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Product Information

Monoclonal Anti-Calcineurin (β-Subunit)
clone CN-B1
produced in mouse, ascites fluid

Catalog Number **C0581**

Product Description

Monoclonal Anti-Calcineurin (β-Subunit) (mouse Ig2b isotype) is derived from the CN-B1 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice immunized with purified bovine brain calcineurin preparation. The isotype is determined using Sigma Mouse Monoclonal Antibody Isotyping Reagent, Catalog Number ISO2.

Monoclonal Anti-Calcineurin (β-Subunit) recognizes an epitope located on the β-subunit of calcineurin (18 kDa, also called calcineurin B) in immunoblotting. It does not cross-react with the α-subunit of calcineurin. The product may also be used in ELISA and immunohistochemistry. Cross-reactivity has been observed with rat, bovine, and human calcineurin. In immunohistology, it reacts with neurons in human myenteric and prostatic ganglia in formalin-fixed, paraffin-embedded sections.

Calcineurin, a major soluble calmodulin-binding protein in the brain, is a Ca^{2+}/calmodulin-dependent serine/threonine protein phosphatase, with a relatively narrow substrate specificity.[1,2] This metalloenzyme, also known as phosphatase 2B, is a heterodimer composed of a calmodulin-binding, catalytic α-subunit (61 kDa, calcineurin A) and calcium-binding β-subunit (18 kDa calcineurin B). The Ca^{2+}-binding subunit, calcineurin B, is immunologically conserved from yeast to mammals. However, the presence of 2 different calcineurin B isoforms (β_1 and β_2) has been reported in rat testis.[3] The catalytic subunit of calcineurin, calcineurin A, isolated from different tissues or different organisms, exhibits some immunological heterogeneity. For instance, there are at least 2 isoforms of calcineurin A in bovine brain (α1 and α2, 61 and 59 kDa, respectively).[4] Calcineurin immunoreactivity is detected at significant concentrations only in normal and neoplastic neurons. It is detected in most neurons, but its concentration is highly variable in different neuronal subpopulations. Within a given neuron, the intensity of calcineurin immunoreactivity appears to be very similar in all regions of the cytoplasm (perikarya, dendrites, axons, and axon terminals), while the nucleus in general is unstained.[5,6] Many of the tissues where calcineurin is most abundant, including the brain homolog of the endogenous inhibitor of protein phosphatase-1, DARPP-32, GAP-43, the type II regulatory subunit of cAMP-dependent protein kinase, and the microtubule-associated protein, are found in brain. The enzyme is thought to play important roles in calmodulin-regulated information transduction in the brain. Other major brain phosphoproteins, such as the multifunctional calmodulin-dependent protein kinase and synapsin, are very poor substrates. In the presence of millimolar concentration of Ni^{2+} and Mn^{2+}, calcineurin also exhibits potent *p*-nitrophenyl-phosphatase and tyrosine phosphatase activities.[7] A close correlation has been observed between inhibition of calcineurin by the complexes of cyclosporin A/cyclophilin and FK506/FKBP and inhibition of apoptosis, suggesting that calcineurin phosphatase activity is a critical signal transduction intermediate in lymphoid cell activation and in programmed cell death.[8,9] Calcineurin is an excellent marker enzyme for the detection of neuronal activity and synaptic plasticity after brain damage, such as an ischemic insult.[10] Monoclonal antibodies reacting specifically with calcineurin are useful as probes of structure-function relationships.

Monoclonal Anti-Calcineurin (β-Subunit) may be used for the localization of β-subunit of calcineurin using various immunochemical assays including ELISA, immunoblotting, and immunohistochemistry.

Reagent

Supplied as ascites fluid with 15 mM sodium azide as preservative.

Precautions and Disclaimer

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

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

Product Profile
Indirect immunoblotting: an antibody titer of 1:3,000 was determined using rat brain extract.

Note: In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

References

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