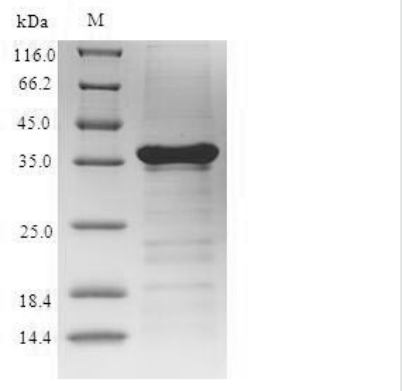
Recombinant Penaeus monodon Sarcoplasmic calcium binding protein

Product Code	CSB-EP2035ETF
Abbreviation	Recombinant Penaeus monodon Sarcoplasmic calcium binding 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.	E7CGC4
Product Type	Recombinant Protein
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MAYSWDNRVKYVVRYMYDIDNNGFLDKNDFECLAVRNTLIEGRGEFSADAYA NNQKIMRNLWNEIAELADFNKDGEVTVDEFKQAVQKHCQGKKYGDFPGAFKV FIANQFKAIDVNGDGKVGLDEYRLDCITRSAFAEVKEIDDAYNKLTTEDDRKAG GLTLERYQDLYAQFISNPDESCSACYLFGPLKVVQ
Research Area	Cardiovascular
Source	E.coli
Expression Region	1-193aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-SUMO-tagged
Mol. Weight	38.1kDa
Protein Length	Full Length

Image



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

Description

This recombinant sarcoplasmic calcium binding protein from Penaeus monodon is produced in E. coli and contains the complete protein sequence spanning amino acids 1 to 193. The protein carries an N-terminal 6xHis-SUMO tag, which

makes purification and detection more straightforward. SDS-PAGE analysis indicates the product achieves over 90% purity, likely ensuring reliable results for research applications.

Sarcoplasmic calcium binding proteins appear to be central players in calcium ion regulation within muscle cells. They influence muscle contraction and relaxation processes, though the precise mechanisms may vary across species. Understanding this protein could shed light on calcium dynamics and related pathways, which is why it has become an important subject in physiological and biochemical research focused on calcium-dependent cellular activities.

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. Calcium-Binding Protein Biochemical Characterization

This recombinant protein offers a way to investigate the calcium-binding properties and kinetics of Penaeus monodon sarcoplasmic calcium binding protein through in vitro binding assays. Scientists might use techniques like isothermal titration calorimetry (ITC) or fluorescence-based calcium titration experiments to determine binding affinity, stoichiometry, and thermodynamic parameters. The N-terminal 6xHis-SUMO tag makes protein purification easier and allows immobilization for surface plasmon resonance studies to analyze calcium binding kinetics. Such studies would likely contribute to our understanding of calcium homeostasis mechanisms in crustacean muscle physiology.

2. Comparative Evolutionary Studies of Calcium-Binding Proteins

The full-length recombinant protein may serve as a useful tool for comparative biochemical analysis between crustacean and vertebrate sarcoplasmic calcium-binding proteins. Researchers could perform structural and functional comparisons using techniques such as circular dichroism spectroscopy to analyze secondary structure changes upon calcium binding. Cross-species binding studies might examine the evolutionary conservation of calcium-binding mechanisms across different taxonomic groups. This application supports research into the molecular evolution of calcium signaling pathways in invertebrates, though interpretations should account for species-specific adaptations.

3. Antibody Development and Immunological Studies

The high purity recombinant protein can function as an immunogen for generating specific antibodies against Penaeus monodon sarcoplasmic calcium binding protein. The 6xHis-SUMO tag allows for straightforward purification and immobilization for antibody screening assays and ELISA-based characterization.

These antibodies would potentially become valuable research tools for immunohistochemistry studies in crustacean tissues and for developing immunoassays to detect this protein in biological samples. The recombinant protein can also serve as a positive control and standard in various immunological assays.

4. Protein-Protein Interaction Studies

This recombinant protein might be used in pull-down assays to identify potential binding partners in Penaeus monodon muscle tissue extracts or other relevant biological samples. The N-terminal 6xHis tag allows for immobilization on nickel-affinity matrices, which enables the capture and identification of interacting proteins through mass spectrometry analysis. Co-immunoprecipitation experiments could be performed using antibodies generated against this protein to study native protein complexes. These studies would help clarify the protein interaction networks involved in calcium signaling in crustacean muscle systems, though results may need validation through additional approaches.

5. In Vitro Functional Assays for Calcium Homeostasis Research

The recombinant protein can be incorporated into reconstituted in vitro systems to study its role in calcium buffering and transport mechanisms. Researchers might use calcium-sensitive fluorescent indicators to monitor calcium dynamics in the presence of varying concentrations of this protein. Adding the protein to isolated sarcoplasmic reticulum preparations from crustacean muscle could help investigate its effects on calcium uptake and release kinetics. These functional studies would likely provide insights into the specific role of this protein in crustacean muscle contraction and relaxation cycles, though extrapolation to in vivo conditions requires careful consideration.

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.