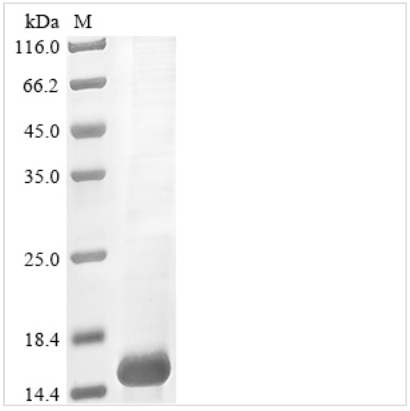
Recombinant Tityus zulianus Beta-toxin Tz1

Product Code	CSB-EP649921TAAJ
Abbreviation	Recombinant Tityus zulianus Beta-toxin Tz1 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.	Q2NME3
Storage Buffer	Tris-based buffer,50% glycerol
Product Type	Recombinant Proteins
Immunogen Species	Tityus zulianus(Venezuelan scorpion)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	KDGYLVGNDGCKYSCFTRPGTYCANECSRVKGKDGYCYAWMACYCYSMPNWVKTWDRATNRCGR
Research Area	Others
Source	E.coli
Target Names	N/A
Protein Names	Recommended name: Beta-toxin Tz1
Expression Region	21-84aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged and C-terminal Myc-tagged
Mol. Weight	14.8 kDa
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 Tityus zulianus Beta-toxin Tz1 gets expressed in E. coli and

covers the complete mature protein sequence from amino acids 21 to 84. The protein comes engineered with an N-terminal 10xHis-tag and a C-terminal Myc-tag, which makes purification and detection much more straightforward. SDS-PAGE analysis shows it reaches over 85% purity - a level that appears suitable for research applications demanding high-quality protein preparations.

Beta-toxin Tz1 from Tityus zulianus is a fairly well-characterized peptide that's known to mess with ion channel activity, especially sodium channels. Being a scorpion toxin, it has become quite important in neurophysiological research. Scientists rely on it to better understand how ion channels work and interact with other molecules. The toxin's distinctive properties may make it a valuable tool for anyone digging into ion channel regulation mechanisms and neurotoxicology.

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. In Vitro Ion Channel Interaction Studies

Researchers can use this recombinant Tityus zulianus beta-toxin to explore how it binds and interacts with different ion channels through electrophysiological assays. The dual His and Myc tags are handy - they allow for both purification and detection when working with isolated membrane preparations or reconstituted ion channels. Scientists might run competition binding assays and track conductance changes to figure out the toxin's selectivity profile. The E. coli expression system likely produces enough material for comprehensive dose-response studies across various channel subtypes.

2. Antibody Development and Immunological Research

This recombinant toxin works well as both an immunogen and antigen for creating specific antibodies against Tityus zulianus beta-toxin. The N-terminal His tag makes purification for immunization protocols easier, while the C-terminal Myc tag proves useful in screening assays to spot specific antibodies. Research teams can develop both polyclonal and monoclonal antibodies for Western blotting, immunoprecipitation, and other immunoassays. These antibodies could become valuable tools for detecting native toxin in venom samples or tracking toxin distribution in research models.

3. Protein-Protein Interaction Mapping

The dual-tagged recombinant toxin works in pull-down assays to identify cellular proteins that might interact with the beta-toxin. The His tag allows for immobilization on nickel-affinity matrices, while the Myc tag helps detect and confirm the toxin's presence in binding complexes. Cell lysates or membrane preparations can be mixed with the immobilized toxin to capture potential binding partners for later mass spectrometry analysis. This method may reveal

unexpected molecular targets and binding mechanisms of the scorpion toxin.

4. Structural and Biophysical Characterization Studies

The recombinant protein supplies material for detailed structural analysis through techniques like NMR spectroscopy, X-ray crystallography, or cryo-electron microscopy. The mature protein region (21-84aa) represents the biologically active domain for structural studies. Meanwhile, the tags can help with protein orientation and purification during sample preparation. Researchers can examine the three-dimensional structure, folding dynamics, and conformational changes of the toxin under different conditions. The E. coli-expressed protein likely provides enough material for multiple analytical techniques and optimization experiments.

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