



LD Biopharma, Inc.
7384 Trade Street, Suite B
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Tel: 858-876-8266
<http://www.ldbiopharma.com>

- PRODUCT DATA SHEET -

Name of Product: Recombinant YFP-Human **CYPA** Protein
Catalog Number: HRP-3447
Manufacturer: LD Biopharma, Inc. USA

Introduction

Human Cyclophilin A (Peptidyl-prolyl cis-trans isomerase A, CYPA) gene encodes a protein which catalyzes the cis-trans isomerization of proline imidic peptide bonds in oligopeptides. It exerts a strong chemotactic effect on leukocytes partly through activation of one of its membrane receptors BSG/CD147, initiating a signaling cascade that culminates in MAPK/ERK activation. CYPA also activates endothelial cells (ECs) in a proinflammatory manner by stimulating activation of NF-kappa-B and ERK, JNK and p38 MAP-kinases and by inducing expression of adhesion molecules including SELE and VCAM1. CYPA induces apoptosis in ECs by promoting the FOXO1-dependent expression of CCL2 and BCL2L11 which are involved in EC chemotaxis and apoptosis. In response to oxidative stress, CYPA initiates proapoptotic and antiapoptotic signaling in ECs via activation of NF-kappa-B and AKT1 and up-regulation of antiapoptotic protein BCL2. It negatively regulates MAP3K5/ASK1 kinase activity, autophosphorylation and oxidative stress-induced apoptosis mediated by MAP3K5/ASK1. It is necessary for the assembly of TARDBP in heterogeneous nuclear ribonucleoprotein (hnRNP) complexes and regulates TARDBP binding to RNA UG repeats and TARDBP-dependent expression of HDAC6, ATG7 and VCP which are involved in clearance of protein aggregates. It plays an important role in platelet activation and aggregation. CYPA regulates calcium mobilization and integrin ITGA2B:ITGB3 bidirectional signaling via increased ROS production as well as by facilitating the interaction between integrin and the cell cytoskeleton. It also binds heparan sulfate glycosaminoglycans. Recent data indicated that APOE4 accelerates advanced-stage Blood-brain barrier (BBB) breakdown and neurodegeneration in Alzheimer's mice via the CYPA pathway in pericytes independently of amyloid- β , which has implication for the pathogenesis and treatment of vascular and neurodegenerative disorder in AD.

Full-length human CYPA cDNA (164aa, Isoform-I) was constructed with codon optimization gene synthesis and expressed with YFP Protein as N-terminal (YFP; 256aa) fusion protein in *E.coli* as inclusion bodies. The final product was refolded using our unique "temperature shift inclusion body refolding" technology and chromatographically purified.

Gene Symbol: CYPA (PPIA; Cyclophilin A)
Accession Number: NP_066953



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Species:	Human
Size:	50µg / Vial
Composition:	2.0 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose, DTT and others.
Storage:	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least two weeks.

Key References

Montagne, A., et al. ***APOE4 accelerates advanced-stage vascular and neurodegenerative disorder in old Alzheimer's mice via cyclophilin A independently of amyloid-β.*** Nat Aging 1, 506-520 (2021).
doi: 10.1038/s43587-021-00073-z

Babu M, et al., ***Proline/arginine dipeptide repeat polymers derail protein folding in amyotrophic lateral sclerosis.*** Nat Commun 12 (1), 3396 (2021)

Piotukh K, et al., ***Cyclophilin A binds to linear peptide motifs containing a consensus that is present in many human proteins.*** J Biol Chem 280 (25), 23668-23674 (2005)

Applications

1. May be used for in vitro CYPA protein mediated signaling in apoptosis pathway regulation for various cell study using intracellular delivery of recombinant human YFP-CYPA protein with protein delivery reagent such as ProFectin.
2. May be used for CYPA protein-protein interaction assay.
3. May be used as specific substrate protein for CYPA specific kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. Potential therapeutic protein, modulating CYPA activity may be benefit of neurologic diseases prevention or treatment.
5. As native human CYPA antigen for its specific antibody production.

Quality Control

Purity: > 92 % by SDS-PAGE.



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Recombinant **YFP**- Human CYPA Fusion Protein Sequence (47.1 kD)

MK**HHHHHH**QVSKGEELFTGVVPIVVELDGDVNGHKFSVSGEGEGDATYGKLTLLKLLCTTGKLPVPWPTLV
TTLGYGVQCFARYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAEVKFE~~GD~~TLVNRIELKIDFK
EDGNILGHKLEYNYN~~SH~~VYITADKQKNGIKANFKIRHNI~~ED~~GGVQLADHYQ~~QNT~~PIGDGPVLLPDNHYL
SYQSALFKDPNEKRDHMLLEFLTAAGITEGMNELYK**GSENL****YFQGEF**VNPTVFFDIAVDGEPLGRVSFE
LFADKVPKTAENFRALSTGEKGFYKGS~~CF~~HRIIPGFMCQGGDFTRHNGTGGKSIYGEKFEDENFILKHT
GPGILSMANAGPNTNGSQFFICTAKTEWLDGKHVVF~~GK~~VKEGMNIVEAMERFGSRNGKTSKKIT~~I~~ADCGQ
LE