ALPHA DIAGNOSTIC INTERNATIONAL

Product Data Sheet

Cat# **SP-55551-1**

Description: Apamin

Sequence: H-Cys-Asn-Cys-Lys-Ala-Pro-Glu-Thr-Ala-Leu-Cys-Ala-Arg-Arg-Cys-Gln-Gln-His-NH2(Cys1-Cys11, Cys3-Cys15); MW: 2027.37

Size: 0.5 mg

Purity: >95%

Store: Desiccated at -20oC.

Apamin is an 18 amino acid peptide neurotoxin found in apitoxin (bee venom). It selectively blocks SK channels, a type of Ca2+-activated K+ channel expressed in the central nervous system and smooth muscle. Due to its specificity for SK channels, apamin is used as a drug in biomedical research to study the electrical properties of SK channels and their role in the after hyperpolarizations occurring immediately following an action potential.

The venom of the honeybee consists of many more products, like melittin, the MCD peptide and phospholipase A2. Apamin binds to the SK channels (small conductance Ca2+-activated K+ channels) in the brain and spinal cord and inhibits them. It inhibits the three cloned SK channel subtypes (SK1, SK2, and SK3) with different affinity, highest affinity for SK2, lowest for SK1, and intermediate for SK3 channels. Heteromers show intermediate sensitivity. Most likely, apamin acts as a pore blocker, although residues both inside and outside of the pore region of the SK channels participate in apamin binding.[8] The SK channels are present in a wide range of excitable and non-excitable cells, including cells in the central nervous system, intestinal myocytes, endothelial cells, and hepatocytes. SK channels, when activated, contribute to afterhyperpolarizations in neurons, which control neuronal excitability. Intracellular Ca2+ binding to calmodulin can activate these channels. Channel deactivation can take place through dissociation of Ca2+ from calmodulin. Inhibition of SK channels by apamin will increase the neuronal excitability and lower the threshold for generating an action potential. Other toxins that block SK channels are tamapin and scyllatoxin. SK channel blockers such as apamin can have therapeutic applications, for example on the peripheral cells (e.g. the insulin releasing cells of the pancreas) and on the central nervous system where there is evidence for a role of SK channels in memory processes, both general and specifically hippocampal. SK channels have been proposed as targets for the treatment of ataxia, epilepsy, memory disorders, and possibly schizophrenia and Parkinson's disease.

References: Habermann E (1984) Pharmacol. Rev. 25, 255-270; Rader K (1987) J. Chromatogr. 408, 341-348;

All peptides are for in vitro research use only.

MSDS: All peptides that are supplied are provided in purified synthetic forms and have no chemical or additives added to them. No formal MSDS is available. All precautions should be used to handle and dispose that are observed for laboratory chemicals.

Please consult “Frequently asked questions” section at our website for Guidance on storage and solubility of the peptides. http://www.4adi.com/commerce/info/showpage.jsp?page_id=1088&category_id=2427

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