Afzelin

Cat. No.: HY-N1441

CAS No.: 482-39-3

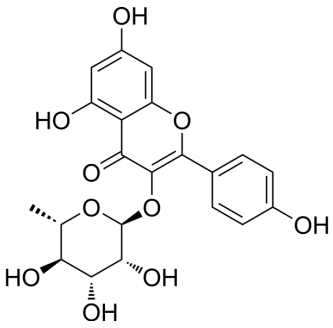
Molecular Formula: $C_{21}H_{20}O_{10}$

Molecular Weight: 432.38

Target: Mitochondrial Metabolism; PTEN; Autophagy; Bacterial

Pathway: Metabolic Enzyme/Protease; PI3K/Akt/mTOR; Autophagy; Anti-infection

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (289.10 mM; Need ultrasonic)
Ethanol : 12.5 mg/mL (28.91 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.3128 mL	11.5639 mL	23.1278 mL
5 mM	0.4626 mL	2.3128 mL	4.6256 mL
10 mM	0.2313 mL	1.1564 mL	2.3128 mL

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

In Vivo

1. Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.78 mM); Clear solution
2. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.78 mM); Clear solution
3. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.78 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Afzelin (Kaempferol-3-O-rhamnoside)It is a flavonol glycoside that has anti-inflammatory, anti-oxidative stress response, anti-apoptotic, and anti-cardiac cytotoxic effects. AfzelinIt can reduce mitochondrial damage, enhance mitochondrial biosynthesis, and reduce mitochondria-related proteins. Parkinand PTENinduced putative kinase 1 (putative kinase 1)s level. AfzelinCan be improved D-galactosamine(GalN)/LPSSurvival rate of mice treated with doxorubicin prophylaxis (HY-15142A)Induced cardiotoxicity and scopolamine (HY-N0296)-induced neurological injury. AfzelinAlso inhibits asthma and allergies caused by ovalbumin[1][2][3][4].

In Vitro

Afzelin (20-80 μM; 12 h) protects the viability of cardiomyocyte H9C2 cells and resists toxicity induced by DOX (1 μM; 12 h)[2].

The anti-cardiotoxic effect of Afzelin is inhibited by AMPKα. Agent Dorsomorphin to eliminate[2].

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

Cell Viability Assay[2]

Cell Line:	Cardiomyocyte H9C2 cells
Concentration:	20, 40, and 80 μM
Incubation Time:	12 h, 24 h
Result:	Was safe and non-toxic to H9C2 cells even under 80 μM concentration. Reversed the effect of DOX, sunch that decreased the cell survival rate, and elevated apoptotic rate, as well as induced the oxidative stress and mitochondrial dysfunction in H9C2 cells.

In Vivo

Afzelin (5, 10 mg/kg/day; po; 20 days) attenuates DOX toxicity-induced cardiac injury in a concentration-dependent manner. Afzelin exerts cardioprotective effects by upregulating p-AMP-activated protein kinase α (AMPKα) and Sirtuin1 (SIRT1) levels [2].

Afzelin (0.1-10 mg/kg/day; po; for 5 days) reduces the asthma phenotype by downregulating the GATA-binding protein 3 transcription factor (GATA3) in mouse models of asthma. Afzelin inhibits GATA3 and reduces Th2 cytokines, while GATA3 is the main regulator of Th2 cytokine differentiation and production[3].

Afzelin (100 ng/μL vis icv; 3 times a week for 1 month) ameliorates synaptic plasticity and cognitive/memory behaviors in mice given Scopolamine (HY-N0296)[4].

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

Animal Model:	C57BL/6 Mouse[2]
Dosage:	5 mg/kg/day, 10 mg/kg/day
Administration:	Oral gavage for 20 days, while C57BL/6 mouse were treated with 4 mg/kg/d (ip, injected at day 1, 7, 14) DXO for 3 doses.
Result:	Attenuated DOX-induced cardiac damage and reduced serum levels of alanine aminotransferase and pro-inflammatory cytokines. Also upregulated the expression of p-AMP-activated protein kinase α (AMPKα) and Sirtuin1 (SIRT1).

Animal Model:	Asthma murine model sensitized by ovalbumin (OVA)[3]
Dosage:	0.1, 1 and 10 mg/kg
Administration:	PO; once daily from day 19 to day 23
Result:	Suppressed eosinophil infiltration, allergic airway inflammation, airway hyperresponsiveness, OVA-specific IgE and Th2 cytokine secretion.

Animal Model:	Scopolamine induced mouse model[4]
Dosage:	100 ng/μL
Administration:	ICV, administered into the third ventricle of the hypothalamus; 3 time per week for 1 month
Result:	Resulted the restoration of the cholinergic systems and molecular signal transduction via

	CREB-BDNF pathways. Led to improved neurocognitive and neuroprotective effects on synaptic plasticity and behaviors partly through the increase in CREB-BDNF signaling.

CUSTOMER VALIDATION

- Aging (Albany NY). 2021 Nov 25;13(22):24753-24767.
- BMC Complement Med Ther. 2023 Oct 27;23(1):381.
- eNeuro. 2024 May 10:ENEURO.0021-24.2024.

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REFERENCES

[1]. Lee SB, et al. Afzelin ameliorates D-galactosamine and lipopolysaccharide-induced fulminant hepatic failure by modulating mitochondrial quality control and dynamics. Br J Pharmacol. 2017 Jan;174(2):195-209.

[2]. Oh SY, et al. Central administration of afzelin extracted from Ribes fasciculatum improves cognitive and memory function in a mouse model of dementia. Sci Rep. 2021 Apr 28;11(1):9182.

[3]. Zhou W, et al. Afzelin attenuates asthma phenotypes by downregulation of GATA3 in a murine model of asthma. Mol Med Rep. 2015 Jul;12(1):71-6.

[4]. Sun Y, et al. Afzelin protects against doxorubicin-induced cardiotoxicity by promoting the AMPKα/SIRT1 signaling pathway. Toxicol Appl Pharmacol. 2023 Oct 15;477:116687.

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