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ProductInformation

MONOCLONAL ANTI-CALCINEURIN (α-subunit)
CLONE CN-A1
Mouse Ascites Fluid

Product No. **C1956**

Product Description

Monoclonal Anti-Calcineurin (α-subunit) (mouse IgG1 isotype) is derived from the CN-A1 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from immunized BALB/c mice. Purified bovine brain calcineurin preparation was used as the immunogen. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Calcineurin (α-subunit) recognizes an epitope located on the α-subunit of calcineurin (61 kDa, also called calcineurin A) in immunoblotting. It does not cross-react with the β-subunit of calcineurin. The product may also be used in ELISA and immunohistochemistry. Cross-reactivity has been observed with rat, bovine and human. In immunohistochemical testing it reacts with neurons in formalin-fixed, paraffin-embedded human ganglia sections.

Monoclonal Anti-Calcineurin (α-subunit) may be used for the localization of α-subunit of calcineurin using various immunochemical assays includin ELISA, immunoblot and immunohistochemistry.

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. 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 in normal and neoplastic neurons. It is detectable 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 best substrates for calcineurin, 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 particularly abundant in brain. Thus, 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 concentrations 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 appears to be 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 tools as probes of structure-function relationships.

Reagents

The product is provided as ascites fluid with 0.1% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Product Profile
The minimum antibody titer of 1:10,000 was determined by indirect immunoblotting of rat brain extract.

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

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 is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

References

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