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Anti-AKR1A1 Antibody

Catalog # AP51718

Product Information

Application	WB, IHC, IF/IC
Primary Accession	P14550
Reactivity	Human, Mouse, Rat, Pig, Bovine
Host	Rabbit
Clonality	Polyclonal
Calculated MW	36573

Additional Information

Gene ID	10327
Other Names	ALDR1; ALR; Alcohol dehydrogenase [NADP(+)]; Aldehyde reductase; Aldo-keto reductase family 1 member A1
Target/Specificity	KLH-conjugated synthetic peptide encompassing a sequence within the C-term region of human AKR1A1. The exact sequence is proprietary.
Dilution	WB~~ 1:1000 IHC~~1:100~500 IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

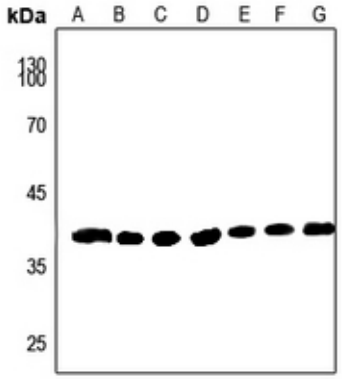
Name	AKR1A1
Synonyms	ALDR1, ALR
Function	Catalyzes the NADPH-dependent reduction of a wide variety of carbonyl-containing compounds to their corresponding alcohols (PubMed:10510318, PubMed:30538128). Displays enzymatic activity towards endogenous metabolites such as aromatic and aliphatic aldehydes, ketones, monosaccharides and bile acids, with a preference for negatively charged substrates, such as glucuronate and succinic semialdehyde (PubMed:10510318, PubMed:30538128). Functions as a detoxifiying enzyme by reducing a range of toxic aldehydes (By similarity). Reduces methylglyoxal and 3-deoxyglucosone, which are present at elevated levels under hyperglycemic conditions and are cytotoxic (By similarity). Involved also in the detoxification of lipid-derived aldehydes like acrolein (By similarity). Plays a role in the activation of procarcinogens, such as polycyclic aromatic hydrocarbon trans-dihydrodiols, and in the metabolism of various xenobiotics

	and drugs, including the anthracyclines doxorubicin (DOX) and daunorubicin (DAUN) (PubMed:11306097, PubMed:18276838). Also acts as an inhibitor of protein S-nitrosylation by mediating degradation of S-nitroso-coenzyme A (S-nitroso-CoA), a cofactor required to S- nitrosylate proteins (PubMed:30538128). S-nitroso-CoA reductase activity is involved in reprogramming intermediary metabolism in renal proximal tubules, notably by inhibiting protein S-nitrosylation of isoform 2 of PKM (PKM2) (By similarity). Also acts as a S-nitroso- glutathione reductase by catalyzing the NADPH-dependent reduction of S- nitrosoglutathione (PubMed:31649033). Displays no reductase activity towards retinoids (By similarity).
Cellular Location	Cytoplasm, cytosol {ECO:0000250|UniProtKB:Q9JII6}. Apical cell membrane {ECO:0000250|UniProtKB:Q9JII6}
Tissue Location	Widely expressed. Highly expressed in kidney, salivary gland and liver. Detected in trachea, stomach, brain, lung, prostate, placenta, mammary gland, small intestine and lung

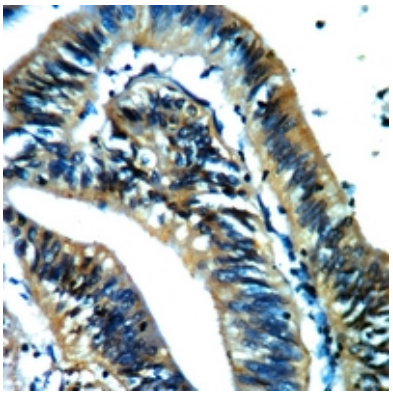
References

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Fujii J.,et al.Cytogenet. Cell Genet. 84:230-232(1999).
Barski O.A.,et al.Genomics 60:188-198(1999).
Ota T.,et al.Nat. Genet. 36:40-45(2004).
Ebert L.,et al.Submitted (JUN-2004) to the EMBL/GenBank/DDBJ databases.

Images

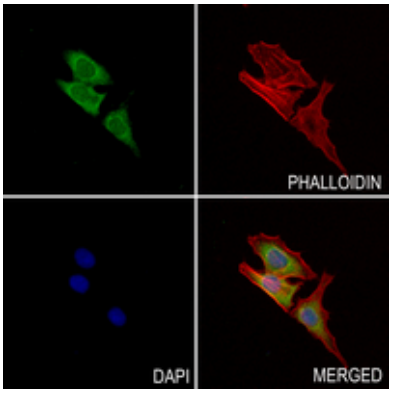


Western blot analysis of AKR1A1 expression in rat kidney (A), rat lung (B), mouse kidney (C), mouse lung (D), U2OS (E), Hela (F), HEK293T (G) whole cell lysates. (Predicted band size: 36 kD; Observed band size: 37 kD)



Immunohistochemical analysis of AKR1A1 staining in human colorectal cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

Immunofluorescent analysis of AKR1A1 staining in HepG2 cells. Formalin-fixed cells were permeabilized with 0.1%



Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a hidified chamber. Cells were washed with PBST and incubated with a AF488-conjugated secondary antibody (green) in PBS at room temperature in the dark. Phalloidin - AF594 was used to stain Actin filaments (red). DAPI was used to stain the cell nuclei (blue).

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