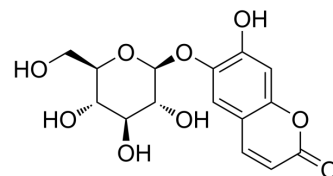


Esculin

Cat. No.:	HY-N0188		
CAS No.:	531-75-9		
Molecular Formula:	C ₁₅ H ₁₆ O ₉		
Molecular Weight:	340.28		
Target:	p38 MAPK		
Pathway:	MAPK/ERK Pathway		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (293.88 mM; Need ultrasonic)

Concentration	Solvent	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	2.9388 mL	14.6938 mL	29.3876 mL
	5 mM	0.5878 mL	2.9388 mL	5.8775 mL
	10 mM	0.2939 mL	1.4694 mL	2.9388 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 (7.35 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (7.35 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (7.35 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Esculin is a fluorescent coumarin glucoside, the active ingredient in ash bark. Esculin has antidiabetic effects, improves cognitive impairment in experimental diabetic nephropathy (DN) via the MAPK signaling pathway, and exerts antioxidant stress and anti-inflammatory effects. Esculin also has anticancer, antibacterial, antiviral, neuroprotective, antithrombotic, and therapeutic properties for eye diseases^{[1][2][3][4][5][6][7]}.

IC₅₀ & Target

p38 MAPK

In Vitro	<p>Esculin (100 μM; 2-8 h) has antiviral activity against White spot syndrome virus (WSSV) monomer in <i>Litopenaeus vannamei</i> larvae, with a safe concentration of 100 μM^[4].</p> <p>Esculin (200 μM, 400 μM, 600 μM; 4 h or 2 h) is a chemical protectant of red blood cells, protecting them from oxidative damage. Esculin inhibits the increase of markers of oxidative stress (such as protein and lipid oxidation) induced by Bioallethrin (HY-122376) (50-200 μM; 4 h or 2 h) in red blood cells and lymphocytes, and restores reduced free amino groups. The ratio of reduced glutathione to oxidized glutathione is also increased^[5].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Esculin (5, 10, and 20 mg/kg; Intragastric administration, once daily for 2 days) protects mice model of ethanol-induced gastric injury. Esculin inhibits NF-κB activation, thereby reducing the expression of iNOS, TNF-α and IL-6. Esculin reduces histopathological damage in a dose-dependent manner^[6].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Phytomedicine. 23 August 2021, 153687.
- Plant Methods. 2023 Nov 28;19(1):136.
- Plant Direct. 2022 Sep 2;6(9):e442.

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- [1]. Knox K, et al. The Coumarin Glucoside, Esculin, Reveals Rapid Changes in Phloem-Transport Velocity in Response to Environmental Cues. *Plant Physiol.* 2018 Oct;178(2):795-807.
- [2]. Song Y, et al. Esculin ameliorates cognitive impairment in experimental diabetic nephropathy and induces anti-oxidative stress and anti-inflammatory effects via the MAPK pathway. *Mol Med Rep.* 2018 May;17(5):7395-7402.
- [3]. Li CX, et al. *Phytother Res.* 2022 Jun;36(6):2434-2448.
- [4]. Li W, et al. Gastroprotective effect of esculin on ethanol-induced gastric lesion in mice. *Fundam Clin Pharmacol.* 2017 Apr;31(2):174-184.
- [5]. Arif A, et al. Esculin protects human blood cells from bioallethrin-induced toxicity: An ex vivo study. *Pestic Biochem Physiol.* 2023 Apr;191:105375.
- [6]. Shan LP, et al. Antiviral activity of esculin against white spot syndrome virus: A new starting point for prevention and control of white spot disease outbreaks in shrimp seedling culture. *J Fish Dis.* 2022 Jan;45(1):59-68.

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

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