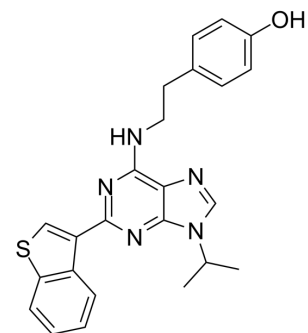


## StemRegenin 1

<b>Cat. No.:</b>	HY-15001		
<b>CAS No.:</b>	1227633-49-9		
<b>Molecular Formula:</b>	C <sub>24</sub> H <sub>23</sub> N <sub>5</sub> OS		
<b>Molecular Weight:</b>	429.54		
<b>Target:</b>	Aryl Hydrocarbon Receptor		
<b>Pathway:</b>	Immunology/Inflammation		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 100 mg/mL (232.81 mM)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	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	1.1640 mL	2.3281 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
 Solubility: ≥ 2.5 mg/mL (5.82 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: 2.5 mg/mL (5.82 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.5 mg/mL (5.82 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

StemRegenin 1 is a potent aryl hydrocarbon receptor (AhR) antagonist with IC<sub>50</sub> of 127 nM.

#### IC<sub>50</sub> & Target

IC<sub>50</sub>: 127 nM (AhR)<sup>[1]</sup>

#### In Vitro

StemRegenin 1 (SR1) acts by antagonizing the aryl hydrocarbon receptor (AhR). StemRegenin 1 increases the number of CD34<sup>+</sup> cells after 5 to 7 days with an EC<sub>50</sub> of ~120 nM. StemRegenin 1 inhibits photoaffinity ligand (PAL) binding (IC<sub>50</sub>=40 nM)

These results support the conclusion that StemRegenin 1 -induced CD34<sup>+</sup> cell expansion is mediated through direct binding and inhibition of the AhR<sup>[1]</sup>. An aryl hydrocarbon receptor antagonist, StemRegenin 1 (SR1), robustly promotes ex vivo expansion of human CD34<sup>+</sup> cells. StemRegenin 1 treatment accelerates the proliferation of CD34<sup>+</sup> cells and decreases the expression levels of VentX<sup>[2]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

### Cell Assay <sup>[1]</sup>

A quantity of 250,000 CB-derived CD34<sup>+</sup> 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<sup>+</sup> 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<sup>[1]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Sci Adv. 2022 Mar 18;8(11):eabf8627.
- J Hazard Mater. 2020 Mar 5;385:121521.
- Theranostics. 2021; 11(18):8797-8812.
- Food Funct. 2021 Feb 17.
- RSC Adv. 2022 Apr 13;12(18):11505-11516.

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## REFERENCES

[1]. Boitano AE, et al. Aryl Hydrocarbon Receptor Antagonists Promote the Expansion of Human Hematopoietic Stem Cells. Science. 2010 Sep 10;329(5997):1345-8.

[2]. Gao H, et al. Suppression of homeobox transcription factor VentX promotes expansion of human hematopoietic stem/multipotent progenitor cells. J Biol Chem. 2012 Aug 24;287(35):29979-87.

**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA