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Recombinant Human Thrombopoietin (TPO) Protein (C-His)

Catalog Number:	630801, 630802
Size:	20 μg, 100 μg
Target Name:	TPO, THPO, Megakaryocyte Colony Stimulating Factor (MKCSF), Thrombopoietin Protein
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	CHO
Species:	Human
accession number:	NP_000451.1
Sources:	A DNA sequence encoding the human THPO (NP_000451.1) precursor (Met 1-Gly 353) was fused with a polyhistidine tag at the C-terminus.
Molecular Weight:	The recombinant human THPO consists of 343 amino acids with the predicted molecular mass of 36.9 kDa. As a result of glycosylation, the apparent molecular mass of rhTHPO is approximately 60-80 kDa in SDS-PAGE under reducing conditions.
Affinity Tag:	C-His
Purity:	> 85 % as determined by SDS-PAGE.
Endotoxin level:	< 1.0 EU per μg protein
Protein Concentration:	Lyophilized
Storage and Handling:	Proteins are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

Human Human Thrombopoietin (THPO) is the primary regulator of platelet production and an important factor in hematopoiesis. It is produced mainly by the liver, with additional contributions from the kidney and bone marrow stromal cells. THPO stimulates the proliferation and differentiation of megakaryocyte progenitors and promotes the maturation of megakaryocytes, ultimately leading to platelet formation.

Structurally, THPO is a glycoprotein composed of an N-terminal domain homologous to erythropoietin, responsible for receptor binding and biological activity, and a C-terminal domain that contributes to protein stability and secretion. THPO functions as a soluble ligand and exerts its effects by binding to its receptor, MPL (also known as CD110), which is expressed on hematopoietic stem cells and megakaryocyte lineage cells.

Upon binding to MPL, THPO activates intracellular signaling pathways such as JAK-STAT, MAPK, and PI3K-AKT, leading to cell

survival, proliferation, and differentiation. This signaling axis is essential not only for platelet production but also for maintaining hematopoietic stem cell quiescence and self-renewal.

In disease, dysregulation of THPO or MPL signaling is associated with hematologic disorders. Reduced THPO activity can contribute to thrombocytopenia, while excessive or constitutive signaling is linked to myeloproliferative neoplasms. Mutations in MPL or downstream signaling components can disrupt normal platelet homeostasis and hematopoiesis.

Therapeutically, THPO signaling is targeted using thrombopoietin receptor agonists such as agonists such as romiplostim and eltrombopag, which are used to treat conditions like immune thrombocytopenia. These agents stimulate platelet production and represent effective treatments for patients with low platelet counts.

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