

Product Data Sheet

Product Name: Humanin
Cat. No.: GC18324

Chemical Properties

Cas. No. 330936-69-1

Chemical Name L-methionyl-L-alanyl-L-prolyl-L-arginylglycyl-L-phenylalanyl-L-seryl-L-cysteiny-L-leucyl-L-leucyl-L-leucyl-L-leucyl-L-threonyl-L-seryl-L- α -glutamyl-L-isoleucyl-L- α -aspartyl-L-leucyl-L-prolyl-L-valyl-L-lysyl-L-arginyl-L-arginyl-L-alanine

SMILES N/A

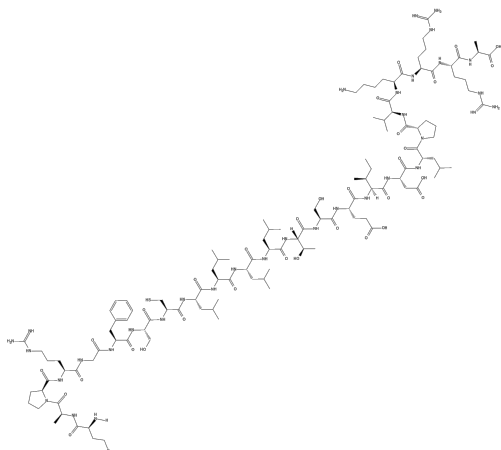
Formula $C_{119}H_{204}N_{34}O_{32}S_2$ M.Wt 2687.2

Solubility DMSO : 100 mg/mL (37.21 mM; Need ultrasonic) Storage Store at -20°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 KGN cells

Preparation Method Cells were incubated with Humanin (1 μ M) for 24 h. Cell viability was assessed by MTT reduction assay.

Reaction Conditions Humanin (1 μ M) for 24 h

Applications Humanin increased cell viability. HN decreased the percentage of hypodiploid KGN cells as well as the percentage of apoptotic KGN cells.

Animal experiment [2]:

Animal models Nine-week-old male ICR mice

Preparation Method On the day of the test, the mice were intraperitoneally (i.p.) injected with a peptide solution (S14G- Humanin 200 nM, 100 μ l/mouse) or vehicle (sterile endotoxin-free water) and returned to their home cage.

Dosage form S14G- Humanin 200 nM, 100 μ l/mouse

Applications Humanin may be involved in the response of HLECs to oxidative stress, and that Humanin expression was significantly upregulated under oxidative stress conditions.

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References:

- [1]. Marvaldi C, Martin D, et.al. Mitochondrial humanin peptide acts as a cytoprotective factor in granulosa cell survival. *Reproduction*. 2021 Apr 20;161(5):581-591. doi: 10.1530/REP-20-0197. PMID: 33764899.
- [2]. Murakami M, Nagahama M, et.al. Humanin ameliorates diazepam-induced memory deficit in mice. *Neuropeptides*. 2017 Apr;62:65-70. doi: 10.1016/j.npep.2016.10.008. Epub 2016 Oct 29. PMID: 27814910.

Background

Humanin is a mitochondrial-derived peptide with cytoprotective properties [1]. Humanin interacts with IGFBP-3 and Bax, counteracts the pro-apoptotic activity, and prevents the translocation and activation of Bax, as well as the subsequent release of cytochrome c into the cytoplasm [2]. Humanin has been widely used to promote the survival of cells under stress and aging conditions [3].

In vitro, Humanin treatment (10 μ M) for 6 days significantly inhibited the death of human cerebral vascular smooth muscle cells (HCSMCs) induced by pathogenic A β and increased the level of α -myosin [4]. Humanin (10 μ g/ml) treatment for 24 hours protects human retinal pigment epithelial cells (hRPECs) from oxidative stress-induced cell death, reduces reactive oxygen species (ROS) production and restores mitochondrial function [5]. Treatment with Humanin (20 μ M) for 24 hours activates the TGF β signaling pathway in 1123 cells and promotes cell adhesion [6].

In vivo, Humanin treatment via intraperitoneal injection at a dose of 4mg/kg, every two weeks, for 10 months significantly improved cognitive function and reduced inflammatory responses in aged mice [7]. Daily intraperitoneal injection of a 4mg/kg dose of Humanin for 15 days significantly reduced the serum glucose level of diabetic mice and decreased the levels of caspase-3 and caspase-9 in the hippocampus and prefrontal cortex of diabetic mice [8].

References:

- [1] Coradduzza D, Congiargiu A, Chen Z, et al. Humanin and its pathophysiological roles in aging: A systematic review[J]. *Biology*, 2023, 12(4): 558.

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[2] Lee C, Yen K, Cohen P. Humanin: a harbinger of mitochondrial-derived peptides?[J]. Trends in Endocrinology & Metabolism, 2013, 24(5): 222-228.

[3] Rochette L, Meloux A, Zeller M, et al. Role of humanin, a mitochondrial-derived peptide, in cardiovascular disorders[J]. Archives of cardiovascular diseases, 2020, 113(8-9): 564-571.

[4] Jung S S, Van Nostrand W E. Humanin rescues human cerebrovascular smooth muscle cells from A β -induced toxicity[J]. Journal of neurochemistry, 2003, 84(2): 266-272.

[5] Sreekumar P G, Ishikawa K, Spee C, et al. The mitochondrial-derived peptide humanin protects RPE cells from oxidative stress, senescence, and mitochondrial dysfunction[J]. Investigative ophthalmology & visual science, 2016, 57(3): 1238-1253.

[6] Ha C P, Hua T N M, Vo V T A, et al. Humanin activates integrin α V–TGF β axis and leads to glioblastoma progression[J]. Cell Death & Disease, 2024, 15(6): 464.

[7] Yen K, Wan J, Mehta H H, et al. Humanin prevents age-related cognitive decline in mice and is associated with improved cognitive age in humans[J]. Scientific reports, 2018, 8(1): 14212.

[8] Bulut F, Adam M, Özgen A, et al. Protective effects of chronic humanin treatment in mice with diabetic encephalopathy: a focus on oxidative stress, inflammation, and apoptosis[J]. Behavioural brain research, 2023, 452: 114584.

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