sheet (Cat.No.T6100)

TargetMol

Torin 2

Chemical Properties



CAS No. : 1223001-51-1

Formula: C24H15F3N4O

Molecular Weight: 432.4

Storage: Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Torin 2(IC50=0.25 nM), a specific and effective mTOR inhibitor, is the 800-fold greater specific activity for mTOR than PI3K and improves pharmacokinetic properties. The EC50 of Torin 2 for ATM/ATR/DNA-PK inhibition is 28 nM/35 nM/118 nM, respectively.
Targets(IC50)	Apoptosis,ATM/ATR,Autophagy,DNA-PK,mTOR
In vitro	In Th-MYCN mice, Torin 2 (20 mg/kg) eradicated MYCN tumors, decreased MYCN protein levels, and induced apoptosis. In liver microsome stability assays, Torin 2 demonstrated greater than 95% pharmacological response with a half-life of 11.7 minutes. The best bioavailability of Torin 2 in male Swiss albino mice, whether administered intravenously or orally, was 51%, with a half-life of 0.72 hours and a low clearance rate of 19.6 mL/min/kg.
In vivo	In MZ-CRC-1 and TT cells, Torin 2 (at concentrations < 50 nM) significantly reduces cell viability, while at 100 nM, it notably decreases cell migration. Torin 2 inhibits mTORC1, thus activating TFEB by promoting its nuclear translocation, with an EC50 value of 1.666 mM. Its mechanism involves a similar binding pattern to PI3Kγ, with V882 serving as a pivotal hinge binding site. This interaction is further stabilized by three hydrogen bonds from Y867, D841, and D964 targeting amino benzyl side chains, mirroring the interaction seen with mTOR's Y2225, D2195, and D2357.
Kinase Assay	mTOR and PI3K Cellular Assays: Cellular IC50 values for mTOR are determined using p53?/? MEFs. Cells are treated with vehicle or increasing concentrations of Torin 2 for 1 h and then lyse. Phosphorylation of S6K1 Thr-389 is monitored by immunoblotting using a phospho-specific antibody. Meanwhile, cellular IC50 values for PI3Ka are determined based on phosphorylation of Akt Thr-308 in p53?/?/mLST8?/? MEFs or human PC3 cells expressing the S473D mutant of Akt1.
Cell Research	For viability, MZ-CRC-1 and TT cells are seeded in quadruplicate in 96-well plates (1.0 ×104 cells per well) in culture media with 2.5% and 4% FBS, respectively. After 24 hours, cells are treated with Torin 2. At the indicated time point, cells are incubated for 3 hours with 10 μL of CellTiter96 AQueous One solution in 100 μL of culture media and absorbance is measured at 490 nm.(Only for Reference)

Solubility Information

Solubility	DMSO: 10 mg/mL (23.13 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 1 mg/mL (2.31 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.3127 mL	11.5634 mL	23.1267 mL
5 mM	0.4625 mL	2.3127 mL	4.6253 mL
10 mM	0.2313 mL	1.1563 mL	2.3127 mL
50 mM	0.0463 mL	0.2313 mL	0.4625 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Liu Q, et al. J Med Chem, 2011, 54(5), 1473-1480.
Jiang X, Liu K, Jiang H, et al.SLC7A14 imports GABA to lysosomes and impairs hepatic insulin sensitivity via inhibiting mTORC2.Cell Reports.2023, 42(1): 111984.
Settembre C, et al. EMBO J, 2012, 31(5), 1095-1108.
Tamburrino A, et al. Clin Cancer Res, 2012, 18(13), 3532-3540.
Berry T, et al. Cancer Cell, 2012, 22(1), 117-130.
Liu Q, et al. Cancer Res, 2013, 73(8), 2574-2586.
Wang X, et al. mTORC signaling in hematopoiesis. Int J Hematol. 2016 May;103(5):510-8.