SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKI (C-19): sc-1543

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 a 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 coexpressed 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 CaMK-II (the multifunctional Ca^{2+}/CaM kinase). Cell Growth Diff. 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 d-CaM kinase isozyme. FEBS Lett. 373: 71-75.
4. 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 (C-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of CaMKI of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-1543 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.

APPLICATIONS

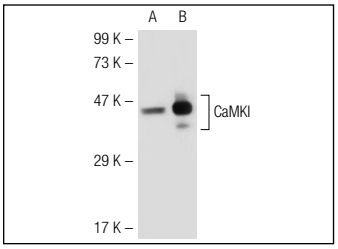
CaMKI (C-19) is recommended for detection of CaMKI of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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.

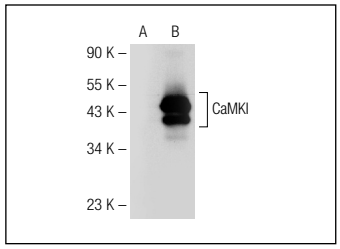
Molecular Weight of CaMKI: 41 kDa.

Positive Controls: CaMKI (m): 293T Lysate: sc-118979, CaMKI (h): 293T Lysate: sc-177014 or mouse brain extract: sc-2253.

DATA



CaMKI (C-19): sc-1543. Western blot analysis of CaMKI expression in non-transfected: sc-117752 (**A**) and mouse CaMKI transfected: sc-118979 (**B**) 293T whole cell lysates.



CaMKI (C-19): sc-1543. Western blot analysis of CaMKI expression in non-transfected: sc-117752 (**A**) and human CaMKI transfected: sc-177014 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Morris, T.A., et al. 1998. CamK-II inhibition reduces cyclin D1 levels and enhances the association of $p27^{kip1}$ with Cdk2 to cause G1 arrest in NIH 3T3 cells. Exp. Cell Res. 240: 218-227.
2. Kahl, C.R., et al. 2002. Regulation of cyclin D1/Cdk4 complexes by calcium/calmodulin-dependent protein kinase I. J. Biol. Chem. 279: 15411-15419.
3. Gambaryan, S., et al. 2006. Regulation of Aldosterone production from zona glomerulosa cells by ANG II and cAMP: evidence for PKA-independent activation of CaMK by cAMP. Am. J. Physiol. Endocrinol. Metab. 290: E423-E433.

RESEARCH USE

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