

Product Data Sheet

Product Name: Salidroside

Cat. No.: GN10127

Chemical Properties

Cas. No. 10338-51-9

Chemical Name (2R,3S,4S,5R,6R)-2-(hydroxymethyl)-6-[2-(4-hydroxyphenyl)ethoxy]oxane-3,4,5-triol

SMILES C1=CC(=CC=C1CCOC2C(C(C(C(O2)CO)O)O)O)O

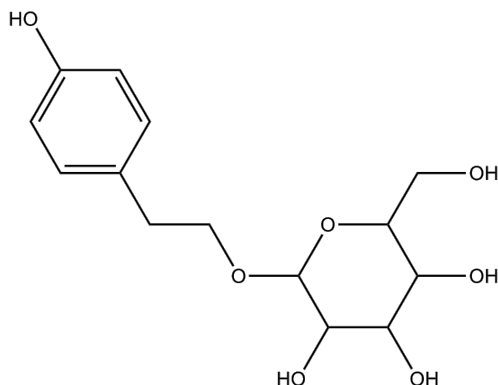
Formula $C_{14}H_{20}O_7$ M.Wt 300.3

Solubility $\geq 30\text{mg/mL}$ in DMSO, $\geq 100\text{ mg/mL}$ in Water. Measured Storage 4°C , protect from light

General tips For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines MN9D cells

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method MN9D cells were cultured in RPMI medium with 10% FBS in a humidified atmosphere incubator of 5% CO₂ at 37°C. The cells were pretreated with Salidroside (10, 25, and 50 µM) for 24 h and incubated with 200 µM of MPP⁺ for an additional 24 h based on a previous dose-effect study

Reaction Conditions 0, 25, 50 µM; 24 h

Applications 200 µM of MPP⁺ remarkably reduced the cell viability, and Salidroside (10, 25, and 50 µM) markedly prevented the cell toxicity induced by MPP⁺.

Animal experiment [2]:

Animal models BABL/c and C57BL/6 mice

Preparation Method BABL/c mice were inoculated with CT-26 cells (1.0×10⁶/100 µL), while C57BL/6 mice with LLC cells (7×10⁵/100 µL), both of them were injected s.c. into the right flank. Nine days after inoculation, tumours were palpable (about 5 mm in diameter) in BABL/c and C57BL/6 mice, respectively. Treatments were given i.p. with the control group, salidroside (60 mg/kg/day), and salidroside (120 mg/kg/day) for 25 days in BABL/c tumour model, while for 20 days in C57BL/6 model.

Dosage form 60 mg/kg/day、 120 mg/kg/day; i.p.

Applications salidroside had an effective anti-cachexia activity in CAC models in vivo, including increasing quality of life and prolonging survival time.

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References:

- [1] Li R, et al. Salidroside Protects Dopaminergic Neurons by Enhancing PINK1/Parkin-Mediated Mitophagy. *Oxid Med Cell Longev*. 2019 Sep 10; 2019: 9341018.
- [2] Chen X, et al. Salidroside alleviates cachexia symptoms in mouse models of cancer cachexia via activating mTOR signalling. *J Cachexia Sarcopenia Muscle*. 2016 May;7(2):225-32.

Background

Salidroside is a tyrosol glycoside primarily found in the roots of *Rhodiola* species, exhibiting a wide range of biological and pharmacological properties, including anti-cancer, antioxidant, anti-aging, anti-diabetic, anti-hypertensive, anti-inflammatory, and immunomodulatory effects. Salidroside can improve muscle nutrition by increasing the expression of mTOR, p-mTOR, and MyHC[1]. It alleviates cachexia symptoms in a mouse model of cancer cachexia by activating the mTOR signaling pathway[1]. Furthermore, salidroside protects dopaminergic neurons by enhancing PINK1/Parkin-mediated mitophagy[2]. Its anti-cancer activity is primarily due to the inhibition of the PI3K/AKT, JAK/STAT, and MEK/ERK pathways, as well as the activation of cell apoptosis and autophagy[3].

In vitro, salidroside significantly increases the expression of mTOR, p-mTOR, and MyHC in C2C12 myotubes and can effectively rescue the downregulation of mTOR, p-mTOR, and MyHC expression induced by tumor necrosis factor- α [1]. Salidroside (10, 25, and 50 μ M) significantly prevents MPP⁺-induced cytotoxicity and reverses the reduction in dopamine, HVA, and DOPAC levels induced by MPTP in the striatum[2]. Additionally, salidroside (100 μ M) inhibits the activity of prolyl endopeptidase (PEP), an enzyme associated with learning and memory, by 10.6 $\pm$ 1.9%[4].

In vivo, salidroside (120 mg/kg/day; i.p.) significantly maintains fat mass and increases lean body mass, especially the mass of the gastrocnemius muscle, indicating a notable improvement in the main features of cancer-associated cachexia in mice[1]. Salidroside (10/20/40 mg/kg/day) also induces a mouse model of testicular damage[5].

References:

- [1] Chen X, et al. Salidroside alleviates cachexia symptoms in mouse models of cancer cachexia via activating mTOR signalling. *J Cachexia Sarcopenia Muscle*. 2016 May;7(2):225-32.
- [2] Li R, et al. Salidroside Protects Dopaminergic Neurons by Enhancing PINK1/Parkin-Mediated Mitophagy. *Oxid Med Cell Longev*. 2019 Sep 10; 2019: 9341018.

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- [3] Zhifeng Z , Jing H , Jizhou Z ,et al.Pharmacological activities, mechanisms of action, and safety of salidroside in the central nervous system[J].Drug Design Development & Therapy, 2018, 12:1479-1489.
- [4] Fan W, et al. Prolyl endopeptidase inhibitors from the underground part of *Rhodiola sachalinensis*. Chem Pharm Bull (Tokyo). 2001 Apr;49(4):396-401.
- [5] Wang Z, et al. Salidroside Ameliorates Furan-Induced Testicular Inflammation in Relation to the Gut-Testis Axis and Intestinal Apoptosis. J Agric Food Chem. 2023 Nov 9.

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