SANTA CRUZ BIOTECHNOLOGY, INC.

ALDH4A1 (F-1): sc-398911

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Aldehyde dehydrogenases (ALDHs) mediate $NADP^+$-dependent oxidation of aldehydes into acids during detoxification of alcohol-derived acetaldehyde, lipid peroxidation and metabolism of corticosteroids, biogenic amines and neurotransmitters. ALDH4A1 (aldehyde dehydrogenase 4 family member A1), also known as P5CD (Δ^1-pyrroline-5-carboxylate dehydrogenase), P5CDh, P5CDhL, P5CDhS or ALDH4, is a major enzyme involved in the proline degradation pathway. Localizing to the mitochondrial matrix, ALDH4A1 catalyzes the conversion of Δ^1-pyrroline-5-carboxylate (P5C) to glutamate. A mutation in the gene encoding ALDH4A1 results in HPII (hyperprolinemia type II), a disease characterized by an excess of P5C and proline that is associated with mental retardation and seizures.

REFERENCES

1. Goodman, S.I., et al. 1974. Defective hydroxyproline metabolism in type II hyperprolinemia. Biochem. Med. 10: 329-336.
2. Flynn, M.P., et al. 1989. Type II hyperprolinaemia in a pedigree of Irish travellers (nomads). Arch. Dis. Child. 64: 1699-1707.
3. Yoshiba, Y., et al. 1997. Regulation of levels of proline as an osmolyte in plants under water stress. Plant Cell Physiol. 38: 1095-1102.
4. Geraghty, M.T., et al. 1998. Mutations in the Δ^1-pyrroline 5-carboxylate dehydrogenase gene cause type II hyperprolinemia. Hum. Mol. Genet. 7: 1411-1415.

CHROMOSOMAL LOCATION

Genetic locus: ALDH4A1 (human) mapping to 1p36.13; Aldh4a1 (mouse) mapping to 4 D3.

SOURCE

ALDH4A1 (F-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 261-288 within an internal region of ALDH4A1 of human 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.

ALDH4A1 (F-1) is available conjugated to agarose (sc-398911 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-398911 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-398911 PE), fluorescein (sc-398911 FITC), Alexa Fluor® 488 (sc-398911 AF488), Alexa Fluor® 546 (sc-398911 AF546), Alexa Fluor® 594 (sc-398911 AF594) or Alexa Fluor® 647 (sc-398911 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-398911 AF680) or Alexa Fluor® 790 (sc-398911 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-398911 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

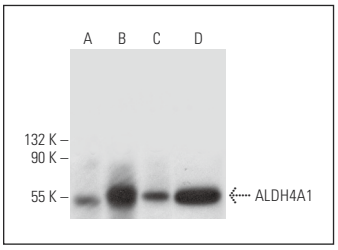
ALDH4A1 (F-1) is recommended for detection of ALDH4A1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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 ALDH4A1 siRNA (h): sc-72478, ALDH4A1 siRNA (m): sc-72479, ALDH4A1 shRNA Plasmid (h): sc-72478-SH, ALDH4A1 shRNA Plasmid (m): sc-72479-SH, ALDH4A1 shRNA (h) Lentiviral Particles: sc-72478-V and ALDH4A1 shRNA (m) Lentiviral Particles: sc-72479-V.

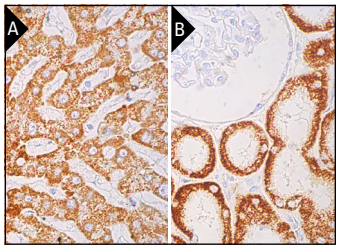
Molecular Weight of ALDH4A1: 62 kDa.

Positive Controls: human kidney extract: sc-363764, human heart extract: sc-363763 or Hep G2 cell lysate: sc-2227.

DATA



ALDH4A1 (F-1): sc-398911. Western blot analysis of ALDH4A1 expression in human liver (**A**), human kidney (**B**) and human heart (**C**) tissue extracts and Hep G2 whole cell lysate (**D**).



ALDH4A1 (F-1): sc-398911. Immunoperoxidase staining of formalin fixed, paraffin-embedded human liver tissue showing cytoplasmic staining of hepatocytes (**A**), and of human kidney tissue showing cytoplasmic staining of cells in tubules (**B**). Blocked with 0.25X UltraCruz® Blocking Reagent: sc-516214. Detection reagents used: m-IgGκ BP-B: sc-516142 and ImmunoCruz® ABC Kit: sc-516216.

SELECT PRODUCT CITATIONS

1. Li, H., et al. 2018. Alcohol metabolism in the progression of human nonalcoholic steatohepatitis. Toxicol. Sci. 164: 428-438.
2. Falavinha, B.C., et al. 2022. Interleukin 21 receptor affects adipogenesis of human adipose-derived stem/stromal cells. Stem Cells Int. 2022: 4930932.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.