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ALDH2 Antibody (Center)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1432c

Product Information

Application	IHC-P, WB, E
Primary Accession	P05091
Other Accession	P11884, P47738
Reactivity	Human, Rat, Mouse
Predicted	Mouse, Rat, Bovine, Canine, Rabbit
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	56381
Antigen Region	318-347

Additional Information

Gene ID	217
Other Names	Aldehyde dehydrogenase, mitochondrial, ALDH class 2, ALDH-E2, ALDHI, ALDH2, ALDM
Target/Specificity	This ALDH2 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 318-347 amino acids from the Central region of human ALDH2.
Dilution	IHC-P~~1:100~500 WB~~1:1000 E~~Use at an assay dependent concentration.
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 (Center) 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

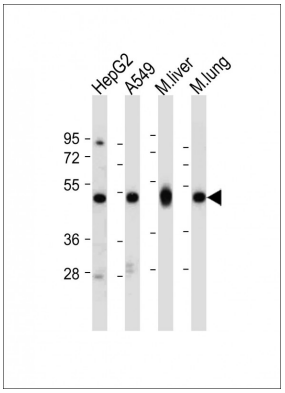
Background

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.

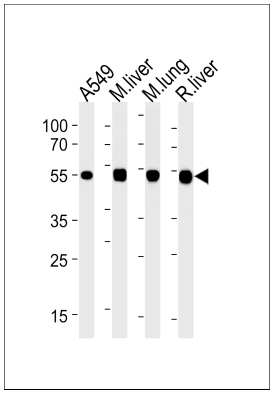
References

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)

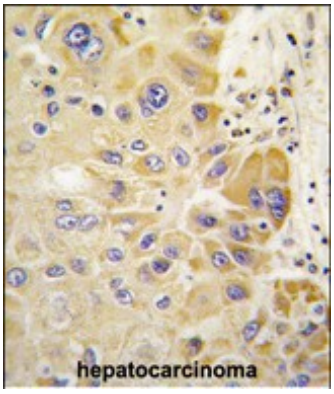
Images



All lanes : Anti-ALDH2 Antibody (Center) at 1:2000 dilution Lane 1: HepG2 whole cell lysate Lane 2: A549 whole cell lysate Lane 3: Mouse liver tissue lysate Lane 4: Mouse lung tissue lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 56 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



ALDH2 Antibody (Center) (Cat. #AP1432c) western blot analysis in A549 cell line,mouse liver and lung,rat liver lysates (35ug/lane).This demonstrates the ALDH2 antibody detected the ALDH2 protein (arrow).



Formalin-fixed and paraffin-embedded human hepatocarcinoma tissue reacted with ALDH2 antibody (Center) (Cat.#AP1432c), 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.

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