

β-Amyloid (25-35)

Cat. No.:	HY-P0128
CAS No.:	131602-53-4
Molecular Formula:	C ₄₅ H ₈₁ N ₁₃ O ₁₄ S
Molecular Weight:	1060.27
Sequence:	Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met
Sequence Shortening:	GSNKGAIIGLM
Target:	Amyloid-β
Pathway:	Neuronal Signaling
Storage:	Sealed storage, away from moisture
	Powder -80°C 2 years
	-20°C 1 year

* The compound is unstable in solutions, freshly prepared is recommended.

BIOLOGICAL ACTIVITY

Description	β-Amyloid (25-35) (Amyloid beta-peptide (25-35)) is the fragment Aβ(25-35) of the Alzheimer's amyloid β-peptide, has shown neurotoxic activities in cultured cells ^[1] .
In Vitro	<p>The amino acid sequence of Aβ(25-35) peptide is NH₂-Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met-COOH, where the first Gly represents the amino acid 25 and the last Met represents the amino acid 35. Amyloid beta-peptide(25-35) is also investigated in gel state for the first time. Comparative studies are also carried out using vibrational absorption and ECD. The conformational preference of Aβ(25-35) peptide film is also investigated using vibrational absorption and VCD spectroscopy^[1]. Amyloid beta-peptide(25-35) induces apoptotic effects on isolated brain mitochondria and the redox state of methionine-35, plays a key role in the induction of programmed cellular death pathways and toxic events^[2].</p> <p>β-Amyloid Aggregation Guidelines (Following is our recommended protocol. This protocol only provides a guideline, and should be modified according to your specific needs).</p> <ol style="list-style-type: none"> 1. Solid Aβ peptide was dissolved in cold hexafluoro-2-propanol (HFIP). The peptide was incubated at room temperature for at least 1h to establish monomerization and randomization of structure. 2. The HFIP was removed by evaporation, and the resulting peptide was stored as a film at -20 or -80 °C. 3. The resulting film was dissolved in anhydrous DMSO at 5 mM and then diluted into the appropriate concentration and buffer (serum- and phenol red-free culture medium) with vortexing. 4. Next, the solution was aged 48h at 4-8 °C. The sample was then centrifuged at 14000g for 10 min at 4-8 °C; the soluble oligomers were in the supernatant. The supernatant was diluted 10-200-fold for experiments. <p>Methods vary depends on the downstream applications.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>β-Amyloid (25-35) can be used in animal modeling to construct Alzheimer's disease models.</p> <p>Rats are injected with Aβ25–35 peptide intracerebroventricularly and compound Danshen (CDS) are subsequently administered once daily for 23 days. Rats' behavior is monitored using Morris water maze and passive avoidance. Real time PCR and Western blotting are used in determining amyloid precursor protein (APP), β-site APP cleaved enzyme-1(BACE1), Presenilin-1 (PS1), Insulin-degrading enzyme (IDE) and neprilysin (NEP) in hippocampus. The Alzheimer' s disease (AD) model group present with spatial learning and memory impairments. CDS and donepezil administration significantly ameliorate the Aβ25–35 peptide-induced memory impairment in both Morris water maze (P<0.05)^[3].</p>

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PROTOCOL

Cell Assay ^[2]

Cell viability is determined by a modified MTS assay, which is based on the conversion of Tetrazolium salt by mitochondrial dehydrogenase to a formazan product spectrophotometrically measurable at 490 nm. PC12 cells are plated in 96-well plates at a density of 10 000 cells/well and maintained for 16 h in complete medium. Cells are then incubated in the absence (control) and presence of 40 μM A β (31-35) and A β (25-35) with reduced, oxidized and norleucine-substituted methionine-35 staurosporine 10 μM is used as positive control of 100% of cellular death. After 48 h of peptide-incubation, 20 μL of MTS reagent (2.0 mg/mL) is added to each well. The cells are then incubated for 30-45 min at 37 °C in a 5% CO₂ incubator. The reaction is stopped by adding 25 μL of 10% SDS. The plates are read with a microplate reader at 490 nm. Each data point is obtained using a triplet-well assay^[2].

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Animal Administration ^[3]

Rats^[3]

Fifty-four Male Sprague-Dawley rats (2 months old, 300-350 g) are used. Amyloid beta-peptide(25-35) is dissolved in sterile distilled water at a concentration of 1 mg/mL as a stocking solution. Animals are infused with 5 μL /side of sterile distilled water (control), aggregated A β_{25-35} (2 $\mu\text{g}/\mu\text{L}$), into bilateral cerebral lateral ventricles at a rate of 1 $\mu\text{L}/\text{min}$; the needle is left in place for 5 min. Then the needles are removed and rats are kept on a warm pad until they are awakened. To determine the neuroprotective effect on AD rats, the A β_{25-35} treated rats are treated with CDS of different doses and Donepezil once daily for 23 days (including duration of behavior test). Experiment is performed to test the effect of CDS on A β_{25-35} -induced memory impairment using Morris water-maze and step-through passive avoidance tasks. Specifically, all of the rats are randomly divided into 6 groups for the experiment: (a) Vehicle 1 (for A β_{25-35})+vehicle 2 (for CDS and Donepezil), (b) A β_{25-35} +vehicle 2, (c) A β_{25-35} +CDS (130 mg/kg), (d) A β_{25-35} +CDS (260 mg/kg), (e) A β_{25-35} +CDS (520 mg/kg), (f) A β_{25-35} +Donepezil (0.5 mg/kg). One day after cerebroventricular microinfusions of A β_{25-35} (10 $\mu\text{g}/\text{side}$) or its vehicle, rats are treated (i.g.) with CDS or Donepezil or vehicle 2, once daily for 14 days prior to the beginning of Morris water maze, followed by passive avoidance task.

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CUSTOMER VALIDATION

- Phytother Res. 2022 Nov 29.
- Phytother Res. 2022 Sep 17.
- J Ethnopharmacol. 2023 Apr 27;116550.
- J Ethnopharmacol. 2023 Apr 3;116455.
- Front Cell Neurosci. 2021 Mar 25;15:614556.

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REFERENCES

[1]. D'Ursi AM, et al. Solution structure of amyloid beta-peptide (25-35) in different media. J Med Chem. 2004 Aug 12;47(17):4231-8.

[2]. Clementi ME, et al. Abeta(31-35) and Abeta(25-35) fragments of amyloid beta-protein induce cellular death throughapoptotic signals: Role of the redox state of methionine-35. FEBS Lett. 2005 May 23;579(13):2913-8.

[3]. Liu M, et al. Cognitive improvement of compound danshen in an A β_{25-35} peptide-induced rat model of Alzheimer's disease. BMC Complement Altern Med. 2015 Oct 23;15:382.

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

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA