3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

β-Synuclein V70M
human, recombinant
expressed in *Escherichia coli*
histidine-tagged

Catalog Number **S6949**
Storage Temperature –20 °C

Product Description

Synucleins (α, β, and γ-synoretin) are a family of small, highly conserved proteins expressed primarily in neurons and certain tumors.[1,2] β-Synuclein (β-syn) is an acidic neuronal protein of 134 amino acids (14,287 Da). This member of the synuclein family lacks the non-amyloidogenic component (NAC) domain that appears to be responsible for the aggregating properties of α-synuclein. β-synuclein is, therefore, considered to be a non-amyloidogenic homologue of α-synuclein. It was postulated β-synuclein could act as a physiological inhibitor of α-synuclein aggregation and it might protect the central nervous system from the neurotoxic effects of α-synuclein. The mechanisms of β-synuclein neuroprotection may involve direct interaction between β-synuclein and Akt, and thus, suggest this signaling pathway could be a therapeutic target for neurological conditions associated with Parkinson and α-synuclein aggregation.[3,4]

Two mutations at residues in highly conserved regions of the β-synuclein protein have been identified in dementia with Lewy bodies. These alterations, which consist of a valine to methionine substitution at codon 70 (V70M) and a proline to histidine substitution at codon 123 (P123H), seem to contribute to the production of Lewy body disorders. Overexpression of these β-synuclein mutants (P123H and V70M) in neuroblastoma cells results in enhanced lysosomal pathology, suggesting a causative role for these missense mutations of β-synuclein in neuro-degeneration stimulation.[5,6]

Purity: ≥90% (SDS-PAGE)

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute the product with 0.5 mL of ultrapure water to yield an ~1 mg/mL solution. Store the reconstituted solution in working aliquots at –20 °C. The reconstituted product is stable for at least 1 year when properly stored.

Storage/Stability

The product ships on dry ice and storage at –20 °C is recommended. The lyophilized product is stable at –20 °C for at least 2 years.

References

1. Lavedan, C., The synuclein family. *Genome Res.*, **8**, 871-880 (1998).
2. George, J.M., The synucleins. *Genome Biol.*, **3**, 1-8 (2002).
3. Hashimoto, M., et al., β-Synuclein regulates Akt activity in neuronal cells. A possible mechanism for neuroprotection in Parkinson's disease. *J. Biol. Chem.*, **279**, 23622-23629 (2004).
4. Hashimoto, M., et al., β-Synuclein inhibits α-synuclein aggregation: a possible role as an anti-Parkinsonian factor. *Neuron*, **32**, 213-223 (2001).
5. Ohtake, H., et al., β-Synuclein gene alterations in dementia with Lewy bodies. *Neurology,* **63**, 805-811 (2004).
6. Jianshe, W., et al., Enhanced lysosomal pathology caused by β-synuclein mutants linked to dementia with Lewy Bodies. *J. Biol. Chem.*, **282**, 28904-28914 (2007).

KAA,EB,MAM 01/09-1