SANTA CRUZ BIOTECHNOLOGY, INC.

MKP-1 (D-3): sc-271684

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

A key element in the pathway involved in the transduction of signals from activated protein-tyrosine kinase transmembrane receptors has been identified as the family of mitogen-activated protein kinases (MAP kinases). The most well known of these Ser/Thr kinases are ERK 1 and ERK 2. Mitogenic stimulation of cells triggers the activation of MAP kinases through phosphorylation of both tyrosyl (Y185) and threonyl (T183) residues. Phosphorylation of the T183 and Y185 ERK regulatory site is mediated by MAP kinase (MEK), which in turn is regulated by the proto-oncogene product Raf. Two highly related phosphatases, designated MKP-1 and MKP-2, exhibit 59% sequence identity at the amino acid level and oppose the action of MEK by downreg-ulating the kinase activity of ERK 1 and ERK 2. MAP kinase phosphatase-1 and -2 proteins function by dephosphorylating ERK 1 and ERK 2 at their T-E-Y regulatory motif. An additional phosphatase encoded by the DUSP2 gene, designated PAC-1, also functions to downregulate ERK 1 and ERK 2 kinase activity. PAC-1 is a nuclear protein whose expression is strongly induced in response to mitogen.

REFERENCES

1. Cobb, M.H., et al. 1991. Extracellular signal-regulated kinases: ERKs in progress. Cell Regul. 2: 965-978.
2. Payne, D.M., et al. 1991. Identification of the regulatory phosphorylation sites in p42/mitogen-activated protein kinase (MAP) kinase. EMBO J. 10: 885-892.

CHROMOSOMAL LOCATION

Genetic locus: DUSP1 (human) mapping to 5q35.1; Dusp1 (mouse) mapping to 17 A3.3.

SOURCE

MKP-1 (D-3) is a mouse monoclonal antibody raised against a peptide mapping at the C-terminus of MKP-1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_3 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MKP-1 (D-3) is available conjugated to agarose (sc-271684 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-271684 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; and to either phycoerythrin (sc-271684 PE), fluorescein (sc-271684 FITC), Alexa Fluor® 488 (sc-271684 AF488) or Alexa Fluor® 647 (sc-271684 AF647), 200 µg/ml, for IF, IHC(P) and FCM.

Blocking peptide available for competition studies, sc-271684 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

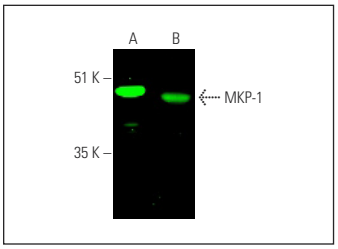
APPLICATIONS

MKP-1 (D-3) is recommended for detection of MKP-1 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).

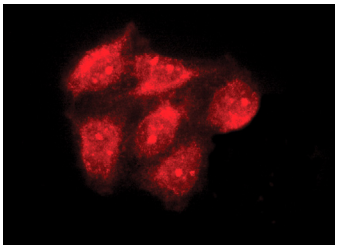
Suitable for use as control antibody for MKP-1 siRNA (h): sc-35937, MKP-1 siRNA (m): sc-35938, MKP-1 siRNA (r): sc-156163, MKP-1 shRNA Plasmid (h): sc-35937-SH, MKP-1 shRNA Plasmid (m): sc-35938-SH, MKP-1 shRNA Plasmid (r): sc-156163-SH, MKP-1 shRNA (h) Lentiviral Particles: sc-35937-V, MKP-1 shRNA (m) Lentiviral Particles: sc-35938-V and MKP-1 shRNA (r) Lentiviral Particles: sc-156163-V.

Molecular Weight of MKP-1: 40 kDa.

DATA



MKP-1 (D-3): sc-271684. Near-infrared western blot analysis of MKP-1 expression in HEK293 (**A**) and A-10 (**B**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



MKP-1 (D-3): sc-271684. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear and cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Zhang, J., et al. 2010. MEKK3 overexpression contributes to the hyperresponsiveness of IL-12-overproducing cells and $CD4^+$ T conventional cells in nonobese diabetic mice. J. Immunol. 185: 3554-3563.
2. Ferraiuolo, R.M., et al. 2017. The cyclin-like protein, SPY1, regulates the ERα and ERK1/2 pathways promoting tamoxifen resistance. Oncotarget 8: 23337-23352.
3. Kumar, R., et al. 2018. Procyanidin B2 3,3''-di-O-gallate induces oxidative stress-mediated cell death in prostate cancer cells via inhibiting MAP kinase phosphatase activity and activating ERK1/2 and AMPK. Mol. Carcinog. 57: 57-69.
4. Lee, J.E., et al. 2019. Stress-induced epigenetic changes in hippocampal Mkp-1 promote persistent depressive behaviors. Mol. Neurobiol. 56: 8537-8556.
5. Custodio, V., et al. 2019. Prenatal ozone exposure induces memory deficiencies in newborns rats. Front. Mol. Neurosci. 12: 244.

RESEARCH USE

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