

Product Information

Anti-Calcium Channel (α 1 Subunit), Pan
produced in rabbit, affinity isolated antibody

Catalog Number **C1103**

Product Description

Anti-Calcium Channel (α 1 Subunit), Pan is [produced in rabbit using as immunogen a synthetic peptide [(C)DNFD YLTRD WSILG PHHLD] corresponding to amino acids 1506-1524 of the α_{1S} subunit of rat skeletal muscle voltage gated calcium channel (VGCC, CP15) (Accession P22002) (with additional N-terminal cysteine), conjugated to MBS-KLH.¹ The antibody is affinity isolated using peptide-agarose.

Anti-Calcium Channel (α 1 Subunit), Pan recognizes all types of α 1 subunits in mouse and rat by immunoblotting. The epitope recognized by this antibody is masked by α 2 and δ chains, therefore the antibody binds only after subunit dissociation using Triton® X-100 or other detergents.² The antibody may also be used in immunohistochemistry.

Voltage-gated calcium channels (VGCCs) are present in most excitable cells. There are five high-voltage activated calcium channel types (L, N, P, Q and R) and one low-voltage activated channel type (T). Each of these channels exists as a heteromultimer of α 1, β , α 2/ δ and γ subunits with the voltage-activated calcium channel function carried by the α 1 subunits.⁶ VGCCs exert spatial and temporal control over cellular calcium concentrations and serve to modulate neurotransmitter release, hormone secretion, muscle contraction, electrical activity, cell metabolism and proliferation, gene expression and neuronal survival.^{7,7} Recent evidence suggests that the α 1 subunit function may be modulated via interactions with other cellular proteins.^{7,9} Cellular fine control of VGCCs even allows selection of different subtypes of VGCC depending upon cellular conditions. For example, in neurotransmitter release from autonomic neurons, different VGCC subtypes are coupled to transmitter release at low versus high electrical stimulation frequencies, and potassium depolarization versus chemical stimulation.¹⁰

With the ubiquitous expression and functional importance of VGCCs, it is not surprising that alterations in channel function have been implicated in

many diseases. This includes cardiovascular disease, migraines, ataxia and epilepsy.^{11,12} Mutations in three calcium channel genes have been found in epileptic mice.¹³ Calcium dependent processes are important in synaptic modification and thus alterations in calcium channel function may be important for both modifying synaptic plasticity and also in age-related neurodegenerative diseases.¹⁴ Calcium channel antagonists are used as antiarrhythmics¹⁵ and in the treatment of hypertension¹⁶ and may even be neuroprotective in Parkinson's Disease.¹⁷

Recent advances have allowed researchers to learn much about the structure and function of these VGCCs. However, much remains to be determined about their precise cellular localization, *in vivo* physiological roles, roles in disease states and possible routes to modulate their structure/function to ameliorate effects of disease.

Reagent

Supplied as a lyophilized powder at approximately 0.3 mg/ml from phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin, 5% sucrose, and 0.025% mM sodium azide as a preservative.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

α 1 subunits of voltage-gated Ca²⁺ channels are highly sensitive to proteases. All procedures that are going to receive a full-length protein should be performed at 4 °C with a protease inhibitor mixture (1 μ g/ml pepstatin A, 1 μ g/ml leupeptin, 1 μ g/ml aprotinin, 0.2 mM phenylmethanesulfonyl fluoride, 0.1 mg/ml benzamidine, and 8 μ g/ml each calpain inhibitors I and II).¹⁸

Preparation Instructions

Reconstitute the lyophilized vial with 0.05 ml or 0.2 ml deionized water. Antibody dilutions should be made in buffer containing 1-3% bovine serum albumin.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody dilution of 1:200 is recommended using rat brain membranes.

Immunohistochemistry: has been tested using rat heart sections. Note: the epitope can be masked by other subunits in some Ca²⁺ channels.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

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