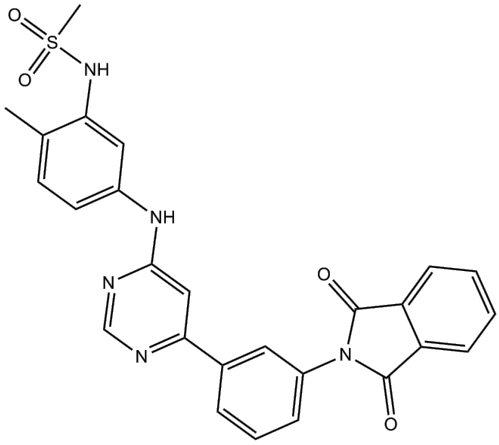
Product Data Sheet

Product Name: CDK9 inhibitor
Cat. No.: GC12871

Chemical Properties

Cas. No.	1415559-43-1		
Chemical Name	N-[5-[[6-[3-(1,3-dioxoisoindol-2-yl)phenyl]pyrimidin-4-yl]amino]-2-methylphenyl]methane sulfonamide		
SMILES	CC1=C(C=C(C=C1)NC2=NC=NC(=C2)C3=CC(=CC=C3)N4C(=O)C5=CC=CC=C5C4=O)NS(=O)(=O)C		
Formula	$C_{26}H_{21}N_5O_4S$	M.Wt	499.54
Solubility	DMSO : 100 mg/mL (200.18 mM; Need ultrasonic)	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.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Protocol

Cell experiment [1]:

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Cell lines	MT4 cells
Preparation method	This compound is soluble in DMSO. 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 condition	2.5 μM; 1 week
Applications	In HIV-1 infected MT4 cells, CDK9 Inhibitor at 2.5 μM potently inhibited HIV-1 propagation due to positive elongation factor b (P-TEFb) inhibition. Moreover, in MT4 cells, CDK9 Inhibitor at the concentrations of 1 μM and 2 μM resulted in the cell viabilities of 101% and 115%, respectively, which implied CDK9 Inhibitor had no cytotoxicity. In the p24 assay, CDK9 Inhibitor down-regulated the expression of p24 protein by 10%.

References:

[1]. Németh G, Varga Z, Greff Z, et al. Novel, selective CDK9 inhibitors for the treatment of HIV infection. Curr Med Chem, 2011;18(3):342-58.

Background

CDK9 inhibitor is a small-molecule selective inhibitor of CDK9 (cyclin dependent kinase 9) with IC50 value of 39 nM [1].
CDKs are a group of serine/threonine kinases and are widely spread in all known eukaryotes. CDKs are activated through binding to cyclins and forming heterodimers. In the dimer, CDK acts as a catalytic subunit and phosphorylates the down-stream proteins such as nuclear lamina protein, nucleolin and histone H1. Through this way, CDKs take participate in the cell cycle regulation. CDK9

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is a special member of the CDK family. It can affect the elongation phase of transcription through phosphorylating RNA polymerase II. The partner of it is positive elongation factor b (P-TEFb). It is reported that CDK9 is necessary for the infection of many kinds of viruses such as HIV-1 and HSV1 [1].

CDK9 inhibitor is a 4-aminophenyl derivative based on the (6-phenyl-pyrimidin-4-yl)-phenylamine structure. It showed elevated selectivity against CDK9 than the previous found inhibitors. The IC50 values of CDK9 inhibitor for CDK1/CycB, CDK2/CycE, CDK3/CycE, CDK4/CycD1, CDK5/p35, CDK6/CycD1 and CDK7/CycH are all higher than 1 μM. CDK9 inhibitor has no cytotoxicity. The treatment of CDK9 inhibitor at concentrations of 1 μM and 2 μM resulted in the cell viabilities of 101% and 115%, respectively. It also showed no significant toxicity in H9 cells. In the p24 assay, CDK9 inhibitor exerted its potency in inhibiting HIV-1 propagation with about 10% reduction of p24 production [1].

References:

1.Németh G, Varga Z, Greff Z, et al. Novel, selective CDK9 inhibitors for the treatment of HIV infection. Curr Med Chem, 2011;18(3):342-58.