Recombinant Human Midkine

Catalog Number: 258-MD

DESCRIPTION

Source	*E. coli*-derived Lys23-Asp143 Accession # P21741.1
N-terminal Sequence Analysis	Lys23
Predicted Molecular Mass	13.3 kDa

SPECIFICATIONS

Activity	Measured by its ability to enhance neurite outgrowth of E16-E18 rat embryonic cerebral cortical neurons. Muramatsu, H. and T. Muramatsu (1991) Biochem. Biophys. Res. Commu. **177**:652. Optimal neurite outgrowth was observed when neurons were plated on 96-well culture plates that had been pre-coated with 100 µL/well of a solution of 3.0-8.0 µg/mL of rhMK.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS. Reconstituted rhMK should be used immediately or aliquoted and stored at -20° C to -70° C.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Midkine (MK) is a 15 kDa heparin-binding molecule originally cloned during a search for genes preferentially transcribed during retinoic acid (RA)-induced differentiation. Midkine belongs to a family of neurotrophic and developmentally-regulated heparin-binding molecules consisting of midkine, pleiotrophin (PTN/HBNF/OSF-1/HNGF-8) and the avian midkine homolog, RI-HB (for retinoic acid-inducible heparin-binding protein).

Midkine is a highly basic, nonglycosylated polypeptide that contains five intrachain disulfide bonds. The predicted molecular weight is approximately 13.3 kDa, based on a mature peptide length of 118 amino acid residues in the mouse and 121 amino acid residues in the human. Across species, MK shows 87% identity between the human and murine proteins. Between family members, human MK is approximately 50% identical to human PTN, with conservation of all 10 cysteines. Initial structure-function studies indicate that the C-terminal half of MK contains the principal heparin-binding site plus the molecule's antigenicity and neurite-promoting sequences; while both the C- and N-termini are necessary for the molecule's neurotrophic effects. Cells known to produce MK include endothelial cells, fetal astrocytes, renal proximal tubule epithelial cells and Wilms' (kidney) tumor cells. MK has also been identified in the senile plaques of patients with Alzheimer's disease. The pattern of expression of midkine during development strongly suggests a role for this factor both in epithelial-mesenchymal interactions and in development of the nervous system.

References:

1. Bohlen, P. and I. Kovesdi (1991) Prog. Growth Factor Res. **3**:143.
2. Muramatsu, T. (1993) Int. J. Dev. Biol. **37**:183.

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