Scutellarin

Cat. No.: HY-N0751

CAS No.: 27740-01-8

Molecular Formula: $C_{21}H_{18}O_{12}$

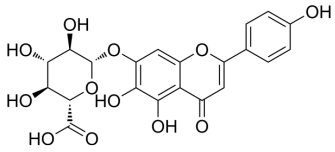
Molecular Weight: 462.36

Target: STAT; Akt; HIV

Pathway: JAK/STAT Signaling; Stem Cell/Wnt; PI3K/Akt/mTOR; Anti-infection

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 (216.28 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.1628 mL	10.8141 mL	21.6282 mL
	5 mM	0.4326 mL	2.1628 mL	4.3256 mL
	10 mM	0.2163 mL	1.0814 mL	2.1628 mL

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

In Vivo

1. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 10 mg/mL (21.63 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 15% Cremophor EL >> 85% Saline
   Solubility: 5 mg/mL (10.81 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Scutellarin, an active flavone isolated from Scutellaria baicalensis, can down-regulates the STAT3/Girdin/Akt signaling in HCC cells, and inhibits RANKL-mediated MAPK and NF-κB signaling pathway in osteoclasts. Scutellarin is active against HIV-1IIIB, HIV-1(74V) and HIV-1KM018 with EC_{50}s of 26 μM, 253 μM and 136 μM, respectively.

IC_{50} & Target		
	STAT3	HIV-1

In Vitro

Scutellarin treatment significantly reduces HepG2 cell viability in a dose-dependent manner, and inhibits migration and invasion of HCC cells in vitro. Scutellarin treatment significantly reduces STAT3 and Girders of actin filaments (Girdin) expression, STAT3 and Akt phosphorylation in HCC cells. Introduction of STAT3 overexpression restores the scutellarin-downregulated Girdin expression, Akt activation, migration and invasion of HCC cells. Furthermore, induction of Girdin

	overexpression completely abrogates the inhibition of scutellarin on the Akt phosphorylation, migration and invasion of HCC cells. Scutellarin can inhibit HCC cell metastasis in vivo, and migration and invasion in vitro by down-regulating the STAT3/Girdin/Akt signaling[1]. Scutellarin selectively enhances Akt phosphorylation[2]. Scutellarin is a putative therapeutic agent as it has been found to not only suppress microglial activation thus ameliorating neuroinflammation, but also enhance astrocytic reaction. Acutellarin amplifies the astrocytic reaction by upregulating the expression of neurotrophic factors among others thus indicating its neuroprotective role. Remarkably, the effects of scutellarin on reactive astrocytes are mediated by activated microglia supporting a functional "cross-talk" between the two glial types[3]. Scutellarin can suppress RANKL-mediated osteoclastogenesis, the function of osteoclast bone resorption, and the expression levels of osteoclast-specific genes (tartrate-resistant acid phosphatase (TRAP), cathepsin K, c-Fos, NFATc1). Further investigation indicates that Scutellarin can inhibit RANKL-mediated MAPK and NF-κB signaling pathway, including JNK1/2, p38, ERK1/2, and IκBα phosphorylation[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Scutellarin (50 mg/kg/day) significantly mitigates the lung and intrahepatic metastasis of HCC tumors in vivo. The numbers of the lung and intrahepatic metastatic tumors in the scutellarin-treated group are significantly less than that in the controls [1]. The rats treated with Scutellarin display a significant alleviation in neurobehavioral deficits compared to the SAH group. Scutellarin enhanced eNOS expression compared with SAH rats[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	HepG2 cells (1×10^5/well) are cultured in 96-well plates and treated in triplicate with scutellarin at concentrations of 5, 10, 20, 30, and 100 μM or vehicle alone for 24 h. The cellular viability is tested by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay, and is expressed as a percentage of proliferation versus controls. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	To establish an orthotopic liver xenograft model, individual mice are anesthetized with isoflurane and a small incision is made in their abdomen. Individual mice are injected with 2×10^6 SK-Hep1 cells in 30 μL Matrigel into their left lobe of the liver. Twenty-four hours after orthotopic liver implantation, the mice are randomized and injected intraperitoneally with scutellarin (50 mg/kg/day) or vehicle (0.9% NaCl, normal saline) daily for 35 consecutive days (n=10 per group). Subsequently, the mice are sacrificed, and their lungs and livers are excised, fixed in 10% buffered formalin and paraffin-embedded for hematoxylin and eosin staining. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Death Dis. 2020 Nov 13;11(11):978.
- Phytother Res. 2021 Dec 2.
- Inflammation. 2024 Jan 2.
- Bioengineered. 2022 Jan;13(1):1013-1024.
- Cell Biol Int. 2022 Jun 28.

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REFERENCES

[1]. Ke Y, et al. Scutellarin suppresses migration and invasion of human hepatocellular carcinoma by inhibiting the STAT3/Girdin/Akt activity. Biochem Biophys Res

Commun. 2016 Dec 18. pii: S0006-291X(16)32174-X

[2]. Yang LL, et al. Differential regulation of baicalin and scutellarin on AMPK and Akt in promoting adipose cell glucose disposal. Biochim Biophys Acta. 2016 Nov 27;1863(2):598-606.

[3]. Wu CY, et al. Scutellarin attenuates microglia-mediated neuroinflammation and promotes astrogliosis in cerebral ischemia - a therapeutic consideration. Curr Med Chem. 2016 Nov 18. [Epub ahead of print]

[4]. Li Q, et al. Scutellarin attenuates vasospasm through the Erk5-KLF2-eNOS pathway after subarachnoid hemorrhage in rats. J Clin Neurosci. 2016 Dec;34:264-270

[5]. Zhao S, et al. Scutellarin inhibits RANKL-mediated osteoclastogenesis and titanium particle-induced osteolysis via suppression of NF-κB and MAPK signaling pathway. Int Immunopharmacol. 2016 Nov;40:458-465

[6]. Zhang GH, et al. The anti-HIV-1 effect of scutellarin. Biochem Biophys Res Commun. 2005 Sep 2;334(3):812-6.

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