

## Contents

### 1. Description

#### 1.1 Background information

#### 1.2 Applications

### 2. References

## 1. Description

<b>Products</b>	Human TPO, research grade. Recombinant human thrombopoietin.								
	<table border="1"> <thead> <tr> <th>Content in µg</th><th>Order no.</th></tr> </thead> <tbody> <tr> <td>10</td><td>130-094-011</td></tr> <tr> <td>25</td><td>130-095-745</td></tr> <tr> <td>100</td><td>130-094-013</td></tr> </tbody> </table>	Content in µg	Order no.	10	130-094-011	25	130-095-745	100	130-094-013
Content in µg	Order no.								
10	130-094-011								
25	130-095-745								
100	130-094-013								
<b>Biological activity</b>	The ED <sub>50</sub> is ≤0.2 ng/mL corresponding to an activity of ≥5×10 <sup>6</sup> U/mg.  ▲ <b>Note:</b> The ED <sub>50</sub> is determined by proliferation assay using MO7e cells, calibrated with the reference standard for human TPO (03/124) provided by the NIBSC.								
<b>Primary structure</b>	Single, non-glycosylated polypeptide chain (175 amino acid residues including N-terminal methionine).								
<b>Molecular mass</b>	18.8 kDa.								
<b>Source</b>	Produced in <i>E. coli</i> .								
<b>Product format</b>	Lyophilized from a filtered (0.2 µm) buffer solution.								
<b>Stabilizer</b>	Mannitol and trehalose.								
<b>Purity</b>	>80% as determined by SDS-PAGE analysis.								
<b>Endotoxin level</b>	Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.								
<b>Storage</b>	Lyophilized Human TPO, research grade should be stored at -20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at -20 °C or below. Avoid repeated freeze-thaw cycles.								
<b>Reconstitution</b>	It is recommended to reconstitute lyophilized Human TPO, research grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.								

### 1.1 Background information

Thrombopoietin (TPO), also known as thrombopoiesis stimulating factor (TSF), is a glycoprotein hormone and the major stimulator of megakaryopoiesis and platelet production. TPO is expressed in liver, kidney, spleen, lung, bone marrow, and brain. The TPO receptor is a product of the proto-oncogene *c-mpl* and displays homology with type I cytokine receptor superfamily members. Analogous to the effect of erythropoietin (EPO), the primary mode of action of TPO is inhibition of apoptosis of its target cells. By contrast, TPO is strongly proapoptotic in the brain and acts as a counterpart of EPO which has neuroprotective properties.

### 1.2 Applications

Human TPO can be used for a variety of applications, including:

- Megakaryocyte proliferation and differentiation *in vitro*.
- *In vitro* expansion of CD34<sup>+</sup> hematopoietic progenitor cells.
- Differentiation of ES-derived cells towards the hematopoietic lineage.
- *In vitro* platelet activation.
- Apoptosis assays.

Optimal concentration for a specific application should be determined by a dose-response experiment.

## 2. References

1. Laurenti, E. *et al.* (2015) CDK6 levels regulate quiescence exit in human hematopoietic stem cells. *Cell Stem Cell* 16 (3): 302–313.
2. Brault, J. *et al.* (2014) Optimized generation of functional neutrophils and macrophages from patient-specific induced pluripotent stem cells: *ex vivo* models of X<sup>b</sup>-linked, AR22<sup>-</sup> and AR47<sup>-</sup> chronic granulomatous diseases. *Biores Open Access* 3 (6): 311–326.
3. Steinleitner, K. *et al.* (2012) EVI1 and MDS1/EVI1 expression during primary human hematopoietic progenitor cell differentiation into various myeloid lineages. *Anticancer Res.* 32 (11): 4883–4889.

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