Cytokines

Human Recombinant EPO

Erythropoietin

Catalog #	78007.1	10 µg
	78007	50 µg
	78007.2	1000 µg

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Product Description

Erythropoietin (EPO) is a glycoprotein growth factor that is produced primarily in the kidney in response to hypoxia or anemia. It is the principal physiological regulator of erythropoiesis. EPO promotes erythropoiesis by binding to a homodimeric cell surface receptor that activates JAK2/STAT5, PI3K/AKT, and MAPK pathways, and stimulates the proliferation and differentiation of erythroid progenitor cells (Jelkmann; Kuhrt & Wojchowski). EPO has also been reported to have a role in cardiac and brain development, and in protecting heart and brain tissue against inflammatory and ischemic damage. It is thought that these cytoprotective activities are either exerted directly on cardiomyocytes and neural cells, or indirectly by promotion of endothelial progenitor cells and neo-vascularization in these tissues. However, the nonhematopoietic activities of EPO have not been as clearly demonstrated as the role of EPO in erythropoiesis and its clinical utility in alleviating anemia in patients with chronic kidney disease and other disorders that affect red blood cell production (Jelkmann).

Product Information

Alternative Names:	Epoetin, Erythropoietin, EP
Accession Number:	P01588
Amino Acid Sequence:	APPRLICDSR VLERYLLEAK EAENITTGCA EHCSLNENIT VPDTKVNFYA WKRMEVGQQA VEVWQGLALL SEAVLRGQAL LVNSSQPWEP LQLHVDKAVS GLRSLTTLLR ALGAQKEAIS PPDAASAAPL RTITADTFRK LFRVYSNFLR GKLKLYTGEA CRTGDR
Predicted Molecular Mass:	18.4 kDa
Species:	Human
Cross Reactivity:	Mouse, Rat
Formulation:	Lyophilized after dialysis against phosphate-buffered saline (PBS).
Source:	CHO

Specifications

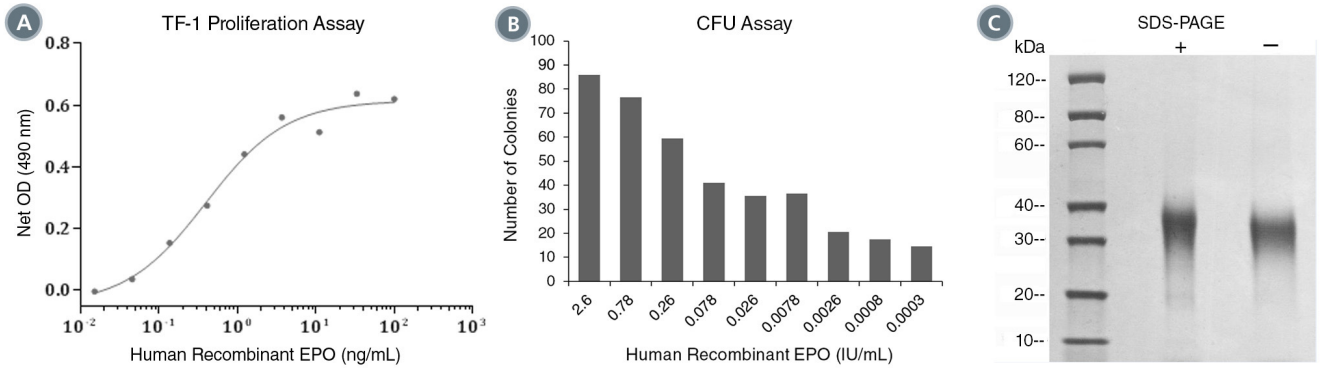
Activity:	The EC50 is ≤ 0.6 ng/mL as determined by a cell proliferation assay using TF-1 cells. The specific activity is ≥ 220 IU/µg as determined by titration in a CFU assay on human bone marrow MNCs and calibration against the third international reference preparation of EPO (NIBSC code: 11/170).
Purity:	≥ 98%
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 0.2 EU/µg protein.

Abbreviations: CFU: Colony-forming unit; EC50: Effective concentration at which the cell proliferation is at 50% of maximum; MNCs: Mononuclear cells

Preparation and Storage

Storage:	Store at -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. OPTIONAL: After reconstitution, dilute in an appropriate buffer, e.g. D-PBS (Without Ca++ and Mg++) (Catalog #37350) with 0.1% (w/v) bovine serum albumin (BSA), diluted from a 10% stock solution (10% BSA in Iscove's MDM, Catalog #09300) or D-PBS with 2% Fetal Bovine Serum (Catalog #07905). The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 week or at -20°C for more than 2 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Human Recombinant EPO was tested by its ability to promote the proliferation of TF-1 cells. Cell proliferation was measured using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which the cell proliferation is at 50% of maximum. The EC50 in the above example is less than 0.6 ng/mL.
(B) Human Recombinant EPO stimulates the proliferation and differentiation of erythroid progenitor cells, and was validated by titration in a CFU assay on human bone marrow MNCs, using MethoCult™ SF H4236 (Catalog #04236). The total number of colonies at each EPO concentration was enumerated using STEMvision™ (Catalog #22006).
(C) 5 µg of Human Recombinant EPO was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant EPO polypeptide has a predicted molecular mass of 18.4 kDa. As a result of glycosylation, the recombinant protein migrates with an apparent molecular mass of 26 - 36 kDa in SDS-PAGE.

Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Jelkmann W. (2013) Physiology and pharmacology of erythropoietin. Transfus Med Hemother 40(5): 302–9.
Kuhrt D & Wojchowski DM. (2015) Emerging EPO and EPO receptor regulators and signal transducers. Blood 125(23): 3536–41.