

# AKR1A1 (B-9): sc-365078

## BACKGROUND

AKR1A1 (aldo-keto reductase family 1 member A1), also known as ALR (aldehyde reductase), DD3 (dihydrodiol dehydrogenase 3) or ALDR1 (alcohol dehydrogenase), is a widely and abundantly expressed member of the aldo-keto reductase (AKR) family of proteins. Members of the AKR family are soluble NADPH-dependent oxidoreductases. They play important roles in the metabolism of drugs, carcinogens and reactive aldehydes. AKR1A1 exists as a monomer and catalyzes the reduction of xenobiotic and biogenic aldehydes and ketones to their corresponding alcohols. In particular, AKR1A1 efficiently catalyzes medium-chain and aromatic aldehydes. AKR1A1 participates in the biosynthetic pathways of cholesterol and triglyceride and plays a role in the activation of polycyclic aromatic hydrocarbons (PAHs).

## REFERENCES

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3. Barski, O.A., et al. 1999. Characterization of the human aldehyde reductase gene and promoter. *Genomics* 60: 188-198.
4. Palackal, N.T., et al. 2001. The ubiquitous aldehyde reductase (AKR1A1) oxidizes proximate carcinogen *trans*-dihydrodiols to o-quinones: potential role in polycyclic aromatic hydrocarbon activation. *Biochemistry* 40: 10901-10910.
5. Palackal, N.T., et al. 2001. Metabolic activation of polycyclic aromatic hydrocarbon *trans*-dihydrodiols by ubiquitously expressed aldehyde reductase (AKR1A1). *Chem. Biol. Interact.* 130-132: 815-824.
6. Plebuch, M., et al. 2007. Increased resistance of tumor cells to daunorubicin after transfection of cDNAs coding for anthracycline inactivating enzymes. *Cancer Lett.* 255: 49-56.
7. Holland-Nell, K., et al. 2007. Specifically immobilised aldo/keto reductase AKR1A1 shows a dramatic increase in activity relative to the randomly immobilised enzyme. *Chembiochem* 8: 1071-1076.
8. Caino, M.C., et al. 2007. Benzo[a]pyrene-7,8-dihydrodiol promotes checkpoint activation and G<sub>2</sub>/M arrest in human bronchoalveolar carcinoma H358 cells. *Mol. Pharmacol.* 71: 744-750.
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## CHROMOSOMAL LOCATION

Genetic locus: AKR1A1 (human) mapping to 1p34.1; Ak1a1 (mouse) mapping to 4 D1.

## SOURCE

AKR1A1 (B-9) is a mouse monoclonal antibody raised against amino acids 211-325 mapping at the C-terminus of AKR1A1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> lambda light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

AKR1A1 (B-9) is recommended for detection of AKR1A1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for AKR1A1 siRNA (h): sc-78566, AKR1A1 siRNA (m): sc-140983, AKR1A1 shRNA Plasmid (h): sc-78566-SH, AKR1A1 shRNA Plasmid (m): sc-140983-SH, AKR1A1 shRNA (h) Lentiviral Particles: sc-78566-V and AKR1A1 shRNA (m) Lentiviral Particles: sc-140983-V.

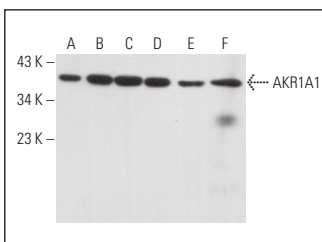
Molecular Weight of AKR1A1: 37 kDa.

Positive Controls: HL-60 whole cell lysate: sc-2209, Hep G2 cell lysate: sc-2227 or HeLa whole cell lysate: sc-2200.

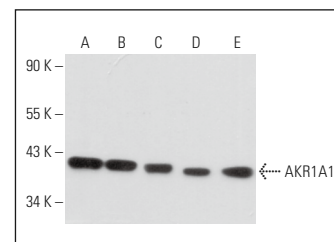
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG<sub>λ</sub> BP-HRP: sc-516132 or m-IgG<sub>λ</sub> BP-HRP (Cruz Marker): sc-516132-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG<sub>λ</sub> BP-FITC: sc-516185 or m-IgG<sub>λ</sub> BP-PE: sc-516186 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



AKR1A1 (B-9): sc-365078. Western blot analysis of AKR1A1 expression in Hep G2 (A), HeLa (B), HL-60 (C), RAW 264.7 (D) and J774.A1 (E) whole cell lysates and rat heart tissue extract (F).



AKR1A1 (B-9): sc-365078. Western blot analysis of AKR1A1 expression in Hep G2 (A), HeLa (B), SK-BR-3 (C), RAW 264.7 (D) and C3H/10T1/2 (E) whole cell lysates. Detection reagent used: m-IgG<sub>λ</sub> BP-HRP (Cruz Marker): sc-516132-CM.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.