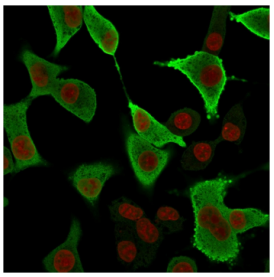
Aldose Reductase Antibody / Polyol Pathway Marker [clone CPTC-AKR1B1-3] (V7403)

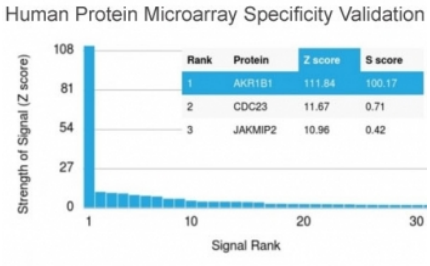
Catalog No.	Formulation	Size
V7403-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	100 ug
V7403-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	20 ug
V7403SAF-100UG	1 mg/ml in 1X PBS; sodium azide free	100 ug
V7403IHC-7ML	Prediluted in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide; *For IHC use only*	7 ml

Bulk quote request

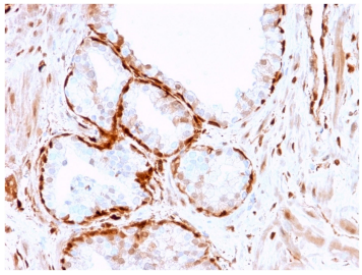
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	CPTC-AKR1B1-3
Purity	Protein G affinity chromatography
UniProt	P15121
Localization	Cytoplasmic, nuclear
Applications	Western blot: 1-2ug/ml Immunofluorescence: 1-2ug/ml Immunohistochemistry (FFPE): 0.5-1ug/ml for 30 min at RT
Limitations	This Aldose Reductase Antibody / Polyol Pathway Marker is available for research use only.



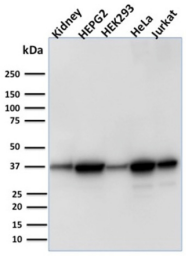
Aldose Reductase Antibody A549 IF. Immunofluorescence analysis of human A549 cells stained with Aldose reductase Antibody clone CPTC-AKR1B1-3 (green) and RedDot nuclear counterstain (red). Strong cytoplasmic fluorescence is observed throughout A549 cells, consistent with the expected intracellular localization of Aldose reductase / AKR1B1, an aldo-keto reductase family enzyme involved in polyol pathway metabolism, glucose-responsive signaling, and oxidative stress-associated cellular regulatory mechanisms.



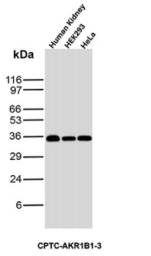
Analysis of HuProt(TM) microarray containing more than 19,000 full-length human proteins using Aldose reductase antibody (clone CPTC-AKR1B1-3). These results demonstrate the foremost specificity of the CPTC-AKR1B1-3 mAb.
Z- and S- score: The Z-score represents the strength of a signal that an antibody (in combination with a fluorescently-tagged anti-IgG secondary Ab) produces when binding to a particular protein on the HuProt(TM) array. Z-scores are described in units of standard deviations (SD's) above the mean value of all signals generated on that array. If the targets on the HuProt(TM) are arranged in descending order of the Z-score, the S-score is the difference (also in units of SD's) between the Z-scores. The S-score therefore represents the relative target specificity of an Ab to its intended target.



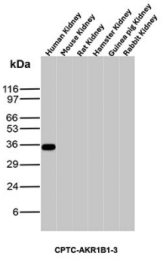
Aldose Reductase Antibody Prostate Cancer IHC. Immunohistochemistry analysis of FFPE human prostate cancer tissue stained with Aldose reductase antibody clone CPTC-AKR1B1-3. Strong cytoplasmic HRP-DAB brown staining is observed within prostate tumor epithelial cells, consistent with the expected intracellular localization of Aldose reductase / AKR1B1, a polyol pathway-associated metabolic enzyme involved in glucose metabolism and oxidative stress-responsive signaling pathways. Tissue sections underwent HIER using 10mM citrate buffer, pH 6, prior to immunostaining.



Aldose Reductase Antibody Multi-Sample WB. Western blot analysis of human kidney tissue and human HepG2, HEK293, HeLa, and Jurkat cell lysates using Aldose Reductase Antibody clone CPTC-AKR1B1-3. A predominant band is detected near approximately 35-40 kDa across multiple samples, consistent with the expected molecular weight range of Aldose reductase / AKR1B1, a cytoplasmic aldo-keto reductase family enzyme involved in polyol pathway metabolism, glucose-responsive signaling, and oxidative stress-associated cellular regulatory mechanisms.



Aldose Reductase Antibody Tissue and Cell Line WB. Western blot analysis of human kidney tissue together with HEK293 and HeLa cell lysates using Aldose reductase Antibody clone CPTC-AKR1B1-3. A strong band is detected near approximately 35-40 kDa across all samples, consistent with the expected molecular weight range of Aldose reductase / AKR1B1, a cytoplasmic aldo-keto reductase family enzyme involved in polyol pathway metabolism, oxidative stress regulation, and glucose-responsive cellular signaling pathways.



Aldose Reductase Antibody Cross-Species WB. Western blot analysis of human, mouse, rat, hamster, guinea pig, and rabbit kidney tissue lysates using Aldose reductase Antibody clone CPTC-AKR1B1-3. A distinct band is detected near approximately 35-40 kDa in human kidney tissue, consistent with the expected molecular weight range of Aldose reductase / AKR1B1, a polyol pathway-associated metabolic enzyme involved in glucose metabolism and oxidative stress-responsive cellular regulation. Minimal signal is observed in the additional species tested under these experimental conditions.

Description

Aldose reductase (AKR1B1) is a cytoplasmic aldo-keto reductase family enzyme involved in glucose metabolism, oxidative stress regulation, and polyol pathway-associated cellular signaling mechanisms. Aldose Reductase Antibody / Polyol Pathway Marker is suitable for investigations involving metabolic signaling pathways, diabetic complication-associated biology, oxidative stress responses, and cellular glucose metabolism. AKR1B1 catalyzes the NADPH-dependent reduction of aldehydes and glucose-derived intermediates, contributing to maintenance of intracellular redox balance and metabolic homeostasis pathways.

Aldose reductase antibody, also referred to as AKR1B1 antibody, Aldo-keto reductase family 1 member B1 antibody, Polyol pathway enzyme antibody, and Diabetic complication marker antibody in the literature, recognizes a widely expressed cytoplasmic metabolic enzyme associated with glucose-responsive signaling pathways and oxidative stress regulation. AKR1B1 expression has been linked to diabetic complications, inflammatory signaling, osmotic stress adaptation, and metabolism-associated cellular injury pathways. Through participation in the polyol pathway, Aldose reductase contributes to regulation of intracellular sorbitol accumulation and oxidative stress-associated metabolic responses.

The polyol pathway has attracted substantial interest in studies involving diabetic nephropathy, retinopathy, neuropathy, cardiovascular disease, and metabolic stress-associated tissue injury. Aldose reductase is additionally implicated in inflammatory signaling pathways, reactive oxygen species-associated cellular stress responses, and cancer metabolism-associated signaling mechanisms. Because metabolic enzymes can influence broader signaling environments, AKR1B1 remains relevant for investigations involving cellular stress adaptation, glucose-responsive signaling, and metabolism-associated disease biology.

Aldose reductase additionally participates in detoxification of reactive aldehydes generated during oxidative stress and lipid peroxidation. Members of the aldo-keto reductase family contribute to maintenance of cellular homeostasis through regulation of metabolic intermediates and oxidative stress-associated signaling pathways. AKR1B1 expression has therefore been investigated in tissues exposed to chronic metabolic stress, inflammation-associated injury, and altered glucose metabolism environments.

Immunohistochemistry, immunofluorescence, and western blot analyses support detection of endogenous Aldose reductase expression in human tissue and cultured cells, consistent with the expected cytoplasmic localization pattern of this metabolic regulatory enzyme. HuProt(TM) protein microarray specificity validation with clone CPTC-AKR1B1-3 further supports selective recognition of AKR1B1 among thousands of human proteins. The combined validation profile supports use of this mouse monoclonal antibody for investigations involving glucose metabolism, oxidative stress-associated signaling, polyol pathway biology, and metabolic disease-associated cellular regulation.

An antibody targeting Aldose reductase can therefore support studies involving diabetic complication-associated pathways, oxidative stress signaling, glucose metabolism regulation, polyol pathway-associated biology, and metabolism-associated cellular stress mechanisms.

Aldose reductase participates in glucose metabolism and oxidative stress-associated signaling pathways; explore related metabolic and signaling proteins on our Signal Transduction Antibodies page.

Application Notes

The optimal dilution of the Aldose Reductase Antibody / Polyol Pathway Marker for each application should be determined by the researcher.

1. The prediluted format is supplied in a dropper bottle and is optimized for use in IHC. After epitope retrieval step (if required), drip mAb solution onto the tissue section and incubate at RT for 30 min.

Immunogen

Recombinant protein was used as the immunogen for this Aldose Reductase antibody.

Storage

Store the Aldose Reductase antibody at 2-8oC (with azide) or aliquot and store at -20oC or colder (without azide).

Alternate Names

Aldose reductase antibody, AKR1B1 antibody, Aldo-keto reductase family 1 member B1 antibody, Polyol pathway enzyme antibody, Diabetic complication marker antibody

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