Recombinant Human Thrombospondin-4

Catalog Number: 2390-TH

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived Ala22-Asn961, with a C-terminal 10-His tag Accession # P35443
N-terminal Sequence Analysis	Ala22
Predicted Molecular Mass	105 kDa

SPECIFICATIONS

SDS-PAGE	145 kDa, reducing conditions
Activity	Measured by the ability of the immobilized protein to support the adhesion of SVEC4-10 mouse vascular endothelial cells. Recombinant Human Thrombospondin-4 (rhThrombospondin-4) is coated to 96 well plates at 10 µg/mL (100 µL/well) overnight then reduced with 20 mM DTT for 30 minutes. When 2 x 10^4 cells/well are added to rhThrombospondin-4 coated plates, ≥50% will adhere after one hour at 37 °C. **Optimal dilutions should be determined by each laboratory for each application.**
Endotoxin Level	<1.0 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 Tris and NaCl. 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-4 (TSP-4) is an approximately 140 kDa matricellular protein that is secreted as a disulfide-linked pentamer. Within the Thrombospondin family, TSP-3 and TSP-5/COMP are also pentameric, while TSP-1 and TSP-2 are trimeric. TSP-4 regulates cell-cell and cell matrix interactions and plays a role in cardiovascular physiology and neuronal development (1, 2). Mature human TSP-4 consists of an N-terminal heparin-binding domain, a coiled coil motif, four EGF-like repeats, seven TSP type-3 repeats (one with an RGD motif), and a TSP C-terminal domain (2). Human TSP-4 shares 93% amino acid sequence identity with mouse and rat TSP-4. TSP-4 binds a variety of matrix proteins including Collagens I, II, III, V, Laminin-1, Fibronectin, and Matrilin-2 (3). Interactions of TSP-4 with non-collagenous proteins are independent of divalent cations, whereas interactions with collagenous proteins are enhanced in the presence of zinc (3). TSP-4 binds to cell surface Integrins containing the αM, β2, or β3 chains (4, 5). It is expressed in skeletal muscle and tendon as well as by vascular smooth muscle and endothelial cells (6-8). It is up-regulated in cardiomyocytes during pressure overload and is required for mediating the responsive increase in cardiac contractility (9). In humans, a polymorphism of TSP-4 (A387P) is associated with myocardial infarction (10). TSP-4 contributes to the development of inflammation and atherosclerosis by promoting macrophage and neutrophil adhesion to the vasculature (4, 5). In the nervous system, TSP-4 is expressed by astrocytes and neurons and is enriched at neuromuscular junctions and synapse-rich layers of the brain and retina (8, 11, 12). It promotes neuronal adhesion, neurite outgrowth, and excitatory synaptogenesis (8, 12, 13). TSP-4 is up-regulated in the spinal cord following peripheral nerve injury where it contributes to presynaptic hypersensitivity and hyperalgesia (11). It is also up-regulated in muscle following denervation (8). TSP-4 is additionally secreted by tumor-associated fibroblasts in gastric adenocarcinoma, particularly in regions of tumor cell invasion (14).

References:

1. Murphy-Ullrich, J.E. and R.V. Iozzo (2012) Matrix Biol. **31**:152.
2. Lawler, J. *et al.* (1995) J. Biol. Chem. **270**:2809.
3. Narouz-Ott, L. *et al.* (2000) J. Biol. Chem. **275**:37110.
4. Pluskota, E. *et al.* (2005) Blood **106**:3970.
5. Frolova, E.G. *et al.* (2010) Circ. Res. **107**:1313.
6. Sodersten, F. *et al.* (2007) Connect. Tiss. Res. **48**:254.
7. Stenina, O.I. *et al.* (2003) Circulation **108**:1514.
8. Arber, S. and P. Caroni (1995) J. Cell Biol. **131**:1083.
9. Cingolani, O.H. *et al.* (2011) Circ. Res. **109**:1410.
10. Stenina, O.I. *et al.* (2007) Arterioscler. Thromb. Vasc. Biol. **27**:1886.
11. Kim, D.-S. *et al.* (2012) J. Neurosci. **32**:8977.
12. Dunkle, E.T. *et al.* (2007) Exp. Eye Res. **84**:707.
13. Eroglu, C. *et al.* (2009) Cell **139**:380.
14. Forster, S. *et al.* (2011) Mod. Pathol. **24**:1390.

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