SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKI (D-9): sc-377418

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The Ca^{2+}/calmodulin-dependent protein kinases (CaM kinases) comprise a structurally related subfamily of serine/threonine kinases which include CaMKI, CaMKII and CaMKIV. CaMKII is an ubiquitously expressed serine/threonine protein kinase that is activated by Ca^{2+} and calmodulin (CaM) and has been implicated in regulation of the cell cycle and transcription. There are four CaMKII isozymes designated α, β, γ and δ, which may or may not be co-expressed in the same tissue type. CaMKIV is stimulated by Ca^{2+} and CaM but also requires phosphorylation by a CaMK for full activation. Stimulation of the T cell receptor CD3 signaling complex with an anti-CD3 monoclonal antibody leads to a 10-40 fold increase in CaMKIV activity. An additional kinase, CaMKK, functions to activate CaMKI through the specific phosphorylation of the regulatory Threonine residue at position 177.

REFERENCES

1. Tombes, R.M., et al. 1995. G_1 cell cycle arrest apoptosis are induced in NIH/3T3 cells by KN-93, an inhibitor of CaMKII (the multifunctional Ca^{2+}/CaM kinase). Cell Growth Differ. 6: 1063-1070.
2. Hama, N., et al. 1995. Calcium/calmodulin-dependent protein kinase II downregulates both calcineurin and protein kinase c-mediated pathways for cytokine gene transcription in human T cells. J. Exp. Med. 181: 1217-1222.
3. Baltas, L.G., et al. 1995. The cardiac sarcoplasmic reticulum phospholamban kinase is a distinct δ-CaM kinase isozyme. FEBS Lett. 373: 71-75.
4. Tokumitsu, H., et al. 1995. Characterization of a CaM-kinase cascade. Molecular cloning and expression of calcium/calmodulin-dependent protein kinase kinase. J. Biol. Chem. 270: 19320-19324.
5. Park, I.K., et al. 1995. Activation of Ca^{2+}/calmodulin-dependent protein kinase (CaM-kinase) IV by CaM-kinase kinase in Jurkat T lymphocytes. J. Biol. Chem. 270: 30464-30469.

CHROMOSOMAL LOCATION

Genetic locus: CAMK1 (human) mapping to 3p25.3; Camk1 (mouse) mapping to 6 E3.

SOURCE

CaMKI (D-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 343-370 at the C-terminus of CaMKI of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-377418 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

CaMKI (D-9) is recommended for detection of CaMKI of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for CaMKI siRNA (h): sc-38947, CaMKI siRNA (m): sc-38948, CaMKI shRNA Plasmid (h): sc-38947-SH, CaMKI shRNA Plasmid (m): sc-38948-SH, CaMKI shRNA (h) Lentiviral Particles: sc-38947-V and CaMKI shRNA (m) Lentiviral Particles: sc-38948-V.

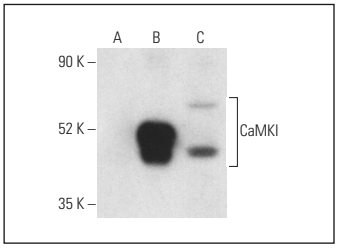
Molecular Weight of CaMKI: 41 kDa.

Positive Controls: CaMKI (h): 293T Lysate: sc-177014, mouse brain extract: sc-2253 or BJAB whole cell lysate: sc-2207.

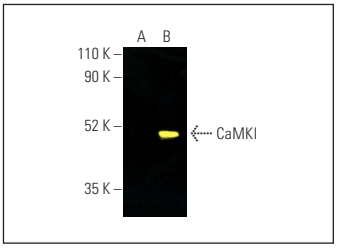
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



CaMKI (D-9): sc-377418. Western blot analysis of CaMKI expression in non-transfected 293T: sc-117752 (**A**), human CaMKI transfected 293T: sc-177014 (**B**) and BJAB (**C**) whole cell lysates. Detection reagent used: m-IgG_1 BP-HRP: sc-525408.



CaMKI (D-9): sc-377418. Fluorescent western blot analysis of CaMKI expression in non-transfected: sc-117752 (**A**) and human CaMKI transfected: sc-177014 (**B**) 293T whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgG Fc BP-CFL 488: sc-533653.

SELECT PRODUCT CITATIONS

1. Li, B., et al. 2020. Neuronal inactivity co-opts LTP machinery to drive potassium channel splicing and homeostatic spike widening. Cell 181: 1547-1565.e15.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.