SANTA CRUZ BIOTECHNOLOGY, INC.

CMPK siRNA (m): sc-105219

BACKGROUND

Nucleoside monophosphate kinases are required for pharmacological activation of therapeutic nucleosides and nucleotide analogs. CMPK (Cytidine monophosphate kinase), also known as UMP-CMP kinase and Deoxycytidylate kinase, is a 196 amino acid protein that catalyzes the phosphoryl transfer from ATP to UMP, CMP and dCMP. This enzymatic reaction leads to the formation of ADP and the corresponding nucleoside diphosphate, which are required for cellular nucleic acid synthesis. Primarily localized to the cytoplasm, CMPK also plays an important role in the activation of pyrimidine analogs, which is clinically useful anti-cancer and anti-viral drugs. CMP is the best substrate for CMPK, followed by UMP and dCMP.

REFERENCES

1. Giblett, E.R., et al. 1974. Uridine monophosphate kinase: A new genetic polymorphism with possible clinical implications. Am. J. Hum. Genet. 26: 627-635.
2. Van Rompay, A.R., et al. 1999. Phosphorylation of deoxycytidine analog monophosphates by UMP-CMP kinase: molecular characterization of the human enzyme. Mol. Pharmacol. 56: 562-569.
3. Van Rompay, A.R., et al. 2000. Phosphorylation of nucleosides and nucleoside analogs by mammalian nucleoside monophosphate kinases. Pharmacol. Ther. 87: 189-198.
4. Pearman, A.T., et al. 2001. Characterization of human UMP-CMP kinase enzymatic activity and 5' untranslated region. Life Sci. 69: 2361-2370.
5. Liou, J.Y., et al. 2002. Characterization of human UMP/CMP kinase and its phosphorylation of D- and L-form deoxycytidine analogue monophosphates. Cancer Res. 62: 1624-1631.
6. Pasti, C., et al. 2003. Reaction of human UMP-CMP kinase with natural and analog substrates. Eur. J. Biochem. 270: 1784-1790.
7. Segura-Peña, D., et al. 2004. Substrate-induced conformational changes in human UMP/CMP kinase. J. Biol. Chem. 279: 33882-33889.

CHROMOSOMAL LOCATION

Genetic locus: Cmpk1 (mouse) mapping to 4 D1.

PRODUCT

CMPK 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 CMPK shRNA Plasmid (m): sc-105219-SH and CMPK shRNA (m) Lentiviral Particles: sc-105219-V as alternate gene silencing products.

For independent verification of CMPK (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-105219A, sc-105219B and sc-105219C.

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

CMPK siRNA (m) is recommended for the inhibition of CMPK 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.

GENE EXPRESSION MONITORING

CMPK (H-2): sc-376153 is recommended as a control antibody for monitoring of CMPK gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CMPK gene expression knockdown using RT-PCR Primer: CMPK (m)-PR: sc-105219-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.