SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKKα (R-73): sc-11370

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.

CHROMOSOMAL LOCATION

Genetic locus: CAMKK1 (human) mapping to 17p13.2; Camkk1 (mouse) mapping to 11 B4.

SOURCE

CaMKKα (R-73) is a rabbit polyclonal antibody raised against amino acids 1-73 mapping at the N-terminus of CaMKKα of rat origin.

PRODUCT

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

APPLICATIONS

CaMKKα (R-73) is recommended for detection of CaMKKα 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), immunohistochemistry (including paraffin-embedded sections) (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 CaMKKα siRNA (h): sc-29904, CaMKKα siRNA (m): sc-29905, CaMKKα shRNA Plasmid (h): sc-29904-SH, CaMKKα shRNA Plasmid (m): sc-29905-SH, CaMKKα shRNA (h) Lentiviral Particles: sc-29904-V and CaMKKα shRNA (m) Lentiviral Particles: sc-29905-V.

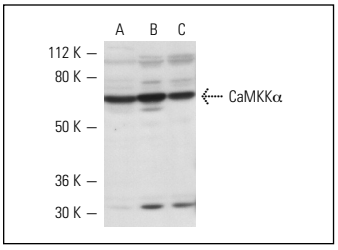
Molecular Weight of CaMKKα: 63 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, PC-12 cell lysate: sc-2250 or rat brain extract: sc-2392.

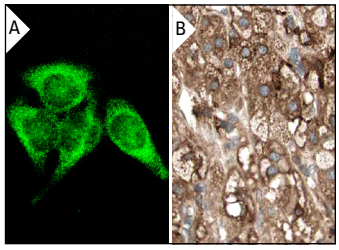
STORAGE

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

DATA



CaMKKα (R-73): sc-11370. Western blot analysis of CaMKKα expression in HeLa (**A**) and PC-12 (**B**) whole cell lysates and rat brain extract (**C**).



CaMKKα (R-73): sc-11370. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic staining (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland tissue showing cytoplasmic staining in cortical cells. Kindly provided by The Swedish Human Protein Atlas (HPA) program (**B**).

SELECT PRODUCT CITATIONS

1. Chen, B.C., et al. 2002. Inhibition of interleukin-1β-induced NFκB activation by calcium/calmodulin-dependent protein kinase kinase occurs through Akt activation associated with interleukin-1 receptor-associated kinase phosphorylation and uncoupling of MyD88. J. Biol. Chem. 277: 24169-24179.
2. Hawley, S.A., et al. 2005. Calmodulin-dependent protein kinase kinase β is an alternative upstream kinase for AMP-activated protein kinase. Cell Metab. 2: 9-19.
3. Woods, A., et al. 2005. Ca^{2+}/calmodulin-dependent protein kinase kinase-beta acts upstream of AMP-activated protein kinase in mammalian cells. Cell Metab. 2: 21-33.
4. Jensen, T. E., et al. 2007. Possible CaMKK-dependent regulation of AMPK phosphorylation and glucose uptake at the onset of mild tetanic skeletal muscle contraction. Am. J. Physiol. Endocrinol. Metab. 292: E1308-E1317.
5. Ichimura, T., et al. 2008. 14-3-3 Proteins directly regulate Ca^{2+}/calmodulin-dependent protein kinase kinase α through phosphorylation-dependent multisite binding. FEBS Lett. 582: 661-665.
6. Xu, B.Z., et al. 2008. Involvement of calcium/calmodulin-dependent protein kinase kinase in meiotic maturation of pig oocytes. Anim. Reprod. Sci. E-published.

RESEARCH USE

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