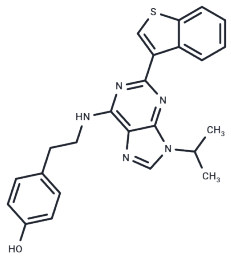
Data Sheet (Cat.No.T1831)

TargetMol

StemRegenin 1

Chemical Properties



CAS No. : 1227633-49-9

Formula: C24H23N5OS

Molecular Weight: 429.54

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	StemRegenin 1 (SR1) is an aryl hydrocarbon receptor (AhR) inhibitor.
Targets(IC50)	AhR,Aryl Hydrocarbon Receptor
In vitro	In NSG (NOD.Cg-Prkdcscid Il2rgtm1Wj1/SzJ) mice, the proliferation of CB CD34+ cells is enhanced through the activation of SR1, facilitating early and sustained cell engraftment.
In vivo	In vitro, StemRegenin 1 (1 μM) effectively promotes the proliferation of CD34+ cells (EC50 ≈ 120 nM) while concurrently reducing the expression levels of VentX. Furthermore, StemRegenin 1 can inhibit the binding of photoaffinity ligands (PAL) with an IC50 value of 40 nM.
Kinase Assay	Kinase assays: PDK1 is assayed in a direct kinase assay and a coupled assay format measuring PDK1- and PtdIns-3,4-P2-mediated activation of AKT2. For the coupled assay, the final assay mixture (60 μL) contained: 15 mM MOPS, pH 7.2, 1 mg/mL bovine serum albumin, 18 mM β-glycerol phosphate, 0.7 mM dithiothreitol, 3 mM EGTA, 10 mM MgOAc, 7.5 μM ATP, 0.2 μCi of [γ-33P]ATP, 7.5 μM biotinylated peptide substrate (biotin-ARRRDGGGAQPFRPRAATF), 0.5 μL of PtdIns-3,4-P2-containing phospholipid vesicles, 60 pg of purified recombinant human PDK1, and 172 ng of purified recombinant human AKT2. After incubation for 2 h at room temperature, the biotin-labeled peptide is captured from 10 μl of the assay mixture on streptavidin-coated SPA beads, and product formation is measured by scintillation proximity in a Wallac MicroBeta counter. The product formed is proportional to the time of incubation and to the amount of PDK1 and inactive AKT2 added. PDK1 is added at suboptimal levels so that the assay could sensitively detect inhibitors of AKT2 activation as well as direct inhibitors of PDK1 or AKT2. To measure PDK1 activity directly, the final assay mixture (60 μL) contained 50 mM Tris-HCl, pH 7.5, 0.1 mM EGTA, 0.1 mM EDTA, 0.1% β-mercaptoethanol, 1 mg/mL bovine serum albumin, 10 mM MgOAc, 10 μM ATP, 0.2 μCi of [γ-33P]ATP, 7.5 μM substrate peptide (H2N-ARRRGVTTKTFCGT), and 60 ng of purified recombinant human PDK1. After 4 h at room temperature, we add 25 mM EDTA and spotted a portion of the reaction mixture on Whatman P81 phosphocellulose paper. The filter paper is washed three times with 0.75% phosphoric acid and once with acetone. After drying, the filter-bound labeled peptide is quantified using a Fuji phosphorimager.

Cell Research	StemRegenin 1 (SR1) is prepared in DMSO and stored, and then diluted with appropriate medium before use[1]. A quantity of 250,000 CB-derived CD34+ cells are cultured with control conditions (DMSO, 0.01%) or StemRegenin 1 (0.75 μM) for 3 weeks. At this point control cultures had expanded 1080-fold and StemRegenin 1 treated cells expanded 2024-fold relative to starting cell numbers. A quantity of 30 to 30,000 uncultured CD34+ CB-derived cells or a fraction of the final culture equivalent to 30 to 10,000 starting cells are transplanted. The cells are injected intravenously via the retro-orbital route into sub-lethally irradiated (300 rads, 200 rads) 6- to 10-week-old NSG mice. Engraftment is performed within 24 h after irradiation. Engraftment is monitored by flow cytometric analysis of blood obtained via retro-orbital sinus or bone marrow using anti-human CD45 and anti-mouse CD45 antibodies. The mice are sacrificed between 13-16 weeks posttransplantation; bone marrow (from both femurs and tibiae), spleen and thymus are collected for analysis. For secondary engraftment, 50% of the bone marrow from each recipient mouse is transplanted into one secondary sub-lethally irradiated NSG mouse. Fifteen weeks after transplantation, bone marrow is harvested from the secondary mice and analyzed by flow cytometry[1].

Solubility Information

Solubility	H2O: < 1 mg/mL (insoluble or slightly soluble), DMSO: 123.75 mg/mL (288.1 mM),Sonication is recommended. Ethanol: < 1 mg/mL (insoluble or slightly soluble), (< 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 (4.66 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	2.3281 mL	11.6404 mL	23.2807 mL
5 mM	0.4656 mL	2.3281 mL	4.6561 mL
10 mM	0.2328 mL	1.164 mL	2.3281 mL
50 mM	0.0466 mL	0.2328 mL	0.4656 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

Boitano AE, et al. Science, 2010, 329(5997), 1345-1348.
Jin H, Ji C, Ren F, et al. AHR-Mediated Oxidative Stress Contributes to the Cardiac Developmental Toxicity of Trichloroethylene in Zebrafish Embryos. Journal of Hazardous Materials. 2020, 385: 121521
Gao H, et al. J Biol Chem, 2012, 287(35), 219979-291987.
Gori JL, et al. Blood, 2012, 120(13), e35-44.
Jin H, Ji C, Ren F, et al. AHR-Mediated Oxidative Stress Contributes to the Cardiac Developmental Toxicity of Trichloroethylene in Zebrafish Embryos[J]. Journal of Hazardous Materials. 2020, 385: 121521.

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