SANTA CRUZ BIOTECHNOLOGY, INC.

ALDH4A1 (H-6): sc-398894

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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.
5. Vasiliou, V., et al. 1999. Eukaryotic aldehyde dehydrogenase (ALDH) genes: human polymorphisms, and recommended nomenclature based on divergent evolution and chromosomal mapping. Pharmacogenetics 9: 421-434.
6. Vasiliou, V. and Pappa, A. 2000. Polymorphisms of human aldehyde dehydrogenases. Consequences for drug metabolism and disease. Pharmacology 61: 192-198.
7. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 606811. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
8. Onenli-Mungan, N., et al. 2004. Type II hyperprolinemia: a case report. Turk. J. Pediatr. 46: 167-169.
9. Yoon, K.A., et al. 2004. Identification of ALDH4 as a p53-inducible gene and its protective role in cellular stresses. J. Hum. Genet. 49: 134-140.

CHROMOSOMAL LOCATION

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

SOURCE

ALDH4A1 (H-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 264-287 within an internal region of ALDH4A1 of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG_3 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-398894 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

ALDH4A1 (H-6) 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.

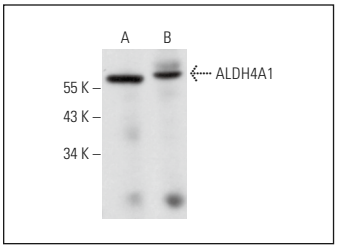
Molecular Weight of ALDH4A1: 62 kDa.

Positive Controls: mouse liver extract: sc-2256 or human liver extract: sc-363766.

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



ALDH4A1 (H-6): sc-398894. Western blot analysis of ALDH4A1 expression in human liver (**A**) and mouse liver (**B**) tissue extracts.

STORAGE

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