

**β-Amyloid (Aβ)
[1-42]
(Human)**

PRODUCT ANALYSIS SHEET

Catalog Number:	03-111
Lot Number:	?????
Quantity:	0.5 mg
Description:	Major constituent of plaques and tangles that occur in Alzheimer's disease (AD) patients
Sequence:	H ₂ N-Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Glu-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met-Val-Gly-Gly-Val-Val-Ile-Ala-OH
Purity:	≥95% by HPLC analysis (purity based on peak area)
Molecular Weight:	4514.1
Amino Acid Analysis and Identity:	Confirms expected sequence
Peptide Content:	???? %
Supplied As:	Trifluoroacetate salt
Physical Appearance:	lyophilized powder
Solubility:	1 mg/mL in water.
Storage:	-20°C
Expiration Date:	See product label
References:	<p>Borchelt, D.R. et al. (1997) Accelerated amyloid deposition in the brains of transgenic mice coexpressing mutant presenilin 1 and amyloid precursor proteins. <i>Neuron</i> 19:939-945.</p> <p>Arendash, G.W. et al. (1999) Intravascular β-amyloid infusion increases blood pressure: implications for a vasoactive role of β-amyloid in the pathogenesis of Alzheimer's disease. <i>Neurosci. Lett.</i> 268:17-20.</p> <p>Yan, S.D. et al. (1999) Role of ERAB/L-3-hydroxyacyl-coenzyme A dehydrogenase type II activity in Aβ-induced cytotoxicity. <i>J. Biol. Chem.</i> 274:2145-2156.</p> <p>Bradt, B.M. et al. (1999) Complement-dependent proinflammatory properties of the Alzheimer's disease β-peptide. <i>J. Exp. Med.</i> 188:431-438.</p> <p>Eisenhauer, P.B. et al. (2000) Toxicity of various amyloid beta peptide species in cultured human blood-brain barrier endothelial cells: increased toxicity of dutch-type mutant. <i>J. Neurosci. Res.</i> 60(6):804-810.</p> <p>Town, T. et al. (2001) Characterization of murine immunoglobulin G antibodies against human amyloid-β1-42. <i>Neurosci. Lett.</i> 307:101-104.</p> <p>Wei, W.L. et al. (2002) Signaling events in amyloid beta-peptide-induced neuronal death and insulin-like growth factor I protection. <i>J. Biol. Chem.</i> 277(20):17649-17656.</p> <p>Johnson, L.V. et al. (2002) The Alzheimer's Aβ-peptide is deposited at sites of complement activation in pathologic deposits associated with aging and age-related macular degeneration. <i>Proc. Nat'l. Acad. Sci.</i> 99:11830-11835.</p> <p>Suhara, T., et al. (2003) A beta 42 generation is toxic to endothelial cells and inhibits eNOS function through an Akt/GSK-3 beta signaling-dependent mechanism. <i>Neurobiology of Aging</i> 24(3):437-451.</p>

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Recommendations for Peptide Reconstitution:

Preparing peptide for neurotoxicity studies, to induce peptide aggregation:

The peptide is supplied in a form that is not neurotoxic prior to a preincubation step. The appearance of toxicity has been shown to correlate with the extent of beta sheet structure (Simmons, L.K. et al. [1994] Mol. Pharmacology 45(3):373-379).

Recommended preincubation procedure:

1. Dissolve the lyophilized peptide in HPLC grade (or better) water at ≈ 6 mg/mL.
2. Dilute the peptide to 1 mg/mL with PBS (it is important that Ca^{2+} is omitted).
3. Incubate at 37°C for 24-48 h (24-36 h is usually sufficient).

Neurotoxicity is usually observed at 30-100 $\mu\text{g/mL}$.

Preparing peptide for studies which require minimal peptide aggregation:

1. Dissolve the peptide at a concentration of 1 mg/mL in 100% HFIP (1,1,1,3,3,3-hexafluoro-2-propanol [Sigma-Aldrich Cat. # 32,524-4, 99.8% ACS reagent grade]).
2. Incubate at RT for 1 hour with occasional vortexing at moderate speed.
3. Sonicate for 10 minutes in a water bath sonicator while the tube is held in the upright position.
4. Dry down the HFIP/peptide solution under a gentle stream of nitrogen gas. Continue drying for an additional 10 minutes. Cap vial immediately.
5. Resuspend the peptide in 100% DMSO.
6. Incubate the peptide plus DMSO for 12 minutes at RT with periodic vortexing at moderate speed. The vial should be rotated during this incubation to permit thorough wetting of the peptide.
7. Add 10 μL of this DMSO/peptide solution to 10 mL of BSAT-DPBS (see formulation below).
8. Vortex the solution at moderate speed.

Peptides prepared in this manner have been used as standards in ELISA for the detection of beta amyloid in biological samples. When using this peptide in ELISA, it is important that the assay buffer used with the peptide standards has the same composition as the samples under investigation.

Buffer Formulations:

DPBS Solution (10X Stock) (Biofluids Cat. # 316-500)

Dulbecco's PBS (DPBS w/o Mg^{2+} , Ca^{2+})

BSAT-DPBS Solution:














1X DPBS, pH 7.4

5% BSA

0.03% Tween-20

Note: The inclusion of a protease inhibitor (i.e. AEBSF [Sigma Cat. # A-8456]) is recommended when the BSAT-BPBS solution is to be used for the analysis beta amyloid-containing biological samples. To prepare a 40 mM stock solution of AEBSF, add 100 mg of AEBSF to 10 mL DPBS, pH 7.4, containing 5% BSA. The stock solution should be diluted to a concentration of 1 mM AEBSF in BSAT-DPBS just prior to use.

Explanation of symbols

Symbol	Description	Symbol	Description
	Catalogue Number		Batch code
	Research Use Only		In vitro diagnostic medical device
	Use by		Temperature limitation
	Manufacturer		European Community authorised representative
	Without, does not contain		With, contains
	Protect from light		Consult accompanying documents
	Directs the user to consult instructions for use (IFU), accompanying the product.		

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