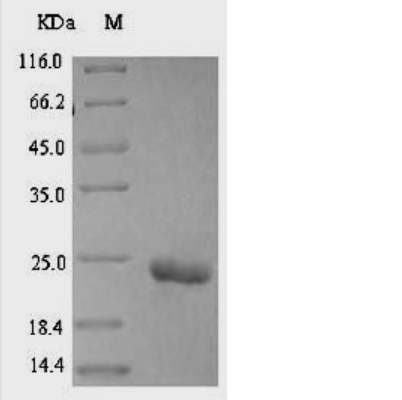
Recombinant Leiurus quinquestriatus hebraeus Alpha-insect toxin LqhaIT

Product Code	CSB-EP322958LDS
Relevance	Alpha toxins bind voltage-independently at site-3 of sodium channels (Nav) and inhibit the inactivation of the activated channels, thereby blocking neuronal transmission. The dissociation is voltage-dependent. This toxin is active on insects. It is also highly toxic to crustaceans and has a measurable but low toxicity to mice.
Abbreviation	Recombinant Leiurus quinquestriatus hebraeus Alpha-insect toxin LqhaIT 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.	P17728
Alias	Lqh-alpha-IT Short name: Alpha-IT
Product Type	Recombinant Protein
Immunogen Species	Leiurus quinquestriatus hebraeus (Yellow scorpion)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	VRDAYIAKNYNCVYECFRDAYCNELCTKNGASSGYCQWAGKYGNACWCYAL PDNVPIRVPGKCHRK
Research Area	Others
Source	E.coli
Expression Region	20-85aa
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	23.5kDa
Protein Length	Full Length of Mature Protein
Image	



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

Description

Recombinant Leiurus quinquestriatus hebraeus Alpha-insect toxin LqhaIT is produced in E. coli and contains the complete mature protein sequence from amino acids 20 to 85. The protein carries an N-terminal 6xHis-SUMO tag, which makes purification and detection more straightforward. SDS-PAGE analysis indicates purity levels above 90%, making this product appropriate for research applications that demand high-quality protein preparations.

Alpha-insect toxin LqhaIT comes from the Yellow scorpion and appears to play an important role in modulating ion channels—particularly those that control insect neuronal signaling. Researchers studying neurotoxicology and ion channel pharmacology may find this toxin especially valuable, as it could provide insights into how insects become paralyzed and potentially help develop new pest control approaches.

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. Ion Channel Interaction Studies

Scientists can use this recombinant alpha-insect toxin from Leiurus quinquestriatus hebraeus to examine how it binds to different insect ion channels and study the kinetics of these interactions in vitro. The N-terminal 6xHis-SUMO tag allows for protein purification and attachment to surfaces during surface plasmon resonance or bio-layer interferometry experiments—techniques that help measure binding affinities. Electrophysiological patch-clamp studies might involve insect cell lines or Xenopus oocytes that express various ion channel subtypes. These experiments could reveal the toxin's selectivity patterns and help researchers understand its mechanism of action.

2. Antibody Development and Immunoassay Applications

The high-purity recombinant protein works well as an immunogen for creating

specific antibodies against LqhaIT in research contexts. That 6xHis-SUMO tag comes in handy again—it makes purification simple and allows researchers to attach the protein to solid supports for ELISA-based screening of hybridoma clones or phage display libraries. Once developed, these antibodies can be used to build research immunoassays that detect and measure the toxin in biological samples or venom fractions.

3. Protein-Protein Interaction Screening

The N-terminal 6xHis tag makes pull-down assays possible, helping identify potential protein targets or binding partners of LqhaIT in insect cell lysates or membrane preparations. Researchers can attach the recombinant protein to nickel-affinity resins to capture interacting proteins, then identify these proteins through mass spectrometry analysis. This strategy may help clarify which molecular targets and pathways this scorpion toxin affects in insect systems.

4. Structure-Function Relationship Studies

The mature protein region (20-85aa) offers a solid foundation for mutagenesis studies aimed at identifying critical amino acid residues that influence toxin activity or stability. Site-directed mutagenesis, combined with the established E.coli expression system, allows researchers to systematically create toxin variants and map functional domains. Comparing wild-type and mutant proteins could reveal structure-activity relationships that are important for understanding how scorpion toxins evolved and achieved their specificity.

5. Biochemical Characterization and Stability Studies

High-purity recombinant protein makes comprehensive biochemical analysis feasible—researchers can examine thermal stability, pH tolerance, and resistance to proteolytic degradation under different buffer conditions. Circular dichroism spectroscopy is likely useful for studying the protein's secondary structure and folding properties. These studies may provide fundamental insights into the physicochemical properties of scorpion alpha-insect toxins and help determine optimal storage and handling conditions for research applications.

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.