Synonyms: cytidylate kinase, deoxycytidylate kinase, deoxycytidine monophosphokinase, dCMP kinase, cytidine monophosphate kinase, CMP kinase (CMK, CMPK), uridine monophosphate kinase (UMK, UMPK), uridine monophosphate/cytidine monophosphate kinase, UMP/CMP kinase (UMP/CMPK), CTP:CMP phosphotransferase, ATP:UMP-CMP phosphotransferase, pyrimidine nucleoside monophosphate kinase (YMPK)

Description

NOVO CIB’s Human UMP-CMP kinase (CMK) is a recombinant protein of ca. 27kDa (full length 228-aa form) cloned by RT-PCR amplification of mRNA extracted from Huh7 cells (human hepatoma) and expressed in E.coli.

UMP-CMP kinase plays a critical role in supplying cells with nucleotides by catalysing the phosphorylation of CMP, UMP and dCMP to their respective diphosphates. CMK plays also an important role in the activation of cytidine analogues, aracytidine and gemcitabine, a mainstay of leukaemia and lymphoma therapy. CMK has a remarkable ability of to phosphorylate L-nucleotides from their monophosphate to diphosphate forms as shown for β-L-2’3’-dideoxy-3’thiacytidine (L-SSdC, 3-TC or lamivudine), an anti-HIV and anti-hepatitis B drug.

Crystal structure of open form of human UMP-CMP kinase has been solved recently. These data, together with the homology model of enzyme in closed state, provides structural basis for understanding the substrate specificity of the enzyme and helps to design new nucleoside analogues of higher phosphorylation efficiency.

Storage: –20 °C in a solution containing 150mM KCl, 50mM Tris-Hcl, pH7.5, 2mM β-mercaptotethanol, 50% glycerol.

Unit Definition: One unit of UMP-CMP kinase converts 1.0 μmole of UMP and ATP to UDP and ADP per minute at pH 7.6 at 25°C, using a coupled enzyme system with PK/LDH.

Specific activity: ≥ 2.5 U/mg

Purity: controlled by SDS-PAGE

Related products:

NOVO CIB has cloned and purified a panel of human recombinant nucleoside kinases and has developed a range of PRECICE® services to evaluate substrate properties of new nucleoside analogues for key cellular kinases.

- UMP-CMP kinase (CMK) nucleoside phosphorylation assay
- Coupled dCK-CMK nucleoside phosphorylation assays
- Deoxycytidine kinase (dCK)
- Adenosine kinase (AK)
- Cytosolic 5’ nucleotidase II (cN-II)
- dCK nucleoside phosphorylation assay
- Adenosine kinase phosphorylation assay
- cN-II phosphorylation assay
- Coupled Nucleoside Kinase – IMPDH II