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Product Information

SILu™Prot MAPK3
Mitogen activated protein kinase 3, human recombinant, expressed in HEK cells
SIL MS Protein Standard, ^{13}C and ^{15}N-labeled

Catalog Number **MSST0019**
Storage Temperature –20 °C

Synonyms: MAP kinase 3, Erk1, p44

Product Description

SILu™Prot MAPK3 is a recombinant, stable isotope-labeled human MAPK3, which incorporates [$^{13}C_6$, $^{15}N_4$]-Arginine and [$^{13}C_6$, $^{15}N_2$]-Lysine. Expressed in human 293 cells, it is designed to be used as an internal standard for bioanalysis of MAPK3 in mass spectrometry. SILu™Prot MAPK3 is a monomer of 399 amino acids (including N-terminal polyhistidine and FLAG® tags), with a calculated molecular mass of 45.9 kDa.

MAPK3, the first mammalian MAPK to be characterized and cloned,[1] is commonly expressed in most tissues and is activated through the small guanosine triphosphatase Ras and sequential activation of the protein kinases Raf and MEK upon stimulation of cells with a broad range of extracellular signals.[2] Erk was suggested to be a good marker for estradiol and tamoxifen effects.[3] Alzheimer's disease's Erk1 and Erk2 index values were inversely correlated with disease duration, suggesting maximal efficacy for early diagnosis.[4] In addition, differential Erk1 and Erk2 phosphorylation could have important clinical utility for providing increased certainty in the positive diagnosis of Alzheimer's disease, particularly in the early phase of disease progression.[4]

Each vial contains 10–13 μg of SILu™Prot MAPK3 standard, in a 0.1 mg/mL solution of 20 mM sodium phosphate, pH 8.0, 1 M NaCl, 1 mM EDTA, and 25% glycerol. Vial content was determined by the Bradford method using BSA as a calibrator. Correction factor from the Bradford method to Amino Acid Analysis is 90% for this protein.

Identity: Confirmed by peptide mapping

Purity: ≥95% (SDS-PAGE)

Heavy amino acid incorporation efficiency: ≥98% (MS)

UniProt: P27361

Sequence Information:
The N-terminal polyhistidine and FLAG tags are italicized.

*MDYKDDDDKGHHHHHHHHGGQ*AAAAAQGGGGGEP
RRTEGVGPGVPGEVEMVKGQPFDVGPRYTQLQYIG
EGAYGMVSSAYDHVRKTRVAIKKISPFEHQTYCQRTL
REIQILLRFRHENVIGIRDILRASTLEAMRDVYIVQDLM
ETDLYKLLKSQQLSNDHICYFLYQILRGLKYIHSANVL
HRDLKPSNLLINTTCDLKICDFGLARIADPEHDHTGFL
TEYVATRWYRAPEIMLNSKGYTKSIDIWSVGCILAEML
SNRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMKA
RNYLQSLPSKTKVAWAKLFPKSDSKALDLLDRMLTFN
PNKRITVEEALAHPYLEQYYDPTDEPVAEEPFTFAME
LDDLPKERLKELIFQETARFQPGVLEAP

Precautions and Disclaimer

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

Storage/Stability

Store the product at –20 °C. The product is stable for at least 2 years as supplied. After initial thawing it is recommended to store the protein in working aliquots at –20 °C.

References

1. Ray, L.B., and Sturgill, T.W., Insulin-stimulated microtubule-associated protein kinase is phosphorylated on tyrosine and threonine *in vivo*. *PNAS*, **85**(11), 3753-7 (1988).
2. Ahn, N.G. et al., The mitogen-activated protein kinase activator. *Curr. Opin. Cell Biol.,* **4**(6), 992-9 (1992).
3. Visram, H., and Greer, P.A., 17beta-estradiol and tamoxifen stimulate rapid and transient ERK activation in MCF-7 cells via distinct signaling mechanisms. *Cancer Biol. Ther.,* **5**(12), 1677-82 (2006).
4. Tapan, K. et al., An internally controlled peripheral biomarker for Alzheimer's disease: Erk1 and Erk2 responses to the inflammatory signal bradykinin. *PNAS,* **103**(35), 13203-7 (2006).

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