Jujuboside A

Cat. No.: HY-N0659

CAS No.: 55466-04-1

Molecular Formula: $C_{58}H_{94}O_{26}$

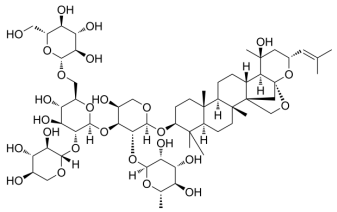
Molecular Weight: 1207.35

Target: GABA Receptor

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (82.83 mM; Need ultrasonic)

H_2O : 50 mg/mL (41.41 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.8283 mL	4.1413 mL	8.2826 mL
5 mM	0.1657 mL	0.8283 mL	1.6565 mL
10 mM	0.0828 mL	0.4141 mL	0.8283 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (41.41 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 (2.07 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (2.07 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (2.07 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Jujuboside A is a glycoside extracted from Semen Ziziphi Spinosae, a Chinese herbal medicine used to treat insomnia and anxiety.

IC_{50} & Target

GABA Receptor, mTOR, PI3K, Akt[1][2]

In Vitro	Jujuboside A at the low dose of 41 μM (about 0.05 g/L) induces significant increase of GABA(A) receptor α1, α5, β2 subunit mRNAs in both 24 and 72h treatments. Jujuboside A at the high dose of 82 μM (about 0.1 g/L) significantly increases GABA(A) receptor α1, α5 subunit mRNA levels and decreases β2 subunit mRNA level at 24h treatment, and decreases GABA(A) receptor subunit α1, β2 mRNAs expression at 72h treatment[1]. Jujuboside A pretreatment could reverse the reduction of cell viability and better the injury of H9C2 cells induced by ISO. Jujuboside A could accelerate the phosphorylation of PI3K, Akt, and mTOR. Jujuboside A could significantly decrease the ratio of microtubule-associated protein LC3-II/I in H9C2 cells[2] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	During daytime (9:00-15:00), jujubosides significantly increases the total sleep and rapid eye movement (REM) sleep without significant influence on non-REM (NREM) sleep. During nighttime (21:00-3:00), jujubosides significantly increases the total sleep and NREM sleep especially the light sleep while shows no significant effect on REM sleep and slow wave sleep (SWS)[3]. Intracerebroventricular treatment with Jujuboside A significantly mitigates learning and memory impairment in mice induced by Aβ1–42 as measured by the Y-maze, active avoidance and Morris water maze. Intracerebroventricular treatment with Jujuboside A reduces the level of Aβ1–42 in hippocampus, significantly inhibits the activities of acetylcholinesterase (AChE) and NO, and decreases the amount of the increased malondialdehyde (MDA) in the hippocampus and cerebral cortex of mice treated with intracerebroventricular injection of Aβ1–42[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	After 7 days in culture in vitro, cells are exposed continuously for the next 24 or 72 h to the culture medium with either Jujuboside A or diazepam, or neither of them. Vehicle is added for the control group; 10 μM diazepam is added for the diazepam group; Jujuboside A 82 μM (about 0.1 g/L) and 41 μM (about 0.05 g/L) are added for the JuA-H (high dose Jujuboside A) and the JuA-L (low dose Jujuboside A) groups respectively. Total RNA is isolated from cells for further analysis [1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Mice: Cognitive impairment of mice is induced by ICV injection of Aβ1-42. Then mice are given intracerebroventricular (ICV) injection of Jujuboside A (0.02 and 0.2 mg/kg) for five consecutive days. Y-maze, active avoidance and Morris water maze tests are performed on mice[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Med Oncol. 2022 Dec 28;40(1):64.
- Research Square Preprint. 2021 Nov.

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REFERENCES

[1]. You ZL, et al. Effects on the expression of GABAA receptor subunits by jujuboside A treatment in rathippocampal neurons. J Ethnopharmacol. 2010 Mar 24;128(2):419-23.

[2]. Han D, et al. Jujuboside A Protects H9C2 Cells from Isoproterenol-Induced Injury via Activating PI3K/Akt/mTOR Signaling Pathway. Evid Based Complement Alternat Med. 2016;2016:9593716.

[3]. Cao JX, et al. Hypnotic effect of jujubosides from Semen Ziziphi Spinosae. J Ethnopharmacol. 2010 Jul 6;130(1):163-6.

[4]. Liu Z, et al. Jujuboside A, a neuroprotective agent from semen Ziziphi Spinosae ameliorates behavioral disorders of the dementia mouse model induced by Aβ 1-42. Eur J Pharmacol. 2014 Sep 5;738:206-13.

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