Recombinant Human Thrombopoietin/Tpo
E. coli-expressed

Catalog Number: 288-TPE

DESCRIPTION

Source	*E. coli*-derived human Thrombopoietin/Tpo protein Ser22-Leu195 Accession # NP_000451
N-terminal Sequence Analysis	Ala & Ser22
Predicted Molecular Mass	18.7 kDa

SPECIFICATIONS

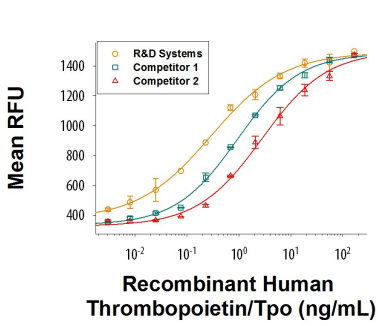
SDS-PAGE	19 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using MO7e human megakaryocytic leukemic cells. Avanzi, G. *et al.* (1988) Br. J. Haematol. **69**:359. The ED_{50} for this effect is 0.05-0.5 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, ≤ -20 °C under sterile conditions after reconstitution.

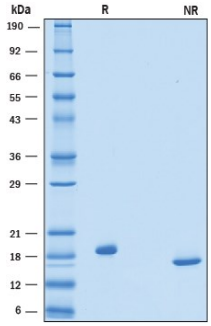
DATA

Bioactivity



Recombinant Human Thrombopoietin/Tpo (Catalog # 288-TPE) stimulates proliferation in the MO7e human megakaryocytic leukemic cell line. The ED_{50} for this effect is 0.05-0.5 ng/mL, which is more than 2-fold more active than two competitors'.

SDS-PAGE



2 µg/lane of Recombinant Human Thrombopoietin/Tpo was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 19 kDa and 18 kDa, respectively.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449

Recombinant Human Thrombopoietin/Tpo
E. coli-expressed

Catalog Number: 288-TPE

BACKGROUND

Thrombopoietin (Tpo), is a key regulator of megakaryocytopoiesis and thrombopoiesis. It is principally produced in the liver and is bound and internalized by the receptor Tpo R/c-mpl. Defects in the Tpo-Tpo R signaling pathway are associated with a variety of platelet disorders (1-3). The 353 amino acid (aa) human Tpo precursor is cleaved to yield the 332 aa mature protein. Mature human Tpo shares approximately 70% aa sequence homology with mouse and rat Tpo. It is an 80-85 kDa protein that consists of an N-terminal domain with homology to Erythropoietin (Epo) and a C-terminal domain that contains multiple N-linked and O-linked glycosylation sites (4, 5). Tissue specific alternate splicing of human Tpo generates multiple isoforms with internal deletions, insertions, and/or C-terminal substitutions (6). Tpo promotes the differentiation, proliferation, and maturation of MK and their progenitors (4, 5, 7). Several other cytokines can promote these functions as well but only in cooperation with Tpo (8, 9). Notably, IL-3 independently induces MK development, although its effects are restricted to early in the MK lineage (8, 9). Tpo additionally promotes platelet production, aggregation, ECM adhesion, and activation (10-13). It is cleaved by platelet-derived thrombin following Arg191 within the C-terminal domain and subsequently at other sites upon extended digestion (14). Both full length Tpo and shorter forms circulate in the plasma, with the shorter, N-terminal EPO-like domain forms showing significantly increased specific activity (4, 5, 15). The C-terminal domain is not required for binding to Tpo R or inducing MK growth and differentiation (5). Aside from its hematopoietic effects, Tpo is expressed in the brain where it promotes the apoptosis of hypoxia-sensitized neurons and inhibits neuronal differentiation by blocking NGF induced signaling (16, 17).

References:

1. Deutsch, V.R. and A. Tomer (2006) Br. J. Haematol. **134**:453.
2. Kaushansky, K. (2005) J. Clin. Invest. **115**:3339.
3. Li, J. *et al.* (1999) Br. J. Haematol. **106**:345.
4. Bartley, T.D. *et al.* (1994) Cell **77**:1117.
5. de Sauvage, F.J. *et al.* (1994) Nature **369**:533.
6. Marcucci, R. and M. Romano (2008) Biochim. Biophys. Acta **1782**:427.
7. Kaushansky, K. *et al.* (1994) Nature **369**:568.
8. Kaushansky, K. *et al.* (1995) Proc. Natl. Acad. Sci. **92**:3234.
9. Broudy, V.C. *et al.* (1995) Blood **85**:1719.
10. Lok, S.I. *et al.* (1994) Nature **369**:565.
11. Chen, J. *et al.* (1995) Blood **86**:4054.
12. Oda, A. *et al.* (1996) Blood **87**:4664.
13. Van Os, E. *et al.* (2003) Br. J. Haematol. **121**:482.
14. Kato, T. *et al.* (1997) Proc. Natl. Acad. Sci. **94**:4669.
15. Foster, D. & Hunt, P. (1997) Thrombopoiesis and Thrombopoietins **13**:203.
16. Ehrenreich, H. *et al.* (2005) Proc. Natl. Acad. Sci. **102**:862.
17. Samoylenko, A. *et al.* (2008) Cell. Signal. **20**:154.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 **Canada** TEL 855 668 8722 **China** TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449