

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-cysteinyll-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

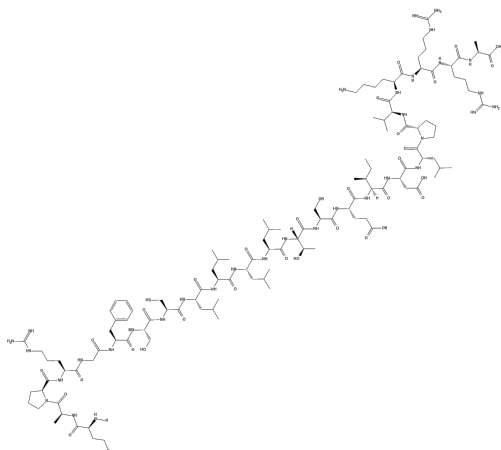
Formula $C_{119}H_{204}N_{34}O_{32}S_2$ M.Wt 2687.2

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]:

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

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Cell lines KGN cells

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

Reaction Conditions Humanin (1 uM) 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 µl/mouse) or vehicle (sterile endotoxin-free water) and returned to their home cage.

Dosage form S14G- Humanin 200 nM, 100 µl/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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