

Midkine Protein, Human, Recombinant

General Information

Synonyms:	midkine (neurite growth-promoting factor 2);NEGF2;MK;ARAP
Protein Construction:	A DNA sequence encoding the human MDK (P21741) (Met 1-Asp 143) was expressed and purified. Predicted N terminal: Val 21
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	P21741
Molecular Weight:	13.4 kDa (predicted); 18 kDa (reducing conditions)

QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 50 mM PBS, 1 M NaCl, pH 6. 8. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:	Reconstituted with sterile deionized water to 0.25 mg/mL. Reconstitution conditions may vary depending on the lot.
Stability & Storage:	It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots. <small>Actual storage temperature shall be subject to the COA.</small>
Shipping:	In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Midkine (MK or MDK) also known as neurite growth-promoting factor 2 (NEGF2) is a basic heparin-binding growth factor of low molecular weight, and forms a family with pleiotrophin. Midkine is a retinoic acid-responsive, heparin-binding growth factor expressed in various cell types during embryogenesis. It promotes angiogenesis, cell growth, and cell migration. Midkine is also expressed in several carcinomas, suggesting that it may play a role in tumorigenesis, perhaps through its effects on angiogenesis. Midkine 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. Midkine is involved in neointima formation after arterial injury, possibly by mediating leukocyte recruitment. Also involved in early fetal adrenal gland development. Midkine exhibited increased expression in the breast carcinomas but showed much lower expression in the normal breast tissue. Thus, it can be used as a breast carcinomas marker.

Reference

- Kadomatsu K, et al. (2004) Midkine and pleiotrophin in neural development and cancer. *Cancer Lett.* 204(2): 127-43.
- Muramatsu H, et al. (1993) Midkine, a retinoic acid-inducible growth/differentiation factor: immunochemical evidence for the function and distribution. *Dev Biol.* 159(2): 392-402.
- Muramatsu T. (2002) Midkine and pleiotrophin: two related proteins involved in development, survival, inflammation and tumorigenesis. *J Biochem.* 132(3): 359-71.
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