

MEK1 Protein, Mouse, Recombinant

General Information

Synonyms:	Prkmk1;MAPKK1;mitogen-activated protein kinase kinase 1;Mek1;MEKK1
Protein Construction:	A DNA sequence encoding the mouse MAP2K1 (NP_032953.1) (Met1-Ile393) was expressed and purified with two additional amino acids (Gly & Pro) at the N-terminus. Predicted N terminal: Gly
Species:	Mouse
Expression Host:	Baculovirus Insect Cells
Accession:	P31938
Molecular Weight:	43.6 kDa (predicted); 45 kDa (reducing conditions)

QC Testing

Biological Activity:	Kinase activity untested
Purity:	> 85 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Supplied as sterile 20 mM Tris, 500 mM NaCl, 10% glycerol, pH 8.0.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store the product under sterile conditions at -20°C to -80°C. Samples are stable for up to 12 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

Proteins are shipped with blue ice.

Protein Background

MEK1, also known as MAP2K1 and MKK1, is a member of the dual-specificity protein kinase family, which acts as a mitogen-activated protein (MAP) kinase kinase. MAP kinases, also known as extracellular signal-regulated kinases (ERKs), act as an integration point for multiple biochemical signals. MEK1 is widely expressed, with extremely low levels in the brain. It lies upstream of MAP kinases and stimulates the enzymatic activity of MAP kinases upon a wide variety of extra- and intracellular signals. As an essential component of the MAP kinase signal transduction pathway, MEK1 is involved in many cellular processes such as proliferation, differentiation, transcription regulation, and development. Binding extracellular ligands such as growth factors, cytokines, and hormones to their cell-surface receptors activates RAS and this initiates RAF1 activation. RAF1 then further activates the dual-

specificity protein kinases MAP2K1 and MEK2. MEK1 has been shown to export PPARG from the nucleus. The MAPK cascade is also involved in the regulation of endosomal dynamics, including lysosome processing and endosome cycling through the perinuclear recycling compartment (PNRC), as well as in the fragmentation of the Golgi apparatus during mitosis. MKK1 catalyzes the concomitant phosphorylation of a threonine and a tyrosine residue in a Thr-Glu-Tyr sequence located in MAP kinases. Defects in MEK1 can cause Cardiofaciocutaneous Syndrome. Cancer Immunotherapy Immune Checkpoint Immunotherapy Targeted Therapy

Reference

Rampoldi L, et al. (1998) Chromosomal localization of four MAPK signaling cascade genes: MEK1, MEK3, MEK4 and MEK5. *Cytogenet Cell Genet.* 78(3-4):301-3.

Zheng CF, et al. (1993) Cloning and characterization of two distinct human extracellular signal-regulated kinase activator kinases, MEK1 and MEK2. *J Biol Chem.* 268(15):11435-9.

Nantel, et al. (1998) Interaction of the Grb10 adapter protein with the Raf1 and MEK1 kinases. *J Biol Chem.* 273(17):10475-84.

Hirata H, et al. (2012) MicroRNA-1826 targets VEGFC, beta-catenin (CTNNB1) and MEK1 (MAP2K1) in human bladder cancer. *Carcinogenesis.* 33(1):41-8.

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