

ALDH1A1 (A-6): sc-398578

BACKGROUND

Aldehyde dehydrogenases (ALDHs) mediate NADP⁺-dependent oxidation of aldehydes into acids during the detoxification of alcohol-derived acetaldehyde; metabolism of corticosteroids, biogenic amines and neurotransmitters; and lipid peroxidation. ALDH1A1, also designated retinal dehydrogenase 1 (RALDH1 or RALDH1), aldehyde dehydrogenase family 1 member A1, aldehyde dehydrogenase cytosolic, ALDH1L1, ALDH-E1 or ALDH E1, is a retinal dehydrogenase that participates in the biosynthesis of retinoic acid (RA). There are two major liver isoforms of ALDH1 that can localize to cytosolic or mitochondrial space. The ALDH1A2 (RALDH2, RALDH2-T) gene produces three different transcripts and also catalyzes the synthesis of RA from retinaldehyde. ALDH1A3 (ALDH6, RALDH3, ALDH1A6) is a 37 kb gene that consists of 13 exons and produces a major transcript of approximately 3.5 kb most abundant in salivary gland, stomach and kidney. ALDH3A1 (stomach type, ALDH3, ALDH1L1) forms a cytoplasmic homodimer that preferentially oxidizes aromatic aldehyde substrates. ALDH genes upregulate as a part of the oxidative stress response, and appear to be abundant in certain tumors that have an accelerated metabolism toward chemotherapy agents.

REFERENCES

- Ikawa, M., et al. 1983. Isolation and characterization of aldehyde dehydrogenase isozymes from usual and atypical human livers. *J. Biol. Chem.* 258: 6282-6287.
- Vasilou, V., et al. 1992. Negative regulation of the murine cytosolic aldehyde dehydrogenase-3 (ALDH3C) gene by functional CYP1A1 and CYP1A2 proteins. *Biochem. Biophys. Res. Commun.* 187: 413-419.
- Vasilou, 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.

CHROMOSOMAL LOCATION

Genetic locus: ALDH1A1 (human) mapping to 9q21.13.

SOURCE

ALDH1A1 (A-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 3-21 at the N-terminus of ALDH1A1 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.

Blocking peptide available for competition studies, sc-398578 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

ALDH1A1 (A-6) is recommended for detection of ALDH1A1 of 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 ALDH1A1 siRNA (h): sc-41442, ALDH1A1 shRNA Plasmid (h): sc-41442-SH and ALDH1A1 shRNA (h) Lentiviral Particles: sc-41442-V.

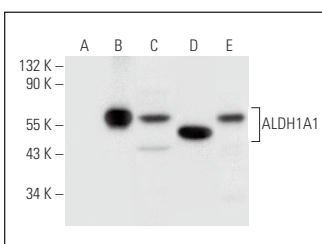
Molecular Weight of ALDH1A1: 56 kDa.

Positive Controls: A549 cell lysate: sc-2413, ALDH1A1 (h): 293T Lysate: sc-174232 or human liver extract: sc-363766.

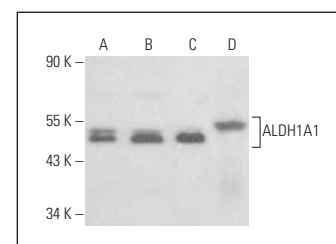
RECOMMENDED SUPPORT REAGENTS

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



ALDH1A1 (A-6): sc-398578. Western blot analysis of ALDH1A1 expression in non-transfected 293T: sc-117752 (A), human ALDH1A1 transfected 293T: sc-174232 (B), Hep G2 (C) and A549 (D) whole cell lysates and human liver tissue extract (E).



ALDH1A1 (A-6): sc-398578. Western blot analysis of ALDH1A1 expression in K-562 (A), Jurkat (B) and MCF7 (C) whole cell lysates and human liver tissue extract (D).

SELECT PRODUCT CITATIONS

- Zhang, S., et al. 2019. Shrimp miRNA suppresses the stemness of human cancer stem cells via the PIN1 pathway. *FASEB J.* 33: 10767-10779.

RESEARCH USE

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



See **ALDH1/2 (H-8): sc-166362** for ALDH1/2 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.