海葵神经毒素 anemone neurotoxin 海葵毒素 Ap-A

种属：	Human Cells
表达系统：	Prokaryotic expression system、Eukaryotic expression system
标签：	not have
同用名：	海葵神经毒素、anemone neurotoxin、海葵毒素、Ap-A
分子量：	5.14 kD
纯度：	Greater than 95% as determined by Tris-Bis PAGE.
储存条件:	Lyophilized from a 0.2 μm filtered solution of 20mM Tris, 100mM NaCl, pH7.5 Freeze dried by cover buffered brine
备注:	Always centrifuge tubes before opening.Do not mix by vortex or pipetting. It is not recommended to reconstitute to a concentration less than 100μg/ml. Dissolve the lyophilized protein in distilled water. Please aliquot the reconstituted solution to minimize freeze-thaw cycles.
储存时间：	Lyophilized protein should be stored at ≤ -20°C, stable for one year after receipt. Reconstituted protein solution can be stored at 2-8°C for 2-7 days. Aliquots of reconstituted samples are stable at ≤ -20°C for 3 months.
运输：	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature listed below.

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背景:

Polypeptide neurotoxins isolated from the nematocyse venom of sea anemone, with molecular weight ranging from 3-7kD, can block or delay the inactivation of biological ion channels, and have a high specificity and affinity for various ion channels. According to their different targets, they can be divided into toxins acting on sodium, potassium and other ion channels.

A variety of toxins have been isolated from different species of anemone, and researchers have divided the anemone toxins from different sources into two types: neurotoxins and lysins. The molecular weight range of anemone neurotoxin is 3-7kD, which can block or delay the deactivation of fast sodium channels, thereby increasing the sodium ion flow, increasing the concentration of sodium ions in cells, and prolongating the action potential duration of cells. According to studies, the positive inotropic effect of anemonitoxin on mammalian myocardium is different from catecholamines and cardiac glycosides, does not affect adrenergic receptors and ATPase, and is not achieved by affecting the transport distribution of calcium ions. It may be through Na+/Ca2+ ion exchange mechanism and secondary calcium channel opening to stimulate the release of intracellular calcium, resulting in increased intracellular calcium ion concentration.

The results of pharmacological studies on neurotoxins in Anemone show that these toxins bind specifically to the 3 site of sodium channel membrane protein and can delay the inactivation of sodium channels. On the one hand, toxins can be used as molecular probes to study the biology of sodium channels. On the other hand, the toxin produced a very strong positive contractile effect on the heart muscle tissue and had no effect on the heart rate and blood pressure of the experimental animals.

Of the reported anemone neurotoxins with amino acid residues ranging from 46 to 49 (and several other toxins with amino acid residues ranging from 27 to 31, called short-chain neurotoxins), 12 amino acids are conserved. According to their amino acid sequence, they can be divided into two subclasses, Ap-A and Ap-B as representatives, belonging to the first subclass; Represented by ShⅠ and RP-ⅰ, they belong to the second subclass. The homology of amino acid sequences between the two subclasses is about 30%, while the homology between amino acid sequences of toxin proteins belonging to the same subclass is more than 60%.

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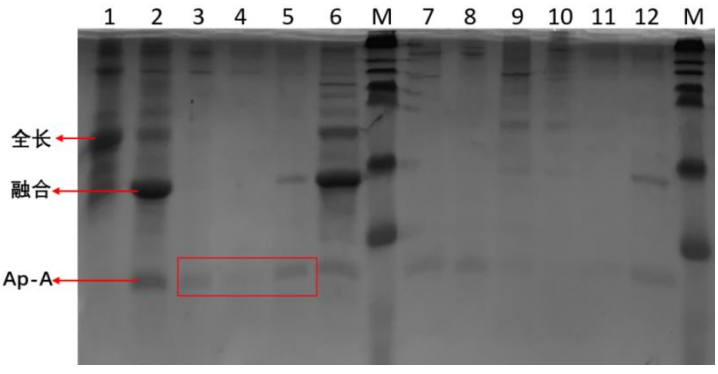
The application of anemone neurotoxin is of great value. It can not only be used as a molecular probe, as a tool to study the structure and function of sodium ion channels, but also become a hot spot in the research of new anti-heart failure drugs because it can enhance the myocardial contractility without affecting the heart rate and blood pressure. It is also worth noting the relationship with epilepsy, which is caused by mutations in sodium ion channels, and the state of sodium channels has a direct impact on the condition. Many antiepileptic drugs are sodium channel blockers, and some drugs act on the sodium channel inactivation process to achieve therapeutic effects. Thus, anemone neurotoxin may be a potential antiepileptic drug. Four new gene clones of recombinant Anemone neurotoxins Hk2a, Hk7a, Hk8a and Hk16a have been obtained from Anthopleurin sp., South China Sea. The anemones are isolated. The contractile experiment of isolated SD rat atrial has studied their mechanism of action on myocardia, and it has been proved that Hk7a causes the longest contraction of myocardia and Hk2a causes the strongest contraction of myocardia. In addition, their effects on sodium channels in hippocampal neurons have been studied in the acutely isolated neurons of SD neonatal mice, and the results show that Hk7a has the most obvious effect on the opening time and probability of sodium channels. Due to the high specificity and affinity of these toxins to different ion channels, they can be used not only as a tool to study the structure and function of ion channels, but also as a pharmacological reagent for the diagnosis and treatment of ion channel-related diseases.

展示数据 ：

海葵毒素A （Ap-A）初次酶切纯化胶图



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