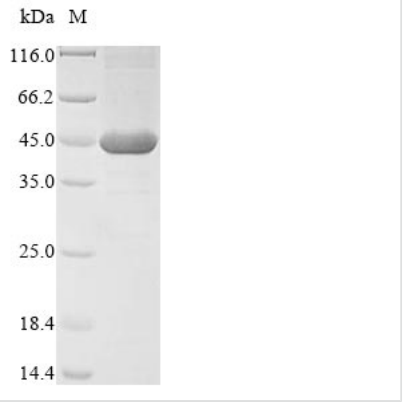
Recombinant Neisseria meningitidis serogroup C / serotype 2a Quinolinate synthase A (nadA)

Product Code	CSB-EP375490NEX
Relevance	Catalyzes the condensation of iminoaspartate with dihydroxyacetone phosphate to form quinolinate.
Abbreviation	Recombinant Neisseria meningitidis serogroup C / serotype 2a nadA 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.	A1KVN9
Product Type	Recombinant Protein
Immunogen Species	Neisseria meningitidis serogroup C / serotype 2a (strain ATCC 700532 / DSM 15464 / FAM18)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MQTAARRSFDYDMPLIQTPTSACQIRQAWAKVADTPDRETAGRLKDEIKALLK EKNAVLVAHYYVDPLIQDLALETGGCVGDSLEMARFGAEHEADTLVVAGVRF MGESAKILCPEKTVLMPDLEAECSLDLGCPEEAFSAFCDQHPDRTVVVYANTS AAVKARADWVVTSSVALEIVSYLKSRGEKLIWGPDRHLGDYICRETGADMLLW QGSCIVHNEFKGQELAALKAEHPDAVVLVHPESPQSVIELGDVVGSTSKLLKA AVSRPEKKFIVATDLGILHEMQKQAPDKEFIAAPTAGNGGSCKSCAFCPWMAM NSLGGIKYALTSGRNEILLDRKLGEAAKLPLQRMLDFAAGLKRGDVFNGMGPA
Research Area	Others
Source	E.coli
Target Names	nadA
Protein Names	Recommended name: Quinolinate synthase A EC= 2.5.1.72
Expression Region	1-370aa
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	44.1 kDa
Protein Length	Full Length
Image	



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

Description

Recombinant Neisseria meningitidis serogroup C / serotype 2a Quinolinate synthase A (nadA) is produced in E. coli and includes a full-length sequence from 1-370 amino acids. This protein features an N-terminal 6xHis-tag, which makes purification and detection more straightforward. The product demonstrates a purity level greater than 85% as confirmed by SDS-PAGE analysis, ensuring suitability for various research applications.

Quinolinate synthase A (nadA) appears to play a critical role in the biosynthesis of quinolinic acid, a key precursor in the NAD+ biosynthesis pathway. This enzyme is essential for the production of nicotinamide adenine dinucleotide, a crucial cofactor involved in numerous metabolic processes. Understanding its function and activity may be important for studying bacterial metabolism and potential therapeutic targets.

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 NAD Biosynthesis Pathway

This recombinant quinolinate synthase A can be used to study the de novo NAD biosynthesis pathway in Neisseria meningitidis through in vitro enzymatic assays. Researchers might investigate the protein's catalytic properties, substrate specificity, and kinetic parameters using purified enzyme preparations. The N-terminal 6xHis tag makes protein purification and immobilization more manageable for detailed biochemical studies. This application would likely contribute to understanding bacterial NAD metabolism and potential species-specific differences in this essential biosynthetic pathway.

2. Antibody Development and Immunological Studies

The purified recombinant protein serves as an excellent antigen for generating polyclonal or monoclonal antibodies against N. meningitidis quinolinate synthase A. These antibodies can be developed for research applications including

Western blotting, immunofluorescence microscopy, and immunoprecipitation studies. The high purity level (>85%) suggests minimal cross-reactivity with other bacterial proteins during antibody production. Such antibodies would be valuable tools for studying protein expression, localization, and regulation in bacterial cell biology research.

3. Protein-Protein Interaction Studies

The 6xHis-tagged recombinant protein can be used in pull-down assays to identify potential protein partners that interact with quinolinate synthase A in N. meningitidis. The histidine tag allows efficient immobilization on nickel-affinity matrices for capturing interacting proteins from bacterial lysates. Co-immunoprecipitation experiments and yeast two-hybrid screens can further validate identified interactions. Understanding protein networks involving this enzyme may reveal regulatory mechanisms controlling NAD biosynthesis in pathogenic bacteria, though such networks are often more complex than initially anticipated.

4. Structural Biology and Biophysical Analysis

This full-length recombinant protein (1-370aa) provides material for structural studies including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy. Biophysical characterization techniques such as dynamic light scattering, analytical ultracentrifugation, and thermal stability assays can reveal protein folding, oligomerization states, and stability properties. The purified protein allows comparative structural analysis with quinolinate synthases from other bacterial species to understand evolutionary relationships and functional conservation, though obtaining high-quality crystals remains challenging for many proteins.

5. Drug Target Validation and Inhibitor Screening

The recombinant enzyme can serve as a target for high-throughput screening of potential antimicrobial compounds that inhibit NAD biosynthesis. In vitro enzyme inhibition assays can be developed to test libraries of small molecules for their ability to block quinolinate synthase A activity. The 6xHis tag makes protein immobilization in microplate-based screening formats more straightforward. This application supports preclinical research into novel antimicrobial strategies targeting essential metabolic pathways in pathogenic Neisseria species, though translating in vitro inhibition to effective antimicrobial activity often presents significant challenges.

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.