

# CMPK (K-14): sc-104147

## 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 are clinically useful anti-cancer and anti-viral drugs. CMP is the best substrate for CMPK, followed by UMP and dCMP.

## REFERENCES

- Giblett, E.R., et al. 1974. Uridine monophosphate kinase: A new genetic polymorphism with possible clinical implications. *Am. J. Hum. Genet.* 26: 627-635.
- 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.
- Van Rompay, A.R., et al. 2000. Phosphorylation of nucleosides and nucleoside analogs by mammalian nucleoside monophosphate kinases. *Pharmacol. Ther.* 87: 189-198.
- Pearman, A.T., et al. 2001. Characterization of human UMP-CMP kinase enzymatic activity and 5' untranslated region. *Life Sci.* 69: 2361-2370.
- 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.
- Pasti, C., et al. 2003. Reaction of human UMP-CMP kinase with natural and analog substrates. *Eur. J. Biochem.* 270: 1784-1790.
- Segura-Peña, D., et al. 2004. Substrate-induced conformational changes in human UMP/CMP kinase. *J. Biol. Chem.* 279: 33882-33889.
- Hsu, C.H., et al. 2005. Phosphorylation of cytidine, deoxycytidine, and their analog monophosphates by human UMP/CMP kinase is differentially regulated by ATP and magnesium. *Mol. Pharmacol.* 67: 806-814.
- Online Mendelian Inheritance in Man, OMIM<sup>™</sup>. 2009. Johns Hopkins University, Baltimore, MD. MIM Number: 191710. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

## CHROMOSOMAL LOCATION

Genetic locus: CMPK1 (human) mapping to 1p33; Cmpk1 (mouse) mapping to 4 D1.

## SOURCE

CMPK (K-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of CMPK of human origin.

## RESEARCH USE

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

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-104147 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

CMPK (K-14) is recommended for detection of CMPK of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (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 CMPK siRNA (h): sc-88593, CMPK siRNA (m): sc-105219, CMPK shRNA Plasmid (h): sc-88593-SH, CMPK shRNA Plasmid (m): sc-105219-SH, CMPK shRNA (h) Lentiviral Particles: sc-88593-V and CMPK shRNA (m) Lentiviral Particles: sc-105219-V.

Molecular Weight of CMPK: 26 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203 or HeLa whole cell lysate: sc-2200.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker<sup>™</sup> compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz<sup>™</sup> Mounting Medium: sc-24941.

## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.



Try **CMPK (H-2): sc-376153** or **CMPK (F-5): sc-376209**, our highly recommended monoclonal alternatives to CMPK (K-14).