SANTA CRUZ BIOTECHNOLOGY, INC.

ADK (H-1): sc-514588

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Adenosine kinase (ATP:adenosine 5'-phosphotransferase), or ADK, is an abundant enzyme in mammalian tissues that catalyzes the transfer of the γ-phosphate from ATP to adenosine, thereby serving as a regulator of concentrations of both extracellular adenosine and intracellular adenine nucleotides. Adenosine, an extracellular signaling molecule, has widespread effects on the cardiovascular, nervous, respiratory, and immune systems with increased concentration at sites of tissue injury and inflammation. Adenosine is an efficient inhibitor of neuronal activity with the ability to suppress seizure activity in various animal models of epilepsy. The human ADK gene maps to chromosome 10q22.2 and encodes two ADK transcripts that encode a 345-amino acid form and a 362-amino acid form of the enzyme. These 2 alternately spliced forms differ only at the 5' end, where the first 4 encoded residues of the short form are replaced by 21 residues in the long form. When expressed, both isoforms of the enzyme phosphorylate adenosine with identical kinetics and both require Mg^{2+} for activity. ADK is fully active under dilute conditions, but tends to form soluble aggregates at higher concentrations, which results in inactivation of the enzyme.

CHROMOSOMAL LOCATION

Genetic locus: ADK (human) mapping to 10q22.2; Adk (mouse) mapping to 14 A3.

SOURCE

ADK (H-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 232-257 within an internal region of ADK of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ADK (H-1) is available conjugated to agarose (sc-514588 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-514588 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514588 PE), fluorescein (sc-514588 FITC), Alexa Fluor® 488 (sc-514588 AF488), Alexa Fluor® 546 (sc-514588 AF546), Alexa Fluor® 594 (sc-514588 AF594) or Alexa Fluor® 647 (sc-514588 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514588 AF680) or Alexa Fluor® 790 (sc-514588 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-514588 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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.

APPLICATIONS

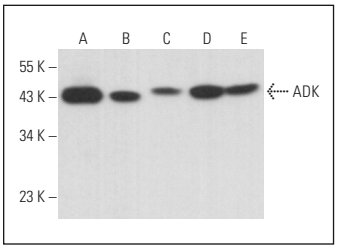
ADK (H-1) is recommended for detection of ADK of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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 ADK siRNA (h): sc-38902, ADK siRNA (m): sc-38903, ADK shRNA Plasmid (h): sc-38902-SH, ADK shRNA Plasmid (m): sc-38903-SH, ADK shRNA (h) Lentiviral Particles: sc-38902-V and ADK shRNA (m) Lentiviral Particles: sc-38903-V.

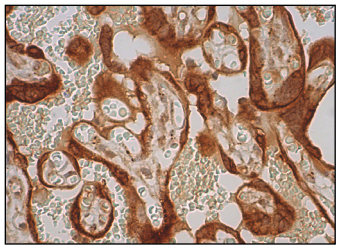
Molecular Weight of ADK: 48/38 kDa.

Positive Controls: SK-BR-3 cell lysate: sc-2218, KNRK whole cell lysate: sc-2214 or 3T3-L1 cell lysate: sc-2243.

DATA



ADK (H-1): sc-514588. Western blot analysis of ADK expression in SK-BR-3 (**A**), 3T3-L1 (**B**), c4 (**C**), KNRK (**D**) and A-10 (**E**) whole cell lysates.



ADK (H-1): sc-514588. Immunoperoxidase staining of formalin fixed, paraffin-embedded human placenta tissue showing cytoplasmic and nuclear staining of trophoblastic cells.

SELECT PRODUCT CITATIONS

1. Valvezan, A.J., et al. 2017. mTORC1 couples nucleotide synthesis to nucleotide demand resulting in a targetable metabolic vulnerability. Cancer Cell 32: 624-638.e5.
2. Valvezan, A.J., et al. 2020. IMPDH inhibitors for antitumor therapy in tuberous sclerosis complex. JCI Insight 5: e135071.
3. Wang, W., et al. 2021. Inhibition of adenosine kinase attenuates myocardial ischaemia/reperfusion injury. J. Cell. Mol. Med. 25: 2931-2943.
4. Aslan, M., et al. 2021. Oncogene-mediated metabolic gene signature predicts breast cancer outcome. NPJ Breast Cancer 7: 141.
5. Zhao, J., et al. 2022. 5-Iodotubercidin inhibits SARS-CoV-2 RNA synthesis. Antiviral Res. 198: 105254.
6. Gerald, W., et al. 2022. Adenosine kinase (ADK) inhibition with ABT-702 induces ADK protein degradation and a distinct form of sustained cardioprotection. Eur. J. Pharmacol. 927: 175050.

PROTOCOLS

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