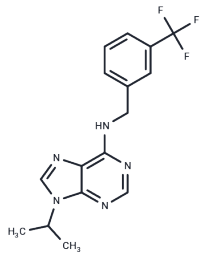
Data Sheet (Cat.No.T5358)

TargetMol

Longdaysin

Chemical Properties



CAS No. : 1353867-91-0

Formula: C16H16F3N5

Molecular Weight: 335.33

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	Longdaysin is an inhibitor of CK1α and CK1δ (IC50s: 5.6/8.8 μM). It also can inhibit ERK2 (IC50: 52 μM).
Targets(IC50)	ERK,Casein Kinase,CDK,Wnt/beta-catenin
In vitro	Longdaysin inhibited CKIδ, CKIα, ERK2, and CDK7 activities (IC50?=?8.8, 5.6, 52, and 29 μM, respectively), while it had much less effect on p38α. The period of CKIδ deficient cells was 1.1 h longer than that of wild type cells. Longdaysin lengthened the period in a dose-dependent manner in CKIδ deficient cells as well as in wild type cells [1]. In breast cancer Hs578T and MDA-MB-231 cells, micromolar concentrations of longdaysin attenuated the phosphorylation of LRP6 and DVL2 and reduced the expression of active β-catenin and total β-catenin, leading to the downregulation of Wnt target genes Axin2, DKK1, LEF1, and Survivin [2].
In vivo	In MDA-MB-231 breast cancer xenografts, treatment with longdaysin suppressed tumor growth in association with inhibition of Wnt/β-catenin signaling [2].
Kinase Assay	The CKIδ, CKIα, CDK7, and ERK2 kinase assays were performed on 384-well plates (10 μl volume). The reaction mixture was as follows: for CKIδ, 2 ng/μl CKIδ, 50 μM peptide substrate RKKKAEpSVASLTSQCSYSS corresponding to human PER2 Lys659-Ser674, and CKI buffer (40 mM Tris, 10 mM MgCl2, 0.5 mM DTT, 0.1 mg/ml BSA, pH 7.5); for CKIα, 1 ng/μl CKIα, 50 μM CKI peptide substrate, and CKI buffer; for CDK7, 5 ng/μl CDK7, 100 μM Cdk7/9 peptide substrate, and CKI buffer; for ERK2, 1.5 ng/μl ERK2, 0.8 μg/μl MBP, and ERK buffer (50 mM Tris, 10 mM MgCl2, 0.5 mM DTT, 1 mM EGTA, pH 7.5). Five hundred nl of compound was added to the mixture (final 5% DMSO), and the reaction was started by adding ATP (final 5 μM). After incubation at 30°C for 3h, 10 μl of Kinase-Glo Luminescent Kinase Assay reagent was added, and the luminescence was detected to determine the remaining ATP amount. All of the tested compounds did not inhibit luciferase activity directly [1].
Cell Research	2×10^5 cells were suspended in 100 μL serum-free medium containing the indicated concentrations of longdaysin, and then seeded in 24-transwell chambers with 8 μm pore membrane. The lower chamber contained medium with 20% FBS. After incubation at 37°C for 6 hours, the unmigrated cells on the upper side of membrane were removed by a cotton swab, and the migrated cells were stained with crystal violet and stained cells were photomicrographed. For invasion assays, the transwell chambers with 8 μm pore membranes were coated with Matrigel [2].

Animal Research	MDA-MB-231 cells were injected s.c. into the right flank of nude mice (1×10^7 cells per mouse), and tumor growth was closely observed and measured every 3 days. When the tumors reached approximately 50 mm3, the mice were randomly divided into two groups (eight mice per group) and i.p. injected with the vehicle (0.8% DMSO/12% Cremophor/8% ethanol in normal saline) or 5 mg/kg longdaysin in vehicle every 3 days. This longdaysin dosage was selected based on results from preliminary experiments, and was well tolerated in the mouse model. Subsequently, tumor volumes were measured with a caliper and calculated as follows: 0.523×(length)×(width)2. After treatment for 3 weeks, the mice were sacrificed and the tumor tissues were collected and weighed before being fixed in buffered formalin [2].

Solubility Information

Solubility	DMSO: 100 mg/mL (298.21 mM),Sonication is recommended. H2O: Insoluble, (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 4 mg/mL (11.93 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	2.9821 mL	14.9107 mL	29.8214 mL
5 mM	0.5964 mL	2.9821 mL	5.9643 mL
10 mM	0.2982 mL	1.4911 mL	2.9821 mL
50 mM	0.0596 mL	0.2982 mL	0.5964 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

Hirota T, et al. High-throughput chemical screen identifies a novel potent modulator of cellular circadian rhythms and reveals CKIα as a clock regulatory kinase. PLoS Biol. 2010 Dec 14;8(12):e1000559.
Xiong Y, et al. Longdaysin inhibits Wnt/β-catenin signaling and exhibits antitumor activity against breast cancer. Onco Targets Ther. 2019 Feb 5;12:993-1005.