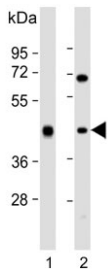
ADH1B Antibody / Alcohol dehydrogenase 1B (F54429)

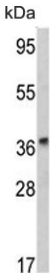
Catalog No.	Formulation	Size
F54429-0.4ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.4 ml
F54429-0.08ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.08 ml

Bulk quote request

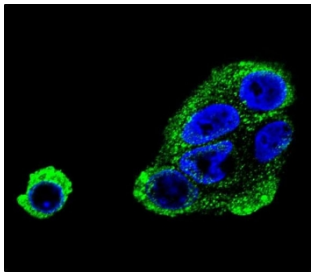
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	SAS precipitation
UniProt	P00325
Localization	Cytoplasmic
Applications	Immunofluorescence : 1:25 Flow Cytometry : 1:25 (1x10e6 cells) Immunohistochemistry (FFPE) : 1:25 Western Blot : 1:500-1:2000
Limitations	This ADH1B antibody is available for research use only.



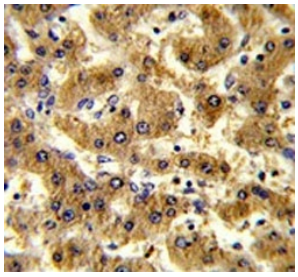
Western blot testing of human 1) liver and 2) Jurkat cell lysate with ADH1B antibody. Predicted molecular weight ~40 kDa.



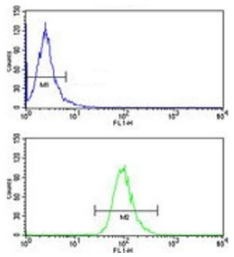
Western blot testing of human HepG2 cell lysate with ADH1B antibody. Predicted molecular weight ~40 kDa.



Immunofluorescent staining of human HepG2 cells with ADH1B antibody (green) and DAPI nuclear stain (blue).



IHC testing of FFPE human hepatocarinoma tissue with ADH1B antibody. HIER: steam section in pH6 citrate buffer for 20 min and allow to cool prior to staining.



Flow cytometry testing of human HepG2 cells with ADH1B antibody; Blue=isotype control, Green= ADH1B antibody.

Description

ADH1B antibody detects Alcohol Dehydrogenase 1B, a cytosolic oxidoreductase that plays a central role in ethanol metabolism, retinoid processing, and the oxidation of a broad array of physiological and xenobiotic alcohols. The UniProt recommended name is Alcohol dehydrogenase 1B. As a member of the alcohol dehydrogenase family, ADH1B participates in the reversible conversion of alcohols to aldehydes using NAD as a cofactor, influencing metabolic homeostasis, detoxification pathways, and tissue specific responses to dietary and environmental exposures. ADH1B is particularly well known for its function in hepatic ethanol metabolism, but its substrate range extends far beyond ethanol, contributing to metabolic processes in multiple organ systems.

ADH1B is a 375 amino acid enzyme that forms homodimers or heterodimers with related ADH subunits. The protein contains zinc binding motifs required for catalytic activity and exhibits distinct substrate affinity compared to other ADH family members. ADH1B demonstrates high catalytic efficiency toward ethanol, converting it into acetaldehyde, which is subsequently metabolized by aldehyde dehydrogenases. This enzymatic process is central to metabolic handling of alcohol consumption and influences physiological responses to ethanol exposure. Variations in ADH1B activity can alter acetaldehyde production rates, with significant consequences for alcohol tolerance, tissue stress responses, and susceptibility to alcohol related disease.

The ADH1B gene is located on chromosome 4q23 and is predominantly expressed in liver, but additional expression has been detected in stomach, kidney, and other metabolic tissues. Genetic polymorphisms in ADH1B are well studied, particularly variants associated with increased catalytic turnover. One common variant results in markedly higher ethanol oxidation rates, generating acetaldehyde more rapidly and producing characteristic adverse reactions to alcohol consumption. These variants have been examined extensively in population genetics, addiction biology, and studies of alcohol related disease risk.

During normal physiology, ADH1B contributes to retinol metabolism by converting retinol into retinal, a precursor in the retinoic acid biosynthetic pathway. This function links ADH1B to developmental processes, epithelial differentiation, and homeostatic control of retinoid dependent signaling. Retinoic acid pathways influence tissue patterning, immune regulation, and cellular differentiation, making ADH1B relevant to research beyond alcohol metabolism alone.

In hepatic biology, ADH1B plays an important role in redox balance, oxidative stress regulation, and metabolic adaptation. Oxidation of ethanol produces NADH, which affects mitochondrial respiration, lipid metabolism, and gluconeogenesis. Elevated ADH1B activity or chronic ethanol exposure can shift redox homeostasis and contribute to metabolic disorders including steatosis, inflammation, and tissue injury. As a result, ADH1B is a major research target in studies on alcoholic liver disease, non alcoholic fatty liver disease, and mitochondrial metabolic stress.

Pathologically, altered ADH1B expression or activity has been associated with several disorders. Overproduction of acetaldehyde due to hyperactive ADH1B variants can increase susceptibility to tissue injury and inflammation. In contrast, reduced activity may impair detoxification and alter metabolic handling of dietary alcohols or endogenous substrates. Studies have linked ADH1B variants to cancer susceptibility, particularly cancers of the upper gastrointestinal tract, where acetaldehyde exposure can exert mutagenic effects. ADH1B has also been implicated in metabolic disorders, cardiovascular disease risk, and tissue specific oxidative stress responses.

In neurobiology, ethanol metabolism influences neurotransmission, behavioral responses, and neuronal adaptation. Although brain ethanol oxidation is comparatively limited, systemic changes induced by ADH1B activity can affect neural processes through acetaldehyde production, redox shifts, and modulation of signaling pathways. Research using ADH1B antibody contributes to understanding how metabolic enzymes impact neurobehavioral responses and alcohol related adaptations.

In addition to alcohol and retinoid metabolism, ADH1B can oxidize a wide range of aliphatic and aromatic alcohols, contributing to xenobiotic metabolism and detoxification. This substrate promiscuity makes ADH1B relevant in pharmacology, toxicology, and studies examining how environmental exposures are metabolized by human tissues.

ADH1B antibody supports research into hepatic metabolism, alcohol processing, retinoid pathways, and metabolic disease. It is used to evaluate expression changes following ethanol exposure, metabolic stress, dietary modulation, or genetic alteration. Researchers also use ADH1B antibody to explore tissue differences in alcohol handling, developmental retinoid metabolism, and disease associated regulation of ADH family enzymes. This antibody is validated for use in relevant research applications to detect Alcohol Dehydrogenase 1B expression in cells and tissues. NSJ Bioreagents provides ADH1B antibody reagents suited for metabolic research, liver biology, developmental studies, and investigations into alcohol related physiology and pathology.

Application Notes

The stated application concentrations are suggested starting points. Titration of the ADH1B antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A portion of amino acids 209-237 from the human protein was used as the immunogen for the ADH1B antibody.

Storage

Aliquot the ADH1B antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.