

# AKR1A1 (h3): 293T Lysate: sc-174269

## 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

1. Jez, J.M., Flynn, T.G. and Penning, T.M. 1997. A new nomenclature for the aldo-keto reductase superfamily. *Biochem. Pharmacol.* 54: 639-647.
2. O'Connor, T., Ireland, L.S., Harrison, D.J. and Hayes, J.D. 1999. Major differences exist in the function and tissue-specific expression of human aflatoxin B1 aldehyde reductase and the principal human aldo-keto reductase AKR1 family members. *Biochem. J.* 343: 487-504.
3. Barski, O.A., Gabbay, K.H. and Bohren, K.M. 1999. Characterization of the human aldehyde reductase gene and promoter. *Genomics* 60: 188-198.
4. Palackal, N.T., Burczynski, M.E., Harvey, R.G. and Penning, T.M. 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., Burczynski, M.E., Harvey, R.G. and Penning, T.M. 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., Soldan, M., Hungerer, C., Koch, L. and Maser, E. 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. and Beck-Sickinger, A.G. 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., Oliva, J.L., Jiang, H., Penning, T.M. and Kazanietz, M.G. 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.
9. Bains, O.S., Takahashi, R.H., Pfeifer, T.A., Grigliatti, T.A., Reid, R.E. and Riggs, K.W. 2008. Two allelic variants of aldo-keto reductase 1A1 exhibit reduced *in vitro* metabolism of daunorubicin. *Drug Metab. Dispos.* 36: 904-910.

## STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

## CHROMOSOMAL LOCATION

Genetic locus: AKR1A1 (human) mapping to 1p34.1.

## PRODUCT

AKR1A1 (h3): 293T Lysate represents a lysate of human AKR1A1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

## APPLICATIONS

AKR1A1 (h3): 293T Lysate is suitable as a Western Blotting positive control for human reactive AKR1A1 antibodies. Recommended use: 10-20 µl per lane.

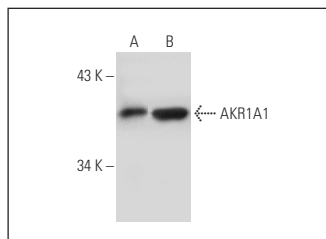
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

AKR1A1 (3B08): sc-100500 is recommended as a positive control antibody for Western Blot analysis of enhanced human AKR1A1 expression in AKR1A1 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-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.

## DATA



AKR1A1 (3B08): sc-100500. Western blot analysis of AKR1A1 expression in non-transfected: sc-117752 (A) and human AKR1A1 transfected: sc-174269 (B) 293T whole cell lysates.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.