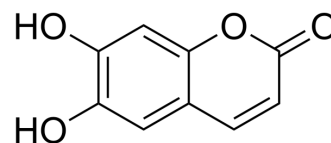


Esculetin

Cat. No.:	HY-N0284		
CAS No.:	305-01-1		
Molecular Formula:	C ₉ H ₆ O ₄		
Molecular Weight:	178.14		
Target:	PI3K; Akt		
Pathway:	PI3K/Akt/mTOR		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro	DMSO : 125 mg/mL (701.70 mM; Need ultrasonic)			
		Solvent Concentration	Mass	
			1 mg	5 mg
			10 mg	
Preparing Stock Solutions	1 mM	5.6136 mL	28.0678 mL	56.1356 mL
	5 mM	1.1227 mL	5.6136 mL	11.2271 mL
	10 mM	0.5614 mL	2.8068 mL	5.6136 mL
Please refer to the solubility information to select the appropriate solvent.				
In Vivo	<ol style="list-style-type: none"> Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.08 mg/mL (11.68 mM); Clear solution Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.08 mg/mL (11.68 mM); Clear solution Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.08 mg/mL (11.68 mM); Clear solution 			

BIOLOGICAL ACTIVITY

Description	Esculetin is an active ingredient extracted mainly from the bark of <i>Fraxinus rhynchophylla</i> . Esculetin inhibits platelet-derived growth factor (PDGF)-induced airway smooth muscle cells (ASMCs) phenotype switching through inhibition of PI3K/Akt pathway. Esculetin has antioxidant, antiinflammatory, and antitumor activities ^[1] .
IC ₅₀ & Target	PI3K
In Vitro	Esculetin (40 μM, 24 h or 48 h) inhibits PDGF-BB-induced ASMC proliferation and migration ^[1] .

Esculetin (40 μ M, 1 h) inhibits PDGF-BB-induced ECM secretion and activation of PI3K/Akt pathway in ASMC cells^[1].
Esculetin (100 μ M, 36 h) induces pancreatic cancer cell (such as PANC-1 cells) apoptosis and loss of mitochondrial membrane potential by activation of caspases 3, 8 and 9^[2].
Esculetin (100 μ M, 0-12 h) binds to KEAP1 and inhibits its interaction with Nrf2 in pancreatic cancer cells (in PANC-1 cells)^[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis^[2]

Cell Line:	PANC-1 cells
Concentration:	100 μ M
Incubation Time:	0-12 h
Result:	Increased the amount of phosphorylated form of Nrf2. Increased the levels of Nrf2 in nuclear. Decreased NF- κ B protein levels.

In Vivo

Esculetin (50 and 100 mg/kg/day, p.o., 7d) ameliorates skin lesion in Imiquimod (HY-B0180) (IMQ)-induced psoriatic mice^[3].
Esculetin (10 or 30 mg/kg, i.p., three times per week for 28 days) inhibits tumor growth and metastasis via Axin2 suppression in an HCT116-implanted orthotopic mouse model^[4].
Esculetin (oral gavage, 25 mg/kg for 35 days) inhibits acute restraint stress (ARS)-induced oxidative stress in mature adult mice by increasing antioxidant enzyme activities, the GSH/GSSG ratio, and cytochrome c oxidase activity in cortex^[5].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Imiquimod (HY-B0180) (IMQ)-induced psoriatic mice ^[3]
Dosage:	50 and 100 mg/kg/day
Administration:	p.o., 7d
Result:	Ameliorated the skin lesion and reduced the PASI score. Inhibited epidermal hyperplasia, and CD8 expression in the skin of psoriatic mice.

CUSTOMER VALIDATION

- Pharmacol Res. 2020 May;155:104751.
- Front Cell Dev Biol. 2021 Nov 10;9:763864.
- J Hepatocell Carcinoma. 2023 Apr 11;10:611-629.

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REFERENCES

- [1]. Arora R, et al. Esculetin induces antiproliferative and apoptotic response in pancreatic cancer cells by directly binding to KEAP1. Mol Cancer. 2016 Oct 18;15(1):64.
- [2]. Chen Y, et al. Esculetin Ameliorates Psoriasis-Like Skin Disease in Mice by Inducing CD4⁺Foxp3⁺ Regulatory T Cells. Front Immunol. 2018 Sep 12;9:2092.
- [3]. Kim WK, et al. Esculetin suppresses tumor growth and metastasis by targeting Axin2/E-cadherin axis in colorectal cancer. Biochem Pharmacol. 2018 Jun;152:71-83.
- [4]. Martín-Aragón S, et al. Age-dependent effects of esculetin on mood-related behavior and cognition from stressed mice are associated with restoring brain antioxidant status. Prog Neuropsychopharmacol Biol Psychiatry. 2016 Feb 4;65:1-16.

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

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