Recombinant Human TPO Protein

Product Name

Recombinant Human TPO Protein

Size / Catalog Number

50μg / TL650-0050

Product Information

Synonyms: thrombopoietin, C-mpl ligand (ML), Megakaryocyte colony-stimulating factor (MLCSF), Megakaryocyte growth and development factor (MGDF), Myeloproliferative leukemia virus oncogene ligand

Accession: UniProt P40225-1

Expressed Region: Ser22-Leu195 (Pro157Asn & Arg164Asn)

Tag: C-terminal 6×His-tag

Expression system: HEK293 cells

Predicted Molecular weight: 19.5 kDa

Purity: > 90% as determined by SDS-PAGE

Endotoxin: < 0.1 EU per 1 μg of protein (LAL method)

Activity: Measured in a cell proliferation assay using Mo7e cells, corresponding to a specific activity of ≥ 5.0×10^6 IU/mg.

Form: Lyophilized from sterile PBS (pH7.4), typically supplemented with 6% mannitol as a protectant.

Background

Recombinant Human Thrombopoietin (TPO) is a functional protein transiently expressed in HEK-293 cells with a C-terminal 6×His tag. By retaining the N-terminal 1-174 amino acid residues of TPO (the EPO-homologous domain essential for bioactivity) and removing the non-essential C-terminal glycosylated region, its molecular weight is optimized to 18-23 kDa. This protein specifically binds to the c-Mpl receptor and activates the JAK/STAT signaling pathway, playing a central role in hematopoietic stem cell culture and cell therapy applications: It drives directed differentiation of hematopoietic stem/progenitor cells toward the megakaryocytic lineage, efficiently promoting *in vitro* expansion and maturation of megakaryocytes, as well as platelet production. This provides critical support for establishing functional *in vitro* platelet production platforms, developing thrombocytopenia therapeutics, and advancing stem cell-based regenerative therapies.

Stability & Storage

Lyophilized powder: Stable for 12 months at -80°C or 6 months at -20°C when stored in the original sealed container under desiccant.

Reconstitution: Dissolve in sterile water for injection, 0.9% NaCl, or PBS (pH7.4), maintaining a final concentration ≥ 100 μg/mL to prevent adsorption.

Handling: Aliquot to avoid repeated freeze-thaw cycles.

References

1. Liu G, Tang F, Wang T, *et al*. Efficacy of recombinant human thrombopoietin in patients with acute-on-chronic liver failure and thrombocytopenia: A prospective, open-label study. World J Gastroenterol. 2025 Apr 14;31(14):105004.

2. Xing C, Wu M, Zhou X, *et al*. Bioinformatic Analysis of the Protective Effects of Dexmedetomidine and Thrombopoietin Against Hypoxia/Reoxygenation-Induced Injury in AC16 Cells. Chem Biol Drug Des. 2025 Apr;105(4):e70105.
3. Kaushansky K. Thrombopoietin and hematopoietic stem cell development. Ann N Y Acad Sci. 1999 Apr 30;872:314-9.
4. Al-Samkari H. Thrombopoietin Agonism to Promote Platelet Engraftment Following Hematopoietic Stem Cell Transplantation: Promising, but Not Ready for Primetime. Transplant Cell Ther. 2024 May;30(5):465-467.

Intended Us

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