SANTA CRUZ BIOTECHNOLOGY, INC.

ATP7B (H-94): sc-33826

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The copper efflux transporters ATP7A and ATP7B sequester intracellular copper into the vesicular secretory pathway for export from the cell. ATP7A functions as a transmembrane copper-translocating P-type ATPase and plays a vital role in systemic copper absorption in the gut and copper reabsorption in the kidney. Polarized epithelial cells such as Madin-Darby canine kidney cells are a physiologically relevant model for systemic copper absorption and reabsorption *in vivo*. Although ATP7A is not detectable in most normal tissues, it is expressed in a considerable fraction of many common tumor types. Increased expression of ATP7A renders cells resistant to cisplatin and carboplatin. Mutations in the ATP7A gene result in Menkes disease, which is fatal in early childhood. Mutations in the ATP7B gene lead to the autosomal recessive disorder, Wilson disease, characterized by neurological symptoms and hepatic damage.

REFERENCES

1. Samimi, G., et al. 2003. Increase in expression of the copper transporter ATP7A during platinum drug-based treatment is associated with poor survival in ovarian cancer patients. Clin. Cancer Res. 9: 5853-5859.
2. Greenough, M., et al. 2004. Signals regulating trafficking of Menkes (MNK; ATP7A) copper-translocating P-type ATPase in polarized MDCK cells. Am. J. Physiol. Cell Physiol. 287: C1463-C1471.
3. van Dongen, E.M., et al. 2004. Copper-dependent protein-protein interactions studied by yeast two-hybrid analysis. Biochem. Biophys. Res. Commun. 323: 789-795.
4. Morgan, C.T., et al. 2004. The distinct functional properties of the nucleotide-binding domain of ATP7B, the human copper-transporting ATPase: analysis of the Wilson disease mutations E1064A, H1069Q, R1151H, and C1104F. J. Biol. Chem. 279: 36363-36371.
5. Song, I.S., et al. 2004. Role of human copper transporter Ctr1 in the transport of platinum-based antitumor agents in cisplatin-sensitive and cisplatin-resistant cells. Mol. Cancer Ther. 3: 1543-1549.

CHROMOSOMAL LOCATION

Genetic locus: ATP7B (human) mapping to 13q14.3; Atp7b (mouse) mapping to 8 A2.

SOURCE

ATP7B (H-94) is a rabbit polyclonal antibody raised against amino acids 1372-1465 mapping within a C-terminal cytoplasmic domain of ATP7B of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

ATP7B (H-94) is recommended for detection of copper-transporting ATPase 2 isoforms a and b of mouse, rat and 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)], 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 ATP7B siRNA (h): sc-44491, ATP7B siRNA (m): sc-44492, ATP7B shRNA Plasmid (h): sc-44491-SH, ATP7B shRNA Plasmid (m): sc-44492-SH, ATP7B shRNA (h) Lentiviral Particles: sc-44491-V and ATP7B shRNA (m) Lentiviral Particles: sc-44492-V.

Molecular Weight of ATP7B: 165 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. di Patti, M.C., et al. 2009. Dominant mutants of ceruloplasmin impair the copper loading machinery in aceruloplasminemia. J. Biol. Chem. 284: 4545-4554.
2. Miyayama, T., et al. 2010. Roles of COMM-domain-containing 1 in stability and recruitment of the copper-transporting ATPase in a mouse hepatoma cell line. Biochem. J. 429: 53-61.
3. Sauer, V., et al. 2010. Overexpressed ATP7B protects mesenchymal stem cells from toxic copper. Biochem. Biophys. Res. Commun. 395: 307-311.
4. Ding, D., et al. 2011. Cisplatin ototoxicity in rat cochlear organotypic cultures. Hear. Res. 282: 196-203.

RESEARCH USE

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