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Product Information

Anti-Calcineurin (α-Subunit) antibody
Mouse monoclonal, Clone CN-A1
purified from hybridoma cell culture

Product Number **SAB4200816**

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. A purified bovine brain calcineurin preparation was used as the immunogen. The isotype is determined by ELISA using Mouse Monoclonal Antibody Isotyping Reagents (Product Number ISO2). The antibody is purified from culture supernatant of hybridoma cells.

Monoclonal Anti-Calcineurin specifically recognizes an epitope located on the α-subunit of calcineurin from human, mouse, monkey, porcine,[1] rat,[2] and bovine[13] origin. It does not cross-react with calcineurin β-subunit. The antibody may be used in various immunochemical techniques including immunoblot[1,2] (~61 kDa), ELISA, and immunohistochemistry.[1,3]

Calcineurin (α-subunit) (CnA), also known as serine/threonine-protein phosphatase 2B catalytic subunit alpha (PP3CA), Calmodulin-dependent calcineurin A subunit alpha (CALN/CALNA), or CAM-PRP catalytic subunit, is a major soluble calmodulin-binding protein in the brain. Calcineurin is a heterodimer metalloenzyme, Ca^{2+}/calmodulin dependent serine/threonine protein phosphatase 3 (PPP3), with a relatively narrow substrate specificity.[4-6,8] It is composed of two subunits, a catalytic calmodulin-binding α-subunit (61 kDa, calcineurin A [CnA]) and a regulatory calcium-binding β-subunit (18 kDa, calcineurin B [CnB]).[6,7] Both subunits are highly conserved from yeast to mammals.[8]

Calcineurin participates in various processes in the cell and in Ca^{2+}-dependent signal transduction pathways. It is present in many mammalian tissues, with the highest levels found in the brain and has many physiological functions including regulation of ion channels, apoptosis, and hormonal control in the brain, T lymphocyte activation, cytokine signaling, and cardiac hypertrophy.[8]

Calcineurin plays an important role in signal transduction that leads to activation of T cells. Following T cell activation via TCR stimulation, Calcineurin becomes activated and CnA dephosphorylates NFAT transcription factor leading to its translocation to the nucleus, where it drives the expression of inflammatory cytokines such as IL-2 and IL-4, and CD40 ligand and completion of the T cell activation.[9]

A close correlation has been observed between inhibition of calcineurin by the complexes of cyclosporine 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.[10,11] In addition, calcineurin appears to be a significant marker enzyme for the detection of neuronal activity and synaptic plasticity after brain damage such as an ischemic insult.[12]

It is also an important target of immunosuppressant drugs known as calcineurin inhibitors (CNIs) that block T cell activation and therefore are used after organ transplantations and for treatment of various autoimmune diseases such as, psoriasis, rheumatoid arthritis (RA), and Crohn's disease.[9]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody Concentration: ~1.0 mg/mL

Precautions and Disclaimer

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 is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
Immunoblotting: a working concentration of 1.25-2.5 μg/mL is recommended using mouse or rat brain tissue extract.

Note: In order to obtain best results in various techniques and preparations, it is recommended to determine optimal working dilutions by titration test.

References

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