SANTA CRUZ BIOTECHNOLOGY, INC.

Aldose Reductase (C-1): sc-271007

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Aldose Reductase (also designated ALR2) is member of the monomeric NADPH-dependent aldoketoreductase family. Aldose Reductase catalyzes the reduction of various aldehydes and has been implicated in the development of diabetic complications by catalyzing the reduction of the aldehyde form of glucose, to the corresponding sugar alcohol, sorbitol. This pathway plays a minor role in glucose metabolism in most tissues, however in diabetic hyperglycemia, cells undergoing Insulin-independent uptake of glucose accumulate significant quantities of sorbitol. The resulting hyperosmotic stress to cells may be a cause of diabetic complications such as neuropathy, retinopathy, and cataracts. Aldose Reductase is very similar to human Aldehyde Reductase (designated ALR1), bovine prostaglandin F synthase and to the European common frog protein, ρ-crystallin.

CHROMOSOMAL LOCATION

Genetic locus: AKR1B1 (human) mapping to 7q33; Akr1b3 (mouse) mapping to 6 B1.

SOURCE

Aldose Reductase (C-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 115-140 within an internal region of Aldose Reductase of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-271007 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

Aldose Reductase (C-1) is recommended for detection of Aldose Reductase of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Aldose Reductase siRNA (h): sc-37119, Aldose Reductase siRNA (m): sc-29670, Aldose Reductase shRNA Plasmid (h): sc-37119-SH, Aldose Reductase shRNA Plasmid (m): sc-29670-SH, Aldose Reductase shRNA (h) Lentiviral Particles: sc-37119-V and Aldose Reductase shRNA (m) Lentiviral Particles: sc-29670-V.

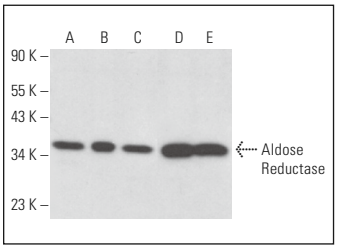
Molecular Weight of Aldose Reductase: 37 kDa.

Positive Controls: A-10 cell lysate: sc-3806, L6 whole cell lysate: sc-364196 or C2C12 whole cell lysate: sc-364188.

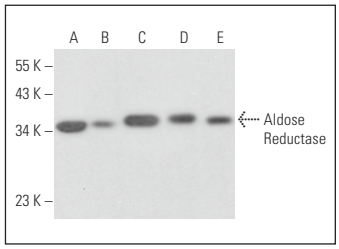
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Aldose Reductase (C-1): sc-271007. Western blot analysis of Aldose Reductase expression in RAW 264.7 (**A**), Sol8 (**B**), C2C12 (**C**), A-10 (**D**) and L6 (**E**) whole cell lysates.



Aldose Reductase (C-1): sc-271007. Western blot analysis of Aldose Reductase expression in ACHN (**A**), RAW 264.7 (**B**), NIH/3T3 (**C**), 3T3-L1 (**D**) and F9 (**E**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Park, J., et al. 2014. Tonicity-responsive enhancer binding protein regulates the expression of Aldose Reductase and protein kinase C δ in a mouse model of diabetic retinopathy. Exp. Eye Res. 122: 13-19.
2. Gao, L., et al. 2015. Steroid receptor coactivators 1 and 2 mediate fetal-to-maternal signaling that initiates parturition. J. Clin. Invest. 125: 2808-2824.
3. Conklin, D.J., et al. 2017. Biomarkers of chronic acrolein inhalation exposure in mice: implications for tobacco product-induced toxicity. Toxicol. Sci. 158: 263-274.
4. Chen, X., et al. 2018. AKR1B1 upregulation contributes to neuroinflammation and astrocytes proliferation by regulating the energy metabolism in rat spinal cord injury. Neurochem. Res. 43: 1491-1499.
5. Maeoka, Y., et al. 2019. NFAT5 up-regulates expression of the kidney-specific ubiquitin ligase gene Rnf183 under hypertonic conditions in inner-medullary collecting duct cells. J. Biol. Chem. 294: 101-115.
6. Pal, P.B., et al. 2019. Aldose Reductase regulates hyperglycemia-induced HUVEC death via SIRT1/AMPK-α1/mTOR pathway. J. Mol. Endocrinol. 63: 11-25.
7. Bose, C., et al. 2021. Anticancer activity of ω-6 fatty acids through increased 4-HNE in breast cancer cells. Cancers 13: 6377.

RESEARCH USE

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