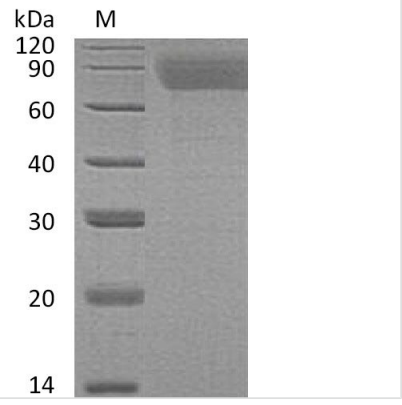
Recombinant Human Thrombopoietin (THPO) (Active)

Product Code	CSB-AP003971HU
Abbreviation	Recombinant Human THPO protein (Active)
Uniprot No.	P40225
Storage Buffer	Lyophilized from a 0.2 μm Filtered 20 mM Tris-HCl, 150 mM NaCl, pH 8.0
Product Type	Growth Factors
Immunogen Species	Homo sapiens (Human)
Biological Activity	The ED50 as determined in a cell proliferation assay using MO7E human megakaryocytic leukemic cells is 0.55 ng/ml.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	SPAPPACDLRVLSKLLRDSHVLHSRLSQCPEVHPLPTPVLLPAVDFSLGEWKT QMEETKAQDILGAVTLLLEGVMAARGQLGPTCLSSLLGQLSGQVRLLLGALQS LLGTQLPPQGRTTAHKDPNAIFLSFQHLLRGKVRFLMLVGGSTLCVRRAPPTT AVPSRTSLVLTLNELPNRTSGLLETNFTASARTTGSGLLKWQQGFRAKIPGLLN QTSRSLDQIPGYLNRIHELLNGTRGLFPGPSRRTLGAPDISSGTSDTGSLPPNL QPGYSPSPTHPPTGQYTLFPLPPTLPTPVVQLHPLLPDPSAPTPTPTSPLLNTS YTHSQNLSQEG
Research Area	Cancer
Source	Mammalian cell
Target Names	THPO
Expression Region	22-353aa
Tag Info	N-terminal 6xHis-tagged and C-terminal 6xHis-tagged
Mol. Weight	37.3 kDa
Protein Length	Full Length of Mature Protein
Image	 (Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.
Description	

Recombinant Human Thrombopoietin (THPO) is produced in a mammalian cell expression system, which appears to ensure proper folding and post-translational modifications. This full-length mature protein spans amino acids 22 to 353 and carries a 6xHis tag at both ends. The purity exceeds 95% based on SDS-PAGE verification, and it shows biological activity with an ED50 of 0.55 ng/ml in cell proliferation assays using MO7E cells. Endotoxin levels stay below 1.0 EU/μg, as measured by the LAL method.

Thrombopoietin (THPO) serves as a key growth factor that regulates platelet production. It's central to hematopoiesis—specifically in how megakaryocytes proliferate and differentiate. These are the progenitor cells that generate platelets. Understanding THPO may help researchers grasp disorders affecting platelet counts, like thrombocytopenia and thrombocythemia. This makes it valuable for hematological research.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Megakaryocyte Differentiation and Platelet Production Studies

This recombinant human THPO can help investigate how megakaryocytes differentiate and how platelets form in laboratory settings. The demonstrated biological activity with an ED50 of 0.55 ng/ml in MO7E cells gives researchers a solid dose-response reference point. Scientists might use this protein to explore the molecular mechanisms driving thrombopoiesis—things like gene expression changes, signaling pathway activation, and the cellular shape changes that happen as megakaryocytes mature.

2. Cell Proliferation and Viability Assays

The proven activity in MO7E human megakaryocytic leukemic cells makes this protein suitable for standardized proliferation assays and dose-response work. Those dual His-tags allow for straightforward detection and measurement in experimental systems. The high purity (>95%) should deliver consistent results between experiments. This application seems particularly useful for screening studies or when comparing different megakaryocytic cell lines.

3. Protein-Protein Interaction Studies

Both N-terminal and C-terminal His-tags make pull-down assays and affinity purification experiments possible for identifying THPO-binding proteins and receptor interactions. Researchers could use this tagged protein in co-immunoprecipitation studies or surface plasmon resonance experiments to characterize binding kinetics and spot novel interaction partners. The mammalian expression system likely preserves proper protein folding and post-translational modifications that may be crucial for authentic protein interactions.

4. Antibody Development and Validation

This highly pure recombinant THPO works well as an antigen for developing and testing anti-THPO antibodies in research applications. The dual His-tagging makes it easy to attach to various surfaces for ELISA development, Western blot validation, and antibody specificity testing. The confirmed biological activity provides an additional functional readout for checking whether newly developed antibodies interfere with THPO's biological function.

5. Signal Transduction Pathway Analysis

The biologically active THPO can be used to dissect downstream signaling cascades that activate when it binds to receptors in megakaryocytic cells. Researchers might use this protein to study JAK-STAT pathway activation, PI3K/AKT signaling, and other intracellular responses that THPO stimulation triggers. The low endotoxin level (<1.0 EU/μg) helps ensure that observed cellular responses are actually due to THPO activity rather than inflammatory contamination.

Endotoxin	Less than 0.01 EU/μg as determined by LAL method.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.