

5-LO (33): sc-136195

BACKGROUND

5-lipoxygenase (5-LO) is expressed primarily in polymorphonuclear leukocytes, macrophages, and mast cells. 5-LO performs the first two catalytic reactions in the biosynthesis of leukotrienes, lipid metabolites that induce contractions of airway smooth muscle and increase vascular permeability during anaphylaxis. The cellular localization of 5-LO varies between cell types. In activated blood polymorphonuclear leukocytes 5-LO undergoes calcium dependent translocation from the cytosol to the nuclear envelope. In alveolar macrophages, the majority of 5-LO is localized in the nucleus and, upon activation of these cells, intranuclear 5-LO binds to the nuclear membrane. This intracellular shuttling of 5-LO is dependent on the association with various signaling molecules, phosphorylation and the presence of a distinct nuclear localization signal, which is encoded at the amino terminus of 5-LO.

REFERENCES

- Matsumoto, T., et al. 1988. Molecular cloning and amino acid sequence of human 5-lipoxygenase. *Proc. Natl. Acad. Sci. USA* 85: 26-30.
- Winkler, J.D., et al. 1993. Influence of arachidonic acid on indices of phospholipase A₂ activity in the human neutrophil. *Biochem. J.* 291: 825-831.
- Woods, J.W., et al. 1995. 5-lipoxygenase is located in the euchromatin of the nucleus in resting human alveolar macrophages and translocates to the nuclear envelope upon cell activation. *J. Clin. Invest.* 95: 2035-2046.

CHROMOSOMAL LOCATION

Genetic locus: ALOX5 (human) mapping to 10q11.21; Alox5 (mouse) mapping to 6 E3.

SOURCE

5-LO (33) is a mouse monoclonal antibody raised against amino acids 442-590 of 5-LO of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

5-LO (33) is recommended for detection of 5-LO of mouse, rat, human and *Arabidopsis thaliana* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500); not recommended for immunoprecipitation.

Suitable for use as control antibody for 5-LO siRNA (h): sc-29596, 5-LO siRNA (m): sc-29597, 5-LO shRNA Plasmid (h): sc-29596-SH, 5-LO shRNA Plasmid (m): sc-29597-SH, 5-LO shRNA (h) Lentiviral Particles: sc-29596-V and 5-LO shRNA (m) Lentiviral Particles: sc-29597-V.

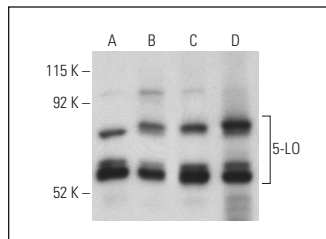
Molecular Weight of 5-LO: 78 kDa.

Positive Controls: RT-4 whole cell lysate: sc-364257, NAMALWA cell lysate: sc-2234 or A-431 whole cell lysate: sc-2201.

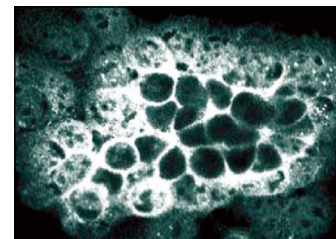
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



5-LO (33): sc-136195. Western blot analysis of 5-LO expression in A-431 (A), NAMALWA (B) and RT-4 (C) whole cell lysates and human spleen tissue extract (D). Detection reagent used: m-IgGκ BP-HRP: sc-516102.



5-LO (33): sc-136195. Immunofluorescence staining of A-431 cells showing cytoplasmic and membrane localization.

SELECT PRODUCT CITATIONS

- Tran, H.T., et al. 2016. Nasturtium (Indian cress, *Tropaeolum majus nanum*) dually blocks the COX and LOX pathway in primary human immune cells. *Phytomedicine* 23: 611-620.
- Maayah, Z.H., et al. 2017. The role of cytochrome P450 1B1 and its associated mid-chain hydroxyeicosatetraenoic acid metabolites in the development of cardiac hypertrophy induced by isoproterenol. *Mol. Cell. Biochem.* 429: 151-165.
- Maayah, Z.H., et al. 2018. 2-methoxyestradiol protects against pressure overload-induced left ventricular hypertrophy. *Sci. Rep.* 8: 2780.
- Lorenzetti, F., et al. 2019. Participation of 5-lipoxygenase and LTB4 in liver regeneration after partial hepatectomy. *Sci. Rep.* 9: 18176.
- Soria-Castro, E., et al. 2020. Alteration of the fatty acid metabolism in the rat kidney caused by the injection of serum from patients with collapsing glomerulopathy. *Biomedicines* 8: 388.
- Bigueti, C.C., et al. 2020. New surgical model for bone-muscle injury reveals age and gender-related healing patterns in the 5 lipoxygenase (5-LO) knockout mouse. *Front. Endocrinol.* 11: 484.
- Sabbir, M.G., et al. 2021. Antisense overlapping long non-coding RNA regulates coding arachidonate 12-lipoxygenase gene by translational interference. *Biochim. Biophys. Acta Mol. Cell Biol. Lipids* 1866: 158987.
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- Ong-Meang, V., et al. 2023. Extracellular vesicles produced by the cardiac microenvironment carry functional enzymes to produce lipid mediators *in situ*. *Int. J. Mol. Sci.* 24: 5866.

RESEARCH USE

For research use only, not for use in diagnostic procedures.