SANTA CRUZ BIOTECHNOLOGY, INC.

AK1 (E-8): sc-365316

BACKGROUND

Adenylate kinases 1-5 (designated AK1-5) are a set of enzymes that regulate the phosphorylation state of intracellular adenine nucleotides, which are the principle high-energy phosphoryl-carrying molecules in living cells. AKs influence metabolic signals, which include gene expression, ion channel activity and protein kinase-mediated signaling, by catalyzing phosphoryl transfer between adenine nucleotides (AMP, ADP, ATP). Inherited mutations leading to AK deficiencies in erythrocytes have been implicated in hemolytic anemia. Human AK1 is found in the cytosol of skeletal muscle, brain and erythrocytes and is clustered within myofibrils or bound to membranes. AK1-mediated phosphotransfer is essential for maintaining sufficient cellular energy, which enables proper skeletal muscle performance and metabolic activity.

REFERENCES

1. Wegmann, G., et al. 1992. *In situ* compartmentation of creatine kinase in intact sarcomeric muscle: the acto-Myosin overlap zone as a molecular sieve. J. Muscle Res. Cell Motil. 13: 420-435.
2. Dzeja, P.P., et al. 1998. Adenylate kinase: kinetic behavior in intact cells indicates it is integral to multiple cellular processes. Mol. Cell. Biochem. 184: 169-182.
3. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 103000. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Janssen, E., et al. 2000. Adenylate kinase 1 gene deletion disrupts muscle energetic economy despite metabolic rearrangement. EMBO J. 19: 6371-6381.

CHROMOSOMAL LOCATION

Genetic locus: AK1 (human) mapping to 9q34.11; Ak1 (mouse) mapping to 2 B.

SOURCE

AK1 (E-8) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 31-59 within an internal region of AK1 of human origin.

PRODUCT

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

AK1 (E-8) is available conjugated to agarose (sc-365316 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365316 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365316 PE), fluorescein (sc-365316 FITC), Alexa Fluor® 488 (sc-365316 AF488), Alexa Fluor® 546 (sc-365316 AF546), Alexa Fluor® 594 (sc-365316 AF594) or Alexa Fluor® 647 (sc-365316 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365316 AF680) or Alexa Fluor® 790 (sc-365316 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365316 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

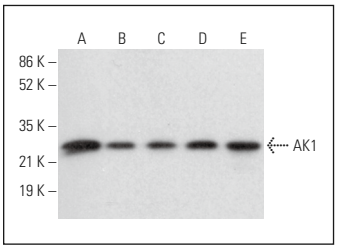
AK1 (E-8) is recommended for detection of AK1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 AK1 siRNA (h): sc-38904, AK1 siRNA (m): sc-38905, AK1 shRNA Plasmid (h): sc-38904-SH, AK1 shRNA Plasmid (m): sc-38905-SH, AK1 shRNA (h) Lentiviral Particles: sc-38904-V and AK1 shRNA (m) Lentiviral Particles: sc-38905-V.

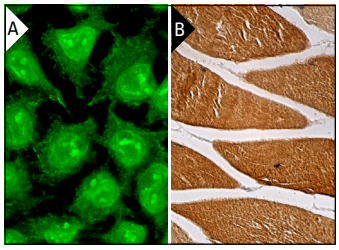
Molecular Weight of AK1: 22 kDa.

Positive Controls: SK-BR-3 cell lysate: sc-2218, BT-20 cell lysate: sc-2223 or HeLa whole cell lysate: sc-2200.

DATA



AK1 (E-8): sc-365316. Western blot analysis of AK1 expression in HeLa (**A**), MDA-MB-231 (**B**), BT-20 (**C**), SK-BR-3 (**D**) and OVCAR-3 (**E**) whole cell lysates.



AK1 (E-8): sc-365316. Immunofluorescence staining of methanol-fixed HeLa cells showing membrane localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human skeletal muscle tissue showing cytoplasmic staining of myocytes (**B**).

SELECT PRODUCT CITATIONS

1. Liu, X., et al. 2020. Adenylate kinase 4 modulates the resistance of breast cancer cells to tamoxifen through an m^6A-based epitranscriptomic mechanism. Mol. Ther. 28: 2593-2604.
2. Elmansy, R.A., et al. 2021. Rebamipide potentially mitigates methotrexate-induced nephrotoxicity via inhibition of oxidative stress and inflammation: a molecular and histochemical study. Anat. Rec. 304: 647-661.

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.