SANTA CRUZ BIOTECHNOLOGY, INC.

AK5 siRNA (m): sc-72060

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 principal 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. AK5 (also designated AK6 or ATP-AMP transphosphorylase) is expressed in the brain and localizes to the cytosol. Like other AKs, it contains an NMP-binding domain, a lid domain and a P-loop. AK5 phosphorylates dAMP and AMP with equal efficiency. It is similar to UMP/CMP kinase and the two enzymes overlap in substrate specificity. Human AK5 occurs in three isoforms: one short isoform (AK5) and two long isoforms (AK5-1 and AK5-2).

REFERENCES

1. Van Rompay, A.R., et al. 1999. Identification of a novel human adenylate kinase. cDNA cloning, expression analysis, chromosome localization and characterization of the recombinant protein. Eur. J. Biochem. 261: 509-517.
2. Donaldson, S.H., et al. 2002. Secreted and cell-associated adenylate kinase and nucleoside diphosphokinase contribute to extracellular nucleotide metabolism on human airway surfaces. Am. J. Respir. Cell Mol. Biol. 26: 209-215.
3. Andrade, F.H., et al. 2003. Paradoxical absence of M lines and downregulation of creatine kinase in mouse extraocular muscle. J. Appl. Physiol. 95: 692-699.
4. McKee, E.E., et al. 2004. Phosphorylation of thymidine and AZT in heart mitochondria: elucidation of a novel mechanism of AZT cardiotoxicity. Cardiovasc. Toxicol. 4: 155-167.
5. Wirschell, M., et al. 2004. Oda5p, a novel axonemal protein required for assembly of the outer Dynein arm and an associated adenylate kinase. Mol. Biol. Cell 15: 2729-2741.

CHROMOSOMAL LOCATION

Genetic locus: Ak5 (mouse) mapping to 3 H3.

PRODUCT

AK5 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see AK5 shRNA Plasmid (m): sc-72060-SH and AK5 shRNA (m) Lentiviral Particles: sc-72060-V as alternate gene silencing products.

For independent verification of AK5 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-72060A, sc-72060B and sc-72060C.

PROTOCOLS

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

AK5 siRNA (m) is recommended for the inhibition of AK5 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor AK5 gene expression knockdown using RT-PCR Primer: AK5 (m)-PR: sc-72060-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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