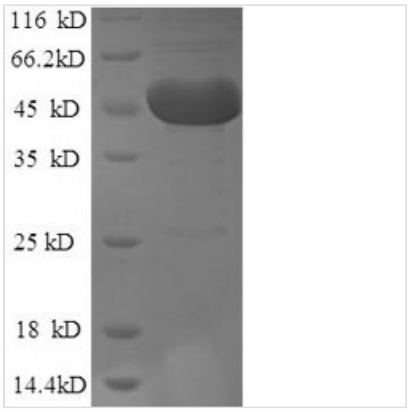
Recombinant Human m7GpppN-mRNA hydrolase (DCP2)

Product Code	CSB-EP810265HU
Relevance	Decapping metalloenzyme that catalyzes the cleavage of the cap structure on mRNAs. Roves the 7-methyl guanine cap structure from mRNA molecules, yielding a 5'-phosphorylated mRNA fragment and 7m-GDP. Necessary for the degradation of mRNAs, both in normal mRNA turnover and in nonsense-mediated mRNA decay. Plays a role in replication-dependent histone mRNA degradation. Has higher activity towards mRNAs that lack a poly(A) tail. Has no activity towards a cap structure lacking an RNA moiety
Abbreviation	Recombinant Human DCP2 protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	Q8IU60
Alias	Nucleoside diphosphate-linked moiety X motif 20 ;Nudix motif 20mRNA-decapping enzyme 2 ;hDpc
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	METKRVEIPGSVLDDLCSRFILHIPSEERDNAIRVCFQIELAHWFYLDFYMQNTP GLPQCGIRDFAKAVFSHCPFLLPQGEDVEKVLDEWKEYKMGVPTYGAIILDETL ENVLLVQGYLAKSGWGFPKGKVNKEEAPHDCAAREVFEETGFDIKDYICKDDY IELRINDQLARLYIIPGIPKDTKFNPKTRREIRNIEWFSIEKLPCHRNDMTPKSKL GLAPNKFFMAIPFIRPLRDWLSRRFGDSSDSDNGFSSTGSTPAKPTVEKLSRT KFRHSQQLFPDGSPGDQWVKHRQPLQQKPYNNHSEMSDLLKGKKCEKKLHP RKLQDNFETDAVYDLPSSSEDQLLEHAEGQPVACNGHCKFPFSSRAFLSFKF DHNAIMKILDL
Research Area	Transcription
Source	E.coli
Target Names	DCP2
Expression Region	1-385aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	48.4kDa
Protein Length	Full Length of Isoform 2

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Producing recombinant human m7GpppN-mRNA hydrolase (DCP2) involves a series of steps beginning with the isolation of the target gene that codes for the 1-385aa of the human DCP2, which is also fused with N-terminal 6xHis-tag for purification purposes. This gene is cloned into an expression vector and transfected into E. coli cells. The E. coli cells express the protein, which is subsequently harvested from the cell lysate. Purification of the protein is commonly achieved using affinity chromatography. Finally, the recombinant DCP2 protein's purity is determined by SDS-PAGE, reaching over 90%.

Human DCP2 is a catalytically active mRNA-decapping enzyme found in specific cytoplasmic structures [1]. It is an RNA-binding protein that selectively binds to a subset of mRNAs containing a stem-loop structure near the 5' cap [2]. DCP2 plays a crucial role in controlling the stability of a subset of human cellular RNAs involved in various functions such as transcription and immune responses [3]. The activation of DCP2 by DCP1 occurs on the EDC4 scaffold and is involved in mRNA degradation by XRN1 in human cells [4]. DCP2 cooperates with MOV10 to de-cap LINE-1 RNA, leading to the degradation of LINE-1 RNA and a reduction in LINE-1 retrotransposition [5].

In humans, the DCP2-DCP1 interaction requires additional proteins like EDC3, ECD4, and the DEAD-box protein DDX6/RCK to form multimeric decapping complexes [6]. DCP2 is regulated at the post-transcriptional level, with miRNAs being an effective way to downregulate its expression [7]. Furthermore, DCP2 preferentially binds to specific mRNAs and has been identified to have specific substrates, such as Rrp41, a core subunit component of the RNA exosome [8].

References:

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[8] Y. Li, M. Song, & M. Kiledjian, Transcript-specific decapping and regulated stability by the human dcp2 decapping protein, Molecular and Cellular Biology, vol. 28, no. 3, p. 939-948, 2008. https://doi.org/10.1128/mcb.01727-07

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.
Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.