Recombinant Human GM-CSF Protein

Catalog Number: TL-302

Product name	
Generic names	Recombinant Human GM-CSF Protein
Gene Name Synonym	Granulocyte-Macrophage Colony-Stimulating Factor, CSF-2, MGI-1GM, Pluripoietin-α.

Product information	
Construction	A DNA sequence encoding the human GM-CSF (NP_034099.2) was expressed with a polyhistidine tag at the C-terminus.
Source	Human
Expression Host	HEK293 cells
QC Testing Purity	> 90 % as determined by SDS-PAGE
Bio Activity	The ED_{50} as determined by the dose-dependent stimulation of the proliferation of human TF-1 cells is ≤ 0.1 ng/ml, corresponding to a specific activity of ≥ 1 x 10^7 units/mg.
Endotoxin	< 0.1EU per μg of the protein as determined by the LAL method.
Molecular Mass	The Recombinant human GM-CSF consists of 190 amino acids and predicts a molecular mass of 15KDa.
Formulation	Lyophilized from sterile PBS, pH 7.4. Normally 6 % - 8 % trehalose, mannitol are added as protectants before lyophilization.
Stability & Storage	Samples are stable for up to 24 months from date of receipt at 4 ℃. Recommend to aliquot the protein into smaller quantities for optimal storage. Avoid repeated freeze-thaw cycles.

Background

GM-CSF is a hematopoietic growth factor that stimulates the development of neutrophils and macrophages, and promotes the proliferation and development of early erythroid megakaryocytic and eosinophilic progenitor cells. It is produced in endothelial cells, monocytes, fibroblasts and T-lymphocytes. GM-CSF inhibits neutrophil migration and enhances the functional activity of the mature end-cells. The human and murine molecules are species-specific and exhibit no cross-species reactivity. GM-CSF stimulates the differentiation of hematopoietic progenitors to monocytes and neutrophils, and reduces the risk for febrile neutropenia in cancer patients. GM-CSF also has been shown to induce the differentiation of myeloid dendritic cells (DCs) that promote the development of T-helper type 1 (cellular) immune responses in cognate T cells. As a part of the immune/inflammatory cascade, GM-CSF promotes Th1 biased immune response, angiogenesis, allergic inflammation, and the development of autoimmunity, and thus worthy of consideration for therapeutic target. GM-CSF has been utilized in the clinical management of multiple disease processes. Most recently, GM-CSF has been incorporated into the treatment of malignancies as a sole therapy, as well as a vaccine

adjuvant. While the benefits of GM-CSF in this arena have been promising, recent reports have suggested the potential for GM-CSF to induce immune suppression and, thus, negatively impact outcomes in the management of cancer patients. GM-CSF deficiency in pregnancy adversely impacts fetal and placental development, as well as progeny viability and growth after birth, highlighting this cytokine as a central maternal determinant of pregnancy outcome with clinical relevance in human fertility.

References

1. Robertson SA. (2007) GM-CSF regulation of embryo development and pregnancy. Cytokine Growth Factor Rev. 18(3-4): 287-98.

2. Waller EK. (2007) The role of sargramostim (rhGM-CSF) as immunotherapy. Oncologist. 12 Suppl 2: 22-6.

3. Clive KS, et al. (2010) Use of GM-CSF as an adjuvant with cancer vaccines: beneficial or detrimental? Expert Rev Vaccines. 9(5): 519-25.