Product Data Sheet

Product Name: Amyloid β-Protein (16-20)
Cat. No.: GA20740

Chemical Properties

Cas. No.	153247-40-6		
Formula	$C_{35}H_{52}N_6O_6$	M.Wt	652.84
Solubility	H_2O : 33.33 mg/mL (51.06 mM; Need ultrasonic)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	Amyloid β-Protein (16-20)		

Protocol

Cell experiment [1]:

Cell lines	Human SH-SY5Y neuroblastoma cells
Preparation Method	SH-SY5Y cells were differentiated into mature neurons using retinoic acid (RA) and brain-derived neurotrophic factor (BDNF). The differentiated cells were then treated with Amyloid β-Protein (16-20) at a concentration of 100μg/mL and incubated overnight.
Reaction Conditions	100μg/mL; overnight.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

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Applications	Amyloid β-Protein (16-20) treatment resulted in 4.21% cell death in the differentiated SH-SY5Y cells, showing the least cytotoxic activity among the tested peptides.

References:
[1] Roytrakul S, Jaresitthikunchai J, Phaonakrop N, et al. Secretomic changes of amyloid beta peptides on Alzheimer's disease related proteins in differentiated human SH-SY5Y neuroblastoma cells. PeerJ. 2024 Jul 17;12:e17732.

Background

Amyloid β-Protein (16-20) is a five-amino acid fragment of the amyloid-β protein. Amyloid β-Protein (16-20) disrupts the formation of β-sheet structures by competitively binding to the hydrophobic core region of the Aβ protein[1-2]. Amyloid β-Protein (16-20) can be used in research related to the pathological mechanisms of Alzheimer's disease and drug screening[3-4].

In vitro, Amyloid β-Protein (16-20) (100nM) was applied to rat striatal and hippocampal synaptosomes for 1 hour. Amyloid β-Protein (16-20) did not increase the percentage of apoptotic signals nor alter the survival rate of the synaptosomes[5]. Amyloid β-Protein (16-20) (100μg/mL) was used to treat differentiated human SH-SY5Y neuroblastoma cells (induced by retinoic acid and brain-derived neurotrophic factor) overnight, resulting in a small amount of cell death. Treatment of human red blood cells with Amyloid β-Protein (16-20) (100μg/mL) for 3 hours caused hemolysis[6].

References:
[1] Chandra Saha P, Das RS, Chatterjee T, et al. Supramolecular β-Sheet Forming Peptide Conjugated with Near-Infrared Chromophore for Selective Targeting, Imaging, and Dysfunction of Mitochondria. Bioconjug Chem. 2020 May 20;31(5):1301-1306.

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[2] Waugh ML, Wolf LM, Moore KA, et al. Rationally Designed Peptoid Inhibitors of Amyloid-β Oligomerization. Chembiochem. 2024 Jul 2;25(13):e202400060.
[3] Kino R, Araya T, Arai T,et al. Covalent modifier-type aggregation inhibitor of amyloid-β based on a cyclo-KLVFF motif. Bioorg Med Chem Lett. 2015 Aug 1;25(15):2972-5.
[4] Niu L, Liu L, Xi W, et al. Synergistic Inhibitory Effect of Peptide-Organic Coassemblies on Amyloid Aggregation. ACS Nano. 2016 Apr 26;10(4):4143-53.
[5] Trebesova H, Olivero G, Marchi M, et al. The Anti-Aggregative Peptide KLVFF Mimics Aβ1-40 in the Modulation of Nicotinic Receptors: Implications for Peptide-Based Therapy. Biomedicines. 2022 Sep 8;10(9):2231.
[6] Roytrakul S, Jaresitthikunchai J, Phaonakrop N, et al. Secretomic changes of amyloid beta peptides on Alzheimer's disease related proteins in differentiated human SH-SY5Y neuroblastoma cells. PeerJ. 2024 Jul 17;12:e17732.

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