



LD Biopharma, Inc.
7384 Trade Street, Suite B
San Diego, CA 92121
Tel: 858-876-8266
<http://www.ldbiopharma.com>

- PRODUCT DATA SHEET -

Name of Product: Recombinant Human MDK Protein
Catalog Number: hRP-2221
Manufacturer: LD Biopharma, Inc.

Introduction

Developmentally regulated, secreted growth factor homologous to pleiotrophin (PTN), which has heparin binding activity. Human Midkine (MDK) binds anaplastic lymphoma kinase (ALK) which induces ALK activation and subsequent phosphorylation of the insulin receptor substrate (IRS1), followed by the activation of mitogen-activated protein kinase (MAPK) and PI3-kinase, and the induction of cell proliferation. It is involved in neointima formation after arterial injury, possibly by mediating leukocyte recruitment. MDK is also involved in early fetal adrenal gland development. Recent data indicated that MDK plays a role in controlling melanoma metastasis.

Full-length mature form of human Midkine cDNA (21 - 143aa, Isoform-A, derived BC011704) was constructed with codon optimization and expressed with a human alpha fetal protein (AFPn) -His-TEV cleavage site Tag (217aa) fusion at its N-terminal. It was expressed in E.coli as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.

Gene Symbol: MDK (NEGF2; ARAP; MK)
Accession Number: NP_002382
Species: Human
Size: 20 µg / Vial
Composition: 0.2 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.
Storage: In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 30 days.

Key References

David Olmeda, et al. *Whole-body imaging of lymphovascular niches identifies pre-metastatic roles of midkine.* *Nature*, doi: 10.1038 / nature22977 (2017)



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Muramatsu T. *Midkine, a heparin-binding cytokine with multiple roles in development, repair and diseases.* Proc. Jpn. Acad., Ser. B, Phys. Biol. Sci. 86 (4), 410-425 (2010)

Tao P, et al. *Abnormal expression, highly efficient detection and novel truncations of midkine in human tumors, cancers and cell lines.* Cancer Lett. 253 (1), 60-67 (2007)

Applications

1. May be used for in vitro Midkine mediated lymphovascular cell differentiation regulation study with this protein either as soluble factor or as coating matrix protein.
2. May be used for mapping protein-protein interaction.
3. Potential therapeutic protein, which may be used for melanoma metastasis treatment.
4. As native immunogen for specific antibody production.

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MTLHRNEYGIASILDSYQCTAEISLADLATIFFAQFVQEATYKEVSKMVKDALTAIEKPTGDEQ
SSGCLLENQLPAFLEELCHEKEILEKYGHSDCCSQSEEGRHNCFLAHKKPTPASIPLFQVPEPVT
SCEAYEEDRETFMNFYIYEIARRHPFLYAPTILLWAARYDKIIPSCCKAENAVECFQTKAATVT
KELRESSGGSHHHHHHGSENLYFQGVAKKDKVKKGGPGSECAEWAWGPCTPSSKDCGVGFREG
TCGAQTQIRICRVPCNWKKEFGADCKYKFENWGACDGGTGTKVRQGTLLKARYNAQCQETIRVT
KPCTPKTKAKAKAKKGGKGD