

ALDH1A1 (h): 293T Lysate: sc-174232

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, ALDHIII) 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.
- Hsu, L.C., et al. 1999. Molecular analysis of two closely related mouse aldehyde dehydrogenase genes: identification of a role for Aldh1, but not Aldh-pb, in the biosynthesis of retinoic acid. *Biochem. J.* 339: 387-395.
- Lin, M., et al. 2000. cDNA cloning and expression of a human aldehyde dehydrogenase (ALDH) active with 9-*cis*-retinal and identification of a rat ortholog, ALDH12. *J. Biol. Chem.* 275: 40106-40112.
- Kitagawa, K., et al. 2000. Aldehyde dehydrogenase (ALDH) 2 associates with oxidation of methoxyacetaldehyde; *in vitro* analysis with liver subcellular fraction derived from human and Aldh2 gene targeting mouse. *FEBS Lett.* 476: 306-311.
- Vasilou, V., et al. 2005. Analysis and update of the human aldehyde dehydrogenase (ALDH) gene family. *Hum. Genomics* 2: 138-143.
- Westerlund, M., et al. 2005. Tissue- and species-specific expression patterns of class I, III, and IV Adh and Aldh 1 mRNAs in rodent embryos. *Cell Tissue Res.* 322: 227-236.
- Jelski, W., et al. 2006. Activity of alcohol dehydrogenase (adh) isoenzymes and aldehyde dehydrogenase (ALDH) in the sera of patients with breast cancer. *J. Clin. Lab. Anal.* 20: 105-108.

CHROMOSOMAL LOCATION

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

PRODUCT

ALDH1A1 (h): 293T Lysate represents a lysate of human ALDH1A1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

APPLICATIONS

ALDH1A1 (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive ALDH1A1 antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

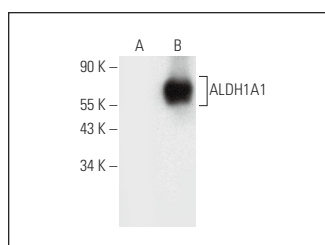
ALDH1A1 (B-5): sc-374149 is recommended as a positive control antibody for Western Blot analysis of enhanced human ALDH1A1 expression in ALDH1A1 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

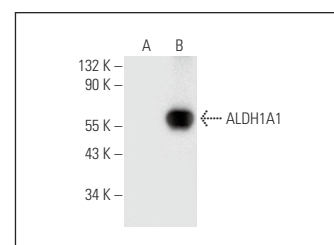
To ensure optimal results, the following support reagents are recommended:

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.

DATA



ALDH1A1 (B-5): sc-374149. Western blot analysis of ALDH1A1 expression in non-transfected: sc-117752 (A) and human ALDH1A1 transfected: sc-174232 (B) 293T whole cell lysates.



ALDH1A1 (A-6): sc-398578. Western blot analysis of ALDH1A1 expression in non-transfected: sc-117752 (A) and human ALDH1A1 transfected: sc-174232 (B) 293T whole cell lysates.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. 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.