

p38 Protein, Human, Recombinant (His)

General Information

Synonyms:	mitogen-activated protein kinase 14;CSPB1;PRKM14;RK;p38 α ;CSBP1;SAPK2A;CSBP2;p38;EXIP;Mxi2;PRKM15;CSBP;p38ALPHA
Protein Construction:	The amino acids corresponding to the full length of human MAPK14 isoform 1 (NP_001306.1) (Met1-Ser360) was fused with a polyhistidine tag at the N-terminus. Activated in vitro by MAP2K6 (10422-H20B1). Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	L7RSM2
Molecular Weight:	43.7 kDa (predicted)

QC Testing

Biological Activity:	The specific activity was determined to be > 50 nmol/min/mg using MBP as substrate.
Purity:	$\geq 85\%$ as determined by SDS-PAGE. $\geq 90\%$ as determined by SEC-HPLC.
Endotoxin:	< 1.0 EU/ μ g of the protein as determined by the LAL method.
Formulation:	Supplied as sterile 50 mM Tris-HCl, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EDTA, 0.1 mM PMSF, 25% glycerol, pH 7.5.

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. <small>Actual storage temperature shall be subject to the COA.</small>
Shipping:	Proteins are shipped with blue ice.

Protein Background

MAPK14 contains 1 protein kinase domain and belongs to the MAP kinase family. MAP kinases act as an integration point for multiple biochemical signals and are involved in a wide variety of cellular processes such as proliferation, differentiation, transcription regulation, and development. MAPK14 can be detected in the brain, heart, placenta, pancreas, and skeletal muscle and it is expressed to a lesser extent in the lung, liver, and kidney. MAPK14 is activated by various environmental stresses and proinflammatory cytokines. The activation requires its phosphorylation by MAP kinase kinases (MKKs), or its autophosphorylation triggered by the interaction of MAP3K7IP1/TAB1 protein with MAPK14. The substrates of p38 alpha include transcription regulator ATF2, MEF2C,

and MAX, cell cycle regulator CDC25B, and tumor suppressor p53, which suggest the roles of p38 alpha in stress-related transcription and cell cycle regulation, as well as in genotoxic stress response. In response to activation by environmental stress, pro-inflammatory cytokines, and lipopolysaccharide, MAPK14 phosphorylates some transcription factors, such as ELK1 and ATF2, and several downstream kinases, such as MAPKAPK2 and MAPKAPK5. MAPK14 plays a critical role in the production of some cytokines, for example, IL-6. It may play a role in the stabilization of EPO mRNA during hypoxic stress. Isoform Mxi2 activation is stimulated by mitogens and oxidative stress and only poorly phosphorylates ELK1 and ATF2.

Reference

Luo X, et al. (2011) Study on p38 mitogen activated protein kinase in vascular endothelial cells dysfunction in preeclampsia. *Zhonghua Fu Chan Ke Za Zhi.* 46(1):36-40.

Park CH, et al. (2011) Epidermal growth factor-induced matrix metalloproteinase-1 expression is negatively regulated by p38 MAPK in human skin fibroblasts. *J Dermatol Sci.* 64(2):134-41.

Lee JY, et al. (2011) Curcumin induces EGFR degradation in lung adenocarcinoma and modulates p38 activation in intestine: the versatile adjuvant for gefitinib therapy. *PLoS One.* 6(8):e23756.

Riis JL, et al. (2011) CCL27 expression is regulated by both p38 MAPK and IKK β signalling pathways. *Cytokine.* 56(3):699-707.

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