

Product Data Sheet

Product Name: Puerarin
Cat. No.: GN10680

Chemical Properties

Cas. No. 3681-99-0

Chemical Name 7-hydroxy-3-(4-hydroxyphenyl)-8-[(2S,3R,4R,5S,6R)-3,4,5-trihydroxy-6-(hydroxymethyl)oxan-2-yl]chromen-4-one

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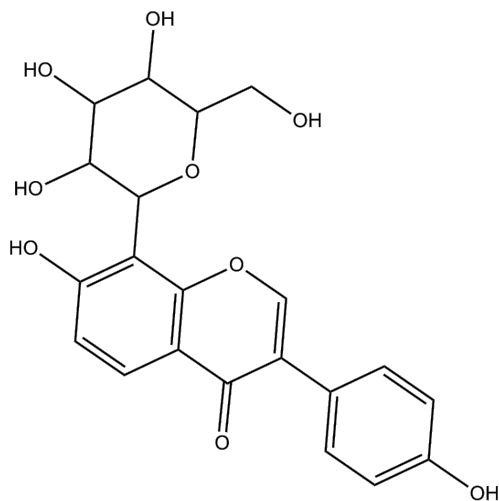
Formula $C_{21}H_{20}O_9$ M.Wt 416.38

Solubility DMF: 16 mg/ml, DMSO: 12.5 mg/ml, Ethanol: 5 mg/ml, PBS (pH 7.2): 0.25 mg/ml
Storage Store at 2-8°C

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 SH-SY5Y cells

SH-SY5Y cells were cultured in DMEM medium containing 10% fetal bovine serum at 37°C and 5% CO₂, and passaged when the cell confluence reached 90%. SH-SY5Y cells were seeded in 96-well plates at a density of 5×10^3 cells/well and cultured in complete medium for 24h. Subsequently, Puerarin was added to the medium so that the final concentration of Puerarin was 0, 25, 50, 75, 100, 150, and 200µM, and the culture was continued for 24h. 10µl CCK-8 solution was added to each well and incubated for 2h at 37°C. The absorbance at 450nm was measured using a microplate reader.

Reaction Conditions 0, 25, 50, 75, 100, 150, and 200µM; 24h

Applications Puerarin significantly inhibited the viability of SH-SY5Y cells in a dose-dependent manner.

Animal experiment [2]:

Animal models Male spontaneously hypertensive rats

Thirty male specific pathogen-free (SPF) spontaneously hypertensive rats (SHR) were housed in SPF-grade animal centers under a 12h-12h light-dark cycle with ad libitum access to food and water. After acclimatization for one week, 30 rats were randomly divided into 2 groups: SHR group (saline treatment); SHR+Puerarin group (Puerarin treatment at 80mg/kg/day; i.p.). The experimental period was 3 months, after which the cardiac function of the rats was analyzed.

Dosage form 80mg/kg/day for 3 months; i.p.

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Applications Puerarin treatment improved myocardial structure and function, ameliorated cardiac morphological disorder and collagen fiber proliferation in rats.

References:

- [1] Sui X, Liu T, Zou Z, et al. Effects and mechanisms of puerarin against neuroblastoma: insights from bioinformatics and in vitro experiments[J]. BMC Complementary Medicine and Therapies, 2024, 24(1): 257.
- [2] Yan J, Honglei Y, Yun W, et al. Puerarin ameliorates myocardial remodeling of spontaneously hypertensive rats through inhibiting TRPC6-CaN-NFATc3 pathway[J]. European Journal of Pharmacology, 2022, 933: 175254.

Background

Puerarin is a phytoestrogen extracted from *Pueraria lobata* with protective functions on the cardiovascular system^[1]. Puerarin exerts vasodilator effects on rat thoracic aorta by activating large conductance voltage-activated and calcium-activated potassium channels (BKCa)^[2]. Puerarin has been widely used to delay the progression of hepatitis, liver fibrosis, and non-alcoholic fatty liver disease in animal models of liver disease^[3].

In vitro, Puerarin treatment for 24 hours significantly inhibited the activity of SH-SY5Y cells with an IC₅₀ value of 174.4μM^[4]. Treatment of U251 and U87 cells with 200μM Puerarin for 48 hours significantly inhibited cell proliferation, induced cell apoptosis, and promoted the expression of Bax and cleaved caspase-3^[5]. Puerarin treatment (20μM) for 48 hours promoted the proliferation of MC3T3-E1 cells, increased alkaline phosphatase (ALP) activity, and up-regulated the expression of osteogenesis-related proteins^[6].

In vivo, Puerarin treatment (80mg/kg/day; i.p.) for three months improved myocardial structure and function, alleviated cardiac morphological disorder and collagen fiber proliferation in spontaneously hypertensive rats^[7]. Oral administration of Puerarin (100mg/kg/day) for 28 days ameliorated Aβ(1-42)-induced cognitive impairment and reversed hippocampal cell apoptosis in rats^[8]. Daily intraperitoneal injection of Puerarin (100mg/kg/day) for 13 weeks prevented high-fat diet (HFD)-induced obesity and steatosis in mice, significantly altered the composition of gut microbiota, and

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greatly increased the abundance of *Akkermansia muciniphil* [9].

References:

- [1] Shu-Yong W E I, Yi C, Xiao-Yu X U. Progress on the pharmacological research of puerarin: a review[J]. Chinese Journal of Natural Medicines, 2014, 12(6): 407-414.
- [2] Zhou Y X, Zhang H, Peng C. Puerarin: a review of pharmacological effects[J]. Phytotherapy Research, 2014, 28(7): 961-975.
- [3] Wang D, Bu T, Li Y, et al. Pharmacological activity, pharmacokinetics, and clinical research progress of puerarin[J]. Antioxidants, 2022, 11(11): 2121.
- [4] Sui X, Liu T, Zou Z, et al. Effects and mechanisms of puerarin against neuroblastoma: insights from bioinformatics and in vitro experiments[J]. BMC Complementary Medicine and Therapies, 2024, 24(1): 257.
- [5] Yang J A, Li J Q, Shao L M, et al. Puerarin inhibits proliferation and induces apoptosis in human glioblastoma cell lines[J]. International journal of clinical and experimental medicine, 2015, 8(6): 10132.
- [6] Wang N, Wang X, Cheng W, et al. Puerarin promotes osteogenesis and inhibits adipogenesis in vitro[J]. Chinese Medicine, 2013, 8(1): 17.
- [7] Yan J, Honglei Y, Yun W, et al. Puerarin ameliorates myocardial remodeling of spontaneously hypertensive rats through inhibiting TRPC6-CaN-NFATc3 pathway[J]. European Journal of Pharmacology, 2022, 933: 175254.
- [8] Li J, Wang G, Liu J, et al. Puerarin attenuates amyloid-beta-induced cognitive impairment through suppression of apoptosis in rat hippocampus in vivo[J]. European Journal of Pharmacology, 2010, 649(1-3): 195-201.
- [9] Wang L, Wu Y, Zhuang L, et al. Puerarin prevents high-fat diet-induced obesity by enriching *Akkermansia muciniphila* in the gut microbiota of mice[J]. PLoS One, 2019, 14(6): e0218490.

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