SANTA CRUZ BIOTECHNOLOGY, INC.

AKR7A2 (Y02): sc-100503

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The Power to Question

BACKGROUND

The aldo-keto reductase 7 (AKR7) family includes AKR7A2, AKR7A3 and AKR7A4 in human, AKR7A5 in mouse and AKR7A2 in rat, all of which function in the metabolism of Aflatoxin B1 and other dicarbonyl-containing compounds. More specifically, AKR7A proteins are involved in the metabolism of compounds with ketone groups on adjacent carbon atoms in a broad range of tissues, notably the liver. The human AKR7A2 gene maps to a region frequently deleted in sporadic colorectal cancer. The functional significance of this correlation lies in the constitutive expression of AKR7A2 in human liver to eliminate aflatoxin (an environmental carcinogen), thus acting as an endogenous chemo-preventative agent.

REFERENCES

1. Ellis, E.M., et al. 1995. Substrate specificity of an aflatoxin-metabolizing aldehyde reductase. Biochem. J. 312: 535-541.
2. Ireland, L.S., et al. 1998. Molecular cloning, expression and catalytic activity of a human AKR7 member of the aldo-keto reductase superfamily: evidence that the major 2-carboxybenzaldehyde reductase from human liver is a homologue of rat aflatoxin B1-aldehyde reductase. Biochem. J. 332: 21-34.
3. Kelly, V.P., et al. 2000. Purification from rat liver of a novel constitutively expressed member of the aldo-keto reductase 7 family that is widely distributed in extrahepatic tissues. Biochem. J. 348, Part 2: 389-400.
4. Kelly, V.P., et al. 2002. Novel homodimeric and heterodimeric rat γ-hydroxybutyrate synthases that associate with the Golgi apparatus define a distinct subclass of aldo-keto reductase 7 family proteins. Biochem. J. 366: 847-861.
5. Praml, C., et al. 2003. Aflatoxin B1 aldehyde reductase (AFAR) genes cluster at 1p35-1p36.1 in a region frequently altered in human tumour cells. Oncogene 22: 4765-4773.
6. Kozma, E., et al. 2003. The high resolution crystal structure of rat liver AKR7A1: understanding the substrate specificites of the AKR7 family. Chem. Biol. Interact. 143-144: 289-297.
7. Hyndman, D., et al. 2003. The aldo-keto reductase superfamily homepage. Chem. Biol. Interact. 143-144: 621-631.
8. Grant, A.W., et al. 2003. A novel aldo-keto reductase from *Escherichia coli* can increase resistance to methylglyoxal toxicity. FEMS Microbiol. Lett. 218: 93-99.

CHROMOSOMAL LOCATION

Genetic locus: AKR7A2 (human) mapping to 1p36.13.

SOURCE

AKR7A2 (Y02) is a mouse monoclonal antibody raised against recombinant AKR7A2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

AKR7A2 (Y02) is recommended for detection of AKR7A2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for AKR7A2 siRNA (h): sc-44477, AKR7A2 shRNA Plasmid (h): sc-44477-SH and AKR7A2 shRNA (h) Lentiviral Particles: sc-44477-V.

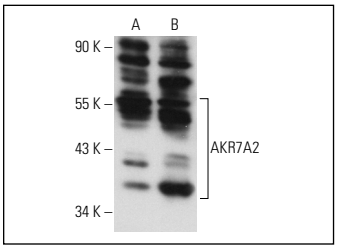
Molecular Weight of AKR7A2: 40 kDa.

Positive Controls: AKR7A2 (h): 293 Lysate: sc-111315, HeLa whole cell lysate: sc-2200 or Hep G2 cell lysate: sc-2227.

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. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



AKR7A2 (Y02): sc-100503. Western blot analysis of AKR7A2 expression in non-transfected: sc-110760 (**A**) and human AKR7A2 transfected: sc-111315 (**B**) 293 whole cell lysates.

SELECT PRODUCT CITATIONS

1. Quiñones-Lombraña, A., et al. 2019. Insights into the transcriptional regulation of the anthracycline reductase AKR7A2 in human cardiomyocytes. Toxicol. Lett. 307: 11-16.

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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.