Leonurine

Cat. No.: HY-N0741

CAS No.: 24697-74-3

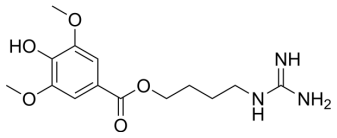
Molecular Formula: $C_{14}H_{21}N_3O_5$

Molecular Weight: 311.33

Target: Autophagy

Pathway: Autophagy

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 30.3 mg/mL (97.32 mM; ultrasonic and adjust pH to 3 with 1 M HCL)
H_2O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.2120 mL	16.0601 mL	32.1203 mL
5 mM	0.6424 mL	3.2120 mL	6.4241 mL
10 mM	0.3212 mL	1.6060 mL	3.2120 mL

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

BIOLOGICAL ACTIVITY

Description

Leonurine is an alkaloid isolated from Leonurus artemisia, with anti-oxidative and anti-inflammatory.

In Vitro

Leonurine (0, 5, 10, 20, 40, 80 μM) causes diminution in lipid accumulation, cellular cholesterol content, including total cholesterol (TC), free cholesterol (FC) and cholesteryl ester (CE), and increase in apoA-I- or HDL-mediated cholesterol efflux after treatment for 24 h. Leonurine also significantly and dose-dependently increases the expressions of ABCA1 and ABCG1 at the mRNA and protein levels in human THP-1 macrophages, and such effect is involved in PPARγ[1]. Leonurine hydrochloride (LH) shows protective effect on cell viability of HepG2 and HL-7702 cells incubated with palmitic acid (PA) of free fatty acid (FFA) for 24 h. Leonurine hydrochloride (125, 250, 500 μM) improves cellular lipid accumulation in HepG2 and HL-7702 cells via activating AMPK/SREBP1 pathway[2]. Leonurine (5, 10, 20 μM) inhibits the expression of iNOS, COX-2, PGE2, NO, TNF-α, and IL-6 in IL-1β-induced human chondrocytes, suppresses ECM degradation in human OA chondrocytes, and blocks IL-1β-induced PI3K and Akt phosphorylation in a dose-dependent manner[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Leonurine (10 mg/kg/d, p.o.) significantly increases the expressions of PPARγ, LXRα, ABCA1 and ABCG1, and decreases both TG and TC levels in serum of mice[1]. Leonurine hydrochloride (50, 100, 200 mg/kg) improves intracellular lipid accumulation via activating AMPK/SREBP1 pathway, enhances biochemical parameters, reduces hepatic lipoperoxide and increases

antioxidant levels in mice[2]. Leonurine (20 mg/kg, p.o.) ameliorates osteoarthritis development in mouse DMM model[3].

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

PROTOCOL

Cell Assay [2]

MTT assay is performed to study the cytotoxic effects of Leonurinein HepG2 and HL-7702 cells. Briefly, HepG2 and HL-7702 cells are seeded for 24 h at the density of 3×10^4 cells/well in 96-well plates. After 24 h incubation, cells are treated with different concentrations of Leonurine (0-1000 μM) and the control group is treated with only DMEM for 24 h at 37°C in 5% CO_2 incubator. Then, these cells are treated with MTT solution (5 mg/mL) for further 4 h. After 4 h incubation, DMEM containing MTT solution is discarded. Cells are then dissolved by adding DMSO (200 μL) to each well and the solutions are mixed thoroughly for 5 min. Finally, the absorbance is determined at 570 nm with a microplate reader[2].

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Animal Administration [1]

Mice[1]

$ApoE^{-/-}$ mice (male, eight-week old) are fed a chow diet for 2 weeks, $apoE^{-/-}$ mice are randomly divided into several groups (n=15/group). Mice in the Leonurine group are intragastrically administered with Leonurine (10 mg/kg/d) every day and continued for 8 weeks. The control group is fed with an equal volume of PBS. At week 16, mice are euthanized, followed by collecting the blood and tissue samples for further analyses[1].

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

CUSTOMER VALIDATION

- Exp Cell Res. 2023 Mar 16;113556.
- Neuropsychiatr Dis Treat. 2023 Jun 1.
- Biochem Biophys Res Commun. 2023 Dec 12, 149375.
- Med Sci Monit. 2020 Apr 14;26:e922149.
- Reprod Domest Anim. 2024 Mar 05.

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REFERENCES

[1]. Jiang T, et al. Leonurine Prevents Atherosclerosis Via Promoting the Expression of ABCA1 and ABCG1 in a Pparγ/Lxrα Signaling Pathway-Dependent Manner. Cell Physiol Biochem. 2017;43(4):1703-1717.

[2]. Zhang L, et al. Novel hepatoprotective role of Leonurine hydrochloride against experimental non-alcoholic steatohepatitis mediated via AMPK/SREBP1 signaling pathway. Biomed Pharmacother. 2018 Dec 7;110:571-581.

[3]. Hu ZC, et al. Inhibition of PI3K/Akt/NF-κB signaling with leonurine for ameliorating the progression of osteoarthritis: In vitro and in vivo studies. J Cell Physiol. 2018 Nov 11.

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