SANTA CRUZ BIOTECHNOLOGY, INC.

ADH5 (2D11): sc-293460

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The alcohol dehydrogenase family of proteins metabolize a wide variety of substrates, including retinol, hydroxysteroids, ethanol, aliphatic alcohols and lipid peroxidation products. ADH5 (alcohol dehydrogenase 5 (class III)), also known as FDH (formaldehyde dehydrogenase), ADHX, ADH-3 or GSNOR, is a 374 amino acid cytoplasmic protein that belongs to the class III subfamily of alcohol dehydrogenases. Expressed ubiquitously, ADH5 uses iron as a cofactor to catalytically oxidize both long-chain primary alcohols and S-hydroxymethyl-glutathione, a product formed spontaneously between formaldehyde and glutathione. ADH5 exists as a homodimer and, via its ability to oxidize S-hydroxymethyl-glutathione and, thus, eliminate formaldehyde, functions as an important component of cellular metabolism. Genetic variations in the gene encoding ADH5 may affect drug and alcohol dependence in humans.

REFERENCES

1. Kaiser, R., et al. 1988. Class III human liver alcohol dehydrogenase: a novel structural type equidistantly related to the class I and class II enzymes. Biochemistry 27: 1132-1140.
2. Giri, P.R., et al. 1989. Cloning and comparative mapping of a human class III (chi) alcohol dehydrogenase cDNA. Biochem. Biophys. Res. Commun. 164: 453-460.
3. Hur, M.W., et al. 1992. Cloning and characterization of the ADH5 gene encoding human alcohol dehydrogenase 5, formaldehyde dehydrogenase. Gene 121: 305-311.

CHROMOSOMAL LOCATION

Genetic locus: ADH5 (human) mapping to 4q23.

SOURCE

ADH5 (2D11) is a mouse monoclonal antibody raised against amino acids 1-374 representing full length ADH5 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

ADH5 (2D11) is recommended for detection of ADH5 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 ADH5 siRNA (h): sc-105044, ADH5 shRNA Plasmid (h): sc-105044-SH and ADH5 shRNA (h) Lentiviral Particles: sc-105044-V.

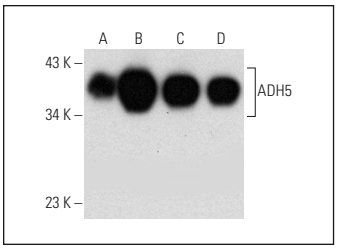
Molecular Weight of ADH5: 40 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409, Hep G2 cell lysate: sc-2227 or K-562 whole cell lysate: sc-2203.

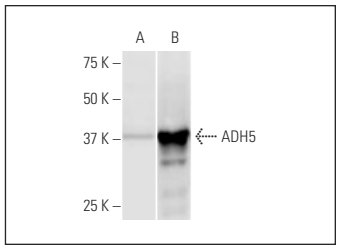
RECOMMENDED SUPPORT REAGENTS

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



ADH5 (2D11): sc-293460. Western blot analysis of ADH5 expression in IMR-32 (**A**), Hep G2 (**B**), Caki-1 (**C**) and K-562 (**D**) whole cell lysates.



ADH5 (2D11): sc-293460. Western blot analysis of ADH5 expression in non-transfected (**A**) and ADH5 transfected (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Rizza, S., et al. 2020. Mitophagy contributes to α-tocopheryl succinate toxicity in GSNOR-deficient hepatocellular carcinoma. Biochem. Pharmacol. 176: 113885.
2. Capitanio, D., et al. 2020. Can serum nitrosoproteome predict longevity of aged women? Int. J. Mol. Sci. 21: 9009.
3. Cirotti, C., et al. 2021. Redox activation of ATM enhances GSNOR translation to sustain mitophagy and tolerance to oxidative stress. EMBO Rep. 22: e50500.
4. Gani, M., et al. 2022. Bystander effect in photosensitized prostate cancer cells with a different grade of malignancy: the role of nitric oxide. Nitric Oxide 128: 25-36.
5. Rizza, S., et al. 2023. GSNOR deficiency promotes tumor growth via FAK1 S-nitrosylation. Cell Rep. 42: 111997.

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.