SANTA CRUZ BIOTECHNOLOGY, INC.

MEK kinase-1 (1-301): sc-4026

BACKGROUND

Mitogen-activated protein (MAP) kinase cascades are activated by various extracellular stimuli including growth factors. The MEK kinases (also designated MAP kinase kinase kinases, MKKKs, MAP3Ks or MEKKs) phosphorylate and thereby activate the MEKs (also called MAP kinase kinases or MKKs), including ERK, JNK and p38. These activated MEKs in turn phosphorylate and activate the MAP kinases. The MEK kinases include Raf-1, Raf-B, Mos, MEK kinase-1, MEK kinase-2, MEK kinase-3, MEK kinase-4, ASK 1 (MEK kinase-5) and MAP3K6 (MEK kinase-6). MEK kinase-1 activates the ERK and c-Jun NH_2-terminal kinase (JNK) pathways by phosphorylation of MAP2K1 and MAP2K4, and also activates the central protein kinases of the NFκB pathway, CHUK and IKBKB. Additionally, MEK kinase-1 uses an E3 ligase through its PHD domain, a RING-finger-like structure, to target proteins for degradation through ubiquitination.

REFERENCES

1. Lange-Carter, C.A., et al. 1993. A divergence in the MAP kinase regulatory network defined by MEK kinase and Raf. Science 260: 315-319.
2. Guan, K.L. 1994. The mitogen activated protein kinase signal transduction pathway: from the cell surface to the nucleus. Cell. Signal. 6: 581-589.
3 Wang, X.S., et al. 1996. Molecular cloning and characterization of a novel protein kinase with a catalytic domain homologous to mitogen-activated protein kinase kinase kinase. J. Biol. Chem. 271: 31607-31611.
4. Fanger, G.R., et al. 1997. MEK kinases are regulated by EGF and selectively interact with Rac/Cdc42. EMBO J. 16: 4961-4972.
5. Gerwins, P., et al. 1997. Cloning of a novel mitogen-activated protein kinase kinase kinase, MEKK4, that selectively regulates the c-Jun amino terminal kinase pathway. J. Biol. Chem. 272: 8288-8295.

CHROMOSOMAL LOCATION

Genetic locus: MAP3K1 (human) mapping to 5q11.2; Map3k1 (mouse) mapping to 13 D2.2.

SOURCE

MEK kinase-1 (1-301) is expressed in *E. coli* as a 50 kDa polyhistidine tagged fusion protein corresponding to amino acids 1-301 of MEK kinase-1 of human origin.

PRODUCT

MEK kinase-1 (1-301) is purified from bacterial lysates (>98%) by Ni^{2+} affinity chromatography; supplied as 50 µg protein in PBS with 5 mM DTT and 50% glycerol.

Also available as MEK kinase-1 (1-301): sc-4026 WB for use as Western blotting control; supplied as 10 µg protein in 0.1 ml SDS-PAGE loading buffer.

STORAGE

Store at -20° C; stable for one year from the date of shipment.

APPLICATIONS

MEK kinase-1 (1-301) is recommended for detection of MEK kinase-1 of origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

Molecular Weight of full length MEK kinase-1: 195 kDa.

Molecular Weight of cleaved MEK kinase-1: 80 kDa.

SELECT PRODUCT CITATIONS

1. Diener, K., et al. 1997. Activation of the C-Jun N-terminal kinase pathway by a novel protein kinase related to human germinal center kinase. Proc. Natl. Acad. Sci. USA 94: 9687-9692.
2. Pomérance, M., et al. 1998. GRB2 Interaction with MEK-Kinase 1 is involved in regulation of Jun-Kinase activities in response to epidermal growth factor. J. Biol. Chem. 273: 24301-24304.
3. Soh, J.W., et al. 2001. Protein kinase G activates the JNK1 pathway via phosphorylation of MEKK1. J. Biol. Chem. 276: 16406-16410.

RESEARCH USE

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

PROTOCOLS

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