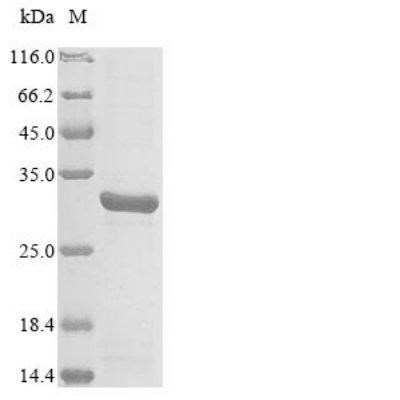
Recombinant Escherichia coli O157:H7 NADH pyrophosphatase (nudC)

Product Code	CSB-EP845206EOD
Abbreviation	Recombinant E.coli O157:H7 nudC 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.	Q8X6X7
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Escherichia coli O157:H7
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MDRIIEKLDHGWWVVSHEQKLWLPKGELPYGEAANFDLVGQRALQIGEWQG EPVWLIQQQRRYDMGSVRQVIDLDVGLFQLAGRGVQLAEFYRSHKYCGYCG HEMYPSKTEWAMLCSHCRERYYPQIAPCIIVAIRRDDSILLAQHTRHRNGVHTV LAGFVEVGETLEQAVAREVMEESGIKVKHLRYVTSQPWPFPQSLMTAFMAEY DSGDIVIDPKELLEANWYRYDDLPLLPPPGTVARRLIEDTVAMCRAEYE
Research Area	Cell Biology
Source	E.coli
Target Names	nudC
Expression Region	1-257aa
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	33.8 kDa
Protein Length	Full length
Image	



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

Description

Recombinant Escherichia coli O157:H7 NADH pyrophosphatase (nudC) is expressed in E. coli and features an N-terminal 6xHis-tag for simplified purification. This full-length protein spans 1-257 amino acids and achieves a purity greater than 85% as verified by SDS-PAGE. This product is designed exclusively for research use and is not intended for therapeutic or diagnostic applications.

NADH pyrophosphatase, encoded by the nudC gene, appears to be involved in regulating NADH levels within the cell. It likely plays a critical role in maintaining cellular redox balance by hydrolyzing NADH, thus influencing various metabolic pathways. Studying this enzyme may be important for understanding bacterial metabolism and energy management, making it a significant focus in microbiological research.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Biochemical Characterization of NADH Pyrophosphatase Activity

This recombinant nudC protein can be used to establish and optimize enzymatic assays for NADH pyrophosphatase activity, including determination of kinetic parameters such as Km and Vmax values. The full-length protein expressed in E. coli provides what appears to be a suitable model for studying the biochemical properties of this enzyme from the pathogenic E. coli O157:H7 strain. Researchers can investigate substrate specificity, cofactor requirements, and optimal reaction conditions using standard spectrophotometric or coupled enzyme assays. The N-terminal His-tag makes protein purification and quantification more straightforward for accurate enzymatic studies.

2. Comparative Enzyme Studies Between Pathogenic and Non-pathogenic E. coli Strains

The recombinant E. coli O157:H7 nudC protein serves as a valuable tool for

comparative biochemical studies examining differences in NADH pyrophosphatase activity between pathogenic and non-pathogenic E. coli strains. Researchers can compare enzymatic properties, protein stability, and structural characteristics with nudC homologs from other bacterial strains. Such comparative studies might provide insights into metabolic adaptations or virulence-associated changes in nucleotide metabolism pathways. The standardized recombinant protein allows for controlled experimental conditions across different research groups.

3. Antibody Development and Immunological Studies

The purified recombinant nudC protein can serve as an antigen for generating polyclonal or monoclonal antibodies specific to E. coli O157:H7 NADH pyrophosphatase. The N-terminal His-tag enables easy purification and immobilization for antibody screening assays such as ELISA or Western blotting. These antibodies could potentially be valuable research tools for studying nudC expression levels, cellular localization, and protein-protein interactions in bacterial systems. The high purity level (>85%) may ensure minimal cross-reactivity with contaminating proteins during immunization protocols.

4. Protein-Protein Interaction Studies

The His-tagged recombinant nudC protein can be used in pull-down assays to identify potential protein interaction partners involved in nucleotide metabolism or related cellular processes. The N-terminal His-tag allows for immobilization on nickel-affinity matrices, enabling capture of interacting proteins from bacterial cell lysates or purified protein libraries. Co-immunoprecipitation experiments and surface plasmon resonance studies can further characterize specific protein-protein interactions. These interaction studies might reveal novel regulatory mechanisms or metabolic network connections involving NADH pyrophosphatase in E. coli O157:H7.

5. Structural Biology and Protein Folding Studies

This recombinant nudC protein provides material for structural characterization studies including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy experiments. The full-length protein (1-257 amino acids) represents the complete functional domain architecture of the enzyme, making it suitable for structure-function relationship studies. Protein folding studies, thermal stability analyses, and conformational change investigations can be performed using techniques such as circular dichroism spectroscopy or differential scanning calorimetry. Having purified recombinant protein available enables systematic structural studies that may inform understanding of the enzyme's catalytic mechanism.

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.