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# Product Information

**α-Synuclein human**
recombinant, expressed in *Escherichia coli*
N-terminal histidine tagged

Catalog Number: **S7820**
Storage Temperature: –20 °C

Synonym: NACP

**Product Description**
α-Synuclein (also known as the non-amyloid component of plaques precursor protein or NACP) is a 140-amino acid protein (19-20 kDa, apparent molecular weight) encoded by a simple gene consisting of six exons on human chromosome 4.[1] The physiological role of α-synuclein is not clear. In the search for its function, it was found that α-synuclein induces polymerization of tubulin into microtubules.[2] In addition, α-synuclein was found to function in the modulation of dopamine transporter function, regulating the synaptic tone of dopamine.[3] Disruption of this function can ultimately lead to neurodegeneration of nerve terminals.

α-Synuclein is highly abundant in presynaptic terminals[4] and is a major component of Lewy bodies (LBs). LBs are neuronal cytoplasmic inclusions that are found in diverse neurodegenerative disorders. The deposition of α-synuclein as fibrillary aggregates in neurons or glial cells is a hallmark lesion in a subset of neurodegenerative disorders. These disorders include Parkinson's disease (PD), dementia with Lewy bodies (filamentous inclusions), Lewy body variant of Alzheimer's disease, and multiple system atrophy.[2] Pathogenic point mutations in the α-synuclein gene are linked to familial Parkinson's disease.[5] However, most neurodegenerative disorders with LBs are associated with abnormal accumulation of wild-type α-synuclein. Deletion of the α-synuclein gene in mice results in functional deficits of the nigrostriatal dopamine system.[6] Neuronal over-expression of wild-type human α-synuclein in mice resulted in progressive accumulation of α-synuclein in neurons, associated with loss of dopaminergic terminals in the basal ganglia and with motor impairment, suggesting that α-synuclein may play a role in Parkinson's Disease and related conditions.[7]

**Reagent**
Supplied as a lyophilized powder

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.

**Storage/Stability**
The lyophilized powder is to be stored at –20 °C, and is stable for 4 months at room temperature and over 2 years at –20°C.

Reconstitute the product in water to ~1 mg/ml. Store the reconstituted solution in working aliquots at –20 °C. Reconstituted product (~1 mg/ml in water) is stable at –20°C for 4 months.

**References:**
1. Chen, X., et al., The human NACP/α-synuclein gene: chromosome assignment to 4q21.3-q22 and TaqI RFLP analysis, *Genomics*, **26**, 425 (1995).
2. Alim, M.A., et al., Demonstration of a role for α–synuclein as a functional microtubule-associated protein. *J. Alzheimers Dis.*, **6**, 435-442 (2004).
3. Sidhu, A., Wersinger, C., and Vernier, P., α-Synuclein regulation of the dopaminergic transporter: a possible role in the pathogenesis of Parkinson's disease. *FEBS Lett.*, **565**, 1-5 (2004).
4. Iwai, A., et al., The precursor protein of non-A β component of Alzheimer's disease amyloid is a presynaptic protein of the central nervous system. *Neuron*, **14**, 467-475 (1995).
5. Polymeropoulos, M.H., et al., Mutation in the α-synuclein gene identified in families with Parkinson's disease. *Science*, **276**, 2045-2047 (1997).

6. Abeliovich, A., et al., Mice lacking α-synuclein display functional deficits in the nigrostriatal dopamine system. *Neuron*, **25**, 239-251(2000).

7. Masliah, E., et al., Dopaminergic loss and inclusion body formation in α-synuclein mice: implications for neurodegenerative disorders. *Science*, **287**, 1265-1269 (2000).

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