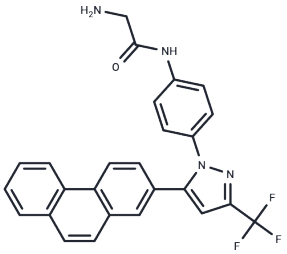
Data Sheet (Cat.No.T2466)

TargetMol

Osu03012

Chemical Properties



CAS No. : 742112-33-0

Formula: C26H19F3N4O

Molecular Weight: 460.45

Storage: 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	Osu03012 (AR-12) is an orally bioavailable, small-molecule, celecoxib-derived inhibitor of phosphoinositide-dependent kinase-1 (PDK1) with potential antineoplastic activity.
Targets(IC50)	PDK,Autophagy
In vitro	In the MDA-MB-435/LCC6 xenograft model, OSU-03012 significantly reduced the expression of EGFR protein in tumors while also inhibiting the binding of YB-1 to the EGFR promoter. In Huh7 xenografts, OSU-03012 (200 mg/kg) effectively inhibited tumor cell growth. Similarly, oral administration of OSU-03012 in the HMS-97 neurofibroma xenograft model suppressed cell growth.
In vivo	At concentrations of 3-5 μM, OSU-03012 can completely inhibit the growth of various tumor cells. In thyroid cancer cells (NPA, WRO, and ARO cells), OSU-03012 acts as an ATP-competitive inhibitor, inhibiting cell proliferation and migration, and inducing apoptosis by suppressing PAK activity and AKT phosphorylation. In hepatocellular carcinoma cell lines (Huh7, Hep3B, and HepG2 cells), OSU-03012 (IC50<1 μM) inhibits cell growth, notably inducing autophagy in Huh7 cells. Additionally, in glioblastoma and PC-3 cells, OSU-03012 promotes apoptosis.
Kinase Assay	PDK-1 Kinase Assay: This in vitro assay is performed using a PDK-1 kinase assay kit. This cell-free assay is based on the ability of recombinant PDK-1, in the presence of DMSO vehicle or OSU-03012, to activate its downstream serum- and glucocorticoid-regulated kinase which, in turn, phosphorylates the Akt/serum- and glucocorticoid-regulated kinase-specific peptide substrate RPRAATF with [γ-32P]ATP. The 32P-phosphorylated peptide substrate is then separated from the residual [γ-32P]-ATP by using P81 phosphocellulose paper and quantitated in a scintillation counter after three washes with 0.75% phosphoric acid.
Cell Research	The effect of OSU-03012 on PC-3 cell viability is assessed by using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2H-tetrazolium bromide assay in six replicates. Cells are grown in 10% FBS- supplemented RPMI 1640 in 96-well, flat-bottomed plates for 24 hours. They are exposed to various concentrations of OSU-03012 (0-10 μM) dissolved in DMSO (final concentration ≤0.1%) in 1% serum-containing RPMI 1640 for different time intervals (~72 hours). Controls receive DMSO vehicle at a concentration equal to that in OSU-03012-treated cells. The medium is removed and replaced by 200 μL of 0.5 mg/mL 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2H-tetrazolium bromide in 10% FBS-containing RPMI 1640. The cells are incubated in the CO2 incubator at 37 °C for 2 hours.

Cell Research	Supernatants are removed from the wells, and the reduced 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-2H-tetrazolium bromide dye is solubilized in 200 μL DMSO per well. Absorbance at 570 nm is determined by using a plate reader.(Only for Reference)

Solubility Information

Solubility	Ethanol: < 1 mg/mL (insoluble or slightly soluble), H2O: < 1 mg/mL (insoluble or slightly soluble), DMSO: 120 mg/mL (260.61 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: 2 mg/mL (4.34 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	2.1718 mL	10.8589 mL	21.7179 mL
5 mM	0.4344 mL	2.1718 mL	4.3436 mL
10 mM	0.2172 mL	1.0859 mL	2.1718 mL
50 mM	0.0434 mL	0.2172 mL	0.4344 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

Zhu J, et al. Cancer Res, 2004, 64(12), 4309-4318.
Zhang Y, Yu G, Chu H, et al. Macrophage-Associated PGK1 Phosphorylation Promotes Aerobic Glycolysis and Tumorigenesis. Molecular Cell. 2018, 71(2): 201-215. e7
Yacoub A, et al. Mol Pharmacol, 2006, 70(2), 589-603.
Porchia LM, et al. Mol Pharmacol, 2007, 72(5), 1124-1131.
Gao M, et al. Cancer Res, 2008, 68(22), 9348-9357.
Tseng PH, et al. Blood, 2005, 105(10), 4021-4027.
Zhang Yajuan, et al. Macrophage-Associated PGK1 Phosphorylation Promotes Aerobic Glycolysis and Tumorigenesis[J]. Molecular cell. 2018 Jul 19;71(2):201-215.e7.