

Recombinant Human LOX5 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50633

Size: 10ug, 100ug

Protein Name: Polyunsaturated fatty acid 5-lipoxygenase (EC 1.13.11.-) (Arachidonate 5-lipoxygenase) (5-LO) (5-lipoxygenase) (EC 1.13.11.34)

Synonym: ALOX5, LOG5

UniProt ID: P09917

UniProt Link: www.uniprot.org/uniprotkb/P09917/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 674 AA

Molecular Weight: 78 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MPSYTVTVATGSQWFAGTDDYIYLSLVGSAGCSEKHLLDKPFYNDFERGAVDSYDVTVDDEELGEIQL
VRIEKRKYWLNDWDYLYITLKTTPHGDYIEFPCYRWITGDVEVVLRDGRAKLARDDQIHILKQHRRKE
LETRQKQYRWMEWNPFGPLSIDAKCHKDLPRDIQFDSEKGVDFVLNYSKAMENLFINRFMHMFQSS
WNDFADFEKIFVKISNTISERVMNHWQEDLMFGYQFLNGCNPVLIRRCTELPEKLPVTTEMVECSLE
RQLSLEQEVQQGNIFIVDFELLDGIDANKTDPCTLQFLAAPICLLYKNLANKIVPIAIQLNQIPGDENPIF
LPSDAKYDWLLAKIWVRSSDFHVHQTITHLLRTHLVSEVFGIAMYRQLPAVHPIFKLLVAHVRFTIAINT
KAREQLICECGLFDKANATGGGGHVQMVMQRAMKDLTYASLCFPEAIKARGMESKEDIPYYFYRDDG
LLVWEAIRTFTAENVVDIYYEGDQVVEEDPELQDFVNDVYVYGMGRGRKSSGFPKSVKSREQLSEYLT
VIFTASAQHAENVFGQYDWCSWIPNAPPTMRAPPTAKGVVTIEQIVDTLPDRGRSCWHLGAVWAL
SQFQENELFLGMYPEEHFIEKPVKEAMARFRKNLEAIVSVIAERNKKKQLPYYYLSPDRIPNSVAI

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Polyunsaturated fatty acid 5-lipoxygenase (EC 1.13.11.-) (Arachidonate 5-lipoxygenase) (5-LO) (5-lipoxygenase) (EC 1.13.11.34) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Catalyzes the oxygenation of arachidonate ((5Z,8Z,11Z,14Z)-eicosatetraenoate) to 5-hydroperoxyeicosatetraenoate (5-HPETE) followed by the dehydration to 5,6-epoxyeicosatetraenoate (Leukotriene A₄/LTA₄), the first two steps in the biosynthesis of leukotrienes, which are potent mediators of inflammation (PubMed:19022417, PubMed:21233389, PubMed:22516296, PubMed:23246375, PubMed:24282679, PubMed:24893149, PubMed:31664810, PubMed:8615788, PubMed:8631361). Also catalyzes the oxygenation of arachidonate into 8-hydroperoxyicosatetraenoate (8-HPETE) and 12-hydroperoxyicosatetraenoate (12-HPETE) (PubMed:23246375). Displays lipoxygenase activity being able to convert (15S)-HETE into a conjugate tetraene (PubMed:31664810). Although arachidonate is the preferred substrate, this enzyme can also metabolize oxidized fatty acids derived from arachidonate such as (15S)-HETE, eicosapentaenoate (EPA) such as (18R)- and (18S)-HEPE or docosahexaenoate (DHA) which lead to the formation of specialized pro-resolving mediators (SPM) lipoxin and resolvins E and D respectively, therefore it participates in anti-inflammatory responses (PubMed:17114001, PubMed:21206090, PubMed:31664810, PubMed:32404334, PubMed:32841762, PubMed:8615788). Oxidation of DHA directly inhibits endothelial cell proliferation and sprouting angiogenesis via peroxisome proliferator-activated receptor gamma (PPARgamma) (By similarity). It does not catalyze the oxygenation of linoleic acid and does not convert (5S)-HETE to lipoxin isomers (PubMed:31664810). In addition to inflammatory processes, it participates in dendritic cell migration, wound healing through an antioxidant mechanism based on heme oxygenase-1 (HO-1) regulation expression, monocyte adhesion to the endothelium via ITGAM expression on monocytes (By similarity). Moreover, it helps establish an adaptive humoral immunity by regulating primary resting B cells and follicular helper T cells and participates in the CD40-induced production of reactive oxygen species (ROS) after CD40 ligation in B cells through interaction with PIK3R1 that bridges ALOX5 with CD40 (PubMed:21200133). May also play a role in glucose homeostasis, regulation of insulin secretion and palmitic acid-induced insulin resistance via AMPK (By similarity). Can regulate bone mineralization and fat cell differentiation increases in induced pluripotent stem cells (By similarity).

Subcellular Localization: Cytoplasm . Nucleus matrix . Nucleus membrane ; Peripheral membrane protein . Cytoplasm, perinuclear region . Cytoplasm, cytosol . Nucleus envelope . Nucleus intermembrane space . Note=Shuttles between cytoplasm and nucleus (PubMed:19233132). Found exclusively in the nucleus, when phosphorylated on Ser-272 (PubMed:18978352). Calcium binding promotes translocation from the cytosol and the nuclear matrix to the nuclear envelope and membrane association (PubMed:16275640, PubMed:19233132, PubMed:3118366, PubMed:8245774).

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.



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- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.