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Zuschläge

- Mindermengenzuschlag
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Isorhamnetin

Cat. No.: HY-N0776

CAS No.: 480-19-3

Molecular Formula: $C_{16}H_{12}O_7$

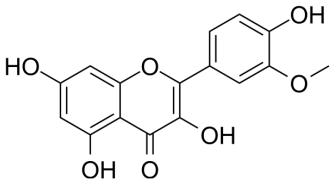
Molecular Weight: 316.26

Target: MEK; PI3K; Endogenous Metabolite

Pathway: MAPK/ERK Pathway; PI3K/Akt/mTOR; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	1 year
	-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (316.20 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1620 mL	15.8098 mL	31.6196 mL
5 mM	0.6324 mL	3.1620 mL	6.3239 mL
10 mM	0.3162 mL	1.5810 mL	3.1620 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.08 mg/mL (6.58 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Isorhamnetin is a flavonoid compound extracted from the Chinese herb Hippophae rhamnoides L.. Isorhamnetin suppresses skin cancer through direct inhibition of MEK1 and PI3K.

IC_{50} & Target			
	MEK1	PI3-K	Human Endogenous Metabolite

In Vitro

Isorhamnetin is a plant flavonoid that occurs in fruits and medicinal herbs. Isorhamnetin binds directly to MEK1 in an ATP-noncompetitive manner and to PI3-K in an ATP-competitive manner. In vitro and ex vivo kinase assay data show that Isorhamnetin inhibits the kinase activity of MAP/ERK kinase (MEK) 1 and PI3-K and the inhibition is due to direct binding with Isorhamnetin[1]. Isorhamnetin inhibits the Akt/mTOR and MEK/ERK signaling pathways, and promotes the activity of the mitochondrial apoptosis signaling pathway. The inhibitory effects of Isorhamnetin on breast cancer cells are determined using the CCK-8 method. Isorhamnetin inhibits the proliferation of numerous breast cancer cells (IC_{50}, ~10 μM), including MCF7, T47D, BT474, BT-549, MDA-MB-231 and MDA-MB-468, whereas less inhibitory activity is observed in the MCF10A

	normal breast epithelial cell line (IC_{50}, 38 μM)[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Photographic data shows that Isorhamnetin treatment suppresses tumor development in mice. The average volume of tumors in untreated mice increases over time and reaches a volume of 623 mm^3 at 4 weeks post-inoculation; however, at this time, in mice treated with 1 or 5 mg/kg Isorhamnetin, the average tumor volume is only 280 or 198 mm^3, respectively. At the end of the study, Isorhamnetin treatment (1 or 5 mg/kg) reduces tumor weight compared with the untreated control group[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	MCF7, T47D, BT474, BT-549, MDA-MB-231 and MDA-MB-468 breast cancer cell lines, as well as a MCF10A normal breast epithelial cell line (control) are seeded into 96-well plates at a density of $5×10^3$ cells/well in 100 μL DMEM and placed in cell incubator for 12 h at 37°C in an atmosphere containing 5% CO_2. The cells are then treated with various concentrations of Isorhamnetin (100, 33.3, 11.1, 3.7, 1.2, 0.4 and 0 μM) for 48 h, and cell proliferation rates are determined by adding 10 μL CCK-8 solution prior to incubation at 37°C for 2 h. The absorbance is measured at a wavelength of 450 nm using a SpectraMax 190 Microplate Reader. For each assay, four parallel wells are included, and the half maximal inhibitory concentration (IC_{50}) is measured using the inhibition curve and presented as the mean of three independent experiments[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Mice[1] Female athymic nude mice are injected subcutaneously in the flank with A431 cells ($1×10^6$ cells in 50 μL of medium and 50 μL of Matrigel). Cells are allowed to form tumors, and once the tumors reach a size of 40 mm^3, the mice are randomly assigned into groups (6 mice/group) and treated with (1 or 5 mg/kg body weight) or without Isorhamnetin in 40% DMSO/PBS buffer, administered intraperitoneally every other day for 28 days. Tumor size is measured every week with calipers, and the tumor volume is calculated. Mice are sacrificed after 28 days of treatment when the control tumors reach approximately 600 mm^3. The tumors are harvested, photographed, and weighed. Tumor tissues are used for western blot analysis and immunohistochemical analysis. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Acta Pharm Sin B. 2021 Jan;11(1):143-155.
- Food Chem. 2022: 134807.
- Sci Rep. 2023 Aug 3;13(1):12607.
- Invest Ophthalmol Vis Sci. 2021 Mar 1;62(3):38.
- BMC Complement Med Ther. 2023 Dec 1;23(1):433.

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REFERENCES

[1]. Kim JE, et al. Isorhamnetin suppresses skin cancer through direct inhibition of MEK1 and PI3-K. Cancer Prev Res (Phila). 2011 Apr;4(4):582-91.

[2]. Hu S, et al. Isorhamnetin inhibits cell proliferation and induces apoptosis in breast cancer via Akt and mitogen activated protein kinase kinase signaling pathways. Mol

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