

Alpha Synuclein Protein

Human Recombinant Alpha Synuclein Pre-formed Fibrils (Type 2)
Catalog No. SPR-317



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Product Name

Alpha Synuclein Protein

Description

Human Recombinant Alpha Synuclein Pre-formed Fibrils (Type 2)

Applications

WB, SDS-PAGE, In vivo assay, In vitro assay

Concentration

Lot/batch specific. See included datasheet.

Conjugates

No tag

Nature

Recombinant

Species

Human

Expression System

E. coli

Amino Acid Sequence

MDVFMKGLSKAKEGVAAAEEKTKQGVAEAAAGKTKEGVLYVGSKTKEGVVHGVATVAEKTKEQVTNVGGAVTGVTAVA
QKTVEGAGSIAAATGFVKKDKLQKNEEGAPQEGILEDMPVDPDNEAYEMPSEEGYQDYPEA

Purity

0.92

Protein Length

Full Length

Biological Activity

Does not induce Lewy body inclusion formation in Sprague-Dawley rat primary hippocampal neurons. Thioflavin T emission curve shows only a small increase in fluorescence (indicative of alpha synuclein aggregation) when Type 2 alpha synuclein PFFs (SPR-317) are combined with alpha synuclein monomers (SPR-321 or SPR-316). Certain biological activities in other neuronal cells cannot be ruled out. Researchers should test compatibility prior to use.

Field Of Use

Not for use in humans. Not for use in diagnostics or therapeutics. For in vitro research use only.

Properties

Storage Buffer

PBS pH 7.4

Storage Temperature

-80°C

Shipping Temperature

Dry Ice. Shipping note: Product will be shipped separately from other products purchased in the same order.

Purification

Ion-exchange Purified

Specificity

~14.46 kDa

Cite This Product

Human Recombinant Alpha Synuclein Protein (StressMarq Biosciences, Canada, Cat # SPR-317)

Certificate Of Analysis

Certified 92% pure using SDS-PAGE analysis.

Other Relevant Information

Endotoxin below 1EU/μg as determined by LAL assay.

Biological Description

Alternative Names

Alpha synuclein PFFs, Alpha synuclein aggregates, Alpha synuclein protein aggregates, Alpha synuclein aggregates, Alpha-synuclein protein, Non-A beta component of AD amyloid protein, Non-A4 component of amyloid precursor protein, NACP protein, SNCA protein, NACP protein, PARK1 protein, SYN protein, Parkinson disease familial 1 Protein

Research Areas

Alzheimer's Disease, Neurodegeneration, Neuroscience, Parkinson's Disease, Synuclein, Tangles & Tau

Cellular Localization

Cytoplasm, Membrane, Nucleus

Accession Number

NP_000336.1

Gene ID

6622

Swiss Prot

P37840

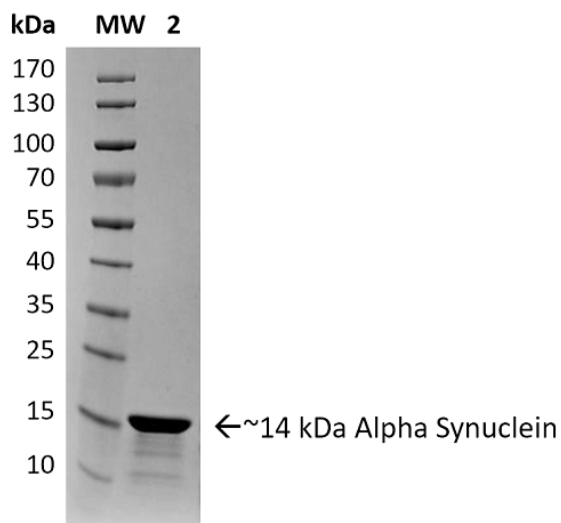
Scientific Background

Alpha-Synuclein (SNCA) is expressed predominantly in the brain, where it is concentrated in presynaptic nerve terminals (1). Alpha-synuclein is highly expressed in the mitochondria of the olfactory bulb, hippocampus, striatum and thalamus (2). Functionally, it has been shown to significantly interact with tubulin (3), and may serve as a potential microtubule-associated protein. It has also been found to be essential for normal development of the cognitive functions; inactivation may lead to impaired spatial learning and working memory (4). SNCA fibrillar aggregates represent the major non A-beta component of Alzheimer's disease amyloid plaque, and a major component of Lewy body inclusions, and Parkinson's disease. Parkinson's disease (PD) is a common neurodegenerative disorder characterized by the progressive accumulation in selected neurons of protein inclusions containing alpha-synuclein and ubiquitin (5, 6).

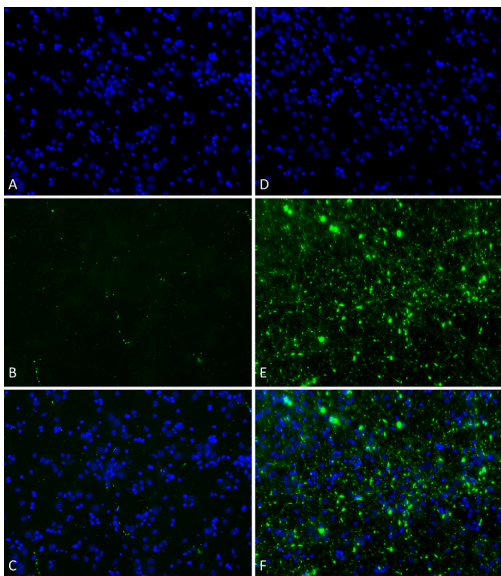
References

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 4. Kokhan V.S., Afanasyeva M.A., Van'kin G. (2012) Behav. Brain. Res. 231(1): 226-230.
 5. Spillantini M.G., et al. (1997) Nature. 388(6645): 839-840.
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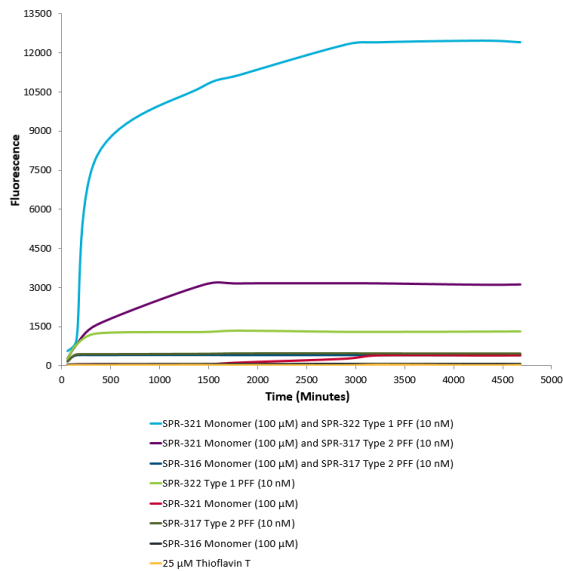
Product Images



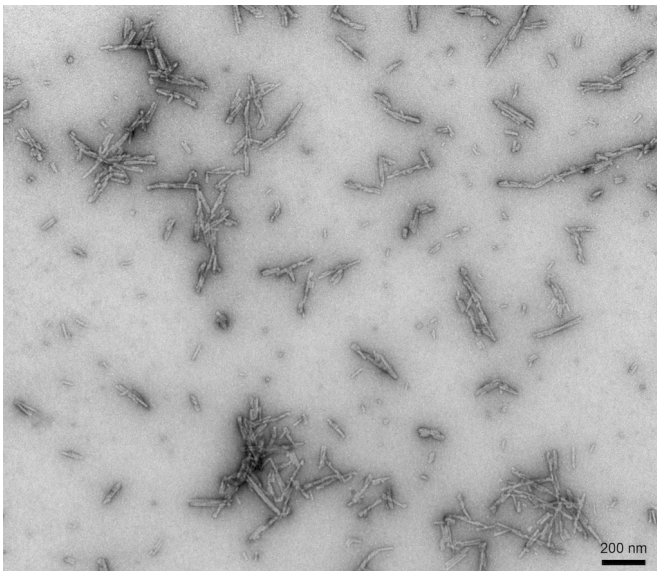
SDS-PAGE of ~14 kDa Human Recombinant Alpha Synuclein Protein Preformed Fibrils (Type 2) (SPR-317). Lane 1: Molecular Weight Ladder (MW). Lane 2: Alpha Synuclein Protein Preformed Fibrils (SPR-317).



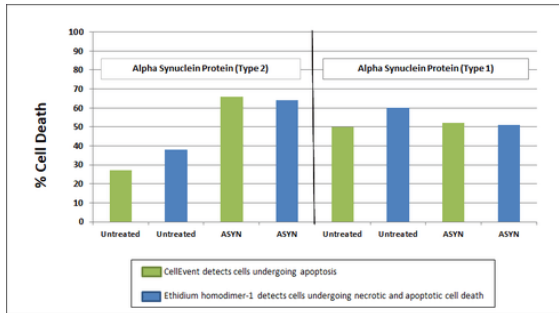
Primary rat hippocampal neurons show lewy body inclusion formation when treated with Type 1 Alpha Synuclein Preformed Fibrils (SPR-322) at 4 µg/ml (D-F), but not when treated with Type 2 Alpha Synuclein Preformed Fibrils (SPR-317) at 4 µg/ml (A-C). Tissue: Primary hippocampal neurons. Species: Sprague-Dawley rat. Fixation: 4% formaldehyde made from PFA. Primary Antibody: Mouse anti-pSer129 Antibody at 1:1000 24 hours at 4°C. Secondary Antibody: FITC Goat Anti-Mouse (green) at 1:700 for 1 hours at RT. Counterstain: Hoechst (blue) nuclear stain at 1:4000 for 1 hour at RT. Localization: Lewy body inclusions. Magnification: 20x.



Type 1 alpha synuclein preformed fibrils (SPR-322) seed the formation of new alpha synuclein fibrils from the pool of alpha synuclein monomers (SPR-321). Thioflavin T is a fluorescent dye that binds to beta sheet-rich structures, such as those in alpha synuclein fibrils. Upon binding, the emission spectrum of the dye experiences a red-shift and increased fluorescence intensity. Thioflavin T emission curves show increased fluorescence (correlated to alpha synuclein protein aggregation) over time when 10 nM of Type 1 alpha synuclein preformed fibrils (SPR-322) is combined with 100 μM of alpha synuclein monomer (SPR-321), as compared to when 10 nM of Type 2 alpha synuclein preformed fibrils (SPR-317) is combined with 100 μM of alpha synuclein monomer (SPR-321) or 100 μM of alpha Synuclein monomer (SPR-316). Thioflavin T λ_{ex} = 450 nm, λ_{em} = 485 nm.



TEM of Type 2 Alpha Synuclein Preformed Fibrils (PFFs) (SPR-317)



Toxicity results comparing Active Human Recombinant Alpha Synuclein Preformed Fibrils (Type 2) (Catalog No. SPR-317) and Active Human Recombinant Alpha Synuclein Preformed Fibrils (Type 1) (Catalog No. SPR-322). Data was graphed after live cell imaging results were obtained using the following procedure: After 8 days in vitro, primary rat mixed cortical neuron cells were washed with 1X PBS and treated with 500 µg/ml of Type 1 and Type 2 Alpha Synuclein Proteins for 20 hours at 37°C. Following treatments, cells were washed with 2X PBS and incubated with a staining solution (2.0 µM Cell Event + 2.5 µM Ethidium homodimer + 2.5 µg/ml Hoechst 33342 in sterile HBSS) for 30 minutes at 37°C. The addition of the Type 2 Alpha Synuclein Proteins resulted in a significant increase in cell death.