Recombinant Human LIF

Catalog Number: 7734-LF/CF

DESCRIPTION

Source	*E. coli*-derived human LIF protein Pro24-Phe202 Accession # P15018
N-terminal Sequence Analysis	Pro24
Predicted Molecular Mass	19.6 kDa

SPECIFICATIONS

SDS-PAGE	19 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. Kitamura, T. *et al.* (1989) J. Cell Physiol. **140**:323. The ED_{50} for this effect is 0.02-0.12 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
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 PBS.
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. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

LIF (leukemia inhibitory factor) is a widely expressed, highly and variably glycosylated, 32-62 kDa, monomeric, pleiotropic cytokine in the IL-6 family of helical cytokines (1-4). The first exon encoding the signal sequence is alternately spliced, resulting in LIF-D, LIF-M, and LIF-T mRNAs that produce secreted, extracellular matrix-associated, and intracellular forms, respectively (5). LIF-D and LIF-M mRNAs produce identical 180 amino acid (aa) mature sequences (5). Mature human LIF (180 aa) shares 78%, 82%, 91%, 88 and 87% aa sequence identity with mouse, rat, canine, bovine, and porcine LIF, respectively. The LIF receptor is a heterodimer of a type I transmembrane ligand-binding subunit, LIFR (gp190), and the type I transmembrane signal transducing subunit, gp130, signaling especially through STAT3 and JAK kinases (3, 4, 6). Gp130 and members of the LIFR family also mediate the biological effects of Oncostatin M, Cardiotrophin-1, Galectin-10, CNTF, IL-6, IL-11, and IL-27 (3, 6). A soluble LIFR has been reported in the mouse (7). Depending on the cells and their context, LIF either opposes or favors differentiation (3, 8). LIF produced by the uterine endometrium supports successful implantation of the embryo, promotes proliferation and maintenance of pluripotency in embryonic stem cells, and favors proliferation of progenitor cell types such as hematopoietic stem cells (3, 6, 8). However, excess LIF blocks differentiation of embryoid bodies, indicating the importance of LIF regulation (3, 6). LIF is produced by $CD4^+$ T cells in response to activation, and is required by the thymic epithelium to support T cell maturation (3, 4). LIF expression is up-regulated by neuronal injury, and promotes motor neuron survival and oligodendrocyte myelination (3, 4, 9). LIF is produced by the adrenal cortex and likely enhances its production of cortisol and aldosterone (10). LIF can function as an autocrine growth factor in some pancreatic cancers, but induces differentiation in the myeloid leukemic cell line M1 (2, 11). Tumor LIF can also induce formation of immunosuppressive tumor-associated macrophages (12). LIF promotes endometrial remodeling and differentiation of adipocytes and cardiac smooth muscle cells (3, 4). It promotes regulatory T cell and inhibits Th17 cell differentiation, thus promoting tolerance, down-regulating inflammation, and contributing to immune tolerance during pregnancy and in the nervous system (3, 4, 6, 8).

References:

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