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ALDH2 Antibody

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AW5333

Product Information

Application	FC, IHC-P, WB
Primary Accession	P05091
Reactivity	Human, Rat, Mouse
Host	Rabbit
Clonality	Polyclonal
Calculated MW	56381
Isotype	Rabbit IgG
Antigen Source	HUMAN

Additional Information

Gene ID	217
Other Names	ALDH2; ALDM; Aldehyde dehydrogenase, mitochondrial; ALDH class 2; ALDH-E2; ALDHI
Dilution	FC~~1:10~50 IHC-P~~1:100~500 WB~~1:1000
Target/Specificity	This ALDH2 antibody is generated from rabbits immunized with human ALDH2 recombinant protein.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	ALDH2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ALDH2 (HGNC:404)
Synonyms	ALDM
Function	Mitochondrial aldehyde dehydrogenase with broad substrate specificity which participates in the detoxification of ethanol-derived acetaldehyde and endogenous aldehydes, including those arising from lipid peroxidation (PubMed:16956664, PubMed:22339434, PubMed:33355142,

PubMed:39075523). The reaction mechanism involves a nucleophilic attack on the aldehyde substrate, resulting in formation of a thiohemiacetal intermediate. Subsequent hydride transfer to NAD+, yields a thioester intermediate which is hydrolyzed to the carboxylic acid product through activation of a water molecule by the catalytic glutamate (PubMed:19506075). In vivo, ALDH2 is required for the clearance of formaldehyde, a cytotoxic and carcinogenic endogenous metabolite that induces DNA damage (PubMed:33355142). It also catalyzes the oxidation of 3,4-dihydroxyphenylacetaldehyde (DOPAL), a reactive intermediate of dopamine catabolism, to 3,4-dihydroxyphenylacetate (DOPAC) (PubMed:16956664). ALDH2 may also catalyze the oxidation of 4-aminobutanal (gamma-aminobutyraldehyde) to 4-aminobutanoate (GABA), representing an alternative route for GABA biosynthesis from polyamine catabolism (By similarity). In vitro, ALDH2 catalyzes the oxidation of acrolein, malondialdehyde, and 4-hydroxynonenal (4-HNE) (PubMed:22339434). It also exhibits esterase activity that is enhanced by NAD+ but does not require it, although the physiological relevance of this activity remains unclear (PubMed:19506075).

Cellular Location Mitochondrion

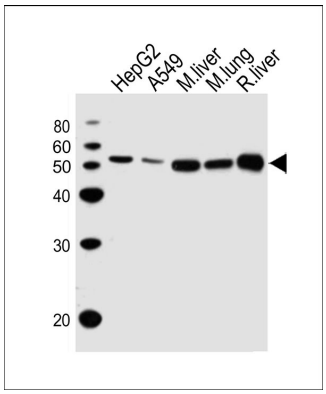
Background

ALDH2 belongs to the aldehyde dehydrogenase family of proteins. Aldehyde dehydrogenase is the second enzyme of the major oxidative pathway of alcohol metabolism. Two major liver isoforms of this enzyme, cytosolic and mitochondrial, can be distinguished by their electrophoretic mobilities, kinetic properties, and subcellular localizations. Most Caucasians have two major isozymes, while approximately 50% of Asians have only the cytosolic isozyme, missing the mitochondrial isozyme. A remarkably higher frequency of acute alcohol intoxication among Asians than among Caucasians could be related to the absence of the mitochondrial isozyme.

References

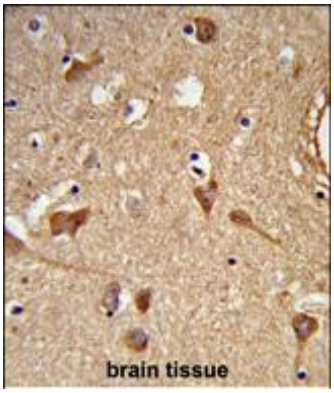
Guo,Y.M., World J. Gastroenterol. 14 (9), 1444-1449 (2008)
Chen,L., PLoS Med. 5 (3), E52 (2008)
Teeguarden,J.G., Inhal Toxicol 20 (4), 375-390 (2008)
Yoshida,A., Pharmacogenetics 2 (4), 139-147 (1992)

Images

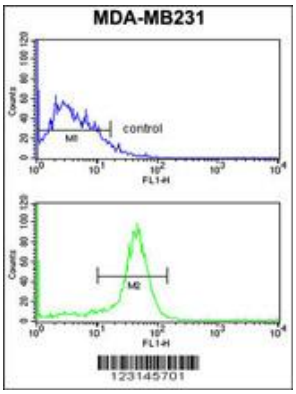


Western blot analysis of lysates from HepG2,A549 cell line,mouse liver,mouse lung,rat liver tissue lysate(from left to right), using ALDH2 Antibody(Cat. #AW5333). AW5333 was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody.Lysates at 20ug per lane.

Formalin-fixed and paraffin-embedded human brain tissue reacted with ALDH2 Antibody, which was peroxidase-conjugated to the secondary antibody,



followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.



ALDH2 Antibody (Cat. #AW5333) flow cytometry analysis of MDA-MB231 cells (bottom histogram) compared to a negative control cell (top histogram).FITC-conjugated goat-anti-rabbit secondary antibodies were used for the analysis.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.