

Product Information

MKK6/SKK3, active, human recombinant, expressed in *E. coli*

Catalog Number **M5814**
Storage Temperature -70°C

Synonyms: MAP Kinase Kinase 6, MEK6

Product Description

MKK6/SKK3 is produced from a DNA sequence corresponding to full length human MKK6 containing a maltose-binding protein (MAL-E) tag at the amino terminus. It is expressed in *E. coli* as an 81 kDa fusion protein. It is purified by affinity chromatography on amylose resin. MKK6 was activated by treatment with histidine-tagged MEK Kinase, which was subsequently removed using Ni-NTA chromatography. It is suitable for phosphorylation assays.

The mitogen-activated protein kinase kinases (MAPKKs, MKKs, or MEKs) are a family of Thr/Tyr dual specificity protein kinases, upstream of the MAP kinases, that play a central role in mitogenic signaling, transducing extracellular signals to intracellular targets, including transcription factors controlling the expression of genes essential to many cellular processes.^{1,2} These upstream kinases are activated by a number of signaling molecules, such as growth factors, or by cellular stress, such as temperature, pH, or osmotic shock. Once activated, MAP kinases phosphorylate a number of cytoplasmic and nuclear regulatory proteins. The cellular response to the initial extracellular signal or event may be differentiation, proliferation, or apoptosis.³ At least three families of MAPKs have been identified in mammals: ERK (extracellular signal-regulated kinases), JNK (c-Jun N-terminal kinases), and p38 MAPK (also called stress-activated protein kinase).⁴

MKK6 is a MAPKK isoform that is closely related to MKK3 and that acts within the stress-activated protein kinase pathways. MKK6 selectively activates p38 MAP kinases (SAPK); it does not activate ERK or JNK.⁵ MKK6/SKK3 preferentially phosphorylates p38 α MAP kinase,⁶ although it is also involved in regulation of gene expression via the p38 γ MAP kinase pathway.⁷ MKK6 activates p38 MAP kinase by dual phosphorylation at Thr and Tyr in the Thr-Gly-Tyr motif.

MKK6 is activated *in vivo* through phosphorylation of the Ser and Thr residues at positions 151 and 155, respectively.⁵ Mixed lineage kinase 3 (MLK3)⁸ and TGF- β -activated kinase (TAK)⁹ phosphorylates MKK6. It is also activated by the G proteins, G $\beta\gamma$ and G α_q ,¹⁰ and by the GTPase, RhoA.⁷ MKK6 mRNA is enriched in heart, skeletal muscle, liver, and pancreas and is detected in brain, placenta, and lung.⁵

Mouse recombinant MKK6/SKK3 is supplied as a solution in 50 mM Tris-HCl, pH 7.5, containing 150 mM NaCl, 270 mM sucrose, 0.1 mM EGTA, 0.1% 2-mercaptoethanol, 0.03% Brij[®] L23, 1 mM benzamidine, and 0.2 mM phenylmethylsulfonylfluoride (PMSF).

Purity: $\geq 80\%$ (SDS-PAGE)

Activity is determined using a coupled assay system in which MKK6 phosphorylates p38 α /SAPK2 α that, in turn, phosphorylates myelin basic protein (MBP). One unit of p38 α /SAPK2 α equals one nmole of phosphate incorporated into MBP per minute at pH 7.2. One unit of MKK6 equals one unit of p38 α /SAPK2 α .

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

The protein remains active for at least six months when stored at -70°C . Centrifuge the original vial after thawing and prior to removing the cap for maximum recovery of product. After initial thawing, store the remaining solution in single-use aliquots at -70°C . Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

References

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