Product datasheet

Recombinant Human Alpha-synuclein protein aggregate (Active) ab218819

9 Images

Overview

Product name: Recombinant Human Alpha-synuclein protein aggregate (Active)
Protein length: Full length protein
Description: Recombinant human Alpha-synuclein protein (Active)

Nature: Recombinant
Source: Escherichia coli

Amino Acid Sequence

Accession: P37840
Species: Human
Sequence:

MDVFMKGLSK AKEGVVAEEE KTKQGVAEEA
GKTKEGVLV GSKTEKVTVH GVATVAEKT
EQVTNVGAV VTGVTAVAQK TVEGASIAA
ATGFVKKDQL GKNEEGAPQE GLEDMPVDP
DNEAYEMPSE EGYQDYEPEA

Molecular weight: 14 kDa
Amino acids: 1 to 140

Additional sequence information: (NP_000336.1) (GeneID 6622)

Specifications

Our Abpromise guarantee covers the use of ab218819 in the following tested applications. The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Biological activity: Endogenous alpha-synuclein phosphorylation.

100 µM alpha synuclein protein monomer (ab218818) seeded with 10 nM alpha synuclein protein aggregate (ab218819) in 25 µM Thioflavin T (ab120751) (PBS pH 7.4, 100 µl reaction volume) generated a fluorescence intensity of 13,000 Relative Fluorescence Units after incubation at 37°C with shaking at 600 rpm for 24 hours.

Fluorescence was measured by excitation at 450 nm and emission at 485 nm on a microplate.
Applications

Western blot
Functional Studies
SDS-PAGE

Purity

> 95% SDS-PAGE.
ab218819 was purified by ion-exchange.

Form

Liquid

Additional notes

Learn more.

Preparation and Storage

Stability and Storage

Shipped on Dry Ice. Store at -80°C. Avoid freeze / thaw cycle.
Constituent: PBS
This product is an active protein and may elicit a biological response in vivo, handle with caution.

General Info

Function

May be involved in the regulation of dopamine release and transport. Induces fibrillization of microtubule-associated protein tau. Reduces neuronal responsiveness to various apoptotic stimuli, leading to a decreased caspase-3 activation.

Tissue specificity

Expressed principally in brain but is also expressed in low concentrations in all tissues examined except in liver. Concentrated in presynaptic nerve terminals.

Involvement in disease

Genetic alterations of SNCA resulting in aberrant polymerization into fibrils, are associated with several neurodegenerative diseases (synucleinopathies). SNCA fibrillar aggregates represent the major non A-beta component of Alzheimer disease amyloid plaque, and a major component of Lewy body inclusions. They are also found within Lewy body (LB)-like intraneuronal inclusions, glial inclusions and axonal spheroids in neurodegeneration with brain iron accumulation type 1.
Parkinson disease 1
Parkinson disease 4
Dementia Lewy body

Sequence similarities

Belongs to the synuclein family.

Domain

The 'non A-beta component of Alzheimer disease amyloid plaque' domain (NAC domain) is involved in fibrils formation. The middle hydrophobic region forms the core of the filaments. The C-terminus may regulate aggregation and determine the diameter of the filaments.

Post-translational modifications

Phosphorylated, predominantly on serine residues. Phosphorylation by CK1 appears to occur on residues distinct from the residue phosphorylated by other kinases. Phosphorylation of Ser-129 is selective and extensive in synucleinopathy lesions. In vitro, phosphorylation at Ser-129 promoted insoluble fibril formation. Phosphorylated on Tyr-125 by a PTK2B-dependent pathway upon osmotic stress.
Hallmark lesions of neurodegenerative synucleinopathies contain alpha-synuclein that is modified by nitration of tyrosine residues and possibly by dityrosine cross-linking to generated stable oligomers.
Ubiquitinated. The predominant conjugate is the diubiquitinated form.
Acetylation at Met-1 seems to be important for proper folding and native oligomeric structure.

Cellular localization

Immunohistochemical analysis of primary rat hippocampal neurons showing Lewy body inclusion formation when treated with active Alpha Synuclein Protein Aggregate (ab218819) at 4 µg/ml (D-F), but not when treated with control Alpha Synuclein Protein Aggregate (ab218817) at 4 µg/ml (A-C). Tissue: Primary hippocampal neurons. Species: Sprague-Dawley rat. Fixation: 4% formaldehyde from PFA. Primary antibody: Mouse anti-pSer129 Antibody at 1/1000 for 24 hours at 4°C. Secondary antibody: FITC Goat Anti-Mouse (green) at 1/700 for 1 hour at RT. Counterstain: Hoechst (blue) nuclear stain at 1/4000 for 1 hour at RT. Localization: Lewy body inclusions. Magnification: 20x.

ab218819 seeds the formation of new alpha synuclein fibrils from the pool of alpha synuclein monomers.

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 ab218819 is combined with 100 µM of alpha synuclein monomer, as compared to ab218819 alone and alpha synuclein monomer alone.

Thioflavin T ex = 450 nm, em = 485 nm.
TEM of active human alpha synuclein preformed fibrils (ab218819) (top) and control (inactive) human alpha synuclein preformed fibrils (ab218817) (bottom). Fibrils were sonicated and treated with uranyl acetate. The active fibrils are shorter than the inactive fibrils.

ThT emission curves show increased fluorescence (correlated to alpha-synuclein protein aggregation) over time when 10 nM of active alpha-synuclein aggregate (ab218819) is combined with 100 µM of active alpha-synuclein monomer (ab218818) (light blue), as compared to when 100 µM of active alpha-synuclein monomer is combined with 10 nM of control alpha-synuclein aggregate (purple line), or 100 µM of control alpha-synuclein monomer (ab218816) is combined with 10 nM of control alpha-synuclein aggregate (ab218817) (dark blue). ThT ex = 450 nm, em = 485 nm. View protocol.
SDS-PAGE analysis of ab218819.

TEM of active human alpha synuclein preformed fibrils (ab218819) (top) and control (inactive) human alpha synuclein preformed fibrils (ab218817) (bottom). Fibrils were sonicated and treated with uranyl acetate. The active fibrils are shorter than the inactive fibrils.
TEM of active human alpha synuclein preformed fibrils (ab218819). Fibrils were sonicated and treated with uranyl acetate.
Immunohistochemistry analysis of rat brain injected with active human alpha synuclein PFFs (ab218819). Species: Female Sprague-Dawley Rat. Rat was injected with 2µL active human alpha synuclein PFFs (ab218819) in each of 2 injection sites: AP+1.6, ML+2.4, DV-4.2 from skull; and AP-1.4, ML+0.2, DV-2.8 from skull. 30-days post-injection. Fixation: Saline perfusion followed by 4% PFA fixation for 48 hrs. Secondary Antibody: Biotin-SP Donkey Anti-Rabbit IgG (H+L) at 1:500 for 2 hours in cold room with shaking. ABC signal amplification, DAB staining. Alpha synuclein pathology is seen in the striatum close to an injection site.

Please note: All products are "FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES"

Our Abpromise to you: Quality guaranteed and expert technical support

- Replacement or refund for products not performing as stated on the datasheet
- Valid for 12 months from date of delivery
- Response to your inquiry within 24 hours
- We provide support in Chinese, English, French, German, Japanese and Spanish
- Extensive multi-media technical resources to help you
- We investigate all quality concerns to ensure our products perform to the highest standards

If the product does not perform as described on this datasheet, we will offer a refund or replacement. For full details of the Abpromise, please visit https://www.abcam.com/abpromise or contact our technical team.

Terms and conditions

- Guarantee only valid for products bought direct from Abcam or one of our authorized distributors