IrvineScientific®

RECOMBINANT HUMAN IL-6 ACF

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PN 41030 Rev. 0

RECOMBINANT HUMAN IL-6 ACF

Catalog No. 95121

INTENDED USE

Recombinant Human IL-6 is a carrier-free, animal component-free bioactive recombinant cytokine intended for use in cell culture applications. IL-6 is an interleukin that acts as both a pro-inflammatory and anti-inflammatory cytokine. It is secreted by T cells and macrophages to promote fever and stimulate immune response to trauma, especially burns or other tissue damage leading to inflammation. IL-6 is also a "myokine", a cytokine produced from muscle, and is elevated in response to muscle contraction (1).

PRODUCT DESCRIPTION

1. **Synonyms**
   IFN-β2, B-cell Differentiation Factor, BSF-2, HSF, MGI-2

2. **Accession Number**
   PO5231

3. **Background**
   IL-6 is a pleiotropic cytokine with a wide range of biological activities in immune regulation, hematopoiesis, inflammation and oncogenesis. IL-6 signals through a cell-surface type I cytokine receptor complex consisting of the ligand-binding IL-6Rα chain (CD126), and the signal-transducing component gp130 (CD130). Signal transduction through gp130, the common signal transducer of cytokines related to IL-6, is mediated by the JAK–STAT pathway and the RAS–MAPK pathway. In addition to the membrane-bound receptor, a soluble form of IL-6R (sIL-6R) has been purified from human serum and urine. The sIL-6R/IL-6 complex can stimulate neurite outgrowth and promote survival of neurons, and hence may be important in nerve regeneration through remyelination. IL-6 is relevant to many disease processes such as diabetes, atherosclerosis, depression, Alzheimer's disease, systemic lupus erythematosus, prostate cancer, and rheumatoid arthritis. There is an interest in developing anti-IL-6 agents as therapy against many of these diseases. Examples of such therapeutic agents include tocilizumab, which has been approved for rheumatoid arthritis and ALD518, described in clinical trials (2-5). Human IL-6 is active on mouse and rat cells. Recombinant human IL-6 is a non-glycosylated protein, containing 184 amino acids, with a molecular weight of 21000 Dalton.

4. **Specifications**
   Formulation
   Recombinant Human IL-6 is lyophilized from 10 mM acetic acid (AcOH).

   Protein Content and Purity
   ≥95% determined by reducing and non-reducing SDS-PAGE, UV spectroscopy at 280 nm.

   Bioactivity
   ED_{50} is determined by the dose-dependent proliferation of mouse 7TD-1 cells. The ED_{50} is typically less than 1 ng/mL.

   Quality and Grade
   Carrier-free. Animal component-free.

SHIPPING

This product is shipped at ambient temperature. Immediately upon receipt, store at the recommended temperature below.

STORAGE INSTRUCTIONS AND STABILITY

Upon receipt, store the lyophilized protein at -10°C in a manual defrost freezer for up to 12 months from the date of receipt. Unopened vials are stable for one year from the date of receipt when stored as recommended. Reconstituted material should be apportioned in working volumes and stored at or below -10°C in manual defrost freezer. Reconstituted material is stable for 4-6 weeks when stored at or below -10°C and for 3-12 months at -80°C. Stability can be increased by adding at least 0.1% carrier protein.

PRECAUTIONS AND WARNINGS

This product is for research or further manufacturing use only. It is not for use in diagnostic procedures. The safety and efficacy of this product in diagnostic or other clinical procedures has not been established.

DIRECTIONS FOR USE

1. **Reconstitution**

   Centrifuge vial before opening. When reconstituting the product, gently pipet and wash down the sides of the vial to ensure full recovery of the protein into solution. It is recommended to reconstitute the lyophilized product with sterile 10mM HCL at a concentration of 0.1 mg/mL, which can be further diluted into other aqueous solutions.

2. **Optimum Concentration**

   The optimum concentration varies depending on cell type and culture conditions. Working concentration should be determined for each specific application.

REFERENCES

1. van der Poll T, Keogh CV, Guirao X, Buurman WA, Kopf M, Lowry SF (1997). Interleukin-6 gene-deficient mice show impaired defense against pneumococcal pneumonia. J. Infect. Dis. 176(2): 439–444.
2. Kishimoto T (2010). IL-6: from its discovery to clinical applications. Int. Immunol. 22(5): 347-352.
3. Guo Y, Xu F, Lu T, Duan Z, Zhang Z (2012). Interleukin-6 signaling pathway in targeted therapy for cancer. Cancer Treat. Rev. 38(7): 904–910.
4. Mousa A, Bakhiet M (2013). Role of cytokine signaling during nervous system development. Int. J. Mol. Sci. 14(7): 13931-13957.
5. Jones SA, Scheller J, Rose-John S (2011). Therapeutic strategies for the clinical blockade of IL-6/gp130 signaling. J. Clin. Invest. 121(9): 3375–3383.

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Recombinant Human Growth Factors

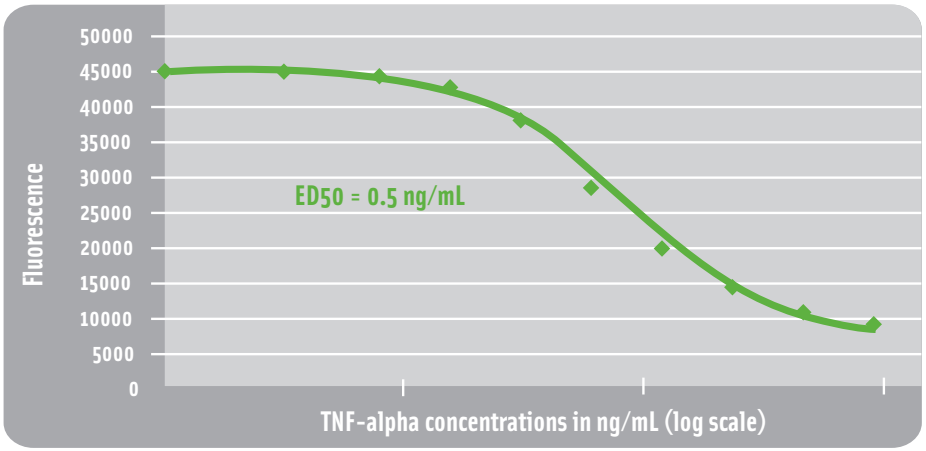
The practicality of clinical applications of primary and stem cells is based on their abilities to sufficiently proliferate and to differentiate into multiple specialized cells. The necessity of consistent high quality and affordable clinical grade key components for primary and stem cell culture, such as growth factors derived from animal component-free (ACF) processes, remains a significant challenge to the success of primary and stem cell-based therapies. A group of key ACF-growth factors commonly used in various cell culture applications have been released by Irvine Scientific for use in *ex vivo* primary and stem cell manipulations to minimize the potential risk of infectious agent transmission from non-ACF growth factors.

FEATURES & BENEFITS

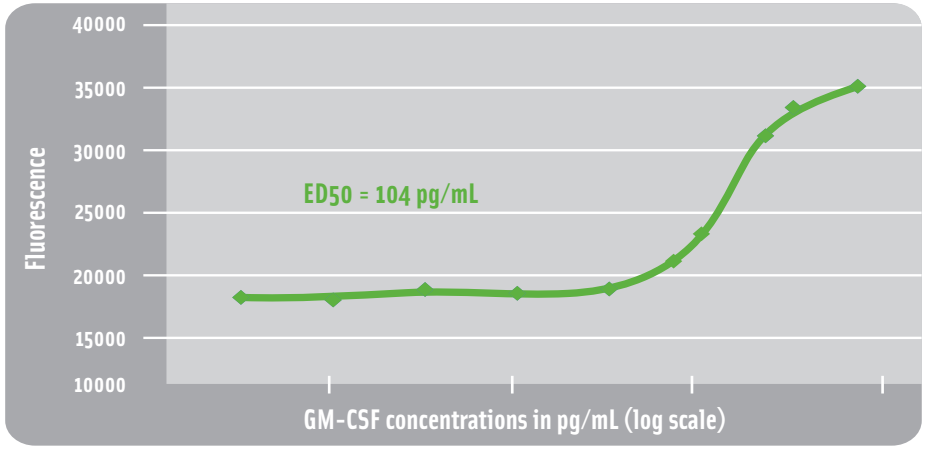
- Animal component-free
- Expressed in *E. coli*
- Validated by relevant bioactivity assay
- Lyophilized form to ensure stability
- High purity (≥ 95%)
- For research or further manufacturing use only
- Custom packaging available

Growth Factor	Catalog Number
Activin A	95106
CD40 Ligand	95104
EGF	95108
FGF-basic 154	95109
TPO	95110
VEGF-165	95111
GM-CSF	95112
IL-3	95113
IL-4	95114
SCF	95115
PDGF-BB	95116
TNF-alpha	95117
IL-2	95118
IGF-1	95119
Flt3-L	95120
IL-6	95121

TNF-alpha Bioactivity



GM-CSF Bioactivity



Examples of bioactivity dose response curves performed for ACF recombinant human TNF-alpha (left) and GM-CSF (right). TNF-alpha ED_{50} was determined by the cytolysis of mouse L929 cells in the presence of Actinomycin D. GM-CSF ED_{50} was determined by a dose dependent proliferation of human TF1 cells.

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