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Zuschläge

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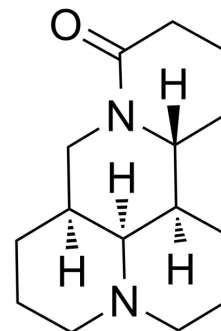
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Matrine

Cat. No.:	HY-N0164		
CAS No.:	519-02-8		
Molecular Formula:	C ₁₅ H ₂₄ N ₂ O		
Molecular Weight:	248.36		
Target:	Opioid Receptor; Autophagy; Mitophagy; Ferroptosis; Apoptosis; PINK1/Parkin		
Pathway:	GPCR/G Protein; Neuronal Signaling; Autophagy; Apoptosis		
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 : ≥ 50 mg/mL (201.32 mM)
 H₂O : 20 mg/mL (80.53 mM; Need ultrasonic)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	4.0264 mL	20.1321 mL	40.2641 mL
	5 mM	0.8053 mL	4.0264 mL	8.0528 mL
	10 mM	0.4026 mL	2.0132 mL	4.0264 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 37.5 mg/mL (150.99 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (10.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (10.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (10.07 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Matrine (Matridin-15-one) is an alkaloid found in plants from the Sophora genus that can act as a kappa opioid receptor and u-receptor agonist. Matrine has a variety of pharmacological effects, including anti-cancer, anti-oxidative stress, anti-inflammation and anti-apoptosis effects. Matrine is potential in the research of disease like human non-small cell lung

cancer, hepatoma, papillary thyroid cancer and acute kidney injury (AKI)^{[1][2][3][4][5]}.

IC₅₀ & Target

κ Opioid Receptor/KOR

μ Opioid Receptor/MOR

In Vitro

Matrine (0-1.5 mg/mL, 24-72 h) inhibits the growth of A549 and SMMC-7721 cells^[1].

Matrine (25 μg/mL, 6 h) suppresses migration of A549 cells^[1].

Matrine (0-1 mg/mL, 48 h) induces apoptosis by reducing the Bcl-2/Bax protein ratios in A549 and SMMC-7721 cells^[1].

Matrine (0-1 mg/mL, 48 h) inhibits miR-182-5p expression and induces the apoptosis of PTC cells^[2].

Matrine (10 μM, 48 h) inhibits cisplatin-induced oxidative injury and inflammation in HK2 cells by reducing ROS level and pro-inflammatory cytokines including IL-1β, IL-6 and TNF-α^[4].

Matrine (10 μM, 48 h) reverses mitochondrial function in cisplatin-induced HK2 cells by activating the SIRT3/OPA1 pathway^[4].

Matrine (0-20 nM, 12 h) promotes HepG2 cell apoptosis by inhibiting mitophagy and PINK1/Parkin pathways^[5].

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

Cell Viability Assay^[1]

Cell Line:

A549, SMMC-7721 cells

Concentration:

0-500 μg/mL for A549 cells, 0-1.5 mg/mL for SMMC-7721 cells

Incubation Time:

24-72 h

Result:

Inhibited the growth of A549 and SMMC-7721 cells.

Western Blot Analysis^[1]

Cell Line:

A549, SMMC-7721 cells

Concentration:

100-250 μg/mL for A549 cells, 0.5-1 mg/mL for SMMC-7721 cells

Incubation Time:

24 h

Result:

Down-regulated the expression of anti-apoptotic protein (Bcl-2) and up-regulated the level of pro-apoptotic protein (bax).

Immunofluorescence^[4]

Cell Line:

HK2 cells

Concentration:

10 μM

Incubation Time:

48 h

Result:

Increased SIRT3 expression reduced under cisplatin stimuli.

In Vivo

Matrine (Intragastric administration, 40 and 80 mg/kg for 16 consecutive days, xenograft male C57BL/6mice model) inhibits tumors growth and metastasis without affecting the body weight^[3].

Matrine (Intraperitoneal injections, 5 mg/kg, daily for four continuous days) attenuates renal injury and apoptosis in cisplatin-induced AKI mice, as well as reducing inflammatory responses and activating SIRT3/OPA1 axis and rescues renal mitochondrial dysfunction^[4].

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

Animal Model:

Xenograft male C57BL/6mice model (LLC cells)^[3]

Dosage:

40 and 80 mg/kg for 16 consecutive days

Administration:	Intragastric administration
Result:	Inhibited tumors growth. Decreased the ratio of CD206 ⁺ /F4/80 ⁺ , promoted the expression of CD4 ⁺ and CD8 ⁺ T cells, and inhibited the expression of Th2 in tumor and spleen tissues.
Animal Model:	Cisplatin-induced acute kidney injury (AKI) mice model ^[4]
Dosage:	5 mg/kg daily for 4 days
Administration:	Intraperitoneal injections
Result:	Attenuated tubular injury observed in AKI mice, including renal tubular necrosis, formation of tubular casts, cytoplasmic vacuoles and renal infiltration of inflammatory cells in mice. Decreased serum levels of TNF- α and IL-6 and the phosphorylation of NF- κ B, activated SIRT3/OPA1 axis and improved mitochondrial function.

CUSTOMER VALIDATION

- Biomed Pharmacother. 2020 Aug;128:110327.
- J Ethnopharmacol. 2021 Nov 2;114796.
- J Cell Mol Med. 2022 Jul;26(13):3702-3715.
- Am J Cancer Res. 2021 Sep 15;11(9):4308-4328.
- Chin Med. 2022 Feb 18;17(1):23.

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REFERENCES

- [1]. Ying Zhang, et al. Effects of matrine against the growth of human lung cancer and hepatoma cells as well as lung cancer cell migration. Cytotechnology. 2009 Apr;59(3):191-200.
- [2]. Songbo Fu, et al. Matrine induces papillary thyroid cancer cell apoptosis in vitro and suppresses tumor growth in vivo by downregulating miR-182-5p. Biomed Pharmacother. 2020 Aug;128:110327.
- [3]. Bei Zhao, et al. Matrine suppresses lung cancer metastasis via targeting M2-like tumour-associated-macrophages polarization. Am J Cancer Res. 2021 Sep 15;11(9):4308-4328.
- [4]. Lu Yuan, et al. Matrine alleviates cisplatin-induced acute kidney injury by inhibiting mitochondrial dysfunction and inflammation via SIRT3/OPA1 pathway. J Cell Mol Med v.26(13); 2022 Jul.
- [5]. Runjie Wei, et al. Matrine promotes liver cancer cell apoptosis by inhibiting mitophagy and PINK1/Parkin pathways. Cell Stress Chaperones. 2018 Nov;23(6):1295-1309.

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

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