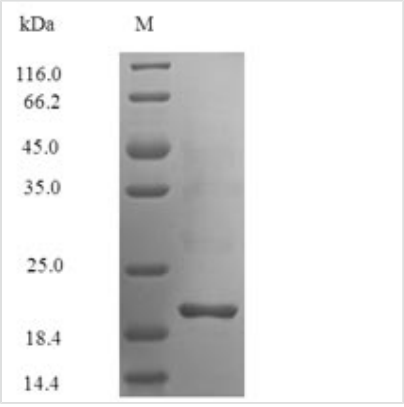
Recombinant Androctonus australis Alpha-mammal toxin AaH2

Product Code	CSB-EP355659AJZ
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. This toxin is active against mammals.
Abbreviation	Recombinant Androctonus australis Alpha-mammal toxin AaH2 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.	P01484
Alias	AaH II Short name:AaHII Neurotoxin 2
Product Type	Recombinant Protein
Immunogen Species	Androctonus australis (Sahara scorpion)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	VKDGYIVDDVNCTYFCGRNAYCNEECTKLKGESGYCQWASPYGNACYCYKL PDHVRTKGPGRCH
Research Area	Others
Source	E.coli
Expression Region	20-83aa
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	23.3kDa
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 Androctonus australis Alpha-mammal toxin AaH2 is produced in E. coli and includes the full length of the mature protein, covering amino acids 20 through 83. This product comes with an N-terminal 6xHis-SUMO tag, which streamlines purification and detection processes. The protein achieves high purity levels exceeding 90% as confirmed by SDS-PAGE, providing what appears to be a dependable reagent for research work.

Alpha-mammal toxin AaH2 from Androctonus australis represents a crucial element in studying the neurotoxic effects of scorpion venom. This toxin targets voltage-gated sodium channels - structures that are essential for nerve impulse transmission. Research on this protein may help advance our understanding of channel physiology and could lead to the development of therapeutic agents for conditions involving ion channel dysfunction.

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 Binding and Interaction Studies

This recombinant scorpion toxin works well in radioligand binding assays or surface plasmon resonance experiments when studying its interaction with various ion channels. Sodium and potassium channels appear to be particularly common targets of scorpion toxins. The N-terminal His-SUMO tag makes purification easier and allows for immobilization on sensor surfaces during real-time binding kinetics analysis. Scientists can examine binding specificity, affinity constants, and competitive binding with other channel modulators. These studies may contribute to understanding the molecular basis of toxin-channel interactions and structure-activity relationships.

2. Antibody Development and Immunoassay Applications

The recombinant AaH2 toxin functions as an effective immunogen and coating antigen for developing specific antibodies against Androctonus australis venom components. High purity levels (>90%) and consistent production from E. coli expression help ensure reproducible immunization protocols and standardized ELISA development. The His-SUMO tag can be used for oriented immobilization in immunoassays, which might improve antibody binding accessibility. These antibodies could prove valuable as research tools for venom composition analysis and cross-reactivity studies with related scorpion species.

3. Protein-Protein Interaction Mapping

The His-tagged recombinant toxin works in pull-down assays to identify and characterize protein targets in membrane preparations or cell lysates. The SUMO tag appears to provide additional stability and solubility, making it

suitable for co-immunoprecipitation experiments with membrane protein complexes. Researchers can use this protein to map interaction networks and identify novel binding partners beyond traditional ion channel targets. Mass spectrometry analysis of pulled-down complexes is likely to reveal potential auxiliary proteins or regulatory subunits involved in toxin binding.

4. Structural and Biophysical Characterization Studies

This recombinant toxin preparation shows promise for detailed structural analysis using techniques such as NMR spectroscopy, X-ray crystallography, or cryo-electron microscopy. High purity and homogeneous preparation from E. coli expression provides consistent material for biophysical studies including circular dichroism spectroscopy, dynamic light scattering, and thermal stability analysis. The defined expression region (20-83aa) representing the mature protein ensures structural studies focus on the biologically relevant domain. These investigations may advance understanding of scorpion toxin fold architecture and stability properties, though results can vary depending on experimental conditions and protein behavior in different environments.

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.