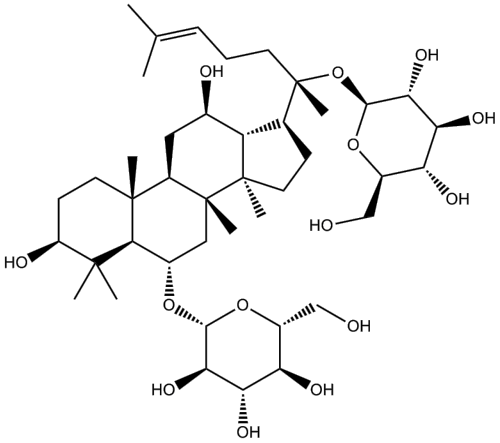
Product Data Sheet

Product Name: Ginsenoside Rg1
Cat. No.: GN10544

Chemical Properties

Cas. No.	22427-39-0		
Chemical Name	Ginsenoside Rg1		
SMILES	CC(=CCCC(C)(C1CCC2(C1C(CC3C2(CC(C4C3(CCC(C4(C)C)O)C)OC5C(C(C(C(O5)CO)O)O)O)C)O)C)OC6C(C(C(C(O6)CO)O)O)O)C		
Formula	$C_{42}H_{72}O_{14}$	M.Wt	801.01
Solubility	≥ 32mg/mL in DMSO	Storage	Store at -20°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]:

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Cell lines	human dental pulp cells
Preparation method	hDPCs were incubated with different concentrations of ginsenoside Rg1 (0.1, 0.5, 2.5, 5, 10 and 20 μmol/L). The effects of ginsenoside Rg1 on the proliferative ability of hDPCs were evaluated by a fibroblast colony forming test, MTT assay and flow cytometry for cell cycle. DPCs were incubated with various concentrations of ginsenoside Rg1 for 1, 3, 5 and 7 days.
Reaction Conditions	0.1, 0.5, 2.5, 5, 10 and 20 μmol/L;1, 3, 5 and 7 days
Applications	Ginsenoside Rg 1 (5 μmol/L) significantly promoted the proliferation and differentiation of human dental pulp cells hDPC. Compared with the control group, ALP activity, DSPP and DMP 1 gene expression were increased in the induction group, ginsenoside Rg 1 group and the two combined groups.
Animal experiment [2]:	
Animal models	APP/PS1 mice

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Preparation method	According to the concentration-response curves, the mice in the G-Rg1 and G-Rg2 groups were injected intraperitoneally once daily with G-Rg1 and G-Rg2 (30 mg/kg), respectively, dissolved in saline. The mice in the AD model group (APP/PS1 mice) and the normal control group (C57BL/6J nontransgenic littermates) were treated with isodose saline (0.9% w/v). All mice were treated for 1 month before brain metabolite profiling.
Dosage form	30 mg/kg；1 month
Applications	Ginsenoside Rg 1 and ginsenoside Rg 2 treatment (30 mg/kg; 1 month) effectively improved the cognitive function of APP/PS1 mice, and a gradual improvement in brain pathological abnormalities was observed, and the accumulation of Aβ deposits was effectively reduced.

References:

[1] Wang P, et al. Effect of ginsenoside Rg1 on proliferation and differentiation of human dental pulp cells in vitro. Aust Dent J. 2012 Jun;57(2):157-65.

[2] Li N, et al. A UPLC/MS-based metabolomics investigation of the protective effect of ginsenosides Rg1 and Rg2 in mice with Alzheimer's disease. J Ginseng Res. 2016 Jan;40(1):9-17.

Background

Ginsenoside Rg1, one of the main active components found in Panax ginseng, is a class of natural products known as steroid glycosides with a wide range of biological activities. Ginsenoside Rg1 has attracted significant attention due to its various pharmacological effects, including the promotion of hippocampal neurogenesis, improvement of neural plasticity, enhancement of learning and memory, anti-aging and anti-fatigue effects, as well as immunoregulatory and anti-tumor activities. Treatment with G-Rg1 has also been shown to significantly reduce the expression of TNF-α, IL-1β, and IL-6 in

ischemia-reperfusion animal and cell models[1]. Ginsenoside Rg1 has been demonstrated to have significant neuroprotective effects, reduce brain levels of Aβ, and decrease NF-κB nuclear translocation, making it a potential therapeutic agent for neurodegenerative diseases such as Alzheimer's and Parkinson's diseases[4].

In vitro, ginsenoside Rg1 (5 μmol/L) significantly promoted the proliferation and differentiation of human dental pulp cells (hDPCs). Compared with the control group, the induced group, the ginsenoside Rg1 group, and the combination of both showed increased ALP activity and expressions of DSPP and DMP1 genes[1]. Another study indicated that Rg1 significantly reduced the levels of TNF-α and IL-6 in inflamed joints of AIA rats and LPS-stimulated RAW 264.7 cells, increased PPAR-γ protein expression, and inhibited the phosphorylation of IκBα and the nuclear translocation of NF-κB[2].

In vivo, intraperitoneal injection of Rg1 (5, 10, and 20 mg/kg) in AIA rats for 14 consecutive days showed therapeutic effects on arthritis, significantly alleviating joint swelling and damage[2]. Moreover, treatment with ginsenoside Rg1 and Rg2 (30 mg/kg; 1 month) effectively improved the cognitive function of APP/PS1 mice, observed gradual improvement in brain pathological abnormalities, and effectively reduced the accumulation of Aβ deposits[3].

References:

[1] Zhang L, et al. Ginsenoside Rg1 attenuates adjuvant-induced arthritis in rats via modulation of PPAR-γ/NF-κB signal pathway. Oncotarget. 2017 Jul 24;8(33):55384-55393.

[2] Wang P, et al. Effect of ginsenoside Rg1 on proliferation and differentiation of human dental pulp cells in vitro. Aust Dent J. 2012 Jun;57(2):157-65.

[3] Li N, et al. A UPLC/MS-based metabolomics investigation of the protective effect of ginsenosides Rg1 and Rg2 in mice with Alzheimer's disease. J Ginseng Res. 2016 Jan;40(1):9-17.

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[4] Xie W , Zhou P , Sun Y ,et al. Protective Effects and Target Network Analysis of Ginsenoside Rg1 in Cerebral Ischemia and Reperfusion Injury: A Comprehensive Overview of Experimental Studies[J].Cells, 2018, 7(12).

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