BioVision
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Product Specification

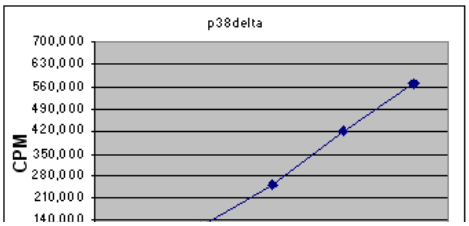
p38δ, active
(Full-length recombinant protein expressed in Sf 9 cells)

Catalog #: 7754-5
Lot #: _____
Aliquot size: 5 µg protein in 50 µl
Specific activity: 259 nmol/min/mg

Quality Control Analysis
Activity assessment
p38delta protein (~100 ng/µl concentration) was diluted to 25ng/µl with assay dilution buffer (4 mM MOPS, pH 7.2, 2.5 mM β-glycerophosphate, 1 mM EGTA, 0.4 mM EDTA, 4 mM $MgCl_2$, 0.05 mM DTT and 40ng/µl BSA), followed by 2-fold serial dilutions, and then the 10µl diluted proteins were used to phosphorylate the MBP protein in the following assay condition:

10 µl diluted p38delta protein
10 µl MBP protein (2 mg/ml stock)
5 µl [^{32}P] ATP mixture (250 µM ATP, 0.16 µCi/µl in 4x assay dilution buffer)

The various reaction components, except [^{32}P] ATP, were incubated at 30° C and the reaction started by the addition of [^{32}P] ATP. After 15 minutes, the reaction was terminated by spotting 20 µl of the reaction mixture onto a phosphocellulose P81 paper. The P81 paper was dried and washed several times in 1% phosphoric acid prior to counting in the presence of scintillation fluid in a scintillation counter. The actual counts, using various dilutions of the enzyme in the assay, are shown in Fig. 1.



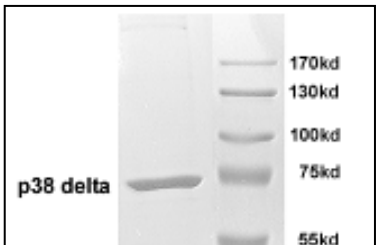


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Fig. 1 p38delta activity assay

Fig. 2 p38delta protein gel

Purity assessment
1.5 µg of p38delta protein was subjected to SDS-PAGE and Coomassie blue staining. The scan of the blue gel showed >80% purity of the p38delta protein product, and the band was at ~71kDa (Fig. 2).

Product Description
Recombinant full length human p38delta containing N-terminal GST tag was expressed by baculovirus in Sf 9 insect cells.
The gene accession number is NM_002754.
This material is sold for research purposes only.

Specific Activity
259 nmol phosphate incorporated into MBP protein per minute per mg protein at 30° C for 15 minutes using a final concentration of 50 µM ATP (0.83 µCi/assay).

Formulation
Recombinant proteins in storage buffer (50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EGTA, 0.1 mM EDTA, 0.1 mM PMSF, 25% glycerol).

Storage and Stability
Store product frozen at or below -70° C. Stable for 1 year at -70° C as undiluted stock. Aliquot to avoid repeated thawing and freezing.

Scientific Background
Mitogen-activated protein kinase (MAPK) cascades represent one of the major signal systems used by eukaryotic cells to transduce extracellular signals into cellular responses, and involved in a wide variety of cellular processes such as proliferation, differentiation, transcription regulation and development. The stress-activated protein kinase 4 (SAPK4), or p38 delta, is a member of the MAPK family that are activated by chemical and environmental stresses as well as by proinflammatory cytokines. SAPK4 has a TGY dual phosphorylation motif and is activated in response to cellular stresses and proinflammatory cytokines (1). MAP kinase kinases 3, and 6 can phosphorylate and activate this kinase. Transcription factor ATF2, and microtubule dynamics regulator stathmin have been shown to be the substrates of this kinase (2).

1. Goedert, M.; Cuenda, A.; Craxton, M.; Jakes, R.; Cohen, P. Activation of the novel stress-activated protein kinase SAPK4 by cytokines and cellular stresses is mediated by SKK3 (MKK6); comparison of its substrate specificity with that of other SAP kinases. *EMBO J.* 16: 3563-3571, 1997.
2. Kumar S, McDonnell PC, Gum RJ, Hand AT, Lee JC, Young PR. Novel homologues of CSBP/p38 MAP kinase: activation, substrate specificity and sensitivity to inhibition by pyridinyl imidazoles. Biochem Biophys Res Commun. 1997 Jun 27;235(3):533-8.