Recombinant Rat IL-3

Catalog Number: 2524-RL

DESCRIPTION

Source	*E. coli*-derived Ile27-Cys169, with an N-terminal Met Accession # P97688
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	16.3 kDa

SPECIFICATIONS

Activity	Measured in a cell proliferation assay using NFS-60 mouse myelogenous leukemia lymphoblast cells. Holmes, K.L. *et al.* (1985) Proc. Natl. Acad. Sci. USA **82**:6687. The ED_{50} for this effect is typically 1-5 ng/mL.
Endotoxin Level	<0.10 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 with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.
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

Rat interleukin-3 (IL-3; also multi-CSF) is a 26 kDa, variably glycosylated monomeric polypeptide that belongs to the α-helix family of hematopoietic cytokines (1, 2). IL-3 has pleiotrophic activies on a number of hematopoietic-related cells (1, 3). The rat molecule has two alternate splice forms. The first is termed IL-3β and is synthesized as a 169 amino acid (aa) precursor that contains a 27 aa signal sequence and a 142 aa mature segment (1, 2). The second is called IL-3α, and is identical to IL-3β, save for a three amino acid (Tyr-Pro-Gln) deletion at positions 56 - 58 (1). The beta form is considered the most common form. Each form has an α-helical structure with two intrachain disulfide bonds and two potential N-linked glycosylation sites. Rat IL-3 is generally considered to be species-specific in its activity. In the mature region, rat IL-3 is 55%, 30% and 24% aa identical to mouse, human and bovine IL-3, respectively. Cells known to express IL-3 include connective tissue mast cells, astrocytes, microglia, megakaryocytes, eosinophils, T cells, keratinocytes and thymic epithelium.

IL-3 exerts its biological activities by binding to a 70 kDa, low affinity, ligand-binding IL-3 Rα subunit, (6) which then recruits a120 kDa, common β-chain, signal transducing subunit (7) to form a functional IL-3 receptor (1, 6, 7). Receptors for IL-3 are present on bone marrow progenitors, macrophages, mast cells, eosinophils, megakaryocytes, basophils and various myeloid leukemic cells. IL-3 can stimulate the proliferation and differentiation of pluripotent hematopoietic stem cells as well as various lineage committed progenitors including those for neutrophils, macrophages, magakaryocytes, and erythroid cells. IL-3 can stimulate the growth of early B cells and mature macrophages, mast cells, eosinophils, basophils, and megakaryocytes. IL-3 augments the function activity of basophils, mast cells, eosinophils, and macrophages (1, 8). In combination with other molecules such as CD40L and or IL-4, IL-3 can stimulate production of dendritic cells (1, 2, 9, 10).

References:

1. Martinez-Moczygemba, M. and D.P. Huston (2003) J. Allergy Clin. Immunol. **112**:653.
2. Mangi, M.H. and A.C. Newland (1999) Cytokines Cell. Mol. Ther. **5**:87.
3. Esandi, M. del C. *et al.* (1998) Gene **211**:151.
4. Cohen, D.R. *et al.* (1986) Nucleic Acids Res. **14**:3641.
5. Gebicke-Haerter, P.J. *et al.* (1994) J. Neuroimmunol. **50**:203.
6. Chritton, S.C. and M.H. Sheng (1997) GenBank Accession # NP_640353.
7. Appel, K. *et* al. (1995) J. Neurosci. **15**:5800.
8. Schrader, J.W. (2001) in *Cytokine Reference,* Oppenhiem, J.J. and M. Feldmann (eds): Academic Press, p. 855.
9. Ebner, S. *et al.* (2002) J. Immunol. **168**:6199.
10. Buelens C. *et. al.* (2002) Blood **99**:993.