Alpha-Synuclein Protein Monomers

Catalog No. 10001

Technical Parameters

Product name: Alpha-synuclein Protein monomers
Specie: Human
Nature: Recombinant
Expression System: *E. coli*
Tag: Tag Free
Amino Acid Sequence: MDVFMKGLSK AKEGVVAAAE KTKQGVAEAA GKTKEGVLYVGSKTKEGVVH GVATVAEKTK EQVTNVGGAV VTGVTAVAQK TVEGAGSIAA ATGFVKKDQL GKNEEGAPQE GILEDMPVDP DNEAYEMPSE EGYQDYEPEA
Molecular Weight: 14.5 kDa (Full Leght). The protein migrates as 15-17 kDa under reducing condition (SDS-PAGE). 140 amino acids.
Applications: SDS-PAGE, WB, dot blot, *In vitro* and *In vivo* assays.
Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis. This product may contain endotoxins and it is not suitable for inflammation assays.

Properties

Size: 500 µg
Appearance: Lyophilized powder
Formulation: Lyophilized from a 0.2 µm filtered solution of HEPES 2 mM, pH 7.4. *Contact us for customized product form or formulation*.
Reconstitution: it is recommended to reconstitute to a concentration less than 300 µg/mL in HEPES 20 mM, NaCl 150 mM, pH 7.4 or PBS, pH 7.4.
Purification: Purified by ion-exchange chromatography.
Purity: > 95% as determined by SDS-PAGE.
Endotoxins: ND
Store and Stability: After reconstitution it is stable at 4°C for 4 weeks, -20°C for 4 weeks or RT for 4 weeks. It is recommended to freeze aliquots at -80°C for up to 12 months under sterile conditions. Avoid freeze-thaw cycles.
Shipping: This product is shipped with dry ice or 25°C, may vary elsewhere. Please inquire the shipping cost.
Cite This Product: Alpha-synuclein Protein monomers (BRINDx, Argentina, Cat # 10001).

Biological Descriptions

Background: Alpha-synuclein is a protein that, in humans, is encoded by the *SNCA* gene. Alpha-synuclein is a neuronal protein that regulates synaptic vesicle trafficking and subsequent neurotransmitter release. It is abundant in the brain, while smaller amounts are found in the heart, muscle and other tissues. In the brain, alpha-synuclein is found mainly in the axon terminals of presynaptic neurons. Within these terminals, alpha-synuclein interacts with phospholipids and proteins. Presynaptic terminals release chemical messengers, called neurotransmitters, from compartments known as synaptic vesicles. The release of neurotransmitters relays signals between neurons and is critical for normal brain function. In Parkinson's disease and other synucleinopathies, insoluble forms of alpha-synuclein accumulate as inclusions in Lewy bodies. Familial Parkinson's disease is associated with mutations in the alpha-synuclein (SNCA) gene. In the process of seeded nucleation, alpha-synuclein acquires a cross-sheet structure similar to other amyloids. The human alpha-synuclein protein is made of 140 amino acids. An alpha-synuclein fragment, known as the non-amyloid beta component (NAC) of Alzheimer's disease amyloid, originally found in an amyloid-enriched fraction, was shown to be a fragment of its precursor protein, NACP. It was later determined that NACP was the human homologue of Torpedo synuclein. Therefore, NACP is now referred to as human alpha-synuclein.

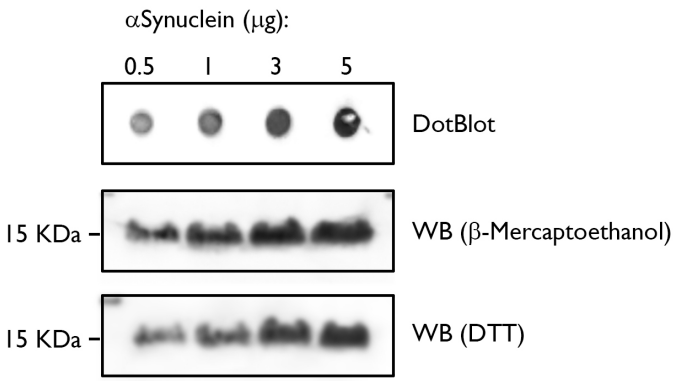
Research area: Neuroscience. Neurogenerative disorders. Parkinson's disease. Alzheimer's disease. Synucleinopathies. Tauopathies.

Cellular Localization: Cytoplasm, Membrane, Nucleus.

Synonyms: synuclein alpha, NACP, PARK1, PARK4, PD1.

Data Base: Gene ID: 6622 [NCBI].
Accession: #P37840.

Product Data



Dot Blot and Western Blot. Alpha-synuclein protein monomer.

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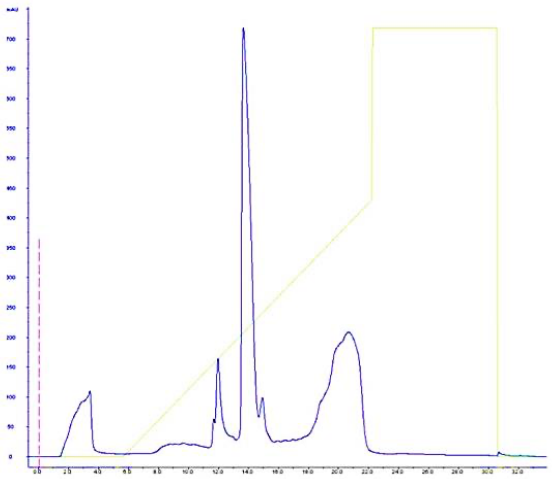
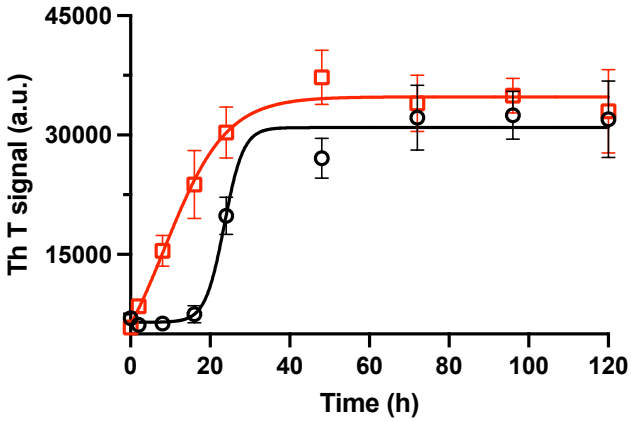


FPLC. Alpha-synuclein protein Chromatrogram purification . Elution of the protein by performing a NaCl concentration gradient up to 60%. The peak with the highest absorbance corresponds to the purified protein.

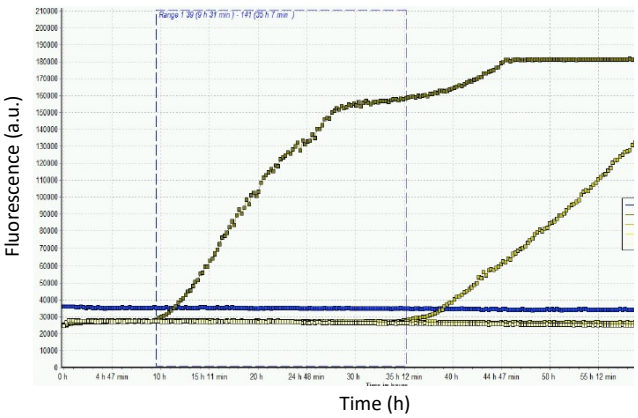
Applications

1. Aggregation kinetics



ThT Assay. In seeding assays, αS PFF served as efficient seeds to accelerate aggregation of α-synuclein monomers (red squares). The unseeded aggregation kinetics of αS monomer (no seeds) is also shown (black circles). For this assay, solutions were incubated at 37 °C under continuous orbital agitation and aggregation was measured by ThT fluorescence emission.

2. Substrate for Seeding Aggregation Assay



RT-QuiC. αS PFF served as efficient seeds to accelerate aggregation of α-synuclein monomers (dark green). For this assay, solutions were incubated at 42 °C and aggregation was measured by ThT fluorescence emission.

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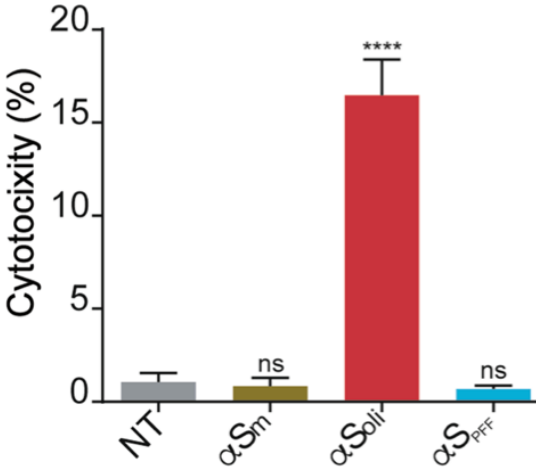
3. Alpha synuclein oligomers citotoxicity



Citotoxicity. LDH cytotoxicity assay in SH-SY5Y cells after the addition of αS monomer, αS oligomers and αS PFF. The cytotoxicity signal was normalized to values obtained after addition of Triton X-100. One-way ANOVA followed by Holm-Sidak's multiple comparisons test. ****p < 0.0001 vs NT.

References

1. Repurposing doxycycline for synucleinopathies: remodelling of α-synuclein oligomers towards non-toxic parallel beta-sheet structured species. *Scientific Report (Nature)*. DOI: 10.1038/srep41755.

2. Rifampicin and Its Derivative Rifampicin Quinone Reduce Microglial Inflammatory Responses and Neurodegeneration Induced In Vitro by α-Synuclein Fibrillary Aggregates. Cells. DOI: 10.3390/cells8080776.

3. Microglial glutamate release evoked by α-synuclein aggregates is prevented by dopamine. Glia. DOI: 10.1002/glia.23472.

4. Neuroprotective Effects of a Novel Demeclocycline Derivative Lacking Antibiotic Activity: From a Hit to a Promising Lead Compound. Celss. DOI: 10.3390/cells11172759.

5. CMT-3 targets different α-synuclein aggregates mitigating their toxic and inflammogenic effects. Scientific Report (Nature). DOI: 10.1038/s41598-020-76927-0.