LD Biopharma, Inc.
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- PRODUCT DATA SHEET -

Name of Product: Recombinant Human ARG2 Protein
Catalog Number: hRP-1712
Manufacturer: LD Biopharma, Inc.

Introduction

Arginase catalyzes the hydrolysis of arginine to ornithine and urea. At least two isoforms of mammalian arginase exists (types I and II) which differ in their tissue distribution, subcellular localization, immunologic crossreactivity and physiologic function. The type II isoform encoded by human Arginase-2 (ARG2) gene, is located in the mitochondria and expressed in extra-hepatic tissues, especially kidney. The physiologic role of this isoform is poorly understood; it is thought to play a role in nitric oxide and polyamine metabolism. Recent data indicated that tumor cella such as human neuroblastoma tumour cells can suppress T cell proliferation, through increased arginase activity. ARG2 is the predominant isoform expressed and creates an arginine deplete local and systemic microenvironment. Neuroblastoma arginase activity results in inhibition of myeloid cell activation and suppression of bone marrow CD34+ progenitor proliferation.

Full-length human ARG2 cDNA (23-354 aa, Isoform-1, derived from BC029050) gene was constructed using gene synthesis technology with codon optimization. A tag of 31 aa (T7/His/TEV cleavage site) was fused to LHPP N-terminal. This protein is 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:	ARG2
Accession Number:	NP_001163.1
Species:	Human
Size:	50 µg / Vial
Composition:	1.0 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

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Francis Mussai, et al., *Neuroblastma arginase activity creates an immunosuppressive microenvironment that impairs autologous and engineered immunity*. Cancer Res.Aug 1; 75 (15): 3043 – 3045 (2015)

Leiva A, et al., *Maternal hypercholesterolemia in pregnancy associates with umbilical vein endothelial dysfunction: role of endothelial nitric oxide synthase and arginase II*. Arterioscler. Thromb. Vasc. Biol. 33 (10), 2444-2453 (2013)

Leiva A, et al., *Maternal hypercholesterolemia in pregnancy associates with umbilical vein endothelial dysfunction: role of endothelial nitric oxide synthase and arginase II*. Arterioscler. Thromb. Vasc. Biol. 33 (10), 2444-2453 (2013)

Xiong Y, et al., *Arginase-II induces vascular smooth muscle cell senescence and apoptosis through p66Shc and p53 independently of its l-arginine ureahydrolase activity: implications for atherosclerotic plaque vulnerability*. J Am Heart Assoc 2 (4), E000096 (2013)

Ino Y, et al., *Arginase II expressed in cancer-associated fibroblasts indicates tissue hypoxia and predicts poor outcome in patients with pancreatic cancer.* PLoS ONE 8 (2), E55146 (2013)

Applications

1. May be used for in vitro ARG2 protein mediated arginine depletion in tumor microenviroment regulation study in various cancer cells with “ProFectin” reagent based intracellular delivery of this protein (Note: Mitochondrial transit peptide was removed, so this recombinant ARG2 protein will be only located at cytoplasmic one after intracellular protein delivery).

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

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

4. As immunogen for specific antibody production.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

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MASMTGGQQMGRGHHHHHHENLYFQGGEFVHSVAVIGAPFSQGQKRKGVEHGPAAIREAGLMKR
LSSLGCHLKDFGDLSFTPVPKDDLYNNLIVNPRSVGLANQELAEVVSRAVSDGYSCVTLGGDHS
LAIGTISGHARHCPDLCVVWVDAHADINTPLTTSSGNLHGQPVSFLLRELQDKVPQLPGFSWIK
PCISSASIVYIGLRDVDPPEHFILKNYDIQYFSMRDIDRLGIQKVMERTFDLLIGKRQRPIHLS
FDIDAFDPTLAPATGTPVVGGLTYREGMYIAEEIHNTGLLSALDLVEVNPQLATSEEEAKTTAN
LAVDVIASSFGQTREGGHIVYDQLPTPSSPDESENQARVRI