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ProductInformation

GRANULOCYTE-MACROPHAGE COLONY STIMULATING FACTOR (GM-CSF)
Rat, Recombinant
Expressed in *E. coli*

Product Number **G 0792**

Product Description

Recombinant Rat Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) is produced from a DNA sequence encoding mature rat GM-CSF.[1] This recombinant protein is a mixture of two rat GM-CSFs, the 127 amino acid form and the 128 amino acid methionyl form. Mature rat GM-CSF has a calculated mass of 14.7 kDa. GM-CSF, an acidic glycoprotein, is species-specific.

Four distinct colony-stimulating factors (CSFs) promoting survival, proliferation and differentiation of bone marrow precursor cells have been well characterized: granulocyte-macrophage-CSF (GM-CSF), granulocyte-CSF (G-CSF), macrophage-CSF (M-CSF), and interleukin-3 (IL-3, Multi-CSF).[2, 3, 4] GM-CSF is a multipotential growth factor, stimulating proliferation of progenitor cells from more than one hematopoietic lineage (granulocyte, macrophage, and eosinophil).[2, 3, 4] GM-CSF stimulates colony formation from pluripotent progenitor cells at extremely low concentrations and is an essential survival and proliferative factor for hematopoietic progenitor cells in all divisions up to maturity.

GM-CSF induces myeloid progenitor cells from bone marrow to form colonies containing macrophages and granulocytes in a semisolid media. It is produced by various cell types (activated T cells, B cells, macrophages, mast cells, endothelial cells, and fibroblasts) in response to cytokine and inflammatory stimuli.[5] In addition to granulocyte-macrophage progenitors, GM-CSF is a growth factor for erythroid, megakaryocyte, and eosinophil progenitors. GM-CSF can induce non-hematopoietic cells such as endothelial cells to migrate and proliferate. It also stimulates the proliferation of tumor cell lines, including osteogenic sarcoma, carcinoma, and adenocarcinoma cell lines. GM-CSF exerts its biological effects through binding to specific cell surface receptors.[6] The high affinity GM-CSF receptors contain a GM-CSF-specific α chain and a common β chain.

Reagent

Recombinant Rat Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) is supplied as approximately 5 µg of protein lyophilized from a 0.2 µm filtered solution in phosphate buffered saline containing 0.25 mg of bovine serum albumin.

Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) containing at least 0.1% human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 10 µg/ml.

Storage/Stability

Store at –20 °C. Upon reconstitution, store at 2 °C to 8 °C for one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

Product Profile

Rat Granulocyte-Macrophage Colony Stimulating Factor (GM-CSF) is measured by its ability to induce proliferation of the factor-dependent murine cell line, DA3.
The ED_{50} for this effect is typically 0.03 to 0.1 ng/ml. ED_{50} is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.
Purity: > 97% as determined by SDS-Page, visualized by silver stain.
Endotoxin level is < 0.1 ng/µg protein as determined by the LAL (Limulus amebocyte lysate) method.

References

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3. Quesniaux, V.F.J., and Jones, T.C., Granulocyte-macrophage colony stimulating factor, in The Cytokine Handbook, 3rd Edition, Thomson, A.W., ed., Academic Press (San Diego, Ca, 1998), pp. 637-670.

4. Callard, R., and Gearing, A., The Cytokine Facts Book. Academic Press (New York, N.Y., 1994).
5. Morstyn, G. and Burgess, A., Cancer Res., **48**, 5624 (1988).
6. Nicola, N., Immunol. Today, **8**, 134 (1987).

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