

Alpha-Synuclein Protein Pre-Formed Fibrils (PFF)

Catalog No. 10010

Technical Parameters

Product name: Alpha-synuclein Protein Pre-Formed Fibrils (PFF)

Specie: Human

Nature: Recombinant

Expression System: *E. coli*

Tag: Tag Free

Amino Acid Sequence: MDVFMKGLSK AKEGVVAAAE KTKQGVAEAA

GKTKEGVLYVGSKTKEGVVH GVATVAEKTQ EQVTNVGGAV

VTGVTAVAQK TVEGAGSIAA ATGFVKKDQL GKNEEGAPQE

GILEDMPVDP DNEAYEMPSE EGYQDYPEA

Molecular Weight: 14.5 kDa (Full Length). 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.

Properties

Size: 100 µg

Appearance: Liquid.

Storage Buffer: HEPES 20 mM, NaCl 150 mM, pH 7.4. *Contact us for customized product form or formulation.*

Concentration: Lot/batch specific. See included datasheet.

Purification: Purified by ion-exchange chromatography.

Purity: > 95% as determined by SDS-PAGE.

Endotoxins: Less than 1.0 EU per µg by the LAL method.

Storage: It is recommended to freeze aliquots at -80°C for X months under sterile conditions. Avoid freeze-thaw cycles.

Shipping: This product is shipped with dry ice. Please inquire the shipping cost.

Relevant information: For best results sonicate before use.

Cite This Product: Alpha-synuclein Protein Pre-Formed Fibrils (PFF) (BRINDx, Argentina, Cat # 10010).

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.

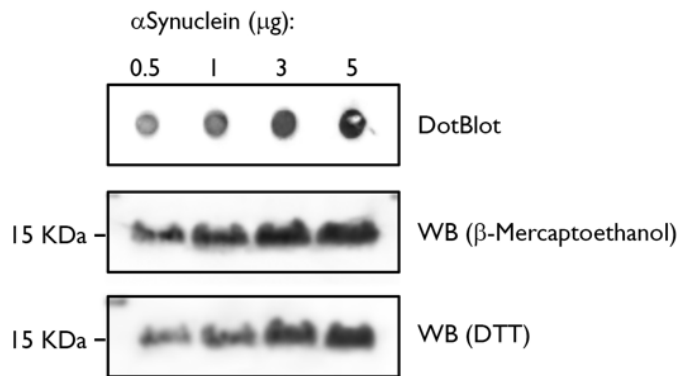
Cellular Localization: Cytoplasm, Membrane, Nucleus.

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

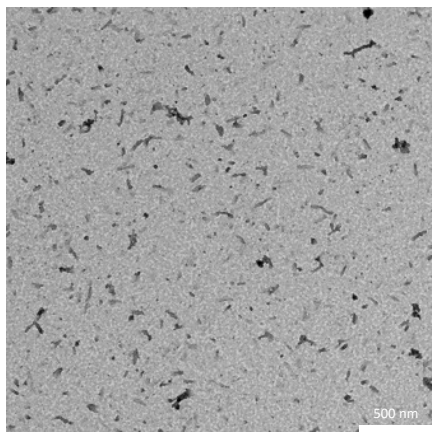
Data Base: Gene ID: 6622 [NCBI].

Accession: #P37840.

Product Data



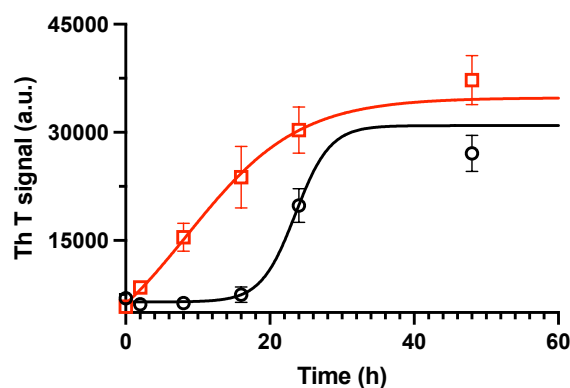
Dot Blot and Western Blot.
 Alpha-synuclein protein monomer.



TEM. Transmission electron microscopy of sonicated Alpha-synuclein Protein Pre-Formed Fibrils (PFF).

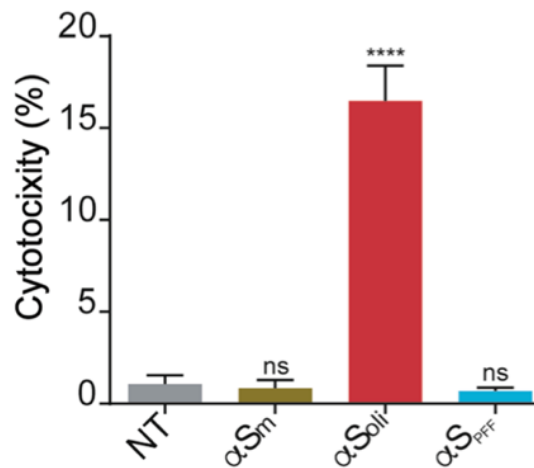
Applications

1. Seeding assay in test tube



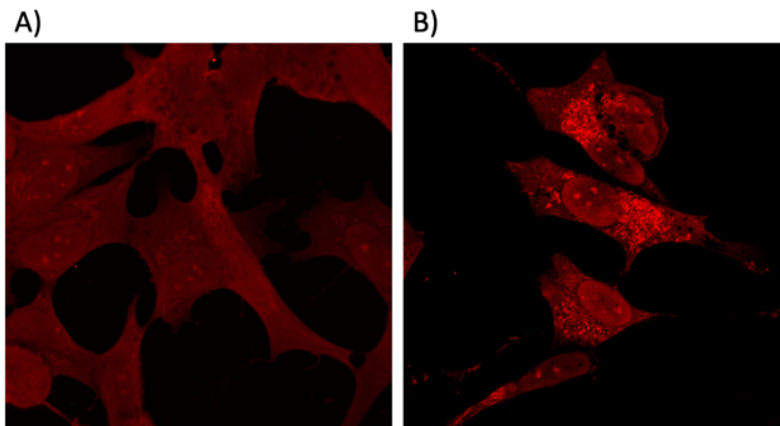
ThT Assay. In seeding assays, α S PFF served as efficient seeds to accelerate aggregation of α -synuclein monomers (red squares). The unseeded aggregation kinetics of α S monomer (no seeds) is also shown (black circles). For this assay, solutions were incubated at 37 °C under continuous orbital agitation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

2. Cytotoxicity

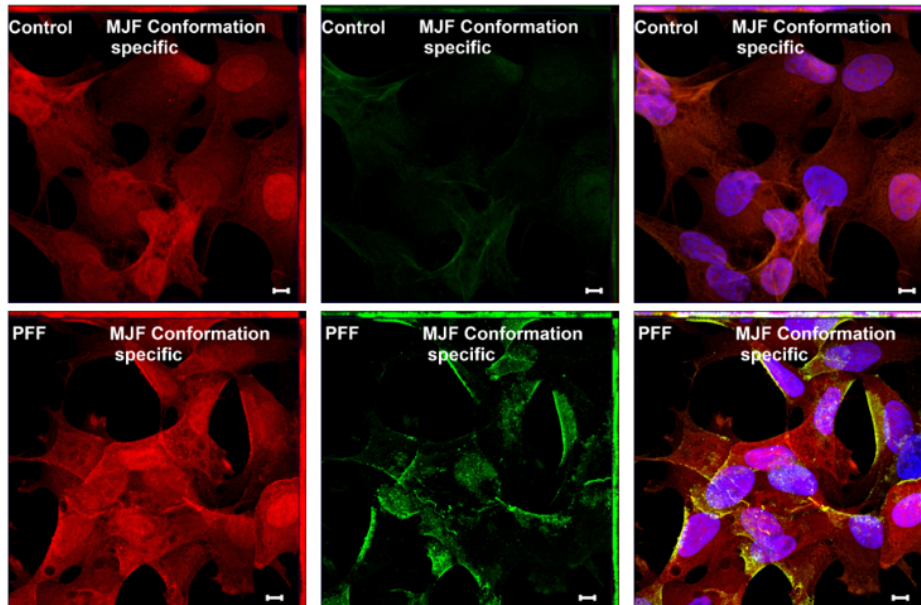


Cytotoxicity. LDH cytotoxicity assay in SH-SY5Y cells after the addition of α S monomer, α S oligomers and α S PFF. The cytotoxicity signal was normalized to values obtained after addition of Triton X-100. One-way ANOVA followed by Holm-Sidak's multiple comparisons test. **** $p < 0.0001$ vs NT.

3. Seeding assay on SH-SY5Y cells



Effect of α -SynPFF-induced seeding of cytoplasmic α -Syn. (a–b) SH-SY5Y transgenic cell line (Innoprot #P30707-02) expressing α -Syn-tRFP treated with α -SynPFF. The left panel corresponds to non-treatment conditions and the right panel are cells treatment with α -SynPFF.



Effect of α -SynPFF-induced seeding of cytoplasmic α -Syn. SH-SY5Y transgenic cell line (Innoprot #P30707-02) expressing α -Syn-tRFP treated with α -SynPFF. The upper panel corresponds to non-treatment conditions and the right panel are cells treatment with α -SynPFF. The green channel correspond is an antibody against α -SynPFF.

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.