Steppogenin

Cat. No.: HY-122094

CAS No.: 56486-94-3

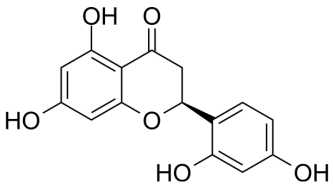
Molecular Formula: $C_{15}H_{12}O_6$

Molecular Weight: 288.25

Target: HIF/HIF Prolyl-Hydroxylase

Pathway: Metabolic Enzyme/Protease

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Steppogenin is a potent inhibitor of HIF-1α and DLL4, with IC_{50} values of 0.56 and 8.46 μM, respectively. Steppogenin can be sued for the research of angiogenic diseases, such as those involving solid tumors[1].

IC_{50} & Target

IC50: 0.56 ± 0.043 μM (HIF-1α), 8.46 ± 1.08 μM (DLL4)[1]

In Vitro

Steppogenin (0-10 μM, 24 h) inhibit the transcriptional activity of HIF-1α under hypoxic conditions in HEK293T cells and VEGF-induced DLL4 expression in vascular endothelial cells (ECs) in a dose-dependent manner[1].
Steppogenin (0-3 μM, 6 h) suppresses the mRNA expression of HIF-1α target genes (VEGF, GLUT1, CXCR4, and CA9) under hypoxic conditions[1].
Steppogenin (0-3 μM, 16 h) suppresses HIF-1α protein levels, and inhibits protein levels of VEGF, CXCR4, and CA9[1].
Steppogenin (0-3 μM, 24 h) suppresses hypoxia-induced vascular EC proliferation and migration as well as VEGF-induced sprouting of EC spheroids[1].

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

RT-PCR[1]

Cell Line:	A549 cells
Concentration:	0, 0.3, 1, 3 μM
Incubation Time:	6 h
Result:	Suppressed the mRNA expression of HIF-1α target genes (VEGF, GLUT1, CXCR4, and CA9) under hypoxic conditions.

Western Blot Analysis[1]

Cell Line:	HEK293T, A549, ARPE19 cells
Concentration:	0, 0.3, 1, 3 μM
Incubation Time:	16 h
Result:	Significantly suppressed HIF-1α protein levels in a dose-dependent manner. reduced nuclear expression of HIF-1α under hypoxic conditions. Inhibited protein levels of VEGF, CXCR4, and CA9 compared with the levels detected in the vehicle control group.

	Suppresseed VEGF-induced DLL4 protein expression.

In Vivo

Steppogenin (2 mg/kg, IP, once) inhibits tumor growth and angiogenesis[1].

Steppogenin (2 mg/kg, IP, once) shows the highest distribution to the liver and spleen (25.5-fold and 9.74-fold AUC ratio, respectively) with significantly higher $T_{1/2}$[1].

Pharmacokinetic Parameters of Steppogenin in male C57BL/6 J mice[1].

	C_{max} (ng/mL)	T_{max} (h)	$T_{1/2}$ (h)	AUC_{8h} (ng/mL□h)	AUC_{∞} (ng/mL□h)	AUC ratio
Plasma	448 ± 113	0.25	0.49 ± 0.14	283 ± 98.9	284 ± 97.8	1
Tumor	635 ± 114	0.3 ± 0.1	1.87 ± 0.87	1078 ± 494	1252 ± 547	4.58
Liver	4319 ± 1063	0.25	1.72 ± 0.26	6733 ± 1300	6967 ± 1200	25.5
Lung	521 ± 181	0.25	0.36 ± 0.12	261 ± 96.1	280 ± 106	1.02
Heart	285 ± 15.2	0.25	0.2	107 ± 44.3	176.9	0.65
Kidney	1225 ± 463	0.25	0.33 ± 0.01	628 ± 234	624.7 ± 238	2.35
Spleen	6110 ± 2954	0.25	0.47 ± 0.01	2443 ± 1155	2663 ± 1289	9.74
Brain	309 ± 95.7	0.25	1.36 ± 0.46	191 ± 67	241 ± 75.4	0.88

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

Animal Model:	C57BL/6 J mice (6-week-old, male, Lewis lung carcinoma (LLC) allograft tumor model)[1]
Dosage:	2 mg/kg
Administration:	IP, once
Result:	Significantly suppressed tumor growth.

Animal Model:	C57BL/6 J mice (6-week-old, male, Lewis lung carcinoma (LLC) allograft tumor model)[1]
Dosage:	2 mg/kg
Administration:	IP, once (Pharmacokinetic Analysis)
Result:	Showed the highest distribution to the liver and spleen (25.5-fold and 9.74-fold AUC ratio, respectively) with significantly higher $T_{1/2}$. may not be accumulated even in the highly distributed tissues after the repeated administration of steppogenin.

REFERENCES

[1]. Cha S, et al. Steppogenin suppresses tumor growth and sprouting angiogenesis through inhibition of HIF-1α in tumors and DLL4 activity in the endothelium. Phytomedicine. 2023 Jan;108:154513.

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