LD Biopharma, Inc.
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- PRODUCT DATA SHEET -

Name of Product: Recombinant Human PADI2 Protein
Catalog Number: hRP-1967
Manufacturer: LD Biopharma, Inc.

Introduction

Human protein-arginine deiminase type-2 (PADI2) gene encodes a member of the peptidyl arginine deiminase family of enzymes, which catalyze the post-translational deimination of proteins by converting arginine residues into citrullines in the presence of calcium ions. The family members have distinct substrate specificities and tissue-specific expression patterns. The type II enzyme is the most widely expressed family member. Known substrates for this enzyme include myelin basic protein in the central nervous system and vimentin in skeletal muscle and macrophages. PADI2 is thought to play a role in the onset and progression of neurodegenerative human disorders, including Alzheimer disease and multiple sclerosis, and it has also been implicated in glaucoma pathogenesis. This gene exists in a cluster with four other paralogous genes.

Full-length human PADI2 cDNA (437aa, Isoform-II) was constructed with codon optimization using gene synthesis technology and expressed with a small T7-His-TEV cleavage site Tag (29aa) fusion at its N-terminal. It was expressed 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:	PADI2 (PAD-H19; PAD2; PDI2)
Accession Number:	NP_031391
Species:	Human
Size:	20 µg / Vial
Composition:	0.2 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.
Storage:	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

Key References

G McNee, et al., *Citrullination of Histone H3 Drives IL-6 Production by Bone Marrow Mesenchymal Stem Cells in MGUS and Multiple Myeloma*. Leukemia. Aug, 12; p1-6. Doi:10.1038/leu.2016.187 (2016).

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Spengler J, et al., *Release of Active Peptidyl Arginine Deiminases by Neutrophils Can Explain Production of Extracellular Citrullinated Autoantigens in Rheumatoid Arthritis Synovial Fluid*. Arthritis Rheumatol 67 (12), 3135-3145 (2015)

McElwee JL, et al., *PAD2 overexpression in transgenic mice promotes spontaneous skin neoplasia*. Cancer Res. 74 (21), 6306-6317 (2014)

Damgaard,D., et al., *Demonstration of extracellular peptidylarginine deiminase (PAD) activity in synovial fluid of patients with rheumatoid arthritis using a novel assay for citrullination of fibrinogen*. Arthritis Res. Ther. 16 (6), 498 (2014)

Applications

1. May be used for in vitro PADI2 mediated post-translational deimination of proteins pathway regulation study for neuronal cells by intracellular delivery of this protein with protein delivery reagent such as ProFectin reagent kit.

2. May be used for mapping protein-protein interaction.

3. May be used as as specific substrate protein for kinase, and ubiquitin (Sumo pathway) related enzyme functional screening assays.

4. Potential therapeutic protein for cancer treatments, such as multiple myeloma, et al.

5. As immunogen for specific antibody production.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHHENLYFQGGEFLRERTVRLQYGSRVEAVYVLGTYLWTDVYSAAPAG
AQTFSLKHSEHVWVEVVRDGEAEEVATNGKQRWLLSPSTTLRVTMSQASTEASSDKVTVNYYDE
EGSIPIDQAGLFLTAIEISLDVDADRDGVVEKNNPKKASWTWGPEGQGAILLVNCDRETPWLPK
EDCRDEKVYSKEDLKDMSQMILRTKGPDRLPAGYEIVLYISMSDSDKVGVFYVENPFFGQRYIH
ILGRRKLYHVVKYTGGSAELLFFVEGLCFPDEGFSGLVSIHVSLLEYMAQDIPLTPIFTDTVIF
RIAPWIMTPNILPPVSVFVCCMKDNYLFLKEVKNLVEKTNCELKVCFQYLNRGDRWIQDEIEFG
YIEAPHKGFPVVLDSPRDGNLKDFPVKELLGPDFGYVTREPLFESVTSLDSFGNLEVSPPVTVN
GKTYPLGRILIGSSFPL