

Product Data Sheet

Product Name: Gypenoside XVII

Cat. No.: GN10566

Chemical Properties

Cas. No. 80321-69-3

Chemical Name
Gypenoside XVII

SMILES CC(=CCCC(C)(C1CCC2(C1C(CC3C2(CCC4C3(CCC(C4(C)C)OC5C(C(C(C(O5)CO)O)O)C)C)O)C)OC6C(C(C(C(O6)COC7C(C(C(C(O7)CO)O)O)O)O)O)C

Formula C₄₈H₈₂O₁₈

M.Wt 947.15

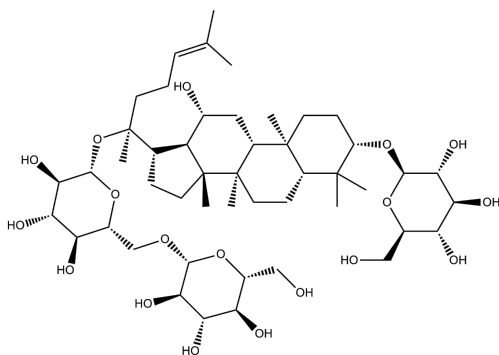
Solubility

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 rat pheochromocytoma PC-12 cells

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

PC-12 cells were pretreated with Gypenoside XVII (10 μ M) for 12h, and then Preparation Method washed twice with PBS. Afterwards, the cells were treated with A β _{25–35} (20 μ M) for 24h.

Reaction
Conditions 10 μ M; 12h

Applications Gypenoside XVII provided significant neuroprotective effects against oxidative stress, autophagy, and apoptosis induced by A β _{25–35}.

Animal experiment [2]:

Animal models Sprague Dawley rats

Excitotoxicity was produced in rats that were injected intraperitoneally (i.p.) with kainic acid (15mg/kg). Gypenoside XVII (30mg/kg) was dissolved in a saline solution containing 1% DMSO and was administered (i.p.) 30min before kainic acid (KA) (15mg/kg in 0.9% NaCl, pH 7.0, i.p.) injection. The rats were divided Preparation Method into the following four groups: control group (i.p. injection of 1% DMSO; n = 10), kainic acid group (only i.p. injection of kainic acid; n = 10), Gypenoside XVII + kainic acid group (i.p. injection of Gypenoside XVII and kainic acid administration; n = 10), and Gypenoside XVII group (only i.p. injection of Gypenoside XVII; n = 3).

Dosage form 30mg/kg; i.p.; 30min before kainic acid injection

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications

Pretreatment with Gypenoside XVII inhibited the convulsive effects of kainic acid by increasing the latency to seizure onset and reducing seizure severity. Gypenoside XVII pretreatment also blocked kainic acid-induced neuronal injury, as indicated by an increase in the number of surviving neurons and a decrease in the number of degenerated neurons in the entorhinal cortex of kainic acid-treated rats.

References:

- [1] Meng X B, Wang M, Sun G B, et al. Attenuation of A β 5-35-induced parallel autophagic and apoptotic cell death by gyphenoside XVII through the estrogen receptor-dependent activation of Nrf2/ARE pathways. *Toxicol Appl Pharmacol*. 2014 Aug 15;279(1):63-75.
- [2] Lu C W, Lin T Y, Chiu K M, et al. Gyphenoside XVII Reduces Synaptic Glutamate Release and Protects against Excitotoxic Injury in Rats. *Biomolecules*. 2024 May 16;14(5):589.

Background

Gyphenoside XVII is a novel phytoestrogen primarily isolated from the plants *Gynostemma pentaphyllum* and *Panax notoginseng* and dose-dependently decreases glutamate release of with a IC₅₀ value of 16 μ M^[1]. Gyphenoside XVII has neuroprotective and cardiovascular benefits, which make it a potential candidate for the development of treatments for conditions such as atherosclerosis and Alzheimer's disease^{[2][3][5][7]}. Furthermore, the estrogenic properties of Gyphenoside XVII could be explored for hormone replacement therapy^{[4][6]}.

In vitro, Gyphenoside XVII has protective effects against atherosclerosis. Gyphenoside XVII(3.125-100 μ g/mL) incubation for 24h dose-dependently mitigated the toxic effect of oxidized low-density lipoprotein (Ox-LDL) on human umbilical vein endothelial cell (HUVEC) viability. Incubation of HUVECs with Gyphenoside XVII (50 μ g/mL) for 12h before exposure to Ox-LDL markedly reduced the ROS generation and increased Antioxidant Defense via the ER α /PI3K/Akt Pathway^[2]. Gyphenoside XVII (100 μ g/mL) treated Ox-LDL-induced THP-1 macrophage-derived foam cells for 24h, exhibiting protective effects by enhancing cholesterol efflux and mitigating inflammation via upregulating ABCA1, ABCG1, and miR-182-5p expression while downregulating HDAC9, and facilitating the M2

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

macrophage phenotype and curbing the inflammatory response^[3]. Pretreated with rat pheochromocytoma PC-12 cells with Gypenoside XVII (10 μ M) for 12h conferred protection against A β _{25–35}-induced neurotoxicity through estrogen receptor-dependent activation of PI3K/Akt pathways, inactivation of GSK-3 β and activation of Nrf2/ARE/HO-1 pathways^[4].

In vivo, Gypenoside XVII (50mg/kg) administered into ApoE –/– mice via intragastric gavage (i.g.) once a day for 10 weeks reduced the serum lipid levels, increase expression of antioxidant enzymes and decrease atherosclerotic lesion formation in ApoE –/– mice^[5]. Gypenoside XVII (1, 2.5, 5 and 10mg/kg) orally administrated once produced the antidepressant-like effects in mice, which was mediated by the inhibition of complement C3/C3aR/STAT3/cytokine signaling in the prefrontal cortex^[6]. Gypenoside XVII (40mg/kg) administered by gavage for 60 days significantly improved the spatial learning and memory abilities of double-transgenic APP^{swe}/PS1^{dE9} (APP/PS1) mice, reduced A β deposition and A β PP expression, and enhanced autophagy and lysosomal biosynthesis by activating TFEB. These results suggest that Gypenoside XVII may be a promising candidate drug for the prevention and treatment of Alzheimer's disease^[7].

References:

- [1] Lu C W, Lin T Y, Chiu K M, et al. Gypenoside XVII Reduces Synaptic Glutamate Release and Protects against Excitotoxic Injury in Rats. *Biomolecules*. 2024 May 16;14(5):589.
- [2] Yang K, Zhang H J, Luo Y, et al. Gypenoside XVII Prevents Atherosclerosis by Attenuating Endothelial Apoptosis and Oxidative Stress: Insight into the ER α -Mediated PI3K/Akt Pathway. *Int J Mol Sci*. 2017 Feb 9;18(2):77.
- [3] Deng W Y, Zhou C L, Zeng M Y. Gypenoside XVII inhibits ox-LDL-induced macrophage inflammatory responses and promotes cholesterol efflux through activating the miR-182-5p/HDAC9 signaling pathway. *J Ethnopharmacol*. 2024 Jan 30;319(Pt 1):117070.
- [4] Meng X B, Wang M, Sun G B, et al. Attenuation of A β _{25–35}-induced parallel autophagic and apoptotic cell death by gyphenoside XVII through the estrogen receptor-dependent activation of Nrf2/ARE pathways. *Toxicol Appl Pharmacol*. 2014 Aug 15;279(1):63-75.
- [5] Wang J R, Yu Y L, Zhang H R, et al. Gyphenoside XVII attenuates renal ischemia-reperfusion injury by inhibiting endoplasmic reticulum stress and NLRP3 inflammasome-triggered pyroptosis. *Eur J Pharmacol*. 2024 Jan 5;962:176187.
- [6] Zhang M M, G H, Cheng J, et al. Gyphenoside XVII, an Active Ingredient from Gynostemma Pentaphyllum, Inhibits C3aR-Associated Synaptic Pruning in Stressed Mice. *Nutrients*. 2022 Jun

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

10;14(12):2418.

[7] Meng X B, Luo Y, Liang T, et al. Gypenoside XVII Enhances Lysosome Biogenesis and Autophagy Flux and Accelerates Autophagic Clearance of Amyloid- β through TFEB Activation. J Alzheimers Dis. 2016 Apr 5;52(3):1135-50.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA