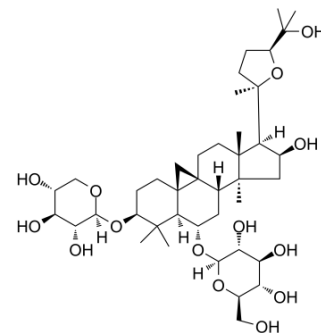


Astragaloside IV

Cat. No.:	HY-N0431		
CAS No.:	84687-43-4		
Molecular Formula:	C ₄₁ H ₆₈ O ₁₄		
Molecular Weight:	784.97		
Target:	MMP; ERK; JNK		
Pathway:	Metabolic Enzyme/Protease; MAPK/ERK Pathway; Stem Cell/Wnt		
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 : ≥ 100 mg/mL (127.39 mM)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	1.2739 mL	6.3697 mL	12.7393 mL
	5 mM	0.2548 mL	1.2739 mL	2.5479 mL
	10 mM	0.1274 mL	0.6370 mL	1.2739 mL

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

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
 Solubility: 2.5 mg/mL (3.18 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
 Solubility: ≥ 2.5 mg/mL (3.18 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
 Solubility: ≥ 2.5 mg/mL (3.18 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Astragaloside IV, an active component isolated from *Astragalus membranaceus*, suppresses the activation of ERK1/2 and JNK, and downregulates matrix metalloproteases (MMP)-2, (MMP)-9 in MDA-MB-231 breast cancer cells.

IC₅₀ & Target

MMP-2	MMP-9	ERK1	ERK2
JNK			

In Vitro	<p>Astragaloside IV (10, 20, 40 ng/mL) inhibits NSCLC cell growth, whereas low concentrations of astragaloside IV (1, 2.5, 5 ng/mL) has no obvious cytotoxicity on cell viability. Moreover, combined treatment with astragaloside IV significantly increases chemosensitivity to cisplatin in NSCLC cells. On the molecular level, astragaloside IV co-treatment significantly inhibits the mRNA and protein levels of B7-H3 in the presence of cisplatin^[2]. Astragaloside IV inhibits the viability and invasive potential of MDA-MB-231 breast cancer cells, suppresses the activation of the mitogen activated protein kinase (MAPK) family members ERK1/2 and JNK, and downregulates matrix metalloproteases (MMP)-2 and -9^[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Astragaloside IV (10, 20 mg/kg, p.o.) exhibits a potent ability to prevent cognitive deficits induced by transient cerebral ischemia and reperfusion. Astragaloside IV (10 mg/kg) and Astragaloside IV (20 mg/kg) can significantly decrease the levels of these cytokines compared to the Model group. Astragaloside IV significantly inhibits the level of TLR4 and its downstream proteins, suggesting that both MyD88-dependent and -independent pathways play important roles in the anti-inflammatory effects of Astragaloside IV. Astragaloside IV attenuates NLRP3 and cleaved-caspase-1 expression, and reduces Iba1 protein expression^[1]. In the mice model, the high-dose astragaloside IV group has a significant increase in the 48-hour survival rate [60% (9/15) vs 13.3% (2/15), $P < 0.05$], significant reductions in the serum ALT and AST levels ($P < 0.01$), and significant reductions in liver histopathological indices and the degree of apoptosis of hepatocytes ($P < 0.01$), as well as a significant reduction in the content of MDA in liver homogenate ($P < 0.01$) and a significant increase in the activity of SOD^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

PROTOCOL

Kinase Assay ^[4]	<p>Briefly, MDA-MB-231 cells treated as indicated or tumor tissues are harvested and lysed in Mg²⁺ lysis buffer containing 50 mM Tris (pH 7.5), 10 mM MgCl₂, 0.5 M NaCl, and protease inhibitor cocktail. Equal amounts of lysates are incubated with PAK-PBD beads at 4°C for 1 h. PAK-PBD beads are pelleted by centrifugation and washed with lysis buffer containing 25 mM Tris (pH 7.5), 30 mM MgCl₂, 40 mM NaCl. Active Rac1 is detected by western blotting. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
Cell Assay ^[2]	<p>Cell viability is determined by CCK-8 assay. To be brief, cultured NSCLC cells are seeded into 96-well plates at the density of 4×10⁴ (cells/well). Then 10 μL/well CCK8 solution is added and incubated in dark at 37°C for another 2 h. The absorbance is determined with the wavelength of 490 nm. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
Animal Administration ^[1]	<p>Transient cerebral ischemia and reperfusion is prepared by BCCAO, as BCCAO is considered an ideal model to study transient cerebral ischemia and reperfusion injury-mediated inflammatory response. Mice are randomly divided into the Sham, Model, Astragaloside IV (10 mg/kg) and Astragaloside IV (20 mg/kg) treatment groups. The Astragaloside IV treatment groups are intragastrically administered 7 days before the surgery and terminated on the day of sacrifice. On the day of the surgery, Astragaloside IV is administered 2 h prior to ischemia. The Sham-operated and Model groups are treated with distilled water. After the mice are anesthetized with an intraperitoneal injection of chloral hydrate (350 mg/kg), the bilateral common carotid arteries are exposed and carefully separated with a small ventral neck incision and occluded twice (20 min each) with ligated surgical silk as described previously with minor modifications. There is a 10 min reperfusion period between the two occlusion periods (ischemia 20 min – reperfusion 10 min – ischemia 20 min). Sham-operated mice are subjected to the same surgical operation without the surgical silk ligation. Mouse body temperature is maintained at 37±0.5°C during the surgery with heating equipment until recovery from the anesthesia. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Front Pharmacol. 2018 Apr 16;9:345.
- Int Immunopharmacol. 2020 Nov 10;107:169.

- Eur J Pharmacol. 2020 Oct 15;885:173399.
- Exp Ther Med. 2019 Oct;18(4):2877-2884.

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REFERENCES

- [1]. Li M, et al. Astragaloside IV attenuates cognitive impairments induced by transient cerebral ischemia and reperfusion in mice via anti-inflammatory mechanisms. *Neurosci Lett*. 2016 Dec 20. pii: S0304-3940(16)30994-
- [2]. He CS, et al. Astragaloside IV Enhances Cisplatin Chemosensitivity in Non-Small Cell Lung Cancer Cells Through Inhibition of B7-H3. *Cell Physiol Biochem*. 2016;40(5):1221-1229. Epub 2016 Dec 14.
- [3]. Liu L, et al. [Protective effect of astragaloside IV against acute liver failure in experimental mice]. *Zhonghua Gan Zang Bing Za Zhi*. 2016 Oct 20;24(10):772-777
- [4]. Jiang K, et al. Astragaloside IV inhibits breast cancer cell invasion by suppressing Vav3 mediated Rac1/MAPK signaling. *Int Immunopharmacol*. 2016 Dec 5;42:195-20
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Caution: Product has not been fully validated for medical applications. For research use only.

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