



Granulocyte Macrophage Colony Stimulating Factor, human recombinant (rHuGM-CSF)

Catalog No: 50449
Lot No: XXXXX
Source: *E. coli*
Synonyms: CSF-2, MGI-1GM, GM-CSF, Pluripoietin-alpha, Molgramostin, Sargramostim, MGC131935, MGC138897

Background

Granulocyte Macrophage Colony Stimulating Factor (GM-CSF) was first characterized as a growth factor that supports the in-vitro colony formation of granulocytes-macrophages progenitor cells. It is a pleiotropic cytokine and a member of a family of endogenous cytokines of the hematopoietic system. GM-CSF is produced as a response to immune or inflammatory stimuli by activated cells of the hematopoietic system such as T cells, B cells, macrophages, mast cells and also fibroblasts and alveolar epithelial cells. It plays an important role in regulating the proliferation, differentiation, survival and activation of hematopoietic cells such as granulocytes and monocytes, neutrophils, basophiles and eosinophiles, erythroid cells, megakaryocytes and T cells. Human and mouse GM-CSF have about 56% homology and are species specific. Human GM-CSF is not active on mouse cells and vice versa. It is active on canine and feline cells. GM-CSF is 144 amino acids, 22 kDa glycoprotein. It is composed of four bundles alpha helices. Its receptor is heterodimers with a ligand-specific alpha subunit and a beta subunit that is shared with the interleukin IL-3 and IL-5 receptors. This unusual form of receptor assembly likely applies also to IL-3 and IL-5 receptors. Cross-linking the two receptor subunits is required for receptor activation and signaling. GM-CSF has been shown to be involved in maturation, mobilization and antigen presentation of myeloid dendritic cells (DCs) in-vivo or ex-vivo. This function promotes Th1 immune responses, cytotoxicity, anti-angiogenesis as well as allergic inflammation, and the development of autoimmunity. Therefore GM-CSF can be used in immunotherapy for the treatment of immune suppressed and immune-compromised patients as well as in veterinary medicine for the same purpose. GM-CSF is also important in regulation of embryo development and pregnancy and specifically in embryo implantation and subsequent development.

Description

Granulocyte Macrophage Colony Stimulating Factor human recombinant produced in *E. coli* is a single, non-glycosylated, polypeptide chain containing 127 amino acids and having a molecular mass of 14477 Dalton. GM-CSF is purified by proprietary chromatographic techniques.

Physical Appearance

Sterile filtered white lyophilized (freeze-dried) powder.

Formulation

GM-CSF was lyophilized after extensive dialysis against 2 mM sodium phosphate buffer pH 7.4±0.1.

Solubility

It is recommended to reconstitute the lyophilized GM-CSF in sterile 18 MΩ-cm H₂O not less than 100 µg/ml, which can then be further diluted to other aqueous solutions.

Stability

Lyophilized Granulocyte Macrophage Colony Stimulating Factor, although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution GM-CSF should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.

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**Purity**

Greater than 98.0% as determined by (a) Analysis by RP-HPLC, (b) Analysis by SDS-PAGE.

Amino Acid Sequence

The sequence of the first five N-terminal amino acids was determined and was found to be Ala-Pro-Ala-Arg-Ser. N-terminal methionine has been completely removed enzymatically.

Activity

The ED50 as determined by the dose-dependant stimulation of the proliferation of human TF-1 cells (human erythroleukemic indicator cell line) is <0.1 ng/ml, corresponding to a specific activity of 11,100,000 IU/mg.

Usage

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