SANTA CRUZ BIOTECHNOLOGY, INC.

ALDH1A2 (G-2): sc-393204

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, ALDHII, 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

1. Ikawa, M., et al. 1983. Isolation and characterization of aldehyde dehydrogenase isozymes from usual and atypical human livers. J. Biol. Chem. 258: 6282-6287.
2. Vasiliou, 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.

CHROMOSOMAL LOCATION

Genetic locus: ALDH1A2 (human) mapping to 15q21.3; Aldh1a2 (mouse) mapping to 9 D.

SOURCE

ALDH1A2 (G-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 28-51 near the N-terminus of ALDH1A2 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.

Blocking peptide available for competition studies, sc-393204 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.

RESEARCH USE

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

APPLICATIONS

ALDH1A2 (G-2) is recommended for detection of ALDH1A2 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

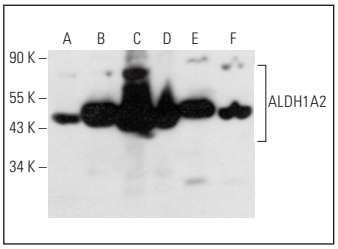
ALDH1A2 (G-2) is also recommended for detection of ALDH1A2 in additional species, including equine, canine, bovine and avian.

Suitable for use as control antibody for ALDH1A2 siRNA (h): sc-41443, ALDH1A2 siRNA (m): sc-108074, ALDH1A2 shRNA Plasmid (h): sc-41443-SH, ALDH1A2 shRNA Plasmid (m): sc-108074-SH, ALDH1A2 shRNA (h) Lentiviral Particles: sc-41443-V and ALDH1A2 shRNA (m) Lentiviral Particles: sc-108074-V.

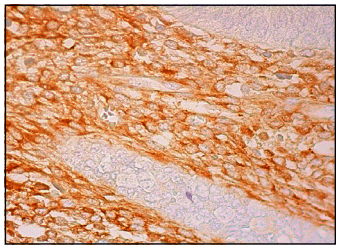
Molecular Weight of ALDH1A2: 55 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409, K-562 whole cell lysate: sc-2203 or RAT2 whole cell lysate: sc-364198.

DATA



ALDH1A2 (G-2): sc-393204. Western blot analysis of ALDH1A2 expression in IMR-32 (**A**), K-562 (**B**), c4 (**C**), C3H/10T1/2 (**D**), RAT2 (**E**) and NRK (**F**) whole cell lysates.



ALDH1A2 (G-2): sc-393204. Immunoperoxidase staining of formalin fixed, paraffin-embedded human premenopausal uterus tissue showing cytoplasmic staining of cells in endometrial stroma.

SELECT PRODUCT CITATIONS

1. Choi, J.A., et al. 2019. ALDH1A2 is a candidate tumor suppressor gene in ovarian cancer. Cancers 11: 1553.
2. Sanders, S., et al. 2021. The presence and potential role of ALDH1A2 in the glioblastoma microenvironment. Cells 10: 2485.
3. Garabuczi, É., et al. 2023. Nur77 and PPARγ regulate transcription and polarization in distinct subsets of M2-like reparative macrophages during regenerative inflammation. Front. Immunol. 14: 1139204.
4. Cardeira-da-Silva, J., et al. 2024. Antigen presentation plays positive roles in the regenerative response to cardiac injury in zebrafish. Nat. Commun. 15: 3637.