

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived human Thrombospondin-1 protein
Asn19-Pro1170, with Thr523Ala substitution and a C-terminal 10-His tag
Accession # P07996

N-terminal Sequence Analysis Asn19

Predicted Molecular Mass 129 kDa

SPECIFICATIONS

SDS-PAGE 135-165 kDa, reducing conditions

Activity Measured by its binding ability in a functional ELISA.
When Recombinant Human VEGF (Catalog # 8147-VE/CF) is coated at 1.00 µg/mL (100 µL/well), it binds to Recombinant Human Thrombospondin-1. The ED₅₀ for this binding is 100-600 ng/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >90%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation Lyophilized from a 0.2 µm filtered solution in TBS, NaCl, and Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100 µg/mL in sterile PBS.

Shipping The product is shipped at ambient temperature. 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 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Thrombospondin-1 (TSP-1) is a 150-180 kDa calcium-sensitive protein that is secreted as a disulfide-linked homotrimer. Within the Thrombospondin family, TSP-2 is also homotrimeric, while TSP-3, -4, and -5/COMP are homopentameric. TSP-1 regulates a wide range of cellular functions including their interactions with other cells and with the extracellular matrix (ECM). TSP-1 contains an N-terminal Laminin G-like globular domain, an extended central region with one vWFC domain, 3 TSP type 1 domains, 2 EGF-like domains, and 8 TSP type-3 domains, and a globular TSP C-terminal domain. Distinct regions of TSP-1 have been associated with binding to particular ECM or cellular molecules (1, 2). Mature human TSP-1 shares 95% amino acid sequence identity with mouse and rat TSP-1. TSP-1 counteracts the angiogenic, hypotensive, and anti-thrombotic effects of nitric oxide (NO) (3). It binds and neutralizes VEGF, blocks VEGF R2 signaling on vascular endothelial cells (EC), and destabilizes adhesive contacts between EC (4-6). TSP-1's actions on vascular smooth muscle cells support arterial tone and blood pressure in the presence of vasodilatory stimulation (7). It is released from activated platelets and enhances platelet aggregation and adhesion (8). TSP-1 also plays an important role in wound repair and tissue fibrosis by binding latent TGF-beta and inducing release of the active cytokine from the latency associated peptide (LAP) (9, 10). TSP-1 dampens adaptive immune responses by inducing the differentiation of regulatory T cells and inhibiting TCR signaling (11, 12). In the nervous system, it promotes excitatory synapse formation (13, 14) and supports the integration of neural progenitor cells into the olfactory bulb (15). In addition, TSP-1 is released by apoptotic cells and promotes macrophage-mediated debris clearance (16).

References:

- Murphy-Ullrich, J.E. and R.V. Iozzo (2012) *Matrix Biol.* **31**:152.
- Lawler, J. and R.O. Hynes (1986) *J. Cell Biol.* **103**:1635.
- Roberts, D.D. *et al.* (2012) *Matrix Biol.* **31**:162.
- Gupta, K. *et al.* (1999) *Angiogenesis* **3**:147.
- Kaur, S. *et al.* (2010) *J. Biol. Chem.* **285**:38923.
- Garg, P. *et al.* (2011) *Am. J. Physiol. Lung Cell. Mol. Physiol.* **301**:L79.
- Isenberg, J.S. *et al.* (2009) *Matrix Biol.* **28**:110.
- Isenberg, J.S. *et al.* (2008) *Blood* **111**:613.
- Schultz-Cherry, S. *et al.* (1994) *J. Biol. Chem.* **269**:26775.
- Sweetwyne, M.T. and J.E. Murphy-Ullrich (2012) *Matrix Biol.* **31**:178.
- Grimbert, P. *et al.* (2006) *J. Immunol.* **177**:3534.
- Kaur, S. *et al.* (2011) *J. Biol. Chem.* **286**:14991.
- Xu, J. *et al.* (2010) *Nat. Neurosci.* **13**:22.
- Eroglu, C. *et al.* (2009) *Cell* **139**:380.
- Blake, S.M. *et al.* (2008) *EMBO J.* **27**:3069.
- Moodley, Y. *et al.* (2003) *Am. J. Pathol.* **162**:771.