Matrine

Cat. No.: HY-N0164

CAS No.: 519-02-8

Molecular Formula: $C_{15}H_{24}N_2O$

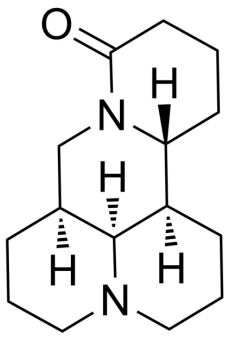
Molecular Weight: 248.36

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)

H_2O : 20 mg/mL (80.53 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	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

1. Add each solvent one by one: PBS
   Solubility: 37.5 mg/mL (150.99 mM); Clear solution; Need ultrasonic
2. 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
3. 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
4. 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].
IC_{50} & 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 infiltrationof inflammatory cells in mice. Decreased serum levels of TNF-a and IL-6 and the phosphorylation of NF-κB, 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.

See more customer validations on www.MedChemExpress.com

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.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA