

PRODUCT INFORMATION



5-Lipoxygenase (human, recombinant)

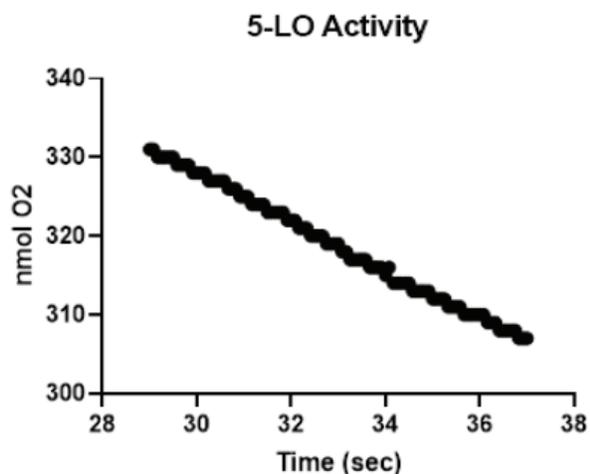
Item No. 60402

Overview and Properties

| | |
|---------------------------|--|
| Synonyms: | 5-LO, 5-LOX, ALOX5, Arachidonate 5-lipoxygenase, LOG5 |
| Source: | Active recombinant human 5-lipoxygenase expressed in insect cells |
| Amino Acids: | 1-674 (full length) |
| Uniprot No.: | P09917 |
| Molecular Weight: | 78 kDa |
| Storage: | -80°C (as supplied); avoid freeze/thaw cycles by aliquoting protein |
| Stability: | ≥6 months |
| Purity: | Clarified lysate |
| Supplied in: | 100 mM Tris-HCl, pH 8.0, with 5 mM EGTA, 1mM calcium chloride, and 30% glycerol |
| Protein | |
| Concentration: | <i>batch specific</i> mg/ml |
| Activity: | <i>batch specific</i> U/ml |
| Specific Activity: | <i>batch specific</i> U/mg |
| Unit Definition: | One unit of enzyme consumes one nmol of oxygen per minute at 25°C in 50 mM Tris-HCl buffer, pH 7.5, with 100 μM arachidonate, 2 mM calcium chloride, 1 mM ATP, 4.6 μM 13(S)-HpODE, and 250 μM oxygen. 5-Lipoxygenase activity is measured at 25°C by monitoring oxygen consumption using a Gilson Model 5/6 H oxygraph equipped with a Clark oxygen electrode. |

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Analytical Data

NOTE: This product is not suitable for use with the Lipoxygenase Inhibitor Screening Assay Kit (Item No. 760700). If you are interested in using a Cayman 5-LO with this kit, please see our 5-LO (potato) Screening Enzyme (Item No. 60401). Also, since 5-LO is a relatively unstable enzyme, keep the stock vial of the enzyme on ice (0-4°C) at all times when performing experiments. The enzyme should be added to the incubation medium (assay mixture) immediately prior to initiation of the experiment.

Description

5-Lipoxygenase (5-LO) is an enzyme encoded by *ALOX5* in humans that is involved in leukotriene biosynthesis.¹ It is composed of an N-terminal regulatory domain and a C-terminal catalytic domain and is primarily expressed in leukocytes. Increases in intracellular calcium levels or cellular stress induce translocation of 5-LO from the cytosol or nucleoplasm, depending on the cell type and 5-LO phosphorylation status, to the nuclear envelope, where it interacts with 5-LO-activating protein (FLAP), which transfers arachidonic acid (Item Nos. 90010 | 90010.1 | 10006607) to 5-LO.^{1,2} 5-LO catalyzes the conversion of arachidonic acid to 5(S)-HpETE (Item No. 44230) and then to leukotriene A₄ (LTA₄).³ Other substrates of 5-LO include 5,8,11,14,17-eicosapentaenoic acid, 5,8,11-eicosatrienoic acid, 5,8-eicosadienoic acid, 12-HpETE, and 15-HpETE. *Alox5* knockout mice are protected against arthritis and pulmonary inflammation.² Knockout of *Alox5* also protects apolipoprotein E-deficient hyperlipidemic mice from high-fat diet-induced hepatic injury and inflammation.⁴ Levels of 5-LO are elevated in postmortem hippocampus and cortex of patients with Alzheimer's disease.⁵ Cayman's 5-Lipoxygenase (human, recombinant) can be used for enzyme activity assays.

References

1. Rådmark, O., Werz, O., Steinhilber, D., *et al.* 5-Lipoxygenase, a key enzyme for leukotriene biosynthesis in health and disease. *Biochim. Biophys. Acta* **1851**(4), 331-339 (2015).
2. Martínez-Clemente, M., Clària, J., and Titos, E. The 5-lipoxygenase/leukotriene pathway in obesity, insulin resistance, and fatty liver disease. *Curr. Opin. Clin. Nutr. Metab. Care* **14**(4), 347-353 (2011).
3. Rådmark, O. Arachidonate 5-lipoxygenase. *Prostaglandins Other Lipid Mediat.* **68-69**, 211-234 (2002).
4. Martínez-Clemente, M., Ferré, N., González-Pérez, A., *et al.* 5-lipoxygenase deficiency reduces hepatic inflammation and tumor necrosis factor α -induced hepatocyte damage in hyperlipidemia-prone ApoE-null mice. *Hepatology* **51**(3), 817-827 (2010).
5. Firuzi, O., Zhuo, J., Chinnici, C.M., *et al.* 5-Lipoxygenase gene disruption reduces amyloid-beta pathology in a mouse model of Alzheimer's disease. *FASEB J.* **22**(4), 1169-1178 (2008).

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