

ALDH3A1 (G-2): sc-376089

BACKGROUND

Aldehyde dehydrogenases (ALDHs) mediate NADP⁺-dependent oxidation of aldehydes into acids, the 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, ALDH1, 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.

REFERENCE

1. Vasilou, V., et al. 1992. Negative regulation of the murine cytosolic aldehyde dehydrogenase-3 (Aldh-3c) gene by functional CYP1A1 and CYP1A2 proteins. *Biochem. Biophys. Res. Commun.* 187: 413-419.
2. 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: ALDH3A1 (human) mapping to 17p11.2; Aldh3a1 (mouse) mapping to 11 B2.

SOURCE

ALDH3A1 (G-2) is a mouse monoclonal antibody raised against amino acids 31-106 mapping near the N-terminus of ALDH3A1 of mouse 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.

ALDH3A1 (G-2) is available conjugated to agarose (sc-376089 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376089 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376089 PE), fluorescein (sc-376089 FITC), Alexa Fluor® 488 (sc-376089 AF488), Alexa Fluor® 546 (sc-376089 AF546), Alexa Fluor® 594 (sc-376089 AF594) or Alexa Fluor® 647 (sc-376089 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376089 AF680) or Alexa Fluor® 790 (sc-376089 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

STORAGE

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

APPLICATIONS

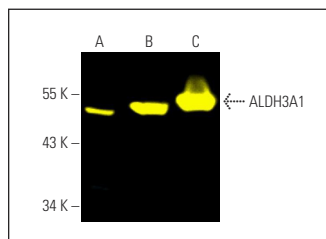
ALDH3A1 (G-2) is recommended for detection of ALDH3A1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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).

Suitable for use as control antibody for ALDH3A1 siRNA (h): sc-72026, ALDH3A1 siRNA (m): sc-72033, ALDH3A1 shRNA Plasmid (h): sc-72026-SH, ALDH3A1 shRNA Plasmid (m): sc-72033-SH, ALDH3A1 shRNA (h) Lentiviral Particles: sc-72026-V and ALDH3A1 shRNA (m) Lentiviral Particles: sc-72033-V.

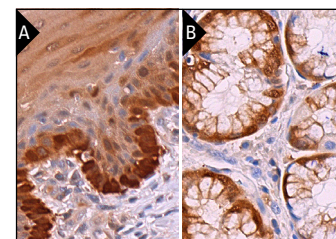
Molecular Weight of ALDH3A1: 50 kDa.

Positive Controls: A549 cell lysate: sc-2413, rat eye extract: sc-364805 or mouse eye extract: sc-364241.

DATA



ALDH3A1 (G-2) Alexa Fluor® 488: sc-376089 AF488. Direct fluorescent western blot analysis of ALDH3A1 expression in A549 whole cell lysate (A) and mouse eye (B) and rat eye (C) tissue extracts. Blocked with UltraCruz® Blocking Reagent: sc-516214.



ALDH3A1 (G-2): sc-376089. Immunoperoxidase staining of formalin fixed, paraffin-embedded human oral mucosa tissue showing cytoplasmic and nuclear staining of squamous epithelial cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human lower stomach tissue showing cytoplasmic and nuclear staining of glandular cells (B).

SELECT PRODUCT CITATIONS

1. Shirai, K., et al. 2014. Effects of the loss of conjunctival Muc16 on corneal epithelium and stroma in mice. *Invest. Ophthalmol. Vis. Sci.* 55: 3626-3637.
2. Oh, T., et al. 2020. Ent-penicilherqueinone suppresses acetaldehyde-induced cytotoxicity and oxidative stress by inducing ALDH and suppressing MAPK signaling. *Pharmaceutics* 12: 1229.
3. Ibrahim, A.I.M., et al. 2022. Expansion of the 4-(diethylamino)benzaldehyde scaffold to explore the impact on aldehyde dehydrogenase activity and anti-proliferative activity in prostate cancer. *J. Med. Chem.* 65: 3833-3848.
4. Boichot, V., et al. 2023. Characterization of human oxidoreductases involved in aldehyde odorant metabolism. *Sci. Rep.* 13: 4876.
5. Zhou, X., et al. 2025. USP14 modulates stem-like properties, tumorigenicity, and radiotherapy resistance in glioblastoma stem cells through stabilization of MST4-phosphorylated ALKBH5. *Theranostics* 15: 2293-2314.

RESEARCH USE

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