

## PRAK/MAPKAPK5 Protein, Human, Recombinant (His & GST)

### General Information

Synonyms:	PRAK;MAPKAP-K5;MK-5;mitogen-activated protein kinase-activated protein kinase 5;MK5
Protein Construction:	A DNA sequence encoding the human MAPKAPK5 isoform 1 (NP_003659.2) (Met 1-Gln 471) was fused with the N-terminal polyhistidine-tagged GST tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	Q8IW41-2
Molecular Weight:	82 kDa (predicted); 75 kDa (reducing conditions)

### QC Testing

Biological Activity:	Kinase activity untested
Purity:	> 80 % 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, pH 8.0, 10% glycerol.

### 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

MAPKAPK5 contains 1 protein kinase domain and belongs to the protein kinase superfamily, CAMK Ser/Thr protein kinase family. MAPKAPK5 has significant sequence homology to mitogen-activated protein kinase (MAPK)-activated protein kinase (MAPKAPK). It is widely distributed. MAPKAPK5 can be phosphorylated by an extracellular-regulated kinase (ERK), and p38 kinase but not by c-jun N-terminal kinase (JNK) in vitro. Recombinant GST-MAPKAPK5 protein can phosphorylate a peptide derived from the regulatory light chain of myosin II.

Phosphorylation of MAPKAPK5 by ERK and p38 kinase increased its activity by 9 and 15 fold respectively. Taken together, these data suggest that MAPKAPK5 is a novel in vitro substrate for ERK and p38 kinase. In response to cellular stress and proinflammatory cytokines, this kinase is activated through its phosphorylation by MAP kinases

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including MAPK1/ERK, MAPK14/p38-alpha, and MAPK11/p38-beta. MAPKAPK5 also mediates stress-induced small heat shock protein 27 phosphorylation.

### Reference

Ni H, et al. (1998) MAPKAPK5, a novel mitogen-activated protein kinase (MAPK)-activated protein kinase, is a substrate of the extracellular-regulated kinase (ERK) and p38 kinase. *Biochem Biophys Res Commun.* 243 (2): 492-6.

Sudo T, et al. (2000) p62 functions as a p38 MAP kinase regulator. *Biochem Biophys Res Commun.* 269 (2): 521-5.

Strausberg RL, et al. (2003) Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences. *Proc Natl Acad Sci.* 99 (26): 16899-903.

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Tel: 781-999-4286 E\_mail: info@targetmol.com Address: 34 Washington Street, Wellesley Hills, MA 02481